GLO IOM ™

MODELS: GLO 150 / 225 / 310

INSTALLATION, OPERATION, & MAINTENANCE MANUAL (IOM)

READ ENTIRE MANUAL BEFORE INSTALLATION

INSPECTION: UV REROURCES carefully packaged your equipment to prevent damage during shipping. **It is your responsibility to inspect this equipment before installing it and to notify us of any damages**. Do not install equipment that is damaged. Also, before discarding the packaging materials, carefully inspect them to prevent the loss of accessories, mounting hardware, spare parts, or instructions. Follow all instructions on any labels or tags.

DISLAIMER: The information and recommendations in this manual are based upon data collected by UV REROURCES and are believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein. Specifications and information are subject to change without notice.

⚠WARNING

Never touch Lamps with bare-hands. Damage to Lamp may result. Oil from fingerprints will permanently etch glass of Lamp and weaken structure. If necessary, clean Lamp using a UV REROURCES cleaning kit (isopropyl alcohol and a lint-free wipe may be substituted).

Before installing fixture or performing maintenance or service on fixture, turn off main power switch to unit. Electrical shock can cause injury or death. There may be more than one disconnect switch.

Machine installations must comply with minimum specifications and requirements stated in the applicable Installation Manual, any applicable municipal building codes, electrical wiring regulations and any other relevant statutory regulations. Due to varied requirements and applicable local codes, this machine must be installed, adjusted, and serviced by qualified maintenance personnel familiar with applicable local codes and the construction and operation. They must also be familiar with the potential hazards involved. Failure to observe this warning may result in personal injury, property damage, and/or equipment damage, and will void the warranty.

GLO Certifications – available upon request

SAVE THESE INSTRUCTIONS

This equipment is designed for use with germicidal UV radiation sources and must be installed in compliance with **manufacturer's site planning recommendations with competent technical directions** to prevent risk of personal injury, SPECIALLY EYES AND BARE SKIN, from UV radiation.

- Relative location of each germicidal system component
- The minimum distances between UV-generating devices and other objects or surfaces
- Protection from line-of-sight exposure to UV radiation in occupied spaces located above the equipment mounting area (e.g., upper-floor balconies, open staircases, etc.).

UV radiation can pose a risk of personal injury. Overexposure can result in damage to eyes and bare skin. To reduce the risk of overexposure this equipment must be installed in accordance with the manufacturer's site planning recommendations. This may include instructions on the relative location of each germicidal system component, the minimum distances between UV-generating devices and other objects or surfaces, and protection from line-of-sight exposure to UV radiation in occupied spaces located above the equipment mounting area (e.g. upper floor balconies, open staircases, etc.) UV and optical radiation can be reflected by surrounding surfaces such as ceilings and walls. Since the reflective properties of surfaces can vary widely, it should be considered as part of site planning. Follow the manufacturer's recommendations for selecting appropriate ceiling and wall finishes.

IT IS THE RESPONSIBILITY OF THE INSTALLER TO ENSURE THAT PERSONS WILL NOT BE EXPOSED TO EXCESSIVE UV OR OPTICAL RADIATION DURING EQUIPMENT OPERATION. THIS WILL REQUIRE THE INSTALLER TO CONDUCT AN ASSESSMENT OF IRRADIANCE OR ILLUMINANCE LEVELS IN THE SURROUNDING OCCUPIED SPACES PRIOR TO OCCUPANCY.

Equipment should be mounted in locations and at heights where it will not readily be subjected to tampering by unauthorized personnel.

DO NOT INSTALL THIS EQUIPMENT IN A DWELLING.

Personal Protective Equipment (PPE): Eye & Bare skin

Certification and Testing

- Electrical Testing

1. Luminaires [UL 1598:2018 Ed.4]
2. Luminaires [CSA C22.2#250.0:2018 Ed.4]

The GLO has also been classified as Risk Level "EXEMPT", based on Intertek Photobiological Testing (UL 8802: Outline of Investigation for UV Germicidal Equipment and Systems (Clause 8) and ANSI/IES RP-27.1-22: Risk Group Classification And Minimization Of Photobiological Hazards From Ultraviolet Lamps and Lamp Systems, when installed in accordance with these installation instructions.

- Ozone Testing.

1. Electrostatic Air Cleaners, UL 867, Section 40, Fifth Edition, August 4, 2011 revision: August 16, 2021
2. CSA 22-2 No. 187-15, Section 7, February 2015, April 2016 Revision

The equipment identified in this report has been found to meet the criteria for emittance of ozone not exceeding a concentration of 0.050 parts per million (ppm). Furthermore, a second sample was not required to be tested, according to UL 867, as the first sample's maximum emissions were less than 0.030 ppm, which satisfies the exception in the Section 40.1.1.

- Output Testing

1. IESNA LM-41-2014: Photometric Testing of Indoor Fluorescent Luminaires
2. IESNA LM-58-2013: Spectroradiometric Measurement Methods for Light Sources
3. IESNA LM-54-2012: IES Guide to Lamp Seasoning
4. IESNA LM-9-2009: Electrical and Photometric Measurements Of Fluorescent Lamps

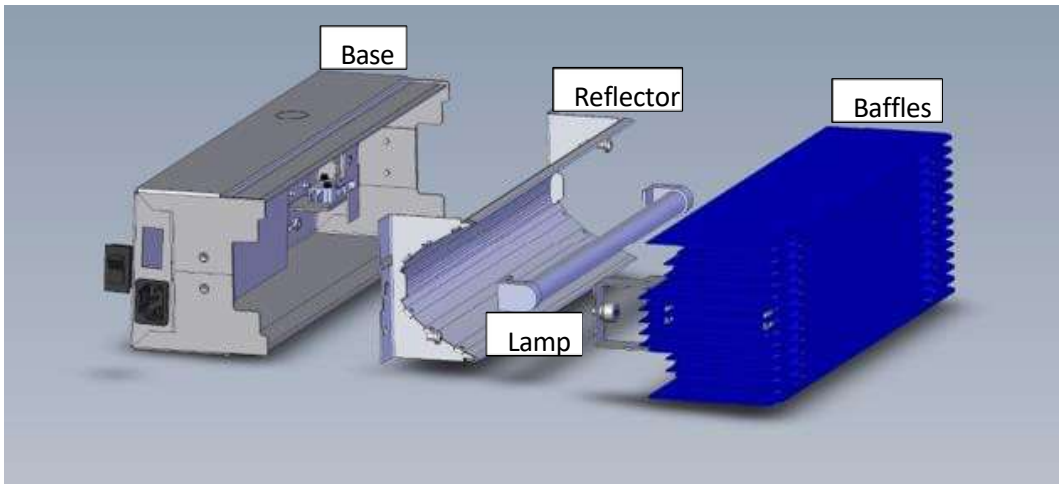
USER RESPONSIBILITY & DISCLAIMER

The user is responsible for determining and validating the suitability of this equipment for the user's own system or process.
The user is responsible for periodically inspecting, cleaning as necessary, and confirming the continued presence and good legibility of the product safety labels. If any of the safety labels are missing or illegible, contact UV RESOURCES.
The manufacturer does not make any warranty or representation with respect to the suitability or performance of this equipment, or to the results that may be expected from its use.

LIMITATIONS OF USE

Important: GLO Upper-Room Germicidal UV fixtures should be installed by a certified technician in accordance with the information provided in this document. Any power requirements or additional wiring must comply with applicable local and national electrical codes so that the GLO installation meets the safety guidelines.
The location, installation, and adjustment of GLO fixtures require proper planning and execution to avoid exceeding the Threshold Limit Value (TLV) for ultraviolet radiant exposure set by the American Conference of Governmental Industrial Hygienists (ACGIF).

CONSTRUCTION



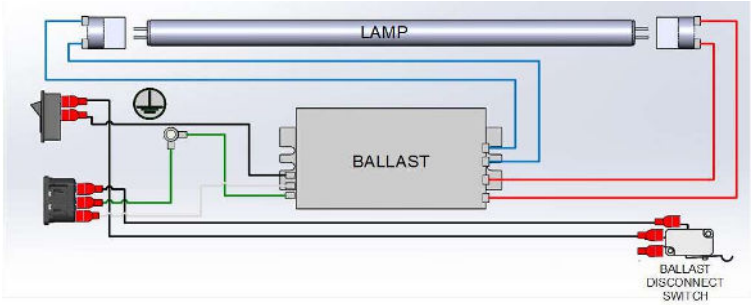
PART / PRODUCT LIST	Qty
GLO FIXTURE	1
Installation Bracket	1
Adjustment Fasteners (1/4-20 flange nuts)	2
U.S. Hospital Grade C13 Power Cord	1
Warning Label for Upper-Room Safety	1
Operating Instructions	1

TOOL / EQUIPMENT LIST
Four (4) Fasteners (#10)
Angular level / Bubble level
Phillips Screwdriver with a #2 Tip / Min. 6" length
Drill
Wall Anchors
Ladder

INSTALLATION

WIRING

The GLO can be hard-wired and controlled with a remote switch, but additional precautions must be taken. Consult UV REROURCES about hard wiring. All wiring should be performed by a certified electrician. All wiring should conform to state and local electrical codes as well as the current National Electric Code (NEC).

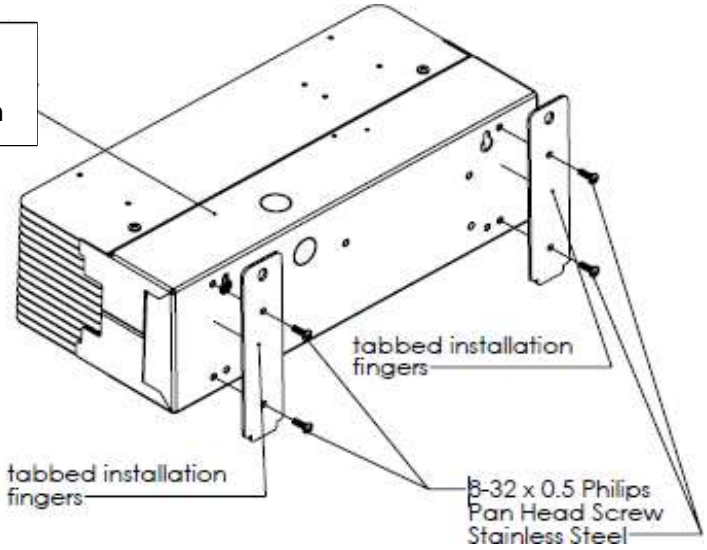


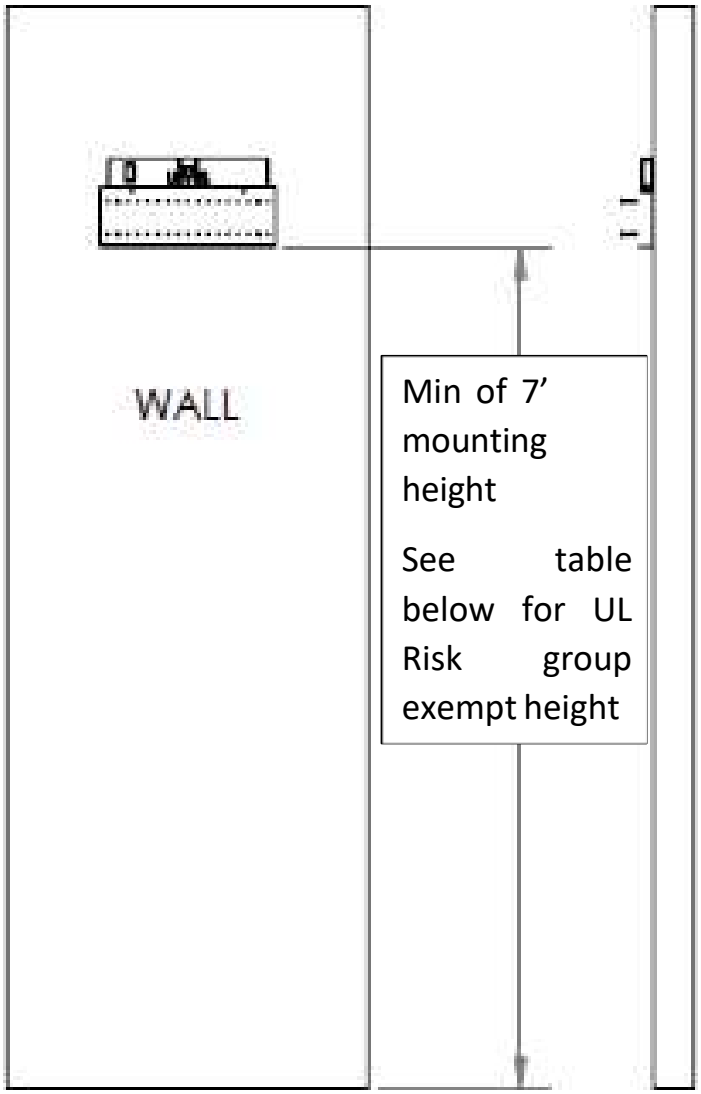
There is one size of installation bracket that can accommodate all sizes of GLO upper-room GUV fixtures whether they are louvered or open fixtures. In order to attach the GLO unit to the bracket, you must first install the included mounting fingers to the GLO unit.

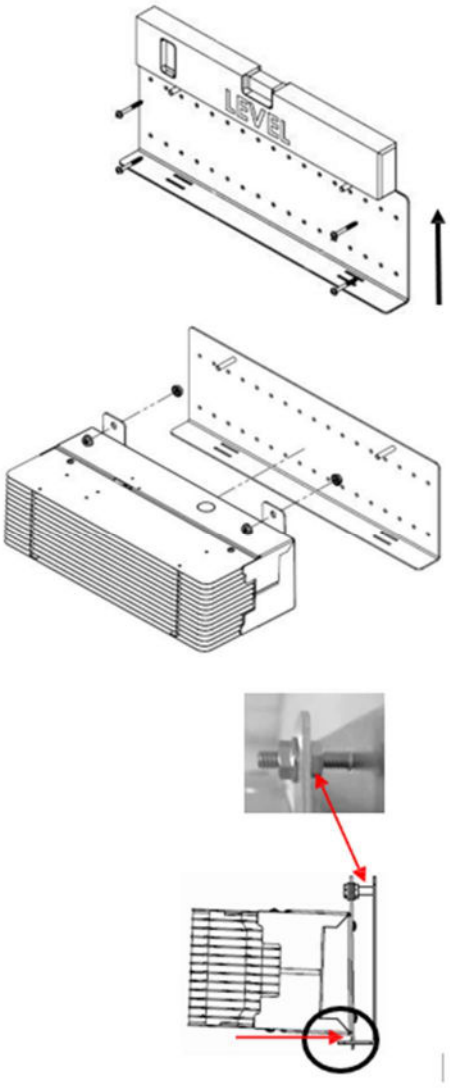
1. Identify and un-box the installation bracket, mounting fingers and bracket hardware.
2. Fasten the (2) mounting fingers to the backside of the Stratus Upper- room UV-C Fixture using the supplied (4) 8-32 x 0.5" Pan head screws.
3. Select Installation location, with the absolute minimum installation heights and angles for each size fixture referenced below.

GLO

AA-C-100 shown







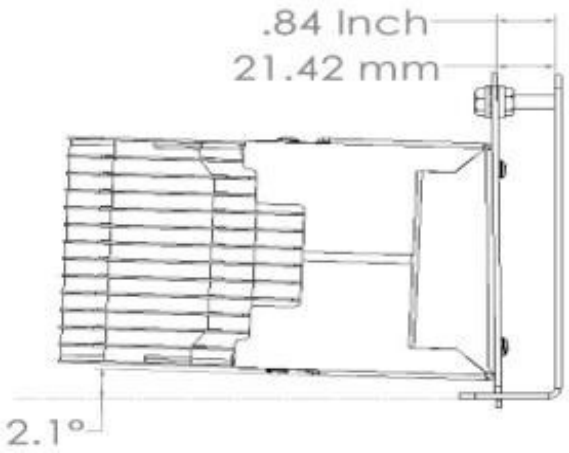
a) Find the installation bracket and loosen the flanged nuts that secure it to the GLO. Then remove the wall bracket from the GLO.

b) Select the installation location. Use the minimum installation heights and angles referenced below. Height is given in feet (‘) and inches (“).

WALL BRACKET

a) Find the installation bracket and loosen the flanged nut that secures it to the GLO. Then remove the wall bracket from the GLO.
b) Select the installation location. Use the minimum installation heights and angles referenced below. Height is given in feet (‘) and inches (“).
c) Find the installation bracket and loosen the flanged nut that secures it to the GLO. Then remove the wall bracket from the GLO.
d) Find the installation bracket and loosen the flanged nut that secures it to the GLO. Then remove the wall bracket from the GLO.
e) Select the installation location. Use the minimum installation heights and angles referenced below. Height is given in feet (‘) and inches (“).

Risk Group Exempt Installation Height Based on UL8802 Testing		
Model	Height	Fixture Angle
GLO 150	7’8”	+2.1°
GLO 225	8’2”	+2.1°
GLO 310	10’0”	+2.1°



f) Fixtures may be installed at heights or angles greater than the minimum required parameters. The optimal installation angle is one that meets the minimums referenced above, but also allows as much of the UV light as possible to remain in the upper-room and not on the ceiling.
d) Level and secure the bracket to the wall. Any of the holes may be used to secure the bracket, but it is recommended that both top holes and at least two holes in the lower row be secured.
e) It is also recommended that one of the fasteners for the top hole be installed to a stud, if possible. If a stud cannot be located, wall anchors and an additional anchor point should be used.

INSTALLATION: MAIN UNIT

a) Place one of the 1/4-20 flanged nuts over the stud of the bracket with the flanged side facing out. Spin the flanged nut all the way down the stud, to allow room for the tab to easily slide over the bracket stud.

b) The slots in the GLO can now be dropped onto the tabs on the bottom of the bracket. The GLO is then rotated back so the hole on the top tab slides over the stud.
c) The other 1/4-20 flanged nut should be added, and then hand tightened.
d) Tightening the flanged nut to different degrees should allow for fine adjustment.
e) Connect the power cord provided.

OPERATION: TURNING ON POST INSTALLALTION

⚠WARNING TO AVOID UV-C EXPOSURE, MAKE SURE YOU ARE BELOW THE IRRADIANCE ZONE (BELOW BAFFLE SECTION) WHEN TURNING ON THE SYSTEM. Once the GLO is connected to a power source, turn the ON/OFF switch to the ON position. When the GLO is ON, a **visible blue light** will emanate from the fixture.

⚠WARNING DO NOT TURN ON THE UNIT IF BAFFLE IS NOT INSTALLED.

SAFETY TESTING INFORMATION

a) UV REROURCES recommends that all fixtures and installations be safety tested. These results should be discussed with, then provided to, the owner or authorized representative, and also kept on file by the installer/distributor.
b) When testing for safety, it is important that the level of UV-C in the occupied space remains below accepted levels as readings are taken throughout the room. The only way to capture such readings is with a properly calibrated light meter with a UV-C specific detector and with adequate accuracy (precision and bias) to **measure levels < 0.40 µW/cm²**. **As such, UV REROURCES requires that all approved distributors and installers own, or have access to, and understand the operation of these devices.**
c) Consult UV REROURCES for specifics regarding safety testing procedures, values and limits. At a minimum, readings should be taken at 3, 6, 9, and 12 feet from the face of the fixture, perpendicular to the installation and at 5 feet, 6 inches above the floor (average eye level).
d) In settings where occupants will spend significant time in a room while not standing (e.g., sitting at a desk, laying in a patient bed, etc.), safety level measurements should also be taken at those locations.
e) The facility name, room number or name, fixture serial number and location, date of testing and technician name (at a minimum) should also be recorded. Maintenance Log is also available.
f) Adjustments to the angle of the fixtures should be made as required to achieve both safe eye-level readings and to ensure as much UV-C irradiance as possible remains in the upper-room (as opposed to being absorbed by walls and ceilings). Reflection of UV-C into the lower-room and loss of UV-C output can occur if the fixture is not adjusted properly.
g) Achieve the desired safety level at an angle greater than the required minimum. Then tighten the two flanged nuts together securely on the stud to lock in the angle, sandwiching the tab between them. You may need to tighten the front and back nuts so that you don't alter the angle, and then re-test to confirm that the safety level has not changed.
h) For rooms with multiple fixtures, it is recommended to create a small table of safety readings along centerline from the fixture (both facing toward and away) showing the results at eye-level. Systematically check for hotspots where output is likely to overlap and where occupants are likely to spend more time. Consult UV REROURCES for specifics regarding safety testing procedures, values and limits. Additional adjustment of the fixtures may be required to achieve this when multiple GLO fixtures are located within one room or space.
i) The installer should complete a final walkthrough with the owner or authorized representative highlighting the safety of the installation and stressing the importance of powering-off all fixtures before anyone is allowed to enter the upper-room for any reason. The GLO Manual should be reviewed and the safety recommendations should be reinforced.

MAINTENANCE

WARNINGS & CAUTIONS

⚠WARNING Always disconnect power to the fixture before performing any service or maintenance. Additionally, the GLO is equipped with a safety interlock switch that will shut down the germicidal ultraviolet lamp when the baffle section is removed.

⚠CAUTION Do not override the safety interlock switch. Operating the fixture when the interlock switch is overridden and baffle section removed will expose personnel to direct or strongly reflected germicidal ultraviolet rays, which are harmful to the eyes and skin.

⚠CAUTION Wear eye protection and skin protection if there is a risk of exposure to the high-intensity UV zone (approximately 6-1/2 feet above the floor) when the GLO is in use. Personal protection equipment (PPE) includes gloves and ultraviolet resistant face shield. In addition, wear a long sleeved shirt and cover any gaps between the cuffs and gloves.

IMPORTANT INFORMATION

a) The GLO is designed to operate with a minimal amount of maintenance. Occasional ultraviolet measurements MUST be made to ensure that germicidal ultraviolet intensities in the treated areas remain within the allowable exposure limits and above minimum levels.

b) A routine cleaning the germicidal ultraviolet lamp, reflector, and baffle section should be established based on visual inspection and experience. The frequency of cleaning will vary with the conditions surrounding each installation. It is recommended that the germicidal lamp, reflector and baffle section be cleaned at least once every 6 months.

c) The germicidal ultraviolet lamp used has a manufacturer's rated average effective life of 9,000 hours. The lamp may operate longer than the rated effective life, but the reduction in ultraviolet output will make it impractical to use past the lamp manufacturer's rated life. For maximum efficiency, lamp replacement is recommended every 6,000 hours of operation for GLO150 and **9,000 hours of operation for GLO225 & GLO310** or after about one (1) year of continuous use.

d) Refer to Appendix A for a suggested maintenance log for the GLO series fixtures.

LAMP REPLACEMENT AND MAINTENANCE (CLEANING)

⚠WARNING Before performing any service or maintenance, turn-off power to the GLO fixture and disconnect it from the utility power source.

a) In addition to eye and skin protection, wear gloves to protect the lamp and reflector.

b) You will need the following tools for lamp maintenance:

- Phillips #1 or #2 screwdriver with 6-inch blade (or longer)
- UV REROURCES lamp cleaning kit
- Ladder

⚠WARNING Follow all of the OSHA guidelines for your industry.

c) Remove the baffle section. Insert the screwdriver into the guide holes near each end of the baffle section and loosen the captive screws. Once the second screw has been loosened, the baffle section can be removed. Set the baffle section safely aside.

Image: Baffle Section and Guide Holes

d) Remove the germicidal ultraviolet lamp by rotating it a quarter-turn and then pulling it straight away from the fixture.

⚠CAUTION The lamp is easily damaged and may cause injury if broken. Exercise care when handling.

e) Wipe down the outer surface of the lamp. Moisten a clean, lint-free cloth with isopropyl alcohol and wipe down carefully. Set the lamp safely aside.

f) Remove any loose dust or dirt from the interior of the fixture with a soft dry cloth, or vacuum.

g) Gently remove any dust, dirt, fingerprints, smears, etc., from the reflective surfaces of the reflector. Moisten a clean, lint-free cloth with a wet wipe and wipe down the reflector. Then use a dry wipe to buff out any streaks that remain from cleaning.

Note: The reflector is constructed from specular aluminum, a highly reflective mirror-like material used to maximize ultraviolet output. **Take great care to not scratch or damage the reflector during these steps!**

h) Re-install or replace the lamp. Align the lamp pins with the openings of the lamp holders, insert the lamp fully, and make a quarter-turn of the lamp in either direction. This quarter-turn will lock the lamp contacts in place.

i) Verify that the lamp is properly seated by gently wiggling the lamp with a small amount of outward force.

j) Reattach the baffle section. Align the base of the GLO and secure the unit by fastening the captive screws. Use the guide holes for screwdriver placement.

k) Reconnect the fixture to utility power and then restart the GLO.

⚠WARNING Avoid exposure to direct or strongly reflected germicidal ultraviolet rays, which are harmful to the eyes and skin.

l) Anytime an GLO fixture is handled, a repeat of basic safety testing should be conducted. If there are safety concerns, consult the appropriate sections of this manual for adjustment instructions. If the fixture is not working properly, see Chapter 5: Troubleshooting.

HANDLING & DISPOSING UV-C LAMPS

⚠WARNING WEAR PROTECTIVE GLOVES TO PREVENT POSSIBLE CUT FROM SHARP EDGES FROM BROKEN GLASS. USE ONLY BROOM & DUSTPAN TO CLEAN BROKEN PIECES AND PUT IN A PLASTIC BAG. GERMICIDAL UV-C LAMPS CONTAINS SMALL AMOUNT OF MERCURY. DISPOSE THSE LAMPS ACCORDING TO LOCAL, STATE, AND/OR FEDEERAL REGULATIONS.

TROUBLESHOOTING

- Always disconnect power to the GLO before performing any service or maintenance.
- Wear personal protective equipment for eye protection and skin protection.
- IMPORTANT: This GLO is to be serviced ONLY by qualified, and appropriately trained personnel.

Table 1 – Troubleshooting

Problem	Possible Cause	Corrective Action
Not operating.	No electrical power.	Verify the GLO is connected to a live power source.
	Power connections to fixtures are loose or disconnected.	Verify power connections to fixture are fully engaged.
Germicidal ultraviolet lamp not operating.	Lamp not installed.	Install lamp.
	Interlock switch open.	Confirm baffle section is attached and secured.
	Lamp not properly seated.	Confirm connection of lamp and lamp holder. Make sure connection is tight and lamp is making full contact with lamp holder.
	Lamp faulty.	Swap suspect lamp with known good lamp. If known good lamp does not operate, visually inspect all wire connections.

REPLACEMENT LAMPS

PRODUCT MODEL	PRODUCT P/N	REPLACEMENT LAMP P/N	4PK	25 PK
GLO 150	**41824002**	**80305121**	**80305124**	**80305125**
GLO 225	**41804000**	**52043541**	**52043544**	**52043545**
GLO 310	**41804002**	**52053541**	**52053544**	**52053545***

* 30 PK

MAINTENANCE:

The intensity of the ultraviolet energy emitted from the UV lamps is dependent on the cleanliness and lamp age. The surface of the lamp should be kept as clean as possible for optimum intensity. Depending on the filtration level of the HVAC system and the general hygiene of the building, periodic cleaning may be necessary. Before attempting any maintenance procedures, always follow all warnings and cautions as detailed in this maintenance section.

CLEANING LAMPS

Note: If lamps are found to be broken, see the proper warning and cautions below regarding broken lamps and hazardous vapors.

1. Disconnect all electrical power to the unit and the UV lamps.
2. Wearing soft cloth gloves and safety glasses grasp lamp with fingers and twist lamp until it can be removed from tombstone.
3. Wipe down each lamp with a clean cloth and isopropyl alcohol. Avoid touching lamp glass with hands as skin oils can accelerate lamp degradation. (If lamps are coated with Teflon they can be touched with bare hands).
4. Apply dielectric grease to 4 pins. Place lamp back in tombstone and twist lamp until it clicks into place.

REPLACING THE LAMPS ANNUALLY

Ultraviolet lamps should be replaced annually if operated continuously or after 9,000 hours of use if operated intermittently. Replacement lamps must be the specific size and wattage as originally supplied from the factory.

Note: Although the lamps may continue to generate a characteristic blue glow beyond 9,000 operating hours, the ultraviolet energy emitted by the bulbs degrades over time and will no longer provide the intended benefit.

LAMP DISPOSAL:

UV lamps should be treated the same as other mercury-containing devices, such as fluorescent bulbs, according to local regulations. Most lamps must be treated as hazardous waste and cannot be discarded with regular waste. Low-mercury bulbs often can be discarded as regular waste; however, some states and local jurisdictions classify these lamps as hazardous waste. The U.S. EPA's universal waste regulations allow users to treat mercury lamps as regular waste for the purpose of transporting to a recycling facility. The National Electrical Manufacturers Association (NEMA) maintains a list of companies claiming to recycle or handle used mercury lamps at www.lamprecycle.org.

LIMITED EQUIPMENT WARRANTY

FOR DETAILED INFORMATION, VISIT https://uvresources/warranty

The warranty (https://uvresources/warranty) supersedes and replaces any warranty statements orally made by a Salesperson, Distributor or Dealer or contained in the written instructions or other Brochures or informational documents in relation to this product. This warranty gives you specific legal rights, and you may also have other rights which vary from State to State.

UV Resources (UVR) warrants to the original buyer that its Products shall be free from defects in material or workmanship under normal use for period of one year. This warranty is contingent upon proper use of Products and will not apply if adjustment, repair or parts replacement is required because of an accident, unusual physical, electrical or electro-mechanical stress, neglect, misuse, failure of electric power, humidity control, transportation, unauthorized repair actions, or not installed or maintained in accordance with UVRs' specifications. This warranty is limited to the repair and/or replacement of parts. This warranty does not cover any labor or subsequent damage incurred as the result of Product failure or indirectly arising from the design, construction, installation, servicing, or operation of Products. UVR neither assumes, nor authorizes any person to assume for it, any obligation in connection with the Products. Buyer shall not return to UVR any allegedly defective goods without UVRs' prior written authorization. This warranty may not be assigned or transferred.

UV RESOURCES

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