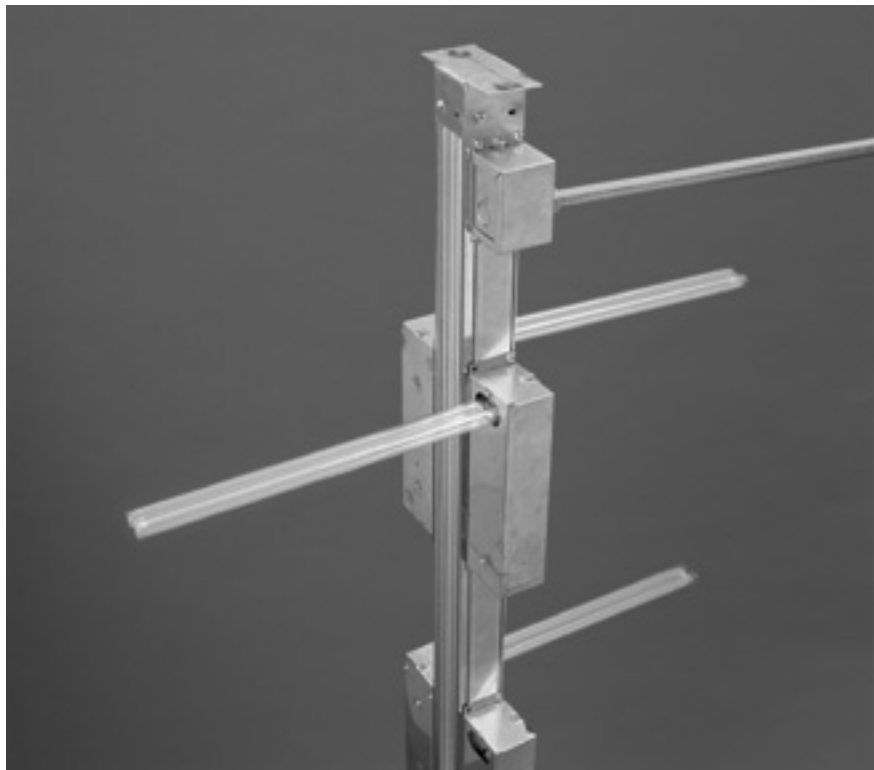


V-Flex[®]

High Output UV Device

INSTALLER/OWNER'S GUIDE



ALTRU...V

REAL SCIENCE FOR HVAC MAINTENANCE

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19-2021 Rev E, 06/05/07

TABLE OF CONTENTS

SPECIFICATIONS	3
Electrical Ratings	3
Approvals	3
APPLICATION	4
INSTALLATION	4
MOUNTING LOCATION	5
INSTALLATION OF THE LAMP MODULES	6
INSTALLATION OF THE POWER JUNCTION MODULE	8
INSTALLATION OF MAIN SUPPORT INTO AIR HANDLING DUCT	9
ELECTRICAL CONNECTION OF THE SYSTEM	10
LAMP INSTALLATION	10
OPERATION	13
TROUBLESHOOTING AND SERVICE	13
Cleaning the Lamps	14
Replacing the Lamp (Annually)	14
EQUIPMENT WARRANTY	16

SPECIFICATIONS

Electrical Ratings

Power Ratings

Note: The V-Flex is a universal input circuit capable of operation at 120 Vac or 240 Vac and 50Hz or 60Hz.

The unit is designed to be hardwired to an appropriate electrical service in accordance with NEC.

Temperature Ratings

Ambient Temperature Range: 40°F to 135°F (4°C to 51°C)

Lamp Temperature Range: 40°F to 135°F (4°C to 51°C)

Relative Humidity: Up to 95% rh, non-condensing

Power Consumption

Model	Input Current (A)	Lamp Wattage (W)
120V	0.6	60
240V	0.3	60

Approvals

Underwriters Laboratories: File no. E212213. Category Code ABQK (Accessories, Air Duct Mounted) UL Standards: UL153, UL1598 & UL1995. The health aspects associated with the use of this product and its ability to aid in disinfection of environmental air have not been investigated by UL. This product is classified only when installed with accompanying part numbers **19-1020**, **19-1030**, **19-3004** and **19-3005**.

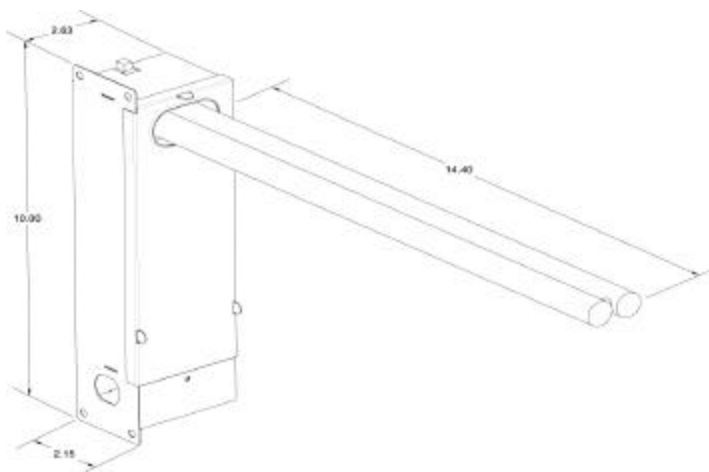


Figure 1. V-Flex™ Lamp Module

19-2021 Rev E, 06/05/07

APPLICATION

When installed in forced air heating and cooling systems, the V-Flex kills airborne and surface microorganism contaminants. It is designed to be mounted in-duct for airborne, “on-the-fly” applications as well as surface irradiation applications. The design allows for many different levels of UV dosage. Proper dosage is affected by many factors, such as air temperature, velocity, and duct reflectivity. The space between supports (typically 32”) and the space between rows (typically 24” for surfaces and 12” to 18” for moving air streams) can be increased or reduced to adjust for dosage.

See your Altru-V dealer or sales representative for assistance, as required.

INSTALLATION

1. Read these instructions carefully. Failure to follow the instructions could damage the product or cause a hazardous condition.
2. Check the electrical rating given in the instructions and on the product to make sure the product is suitable for your application.
3. **To avoid accidental exposure to ultraviolet light, the power supply to this product must be electrically interlocked. Interlock switches must be installed at any access panel or door within view of the UV fixtures.**
4. The installer must be a trained, experienced service technician.
5. After installation is complete, check out product operation as provided in this guide.
6. If the HVAC system has been in use prior to installation, it is recommended that debris and buildup on coils and HVAC system surfaces be cleaned.

Product Registration

Thank you for purchasing this product from UVDI! Prior to any other installation activities, please proceed with registering your product via the web at <http://www.altruv.com> or by returning the enclosed self-addressed postcard. Product registration will insure that your warranty is handled in a proper and expeditious manner. In addition, it will allow UVDI to provide you with important updates regarding your new product including reminders of when replacement parts are needed and also make you eligible for future parts discounts



CAUTION

Personal Injury Hazard

Power supply can cause electrical shock.

Disconnect power supply before beginning installation. Do not open lamp knob. There are no user serviceable components inside. Professional installation is required per NEC standards.



WARNING

UV Light Hazard

Harmful to bare skin and eyes.

Can cause temporary or permanent loss of vision.

19-2021 Rev E, 06/05/07

Never look at the lamps while illuminated. Only view illumination by way of view port accessory. To prevent exposure to ultraviolet light, disconnect power to the V-Flex before servicing any part of the HVAC system.

MOUNTING LOCATION



CAUTION

Equipment Damage Hazard

Ultraviolet light can cause color shift or structural degradation of plastic HVAC materials.

Select mounting location that prevents exposure to plastic components with unknown resistance to ultraviolet light. It is recommended that there be a minimum of three-feet between ultraviolet lamps and plastic-fabricated devices (such as non-fiberglass media filters).



CAUTION

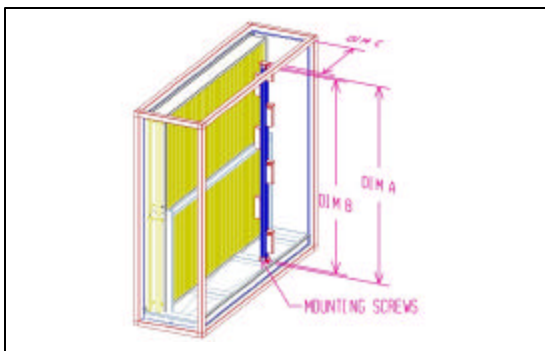
Equipment Damage Hazard

Ultraviolet light can cause color shift or surface degradation and sometimes structural degradation of non-metallic components.

Select a mounting location that prevents exposure to plastic flexible duct components, polyurethane foam insulation material, rubber hoses, wire insulation, etc. If mounting options are limited, items above should be protected with ultraviolet resistant material such as aluminum foil, aluminum duct tape, or metallic shields or equivalent.

1. Inspect and determine an appropriate location inside the air handling system for the installation. The location should allow for the mounting of a bracket on the floor and the ceiling of the air handler and should be readily accessible for the cleaning of lamps and the annual replacement of lamps (see Figure 2a).

Record Dimensions:



Dimension A	Dimension B	Dimension C

Figure 2a

- Determine the number and configuration of Lamp Modules and Power Junction Modules.
Note: the maximum number of Lamp Modules (19-1000) to be installed per Power Junction Module (19-1020) is 24.
- Mark the location of the lower mounting bracket on the lower mounting surface of the installation area.
- Measure overall length/height required for the installation (Figure 2a, dimension 'A'). This dimension is the distance from the lower mounting surface to the upper mounting surface of the mounting location. Record the measurement in the table in Figure 2a. for Dimension A.
- Referencing Dimension A, deduct ½" from the overall distance from the lower to upper mounting surface and record as Dimension B. This is the overall length of the Main Support.
- Install the lower bracket to the lower mounting surface of the installation area in the previously marked location. Four sheet metal screws (provided) should be used to securely fasten the lower bracket to the lower mounting surface (see Figure 2a).
- Place the Main Support on a horizontal surface in an appropriate work area. Measure and mark off the Dimension B onto the Main Support (see Figure 2b). Then make one cut through the cross-section of the Main Support using a tool appropriate for cutting aluminum. Cut only from one end, as it is important to retain a wiring feed-through hole in the Main Support section to be installed.

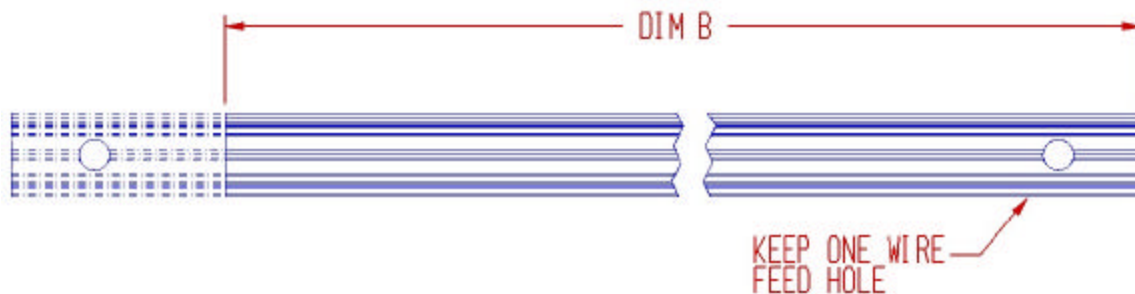


Figure 2b

INSTALLATION OF THE LAMP MODULES

- Carry the Main Support into the installation area. Place the upper mounting bracket onto the top end of the Main Support. **Do not install screws in the upper mounting bracket at this time.**
- Place the lower end of the Main Support into the lower mounting bracket, which is secured to the lower mounting surface.
- Swing the Main Support into place so that it is vertical.
- When vertical, use the supplied hardware to anchor the upper mounting bracket into the duct ceiling.
- First mark the location where the Power Junction Module is to be attached. It is important to mount the Power Junction Module near, but not covering, the wire feed through hole in the Main Support. It is recommended that the Power Junction Module be attached to the upper end of the Main Support.
- Mark the Main Support locations where the Lamp Modules should be attached.
Note: the maximum number of Lamp Modules (19-1000) to be installed per Power Junction Module (19-1020) is 24.
- Once the desired locations for the Lamp Modules and Power Junction Modules have been identified, disassemble the upper mounting bracket from the upper mounting surface and return the Main Support to the work area.

19-2021 Rev E, 06/05/07

8. Select one side of the Main Support to start assembly of lamp modules. Begin assembly of the Lamp Modules attachments first (see Figure 3b). Begin by installing the Lamp Module furthest from the Power Junction Module location.
9. Thread the three wires from the last Lamp Module installed to the main extrusion through the strain relief and into the wiring compartment of the next Lamp Module.
10. Route the external wires from the Lamp Modules into the Main Support wire raceway. Attach Lamp Modules to the Main Support with supplied screws (4) as shown (See Figure 3b).



Figure 3a

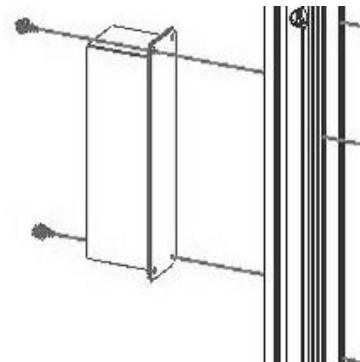


Figure 3b

11. Prepare next Lamp Module for attachment by removing wire access cover and loosening strain-relief screws.
12. Thread the three wires from the last Lamp Module installed to the Main Support through the strain relief and into the wiring compartment of the next Lamp Module.
13. Route the external wires from the Lamp Module under installation into the Main Support wire raceway and attach next Lamp Module to support with four screws.
14. Tighten strain-relief screws to secure the external power wires
15. Cut, as required, and strip 3/8" from the wires and insert into respective WAGO connector terminals (black-black, white-white, green-green)
16. Fold cables into Lamp Module enclosure and attach the wire access cover.
17. Repeat steps 5–14 as required until all Lamp Modules to be installed on the present side of the Main Support are installed.
18. Proceed to install Lamp Modules to the second Lamp Module mounting side of the Main Support.
19. Begin by installing the Lamp Module furthest from Power Junction Module. Repeat the instructions included in steps 5 through 14.

20. After installation of the last Lamp Module on the side opposite of the Power Junction Module, route the power wires from the last Lamp Module installed through the feed through hole connecting the wire raceway from either side. **Do not install lamps at this stage. (see Figure 3c for example of completely wired system)**

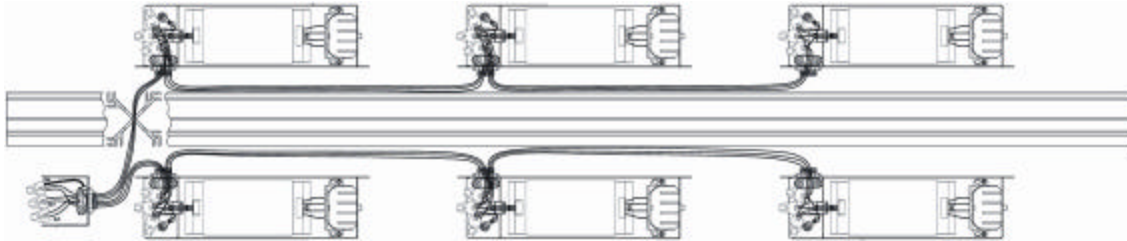


Figure 3c

INSTALLATION OF THE POWER JUNCTION MODULE

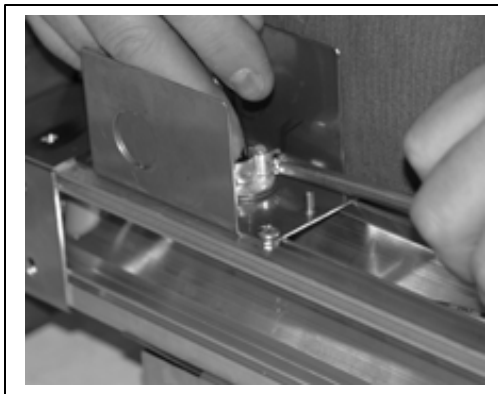
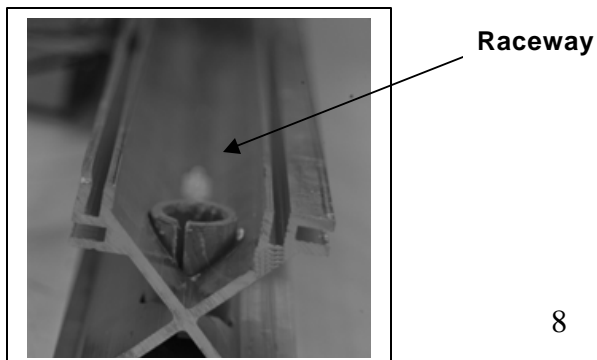


Figure 4a

21. Remove Power Junction Module cover.
22. Thread wires from last Lamp Module installed on each side through Power Junction Module strain relief (See Figure 4a).
23. Attach Power Junction Module to support with screws provided (2) as shown in Figure 4a.
24. Pull wires through strain relief until slack is removed and tighten strain relief screws to secure the wires entering the Power Junction Module
25. Cut and strip wires, 3/8", and insert into respective WAGO connector terminals (black-black, white-white, green-green), as required.
26. Fold cables into Power Junction Module enclosure.

PREPARATION OF THE WIRE/RACEWAY COVER



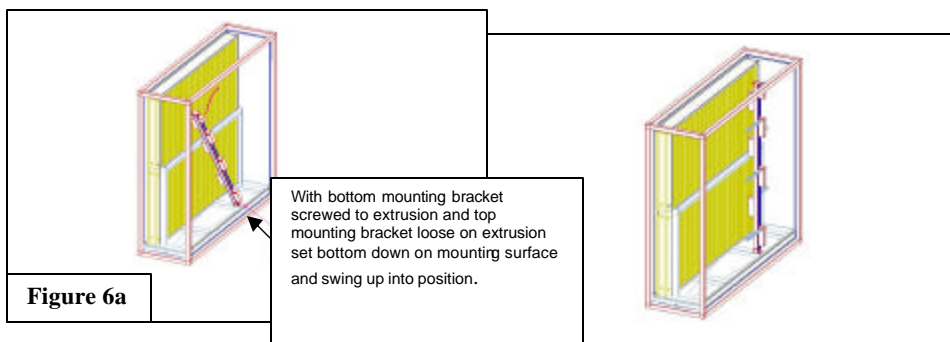
IMPORTANT

It is a requirement to incorporate the wire raceway covering to all exposed portions of the wire raceway on the mounting sides of the Main Support where modules have been mounted.

27. Identify, measure and record all spaces on the Main Support between Lamp Modules and the Power Junction Module (see Figure 2b).
28. Place the bare wire/raceway cover onto a horizontal surface in an appropriate work area. Mark off the dimensions corresponding to the gap dimensions recorded in step 7 onto the raceway cover sections. Make one cut through the cross-section of the raceway cover for each space identified using a tool appropriate for cutting aluminum.
29. Install (press fit) the raceway covers onto the Main Support for all gaps existing in the Main Support raceway.

INSTALLATION OF MAIN SUPPORT INTO AIR HANDLING DUCT

1. Carefully carry the partially assembled Main Support into the installation area.



2. Place the second mounting bracket onto the top end of the Main Support. ***Do not install screws into the top end bracket at this stage.***
3. Place the lower end of the Main Support into the lower mounting bracket, which is secured to the lower mounting surface.
4. Swing the Main Support into place so that it is vertical.
5. When vertical, use the supplied hardware to anchor the upper mounting bracket into the duct ceiling.
6. Anchor the Main Support to the lower mounting bracket using two screws.
7. Anchor the Main Support to the upper mounting bracket using two screws.

ELECTRICAL CONNECTION OF THE SYSTEM

WARNING

Personal Serious Injury Hazard

Power supply can cause severe electrical shock.

Disconnect power supply before installation. All wiring should be in accordance with NEC.

1. Bring power to the Power Junction Module and use appropriate knock-out on the Power Junction Module.
2. Install power conduit connector.
3. Using supplied WAGO connector terminals, connect assembly wires to power supply. (Line in to black, neutral to white, and earth ground to green).
4. Attach the Power Junction Module cover with two nuts.



WARNING

UV Light Hazard

Harmful to bare skin and eyes.

Can cause temporary or permanent loss of vision.

Never look at the lamps while illuminated. Only view illumination by way of view port accessory. To prevent exposure to ultraviolet light, disconnect power to the V-Flex™ before servicing any part of the HVAC system.

WARNING

The electrical supply circuit connected to this UV appliance must be routed through an electrical interlock switch placed on the HVAC system duct access panels and doors to prevent accidental UV exposure when servicing the air ducts or equipment.

LAMP INSTALLATION



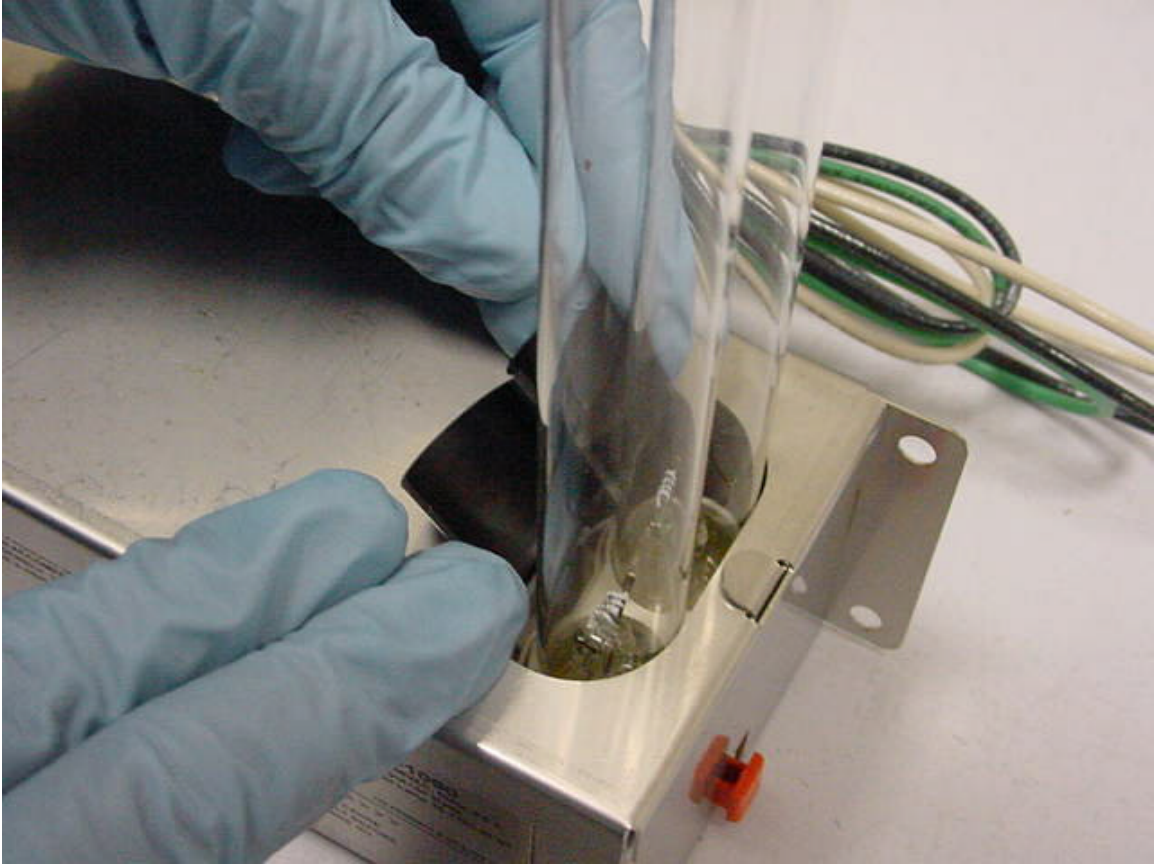
CAUTION

Breakable Glass Hazard

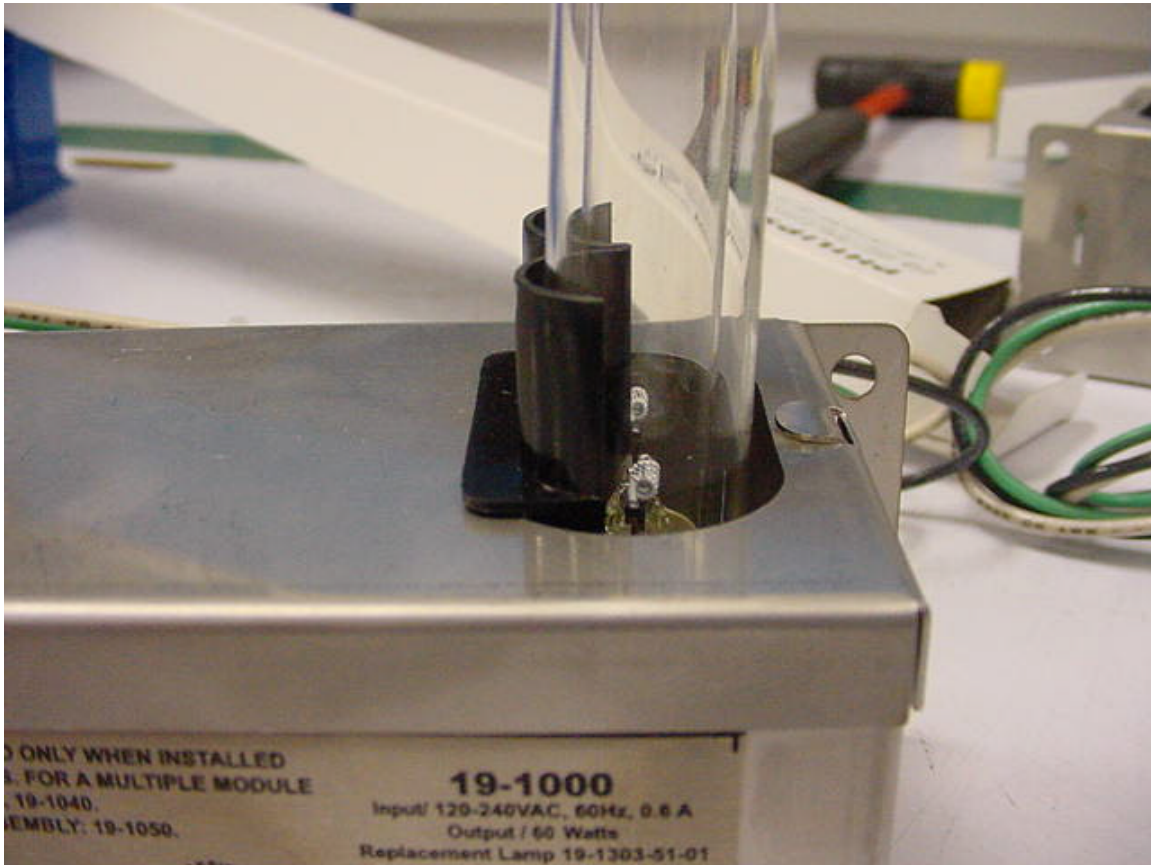
Can cause personal injury.

Be careful when inserting lamp into lamp base. Wear protective gloves when handling lamp.

1. To install lamps into Lamp Modules. Slide lamp and black clip into the lamp module as shown in the below picture:



2. Insert the black V-Flex Clip into the module so that it is holding the lamp in place and the clip is secured onto the metal module. Make sure the clip is slid over the lamp module as shown below:



3. Push the lamp in till it snaps into place. Verify that lamp is retained.
4. Lamp should not have any slack to move.



WARNING

UV Light Hazard

Harmful to bare skin and eyes.

Can cause temporary or permanent loss of vision.

Never look at the lamps while illuminated. Only view illumination by way of view port accessory. To prevent exposure to ultraviolet light, disconnect power to the V-Flex before servicing any part of the HVAC system.

⚠ WARNING

Prevent accidental exposure to service personnel.

Install interlock switches on all access doors and affix UV warning labels to HVAC equipment.

5. Reconnect the power to the HVAC system.
6. Choose a location on the adjacent HVAC equipment for the HVAC maintenance label included in the V-Flex Lamp Module packing box. Choose a location that a future installer can easily see during all future HVAC maintenance or repair.
7. Adhere the HVAC maintenance label to the HVAC equipment access door or panel.

⚠ CHECKOUT

The installer should verify that the ultraviolet lamps are operating only by viewing through view port accessory. Do not attempt to look directly into the duct to see the illuminated ultraviolet lamp. The installer should orient the owner to the unit by demonstrating use of the view port accessory and discussing how to determine when the unit is functioning properly without looking directly into the duct to see the illuminated ultraviolet lamp. The installer should also emphasize the hot surface and electrical shock safety warnings. The installer should leave the product data with the owner and review the lamp cleaning and lamp replacement procedures.

OPERATION

TROUBLESHOOTING AND SERVICE

The V-Flex has no field-serviceable parts. Lamp cleaning is recommended as routine maintenance four times a year, or every three months (quarterly). Annual lamp replacement is required. See the Replacing the Lamp (Annually) section for detailed procedural information.

MERCURY NOTICE

This device contains mercury in the sealed ultraviolet lamp. Do not place your used lamp in the trash. Dispose of properly.

Broken Lamp Clean-up

Do not use a household vacuum. Sweep debris into a plastic bag and dispose of properly. Contact your local waste management authority for instructions regarding recycling and the proper disposal of old lamp.

CAUTION

UV Lamp Burn Hazard

Harmful to bare skin. Can cause severe burns.

Disconnect power 15 minutes before removing the ultraviolet lamp.



WARNING

UV Light Hazard

Harmful to bare skin and eyes.

Can cause temporary or permanent loss of vision.

Never look at the lamps while illuminated. Only view illumination by way of view port accessory.



WARNING

UV Light Hazard.

Harmful to skin and eyes.

Can cause temporary or permanent loss of vision.

Never look at the lamp while illuminated.

Cleaning the Lamps

Use alcohol or glass cleaner. Do not touch.

Depending upon operating conditions, lamp cleaning is recommended as routine maintenance up to four times a year, when necessary. If the air stream is filtered, cleaning schedule may be reduced.

To clean the lamp:

1. Disconnect power to HVAC system. Never enter system with UV lamps illuminated.
2. Open the system access panel or door.
3. Allow the lamp to cool for at least 15 minutes.
4. Wipe the lamp glass using a soft cloth with window cleaner applied to the cloth. Do not touch the lamp surface with your hands; use only the cloth.
5. Wipe the lamp with a clean, dry cloth as a dirty cloth can cause the lamps to soil more quickly.
6. Reconnect the power to your HVAC system.
7. Replace and lock enclosure cover.
8. Verify that the ultraviolet lamp is operating only by viewing through the view port accessory. Never look directly at the lamp while illuminated.

Replacing the Lamp (Annually)

Annual replacement of the lamp is required. To replace the lamp:

1. Disconnect the power to the HVAC system.
2. Open the access door or panel.

19-2021 Rev E, 06/05/07

3. Allow the lamp to cool for at least 15 minutes.
4. Depress lamp release button and remove lamp. Be careful not to strike or hit the lamp glass with the enclosure edges.
5. Insert new lamp into the Lamp Module. Depress lamp release button and insert lamp. Let go of the lamp release button and verify that lamp is retained.
6. Reconnect the power to the HVAC system.
7. Clean the lamp (see Cleaning the Lamps) to remove any fingerprints or dirt on the glass.



Hg-LAMP CONTAINS MERCURY

Manage in Accord with Disposal Laws

See: www.Altruv.com

or call: 1-877-787-3882



MERCURY NOTICE

This device contains mercury in the sealed ultraviolet bulb(s). Do not place your used bulb(s) in the trash. Dispose of properly.

EQUIPMENT WARRANTY

UltraViolet Devices, Inc. (UVDI), warrants to original Buyer for one year from the date of original installation, or eighteen (18) months from date of shipment, whichever comes first, that its goods are free from defect in material and workmanship under normal use and service. **UVDI's** obligation under this warranty shall be limited to the repair or replacement of those goods which prove defective, provided that such products are installed, maintained, and operated for the purpose and in the manner intended and for which **UVDI** instructs or recommends. Neither **UVDI** nor its dealers shall be liable for any special or consequential damages directly or indirectly arising from the design, construction, installation, servicing, or operation of the goods. THIS IS **UVDI'S** SOLE WARRANTY. NEITHER **UVDI** NOR ITS DEALERS MAKE ANY OTHER WARRANTY OF ANY KIND, EXPRESSED OR IMPLIED. ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE WHICH EXCEED **UVDI'S** AFFORESTATED OBLIGATIONS ARE HEREBY DISCLAIMED AND EXCLUDED FROM THIS WARRANTY.

UVDI AND ITS DEALERS' LIABILITY UNDER THIS WARRANTY SHALL IN NO EVENT EXCEED THE COST OF THE GOODS SOLD UNDER THIS CONTRACT OF SALE. **UVDI** neither assumes, nor authorizes any person to assume for it, any obligation in connection with the goods. This warranty shall not apply to any goods (a) which have been subjected to misuse, tampering, negligence, or accidents; or (b) the serial numbers of which have been altered, defaced, or removed; or (c) which have been used in a manner contrary to **UVDI's** instructions or recommendations. Buyer shall not return to **UVDI** any allegedly defective goods without **UVDI's** prior written authorization. This warranty may not be assigned or transferred.

Product Registration

It is highly recommended that you register your product via the web at <http://www.altruv.com/> or return the enclosed self-addressed postcard to UVDI. Product registration will insure that your warranty is handled in a proper and expeditious manner. In addition, it will allow UVDI to provide you with important updates regarding your new product including reminders of when replacement parts are needed and also make you eligible for future parts discounts.



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