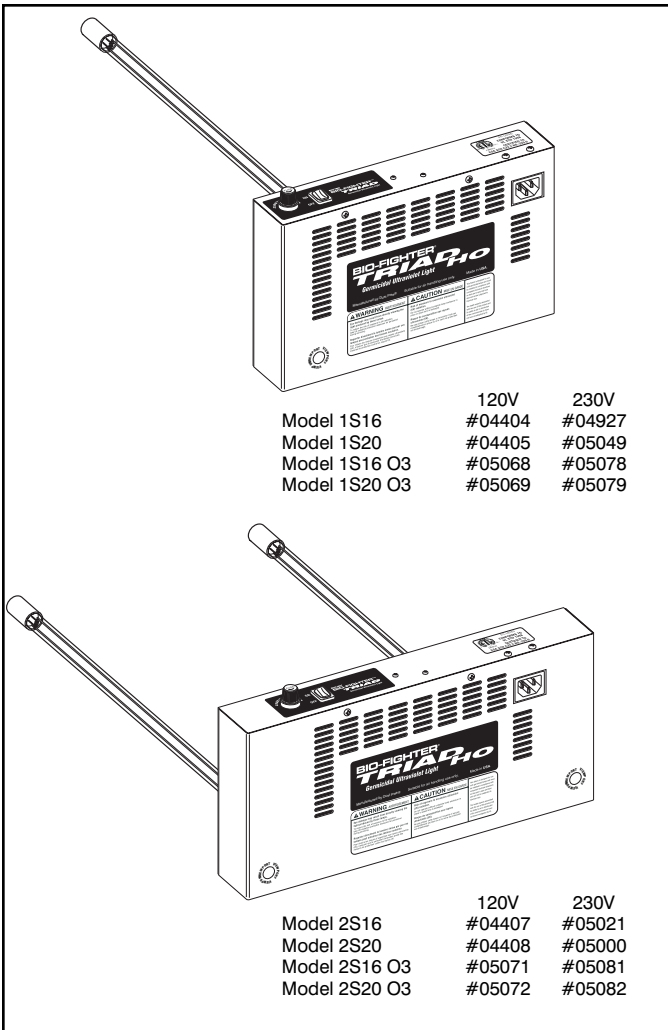


BIO-FIGHTER® Triad HO 1S and 2S Ultraviolet Light Systems

Installation & Operation Manual



FEATURES

- Reduces or prevents mold growth on HVAC coils, allowing them to operate at peak efficiency. Also significantly reduces bacteria, viruses, fungi, and yeasts in the ductwork.
- High Output, long life UVC bulbs.
- Low maintenance and reduced costs.
- Available in 120V or 230V models.
- Odor control (O3) bulbs available.

INCLUDED INSIDE BOX

- Bio-Fighter® Triad HO ultraviolet light system
- UV bulb(s)
- Power cord
- Sheet metal screws (5)
- Installation & operation manual
- UV warning label for duct

TOOLS REQUIRED FOR INSTALLATION

- Electric drill
- Phillips screw bit or screwdriver
- 1" drill bit or holecutter
- Eye protection
- Voltage meter

BEFORE INSTALLING

- Read all instructions carefully. Failure to do so could damage the equipment or cause harm to yourself or others.
- Acknowledge all warnings.
- Only qualified technicians should perform the installation.

GENERAL

This product is designed to help disinfect the internal surfaces of heating, ventilation, and air conditioning systems. Bacteria and viruses that are in the air stream that passes through the system will also be reduced. The result is an improved level of indoor air quality for occupants and improved system hygiene.

The Bio-Fighter® emits ultraviolet(UVC) radiation at a frequency of 254 nanometers, which has been proven effective in damaging the DNA of microorganisms such as viruses, bacteria, yeast and molds. This process either destroys the microorganism or neutralizes its ability to reproduce.



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ETL LISTED
CONFORMS TO
UL STD 1598
CERTIFIED TO
CSA STD C22.2 NO. 250.0

Base Dimensions

Triad HO 1S - 6 3/4"L x 11"W x 2"H
 Triad HO 2S - 6 3/4"L x 14"W x 2"H

Weight:

Triad HO 1S 120V - 4 1/2 lbs.
 Triad HO 1S 230V - 5 3/4 lbs.
 Triad HO 2S 120V - 6 3/4 lbs.
 Triad HO 2S 230V - 8 lbs.

Electrical:

120V, 60Hz, 1PH. 3 amp-250v fuse.
 Optional 230V, 60Hz, 1PH.

Listings:

FIFRA - File # 73316
 (Federal Insecticide Fungicide Rodenticide Act)
 ETL Safety Agency - File #2002554

U.S. Patent Nos. 5,334,347, 5,817,276, 6,245,293, 6,267,924,
 6,280,686, 6,313,470, 6,627,000, 6,539,727, 6,932,494, 6,550,257.
 Specifications subject to change without notice.

IMPORTANT:

The device must be installed in compliance with all national and local electrical and mechanical codes. Failure to do so will void ETL safety listing and Dust Free warranty.

SELECTING A LOCATION

This device installs in the air handling system. Select a mounting location with enough clearance for the bulb to be installed and replaced easily. Allow approximately 20" depending on bulb length.

Nearby access to 120V or 230V power is required, depending on model. Any modification to the supplied power cord will void ETL safety listing and Dust Free warranty.

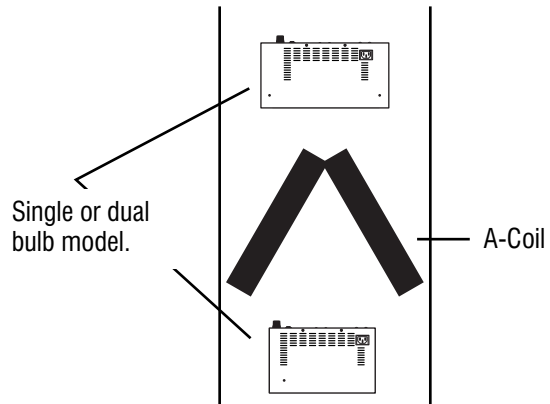


Fig. 1 Device may be mounted before or after A-coil in either horizontal or vertical air handling systems.

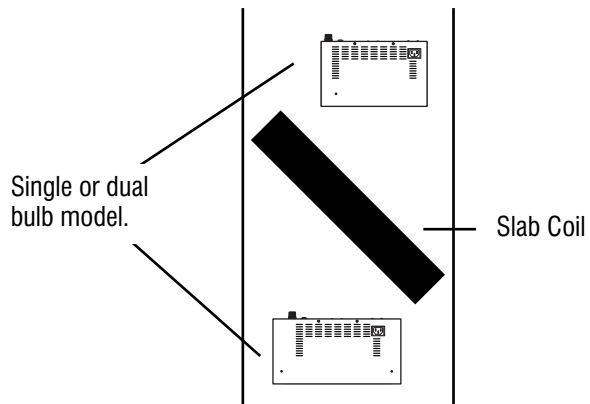


Fig. 2 Device may be mounted before or after slab coil in either horizontal or vertical air handling systems.

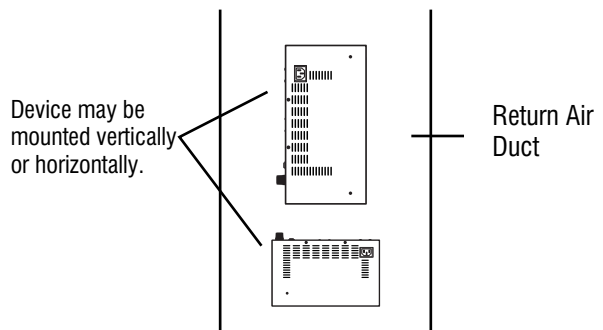


Fig. 3 Mounting for airstream irradiation in return air flow.

⚠ WARNING

UVC Light Hazard.
 UVC light can cause temporary or permanent loss of vision, and sunburn. To prevent exposure, do not install device in any applications that allows UVC light to be visible after installation.

⚠ CAUTION

UVC Light May Degrade Plastic and Rubber.
 Shield exposed plastic drain pans, wire insulation, flex duct, or other plastic/rubber components from UVC light.

SPECIAL INSTALLATION NOTES

- Do not install in closet return grille applications.
- Do not install in outdoor applications.
- Do not expose wiring or plastic parts to UV-C light.
- Do not install where UV-C light can be seen after installation.
- Do not install beneath a humidifier.
- If the UV device is installed on the inlet side (return air side) of a coil, make sure that the blower is located between the return air filter and the inlet side (return air side) of the coil, such as would be found in a traditional up-flow, or horizontal furnace with the coil placed after the heat exchanger.
- If the UV device is installed near an air filter, check with filter manufacturer for UV-C resistance properties.
- If the desired UV installation location is intended to irradiate an air filter, to neutralize the microbiological matter on the air filter surface, such as would be found in the return air drop of a basement application or in the return plenum of a horizontal system in an attic; take precautions as described in note above, and make sure the UV fixture is placed on the return side of the filter. **DO NOT INSTALL THE UV FIXTURE ON EITHER SIDE OF THE FILTER IN HALL / CLOSET RETURN AIR APPLICATIONS.** (See ATTENTION! Warning sheet #212945-00).

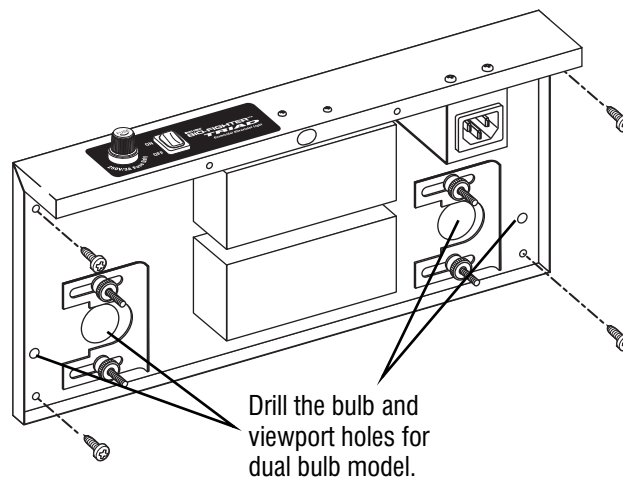
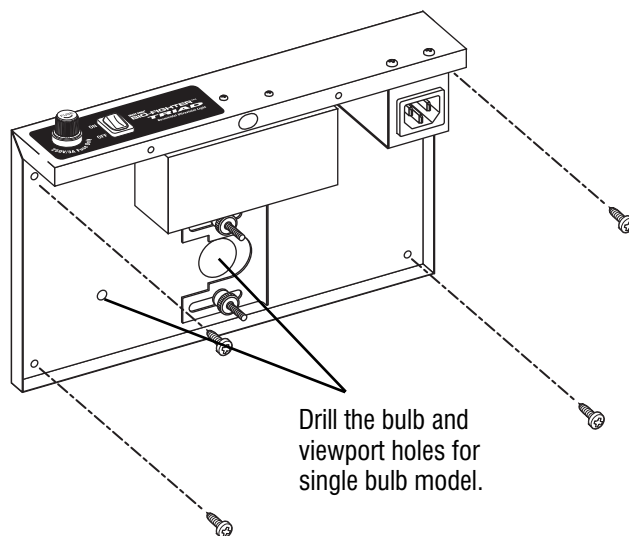


Fig. 4 Mount the device using included sheet metal screws.

STANDARD MOUNTING (Fig.4)

Remove the cover of the device and mount the base to the air handling system using the included sheet metal screws.

Using the mounted base as a template, use a 1" bit or holecutter to make the bulb hole(s) required. Viewport shield(s) must be removed prior to drilling.

⚠ WARNING

UVC Light Hazard.

UVC light can cause temporary or permanent loss of vision, and sunburn. To prevent exposure, do not install device in any applications that allows UVC light to be visible after installation.

⚠ DANGER

Fire Hazard. Do not exceed voltage rating. Severe damage to device and/or fire could result. Verify proper power with voltage meter.

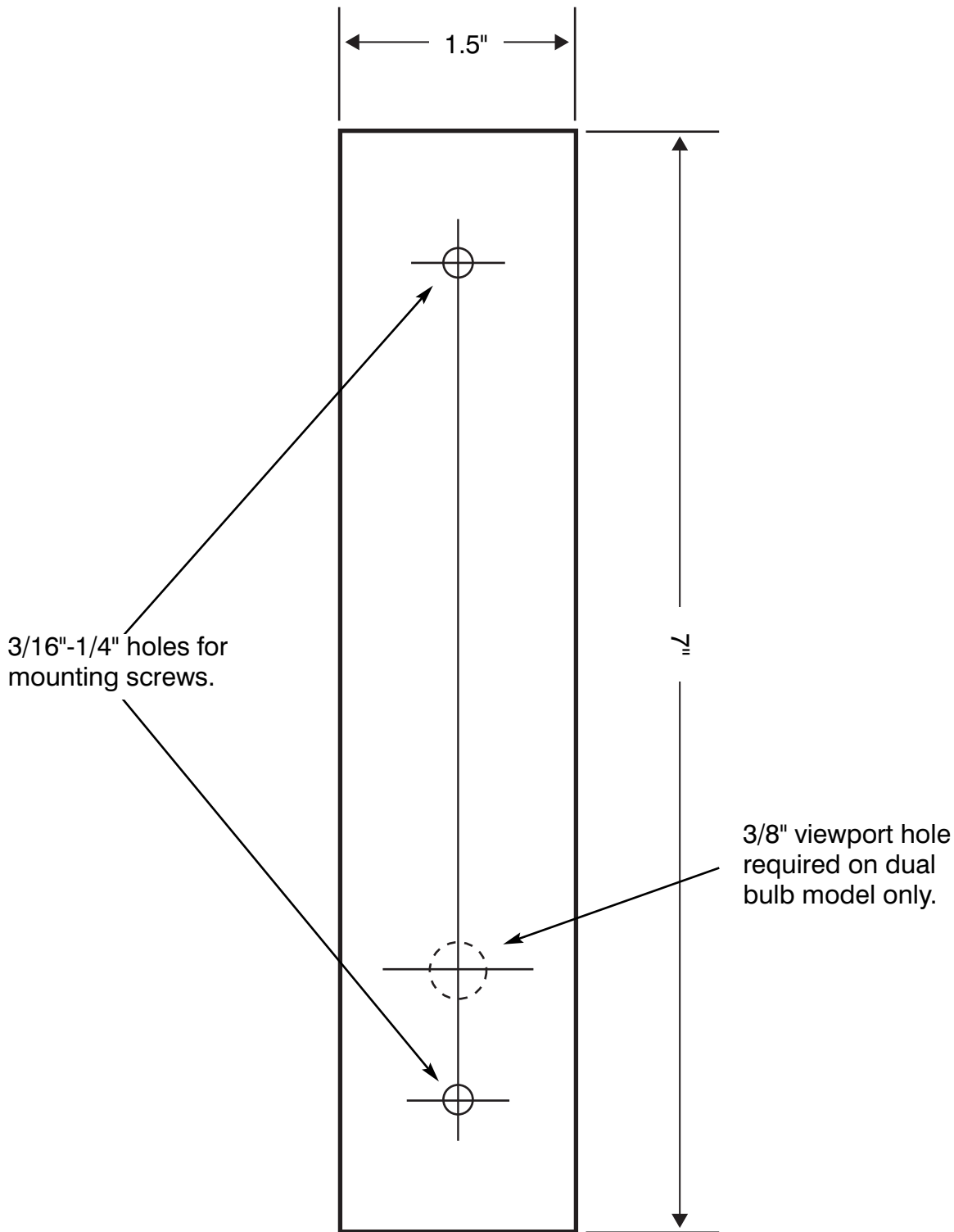
⚠ CAUTION

Sharp Edge Hazard.

Be careful of sharp edges on device and HVAC equipment while installing the device. Personal injury may result.

FIBERBOARD MOUNTING STRAP TEMPLATE

Construct from minimum 26 gauge metal. Make strap no wider than 1.5". Wider strap may obstruct viewport hole on single bulb models.



FIBERBOARD MOUNTING (Fig.5)

For fiberboard installations two sheet metal straps, suitable length #6 or #8 screws/nuts are required (not included). See template on page 4 for strap construction.

Remove the cover and use the base as a template for drilling or cutting bulb and viewport holes into the fiberboard. Use a 6" holecutter to make access holes to attach the straps to the base.

Note: Do not make bulb holes smaller than 1".

Attach base as shown in Fig. 5.

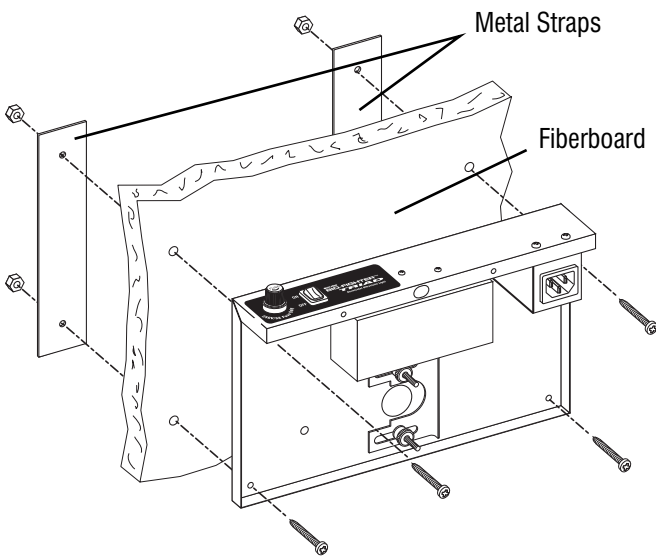


Fig. 5 Mount the device to metal straps using #6-#8 screws/nuts. (Straps and needed screws are not included.)

INSTALLING THE BULB (Fig.6)

To maximize the efficiency and life of the UVC bulb, clean each bulb prior to installation. Use isopropyl alcohol and cotton cloth to wipe dust and fingerprints from the bulb.

Gently insert the bulb into the bulb hole. Slide the bracket over the retaining lip of the bulb and tighten the two knurled nuts until the bulb is securely fastened. The bulb seals against the base of the unit using a rubber grommet which prevents air leaks. Repeat for each bulb of the installation.

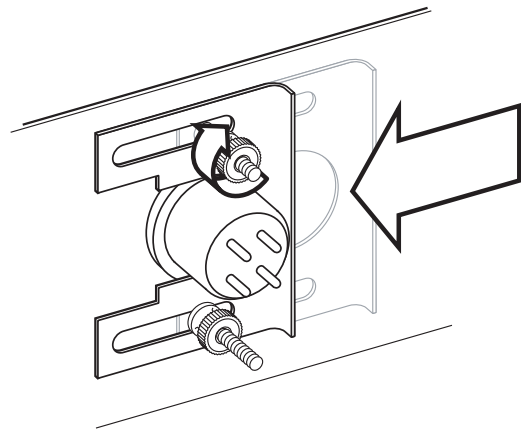


Fig. 6 Bulb is secured with a sliding bracket tightened with two knurled nuts.

⚠ WARNING

Mercury Hazard. Do Not Break.
Each UVC bulb contains a small amount of Mercury. May cause redness or irritation. Use proper disposal techniques in case of breakage. See page 6.

⚠ WARNING

UVC Light Hazard.
UVC light can cause temporary or permanent loss of vision, and sunburn. Take precautions to protect eyes and skin from direct exposure.

⚠ CAUTION

Clean bulb(s) prior to installation.
Failure to remove dirt and fingerprints from the bulb(s) could shorten their lifespan.

⚠ DANGER

Fire Hazard. Do not exceed voltage rating.
Severe damage to device and/or fire could result. Verify proper power with voltage meter.

CONNECTING THE HARNESS (Fig.7)

After bulb has been installed, attach electrical harness. The harness connector is asymmetrical and can only be attached one way. If the harness does not attach easily, rotate 90 degrees and try again. Repeat for all bulbs.

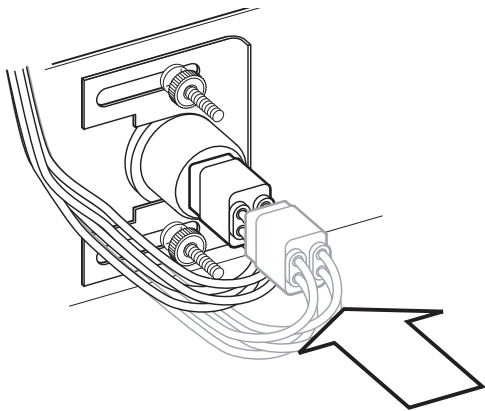


Fig. 7 Attach electrical harness to bulb.

FINISHING THE INSTALLATION

With the cover replaced, connect the Triad HO to proper power. If optional whip-type power cord (#06303) is used, see fig. 8 for power connection.

The device power switch must be turned on and device checked for operation using the viewport. The bulb(s) should be radiating a bright blue light.

Whip-type Power Cord Option

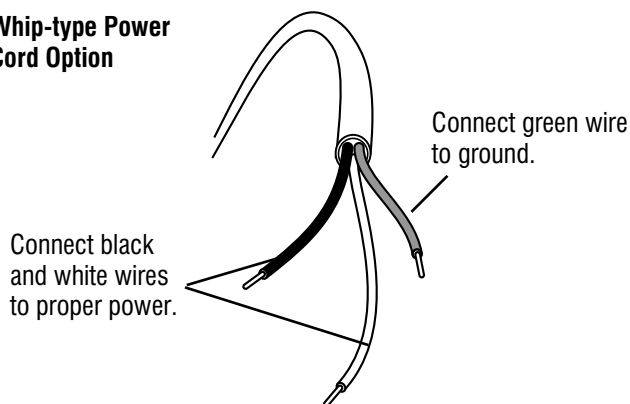


Fig. 8 Optional whip-type power cord.

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OPERATION

Under normal conditions the Bio-Fighter® Triad HO should be operated continuously to extend the life of the bulb(s), and to increase the effectiveness in disinfecting the location selected.

A convenient power switch is located on the device, and should be turned off before any maintenance on the device or HVAC system is performed.

TROUBLESHOOTING

Maintenance and troubleshooting should be performed by a qualified technician.

Device fails to operate. (On/Off switch light is not lit.)

1. Check that device is connected to proper power.
2. Check that fuse is in good working order. Replace with 250V/3A fuse if necessary.
3. Check that safety switch is activated.

Device fails to operate. (On/Off switch light is lit.)

1. Check that device is connected to proper power.
2. Check that ballast is receiving correct power. Replace ballast if necessary.
3. Check continuity of lamp filaments. Replace lamp if necessary.)
4. Check that lamp is properly connected to lamp connector.
5. Check that wires are properly connected to lamp and ballast.

⚠ WARNING

Burn Hazard.

During replacement, allow bulbs to cool 10 minutes before removing them. Personal injury may result.

⚠ DANGER

Fire Hazard. Do not exceed voltage rating.

Severe damage to device and/or fire could result. Verify proper power with voltage meter.

BULB REPLACEMENT(Annually)

The bulb should be replaced annually even if it appears to be operating normally. UVC energy production diminishes over time.

1. Obtain the correct replacement bulb for your model.
2. Disconnect power to the equipment.
3. Open the cover of the device. *Allow bulb to cool 10 minutes before touching.*
4. Disconnect the electrical connector to the bulb.
5. Unscrew the two knurled nuts of the bulb retaining bracket and slide the bracket away from the bulb retaining lip.
6. Carefully remove the UV bulb and replace it with the new bulb. Be sure to clean the bulb of dust and fingerprints prior to installation.
7. Slide the retaining bracket back in place and tighten knurled nuts.
8. Reconnect electrical connector to the bulb.
9. Close the cover of the device.
10. Reconnect power.
11. Verify operation.

FUSE REPLACEMENT

1. Disconnect power cord.
2. Unscrew the knob marked "Fuse" and remove fuse.
3. Install new fuse and screw knob back in place. Only use a 250V/3 amp fuse.
4. Reconnect power cord.

BULB DISPOSAL

Dispose of your spent UVC bulbs at your local recycling center. You may also send your spent bulbs in the same container you received your replacement bulbs to:

Dust Free® Bulb Reclamation
1112 Industrial Drive
Royse City, TX 75189

PROPER CLEAN-UP TECHNIQUE IN CASE OF BULB BREAKAGE

- Wear protective gloves, eyewear and mask.
- Sweep the broken glass and debris into a plastic bag, seal the bag, and dispose of properly. Contact your local waste management office for proper disposal.
- **Do not use a vacuum cleaner. Do not incinerate.**

Replacement Parts	Part No.
UVC Bulb - 16"	06032
UVC Bulb - 20"	06033
UVC-O3 Bulb - 16"	06072
UVC-O3 Bulb - 20"	06073
Ballast - 16" (120V)	06024
Ballast - 16" (230V)	06027
Ballast - 20" (120V)	06025
Ballast - 20" (230V)	06028
Power Cord (120V)	06309
Power Cord (230V)	06215
Power Cord Whip-Type	06303
Power Cord Receptacle	212106-00
Cover Interlock Switch	212108-00
Slide Bracket Springs (2)	210-0005-001
Slide Bracket	210929-00
Knurled Nuts (2)	210226-00
Lighted On/Off Switch (120V)	750-0026-001
Lighted On/Off Switch (230V)	750-0026-002
Fuseholder	212225-00
Fuse	750-0108-001

For information on the dealer in your area call: 1-972-635-9565.
 Visit us at <http://www.dustfree.com>

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LIMITED LIFETIME WARRANTY

Dust Free®, LP warrants this Bio-Fighter® UV-C Light to be free from defects in materials and workmanship under normal use and service, for as long as it is owned by the original purchaser. This warranty does not cover UV-C bulb(s), which carry a one (1) year warranty from the date of installation, or the ballast(s) which carry(s) a five (5) year warranty. Lamp Tracker Model carries a two (2) year warranty on the Lamp Tracker chip.

This warranty does not cover cosmetic damage, damage due to acts of God, damage as a result of handling or shipment, negligence, misuse, connection to improper voltage, improper maintenance, or abuse. This warranty is void if defect(s) result from failure to have this unit installed by a qualified, properly licensed, heating and air conditioning contractor in compliance with all local building and construction codes.

Dust Free®, LP's exclusive obligation under this warranty shall be to supply, without charge, a replacement for any covered component of the Bio-Fighter® UV-C Light which is found to be defective within the parameters defined herein. Dust Free®, LP reserves the right to replace or repair the defective part or component.

Dust Free®, LP SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE OF ANY KIND, INCLUDING ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING, DIRECTLY OR INDIRECTLY, FROM ANY BREACH OF WARRANTY, EXPRESS OR IMPLIED, OR ANY OTHER FAILURE OF THIS PRODUCT. (Some states do not allow the exclusion or limitation of incidental or consequential damages, so this limitation may not apply to you.) THE WARRANTIES SET FORTH HEREIN ARE EXCLUSIVE AND Dust Free®, LP EXPRESSLY DISCLAIMS ALL OTHER WARRANTIES, WHETHER WRITTEN OR ORAL, IMPLIED OR STATUTORY, INCLUDING BUT NOT LIMITED TO ANY WARRANTIES OF MERCHANTABILITY, WORKMANSHIP, OR FITNESS FOR A PARTICULAR USE. If the limited warranty is void due to failure to use a qualified contractor all disclaimers of implied warranties shall be effective upon installation.

How to make a warranty claim or have questions answered:

Should you have a warranty claim or questions about the warranty policy, contact the distributor or dealer from which you purchased the product. Proof of original purchase and proof of identity that the original purchasing party is filing the claim is required in order to initiate a warranty claim. Defective parts must be returned no later than thirty (30) days after the failure to the installing contractor together with the model number, serial number, and date of installation. All service and removal must be performed by a licensed HVAC contractor. You must pay shipping charges and all other costs of warranty service. Warranty is only valid the United States and Canada.

THIS WARRANTY SHALL NOT OBLIGATE THE MANUFACTURER FOR ANY LABOR COSTS AND SHALL NOT APPLY TO DEFECTS IN WORKMANSHIP OR MATERIALS FURNISHED BY THE INSTALLING CONTRACTOR AS CONTRASTED TO DEFECTS IN THE GERMICIDAL LIGHT ITSELF.

NOTE: Do not return any products or parts to the factory without a factory issued Return Authorization number issued by the Dust Free®, LP customer service department.

In the event you have any questions concerning the use and care of this product or this warranty which have not been answered to your satisfaction by the distributor or dealer, please call or write the factory.

Dust Free®
PO Box 519
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Royse City, TX 75189
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