



PHOTO-CATALYTIC AIR PURIFIER SYSTEMS

Models: DUO-11/24, DUO-11/120, DUO-14/24, DUO-14/120, PCUV-16UA, DUO-16/24, DUO-16/120



ITEMS INCLUDED IN KIT:

- 1 - 24 Volt or 120 Volt UV-Aire Ballast Assembly (not included with PCUV)
- 1 - Photo-Catalytic and Carbon Duct Media
- 1 - UVC Germicidal Lamp (not included with PCUV)
- 4 - Sheet Metal Mounting Screws
- 1 - Instruction Sheet
- 1 - Duct Board Mounting Bracket
- 1 - 24V Multi-Mount Transformer TR50VA (included with 11/24 & 14/24 models)
- 1 - 24V Plug-in Transformer TR12024P (included with 16/24 models)
- 2 - Fork Terminals

The Duo & PCUV models produce germicidal UVC Band light rays, which sterilize and reduce airborne microorganisms and reduce Volatile Organic Compounds (VOC's) by a combination of photocatalytic chemical reaction and carbon absorption as air passes through a heating or air conditioning system. They are installed in the main supply or return duct and operate continuously to automatically purify the air in the home 24 hours a day.

The PCUV-16UA PCO Upgrade Kit is intended for retrofit to an existing UV-16 or AH-1 germicidal UVC lamp installation. The PCUV-16UA provides a new mounting structure with photo-catalytic VOC reduction and carbon absorption technology for the existing lamp installation.

This product is not sold as a medical device and is not for the purpose of diagnosis of any disease or condition, nor for use in the mitigation, treatment, or prevention of any disease or condition.

READ THESE INSTRUCTIONS CAREFULLY AND COMPLETELY BEFORE PROCEEDING WITH THE INSTALLATION.



WARNING: Duo-11/24V, Duo-14/24V and Duo-16/24V models are intended for use with 24V ONLY! Do not exceed voltage rating. Severe damage to device and or fire could result. Verify proper voltage.

This device **MUST** be installed by a qualified agency in accordance with the manufacturer's installation instructions. The definition of a qualified agency is: any individual, firm, corporation or company which either in person or through a representative is engaged in, and is responsible for, the installation and operation of HVAC appliances, who is experienced in such work, familiar with all the precautions required, and has complied with all the requirements of the authority having jurisdiction.

Please retain these instructions after installation.

Installed By: _____ Phone: _____ Installation Date: _____



FIELD CONTROLS

www.fieldcontrols.com

P/N 46648100 05/20 Rev K

SAFETY CONSIDERATIONS



WARNING: Never expose eyes or skin to UVC light from any source.

- Looking directly at the UVC light may cause permanent eye damage or blindness.
- Never operate the UV-Aire Air Purifying System out of the plenum.
- Designed for a closed duct system. Do not mount near a supply or a return air opening.
- All duct openings in direct line of site of the UV light must be sealed with aluminum tape or equivalent sealing methods.



WARNING: UV light will break down plastic materials not rated for UV exposure:

(Examples: wire insulation, flex duct, drain pans and humidifiers)

- The unit must be mounted at least 30" from the above stated type of materials.
- If it is necessary to mount the unit in direct line of site of these types of materials, they must be shielded with aluminum foil, aluminum foil tape, or sheet metal.



WARNING: DO NOT mount this unit outdoors.

- This product is designed for indoor installation only (i.e. attics, crawl spaces, basements, etc.).



WARNING: Never touch broken lamp or internal contents of lamp. The lamp contains mercury.

- After opening the carton, unpack and inspect the unit and lamp for damage. Do not install this unit if any damage is noticeable. If lamp is damaged, cracked or broken, do not touch lamp or other contents in carton. Close carton and return to seller immediately.
- In case of accidental exposure to internal contents of lamp, wash hands and any other affected skin area with mild detergent. Remove affected clothing immediately. If skin surface is pierced, seek medical attention immediately.

NOTE: If you touch the glass of the lamp, you should wipe the glass clean with isopropyl alcohol and a lint free wipe. If the lamp is not cleaned, the film of hand oils causes a reduction in the light intensity.



WARNING: Before installing or servicing a humidifier, air filter, HVAC system, or this unit, etc., always turn all power OFF and have unit unplugged. Electrical shock can cause personal injury or death. Never expose eyes or skin to direct UVC light from any source.



WARNING: To prevent water damage or electric shock, do not mount unit under a humidifier.



WARNING: This product is designed for indoor installation only (i.e. attics, crawl spaces, basements, etc.). For use on gas fired, oil fired, electric and split system heat pump forced air systems.* This product is NOT designed to be mounted outside on gas fired or heat pump packaged units.**

*** Split system heat pumps are systems where the air handler and the air conditioning compressor are separate units.**

****Packaged units are systems where the air handler and the air conditioning compressor are built together and are installed outside of the building.**

GENERAL INFORMATION

The UV-Aire unit uses technology that is recommended by doctors who state that "ultraviolet radiation, properly integrated with heating, ventilating, and air conditioning systems, shows the most promise as a widely applicable means of air disinfection".¹

¹ Richard Riley, M.D. "Airborne Infection: The American Journal of Medicine, September 1974, Vol. 57 - 5/16/01

The health aspects associated with the use of these products and their ability to aid in disinfecting of environmental air have not been investigated by UL.



WARNING: Never expose eyes or skin to UVC light from any source. Looking directly at the UVC light may cause permanent eye damage or blindness. Never operate the UV-Aire™ Air Purifying System out of the plenum. Avoid touching the glass portion of the lamp with your hands.

PRODUCT SIZING

The UV-Aire DUO products are designed to fit into supply and return air ductwork as well as fit into HVAC systems. The UV-Aire DUO product insertion sizes and maximum HVAC system sizes are listed in Table 1 below. When selecting location for product installation, verify sufficient room is available in system ductwork to accommodate product insertion length to maintain proper HVAC airflow.

TABLE 1: Sizing Table

Model	HVAC System Sizing (Tons)	Insertion Dimension (Inches)	Hole Cut Out Dimensions (Inches)	Static Pressure
Duo-11	1.0 to 3.0	11	5-3/8 x 5-3/8	0.015 "WC @ 1,200 CFM
Duo-14	1.0 to 5.0	13	5-3/8 x 5-3/8	0.017 "WC @ 2,000 CFM
Duo-16	1.0 to 5.0	15	5-3/8 x 5-3/8	0.02 "WC @ 2,000 CFM
PCUV-16A	1.0 to 5.0	15	5-3/8 x 5-3/8	0.02 "WC @ 2,000 CFM

INSTALLATION INSTRUCTIONS FOR PCUV-16UA PCO UPGRADE KIT

NOTE: Please refer to the following Duo model installation instructions for specific instructions as directed below, and the instructions included with the UV-Aire™ UV-16/24 or UV-16/120 models as directed below.

⚠ WARNING: Disconnect power to all equipment before beginning this installation! Refer to all warning and cautionary statements as given in the included main installation instructions!

1. If upgrading an existing installation of a UV-Aire™ UV-16 model with the PCO Carbon Upgrade Kit (skip this step for new installations of a UV-16 model):
 - a. **CAREFULLY** remove the ballast and lamp from the existing UV-16 model, and remove its white plastic mounting base from the mounting surface.
 - b. Determine whether the PCUV-16UA may be installed in the existing location, using the included Duct Board Mounting Bracket as a template for the larger duct cutout required. Refer to the Installation Section in the following Duo installation instructions for guidance on installation location, required clearances and safety precautions, etc.
 - c. If the PCUV-16UA may NOT be installed in the existing location, cover and seal the existing mounting location cutout with appropriate materials, and determine an alternate installation location as directed.

2. If attached, remove the UV-16 ballast from its white plastic mounting base by twisting the ballast 1/4 turn to the left (counterclockwise), see labeling on the white plastic mounting base and the Duo model installation instructions illustrations.
3. Peel paper backing from the included 1/2" x 1" rectangular foam gasket and apply to the bottom of the new or existing UV-16 safety switch actuating finger, on the underside of the white plastic mounting base as shown in Figure A.



FIG A

NOTE: Do not remove the existing foam gasket from the base of the actuating finger.

4. Using the four included #8-32 x 1/2" machine thread screws (fine threads), attach the white plastic mounting base of the UV-16 to the PCUV-16UA mounting flange as shown in Figure B. Note that the base may be attached in two different orientations; refer to the Duo model instructions regarding the sight glass and airflow direction.
5. Determine an appropriate mounting location as directed for the Duo model in the Installation Section.
6. Using the included Duct Board Mounting Bracket as a template, mark and cut the enlarged duct cutout required as directed for the Duo models.



FIG B

⚠ WARNING: Never expose eyes or skin to UVC light from any source. Looking directly at the UVC light may cause permanent eye damage or blindness. Never operate the UV-Aire™ Air Purifying System out of the plenum. Avoid touching the glass portion of the lamp with your hands.

7. Install the PCUV-16UA as directed for the Duo models. Use the included sheet metal screws or other appropriate fasteners to securely mount the PCUV-16UA to the mounting surface or Duct Board Adapter if used.

8. Complete the installation of a new UV-16/24 or UV-16/120 model as directed in the instructions included with the UV-16 unit, otherwise install the existing UV-16 lamp and ballast by instructions included with the unit.

DUO MODEL INSTALLATION INSTRUCTIONS:

1. Choose a location for the Duo unit, with the following considerations:

- a. The Duo unit will reduce organic buildup on an HVAC cooling/heating coil by illumination with UVC germicidal rays. Locate the Duo such that the maximum surface area of the coil is illuminated, while installing as close to the coil as possible without damage to the coil.

CAUTION: Use care to avoid damage to the coil and any wiring or other components while installing the Duo unit.



WARNING: To prevent water damage or electric shock, do NOT mount unit under a humidifier.

- b. Duo 24V models must be installed with the attached power cord within reach of the included 24V transformer, or the 24V power cable must be extended by using minimal 18 gauge wiring suitable for the installation, with maximum extension length of 20 feet. DO NOT connect to the HVAC system transformer, as this may overload the HVAC transformer and/or under-power the Duo 24V unit, which may cause damage and will void the factory warranty. The transformer included with DUO 11/24V and DUO-14/24V models is intended to be mounted on a 4x4 junction/conduit box or within an approved electrical enclosure. The mounted 24V transformer shall be connected to 115 or 230 VAC power. The transformer included with the DUO-16/24V models is intended to be plugged directly into the wall. The plug-in transformer shall be connected to 120V.
 - c. Duo 120V models must be installed with the attached power cord within reach of a permanently-installed standard 120V electrical outlet with 15 amp circuit protection. Do not connect to extension cords, or extend or remove the plug from the power cord. Make sure the Duo power cord is protected from damage, and inspect the cord for damage or defect. Do not use the Duo 120V unit if the power cord is damaged or defective.
 - d. The Duo unit may be installed on either the supply or return plenum.
 - e. The Duo unit may be installed in upflow, downflow, or horizontal flow ducts and plenums.
 - f. The Duo unit may be installed directly onto a sheet metal air duct or plenum, or onto fiberglass ductboard when installed using the included Ductboard Adapter Plate (see Figure 1).
2. Install the Duo unit:

- a. Hold or temporarily tape the included Ductboard Adapter Plate in the location chosen for installation, and using the plate as a template, mark the mounting surface using the outermost slots in the plate (see Figure 1). Alternatively, a 5-3/8" square may be marked on the mounting surface.
- b. Cut out the opening for the Duo unit in the mounting surface, making sure to cut slightly outside the marked lines if the Ductboard Adapter Plate was used as a template.
- c. If mounting the Duo unit on ductboard: attach the Ductboard Adapter Plate to the opening by folding the inner flaps of the plate into the opening and fully back against the inside of the opening in the ductboard, either from the sides or from top and bottom of the plate. Finish the Plate Adapter installation by sealing around the edges of the plate to the ductboard, using mastic foil tape or other material suitable for sealing duct joints.



Figure 1



WARNING: Never expose eyes or skin to UVC light from any source. Looking directly at the UVC light may cause permanent eye damage or blindness. Never operate the UV-Aire™ Air Purifying System out of the plenum. Avoid touching the glass portion of the lamp with your hands.

- d. Insert the Duo unit into the duct opening and attach it to the duct (or Ductboard Adapter Plate) with the four included sheet metal screws. The wider side of the V-shape of the Duo unit panels should face into the oncoming airstream, see Figure 2.
- e. The Duo models are configured for upward or horizontal air flow direction as shipped. If the direction of airflow in the duct is downward, the whole Duo unit may be rotated, so that airflow matches Figure 2.

NOTE: The white plastic base has a round sight glass hole for observing the lamp inside the duct (the sight glass may be seen above the center hole in the mounting base in Figure 3). There is a pair of holes in the Duo mounting flange that allow the sight glass in the base to align with, in either position.

- f. Insert the UVC lamp pins into the ballast socket (see Figure 4).

NOTE: The lamp has one long pin that must be aligned with the recessed terminal in the ballast socket. Do NOT directly touch the bulb lamp glass section with bare hands. Wear oil-free cotton type gloves when handling germicidal glass bulb.



Figure 2



Figure 3

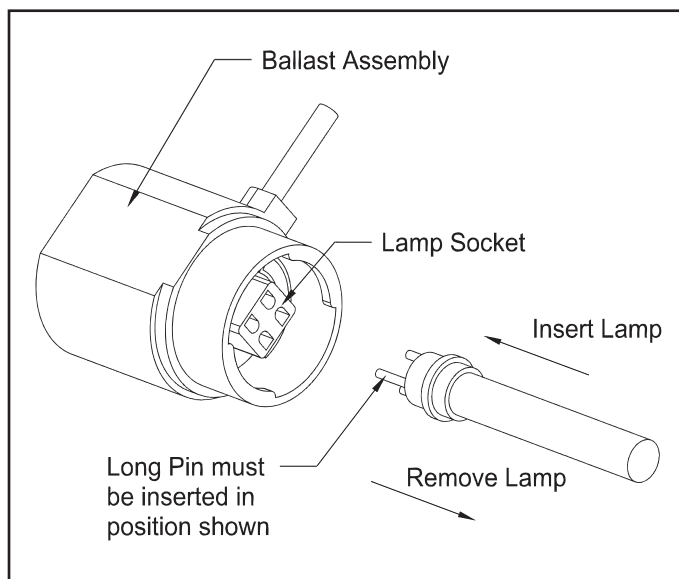


Figure 4

- g. Carefully insert the lamp through the center of the white plastic mounting base, align the ballast with the power cord pointing 90 degrees to the right of the round sight glass, and engage the ballast onto the base by rotating the ballast $\frac{1}{4}$ turn to the right (see figures 4, 5 and 6). Note: the safety switch actuating finger that protrudes from the mounting base must engage into the slot in the inside of the ballast. The slot is visible above the ballast socket in Figure 4.



WARNING: Never expose eyes or skin to UVC light from any source. Looking directly at the UVC light may cause permanent eye damage or blindness. Never operate the UV-Aire™ Air Purifying System out of the plenum. Avoid touching the glass portion of the lamp with your hands.

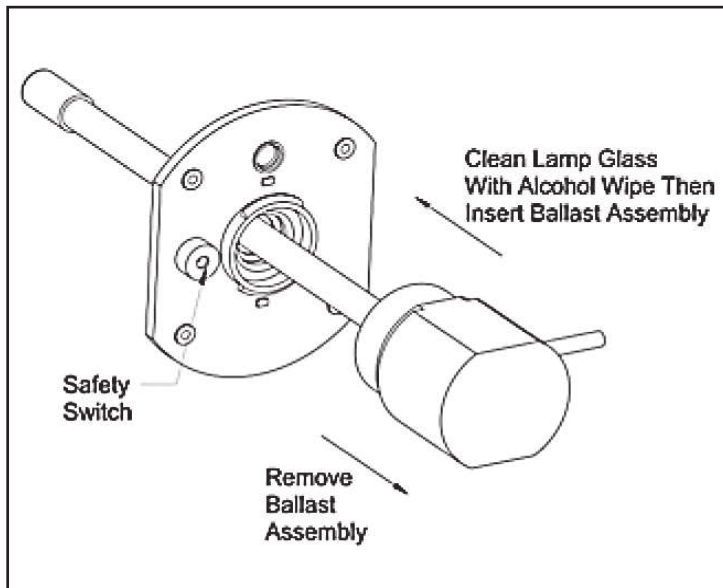


Figure 5



Figure 6

3. For 24V models, ensure that power has been disconnected to the circuit that will provide power to the 24V transformer, and install the transformer as directed in the installation instructions included with the transformer.

⚠ WARNING: MAKE SURE POWER IS DISCONNECTED TO THE CIRCUIT TO BE USED TO PROVIDE POWER TO THE DUO 24V UNIT!

4. For 24V models, connect the ballast power cord to the provided 24V transformer terminals, using the included crimp-on fork terminals.

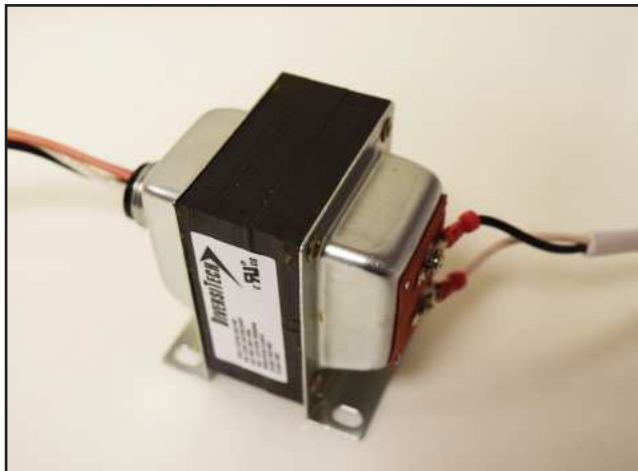


Figure 7 - Multimount Transformer with connectors



Figure 8 - Plug-In Transformer with connectors

5. For 24V models, restore power to the circuit providing power to the 24V transformer.
6. For 120V models, plug the power cord into the 120V electrical outlet.
7. Look through the round sight glass hole in the mounting base to verify that the UV-C lamp is lit. The lamp should have a blue glow along its length. If the lamp is not lit, carefully rotate the ballast $\frac{1}{4}$ turn to the left, partially remove it from the base, and re-install with the safety switch finger engaging with the slot in the ballast as directed in Step 2f.

⚠ WARNING: Never expose eyes or skin to UVC light from any source. Looking directly at the UVC light may cause permanent eye damage or blindness. Never operate the UV-Aire™ Air Purifying System out of the plenum. Avoid touching the glass portion of the lamp with your hands.

MAINTENANCE

⚠ WARNING: Disconnect power to the transformer before commencing inspection and cleaning.

NOTE: Wear disposable, non-absorbent protective gloves prior to inspection procedure in case of accidental breakage of glass.

1. We recommend inspecting and cleaning the lamp at least every 6 months. Frequency depends upon the environment. Such as: the type of air filter, duration of use and replacement cycle.
2. To maintain maximum output intensity, replace the UV-Aire lamp annually. The lamp should operate continuously for maximum lamp life and light effectiveness.
3. Do not attempt to clean the catalytic aluminum substrate core with cleaning solutions. The catalyst is radiated with short wave ultraviolet light during period of non-air flow and is self-cleaning. If there is build up blocking the catalytic cells, sit the unit on end, on a flat surface, with electrical enclosure facing up. Use low-pressure, compressed air to blow the surface of the catalytic cells free of blockage.

⚠ WARNING: Disconnect power to the transformer or unplug the 120V power cord before starting replacement procedure.

REPLACEMENT PROCEDURE (LAMP ONLY)

NOTE: Wear disposable, non-absorbent protective gloves prior to replacement procedure in case of accidental breakage of glass.

1. Rotate the Duo or UV-Aire ballast assembly counter-clockwise until it stops. (See Figure 9)
2. Remove the ballast assembly and lamp from the mounting base. (See Figure 10)
3. Remove the lamp from the lamp socket.
4. Install the replacement lamp into lamp socket. Do not handle the lamp with bare hands. Oils on the hands tend to reduce lamp intensity.
5. Wipe off the glass with the supplied alcohol wipe.
6. Position the ballast assembly power cord 90° to the viewport hole on the mounting base. (See Figure 10)
7. Slide the lamp through the hole in the mounting base.
8. Press the ballast against the mounting base. Rotate the ballast assembly clockwise until it stops and is locked in place. (See Figure 11)
9. After assembly is firmly in place, reconnect power to transformer or ballast. Check lamp operation by looking through the viewport hole. A blue glow should be seen in the duct.
10. After replacing the lamp, make sure to install the Lamp Replacement Label. Print the date on the label and apply to the side of ballast assembly.

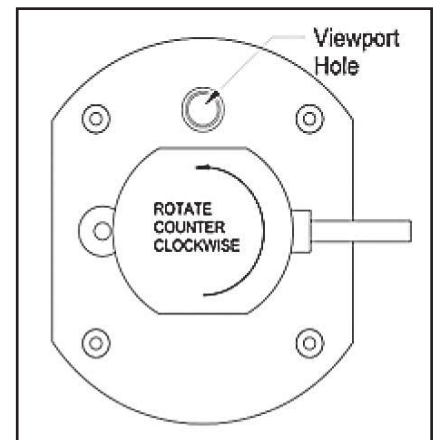


Figure 9 (Removal)

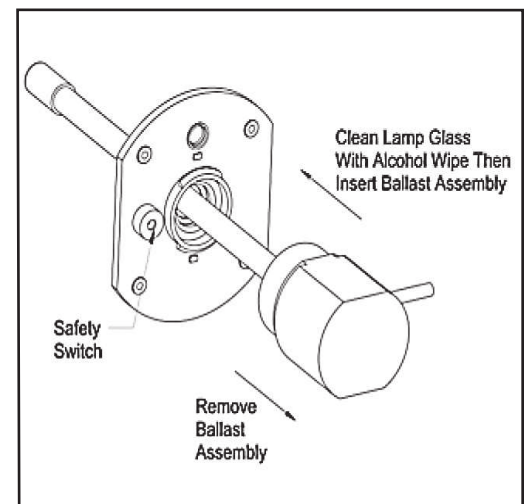


Figure 10

⚠ WARNING: Never expose eyes or skin to UVC light from any source. Looking directly at the UVC light may cause permanent eye damage or blindness. Never operate the UV-Aire™ Air Purifying System out of the plenum. Avoid touching the glass portion of the lamp with your hands.

NOTE: If blue light leaks through any portion of plenum and/or around mounting plate, unplug power supply cord immediately and seal affected areas and/or rotate ballast and repeat step #9.

UV lamps contain a small amount of mercury, like a typical fluorescent lamp. Check with your local waste management authority for local disposal or recycling requirements. According to the EPA's Universal Waste Rule, these types of lamps may be disposed of into household waste.

⚠ WARNING: Never touch broken lamp or internal contents of lamp. The lamp contains mercury.

NOTE: In case of accidental exposure to internal contents of lamp, wash hands and any other affected skin area with mild detergent. Remove affected clothing immediately. If skin surface is pierced, seek medical attention immediately.

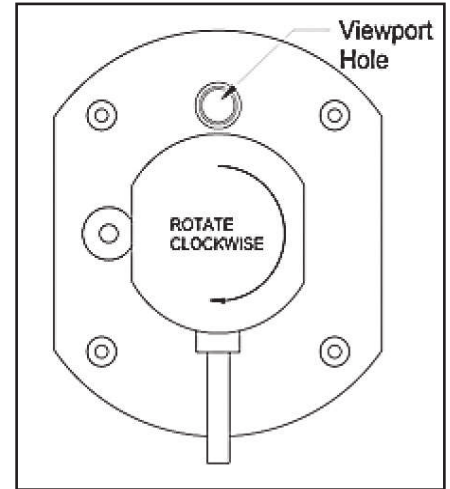


Figure 11 (Installed)

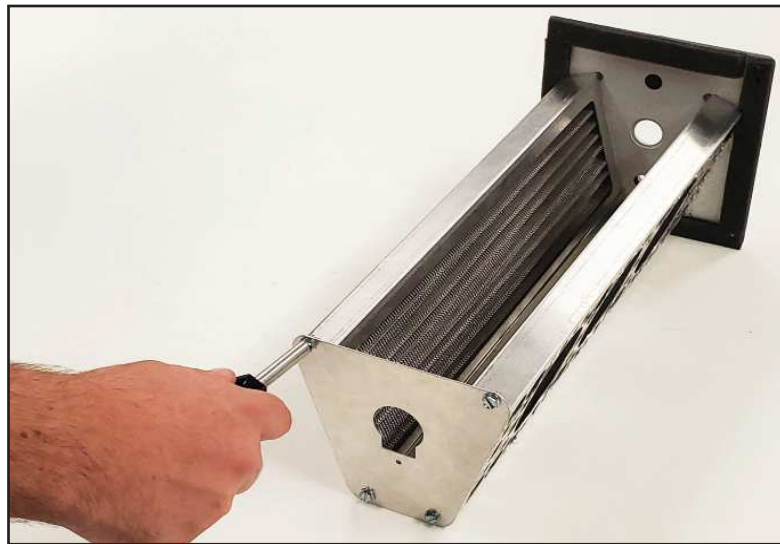


Figure 12

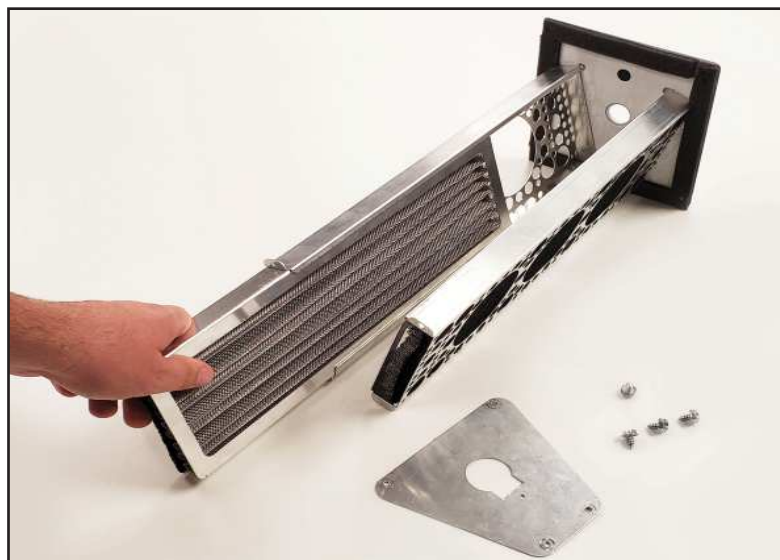


Figure 13

⚠ WARNING: Never expose eyes or skin to UVC light from any source. Looking directly at the UVC light may cause permanent eye damage or blindness. Never operate the UV-Aire™ Air Purifying System out of the plenum. Avoid touching the glass portion of the lamp with your hands.

CATALYTIC ALUMINUM SUBSTRATE AND CARBON REPLACEMENT

If there is a need to replace the Pro-Cell catalytic aluminum substrate or carbon media, the subsequent procedure should be followed.



WARNING: Make sure power is disconnected from the unit before removing the unit.

NOTE: Wear disposable non-absorbent protective gloves prior to replacement procedure in case of accidental breakage of glass.

1. Disconnect the Duo Model from any power source. Look through the round sight glass hole and verify the UV lamp is off before removing the unit from the duct or Ductboard Adaptor Plate. There should be no blue glow along the length.
2. Detach the unit from the duct or Ductboard Adaptor Plate by removing the four sheet metal screws. Save the sheet metal screws for reattaching the unit.
3. Carefully remove ballast with attached lamp by rotating $\frac{1}{4}$ turn to the left. Carefully set aside somewhere where the lamp will not break or touch any surface. Be careful not to break the lamp nor touch it with hands.
4. Unscrew the end bracket by removing the hex screws, See Figure 12. Save the hex screws for reattaching the end bracket. The end bracket is located on the opposite side of the Model than the power source.
5. With the end bracket taken off, the Pro-Cell catalytic aluminum substrate and carbon media and frame can be slid out of the opening in the back of the unit, see Figure 13. All three parts must be removed together even if only one needs replacing.
6. Replace any removed pieces of either Pro-Cell catalytic aluminum substrate or carbon media with the specified replacement parts only. When sliding the replacement pieces back into the unit, check and make sure the Pro-Cell catalytic aluminum substrate is placed on the inside touching the frame, while the carbon media is touching the outside side panel.
7. Once the replacements are slid all the way into the opening, attach the end bracket with previously removed hex screws.
8. Carefully insert the lamp through the center of the white plastic mounting base, align the ballast with the power cord pointing 90 degrees to the right of the round sight glass, and engage the ballast onto the base by rotating the ballast $\frac{1}{4}$ turn to the right (see figures 4, 5 and 6). Note: the safety switch actuating finger that protrudes from the mounting base must engage into the slot in the inside of the ballast. The slot is visible above the ballast socket in Figure 4.
9. Insert Duo unit back into duct opening and attach to duct or Ductboard Adaptor plate using the four sheet metal screws that were previously removed. The V shape of the Duo unit should face into the panel, see Figure 2.
10. For the 24V units, reconnect the unit to the provided 24V transformer terminals.
11. For the 24V model, restore power to the circuit providing power to the 24V transformer provided.
12. For 120V models, plug the cord into the 120V electrical outlet.
13. Look through the round sight glass hole and verify the UV lamp is lit. There should be a blue glow along the length. If the lamp is not lit, follow the Troubleshooting guide.



WARNING: Never expose eyes or skin to UVC light from any source. Looking directly at the UVC light may cause permanent eye damage or blindness. Never operate the UV-Aire™ Air Purifying System out of the plenum. Avoid touching the glass portion of the lamp with your hands.

TROUBLESHOOTING GUIDE

1. Do not wire the 24V models into the appliance 24 volt fan or thermostat circuit. This will cause premature ballast or lamp failure and void the warranty. For proper operation, 24V models requires 24VAC at all times.
2. Check to make sure 24VAC power is available at the transformer, or 120V at the electrical outlet.
3. If lamp does not light up, pull back metal washer on mounting base. If lamp comes on, the base needs tightening to ensure that the safety switch is fully engaged.
4. If lamp does not light up, remove the ballast from the base and re-install it onto the base, ensuring that the finger projecting from the base engages into the safety switch slot in the ballast. Repeat step 3.
5. If lamp does not light up after performing Steps 3 and 4, replace lamp.
6. If unit still does not light up after replacing lamp, replace unit.



WARNING: Never expose eyes or skin to UVC light from any source. Looking directly at the UVC light may cause permanent eye damage or blindness. Never operate the UV-Aire™ Air Purifying System out of the plenum. Avoid touching the glass portion of the lamp with your hands.

REPLACEMENT PARTS LIST

Replacement Part Number	
46649301	11" Lamp Assy Duo
46649302	14" Lamp Assy Duo
46511200	16" Lamp Assy
46638900	24V Multi-Mount Transformer
46529500	24V Plug-in Transformer
60530005024	QT-Ballast-24V RPLC Ballast Assy DUO UV16
60530005120	QT-Ballast-120V RPLC Ballast Assy DUO UV16
730118107	Carbon, DUO-11
730118127	Carbon, DUO-14
730118147	Carbon, DUO-16
808010011	PRO-Cell Catalytic Aluminum Substrate, DUO-11
808010014	PRO-Cell Catalytic Aluminum Substrate, DUO-14
808010016	PRO-Cell Catalytic Aluminum Substrate, DUO-16

For replacement parts, contact Field Controls at:

Phone: 252-522-3031 • Fax: 252-522-0214

Email: sales@fieldcontrols.com

CLEAN-UP OF BROKEN LAMPS

(see warnings on page two of this manual)

UV lamps contain a small amount of mercury, like a typical fluorescent lamp. DO NOT touch any of the mercury with your bare hands.

1. While wearing disposable, non-absorbent protective gloves, carefully pick up the large pieces of glass with your hands.
2. Vacuum the entire area with a standard household vacuum cleaner ensuring the removal of all lamp material.
3. Dispose of the pieces of glass, the vacuum cleaner bag, and the disposable gloves in a sealed garbage bag.
4. Check with your local waste management authority for local disposal or recycling requirements.
According to the EPA's Universal Waste Rule, these types of lamps may be disposed of into household waste.
5. Wash hands, and remove and wash clothes for added safety measures.



WARNING: Never expose eyes or skin to UVC light from any source. Looking directly at the UVC light may cause permanent eye damage or blindness. Never operate the UV-Aire™ Air Purifying System out of the plenum. Avoid touching the glass portion of the lamp with your hands.

This manual may be downloaded and printed from the Field Controls website (www.fieldcontrols.com)

WARRANTY

For warranty information about this or any Field Controls product, visit:
www.fieldcontrols.com

Field Controls Technical Support
1.800.742.8368
fieldtec@fieldcontrols.com



FIELD CONTROLS

Phone: 252.522.3031 • Fax: 252.522.0214
www.fieldcontrols.com