



# INSTALLATION MANUAL



This symbol on the product means the DUOX-16/120 and DUOMAX is listed by Underwriters Laboratories, Inc



## IN-DUCT UV AIR CLEANING SYSTEM

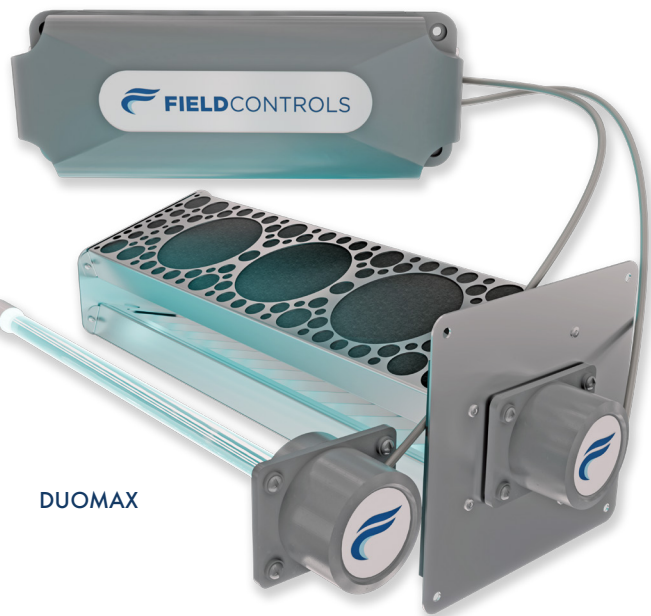
Model: DUOX-16/120 and DUOX-16/120-D (DUOMAX)

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

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.

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This product should be installed according to local and national codes and standards.



**Parts included in the DUOX Air Purifier package:**

1. Ballast Assembly
2. Power Head Assembly  
(1) DUOX-16/120  
(2) DUOMAX
3. PCO Assembly
4. UVC Lamp  
(1) DUOX-16/120  
(2) DUOMAX
5. Quick Connect Power Cord w/ Plug
6. Duct Board Mounting Plate  
(1) DUOX-16/120  
(2) DUOMAX
7. Sheet Metal Mounting Screws
8. Installation Manual



**Options and additional parts recommended:**

1. 16" 120V UVC Lamp (602617120)

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## 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 DUO Air Cleaning 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 method.
- **UV light will break down plastic material 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 sight of these types of materials, they must be shielded with aluminum foil, aluminum foil tape, or sheet metal
- **DO NOT** mount this unit outdoors.
  - This product is designed for indoor installation only (i.e. attics, crawl spaces, basements, etc.)
- Never touch broken lamp or internal contents of lamp. The lamp contains mercury

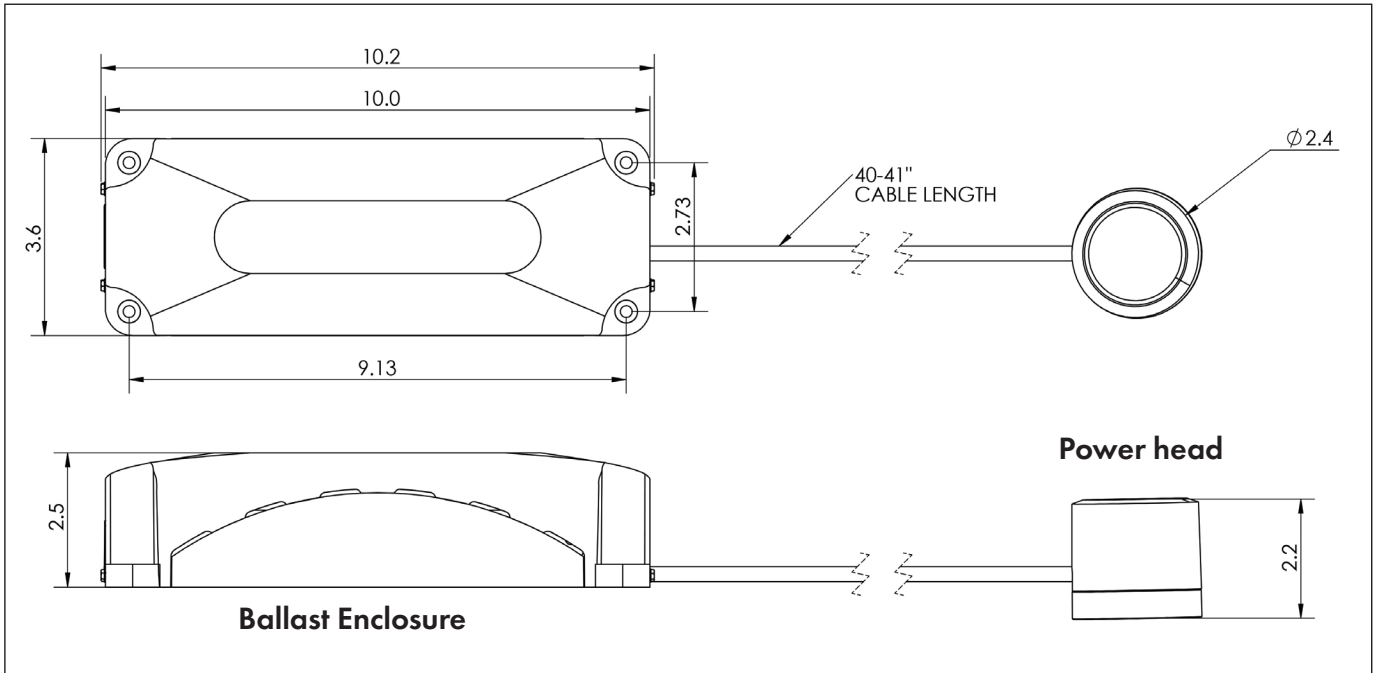
## PRODUCT SPECIFICATIONS

### DUOX AIR PURIFIER SYSTEM MODELS

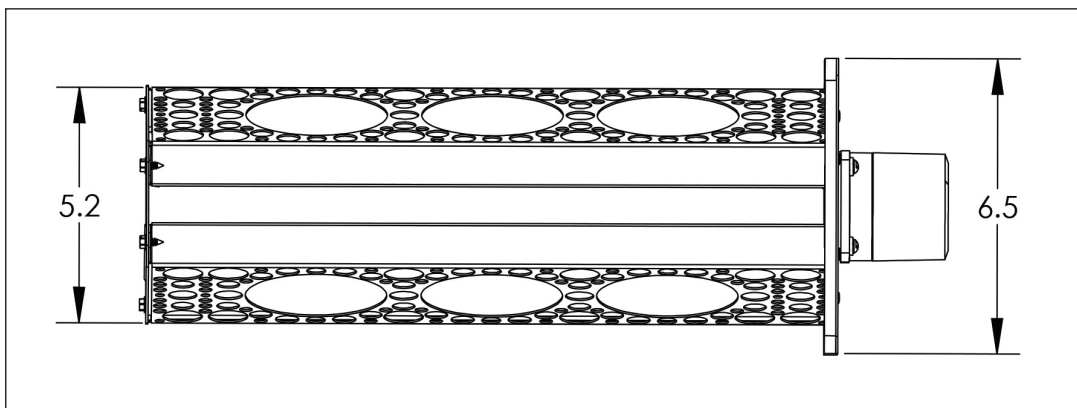
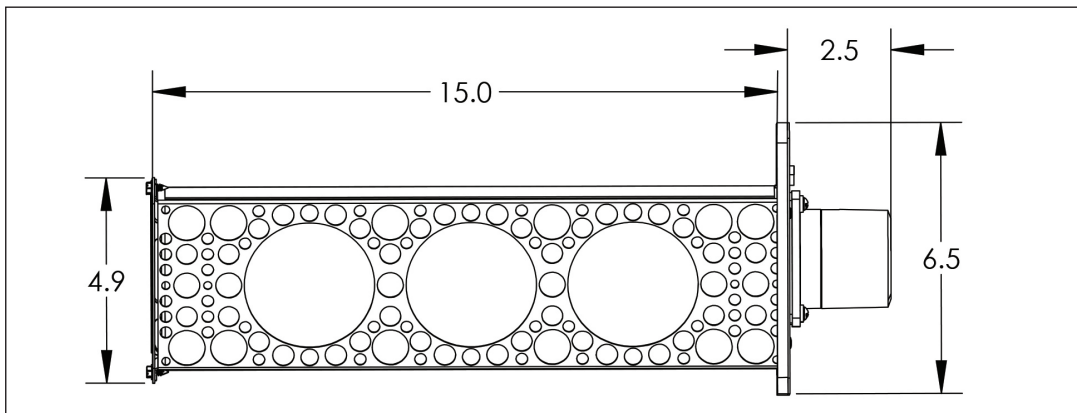
MODEL	DUOX-16/120	DUOMAX
LAMP CONFIGURATION	Single	Dual
SIZING (TONS)	1.5 to 5.0	
VOLTAGE	120	
LAMP WATTAGE	36	36 per lamp
LAMP OUTPUT	800 mA	
TEMPERATURE RANGE	-22 to 140° Ambient Indoor	
LAMP CABLE LENGTH	4 Feet	
POWER CABLE	Plug 10 Feet, Nema 5-15P (Incoming Power) to IEC C13 (Ballast Enclosure)	
LAMP INTENSITY ( $\mu\text{W}/\text{cm}^2@1\text{m}$ )	132	132 per lamp (264)
LAMP INTENSITY ( $\mu\text{W}/\text{cm}^2@1\text{in}$ )	16,764	16,764 per lamp (33,528)
LAMP INTENSITY ( $\mu\text{W}/\text{cm}^2@0\text{in}$ )	46,728	46,728 per lamp (93,456)



## DIMENSIONAL DATA



NOTE: DUOX-16/120 (1) Power head  
DUOX-16/120-D (2) Power heads



## SIZING



- This model is recommended for where the HVAC system is between 1.0 to 5.0 tons. For installs greater than 3.0 to 6.0 tons, use 2 units or a dual power head model.
- For applications with multiple systems, we recommend one unit per system.
- For larger applications, multiple units are recommended, please contact technical support for additional sizing assistance.

## INSTALLATION

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

1. Choose a location for the PCO unit with the following considerations:
  - A. The unit will reduce organic buildup on an HVAC cooling/heating coil by illumination with UVC rays. Locate the unit 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.
  - B. The unit may be installed on either the supply or return plenum.
  - C. The unit may be installed in upflow, downflow, or horizontal flow ducts and plenums.
  - D. The unit may be installed directly onto a sheet metal air duct or plenum, or onto fiberglass duct board when installed using the included Duct Board Mounting Plate. (See Figure A)



Figure A

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

2. The ballast assembly is connected to the PCO unit by a 4' cable. This assembly must be mounted within 30" of the PCO unit to ensure there is enough slack to replace the lamp without having to remove the ballast assembly. The ballast assembly can be screwed into any sheet metal using the supplied sheet metal screws. Locate area the ballast assembly will be mounted to.
3. Clean the mounting surface with degreaser and let dry. The mounting surface must be clean and dry.
4. Hold or temporarily tape the included duct board mounting plate in the location chosen for the installation, and using the plate as a template, mark the mounting surface using the outermost slots in the plate (see Figure A). Alternatively, a 5 3/8" square may be marked on the mounting surface.

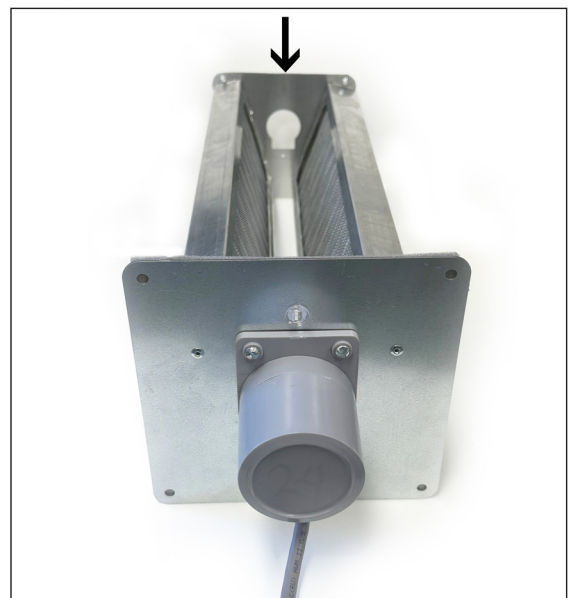


Figure B

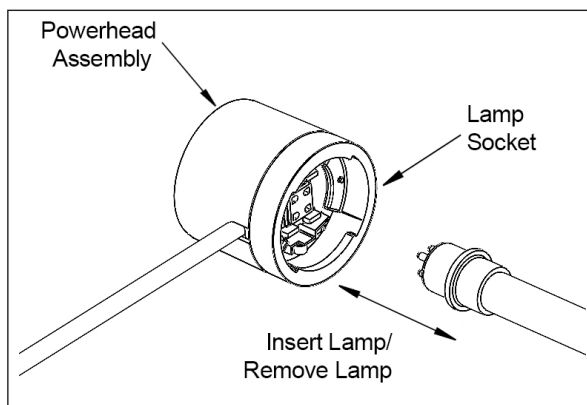


## INSTALLATION

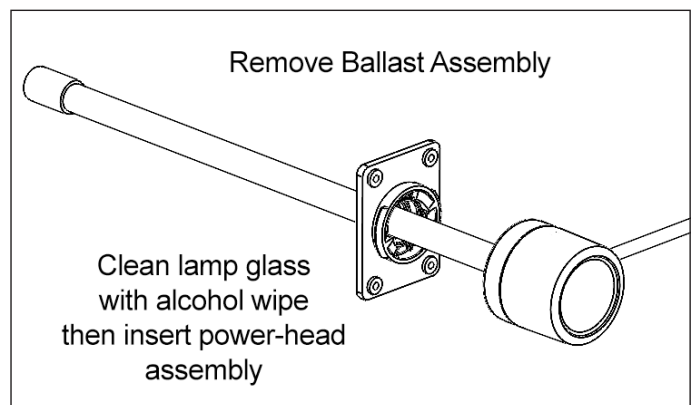
5. Cut the opening for the unit in the mounting surface, making sure to cut slightly outside the marked lines.
6. If mounting the unit on duct board: Attach the Duct Board Mounting Plate to the opening by folding the inner flaps of the plate into the opening and fully back against the inside of the opening in the duct board, either from the sides or from the top and bottom of the plate. Finish the Mounting Plate installation by sealing around the edges of the plate to the duct board, using mastic foil tape or other material suitable for sealing duct joints.
7. Insert the unit into the duct opening and attached it to the duct with the included sheet metal screws. The wider side of the V-shape of the unit should face into the oncoming air stream (See Figure B). For DUOMAX refer to DUOMAX Second Lamp Installation Section
8. Locate the potential mounting location for ballast assembly. Ensure there is enough slack in the lamp cords to fully remove the lamp for replacement. If not, relocate the ballast assembly closer so there is enough slack.

**NOTE:** Plan the ballast assembly mounting location before securing it in place.

- Ensure there is enough lamp cord length to entirely remove the power head and lamp from the installed space and that the power cord can reach the power source. Secure ballast assembly once an acceptable location is selected.



**Figure C**



**Figure D**

9. Using supplied sheet metal screws, attach ballast assembly to duct in location selected in step 2.
10. Do not handle the lamp with bare hands. Oils in your hands tend to reduce lamp intensity. Install lamp into power head (see Figure C).
11. Wipe off the lamp glass with the supplied alcohol wipe. The insert the lamp through the center hole of the PCO structure. The power cord must be facing to the right 90° of the top of the mounting plate. (See Figure D)
12. With the power head pressed against the mounting base, rotate the power head clockwise 90° until it clicks into place.
13. Do not wire the unit into the appliance fan circuit or thermostat. Premature failure of the ballast and lamp will occur. The warranty will be voided.
  - A. Plug the power supply cord into a standard 120VAC electric outlet.
14. Check lamp operation by looking through the viewport. **NOTE:** The viewport will not allow UVC rays to pass through. A blue glow should be seen in the duct.
15. If blue glow is not seen, make sure power head is fully clicked into place on the mounting base.
16. With aluminum or foil tape, seal all joints and seams of the plenum near the mounting location to reduce direct viewing of light.



## DUOMAX SECOND LAMP INSTALLATION

1. Locate a suitable placement for the 2nd power head (See Figure E)
  - A. **Best Location:** For optimum coil cleaning, mount the unit in the supply return plenum as close to the coil as possible. For a Z shaped coil, place on the opposite side from where you mounted the PCO structure.
  - B. **Optional Location:** Supply or return plenum, preferably downstream from the air filter. (UVC light can damage the filter).
2. Ensure the ballast assembly will be mounted in a location that is within 30" of both power heads to ensure there is enough slack to replace both lamps without having to remove the ballast assembly.
3. Apply supplied mounting template to air duct in a vertical position. Leave template mounted to duct for future reference.
4. Drill 1/8" diameter mounting holes at positions indicated on template (See Figure F).
5. Cut out the large opening (1-1/2" hole) on the template. (See Figure F)
6. Using a 3/8" drill bit, drill a viewport hole as indicated on the template. (See Figure F)
7. Attach the Mounting Base onto the duct with the supplied sheet metal screws. (See Figure G)
8. Insert viewport into hole drilled in duct in step 6. (See Figure G)
9. Do not handle the lamp with bare hands. Oils on your hands tend to reduce lamp intensity. Install lamp into power head. (See Figure H)
10. Wipe off the lamp glass with the supplied alcohol wipe. Then insert lamp through the center hole of the mounting base. The power cord must be facing to the right 90° of the top of the mounting plate. (See Figure D)
11. With the power head pressed against the mounting base, rotate the power head clockwise 90° until it clicks into place. (See Figure D)



Figure E

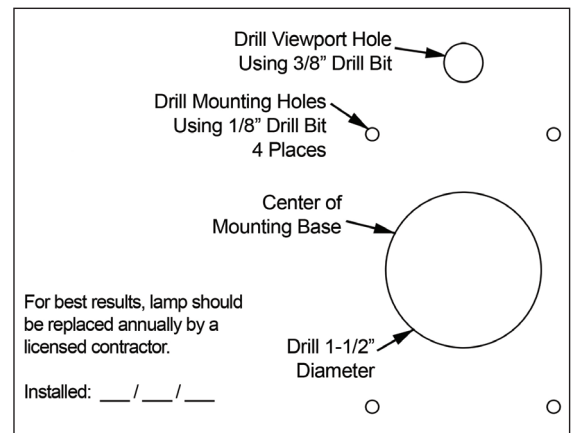


Figure F

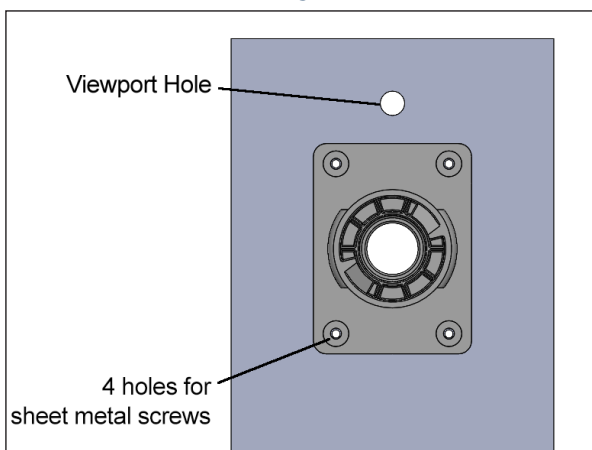


Figure G

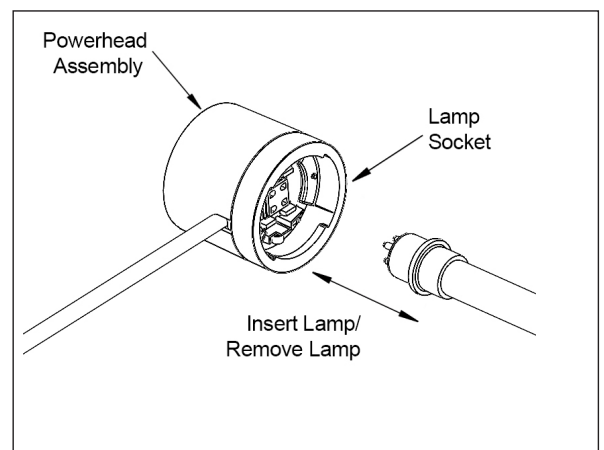


Figure H



## MAINTENANCE

**WARNING:** Always unplug unit and disconnect power before commencing inspection and cleaning.

**NOTE:** Wear disposable, non-absorbent protective glove 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 UVC lamp bi-annually. The lamp should operate continuously for maximum lamp life and light effectiveness.

## REPLACEMENT PROCEDURE

**WARNING:** Always unplug unit and disconnect power before commencing inspection and cleaning.

1. Disconnect power to the transformer (24V models) or unplug the unit from the electrical outlet (120V models). For additional safety unplug the power cord from the ballast assembly.
2. Rotate the power head assembly counterclockwise until it stops. (See Figure I)
3. Remove the power head assembly and lamp from the mounting base. (See Figure D)
4. Remove the lamp from the lamp socket. (See Figure H)
5. Install the replacement lamp into lamp socket. Do not handle lamp with bare hands. Oils on the hands tend to reduce lamp intensity.
6. Wipe the glass with the supplied alcohol wipe.
7. Position the power head assembly power cord 90° to the top of the mounting base. (See Figure I)
8. Slide the lamp through the hole in the mounting base. (See Figure G)

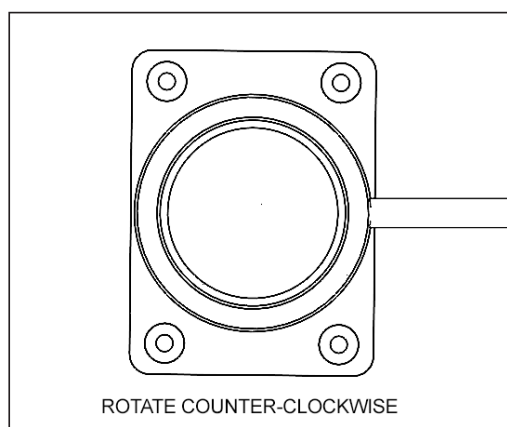


Figure I

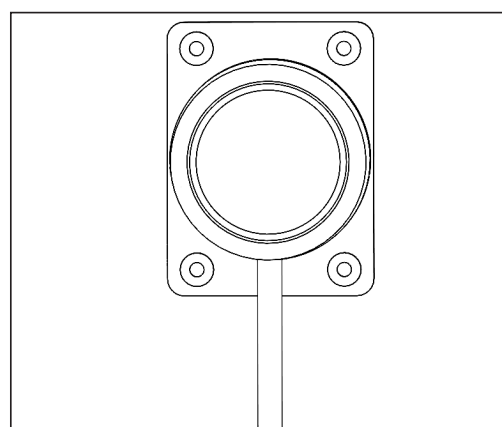


Figure J

9. Press the power head assembly against the mounting base. Rotate the power head assembly clockwise until it stops and clicks into place. (See Figure J)
10. After the assembly is firmly in place, plug the power supply cord back into the ballast and reconnect power. Check the lamp operation by looking through the viewport hole. A blue glow should be seen in the duct.
11. After replacing the lamp, make sure to install the lamp replacement label. Print the date on the label and apply to the side of the ballast assembly. **NOTE:** If blue light leaks through any portion of the plenum and/or around the mounting plate, unplug the power supply cord immediately and seal affected areas.
12. 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.



## CLEAN UP OF BROKEN LAMPS

**WARNING:** Never touch a 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.

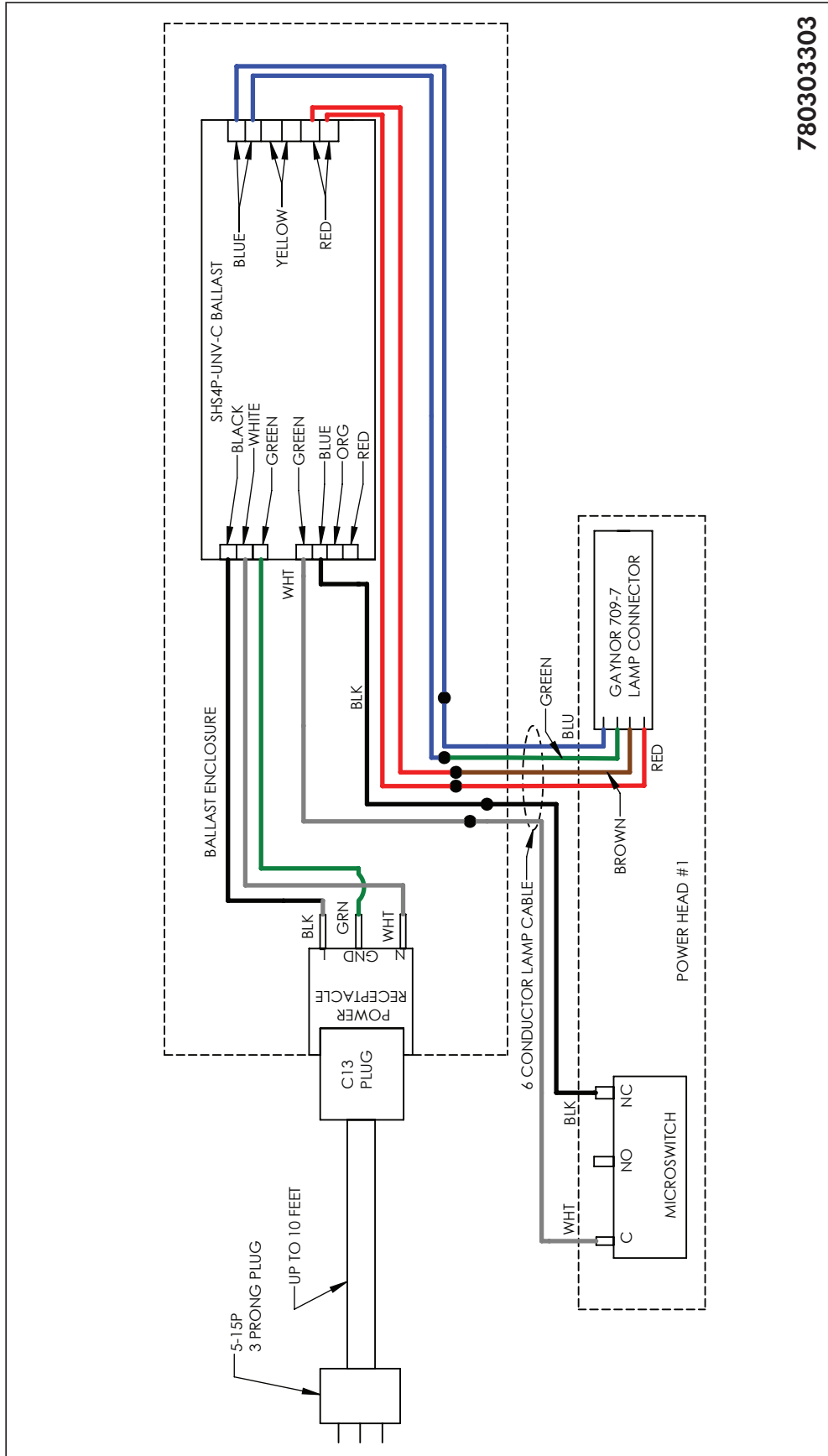
1. UV lamps contain a small amount of mercury, like a typical fluorescent lamp. **DO NOT** touch any of the mercury with your bare hands.
2. While wearing disposable, non-absorbent protective gloves, carefully pick up the large pieces of glass with your hands.
3. Then, vacuum the entire area with a standard household vacuum ensuring the removal of all lamp material.
4. Dispose of the pieces of glass, the vacuum cleaner bag, and the disposable gloves in a sealed garbage bag.
5. 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.
6. Wash hands and remove and wash clothes for added safety measures.

## TROUBLESHOOTING GUIDE

ISSUE	SOLUTION
<b>The lamp is not lighting up</b>	<ol style="list-style-type: none"><li>1. Check if the power head is installed and rotated until a "click" is felt or heard.</li><li>2. Check the power connection to the ballast.</li><li>3. Check for connection. Ensure 120VAC power is available at the electrical outlet.</li><li>4. Replace lamp</li><li>5. Confirm that the ballast was not connected to the appliance fan or thermostat circuit, which may have caused premature failure.</li></ol>
<b>Light shining outside of installed space</b>	<p>Immediately power off the DUO:</p> <ul style="list-style-type: none"><li>• If in AHU, ensure the mounting plate is fully installed flush against the AHU body.</li><li>• If in duct board, ensure the supplied metal mounting plate is sealed to the board, and the mounting plate is securely screwed into the metal mounting plate.</li></ul>

**WIRING  
SOLUTIONS**





7803033303

DIAGRAM C: FOR 120VAC SINGLE LAMP

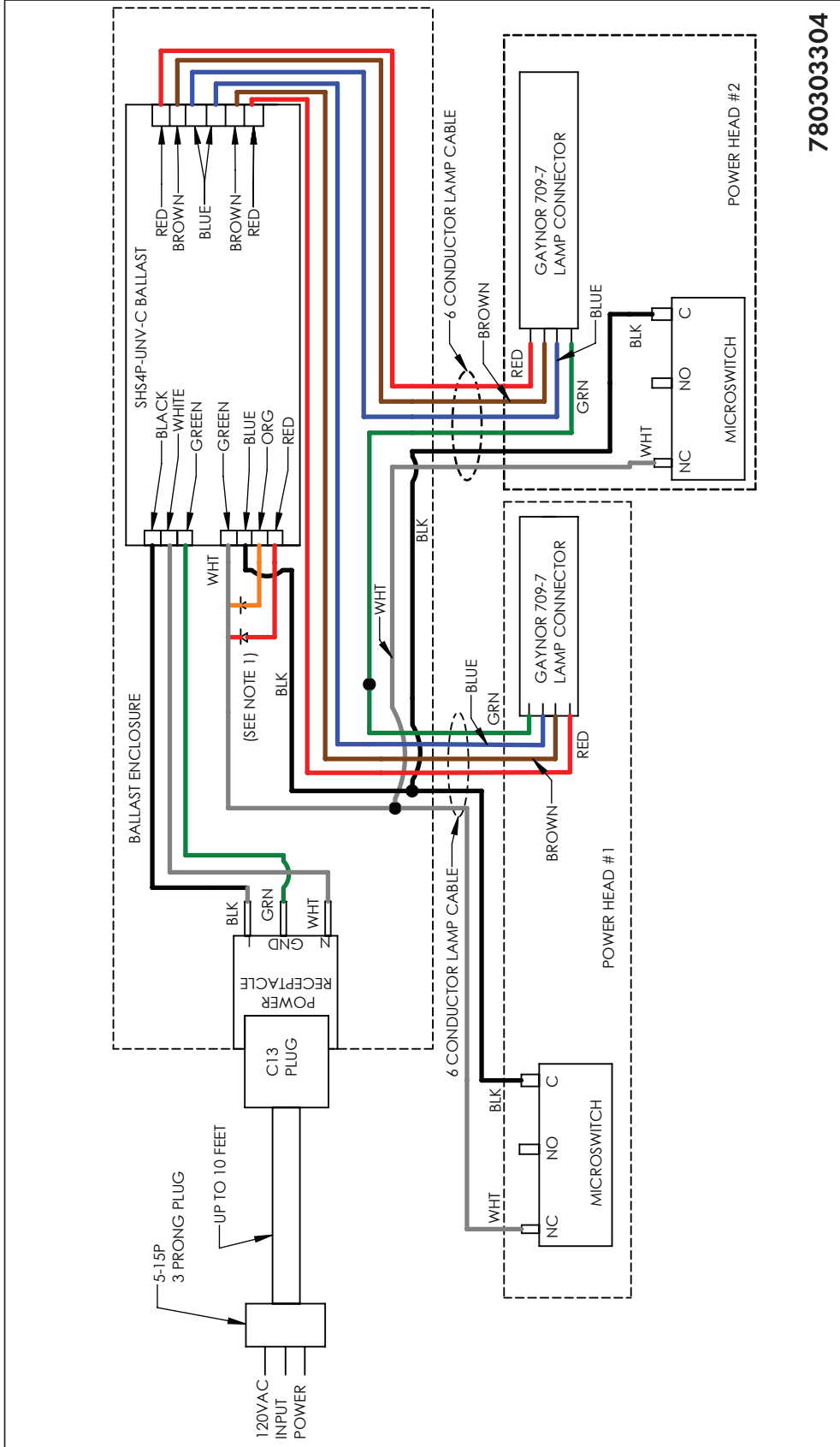


DIAGRAM D: FOR 120VAC DUAL LAMP

- NOTES:
- LED's are optional
  - Denotes Wire Nut

This manual may be downloaded and printed from the Field Controls website ([www.fieldcontrols.com](http://www.fieldcontrols.com))

**WARRANTY**

For warranty information about this or any Field Controls product, visit:  
[www.fieldcontrols.com/ventCool](http://www.fieldcontrols.com/ventCool)

Field Controls Technical Support  
1.800.742.8368  
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