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PUREAIR™ AIR PURIFICATION SYSTEM PHOTOCATALYTIC OXIDATION (PCO) TECHNOLOGY

INSTALLATION INSTRUCTIONS FOR PUREAIR™ AIR PURIFICATION SYSTEM MODELS PCO3-14-16, PCO3-16-16 AND PCO3-20-16

THIS MANUAL MUST BE LEFT WITH THE HOMEOWNER FOR FUTURE REFERENCE

Shipping & Packing List

Assembled PureAir™ air purification system which includes:

- PCO Cabinet (1)
- UVA Lampholder / PureAir™ air purification system Insert Cartridge (secure to interior of cabinet) (1)
- UVA lamp in box (secure to interior of cabinet) (1)
- Healthy Climate® Carbon Clean 16 Media Air Cleaner (located in interior of cabinet) (1)
- Lamp socket with 4-pin female connector assembly attached to light ballast electrical connector (1)
- Literature Bag includes power cord (120VAC)*, installation instruction, UVA Lamp Socket brass finger nuts (2), UVA Lampholder / PureAir™ air purification system Insert Cartridge wing nuts (2) and warranty.

*230VAC power cord available separately (part number 91X44).

Shipping Damage

Check equipment for shipping damage. If damage is found, immediately contact last carrier.

General Information

The PureAir™ air purification system uses photo-catalytic oxidation (PCO) technology to reduce levels of airborne volatile organic compounds, cooking odors, common household odors, airborne dust particles, mold spores and pollen. The PureAir™ air purification system is available in three models (PCO3-14-16, PCO3-16-16 and PCO3-20-16). Each unit may be connected to either 120VAC or 230VAC power supply.

Lab tests confirm a 50% reduction in **total volatile organic compounds** (TVOC) within the first 24 hours of initial operation of the PureAir™ air purification system. It may take up to 48 hours after initial system start-up to reduce the airborne chemicals that have built up in a home over a long period of time.

For peak performance, unit should be installed in homes with TVOC levels that are less than 1000 micro-gram / cubic meter. Home source removal and ventilation may be required to lower total volatile organic compounds to this level.

The Healthy Climate® Carbon Clean 16 Media Air Cleaner combines industry-leading MERV 16 filtration with an odor-removing, coconut-activated and carbon-coated fiber matrix.

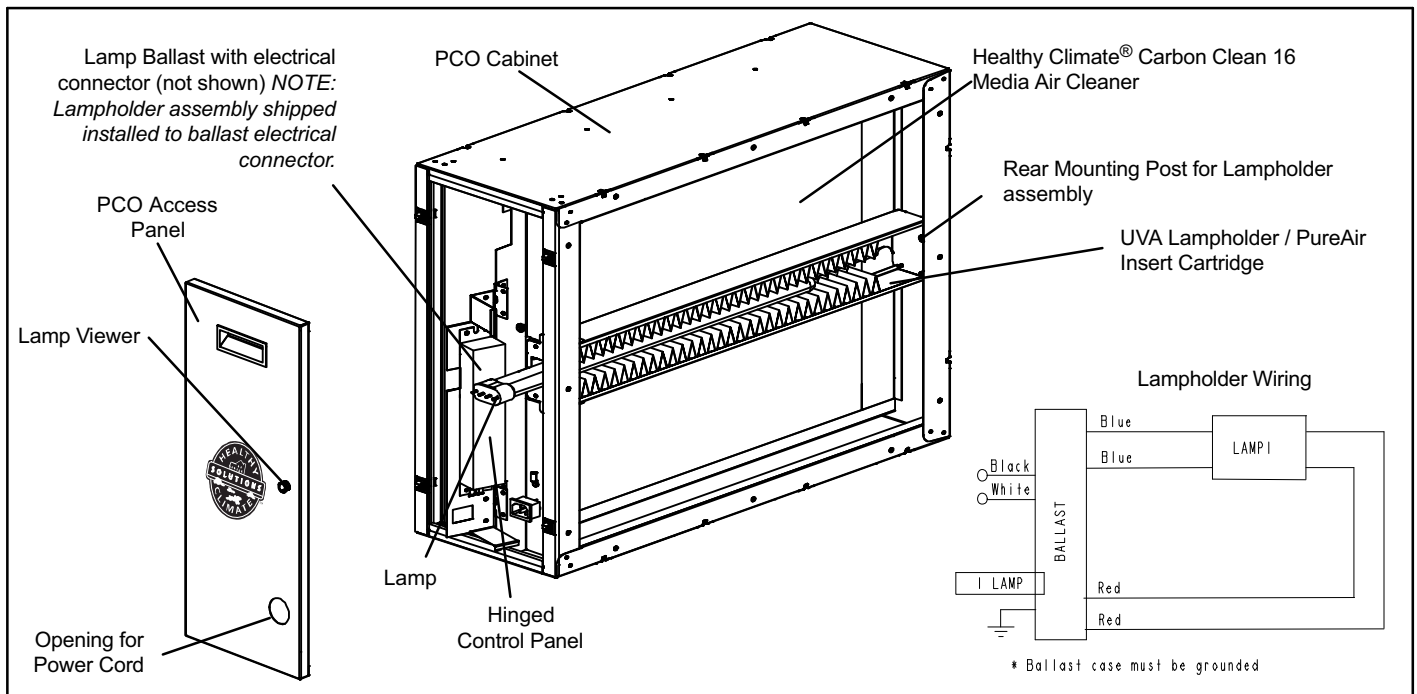


Figure 1. PCO Parts Identification

Dimensions and Specifications

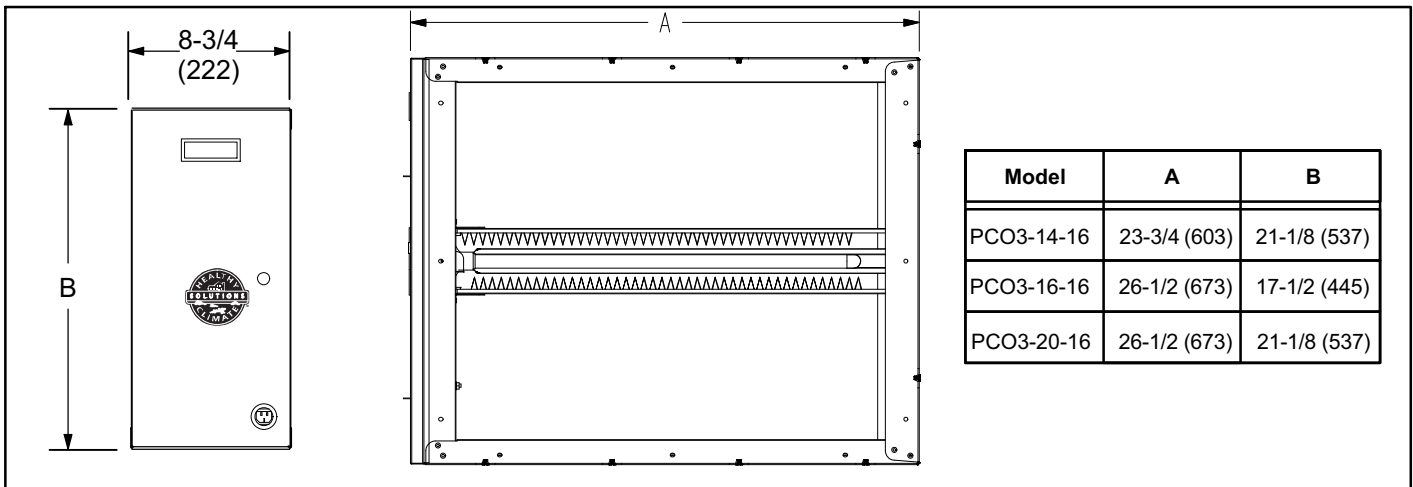


Figure 2. Dimensions

Table 1. Specifications

WEIGHT	
PCO3-14-16	27 lbs.
PCO3-16-16	25 lbs.
PCO3-20-16	27 lbs.
ELECTRICAL	
PCO3-14-16	120V, 50/60 Hz, 0.48 Amps -- Maximum
PCO3-16-16	230 V, 50/60 Hz, 0.24 Amps -- Maximum
PCO3-20-16	
POWER CONSUMPTION	
120VAC	58 Watts Nominal
230VAC	58 Watts Nominal
OPERATING ENVIRONMENT	
0°F to 140°F outside of duct 10 to 60 percent relative humidity (Optimal performance at 50 percent relative humidity)	
PLEATED FILTER EFFICIENCY	
Minimum Efficiency Rating Value (MERV) 16	
LISTINGS	
ETL safety listing report 3061144A. Conforms to UL STD 1598 Certified to CSA STD C22.2 no. 250.0.	

Table 2. Approximate Air Flow Resistance
(Cabinet and Filter)

Capacity (Tons)	Flow Rate (CFM)	Pressure Drop (in. w.g.)		
		PCO3-14-16	PCO3-16-16	PCO3-20-16
2	800	0.11	0.10	0.08
2.5	1000	0.16	0.15	0.11
3	1200	0.20	0.19	0.13
3.5	1400	0.26	0.25	0.17
4	1600	*	0.30	0.20
4.5	1800	*	*	0.25
5	2000	*	*	0.29

**Not recommended. Excessive system pressure drop can damage HVAC system and reduce performance.*

⚠ WARNING

Risk of property damage, injury, or death.

Installation and service must be performed by a licensed professional installer (or equivalent) or a service agency.

⚠ WARNING

Risk of carbon monoxide poisoning.

Can cause injury or death.

Do not operate system unless access door is in place and properly secured. Operation of this equipment without the PCO access door in place may cause exhaust fumes to be drawn into occupied spaces.

⚠ WARNING

Electric shock hazard.

Can cause injury or death.

Disconnect all electrical power supplies before servicing. Access panels must be in place during appliance operation.

⚠ CAUTION

Sharp edges hazard.

Sharp edges can cause injuries.

Use protective gloves when grasping equipment edges.

⚠ CAUTION

Lamp contains mercury.

Ingestion of or contact with mercury or mercury vapor is hazardous to your health.

Take care when handling lamp. If lamp is broken, avoid contact with mercury.

⚠ CAUTION

Ultraviolet (UVA) radiation risk.
Prolonged exposure may cause skin or eye damage.
Avoid prolonged (weeks) exposure to skin or eyes.

⚠ CAUTION

Personal Burn Hazard.
Lamp is very hot when illuminated.
Allow lamp to cool for 10 minutes before removing lamp from socket.
Injury may result from contact with hot lamps.

⚠ CAUTION

LAMP CONTAIN MERCURY.
Ingestion of or contact with mercury or mercury vapor is hazardous to your health.
Take care when handling lamps. If lamp breaks, avoid contact with mercury.

NOTICE

Possible odor emissions. Chemical reactions may cause temporary odors after initial start-up or after lamp replacement. Odor may also be present after paint, cleaning solutions or hobby materials have been used in the conditioned space.
Some occupants may experience irritation or discomfort during this period. If the irritation or discomfort lasts longer than 48 hours, the homeowner should be advised to contact a Lennox dealer.

NOTICE

The PCO should be installed so that the lamp will be in the horizontal position.
Contact the Technical Support Department at 1-800-953-6669 for additional information.

NOTICE

This system is NOT intended to be used for removal of active mold growth or continuous sources of high levels of chemicals in the air.
For existing mold growth, the mold must be properly removed PRIOR to installation of the PureAir™ air purification system.

NOTICE

This appliance is intended for return air duct installation only.
Improper installation may damage PureAir™ air purification system, HVAC system, or other equipment and may also void warranty.

NOTICE

Oil on metal ducts may cause odors.
Use a mild soap and water solution to remove oils from transitions and duct surfaces prior to installation.

NOTICE

Do not use any form of silicone sealant.
Use of silicone-based products will reduce the effectiveness of, or damage the titanium dioxide coatings on the PureAir™ air purification system Insert Cartridge.

NOTICE

Route power cord away from traffic areas where the cord may become a safety hazard.

NOTICE

Healthy Climate® Carbon Clean 16 Media Air Cleaner cannot tolerate direct exposure to UVA light.
Filter are protected by insert cartridge shield.

NOTICE

Unpacking required.
Remove all protective packing material from the UVA lamp (taped to the cabinet) and the titanium dioxide PureAir™ Cartridge.
Packing material should be disposed of properly.

NOTICE

UVA lamp life is shortened when lamp is turned off and on. Power to PCO unit must remain on at all times.
Do not interlock lamp operation with air handler blower operation.

NOTICE

Do not wash UVA Lampholder / PureAir™ air purification system Insert Cartridge. Soap and water will destroy the titanium dioxide catalyst that coats the cartridge surface.

Installation Examples

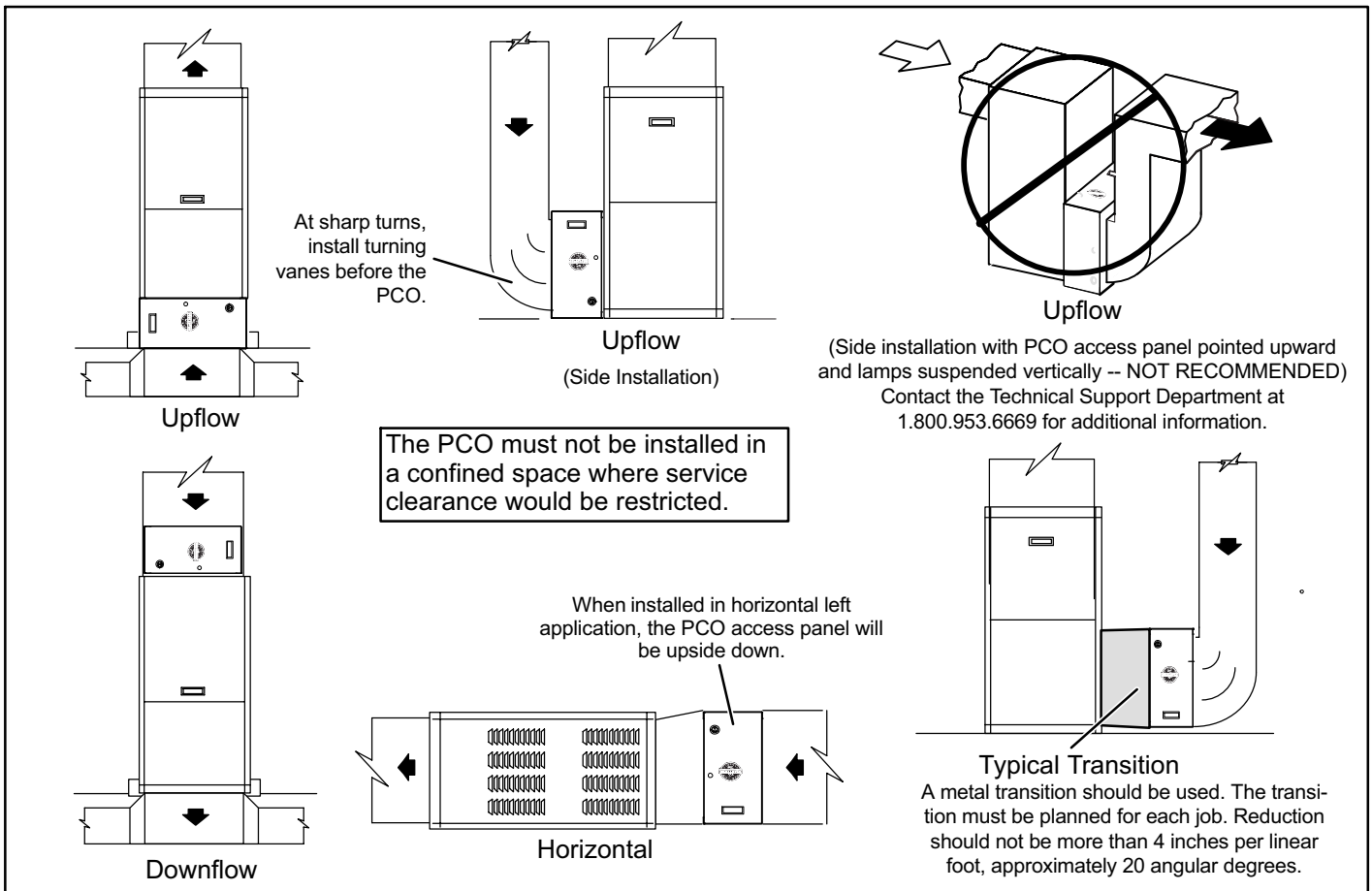


Figure 3. Installation Examples

Unique Field-Supplied Installation Items

- Cotton gloves and cloth (to remove finger prints from lamps)
- Aluminum foil tape or water-based mastic (NOT silicone) to be applied as a sealant.

Installation

Select a Location

The PCO must be installed in the return air duct upstream of the supply blower. Allow a 30-inch service clearance in front of the access door as shown in figure 4. The air filter and UVA Lampholder / PureAir Insert Cartridge must be removable.

Installing PCO Cabinet

The PCO cabinet may either be installed on a level installation deck or platform adjacent to the air handler or it may be suspended from the rafters using metal strapping. If straps are used, take care when attaching straps to the

PCO cabinet. Ensure fasteners do not interfere with internal components of the PCO cabinet. The air filter and UVA Lampholder / PureAir Insert Cartridge must be able to slide freely into the cabinet.

1. Locate and remove the UVA Lampholder / PureAir™ air purification system Insert Cartridge from the PCO cabinet.

NOTE: Oil on metal surfaces may cause odors. Use mild soap and water solution to wash all new duct and transition surfaces.

2. Use the air flow directional label on the inside of the UVA Lampholder / PureAir™ air purification system Insert Cartridge to orient the PCO unit.
3. Properly position the PCO cabinet next to the return air opening of the air handling unit. Use sheet metal screws (1" maximum length), rivets or other appropriate fasteners to secure PCO cabinet to the return air side of the air handling unit.
4. Use field-provided sheet metal screws (1" maximum length) to fasten the return air duct to the other side of

the PCO cabinet. Attachment holds are provided in PCO housing.

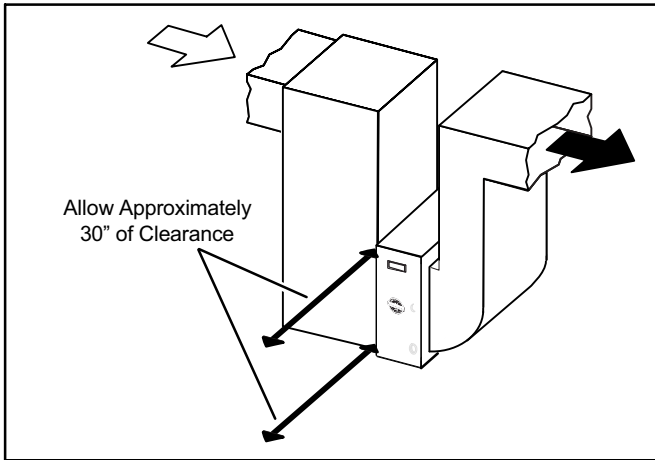


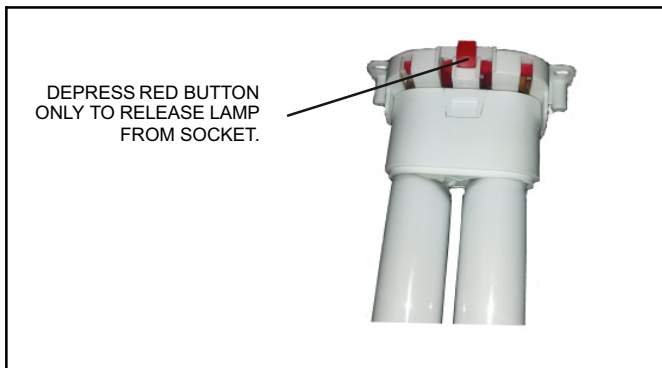
Figure 4. Service Clearance

5. Use field-provided aluminum foil tape or water-based mastic to seal all joints between the PCO cabinet, air handler and duct. Attachment holes are provided in PCO housing.
6. In high humidity applications, wrap PCO cabinet with field-provided 2" foil-faced insulation (foil on the outside) to prevent condensation.

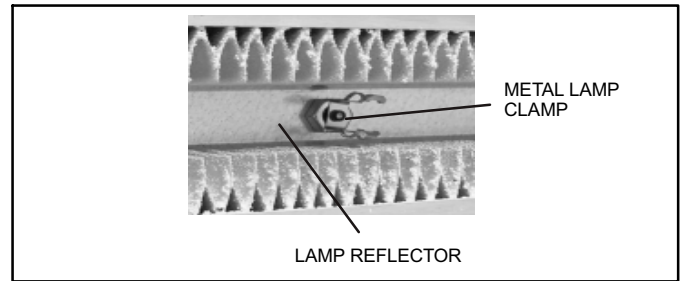
Lamp Installation

Use cotton gloves or a cotton cloth to protect the lamp and your hands during unpacking and installation.

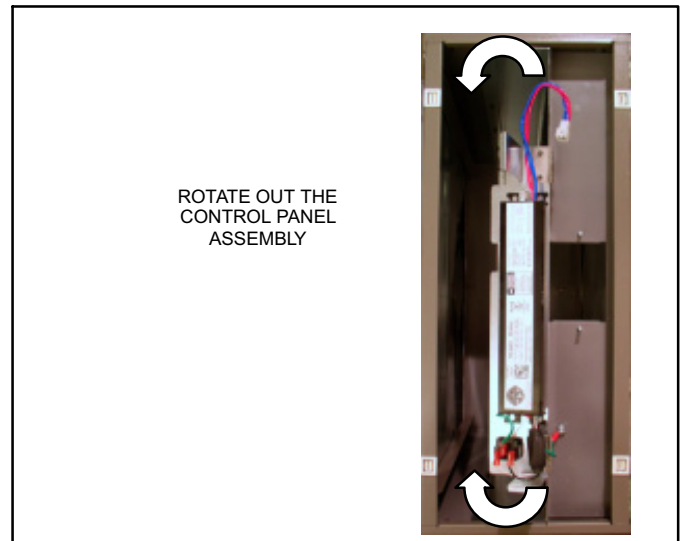
1. Remove PCO cabinet access panel.
2. The UVA Lampholder / PureAir™ air purification system Insert Cartridge is shipped in a protective packaging. Packaging must be removed prior to installation. Take care to prevent damage while removing from packaging.
3. Locate the lamp box, which is taped to the inside of cabinet and carefully remove. Set lamp box aside while preparing PCO cabinet for lamp installation.
4. Remove (slide out) Healthy Climate® Carbon Clean 16 Media Air Cleaner from PCO cabinet.
5. Disconnect the lampholder cable assembly from the lamp ballast connector.
6. Secure the lamp electrical connector to the lamp by sliding the lamp pins into the slot. Proper connection will make a snapping sound.



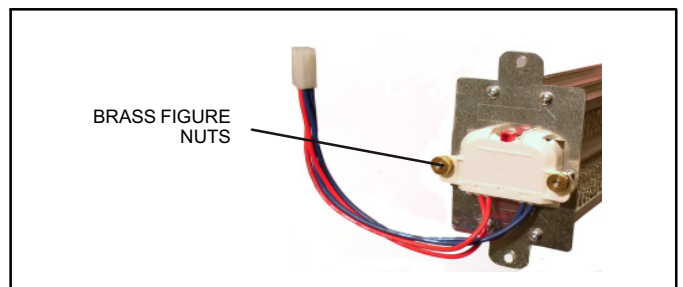
7. Slide the lamp into UVA Lampholder / PureAir™ air purification system Insert Cartridge. Verify that the lamp is secure to the one metal lamp clamp located mid-way on the lamp reflector.



8. Rotate the hinged control panel assembly out.



9. Thread the UVA Lampholder / PureAir™ air purification system Insert Cartridge two posts through the lamp connector's two holes
10. Fasten the lamp socket to the UVA Lampholder / PureAir™ air purification system Insert Cartridge using the two-brass figure nuts located in the literature bag.



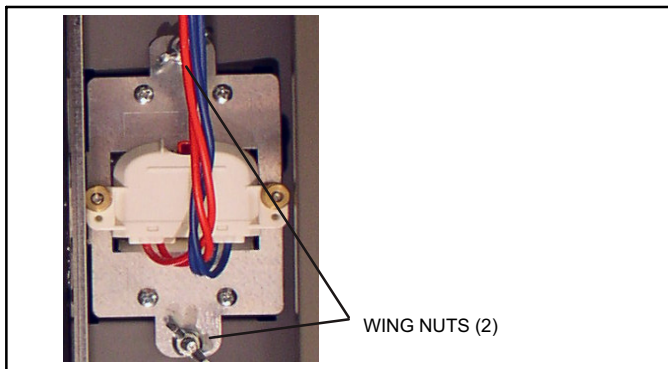
Installing Lampholder

Use the following procedure to install the UVA Lampholder / PureAir Insert Cartridge.

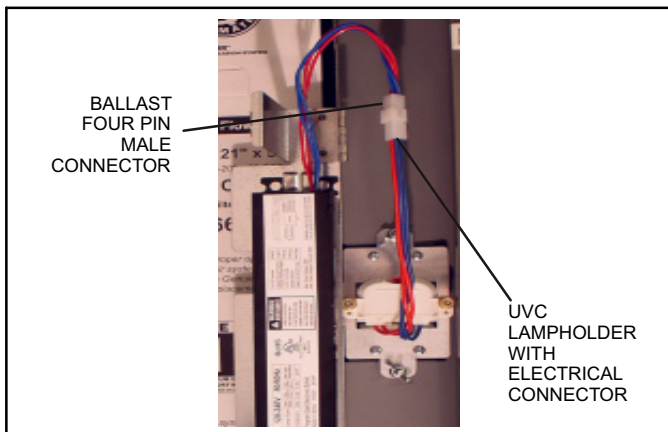
1. While aligning, slide the UVA Lampholder / PureAir™ air purification system insert cartridge into PCO case rails and align with rear mounting post.

- Secure the UVA Lampholder / PureAir™ air purification system Insert Cartridge to the two frame screw posts using the provided wing nuts (2).

NOTE: There is an arrow on the front of the component indicating the correct way to install it.



- Connect lamp 4-pin male connector to ballast female 4-pin connector.



- Rotate hinged control panel assembly back into the cabinet. Make sure no wiring is being pinched.

Installing Air Filter

Use the following procedure to install the air filter.

- Slide the Healthy Climate® Carbon Clean 16 Media Air Cleaner into the rails on the air inlet side of the PCO cabinet. Verify proper airflow direction.
- Securely fasten the PCO access panel.
- Plug one end of the provided power cord into the receptacle on the PCO cabinet and the other end into a power receptacle.
- Look through the view port in the access panel to check that the lamp is illuminated.

NOTE - On initial start-up, the lamp may not reach full illumination for several minutes.

Wiring

The PCO should be wired in accordance with national and local codes.

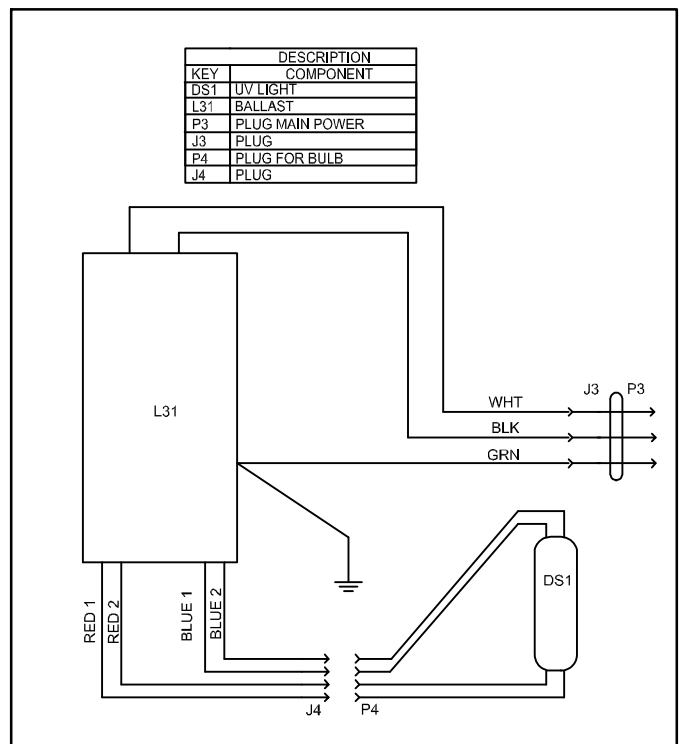


Figure 5. Wiring Schematic

Operation

NOTICE

If the system has been operated for a period of time without the lamp being illuminated, an odor may occur when lamps are illuminated. This odor is considered typical and should dissipate within 12 hours of full operation. If the odor does not subside after 48 hours of operation, instruct the homeowner to unplug the PCO unit and contact a Lennox dealer.

- Check to ensure that access door is securely in place.
- Lamp should remain illuminated continuously except during service and maintenance.
- For optimal odor control, air handler blower should remain on **CONTINUOUSLY** (thermostat fan setting in ON position, rather than AUTO).

If air handler does not provide a continuous low blower speed option, an additional blower relay should be installed. Use Lennox part number 45H03. Contact the Lennox Application Department at 1-800-453-6669 for wiring information.

NOTE - Continuous fan operation may result in higher humidity. If humidity levels are uncomfortably high, fan setting should be switched to AUTO during cooling operation.

Filter, UVA Lampholder / PureAir Insert Cartridge and Lamp Replacement

The Healthy Climate® Carbon Clean 16 Media Air Cleaner UVA Lampholder / PureAir™ air purification Insert Cartridge and UVA lamp require annual replacement. More frequent filter replacement may be required in applications with heavier dust or dirt loads or if you notice a reduction in odor-removal efficiency. An annual maintenance kit is available.

Annual Maintenance Kits

The annual maintenance kits include the following:

- Healthy Climate® Carbon Clean 16 Media Air Cleaner (1)
- PureAir™ air purification system Insert Cartridge (1)
- UVA Lamp (1)

Order using the following kit catalog numbers:

Table 3. Maintenance Kits

Part Description	Catalog Numbers		
	PCO3-14-16	PCO3-16-16	PCO3-20-16
Annual Maintenance Kit	Y6616	Y6612	Y6608

Replacement Parts

Replacement parts are available through Lennox, see figure 1 for parts arrangement. Part description and catalog numbers are as follows:

Part Description	Catalog Numbers		
	PCO3-14-16	PCO3-16-16	PCO3-20-16
Healthy Climate® Carbon Clean 16 Media Air Cleaner	Y6606	Y6605	Y6604
UVA Lamp	X8794	X8794	X8794
PureAir™ air purification system Insert Cartridge	Y6621	Y6607	Y6607
Lampholder cable assembly	Y6622	Y6622	Y6622
Power Cord (120VAC)	49M48	49M48	49M48
Power Cord (230VAC)	91X44	91X44	91X44
Electrical Socket	75X77	75X77	75X77
Ballast	Y6620	Y6620	Y6620

Removing and Installing Lamp, Lampholder and Air Filter

1. Remove power cord from 120VAC or 230VAC receptacle.
2. Remove power cord from PCO unit
3. Remove PCO access panel.
4. Remove Healthy Climate® Carbon Clean 16 Media Air Cleaner.
5. Rotate out the hinged control panel.
6. Disconnect lamp electrical connector from ballast.
7. Remove both fasteners securing the UVA Lampholder / PureAir® air purification system Insert Cartridge from the PCO chassis.
8. Slide out the UVA Lampholder / PureAir™ air purification system Insert Cartridge from the PCO chassis.
9. Remove both brass figure nuts that secure the lamp elector connector to the UVA Lampholder / PureAir Insert Cartridge.
10. Slide out lamp from UVA Lampholder / PureAir™ air purification system Insert Cartridge.
11. Push the red button on lamp electrical connector and gently slide off connector from lamp (do not dispose of lamp electrical connector).
12. Properly dispose of lamp and air filter
13. Reinstall in reverse order starting with step 11.

Proper Clean-Up of Broken UVA Lamp

If lamp is broken, it must be disposed of properly.

- Wear protective gloves, eye wear and mask.
- Sweep broken glass and debris into a plastic bag and seal before disposal in accordance with instructions provided by local waste management office.
- **Do not use a vacuum cleaner. Do not incinerate.**

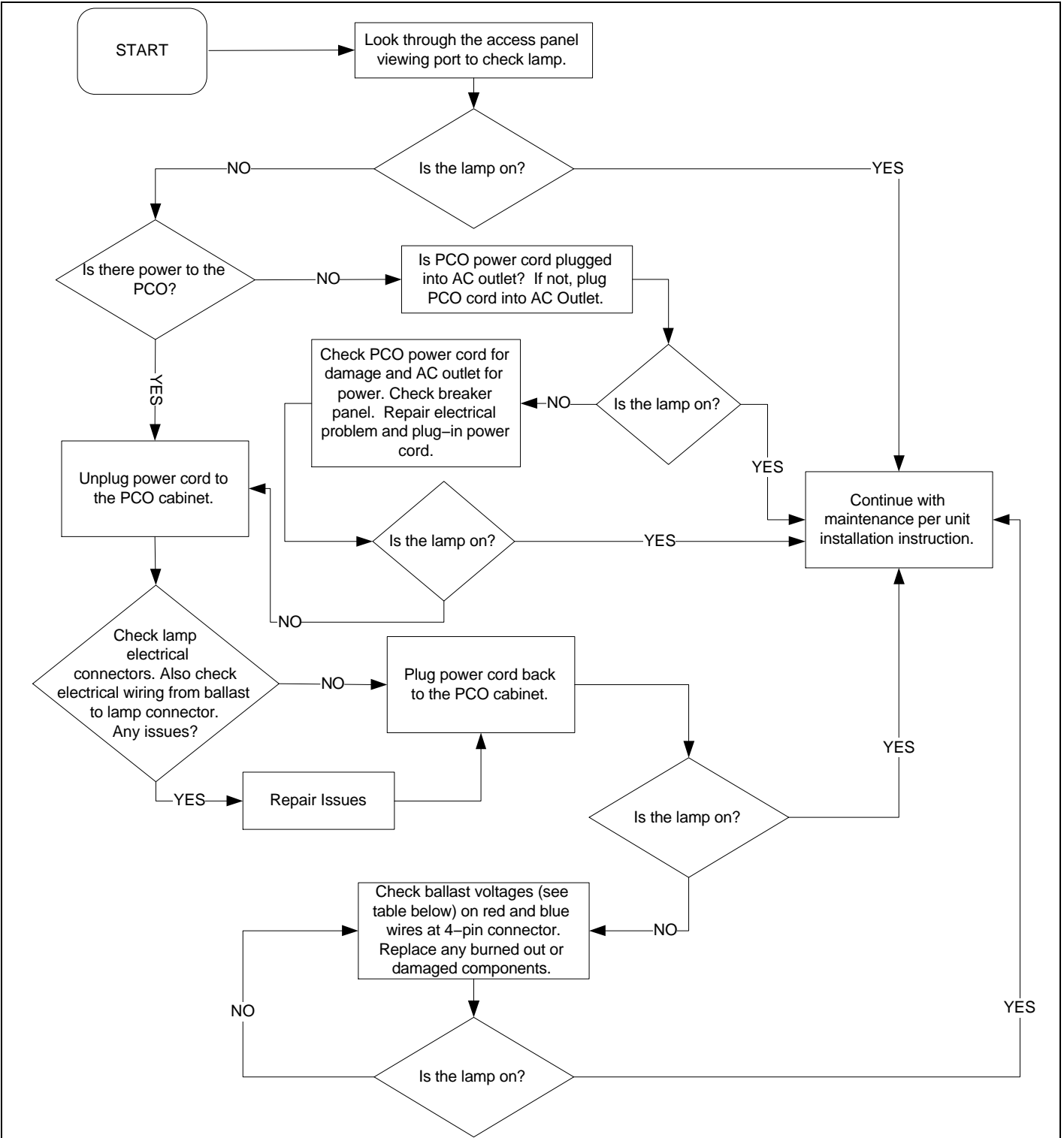
NOTICE

Hg -- Lamp contain mercury.

Manage in accord with disposal laws.

Refer to www.lamprecycle.org or call 1-800-9LENNOX.

Troubleshooting Flow Chart



	INPUT/OUTPUT	WIRE/TERM COLOR	NORMAL READING	SERVICE ACTION (See wiring diagram, Figure 5, Page 6)
BALLAST	OUTPUT	RED	≥60	Replace ballast if less than 60VAC.
		RED	≥60	Replace ballast if less than 60VAC.
		BLUE	≥200	Replace ballast if less than 200VAC.
		BLUE	≥200	Replace ballast if less than 200VAC.

Figure 6. Troubleshooting Flow Chart