



# INSTALLATION, OPERATION & MAINTENANCE MANUAL

## Plasma Air 200 SERIES (MODELS 201D, 201E, 202D, 202E)

REV 07/2019



## INTRODUCTION

The Plasma Air 200 Series ion generator is a two-tube commercial quality unit intended for installation in air handling units (AHU), furnaces, or duct systems for residential and commercial applications.

This ionization equipment is effective in reducing harmful pollutants and odors by introducing positive and negative ions into the system. The number of units and the size of the ionization tubes are dependent on the airflow in the system and the severity of the pollution problem. See chart on the back of this manual for selection criteria.

## MECHANICAL INSTALLATION INSTRUCTIONS

**WARNING:** To reduce the risk of fire, this unit should not be installed downstream of a humidifier or exposed to other sources of moisture.

**CAUTION:** This product is suitable for mounting into duct of metallic construction only. Installation must be such that the structural integrity of the ducting is not compromised.

Mount units to allow access to the ionization level adjustment knob and for general maintenance. This product shall not be installed behind a suspended floor/ceiling or a structural wall, ceiling, or floor.

This product should not be mounted in a location where the air temperature exceeds 140° F. This usually means that it should not be installed at the outlet of a gas or oil fired furnace.

1. Screw the ionization tube using the end cap into the back of the transformer while gently holding the grounding clip away from the tube.
2. For residential installations, the preferred location is in the supply air duct leaving the AHU. Be sure to pick a location before any branch duct take-offs. Verify that there is sufficient duct depth to allow clearance for the tube – see Figure 1.

### To mount the units in a duct:

- a. Trace a 5½" by 5½" square on the surface of the duct onto which you are mounting the 200 Series. The units have a flange gasket that forms a seal between the duct and the mounting plate.
- b. Cut out the traced portion of the duct using snips or sheet metal shears.
- c. Screw the 200 Series ionizer onto the duct using sheet metal screws.

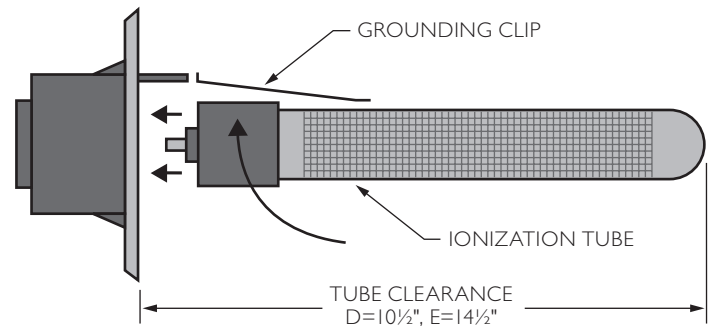
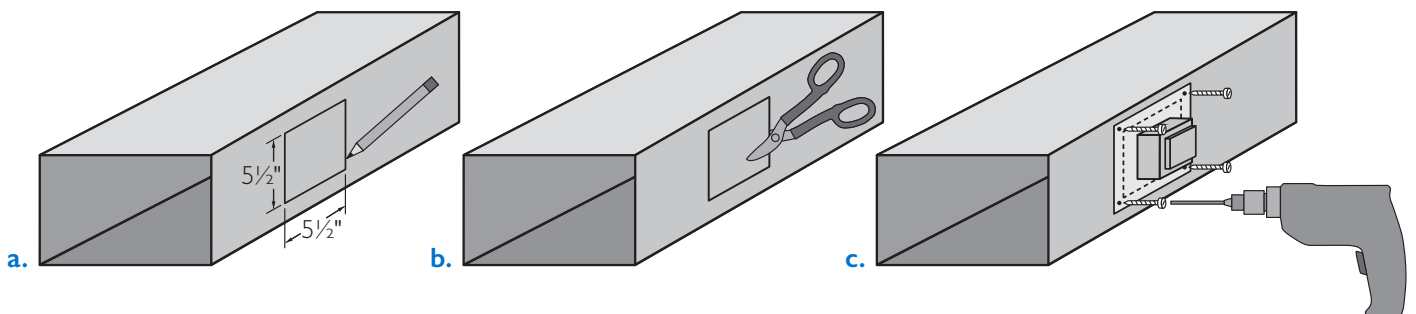


FIGURE 1 – MODEL 200 AND IONIZATION TUBE



3. If the unit cannot be installed in the preferred location due to space or temperature limitations, see Figure 2 for alternate locations. Units can be installed using “L” shaped brackets available from many hardware suppliers.
4. For commercial applications, the units can be mounted in the supply air duct as long as these ducts are easily accessible for tube replacement or other service. Units are sometimes mounted inside a roof top AHU using “L” shaped brackets available at many hardware suppliers. Be sure to select a location within the air handling unit where there is good air flow. One such location is immediately next to the fan inlet.

## Mounting location notes:

- Ensure sufficient airflow over the ionization tubes.
- Do not mount the units before the system filter.
- Do not mount downstream of a gas or oil fired furnace.
- Avoid locations where moisture may be present like immediately downstream of a cooling coil.

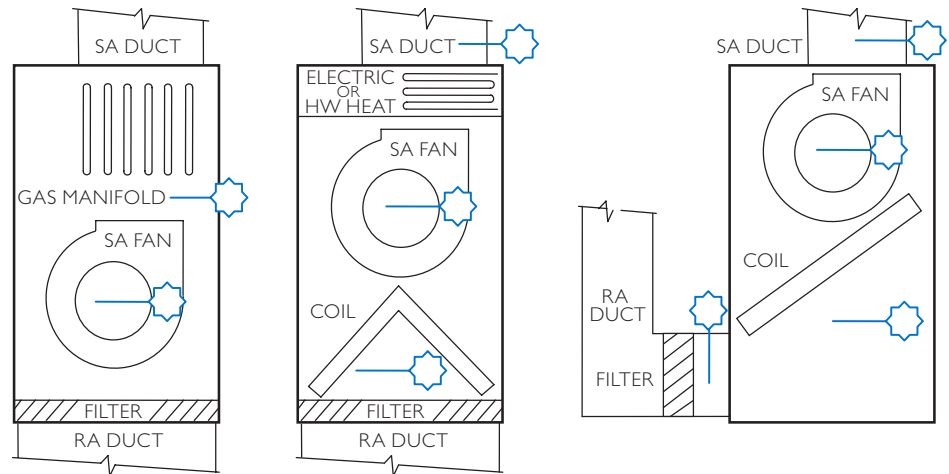


FIGURE 2 – SUGGESTED MOUNTING LOCATIONS IN A TYPICAL AHU OR FURNACE

## ELECTRICAL INSTALLATION INSTRUCTIONS

**WARNING:** The secondary voltage at the ionizing tubes can be 2,900 Volts AC. Do not connect to power before the installation is complete. Always disconnect power to the unit before handling any of the unit components.

To reduce the risk of electric shock, this equipment has a grounding type plug that has a third (grounding) pin. This plug will only fit into a grounding type power outlet. If the plug does not fit into the outlet, contact qualified personnel to install the proper outlet.

1. The 200 Series is available in two primary voltage models, nominally 120 volts AC (model 201) or 230 volts AC (model 202). The units may be used on 50 cycle or 60 cycle frequencies. Verify that the model's voltage is the same as the available voltage by checking the ionizer's UL label.
2. The 200 Series draws up to 16 watts. The power source should not be protected by a breaker exceeding 20 amps.
3. The unit should be powered when the system supply fan is energized. This can be accomplished by any of the following methods:
  - On systems with single speed supply fans, the fan power supply can be used.
  - Use a pressure switch in series with the ionizer's power supply.
  - Install a relay off the 24 volt fan control circuitry and wire the ionizer's power through the NO contacts.
  - Install a current sensing relay on supply fan power wiring and then wire the ionizer's power through the NO contacts.
  - Wire into the "EC" (Electronic Air Cleaner) contacts oftentimes provided on the AHU.
  - On systems where the above fan interlocking options are not available, contact your distributor/dealer or Plasma Air directly for an AFS-MF-JB unit. This product is a mounting frame with an integral pressure differential switch that allows the unit to be hard wired in the field via integral junction box.

## OPERATION

The ionization adjustment knob is a six-position switch that is used to turn the unit on and adjust the level of ionization.

1. When the knob is in the "0" position, no power is being applied to the ionization tubes and the green light is off. Rotating the knob from "0" through "5" increases the ionization output and will illuminate the green light.
2. The ionization level is set by the installing contractor and does not require adjustment on a regular basis. A guide is provided on the back cover of this manual to set the ionization level based on the Pollutant Load Factor.
3. The benefit of the ionization system is only realized when the supply fan is running. So to achieve improved air quality, run the fan continuously or use an IAQ type thermostat which will cycle the fan once an hour at specified times of the day.

## MAINTENANCE

**WARNING: The secondary voltage to the ionizing tubes can be 2,900 Volts AC. Always disconnect power to the unit and switch the power to the “off” position before performing any maintenance.**

Depending on the severity of the pollutant, the upstream filtration and the maintenance schedule, the tubes are rated for 17,600 hours of service and should be replaced at that interval. Contact your local Plasma Air Distributor to purchase replacement tubes, [www.plasma-air.com](http://www.plasma-air.com).

## TROUBLESHOOTING

If the unit is not working, check in the following order that:

1. The ionization adjustment knob is in between “1” and “5” and that the green light illuminates.
2. The 0.5 amp, glass cartridge fuse is not blown. The fuse is located in the power inlet fitting. The fuses are 5mm × 20mm rated at 250 volts and are available at any electrical supply store.
3. If the unit fuse is blown, remove the tube and replace the fuse. Turn on power to the unit. If the fuse blows again, return the unit to the distributor for factory service.
4. If the fuse does not blow, the most likely problem is a defective tube. Carefully inspect the tube for cracks. Although rare, cracks can occur at the capped end of the tube.
5. If the tube has been subjected to high temperatures, above 140° F, there is a possibility of a pin hole defect. These are difficult to spot, but can cause shorting of the tube. Install the tube into the unit and power the unit. If the fuse blows, the tube is defective and requires replacement.
6. If there seems to be a loss of effectiveness, check the tubes and clean them if necessary. If the tubes are more than two years old, replace them.

## PRODUCT SELECTION

Selecting the proper ionization equipment is important for achieving all the benefits from the ionization system. In commercial or industrial projects, pollutants such as airborne particles from smoke, dust, spores; VOCs from cleaning supplies, glues, paints, or other chemicals; odors from locker rooms, cooking, nursing homes, industrial processes; and even health related concerns from mold, bacteria, and viruses all contribute to poor indoor air quality. The information below will guide you through the process.

	POLLUTANT LOAD FACTOR
A	Normal residential, office, or classroom space - low pollutant levels
B	Day care center, nursing home, food processing facility, restaurant - medium pollutant levels
C	Animal hospital, casinos, light manufacturing, smoking areas, nail/beauty salons - heavy pollutant levels
D	Industrial facility, heavy manufacturing, or garbage room - very heavy pollutant levels
E	Heavy pollution or odors typical of a waste water treatment facility

### SQUARE FOOTAGE SERVED BY AIR HANDLER

POLLUTANT LOAD FACTOR	1,000	2,000	3,000	5,000	10,000	20,000
	A	(1) 100C	(1) 100D	(1) 100E	(1) 200E	(1) 50F
B	(1) 100D	(1) 100E	(1) 200E	(1) 50E	(2) 50E	(3) 50F
C	(1) 100E	(1) 200E	(1) 50E	(1) 50F	(2) 50F	(4) 50F
D	(1) 200E	(1) 50E	(1) 50F	(2) 50F	(4) 50F	(8) 50F
E	*Consult Plasma Air Engineering Department for Engineering Support					