



# Installation, Operation and Maintenance Guide

## 500 Series



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### OUR MISSION

To improve health and wellness by actively restoring indoor air to its pure, natural state where no pollution or contaminants exist, while reducing energy use and emissions in the process.

### IMPORTANT

Save this Document  
for Future Reference &  
Warranty Information



AtmosAir.com  
CAG-23-10-007

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## WARNING

**Failure to follow this warning could result in personal injury or death.**

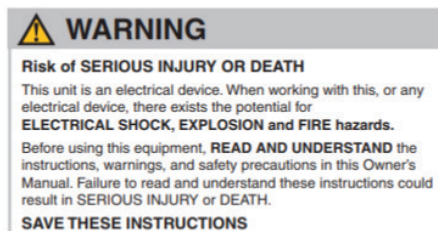
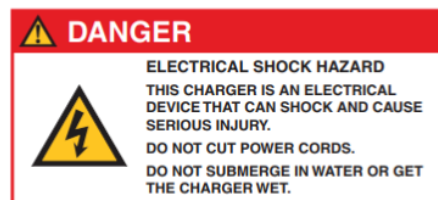
For installation you **MUST**:

- Always disconnect all electrical power to the unit before handling any of the components, to the air handler before removing access panels, or to perform any maintenance activities.
- Do NOT connect to the power before the installation is complete and personnel are aware of the imminent operation – secondary voltage to the ionization tube can be as high as 3,000 VAC.
- Installation of AtmosAir equipment is not to be performed in areas with extreme conditions such as extreme heat or cold, or where water or condensing moisture can impact the system.
- Carefully read this instruction booklet before beginning the installation.
- Follow each installation or repair step exactly as shown and explained in this guide.
- Observe all local, state, national, and international electrical codes.
- Pay close attention to all warnings and caution notices given in this guide.

1. Before installing or servicing system, always turn off main power to system.

**Note:** There may be more than one disconnect switch.

2. AtmosAir equipment must be installed with a proper ground. The electrical cable enclosed with your AtmosAir unit must be used as it has a special plug which provides a ground circuit for the equipment.
3. Always replace fuse with the same rating and type of fuse.
4. Failure to follow this caution may result in personal injury or product and/or property damage.
5. Although special care has been taken to minimize sharp edges in the construction of your unit, be extremely careful when handling parts or reaching into the unit.
6. Do NOT block or obstruct the air flow over or around the ionizing tubes.
7. Do NOT touch ionizing tubes when power is on.
8. Tube cleaning should be performed only when the power is disconnected.
9. The tubes require minimal cleaning with routine operation and maintenance.  
Longer operating cycles and reduced ionizing efficiency may indicate the need for cleaning or replacing tubes by your AtmosAir dealer or qualified installer.



## Commissioning Statement

**Do not** commission new airhandlers after installation. All duct cleaning must be performed **before** the unit is installed.

**Disclaimer:** The air purification technologies provided by Clean Air Group are intended to improve indoor air quality. They are not intended as a replacement for reasonable precautions aimed at preventing the transmission of contaminants, airborne or otherwise. All persons having access to the serviced premises should comply with applicable public health laws and guidelines issued by federal, state and local governments and health authorities such as the Centers for Disease Control and Prevention (CDC). Clean Air Group does not maintain that its products will protect people from all modes of transmission of bacteria, viruses or other contaminants, and excludes liability for loss or damage arising from any such claims or the consequences arising out of the application, use or misuse of its products.

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## 01 PRODUCT OVERVIEW

The AtmosAir 500 series, models 500EC, 500FC and 508FC, ionization generators are industrial quality units intended for installation in air conditioning systems or in custom-designed air distribution systems in commercial and industrial facilities. AtmosAir equipment is effective in reducing odors and harmful pollutants through the introduction of positive and negative ions into the air stream to be treated. The number and size of the ionization tubes used is dependent upon the airflow, size of the space, and severity of the pollution and odors. The AtmosAir 500 series equipment is designed for minimal maintenance efforts. The 500 series has two components that require inspection and maintenance:

1. AtmosAir 500 series ionization generator
2. Ionization tubes

Because there are no moving parts, the systems have very low failure rates and minimal maintenance requirements.

For more information, read the AtmosAir 500 series submittal documents.

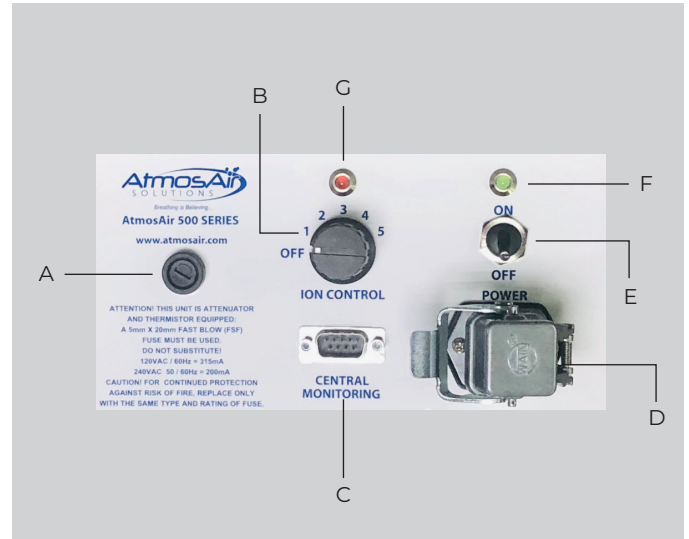
**Pressure Drop Chart**

Unit Size	Flowrate (CFM)	Drag – mm / inch WG (Pascals)
500EC	8,000	203.2mm / 0.0080 (2.00)
500FC	10,000	259.1mm / 0.0102 (2.55)
508FC	15,000	754.4mm / 0.0297 (7.40)

Pressure Drop @ 20°C (68°F), Density of Air = 1.225 kg/m<sup>3</sup> & 120V @ 50/60 Hz

## Control Panel Diagram

AtmosAir 500 Series Control Panel Layout:



- A. Fuse**
- B. 5-Step Power Adjustment Switch**
- C. Monitoring DB-9 Output Connection**
- D. Power Socket / Quick Disconnect**
- E. Power Switch**
- F. Green System Power Light**
- G. Red Ionization Power Light**

**Overall Dimensions Chart**

Product	Length	Height	Width
500EC	704.85mm (27¾")	209.55mm (8¼")	273.05mm (10¾")
500FC	704.85mm (27¾")	209.55mm (8¼")	273.05mm (10¾")
508FC	704.85mm (27¾")	241.30mm (9½")	273.05mm (10¾")
508FC-WM	704.85mm (27¾")	342.9mm (13½")	273.05mm (10¾")

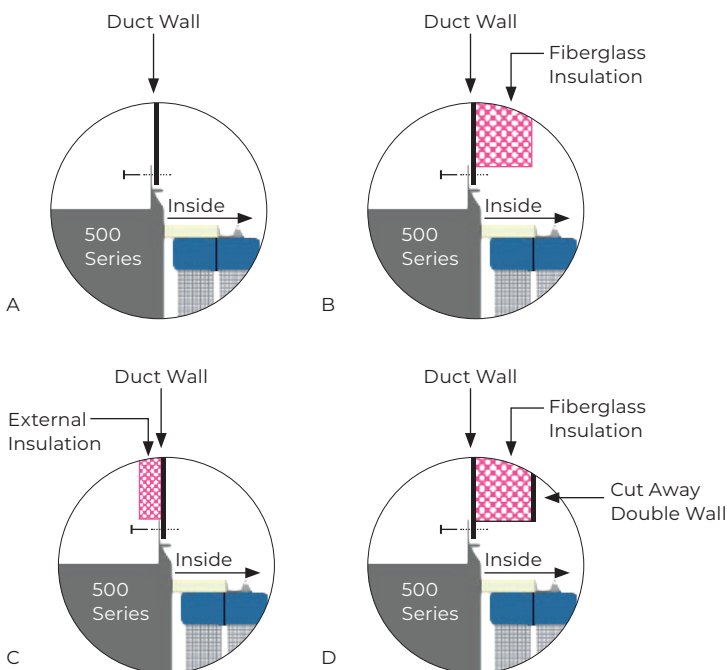
## 02 INSTALLATION

The AtmosAir 500 series equipment can be mounted on the side of a duct or air handler wall, using the integral mounting flange and a weather-strip gasket, or inside an air handler using a custom mounting rack with an optional wall mount bracket. In an air handler, the units operate best when located after the filters. Ideally, the tubes lie parallel to the direction of airflow with the end of the tubes pointing upstream.

When installed on the side of a duct or air handler wall, the outer box and faceplate should not be exposed to direct sunlight or moisture. If installing outside, a weatherproof enclosure with an access panel for servicing should be installed over the AtmosAir Ion Generator (which can be provided by AtmosAir).

The 500 series operates on 110/120 VAC, 50/60 Hz or 220/240 VAC, 50/60 Hz is available upon request. If using the integral remote monitoring panel, the connection is made using a supplied 9-pin (DB-9) connector. The tubes and electrode contacts should not come into contact with any conductive surface. A minimum 101.6mm (4") clearance around the tubes is recommended.

### Types of Insulated Duct Walls

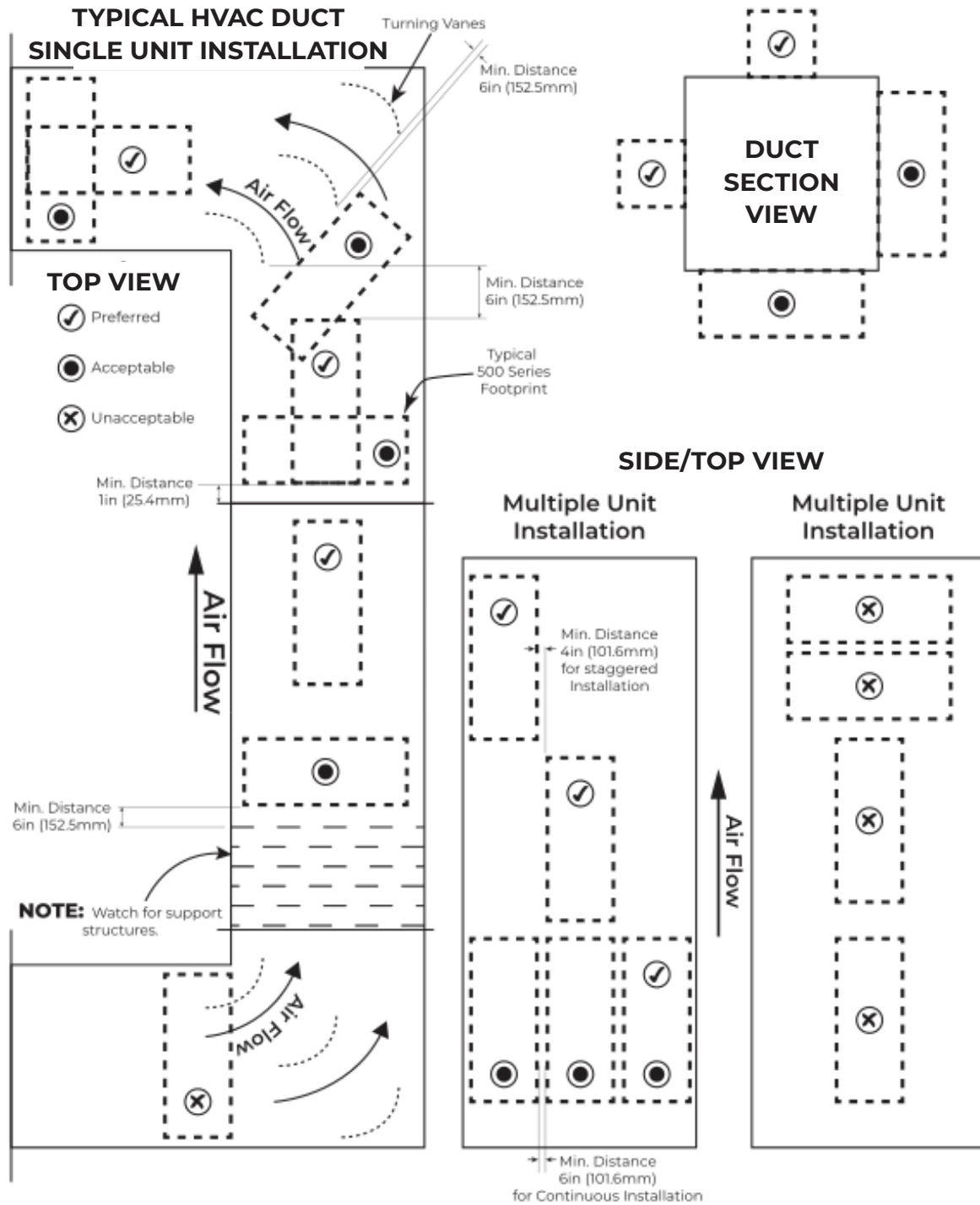


## Mechanical Installation

1. Carefully remove the equipment from its shipping container. Inspect the box, components, and tubes for damage. Verify that the unit's voltage rating is the same as the available voltage, either 110/120 VAC, 50/60 Hz or 220/240 VAC, 50/60 Hz.
2. If they have been packaged separately, install the ionization tubes using the supplied friction nuts and clamp screws. Gently tighten the tube grounding clamps to ensure solid contact with the tube's outer mesh. **Do not over-tighten either connection.** In most cases, units come with tubes pre-installed.
3. **Orientation:** Install the unit with tubes parallel to the airflow and the nosecones normal to the airflow, whenever possible; otherwise, perpendicular orientation is acceptable. If multiple units are installed in the same duct, stagger the units, if possible, in the airflow so they are not in the same airflow path.
4. **For in-duct installation:** Verify the flange gasket are in place and in good shape to ensure the unit seals properly. Make a cut-out in the duct sized per the illustration and table on the following page. Use the unit as a template for the mounting screw locations. Affix the unit securely in the duct using self-tapping screws. **Do not over-tighten, this may strip the screw-hole.** The unit is self-sealing to the duct, so no further sealing is needed.
5. **For in-plenum/AHU installation:** Mounting varies with rack-style. Follow mounting instructions provided with rack. Typically, racks require 101.6mm (4") of clearance from walls.
6. Units should be installed to allow easy access for maintenance. Install units so that the power switch and 5-step power adjustment knob are accessible. When oriented vertically, control panel should be upwards.

- A. Single Wall, No Insulation
- B. Single Wall, Internal Insulation
- C. Single Wall, External Insulation
- D. Double Wall, Internal Insulation

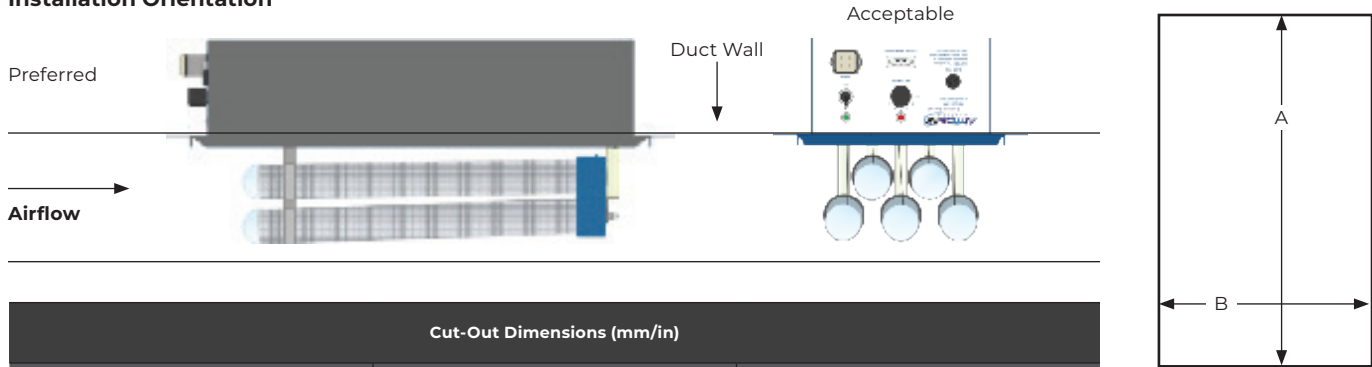
## Mechanical Installation — Mounting



Continue on Next page

## Mechanical Installation — Mounting Continued

### Installation Orientation



Cut-Out Dimensions (mm/in)		
Model	A	B
500EC	495.3mm (19.5")	228.6mm (9")
500FC	660.4mm (26")	228.6mm (9")
508FC	660.4mm (26")	228.6mm (9")

**As of August 2021, all 500 Series units are equipped with a power conditioning attenuator and thermistor. A fuse rating of 315mA Glass 5mm x 20mm Fast Blow (FSF) for 110/120V and fuse rating of 200mA Glass 5mm x 20mm Fast Blow (FSF) for 220/240V must be used. No other substitutions will be advised on these units.**

**To source the proper fuse, it is recommended to contact an authorized AtmosAir Representative or to only purchase the specific part by the brand Bussmann.**

**315mA Part #: GMA-315MA-R**

**200mA Part#: GMA-200MA**

## Electrical Installation

AtmosAir 500 series systems require an average of 50 watts per unit. A replaceable fuse protects the unit. Note:

**It is required to order the proper fuse per 110/120 V or 220/240 V unit.**

**Follow proper electrical procedures, guidelines, and codes for providing power supplies to the systems,** including requirements for conduit, sufficient ampacity, phase balancing, etc. Electrical installation should be performed by a qualified electrician.

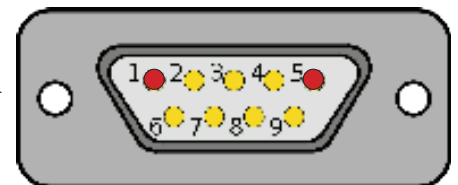
1. Field-install a junction box within 2.44 meters (8') of the unit(s). Each 500 series unit is typically shipped with a 3.05 meters (10') power lead in a flexible metallic conduit with a

quick-connect power plug on one end and bare wires on the other.

2. The unit is equipped with a normally open relay that closes on ionization start-up and opens on loss of power. This relay can initiate a local alarm or be tied into a building automation system. Connection is via a DB-9 connector. Pins 1 and 5, starting from the top left, are the active pins. There is no electrical power across the terminals.

- Active Pins
- Inactive Pins

DB-9 Connector

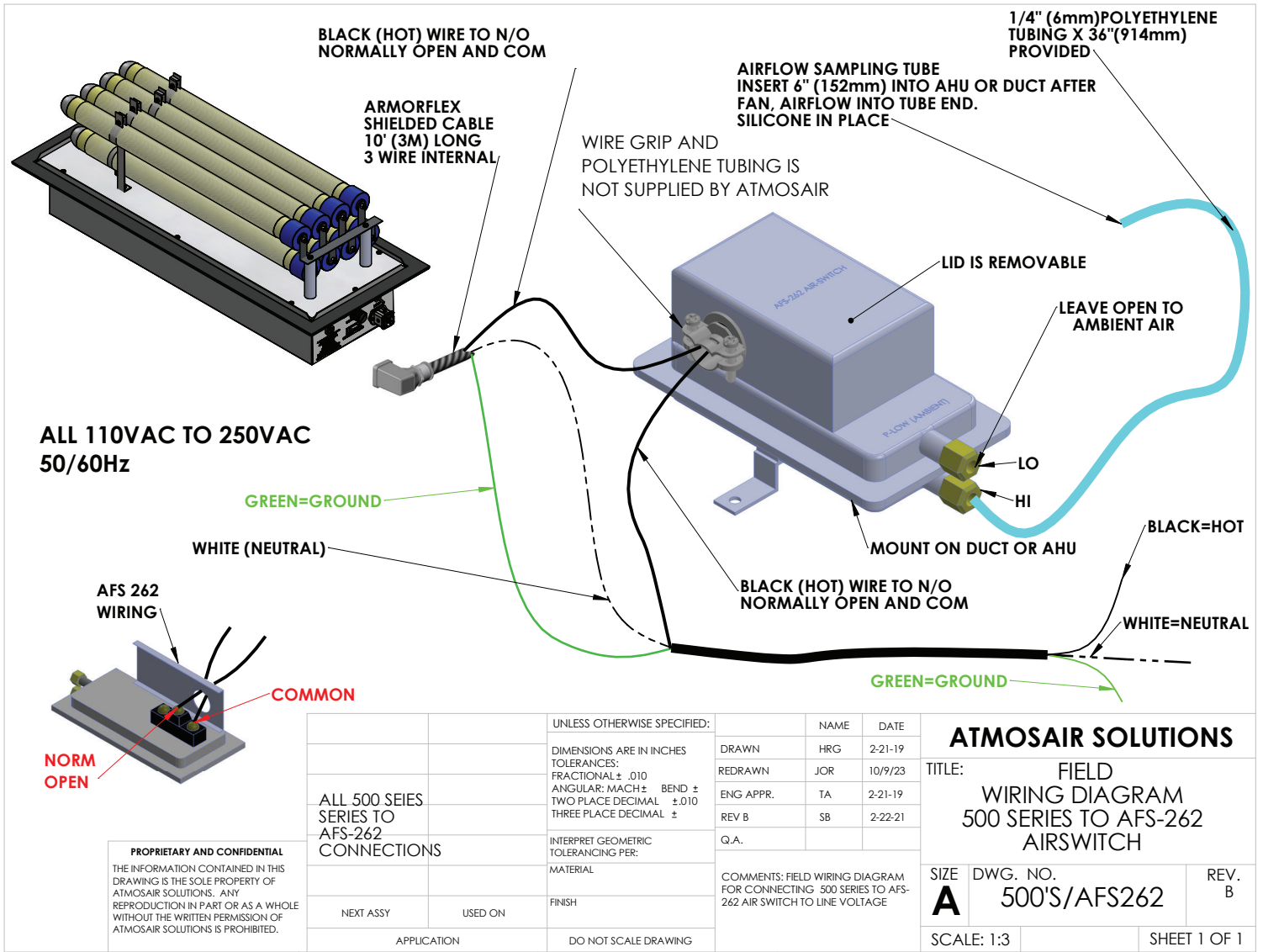


### !!!WARNING!!!

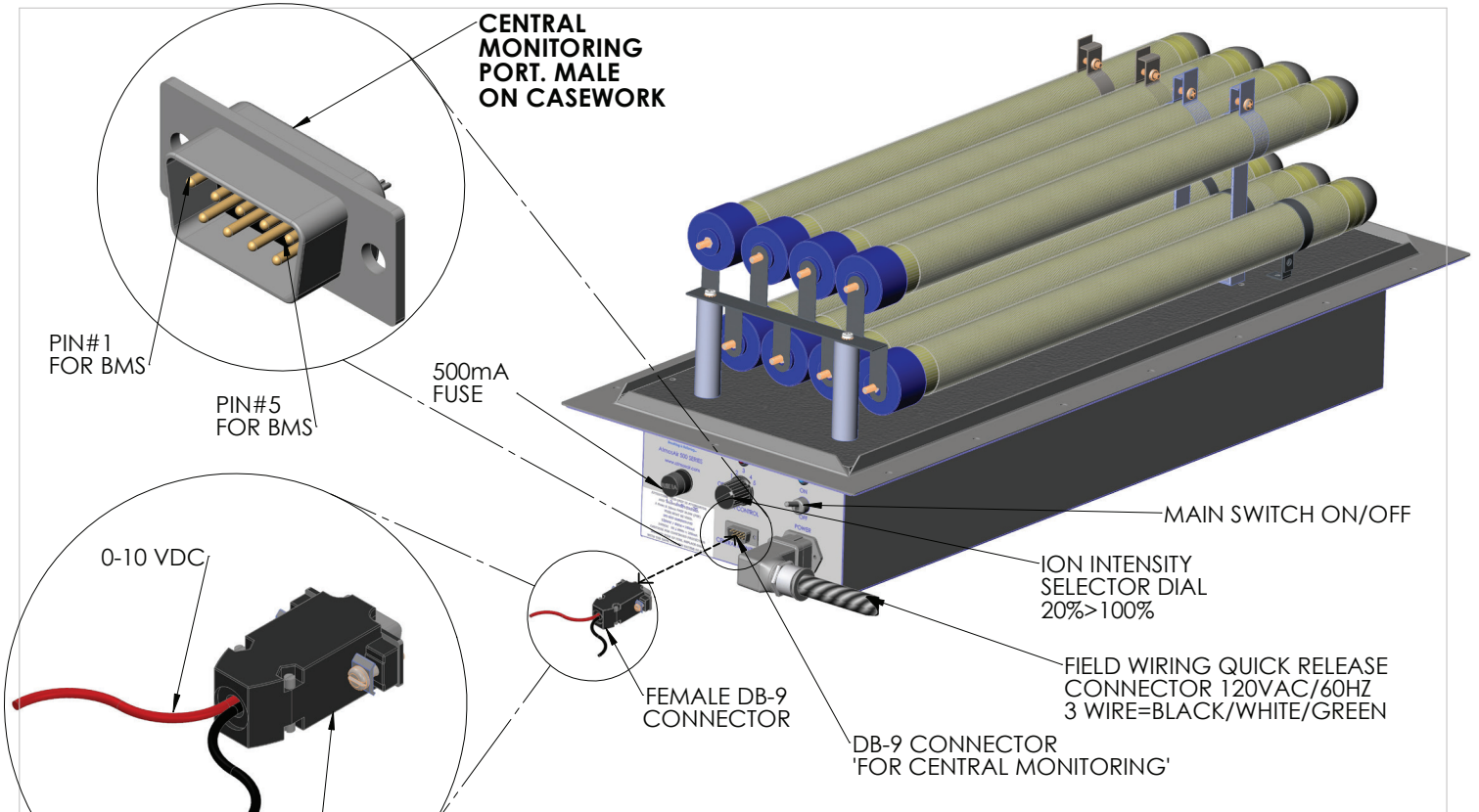
The secondary voltage to the ionization tubes can be as high as 3000 volts AC. Do **NOT** connect to power before the installation is complete and all personnel are aware of imminent operation. Always disconnect power to the unit before handling any of the components.



### 03 FIELD WIRING DIAGRAMS



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		UNLESS OTHERWISE SPECIFIED:	NAME	DATE
		DIMENSIONS ARE IN INCHES	DRAWN	HRG 11/10/17
		TOLERANCES:	CHECKED	
		FRACTIONAL ± .010	ENG APPR.	TA 11/10/17
		ANGULAR: MACH ± BEND ±	Rev C	SB 2/10/22
		TWO PLACE DECIMAL ±.010	Q.A.	
		THREE PLACE DECIMAL ±	COMMENTS: 2 PIN CONNECTOR FOR BMS MONITORING STATUS ONLY	
	<b>500EC</b>	INTERPRET GEOMETRIC TOLERANCING PER:		
	<b>500FC</b>	MATERIAL		
	<b>508FC</b>	FINISH		
NEXT ASSY	USED ON	APPLICATION	DO NOT SCALE DRAWING	

<b>ATMOSAIR SOLUTIONS</b>		
TITLE: <b>508 FC BMS CONNECTION</b>		
SIZE <b>A</b>	DWG. NO. <b>508BMS-001</b>	REV. <b>B</b>
SCALE: 1:20	WEIGHT:	SHEET 1 OF 1

SOLIDWORKS Educational Product. For Instructional Use Only.

## 04 OPERATION

Once the system is properly installed and all personnel are clear of the high voltage tubes, the system can be turned on:

1. Ensure the ionization power knob is turned all the way counterclockwise in the 'off' position.
2. Flip the power switch up to the 'on' position. The green embedded LED light above the power switch should light up to indicate that the power is on and running to the system.
3. Set the ionization power knob to the appropriate setting (1-5, with 1 being low and 5 being high). The red embedded LED above the power knob should light up to indicate that ionization has been activated and high voltage is being sent to the tubes' electrodes. An initial ion level setting of #3 is recommended.

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### !!!WARNING!!!

A non-functioning LED light may improperly indicate that the system is not functioning. Be sure to disconnect from the mains power before performing maintenance or troubleshooting the system.

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## 05 MAINTENANCE REQUIREMENTS

- The maintenance requirements on an AtmosAir system are mainly site-dependent; a heavily contaminated environment may require more frequent inspection & maintenance. In general, a semi-annual inspection is recommended along with a bi-annual tube replacement.
- The local AtmosAir dealer can provide you with an annual service contract.

### Inspection:

- Visually check the performance of the system by checking the red and green lights on the individual units. If both lights are on, and you can hear the 'buzz' of the tubes, then unit is functioning properly. If not, proceed to the troubleshooting section for repair. Maintain a physical distance between all personnel and the tubes while system is operating or turned on.

- **Optional:** Check performance using a high voltage probe (minimum of 5000 V, Contact AtmosAir for additional minimum probe specifications) paired with a multimeter. Follow proper procedures for dealing with high voltages. If you are uncertain, do NOT perform any maintenance with the power on and, instead, proceed to the next step.
- Disconnect the system from the mains power before performing any maintenance steps.
- Inspect the unit box, plastic tube caps, and tube-mounting plate. Remove any stains, dirt or debris using ordinary household cleaner from mounting plate, and thoroughly wipe clean any tracks or grooves that may have developed in the plate or caps.
- Inspect connections: tightness of all nuts and screws; remove deposits on the connections using sandpaper or wire brush - it may be necessary to remove the tubes for this step.
- It may be beneficial to clean the tubes to improve performance. The tubes can be cleaned using an air compressor for a quick clean, or more thoroughly with cleaning solutions. Do not immerse the tubes in water. Ensure that the tubes and mesh and all components are completely dry before re-installing.
- When replacing tubes, be sure not to over-tighten the loop connector. Do not use a power driver, please **only use a hand Phillips head screwdriver** to tighten the loop connector and be sure **not** to over tighten. For the retaining nut on the back end of tube, only use a hand held nut driver, and tighten this nut snugly.

### Tube Replacements:

Bi-annual tube inspections are recommended, in addition to tube replacements once every two years as the production efficiency slowly declines over time due to the stress caused by plasma and (lack of) cleanliness of the electrodes. Old or excessively dirty tubes can also put undue stress on the transformer causing premature failure.

## 06 TROUBLESHOOTING

In the event that the system is not functioning, follow these steps **IN ORDER**:

1. Check that the main power supply is sending the correct power to the unit.
  2. Power off unit using the Off / On switch. Check the fuse. If it is blown, **replace it with only the exact sized and branded fast blow glass 5 mm × 20 mm fuse rated at for 110/120 V or 220/240 V** and power on. If it fails to power on, continue to the next step.
  3. If the system is controlled by an air pressure switch, and/or a door switch, check that these are not preventing power from being sent to the system.
  4. If power is reaching the unit and it was necessary to replace the fuse, and on powering up, the new fuse blows, the next step is to determine whether there is a fault in the system or a tube. First, to check that the system's power is functioning, set the ionization power knob and the power switch both to the 'off' position. Make sure all personnel are clear of the high voltage tubes, then re-connect the power supply. Flip the power switch to 'on' and observe the green light. If the light does not turn on, there is still a problem with delivering power to the system. If all external sources of failure are eliminated, the system should be serviced by a qualified AtmosAir technician. Please see contact information at the bottom of this page.
- The next step is to determine the cause of the failure, or blown fuse. Typically, failures are caused by short circuiting between the inner and outer electrodes, or between one electrode and ground. This often occurs because of damaged tubes or dirty and/or wet conditions that have allowed carbon tracking to temporarily connect two electrodes and/or a grounding point electrically.
5. Inspect the mounting plate for tracking evidence.
  6. Inspect the tubes for cracks, pitting, or other degeneration of the tube material that may cause the tube to become breached and fail and short circuiting to occur.
  7. If physical inspection has not revealed the cause of failure, one may carefully observe the tubes as the ionization system is turned on to determine whether short circuiting is occurring at a particular tube. The fuse will usually blow, again, but for a short time, one may observe the cause of the power surge in the form of a visual or audio cue. Usually, a failing tube can be determined in a darkened room by looking for a flash or arc from the failing tube. In some cases, the correctly operating tubes may be in the way of the failing tube's visual indication. **It is permissible and recommended to remove the top row of tubes temporarily to assist in the visual diagnosis. The device uses a bus-bar technology allowing the servicing technician to remove any number of tubes needed to diagnose and/or temporarily run the device whilst waiting for replacement tubes.**
  8. It may be necessary to remove all the tubes to ensure that the transformer is working properly in the absence of tubes. If the fuse still blows, then there is an internal short circuit, and the system should be serviced by a qualified AtmosAir technician.
  9. It is recommended to also check the voltage levels of the system when a fuse has blown and been replaced, in order to ensure that the transformer has not been irreparably damaged. Output voltage to the tubes are as follows, Setting 1 = 2,200 VAC, Setting 2 = 2,400 VAC, Setting 3= 2,600 VAC, Setting 4= 2,800 VAC and Setting 5= 3,000 VAC. If the voltages are lower than expected, also check that all the connections are secure and rust-free; also check that the input voltage is approximately 110/120 VAC or 220/240 VAC.
  10. If the fuse blows, then the system should be serviced by a qualified AtmosAir Technician. You can contact repair services at [RMA@atmosair.com](mailto:RMA@atmosair.com) or by contacting us at 1-888-MY-AIR11.
  11. Otherwise, replace the damaged tube(s), clean and smooth any mounting plate or end cap carbon tracking, and return the system to service.

## 07 EXPLANATION OF TECHNOLOGY

AtmosAir Solutions'™ mission is to bring and restore every indoor environment the same clean and pure quality air that is typically found at higher mountain elevations.

AtmosAir's unique and proven air purification process significantly reduces mold, controls the spread of bacteria and airborne viruses, and reduces airborne particles that evade normal filtration solutions.

AtmosAir equipment uses non-thermal plasma technologies to generate bi-polar ionization that attacks and breaks down odors and contaminants.

## 08 PRODUCT WARRANTY



### CLEAN AIR GROUP, INC. – PRODUCT WARRANTY

Clean Air Group, Inc. d/b/a AtmosAir Solutions (“Clean Air Group”) warrants to the original purchaser of this product (“Customer”), that should it prove to be defective by reason of improper materials or workmanship, for **twenty-four (24) months** from the date of installation, or **twenty-seven (27) months** from the date of Clean Air Group’s original delivery of the product, whichever occurs first, Clean Air Group shall repair or replace the product without charge to the Customer. Proof of malfunction and return of the non-working product must be presented by the Customer if submitting a warranty claim. This warranty is invalid if the factory applied serial number has been altered or removed from the product. This warranty does not cover damage due to acts of God, misuse, abuse, negligence, or modification of or to any part of the product. This warranty does not cover damage due to improper installation, operation or maintenance, connection to improper voltage or electrical supply, or repair by anyone other than an authorized Clean Air Group service provider. To obtain warranty service the Customer must: (1) provide proof of purchase in the form of a Bill of Sale or receipted invoice, with evidence that the product is within the warranty period; (2) request a Return Merchandise Authorization (“RMA”) from Clean Air Group prior to shipping; and (3) ship the product with the RMA to Clean Air Group, freight prepaid, in either its original packaging or packaging affording an equal degree of protection. The product should be delivered to *AtmosAir, 2115 East Cedar Street, Suite 6, Tempe, AZ 85281*. All transportation charges and shipping expenses are the Customer’s responsibility. Clean Air Group will return the product by the same method it receives the product. A product returned for repair after the warranty period, or that shows damage outside of the warranty coverage described herein, shall be repaired for a reasonable charge as determined by Clean Air Group. The Customer will be advised of the cost of repair or replacement before Clean Air Group proceeds.

THE OBLIGATIONS OF CLEAN AIR GROUP HEREIN ARE EXPRESSLY GRANTED IN LIEU OF ALL WARRANTIES, WHETHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. ALL IMPLIED WARRANTIES INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE ARE LIMITED TO THE TERM OF THE EXPRESS WARRANTY GRANTED HEREIN. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE FOREGOING LIMITATION OR EXCLUSION MAY NOT APPLY TO THE CUSTOMER.

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#### Disclaimer:

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Manufacturer,

A handwritten signature in black ink, appearing to read "Anthony M. Abate".

Anthony M. Abate