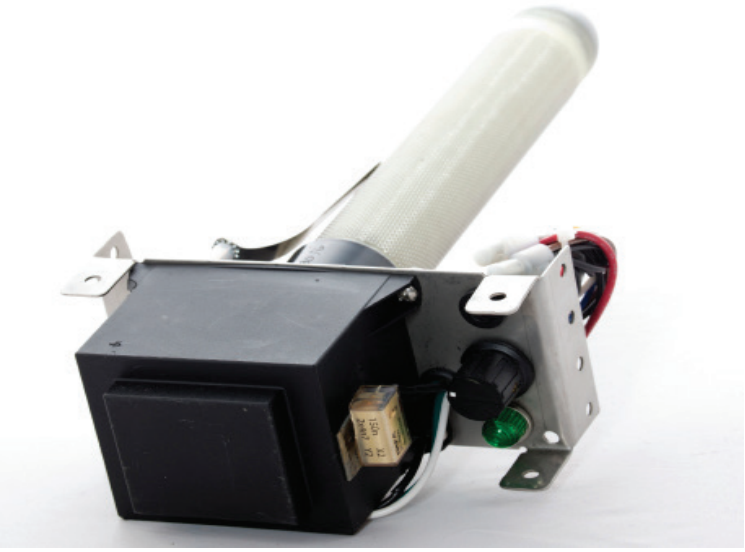
Installation, Operation and Maintenance Guide

FC-100/102 Series



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-23-10-006

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To the Holder of this Document

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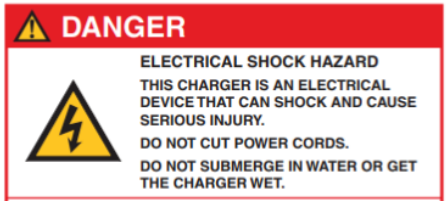
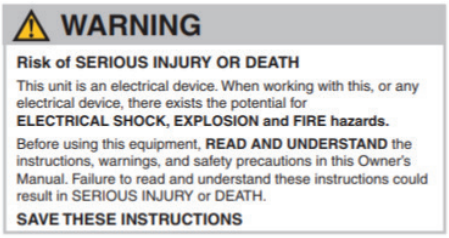


WARNING

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.

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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 FC-100 series, models FC-100 and FC-102 ionization system(s) are intended to be mounted in the supply discharge in smaller air handling systems such as fan coil, heat pump and other unitary type systems. The system(s) can be integrated on an OEM basis or a retrofit package is also available. Power to the ionization unit can be interlocked with fan operation or controlled via an air pressure switch if required. The unit will be calibrated at the factory per AtmosAir recommendations to attain ion level readings of between 500 and 1,500 –ions/cm3.

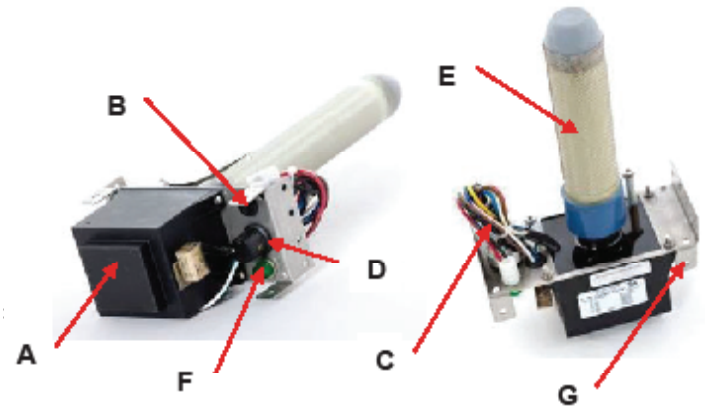
AtmosAir equipment is effective in reducing odors and harmful pollutants through the introduction of positive and negative ions into the air stream to be treated. The number and size of the ionization tubes used is dependent upon the airflow, size of the space, and severity of the pollution and odors. The AtmosAir FC-100 series equipment is designed for minimal maintenance efforts. The FC-100 series has two components that require inspection and maintenance:

1. AtmosAir FC-100 series base unit component
2. Ionization tubes

Because there are no moving parts, little maintenance is required, and the system(s) have very low failure rates.

Product Diagram

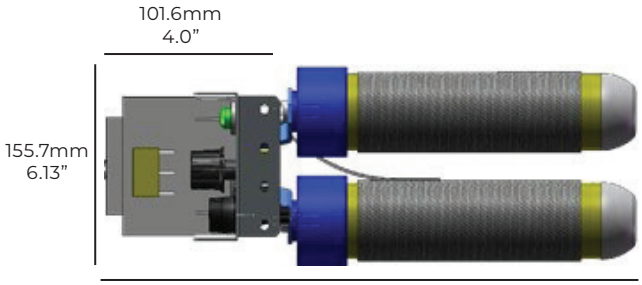
AtmosAir FC-100:



A. Power Transformer
B. Fuse: FC-100/120 VAC= 1.25 A 5 mm x 20 mm glass; FC-100 240 VAC= 1.0 A; Slow-Blow
C. Power Wiring Access
D. 5-Step Ion Level Adjustment Knob
E. Ionization Tube
F. System Power Light
G. Multi-Position Mounting Bracket

***Optional/Available by Special Order 4 Point Horizontal Mount, 'S' Clip Tube Bus Bar.**

AtmosAir FC-102:



C Tube 289.06mm (11.38")
D Tube 355.60mm (14.0")
E Tube 466.85mm (18.38")
F Tube 670.05mm (26.38")

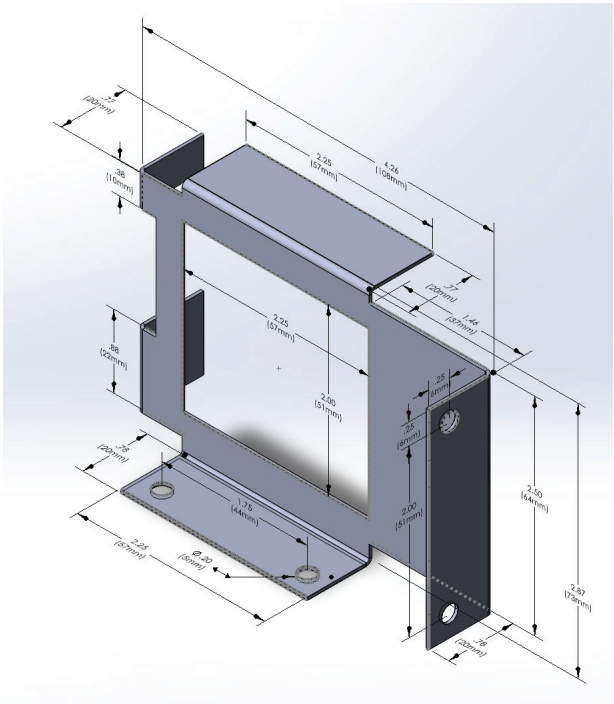
02 INSTALLATION

AtmosAir FC-100 series equipment can be mounted in a duct or air handler wall, using the faceplate mounting flange, or inside a plenum using a semi-custom mounting bracket. A four point mounting bracket of 304 SS is available. The units operate best when located after all filters, coils, and fans. Various mounting arrangements are possible; however, the available options may be limited due to size and configuration restrictions.

When mounted on the side of a duct or air handler wall, the enclosure 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 equipment.

The AtmosAir FC-100 series operates on 120 or 240 VAC, 50/60 Hz. The tube and electrode contacts should not come into contact with any conductive surface. A minimum 101.60 mm (4") clearance around the tube is recommended. All exposed metal parts are grounded.

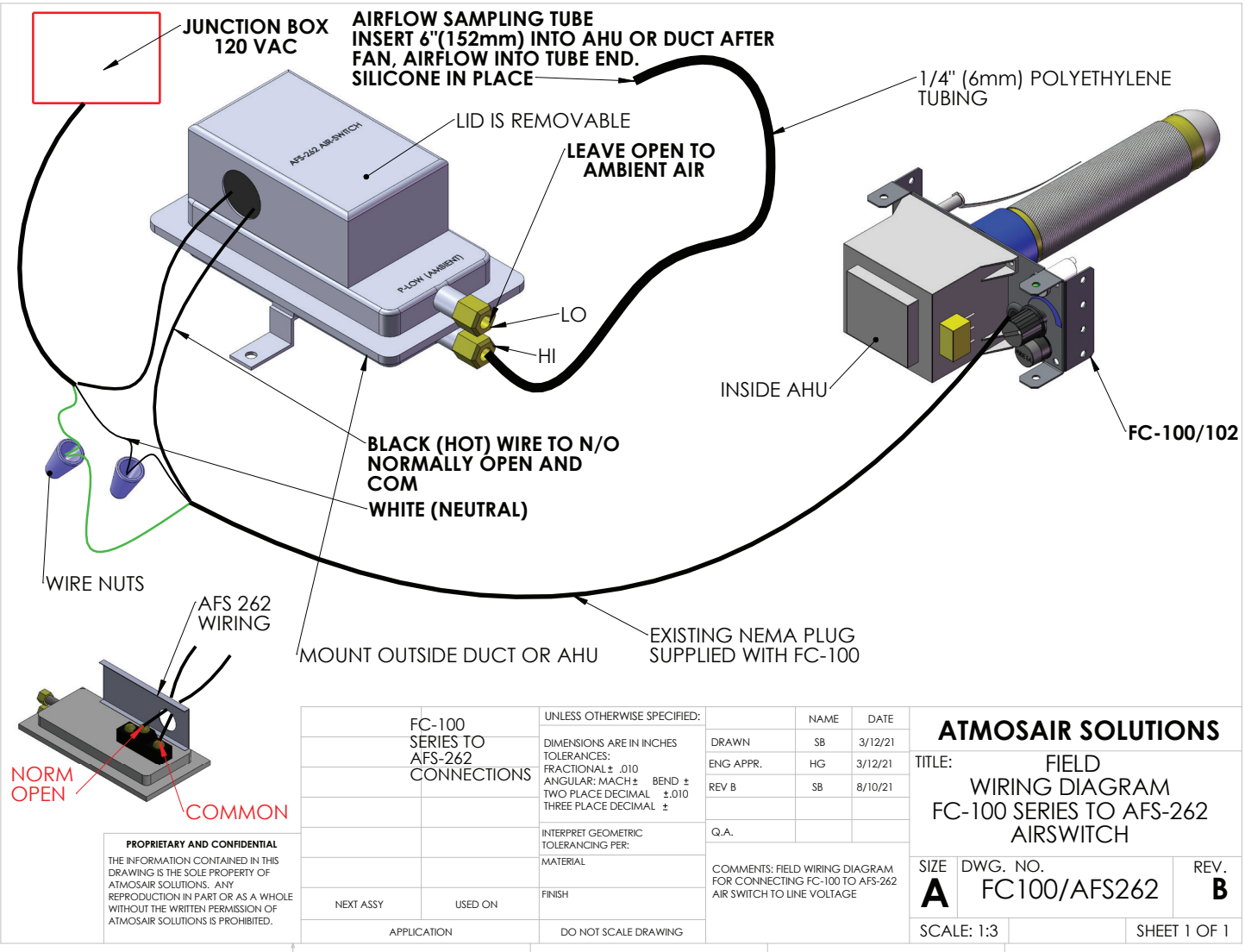
Optional/Available: Four Point Mounting Bracket



Mechanical Installation

1. Carefully remove the equipment from its shipping container. Inspect the main components, gasket, and tube(s) for damage. Verify that the unit's voltage rating is the same as the available voltage, 120 or 240 VAC.
2. **Install the ionization tube:** Gently pull the conductor strap back to allow the tube to turn freely; screw the end screw of the tube into the tube holder hand-tight utilizing the blue cap, **DO NOT TWIST THE TUBE OR MOVE THE EMITTER SCREEN. DO NOT OVER-TIGHTEN THE TUBE!** Once the tube is secure, return the conductor strap to its normal position and **ENSURE SOLID, FLAT CONTACT IS MADE WITH THE TUBE'S OUTER MESH.**
3. **Location and Orientation:** Install the unit downstream of filters, coils, and fans with the ionization tubes vertical whenever possible If multiple units are installed in the same duct, stagger the units in the airflow so they are not in the same airflow path.
4. **For in-plenum/AHU installation:** Mounting varies with bracket-usage. Typically provide 50.8mm (2") inches of clearance from walls or other conductive material. Units should be installed to allow easy access for maintenance. Install units so that the 5-step power adjustment knob and status light are easily accessible. Position so that fuse can be accessed without removing unit. There is no orientation for the tube and in a typical flat installation the mounting bracket allows the tube to be tipped-up slightly. Allow 50.8mm (2") minimum clearance from all combustible or conductive materials.
5. Attach the FC-100 series system using at least two #10 Tek Headed Self- Tap Screws. Optional 4 Point Mount.

03 FIELD WIRING DIAGRAM



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Electrical Installation

All AtmosAir FC-100 series systems require approximately 5-6 watts. An internal 1-amp and 240 VAC or 1.25-amp and 120 VAC, slow-blow fuse protects the unit.

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

Field-install or junction box within 1.5 m (5') of the unit(s). Each FC-100 series unit is typically shipped with a 1.83 meter (6') power cord field wire connection to junction box.

!!!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.

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

04 OPERATION

Ensure the ionization power knob is turned all the way counterclockwise in the 'off' position. Once the system is properly installed and all personnel are clear of the high voltage tubes, the system can be turned on:

1. Wire to junction box and 120 VAC or 240 VAC power.
2. Turn the system on and set the ionization power knob to the appropriate setting (1-5, with 1 being low and 5 being high). The green embedded LED light left of the power knob should light up to indicate that the system is on, ionization has been activated, and high voltage is being sent to the tubes.

The system is intended to deliver ions into the treated area such that the ion levels should be between 100 and 1500 negative ions/cm3. The desired ion increase is dependent on many factors, including space, use, contaminant level, and distribution effectiveness. An authorized AtmosAir design consultant should recommend the desired ion increase and appropriate system layout.

05 MAINTENANCE REQUIREMENTS

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

Recommended Maintenance Procedures:

- Visually check the performance of the system by checking green light on the individual units. If the light is on, then the unit should be 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.

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- **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, plastic tube caps, and tube-mounting plate. Remove particles and debris 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 a 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 are completely dry before re-installing. Install emitter mesh equidistant on the composite tube area. Do not dislodge or move mesh emitter.

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.

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

06 TROUBLESHOOTING

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

1. Check the fuse. If it is blown, replace it with the appropriately sized slow-blow 1.25 A glass 5 mm × 20 mm fuse rated at 120 V or 1.0 A fuse rated at 240 V and continue to the next step.
2. Check that the main power supply is sending the correct power to the unit.
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, 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. Rotate the Ion level dial to #1 and observe the green light. If the light does not turn on, there is a power delivery problem. 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 arcing 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 enclosure and tube cap for carbon tracking evidence.
6. Inspect the tubes for cracks, pitting, or other degeneration of the dielectric material that causes the dielectric to fail and arcing to occur. Inspect the tube for black dots indicating failed dielectric.

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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 arcing 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. The FC-100/102 must be dismounted and carefully turned upside-down. If the tube is functioning properly, it will buzz audibly.
8. It may be necessary to remove the tube(s) to ensure that the transformer is working properly in the absence of tubes. If the fuse still blows, then 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, to ensure that the transformer has not been irreparably damaged (See step 4 for more information on this process.) If the voltages are lower than expected, check that all the connections are secure and rust-free; also check that the input voltage is approximately 120 VAC. The technician must use a high voltage probe!
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 or by contacting us at 1-888-MY-AIR11.
11. If the fuse continuously blows, or if the voltages are lower than expected, then the system should be serviced by a qualified AtmosAir technician. **Only AtmosAir qualified technician should perform this step.**
12. 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.

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Manufacturer,

Anthony M. Abate
Chief Technology Officer
Clean Air Group, Inc.