Air Purification for Better Living

BIOCLIMATIC

MODEL IG RESIDENTIAL SYSTEM

INSTALLATION, OPERATION

&

MAINTENANCE

MANUAL

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303/FEB09

BIOCLIMATIC

RESIDENTIAL BI-POLAR IONIZATION UNIT

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GETTING STARTED

Included items:

1. **IG Residential Generator on mounting plate with receptacle (1)**
2. **IRE Ionization tubes with electrode (2)**
3. **#8 x 1/2 sheet metal screws (15)**
4. **1/8" thick x 1/4" closed – cell vinyl form tape (17ft. per unit)**
5. **6' pressure tubing**
6. **5/16 ID Grommet**

1.

2.

3.

Tools recommended:

- **Drill**
- **½ diameter drill bit (for jig saw blade starter hole and pressure tubing hole, if required)**
- **5/16 diameter drill bit**
- **#8 hex drive**
- **Jig saw or tin snips**
- **Tape measure**
- **Marker**

1 INTRODUCTION

1.1 Disclaimer

These instructions are submitted with the implicit understanding that:

1.1.1 This manual is to guide the user of Bioclimatic equipment in the proper installation, operation and maintenance procedures to insure maximum equipment life with efficient operation.

1.1.2 The customer has assigned competent maintenance and operating personnel to the system described herein and will assume operational and maintenance responsibility upon start-up of the system.

1.1.3 The customer will read and thoroughly examine the foregoing instructions and will notify the seller of any points not fully understood, points of conflict or error.

1.1.4 The customer, in lieu of any notification to the contrary, has read and fully understands the operation of the system and is aware of the hazards of corrosion, abrasion, and fire or explosion and shall take the necessary steps in the operation of equipment to control such hazards to the maximum extent possible.

1.1.5 Start-up assistance or field engineering service provided by Bioclimatic shall in no way relieve the customer of responsibility for the proper operation of the System.

IMPORTANT: Any modifications to the unit by unauthorized personnel will void ETL listing and factory warranty. The unit must be installed in accordance with the manufacturer's instructions to preserve warranty and ETL label.

1.2 Receiving

Products leaving the Bioclimatic factory are inspected and in satisfactory operating condition. All equipment should be thoroughly inspected when received. Although all units are properly packaged, rough handling in transit can cause breakage. Any shortage or damage should be reported at once to the transportation company. Note the damage on the bill of lading before signing for the shipment. **Equipment MAY NOT be returned to Bioclimatic without written authorization. Returned equipment sent without authorization will be refused and returned to sender.**

All products are shipped F.O.B. Bioclimatic warehouse. Responsibility for all equipment passes to the Buyer at the time equipment is loaded onto the carrier's truck.

1.3 Storage

If the unit is not installed upon delivery, it should be stored in a cool, dry, weather protected location. Do not stack any other equipment on top of the unit.

1.4 Warranty

THE SELLER WARRANTS THE EQUIPMENT AGAINST DEFECTIVE WORKMANSHIP AND MATERIAL FOR FIFTEEN (15) MONTHS FROM DATE OF FACTORY SHIPMENT OR ONE (1) YEAR FROM COMMISSIONING, WHICHEVER OCCURS FIRST. IN THE FULFILLMENT OF ITS WARRANTY, THE SOLE OBLIGATION OF SELLER SHALL BE TO REPAIR OR REPLACE, AT ITS OPTION, F.O.B. ITS FACTORY, ANY PART OR PARTS WHICH ARE RETURNED F.O.B. ITS FACTORY, SHIPPING CHARGES PREPAID, AND WHICH AFTER INSPECTION BY SELLER ARE FOUND TO BE DEFECTIVE. BUYER SHALL NOTIFY SELLER OF DEFECT IN WRITING, PROMPTLY UPON DISCOVERY AND WITHIN THE WARRANTY PERIOD. THIS WARRANTY DOES NOT COVER DEFECTS CAUSED BY CORROSION OR NORMAL DETERIORATION; IT DOES NOT EXTEND TO CONSEQUENTIAL DAMAGE, LOSS OR DELAY ASSOCIATED WITH A WARRANTY DEFECT; AND IT DOES NOT COVER ANY COST OF LABOR, TRAVEL, OR OTHER EXPENSE ASSOCIATED WITH THE REPAIR OR REPLACEMENT OF DEFECTIVE PARTS. SELLER ASSUMES NO LIABILITY FOR PRODUCT LOSS OR OTHER CLAIMS WHATSOEVER ARISING OUT OF THE USE OR APPLICATION OF THE EQUIPMENT IN ANY OPERATIONS, WHETHER THE MACHINE IS USED ALONE OR IN CONJOINT USE WITH OTHER EQUIPMENT OR PROCESSES. NOTWITHSTANDING THE FOREGOING, SELLER'S WARRANTY OBLIGATIONS WITH RESPECT TO ANY ITEMS NOT MANUFACTURED BY SELLER SHALL NOT EXCEED THE OBLIGATIONS UNDERTAKEN BY THE MANUFACTURER THEREOF UNDER EXPRESS WARRANTY TO THE SELLER. THIS EXPRESS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES OF FITNESS OF THE MACHINE FOR ANY PARTICULAR PURPOSE.

THERE ARE NO OTHER REPRESENTATIONS, WARRANTY OF CONDITION IN ANY RESPECTS EITHER EXPRESSED OR IMPLIED, STATUTORY OR OTHERWISE IN CONTRACT OR TORT, OTHER THAN WHAT IS STATED ABOVE.

THE SELLER SHALL NOT BE HELD LIABLE IN ANY WAY FOR CONSEQUENTIAL DAMAGES, HOWEVER CAUSED.

THIS WARRANTY WILL NOT APPLY IF THE SELLER'S EQUIPMENT HAS BEEN DAMAGED DUE TO IMPROPER INSTALLATION, ALTERATION, ABUSE OR MISUSE, ACCIDENT, FIRE, FLOOD OR ACT OF GOD. FURTHER, THIS WARRANTY WILL NOT APPLY IF REPAIRS, REPLACEMENTS, OR ALTERATIONS ARE MADE BY OTHERS WITHOUT THE SELLER'S PRIOR WRITTEN AUTHORIZATION.

IN THE EVENT THE STATE IN WHICH THE EQUIPMENT IS INSTALLED DOES NOT PERMIT THE LIMITATION OR EXCLUSION OF IMPLIED WARRANTIES OR CONDITIONS UNDER GIVEN CIRCUMSTANCES, THE PROVISIONS OF THIS WRITTEN WARRANTY ARE IN ADDITION TO AND NOT A MODIFICATION OF THE STATUTORY WARRANTIES AND OTHER RIGHTS AND REMEDIES PROVIDED BY SUCH LAWS.

NOTE:

"ANY MODIFICATION TO ORIGINAL EQUIPMENT BY ANY COMPANY OR PERSON OTHER THAN THE MANUFACTURER WILL SERVE TO CANCEL AND VOID ALL OF THE SELLER'S LIABILITY UNDER THE MANUFACTURER'S WARRANTY. ENCLOSURES CONTAINING ELECTRONIC COMPONENTS ARE NORMALLY SEALED BY THE MANUFACTURER TO PREVENT UNAUTHORIZED TAMPERING OR ADJUSTMENTS. ONLY AUTHORIZED SERVICE PROVIDERS MAY BREAK SEALS TO COMPLETE CALIBRATION OR TO TROUBLE SHOOT THE UNIT. UNAUTHORIZED TAMPERING OR BREAKING SEALS WILL RELEASE THE SELLER FROM ANY FUTURE LIABILITY UNDER THE WARRANTY".

2 INSTALLATION AND OPERATING INSTRUCTIONS

Read instructions in entirety before proceeding.

- ***National and Local Electrical Codes must be followed when installing this product.***
- ***Installation is recommended to be performed by a licensed professional.***
- ***Unit is factory calibrated. Do not open generator box.***

2.1 System Description & Installation

2.1.1 The Bi-polar ionization unit consists of a power generator and ionization tubes.

a) The ion generator takes 120 volt power found in U.S homes. The power generator produces line synchronized bi-polar ionization externally; the power generator includes ionization tube sockets, ground springs, power cord, indicator lamp, pressure switch with flex pipe, PCB with components, and on/off circuit breaker.

b) The ionization tube consists of two electrodes, a glass tube, and a plastic base with a male threaded connector. The external electrode is crimped around the glass tube by the manufacturer, and under no circumstances should it be removed from the tube.

c) The glass tubing material is fragile and should be handled with care. Cracked or damaged glass will cause a system malfunction and require tube replacement.

2.1.2 For operating safety and efficiency, the Ionization unit must be installed and operated in accordance with the following parameters:

a) The minimum air velocity across the ionization tubes is 100 feet per minute (fpm).

b) The minimum quantity of air circulated for each tube is:

IRE = 115 cubic feet per minute (cfm).

c) Unless otherwise specified, the generator is designed to accept a nominal input voltage of 120 volts.

d) It is recommended that the ionization generator unit be installed on the air return side after the filter. The ventilation system should include at minimum a 30% rated ASHRAE standard filter.

2.1.3 To obtain good operating results, locate the Ionization unit in accordance with the following guidelines.

a) The optimum air velocity for efficient operation is 400 to 1000 fpm. This condition is normally found on the return side of the blower assembly or on supply side in the air handling unit. For air handling units of 2,000 cfm and smaller, installation on the air return is the best location.

b) If it is desirable to install the Ionization unit in the supply plenum, the ionization tubes must not be exposed to ambient temperatures exceeding 130° F. In most gas fired or oil fired heating units, the ambient temperature conditions exceed the design criteria; therefore, installation is only possible on the air return. **NOTE**: The Ionization unit's integral air pressure switch is set for return air mounting (negative pressure – negative pressure means that air is pulled into the duct) from the factory. If the unit is mounted on the supply air duct (positive pressure – positive pressure means the air is blowing out of the duct into your face), perform the following steps.
    1. Disconnect all power
    2. Remove screws from top cover
    3. Find the air pressure switch as shown in **FIG. 5** below.

NOTE: The air pressure tubing must be reversed on the air pressure switch. Simply swap the two hoses (hose 1 and hose 2 as shown in Figure 5) attached to the air pressure switch and confirm they are seated firmly on the posts. DO NOT remove the tubing from the brass nipples!

c) Replace top cover and tighten.

d) When installing the Ionization unit on the air supply side, allow a minimum of 12 in. clearance between the heating or cooling source and the ionization tubes.

e) Do not install the Ionization unit in any location where condensation or moisture may collect on the ionization tubes.

2.1.4 Locate the cutout in the center of the duct (Refer to FIG.1). Be certain there is sufficient depth to accommodate the ionization tubes. Allow approximately 3 inches clearance between ends of the tubes and duct. A minimum of four (4) inches clearance should also be provided between the side of the tubes and the duct. The installation orientation should always place the generator on a vertical position.

This installation will provide maximum strength to the tubes and minimize the risk of stress cracks in the glass. Orient the unit such that the maximum number of tubes faces the airflow.

For installation of multiple units, arrange the units uniformly across the airflow subject to the clearances specified above. Provide a minimum of eight (8) inches clearance between tubes on adjacent units spaced across the airflow.

Units may also be installed in series along a duct run. In this case, stagger units to cover the cross-sectional area of the duct. Provide at minimum two (2) feet clearance between units in series.

2.1.5 After selecting the best location for the Ionization unit, trace the outline of the cutout (11-3/8 x 6-3/8 inches) on the duct or use the ionization mounting template (provided at the end of these directions) and adhere it to the duct. Use the 1/2 inch drill bit to drill a starter hole for inserting the jig saw into the duct. Cut metal out on the inside of the dashed lines of the template. Install the neoprene gasketing on the perimeter of the newly cut hole. Make sure the gasketing makes a complete rectangle.

2.1.6 Install ionization tubes into generator by holding the ground spring clear of tube's external stainless steel wire mesh electrode. Turn tube into the socket by its base until the male boss on the tube base contacts the socket base. Tighten no more than 1/4 turn after the tube contacts socket. Do not use hand tools. Carefully release the grounding leaf spring. Use caution not to twist the grounding spring during installation of the tubes.

2.1.7 Insert assembled unit into duct. Secure generator into position by installing sheet metal screws into predrilled holes. (Refer to FIG.2)

2.1.8 Wire the receptacle into a 120 volt, 1 phase, 60 hertz power source. During periods of low heating or cooling loads or during periods when the building (room) is not occupied, it is recommended that the blower operate 20 minutes every hour; and/or the system should be operated for two (2) hours prior and following periods of occupancy to remove undesirable pollutants. This procedure will reduce levels of airborne contamination currently being introduced or that which remains from the previous day or that which accumulates while the building is not occupied. Continuous operation of the fan is highly recommended.

2.1.9 When mounting the generator on the return plenum, drill a 5/16” hole on the supply air plenum. Be cautious not to drill into the

cooling or heating coil! Remove the rubber hose from the kit and attach one end to the brass nipple on the exterior of the generator and place the other end through the 5/16" hole. If mounting the generator on the supply air plenum, drill the 5/16" hole on the return air duct and mount the air pressure tubing in the same manner. If return air duct is not provided on the HVAC system, place the tube downstream of the return air filter, but before the fan.

2.1.10 After checking input electrical power, energize the ventilation blower. Turn on the Ionization unit by pressing the rectangular circuit breaker switch. When the integral air pressure switch senses air flow in the duct, the ionization will be activated (green light will turn on).

CAUTION: Do not energize generator while it is removed from the duct. The generator should only be energized outside the duct by qualified personnel who are familiar with safety and maintenance procedures.

2.1.11 **HI / LO SWITCH**

The HI / LO switch can be used to control the amount of Ionization density. Set the switch on 'HI' (marked) position when more Ionization is desired (i.e. while cooking, cleaning, strong odors present, etc.).

2.1.12 **FOR SPRING AND AUTUMN USE:**

If the Ionization will be used during the spring or autumn season, when most HVAC systems are off, the furnace fan should be turned on to move air through the system.

2.2 Maintenance and Troubleshooting

2.2.1 The ionization tubes should be washed on a periodic basis to restore operating efficiency. Assuming that the recommended type filter has been installed, it will be necessary to wash tubes once every six to 12 months (6 to 12) months.

a) Disconnect the generator from the power source and remove from duct/plenum (Refer to FIG.4). Remove only the 6 screws holding the black flange to the galvanized (silver) plate. Do not remove the sheet metal screws holding the metal plate to the duct. Remove ionization tubes from the generator by the reverse procedure as described in paragraph 6 above.

b) Wash tubes in warm water with detergent. If dirt is imbedded in the external electrode, use a soft nylon brush to remove. Rinse with clean water. Alcohol or other decreasing agents may be

used if insoluble material is on the tube's external surface. DO NOT remove the external electrode.

2.2.2 If the Ionization unit malfunctions:

a) Check power source and circuit breaker switch.

b) Remove ionization tubes and inspect for damage. **Do not use defective tubes.**

c) Install one tube at a time and test operation.

d) Return unit to manufacturer or authorized repair facility for repairs.

CAUTION: Repair of the Bi-polar Ionization unit should not be attempted except by a qualified electronics technician or factory authorized personnel. Hazardous live parts and high voltage components are exposed during this procedure.

Problem	**Solution**
1. Unit does not operate.	**Check wiring. Plug in unit. Turn on furnace fan. Press circuit breaker switch.**
2. Light does not come on.	**Press circuit breaker switch. Turn on furnace fan.**
3. Everything is properly connected and all items checked under solutions for step 1 and 2 above, but unit still doesn't operate.	**Confirm unit is mounted properly and the air pressure switch tubing is connected. Remove air pressure tubing from duct and gently blow into it (blow for negative pressure mounting and suck for positive pressure mounting). If unit energizes, the air pressure switch may need adjustment. A hex head driver will be required to adjust the air pressure switch sensitivity. Turn the screw counterclockwise for more sensitivity. If unit fails to energize, call customer service for a return authorization number. Unit must be returned for factory inspection.**

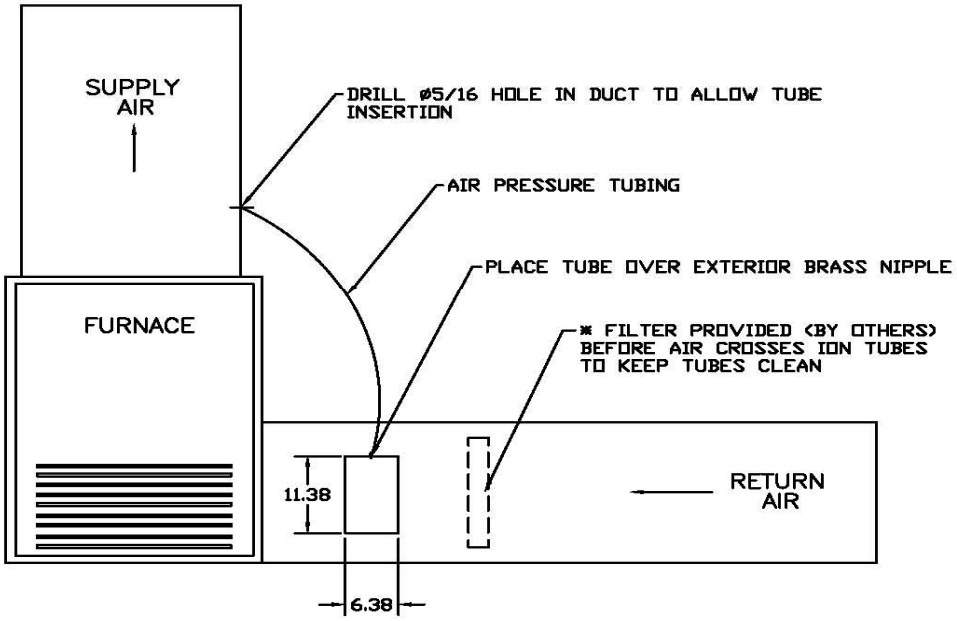

FIG. 1 — Return air duct mounting location (negative pressure— air is pulled into duct)

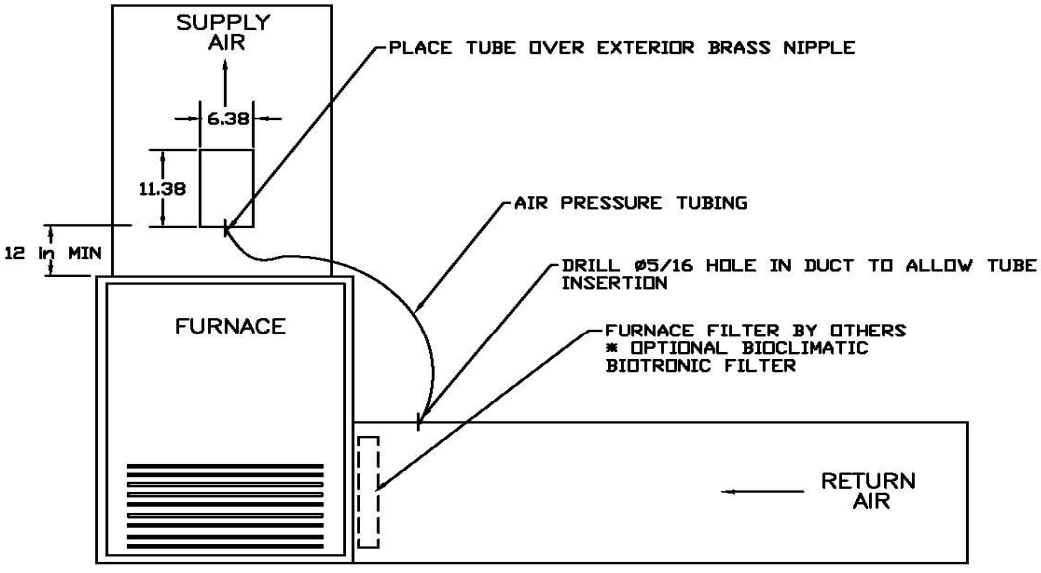

FIG. 1A — Supply air duct mounting location (positive pressure— air is blown out of duct)

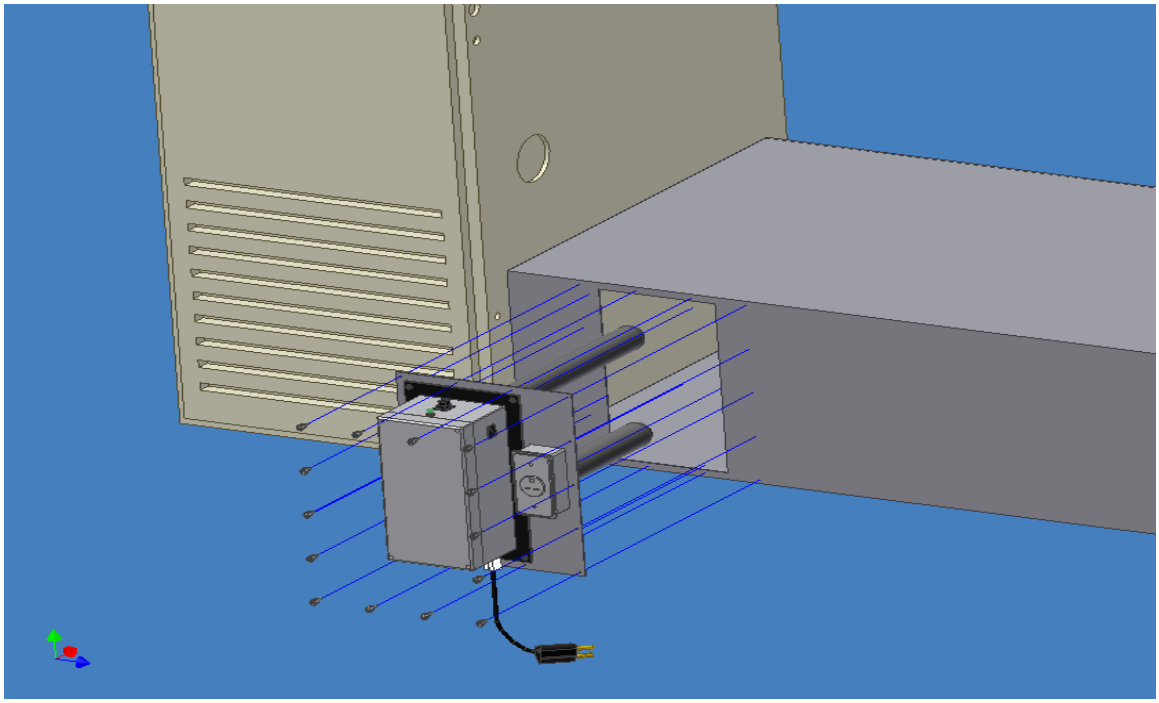

FIG. 2

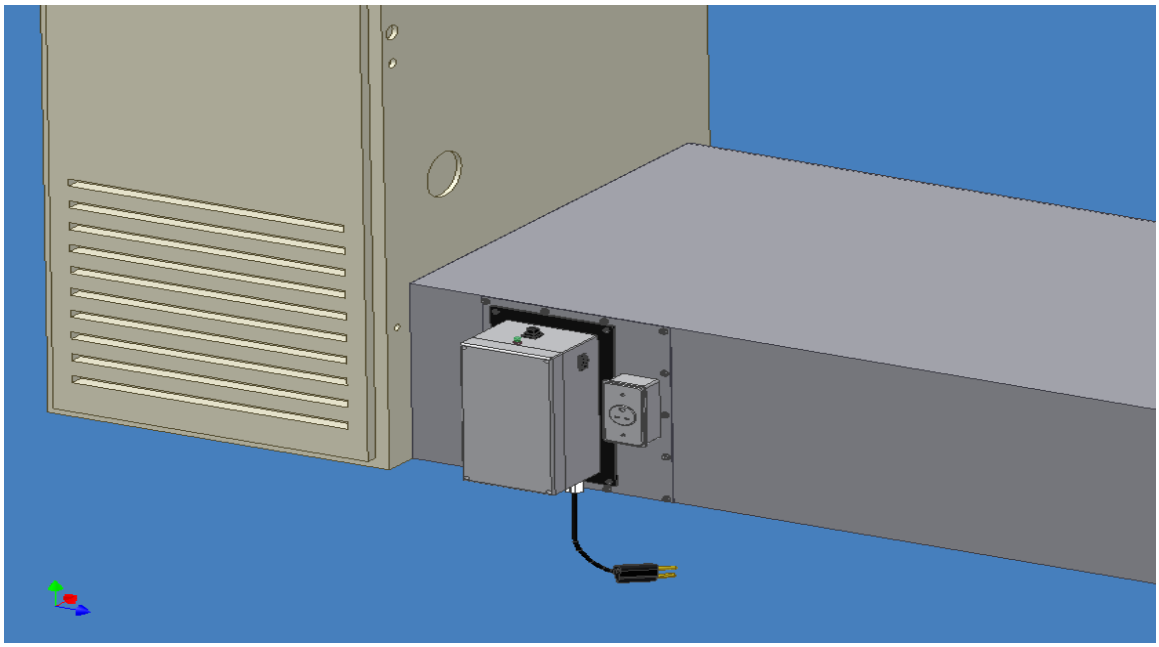

FIG. 3

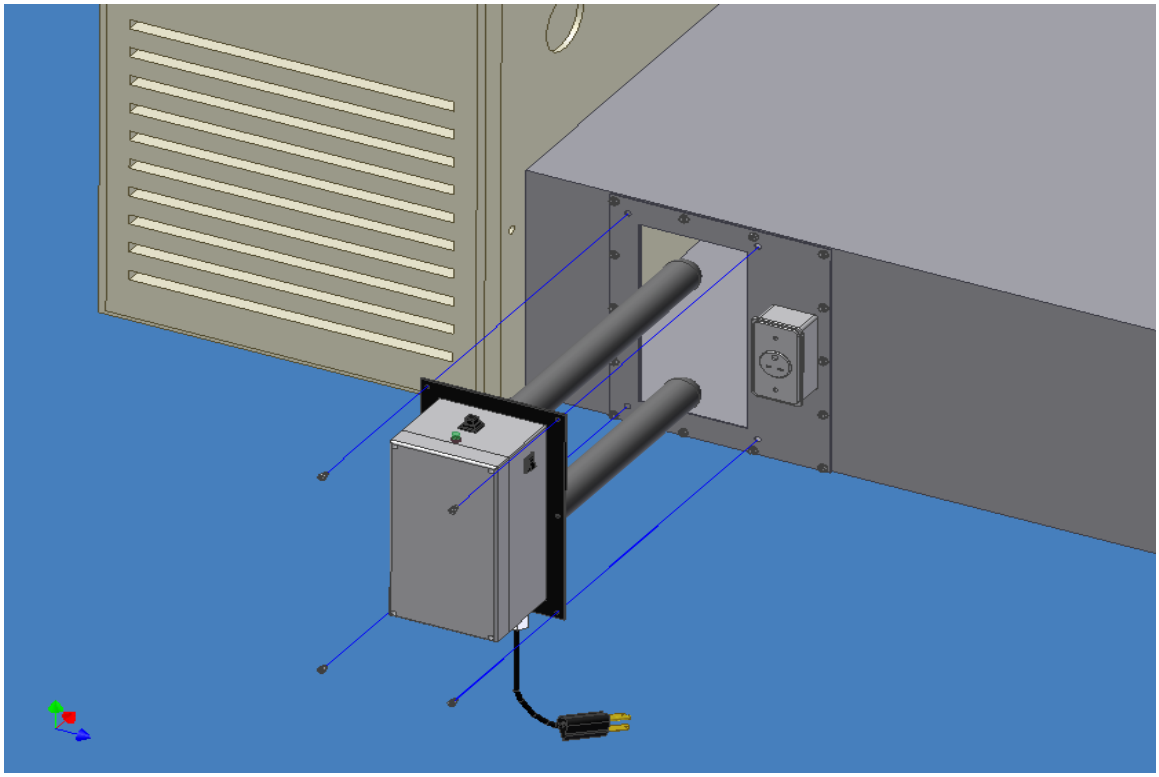

FIG. 4
REMOVAL FOR SERVICE:
***DO NOT* REMOVE ENTIRE PLATE ASSEMBLY. UNSCREW GENERATOR FROM PLATE VIA THUMB SCREWS. NOTE: ALWAYS DISCONNECT PLUG AND POWER TO THE GENERATOR BEFORE SERVICING OR REMOVING THE UNIT.**

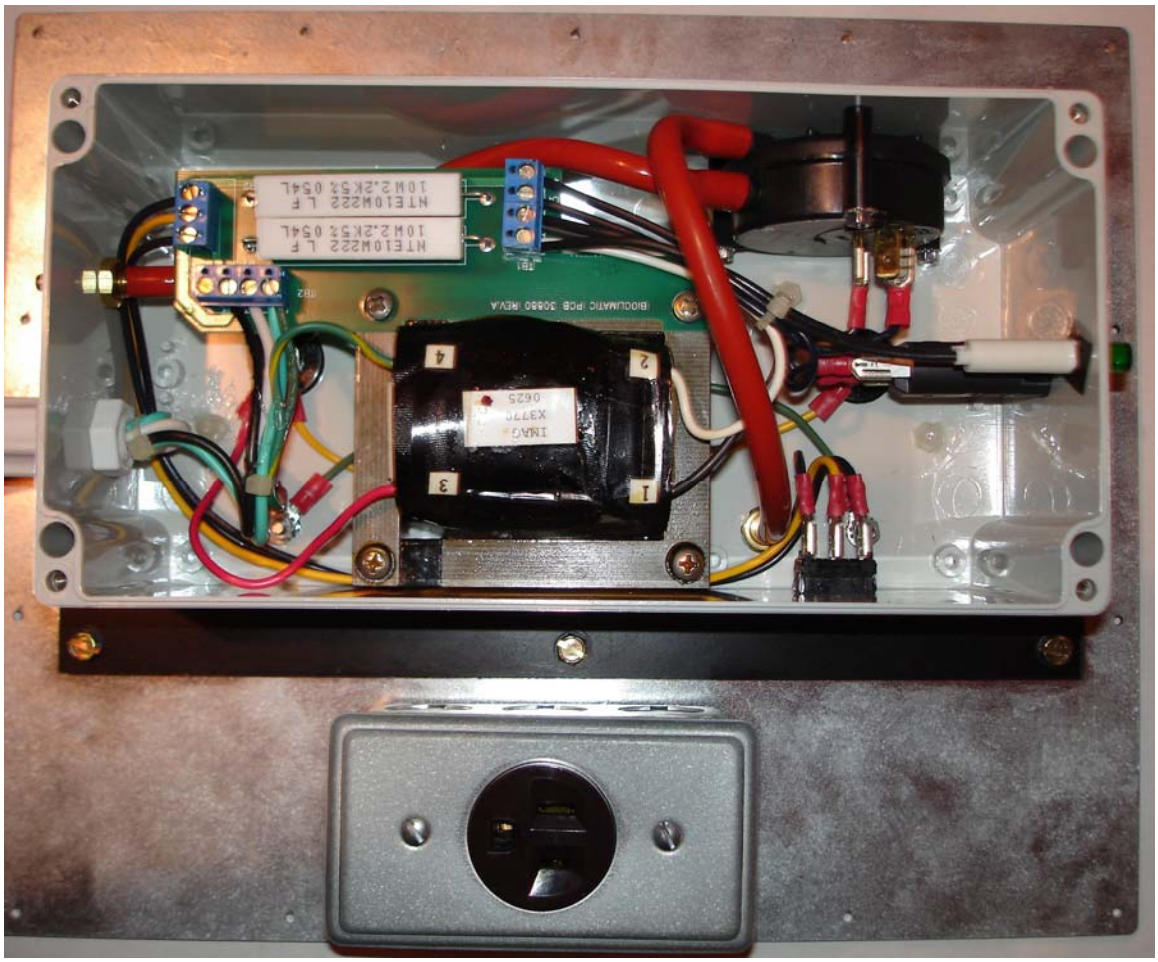

FIG 5 – NEGATIVE PRESSURE AIR HOSE CONFIGURATION SHOWN (FACTORY DEFAULT POSITION UNLESS OTHERWISE NOTED)

To convert to positive pressure, if mounting location is as shown in Figure 1A, swap H1 and H2.