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# INSTALLATION, OPERATION AND MAINTENANCE MANUAL FOR PRESSURIZATION MODULE



## PRESSURIZATION MODULE NOMINAL 300 & 450 CFM FOR 3.5 THROUGH 6 TON WALL MOUNT HVAC UNITS

115VAC & 208/230VAC Models

\* A more recent revision may be available at [www.voltaresys.com](http://www.voltaresys.com) or the QR Code in the top right corner of every page.



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## 1. IMPORTANT INFORMATION TO REVIEW PRIOR TO INSTALLATION, OPERATION AND MAINTENANCE

- **READ THE ENTIRE MANUAL PRIOR TO INSTALLING, OPERATING AND MAINTAINING** the VoltAire Systems Pressurization Module. Do not install or perform maintenance on the equipment if you do not understand all of the instructions. Contact VoltAire Systems at (407) 378-7482 with any questions or concerns.
- The pressurization module should be fully inspected on initial delivery. Open the packaging completely at the time of initial delivery and verify there is no hidden or concealed damage. Shipping damage, including concealed damage, is not covered under warranty. Reject the shipment if any damage is found.
- **WARNING: IMPROPER INSTALLATION AND OPERATION MAY CAUSE PROPERTY DAMAGE, PERSONAL INJURY OR LOSS OF LIFE.** The pressurization module shall only be installed and serviced by a certified professional in strict accordance with the requirements within this manual, in accordance with all local/state/federal codes, and per industry standards. Remove power from the unit during maintenance and installation, as line voltage may be dangerous, hazardous and lethal.
- In the event of a conflict, code requirements shall take precedence over the instructions provided within this manual. The installer shall be aware of all code requirements and shall comply fully.
- Use care when transporting and lifting the pressurization module.
- **WARNING: WEAR PROPER PERSONAL PROTECTION EQUIPMENT, INCLUDING BUT NOT LIMITED TO SAFETY GLASSES, GOGGLES, AND GLOVES. EDGES MAY BE SHARP.**
- A field provided disconnect must be provided by the installer with the power supply circuit serving the pressurization module. The installer shall size the electrical wire and disconnect in accordance with all applicable codes. Verify wire terminals and voltage prior to starting the pressurization module, otherwise you may damage the electrical components.
- These instructions should be retained by the owner and/or with the unit.



## 2. PARTS SHIPPED LOOSE AND TOOLS/MATERIALS PROVIDED BY THE INSTALLER

Materials shipped loose in addition to this manual are as follows:

a) Bard Side Inlet Grille Trim and Insulation

DESCRIPTION	PART NUMBER
Front Painted Trim Metal with Flange	D5X0002VAA
Rear Trim Metal (Non-Painted)	D5X0003VAA
Bard Sheet Metal Screws (Qty. 3)	Y6N0034XXA
3" x 16" Peel and Stick Insulation	D6F0001VAA

b) Bard Economizer Kit (Optional, Sold Separately - For Bard Units with Economizers)

DESCRIPTION	PART NUMBER
W42-W72 Economizer Exhaust Mod Field Kit (Bard Models W42-W72)	D0Z0004VAA

Required Tools and Materials provided by Installer:

- a. Electrical service wire and disconnect, and associated electric tools
- b. Exterior rated silicone or other exterior sealant
- c. Flathead and phillips head driver/bit
- d. 5/16" Hex head drill bit
- e. Three (3) metal self tapping screws (for Bard units with economizers)
- f. Personal Protection Equipment

## 3. PRODUCT DESCRIPTION

VoltAire Systems pressurization modules are designed to be mounted on Bard HVAC Units, sizes 3.5 to 6 ton (W42 through W72), to provide fan powered pressurization air through the Bard unit and into the building, providing positive pressure to the building after pre-conditioning the outside air with the Bard unit. The amount of pressurization air required is a function of the building/room size and tightness/sealing. The pressurization module provides a pre-filter/mist eliminator and 2" MERV 8 Filter to provide filtration. The pressurization module fan speed is manually adjusted utilizing the potentiometer. It is important to note that the units must be ordered for either a right hand or left hand mounting orientation.

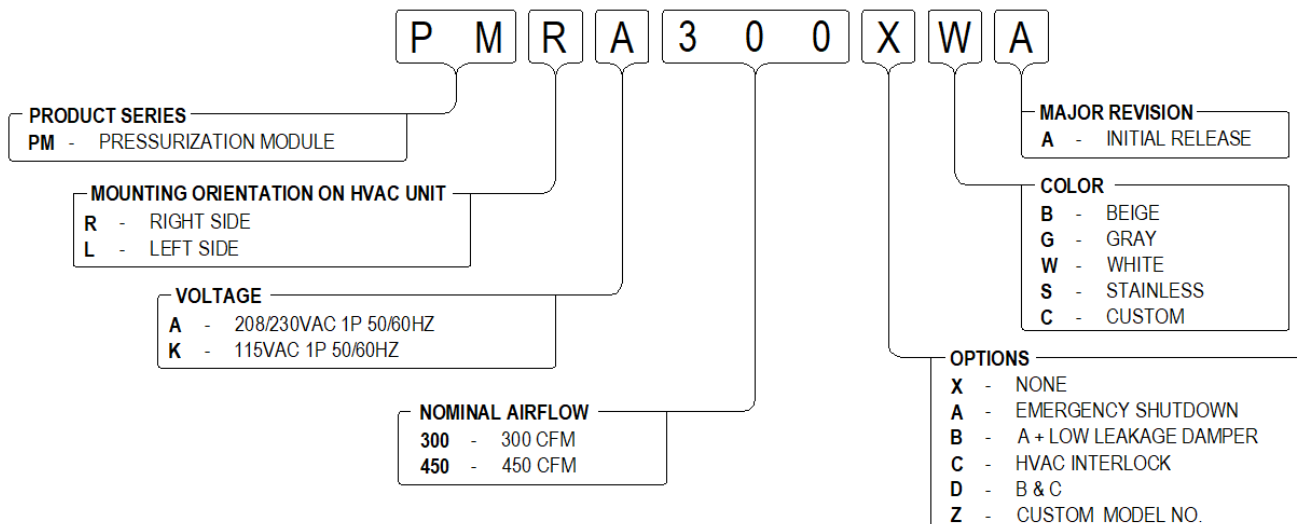
It is highly recommended that Bard units paired with the VoltAire Systems Pressurization Module (PM) be supplied with independent humidity control for any sites where ambient humidity may be higher than the desired building interior humidity.



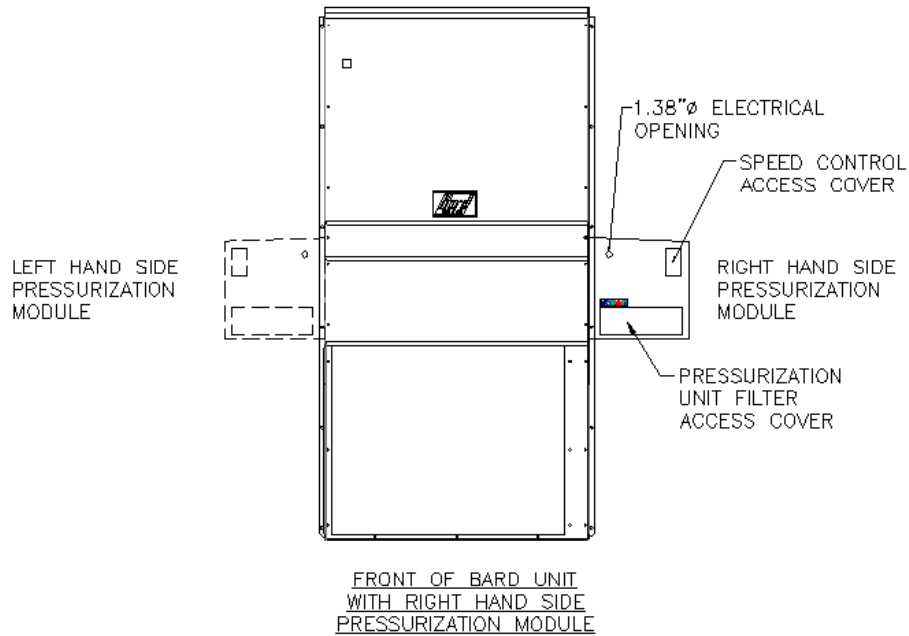
## 4. IMPORTANT APPLICATION NOTES

- HVAC independent humidity control highly recommended for mild to high humid environments due to fresh air pressurization.
- Positive pressurization requires a well-sealed building/room envelope. Take extraordinary means to ensure envelope sealing.
- If HVAC units are equipped with economizers, special accommodations may be required to the HVAC unit as building/room pressure will be affected by economizer operation.
- Consider outdoor air load in HVAC sizing calculations to ensure proper heating, cooling, and dehumidification for outside air provided by the pressurization module.

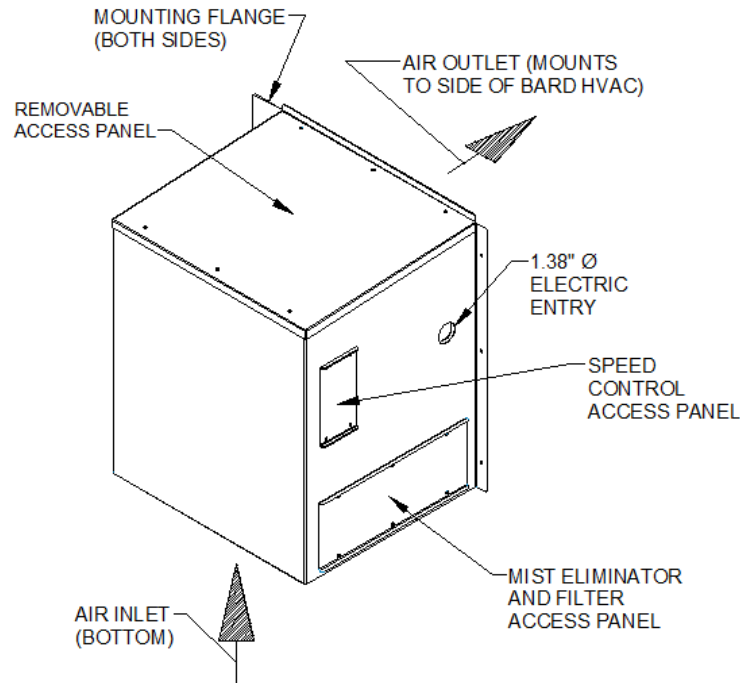
## 5. GENERAL PRODUCT DATA



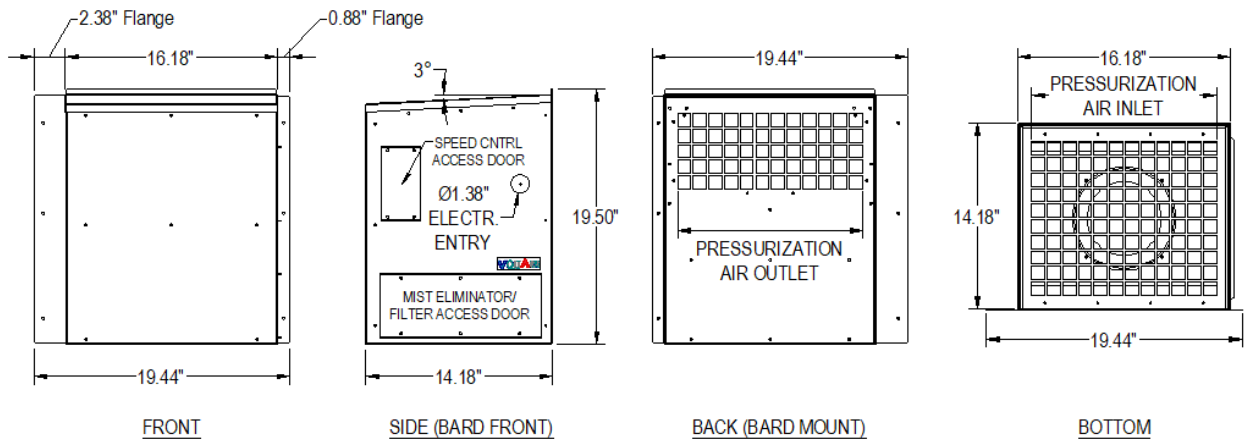
### MODEL NOMENCLATURE



**PRODUCT CONFIGURATIONS (LEFT OR RIGHT)**



**GENERAL CONFIGURATION AND AIRFLOW**



NOTE: LEFT HAND PRESSURIZATION MODEL SHOWN

## DIMENSIONS

## 6. INSTALLATION INSTRUCTIONS

**WARNING: REVIEW THIS MANUAL COMPLETELY PRIOR TO BEGINNING INSTALLATION OR SERVICE. FAILURE TO DO SO MAY RESULT IN IMPROPER OPERATION, UNIT DAMAGE, AND/OR PERSONAL/BODILY HARM. PRESSURIZATION MODULES MUST ONLY BE INSTALLED BY PROPERLY TRAINED AND EXPERIENCED TECHNICIANS.**

The unit is designed to be installed on Bard 3.5 to 6 ton models W42 through W72. The pressurization module (PM) utilizes the existing Bard opening and mounting screws to easily attach to the Bard unit. The Bard side panel covering the condenser air inlet and fresh air inlet must be modified to allow the PM to be installed against the Bard side panel at the standard fresh air intake opening. Note that the Bard side panels, left and right, are identical and the side panels can be relocated to the applicable side.

The below images show the Bard side inlet panel modified to be cut shorter, together with new VoltAire trim pieces installed on the Bard panel to provide a clean edge. The upper portion of the Bard side panel is used to protect the Bard opening during shipment only, this panel can be removed and discarded at the time of installation as it will not be needed following installation of the PM. The design of the PM allows for existing Bard screws to be utilized to mount the unit. Screws that do not align with the PM mounting flange holes either do not need to be used and discarded if they are under the PM footprint, or those not under the PM the Bard screw should be replaced to fill the hole. Installation steps are as follows, and note that Steps 1 – 8 may have been completed by your distributor:

1. Remove the Bard side panel and cut to length. The modified height of the panel measuring from the bottom is 36-1/2".



- Using the Bard trim pieces, Part # D5X0002VAA and D5X0003VAA, and using the three (3) provided screws, mount the trim to the top of the Bard panel to provide a clean edge and protect the sharp edge. The painted piece with the flange is mounted on the outside of the Bard panel, flanged turned in, the unpainted piece aligns on the back side to allow the two trim pieces to mount on either side of the top piece, as shown below.



Front side – Painted Trim with Flanged Direct Back



Back side – Metal Backer

- Install the lower portion of the Bard side panel back on the Bard unit with the existing screws and holes.
- Using the 3"x16" peel and stick insulation, place the insulation over the holes in the section of the Bard ventilation intake section, as shown on images below. This area is located at the HVAC unit return opening. If no holes are present the insulation may be disregarded.



Openings in Bard Vent Section



Insulation Applied

- If the Bard unit includes an economizer, steps #6 through #7 must be completed. If the Bard units do not have economizers, proceed to step #9.
- From the rear of the Bard unit via the return air opening, remove the linkage from the actuator to the applicable side damper blade. The actuator arm MUST be removed for the side of the economizer which has the Pressurization Module installed. The linkage for the damper on the opposite side must remain in place to allow for proper economizer operation. The image below reflects the damper linkage having been removed on the side of the Bard unit that will receive the Pressurization Module.





- Using the ship loose Part # D5X0004VAA, add the economizer bracket. This bracket will keep the economizer blade permanently open. See the image below the bracket installed using the existing Bard screws.



- To assist the loss of pressurization during economizer mode, add the economizer exhaust manual balancing damper (VoltAire Part # D0Z0004VAA or D0Z0005VAA) to allow the owner/user to manually adjust exhaust on the economizer. Using field furnished self-tapping metal screws, install the manual damper with three (3) field supplied self tapping screws, one per slot. Do not use any pre-drilled holes, as these may conflict with the Bard economizer damper. For an initial manual damper setting, we recommend that you cover approx. 1/3 to 1/2 of the Bard economizer exhaust opening; However it should be anticipated that this be field tested and adjusted when the building is commissioned.



**Economizer Exhaust Manual Damper (Bard Economizer Damper Adjusted Open)**

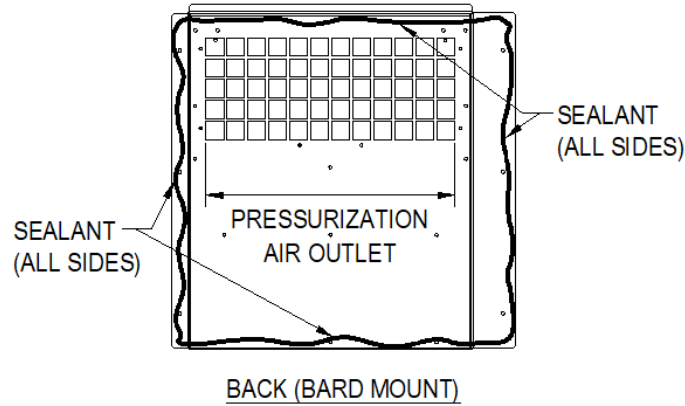


**Bard Economizer Damper in Fully Closed Position**

- The upper portion of the Bard side grille can be discarded. Note that if the panel was modified by others, this upper portion may have been left on the unit to protect the unit during shipping, so it can be removed and discarded.



10. To begin the process of mounting the unit on the Bard unit, remove the top access panel of the PM to access some internal mounting hole locations and the electrical section.
11. Apply a liberal amount of field supplied sealant/silicone along the outer perimeter of the PM on the back side, as shown in the image below.



12. For pressurization modules without the low leakage shutdown damper: Align the pressurization unit on the Bard unit. Install the first two screws at the top, located inside the PM as shown below.



**No Low Leakage Shutdown Damper: Install Upper Left and Right Screws from Within Unit**

For pressurization modules with the low leakage shutdown damper : Align the pressurization unit on the Bard unit. Install the first two screws on the top of the mounting flanges, located on the sides of the PM as shown below.



**Low Leakage Shutdown Damper: Install Upper Left and Right Screws On Mounting Flange**



13. For units without a pre-installed damper: Install the remaining screws in the side flanges of the PM, 3 per side, using the existing Bard screws and existing Bard screw holes.

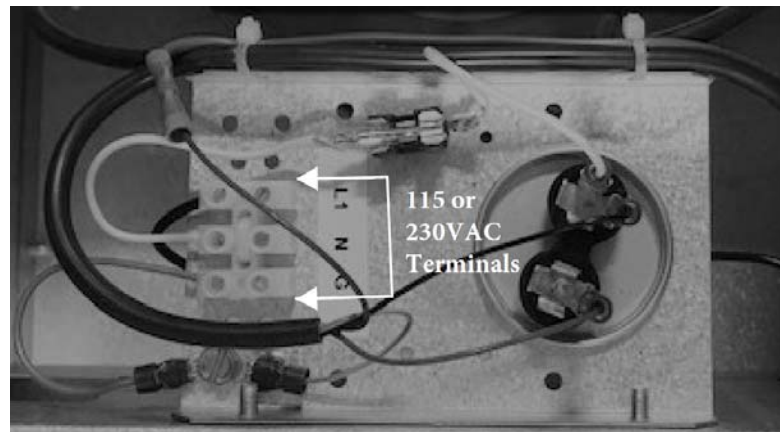
For units with a pre-installed damper: Install the remaining screws in the side flanges of the PM, 2 per side, using the existing Bard screws and existing Bard screw holes.

14. Any original holes not covered by the PM will need the Bard screws replaced to prevent leaking, if previously removed.
15. Using field supplied sealant, seal along the top and sides of the pressurization module to provide a tight seal between the PM and the Bard unit, as shown below



Seal Along back of Pressurization Module at Bard Unit

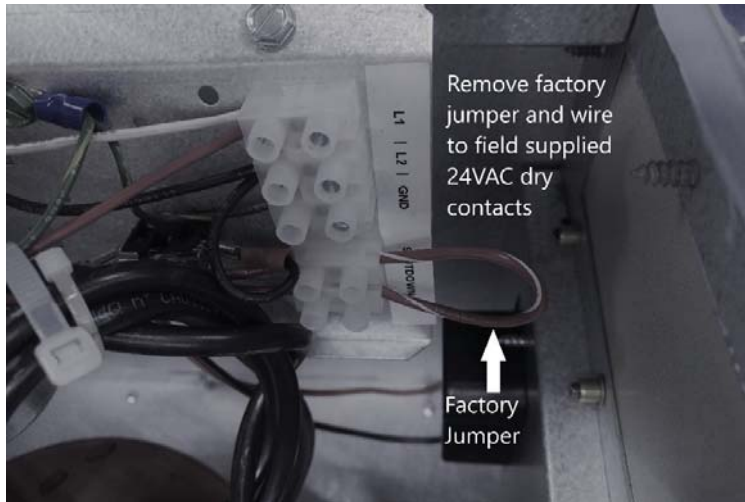
16. Using the field supplied electrical service with disconnect, connect to the PM electrical and land the wires at the terminal block, including a ground wire to the ground terminal, as shown below. Wire size may be #12 to #16 AWG, sized by installer per code, using the torque driver to provide 4.5 in-lb torque.



High Voltage (and Low Voltage) Terminal locations may vary by model

17. For Pressurization Modules with an HVAC interlock or fire/smoke shutdown option, remove the factory jumper and replace with field supplied dry contacts. The field contacts should be closed to command the Pressurization Module to operate, and the contacts should open for interlock off or fire/smoke shutdown. If supplied with a low leakage damper, the damper will automatically shut when the Pressurization Module is

turned off by the interlock or fire/smoke damper. The below image shows the interlock or fire/smoke terminals temporarily jumped with a factory jumper. If the unit is ordered with an interlock or fire/smoke shutdown option however not used, the hole entry should be closed with field supplied hole plug.



Interlock or Fire/Smoke Shutdown Dry Contacts (Factory Jumper Installed)

18. Verify all wires and landing points for high voltage and interlock/fire-shutdown are tight and secure any loose wires with a wire tie to prevent the wires from rubbing or touching the fan.
19. Place top access panel and secure with screws.
20. The unit is now fully installed and ready for operation, with Startup Instructions below.

## 7. STARTUP INSTRUCTIONS

The Pressurization Module is designed to provide continuous airflow to provide positive pressure in the building. As such, the fan will run continuously whenever power is applied to the unit, unless the interlock or fire/smoke shutdown option is ordered. The amount of pressurization air required is heavily dependent upon how well the building/room is sealed.

If a building or room pressurization monitoring station is provided (sold separately), the installer can adjust the pressurization module(s) to adjust speed to reach the desired pressurization. The below image shows the access to the fan speed control to allow for an increase or decrease in airflow. Utilize a small flat head screw driver to adjust the potentiometer. Turning the potentiometer to the right increases the fan speed and adjusting to the left lowers the fan speed.

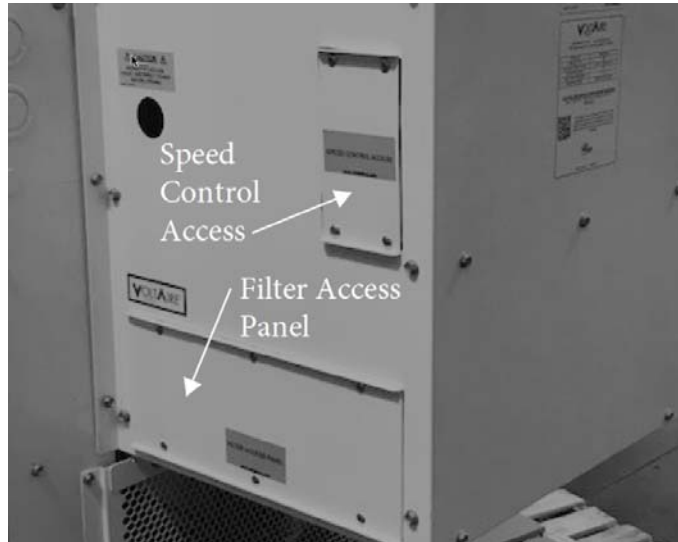
If the wall mount AC unit has an economizer and the VoltAire economizer exhaust kit was purchased, operate the unit in economizer mode and manually balance the VoltAire exhaust damper to achieve the desired pressurization. The manual damper is located through access behind the HVAC return grille.

If the VoltAire pressurization module was ordered with an interlock or fire shutdown, ensure that the interlock is wired to



the appropriate system (wall mount AC or fire/life-safety system). Open contacts will de-energize the pressurization module and close the damper (if ordered/provided), closed contacts will provide continuous run and open the damper (if applicable). Test the shutdown/interlock to verify proper operation.

Speed Control and Filter Access Panels



The Module is provided with a nominal ½” mist eliminator and a nominal 2” x 12” x 16” MERV 8 filter. These filters are accessible by removing the access panel. It is recommended that the filters be checked monthly with the mist eliminator being cleaned and the 2” MERV 8 being replaced, as necessary.

## 8. TROUBLESHOOTING GUIDE

**WARNING: ELECTRICAL SHOCK HAZARD. DISCONNECT POWER FOR SERVICING. FAILURE TO DO SO COULD RESULT IN ELECTRICAL SHOCK OR DEATH.**

**CAUTION: SERVICE AND TROUBLESHOOTING SHOULD ONLY BE CONDUCTED BY CERTIFIED HVAC TECHNICIANS. TECHNICIANS SHALL FOLLOW ALL INDUSTRY STANDARDS FOR SAFETY. THE COMPONENTS IN THE UNIT ARE STANDARD INDUSTRY COMPONENTS, AND TOGETHER WITH THE INFORMATION PROVIDED WITHIN THIS MANUAL, THE TECHNICIAN SHALL USE STANDARD ELECTRICAL TROUBLESHOOTING, DIAGNOSIS AND REPAIR PROCEDURES. PLEASE NOTE THAT UNIT MAY CONTAIN CUT HAZARDS/SHARP EDGES AND GLOVES SHALL BE USED TO AVOID SHARP EDGES AND INJURY, TOEGHER WITH SAFETY GLASSES.**

**IMPORTANT: REVIEW THE MANUAL IN ITS ENTIRETY PRIOR TO SERVICING OR MAINTAINING THE EQUIPMENT.**

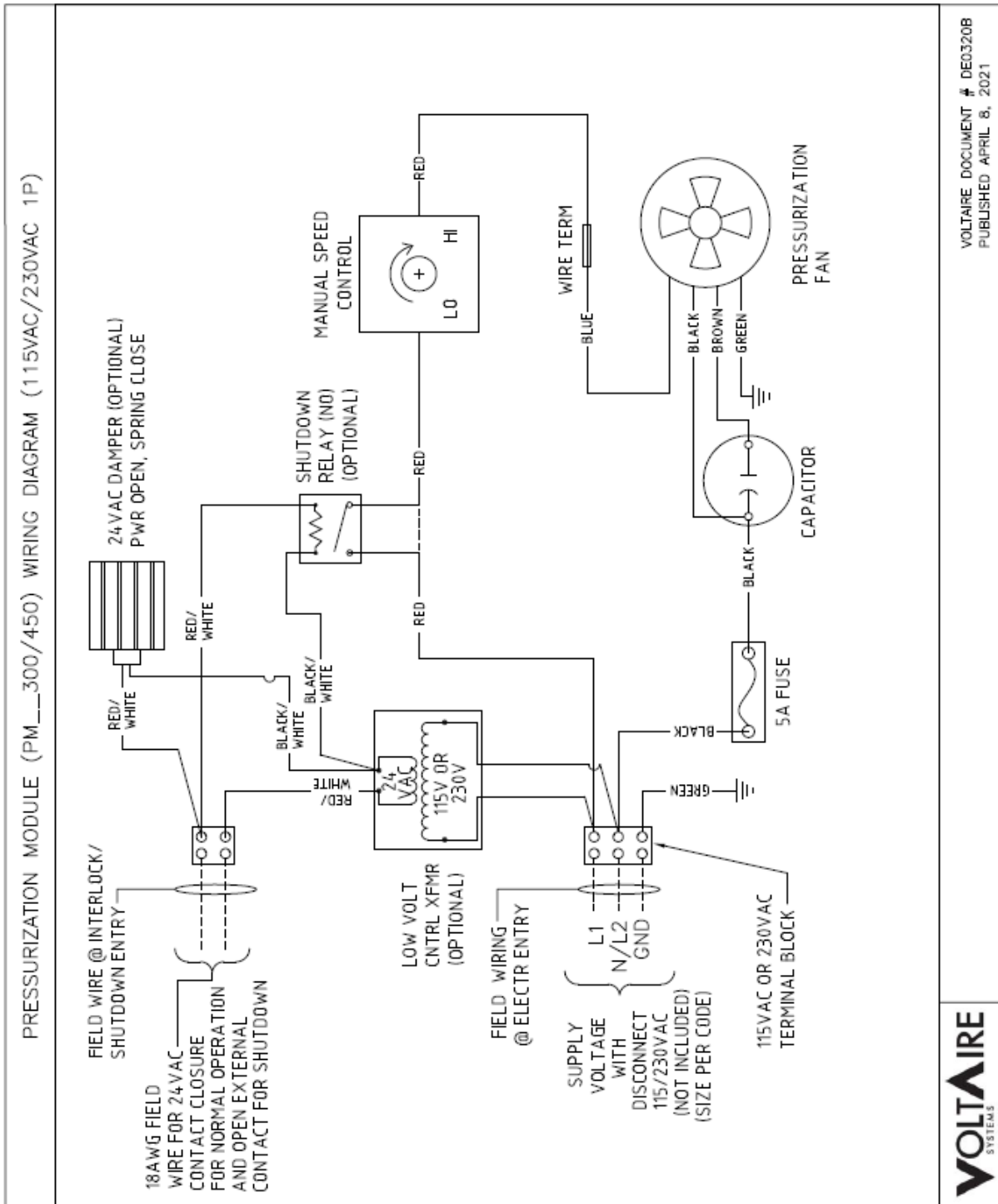
The below table provides some problems that may be experienced with startup and/or maintenance of the pressurization module. Please review this chart to diagnose the problem and repair/adjust, as needed.



PROBLEM	POTENTIAL CAUSE	SOLUTION
The pressurization fan does not operate or operates too slow to pressurize the building/room	Verify the field supplied disconnect is turned ON	Check power source voltage and verify the disconnect is turned on.
	Verify the 5A fuse is operable	Turn the disconnect OFF, remove the top access panel and remove the fuse from the fuse holder to verify continuity. If the fuse is open replace it and restart as described within this manual.
	Verify the filter is clean	Air flow will be reduced as the filter becomes dirty. Check the filter and replace if dirty.
	Verify wire terminal connections	Turn the disconnect OFF and verify all wires are landed on terminals and tightened properly.
	Verify the fan is operating	Turn the disconnect OFF; Remove the top access panel and turn the disconnect ON to visually inspect if the fan is operating. If the above items have all been checked and verified AND the fan is not rotating, replace the fan.
	If provided with interlock or fire shutdown, external dry contacts are not functional	Verify that the external dry contacts are operating properly and closed during normal operation; The dry contacts must be closed for normal operation.
	Verify Controller setting	The PM is equipped with a fan speed controller, make sure this is turned to the right to increase speed.
The Pressurization Module will not pressurize the building	Check for building/room for air leakage	Check all doors, windows, and other building components to ensure they are well sealed; Buildings requiring positive pressure may require additional sealing, including but not limited to gasket on all doors.
	Verify sufficient pressurization capacity	The level of pressurization will determine the amount of pressurization air required. Verify the building has sufficient pressurization air capacity. Although all buildings/rooms vary, there are rules of thumb used to determine the amount of pressurization air required. Common rules of thumb are (i) 0.25 CFM/Surface area (floor, walls, ceiling), and (ii) 1 CFM/SF of floor area for building pressurized to +/- 0.1" W.C.
<b>FOR ADDITIONAL TECHNICAL SUPPORT, PLEASE CONTACT VOLTAIRE SYSTEMS AT (407) 378-7482.</b>		



# 9. WIRING DIAGRAM





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## 10. WARRANTY

### VOLTAIRE SYSTEMS THERMAL UNITS NON-TRANSFERABLE STANDARD LIMITED WARRANTY, DISCLAIMERS, AND LIMITATIONS OF LIABILITY

#### (Applies to All Heat Exchangers, Pressurization Units/Modules, Fan Units, and Air Conditioners)

The VoltAire Systems, LLC ("VoltAire") Non-Transferable Limited Warranty ("Limited Warranty") is applicable for 12 months following the shipment of the product to the original purchaser ("Purchaser") defined as the "Warranty Period". VoltAire warrants to the original purchaser during the Warranty Period that all materials and workmanship are free of defects of quality and operation that would impair the usefulness of the original air conditioner, fan unit, pressurization unit or heat exchanger (collectively herein referred to as "Product") during the Warranty Period. This Limited Warranty is for all components of the Product, except filters, when installed and operated under the following conditions:

- A. In strict accordance with the Product's Installation and Operation Manual, as may be revised from time to time with the latest version available at [www.voltairesys.com](http://www.voltairesys.com).
- B. Maximum voltage variation no greater than plus or minus 10% of nameplate nominal rating.
- C. Maximum frequency variation no greater than plus or minus 3 Hz. of nameplate nominal rating.
- D. Must not exceed minimum and maximum stated temperatures on the nameplate.
- E. Not to exceed (BTU/Hr.) rating, including any heat sink, as indicated on the nameplate.
- F. Installed per all local, State and Federal legal requirements.
- G. The unit must not be restarted for a period of five (5) minutes after intentional or accidental shut-off of a compressor. (This does not apply to heat exchanger or filter fan.)

The Limited Warranty is void and not applicable if:

- A. The Product is installed improperly
- B. The Product is not maintained properly, including prolonged operation with dirty filters or coils
- C. The Product is modified, abused and/or tampered
- D. The Product is applied in an incorrect manner, including operation within a corrosive atmosphere (including but not limited to coastal applications)
- E. The Product is used with the incorrect refrigerant (air conditioners)
- F. The Product is damaged and/or inoperable due to accidents or events beyond the reasonable control of VoltAire and Acts of God
- G. The Product is repaired with parts not provided by VoltAire
- H. The Product is installed and operated outside the United States, Mexico, and/or Canada.

Damage during freight is not included with this Limited Warranty. The Purchaser must insure the Product is installed by a competent, professional, qualified contractor, following all local, state, and national legal requirements and industry standards. The Purchaser must provide adequate maintenance (e.g. filter changes, coil cleanings).

The Limited Warranty covers the Product for the Purchaser only during the Warranty Period, and the Limited Warranty does not include any labor, freight, and/or consequential damages or loss. Upon Notification by the Purchaser, VoltAire solely reserves the right to either, as Purchaser's sole remedy:

- Ship replacement parts to the Purchaser for the Purchaser's infield replacement of the part. Infield replacement will require the Purchaser to provide a purchase order to VoltAire for the standard cost of the





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part and after infield replacement return the original part to VoltAire with freight cost by Purchaser. Within fourteen (14) days of receipt of the returned part VoltAire will review and analyze the returned part. If the part is found to be defective by VoltAire a credit will be issued to the Purchaser. Parts returned to VoltAire and found not to be defective will result in no credit applied to Purchaser's account and the Purchaser will be required to pay for the replacement part.

- Or, request the return of the Product for evaluation. Return of the Product must be preceded by the issuance of a VoltAire Return Merchandise Authorization (RMA). The RMA will require that shipping costs be paid by the Purchaser to return the Product to VoltAire. Within fourteen (14) days of receipt of the returned Product VoltAire will review and analyze the Product. If the Product is determined by VoltAire to be defective, VoltAire may repair or replace the Product, and will ship the Product to the Purchaser for the Purchaser's installation in the field with no labor costs reimbursed by VoltAire. If the Product is determined by VoltAire to NOT be defective, the Purchaser will be notified and a Purchase Order must be issued in the amount required for the Product to be packaged and returned to the Purchaser.

**DISCLAIMERS AND LIMITATIONS OF LIABILITY:**

THIS LIMITED WARRANTY CONSTITUTES THE ENTIRE WARRANTY FOR THE VOLTAIRE PRODUCT AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS AND IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY AND WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE. THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF.

VOLTAIRE IS NOT RESPONSIBLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY NATURE WHATSOEVER, INCLUDING, BUT NOT LIMITED TO, LOST PROFITS, ATTORNEYS FEES, AND LOSS OF USE DAMAGES.

VOLTAIRE EXCLUDES ALL LIABILITY FOR OR ARISING FROM ANY NEGLIGENCE ON ITS PART OR ON THE PART OF ANY OF ITS EMPLOYEES, AGENTS, OR REPRESENTATIVES IN RESPECT TO THE MANUFACTURE OR SUPPLY OF GOODS, INCLUDING THE PRODUCT, OR THE PROVISION OF SERVICES RELATING TO THE GOODS, INCLUDING THE PRODUCT.

THIS LIMITED WARRANTY, DISCLAIMER, AND LIMITATION OF LIABILITY SHALL SUPERSEDE ANY TERMS OF PURCHASE PROVIDED BY THE PURCHASER AT THE TIME OF THE PURCHASE, AND THE LIMITATION OF LIABILITY SHALL SURVIVE FROM THE DATE OF THE PURCHASE TO THE DATE OF DISCONTINUED USE. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OF CONSEQUENTIAL DAMAGES MAY NOT APPLY.