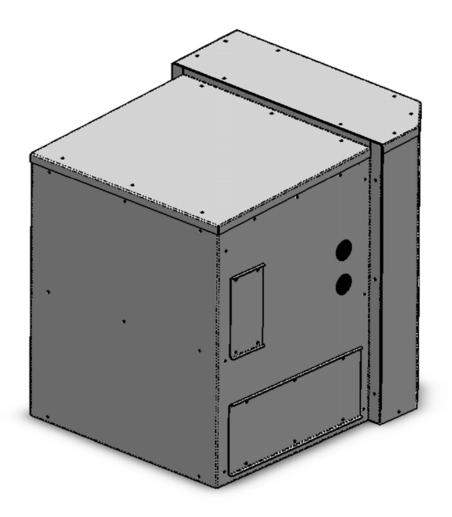






INSTALLATION, OPERATION AND MAINTENANCE MANUAL FOR PRESSURIZATION MODULE (WITH PLENUM FOR W18-W36 AIR CONDITIONER MODELS)



NOMINAL 300 & 450 CFM FOR BARD W18 THROUGH W36 UNITS

115VAC & 208/230VAC Models

* A more recent revision may be available at <u>www.voltairesys.com</u> or the QR Code in the top right corner of every page.

www.voltairesys.com Phone: (407) 378–7482 2900 W. Orange Ave. Ste. 100 Apopka, FL 32703

VoltAire Systems, LLC





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

- <u>READ THE ENTIRE MANUAL PRIOR TO INSTALLING, OPERATING AND MAINTAINING</u> 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.
- <u>WARNING: WEAR PROPER PERSONAL PROTECTION EQUIPMENT, INCLUDING BUT NOT LIMITED TO SAFETY</u> <u>GLASSES, GOGGLES, AND GLOVES. EDGES MAY BE SHARP.</u>
- 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) Ship Loose Kit

DESCRIPTION	PART NUMBER
Pressurization Module Ship Loose Kit	D0Z0007VAA
Pressurization Module Plenum Ship Loose Kit	D0Z0008VAA

b) Bard Economizer Exhaust Modification Kit (Optional, Sold Separately)

DESCRIPTION	PART NUMBER
W18-W24 Economizer Exhaust Mod Field Kit (Bard Models W18-W24)	W18-W24ECONMODKIT
W30-W36 Economizer Exhaust Mod Field Kit (Bard Models W18-W24)	W30-W36ECONMODKIT





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. Foil sealing tape

- d. Flathead and phillips head driver/bit
- e. 5/16" Hex head drill bit
- f. Jigsaw / Reciprocating saw
- g. Personal Protection Equipment

3. PRODUCT DESCRIPTION

VoltAire Systems pressurization modules are designed to be mounted on Bard HVAC Units, sizes 1.5 to 3 tons (W18 through W36), 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 <u>highly recommended</u> that Bard units paired with the VoltAire Systems Pressurization Module 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

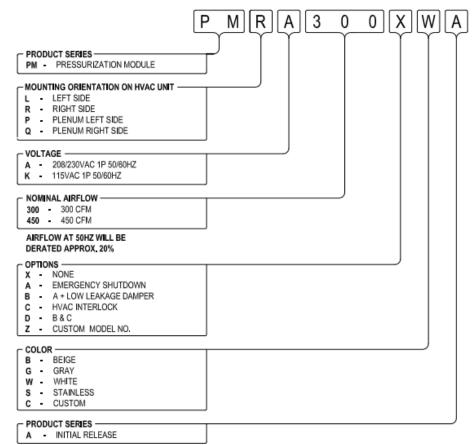


FIGURE 1: PRESSURIZATION MODULE MODEL NOMENCLATURE

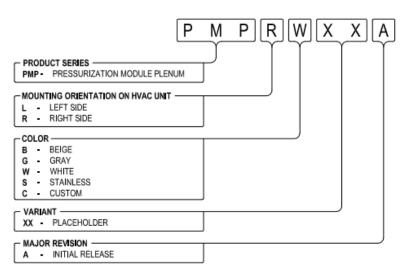


FIGURE 2: PRESSURIZATION MODULE PLENUM MODEL NOMENCLATURE

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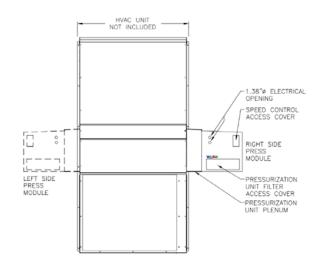


FIGURE 3: PRODUCT CONFIGURATIONS (LEFT OR RIGHT) FRONT OF BARD UNIT WITH RIGHT HAND SIDE PRESSURIZATION MODULE (WITH PLENUM)

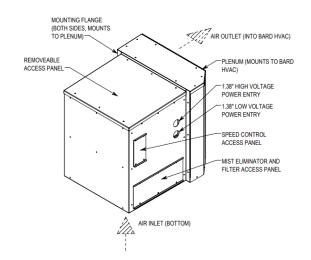
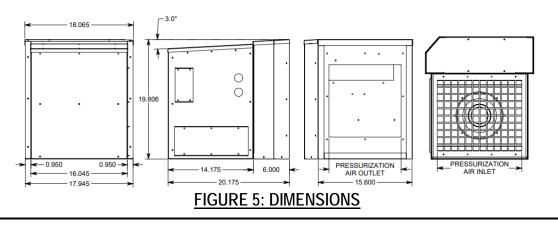


FIGURE 4: GENERAL CONFIGURATION AND AIRFLOW



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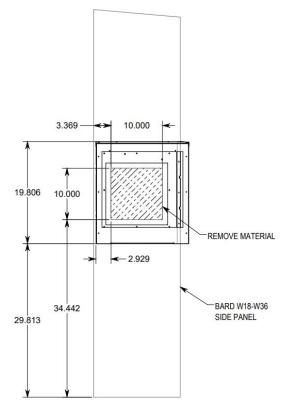
6. INSTALLATION INSTRUCTIONS

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 Pressurization Module is designed to use a Plenum adapter to fit on Bard HVAC models W18 to W36. The Plenum requires a 10 by 10 inch cutout to be made on the side panel. Two pre-existing screws are used to assist with hanging the Plenum. After the Plenum is hung, 8 self-tapping screws will be used to fix the plenum in place. The main Pressurization Module may then be affixed to the Plenum.

Installation steps are as follows and note that your distributor might have completed some or all of the steps.

 Prepare the Bard side panel for removal of the 10" x 10" cutout. The cutout is located below the filter assembly in the approximate location shown. Mark the cut out area and using a tape measure and visual inspection, verify that the cutout will not conflict with any internal piping and/or components. Be cautious of cutting blade depth. After the material is removed from the cutout, deburr and clean the cutout as necessary ensuring the side panel is clean of any metal shavings, dust, and/or debris.



WARNING! After marking the cutout opening location, check the interior of the HVAC unit within the cutout area footprint to verify there are no copper pipes, wires, and other HVAC unit components that will be damaged by the cutting blade.

Bard Side Panel Shown FIGURE 6: CUTOUT AREA

2. Using foil tape (field supplied), tape the metal edge and internal insulation to provide a clean edge as shown

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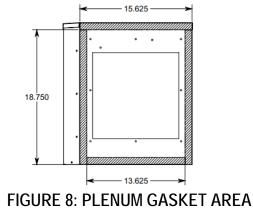


below.





3. Install the Plenum gasket kit as shown in Figure 8 below. The figure shows the gasket area. Note that the 15.625-inch length piece runs across the top of the unit.



4. After installation of the Plenum gasket kit, utilize the pre-existing screws on the Bard side panel and the marked holes on the Plenum, mount the Plenum onto the Bard unit. The approximate location of the Bard screws are shown in Figure 9. Note that these screws hold the filter rack bracket in place on the Bard unit and the filter rack may need to be re-located back in place during installation. Your plenum gasket side should mount against the Bard side panel. Before fully securing the two screws, ensure the plenum is level.





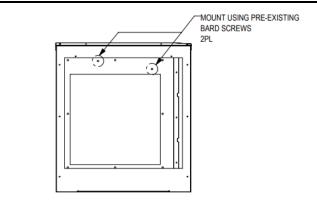


FIGURE 9: PLENUM ALIGNMENT SCREWS

5. After hanging the plenum, install the 8 provided self-tapping screws in the location shown in Figure 10.

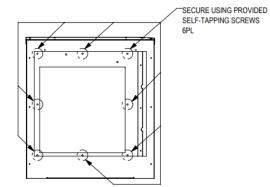
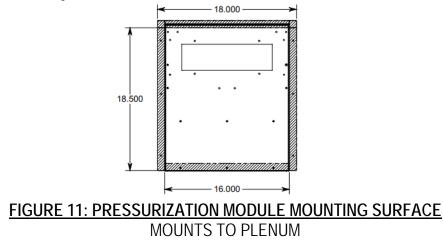


FIGURE 10: PLENUM MOUNTING LOCATIONS

- 6. Using field-supplied sealant, apply a bead along the top seam (and side seams if possible) between the Plenum and the Bard unit.
- 7. Install the Pressurization Module gasket kit utilizing Figure 11 as reference. The figure shows the gasket area. Note that the 18-inch length runs across the top of the unit.



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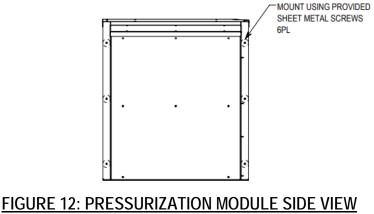
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8. Install the Pressurization Module on the Plenum using the 6 provided screws in the shipped loose kit. The six screw holes can be found on the mounting flanges the Pressurization Module as shown in Figure 12.



(OPPOSITE SIDE OF MOUNTING SURFACE)

- 9. Remove the top access panel from the pressurization module. (Refer to General Configuration and Airflow)
- 10. Using field-supplied sealant, apply a bead along the top and around the sides of the mounting bracket where the Pressurization Module and the Plenum meet.
- 11. Using the field supplied electrical service with disconnect, pass through the Pressurization Module electrical entries and land the wires at the terminal block, including a ground wire to the ground terminal, as shown in Figure 13. Wire size may be #12 to #16 AWG, sized by installer per code, using the torque driver to provide 4.5 in-lb torque.



12. The Pressurization Module may come with a selection of features depending on the model number. Determine which features are included with the unit by referring to the model number to the nomenclature from Figure 1 on page 5. Then refer to the respective wiring diagrams found on pages 14-18 in this manual for further clarification.

For Pressurization Modules with an HVAC interlock, remove the factory jumper from the interlock relay and provide 24VAC external power to the interlock contacts.

For Pressurization Modules with fire/smoke shutdown, remove the factory jumper from the shutdown terminal block 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.

If the unit is ordered without an interlock or fire/smoke shutdown option not used, ensure that the hole entry remains plugged.

- 13. 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. Ensure that any wires are free from entanglement with the damper actuator.
- 14. Place top access panel and secure with screws.
- 15. If the unit has an economizer and if a field economizer exhaust modification kit is provided, install the economizer mod kit as follows, prior to installing the Bard unit on the building if the return air opening is not accessible from inside the unit. If the return air opening is accessible from inside the unit, this modification and field adjustment can occur after the Bard unit is installed on the building by accessing the economizer through the wall return opening (prior to the return grille installation).
 - a. Power the economizer blade open to expose the economizer exhaust opening. This will require the unit is powered with damper opening via running the economizer Damper Open test. Reference Bard HVAC manual as necessary.
 - Remove the factory economizer seal blade on the sides of the opening (rear to remain).
 - c. The economizer modification kit is provided with two pieces of metal, the first is the bracket to be installed with screws on the down flange as shown. The second piece installs on top of the bracket and has set screws. The set screws can be adjusted to vary the amount of economizer exhaust opening. Install new gasket (provided with field kit) on the sides as shown.
 - d. Once installed, the Damper Open test mode can be terminated and the damper blade will return to fully closed position and the installation of the economizer exhaust modification kit is complete.

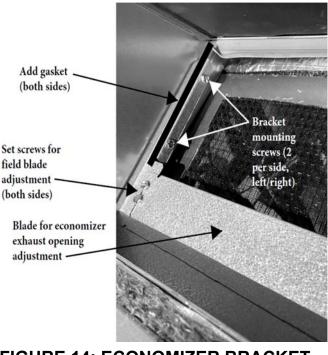


FIGURE 14: ECONOMIZER BRACKET INSTALLATION

16. The unit is now fully installed and ready for operation, with Startup Instructions on the following pages.





7. STARTUP INSTRUCTIONS

The Pressurization Module is designed to provide continuous airflow for 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 speed of the Pressurization Module(s) to reach the desired pressurization. The speed control can be accessed by removing the speed control panel found above the filter access panel. 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 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.

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 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 TOUBLESHOOTING, 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.





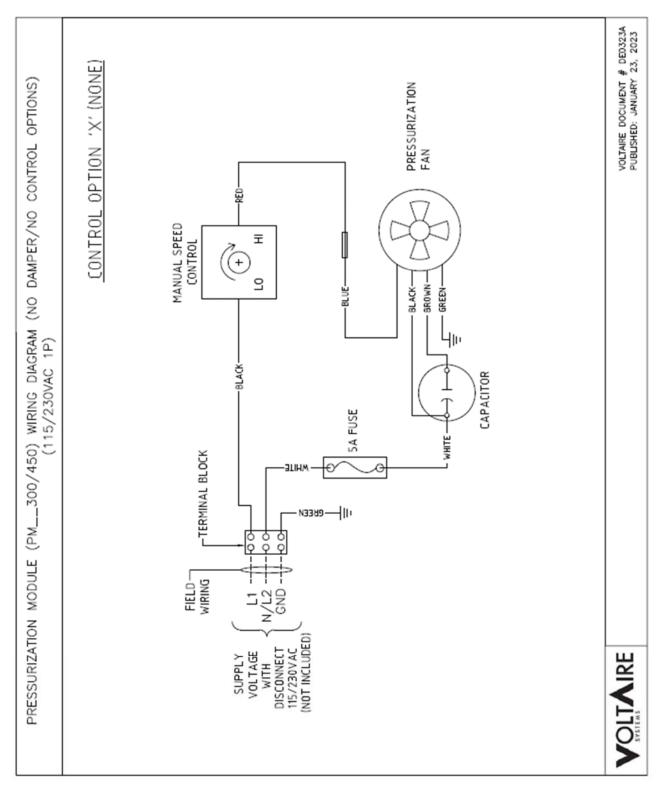
The following troubleshooting table provides some problems that may be experienced with startup and/or maintenance of the pressurization module. Please review this chart to diagnose the problem and repair/adjust, as needed.

PROBLEM	POTENTIAL CAUSE	SOLUTION		
	No power	Check power source voltage and verify the disconnect is turned on.		
	5 amp fuse blown	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.		
The	Dirty filter	Air flow will be reduced as the filter becomes dirty. Remove the filter through the filter access panel. Check the filter and replace if dirty.		
pressurization fan does not operate	Loose wires or terminal connections	Turn the disconnect OFF, remove the top access panel and verify all wires are landed on terminals and tightened properly.		
or operates too slow to pressurize the building/room	Fan is not operating	Turn the disconnect OFF, remove the top access panel and turn the disconnect ON to visually inspect if the fan is operating. Check the capacitance of the fan capacitor. If the above items have all been checked and verified AND the fan is not rotating, replace the fan capacitor and/or fan.		
	If provided with interlock or fire shutdown, external dry contacts are not functional	Verify that the external dry contacts for shutdown and the 24VAC supply for the interlock are operating properly and closed during normal operation; The dry contacts must be closed for normal operation.		
	The fan is running slow	Access the speed controller through the speed control access panel. Make sure this is turned to the right to increase speed.		
	Building / room 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.		
The Pressurization Module will not pressurize the building	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.		
	Economizer Exhaust Adjustment	If the Bard unit has an economizer and the pressurization module was provided with the economizer exhaust modification kit and the building pressure loss is only occurring during economizer mode, adjust the plate on the economizer modification kit to reduce the opening on the economizer exhaust.		
FOR ADDITIONAL TECHNICAL SUPPORT, PLEASE CONTACT VOLTAIRE SYSTEMS AT (407) 378-7482.				

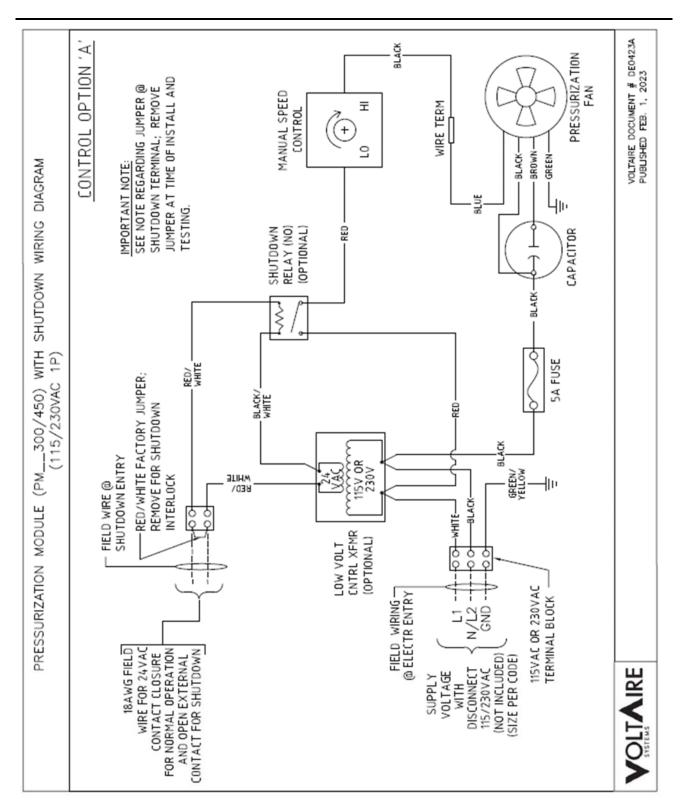




8. WIRING DIAGRAMS



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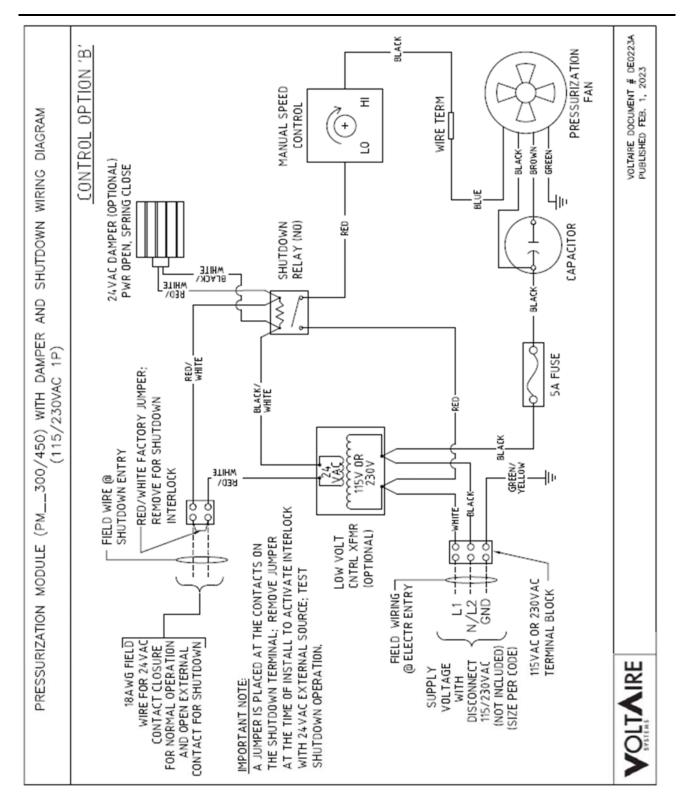












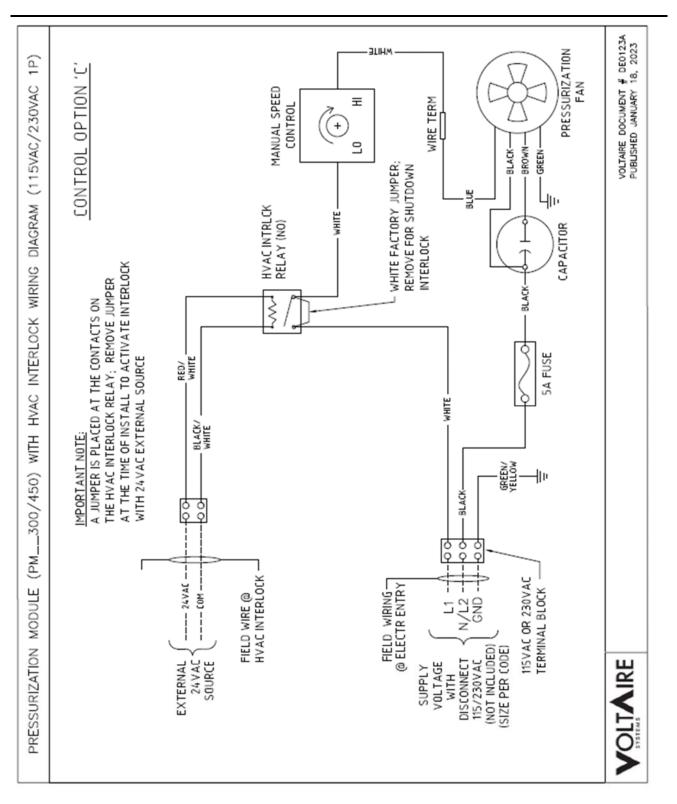
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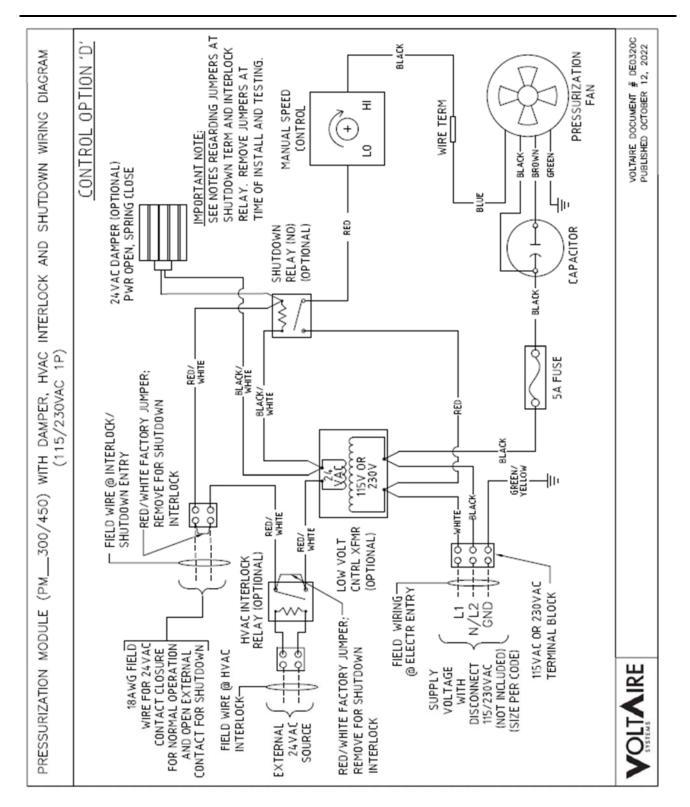




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10. WARRANTY

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 <u>www.voltairesys.com</u>.
- 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





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.