

**READ AND SAVE  
THESE INSTRUCTIONS**

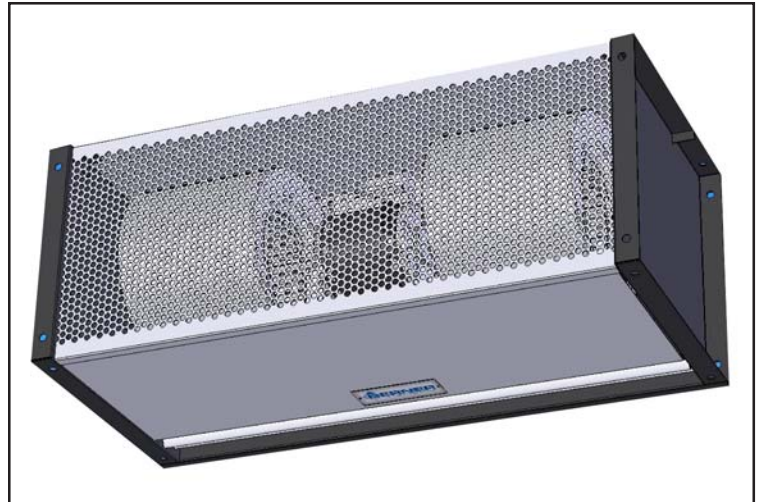


No.: II-230  
Date: October, 2007

## VSA/VSB & KSA/KSB

### Series Air Doors

## *Installation & Maintenance Instructions*



**WARNING: TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS, OBSERVE THE FOLLOWING:**

- A. Use this unit only in the manner intended by the manufacturer. If you have any questions, contact the manufacturer.
- B. Before servicing or cleaning unit, switch power off at service panel and lock the service disconnecting means to prevent power from being switched on accidentally. When the service disconnecting means cannot be locked, securely fasten a prominent warning device, such as a tag, to the service panel.
- C. Installation work and electrical wiring must be done by qualified person(s) in accordance with all applicable codes and standards, including fire-rated construction.
- D. Sufficient air is needed for proper combustion and exhausting of gases through the flue (chimney) of fuel burning equipment to prevent back drafting. Follow the heating equipment manufacturer's guideline and safety standards such as those published by the National Fire Protection Association (NFPA), and the American Society for Heating, Refrigeration and Air Conditioning Engineers (ASHRAE), and local code authorities.
- E. When cutting or drilling into wall or ceiling, do not damage electrical wiring and other hidden utilities.

### **I. UNCRATING**

Carefully examine the carton(s) for damage before opening. If the carton is damaged, immediately notify shipping company. If the unit(s) were shipped on wooden skids, remove protective wood and banding straps securing the carton(s) to the skid. Open the carton(s) and remove all protective packaging. Immediately verify that the electrical rating nameplate located on the cover matches electrical power supply available. Retain the shipping carton(s) until the unit(s) is installed and properly operating.

**ACCESSORIES:** If the unit(s) were ordered with optional electrical accessories (door switch, control panel, etc.), the accessories may be found in the carton containing the unit or in a separate carton(s) accompanying the unit(s). Check all of the cartons/skids for accessories before discarding.

## II. MOUNTING INSTRUCTIONS

### (General Notes for All Mounting Configurations)

**INDOOR MOUNTING** - Environmental/Insect/Dust Control

**OUTDOOR MOUNTING** (Unheated Only) - Insect/Dust Control

- A. Berner VSA and VSB series air doors are designed to be mounted by their end flanges without the need for intermediate support. Each end flange contains (8) total ½” holes located on all (4) sides to facilitate mounting flexibility and the easy addition of mounting accessories. Units may be attached to the wall directly, suspended from overhead, or supported by brackets. The style of door will determine the best mounting method and; as a general rule, use the mounting configuration that positions the air door as close to the top of the doorway as possible without interfering with door operation.
- B. The VSA/VSB air door is designed to be an effective barrier against cold drafts in the winter and hot air in the summer. To achieve optimum protection, the unit should be mounted on the inside of the building, flush to the wall and as close to the top of the door opening as possible. To ensure peak performance keep the air stream free of obstructions. If the air door cannot be installed flush with the wall, be sure to seal the gap between the wall and the back of the air door along the entire length of the unit to prevent airflow through this void.
- C. **The air door will not perform properly if negative air pressure exists in the building. Under these conditions, a means for makeup air to the building must be provided so that the air pressure on both sides of the opening is in balance.**
- D. Before mounting the air door, check the supporting structure to verify that it has sufficient load-carrying capacity to support the weight of the unit(s). The mounting hardware (supplied by others) should be capable of supporting a minimum of three (3) times the weight of the unit. **See Tables 1 & 2.**

Model	Weight by Unit Type			
	Ambient	Electric Heat	Hydronic Heat	Indirect Gas Heat*
VSB1036	95	101	110	265
VSB1042	101	107	118	276
VSB1048	106	112	126	285
VSB1060	117	123	142	304
VSB2060	178	190	203	385
VSB2072	187	199	217	414
VSB2078	193	205	225	414
VSB2084	198	210	233	434
VSB2096	208	220	248	453
VSB3096	263	281	303	633
VSB2108	251	263	296	505
VSB3108	306	324	351	685
VSB2120	258	270	308	521
VSB3120	313	331	363	701
VSB3132	334	352	389	761
VSB3144	348	366	408	770
VSB4144	403	427	463	825

\* Weight includes heater and duct transition

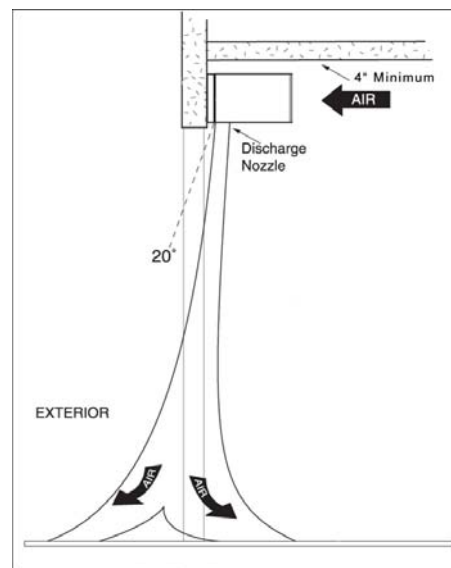
Table 2

- E. The air door is weatherproof. Therefore, no special covering is required when outdoor mounting, unheated, steam, or hot water units.
- F. **IMPORTANT:** A minimum of 4" (8" preferred) is recommended above the top of the air door for the installation and removal of the screen or to gain access to junction boxes.
- G. When determining the mounting location for the unit(s), make sure that nothing interferes with the curtain of air developed when the discharge vanes are directed from 0° to 20° toward the door opening. If the air stream strikes any obstruction (the top edge of the doorway, a door opening device, etc.), the effectiveness of the unit will be greatly reduced. **See Drawing 1.**

Model	Weight by Unit Type			
	Ambient	Electric Heat	Hydronic Heat	Indirect Gas Heat*
VSA1036	80	86	95	250
VSA1042	86	92	103	261
VSA1048	91	97	111	270
VSA1060	102	108	127	289
VSA2060	148	160	173	340
VSA2072	157	169	187	359
VSA2078	163	175	195	369
VSA2084	168	180	203	378
VSA2096	178	190	218	417
VSA3096	218	236	258	472
VSA2108	221	233	266	469
VSA3108	261	279	306	524
VSA2120	228	240	278	494
VSA3120	268	286	318	549
VSA3132	289	307	344	576
VSA3144	303	321	363	595
VSA4144	343	367	403	715

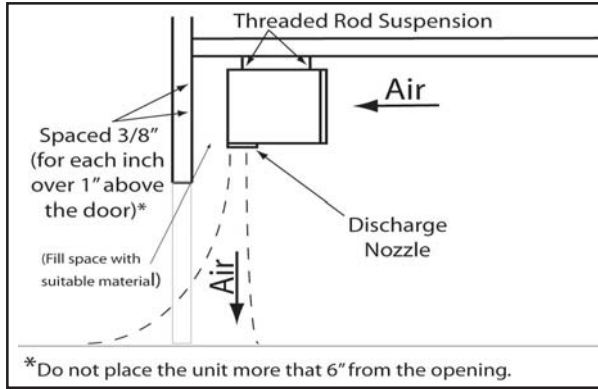
\* Weight includes heater and duct transition

Table 1



Drawing 1

H. For optimum performance, the bottom of the unit (discharge nozzle) should be no more than 1" above the top of the door opening with the unit mounted flush to the wall. If the unit must be mounted higher, it must be **spaced out** from the wall  $\frac{3}{8}$ " for every inch the unit is above the door opening. See **Drawing 2**.



Drawing 2

**I. Electric heated units shall:**

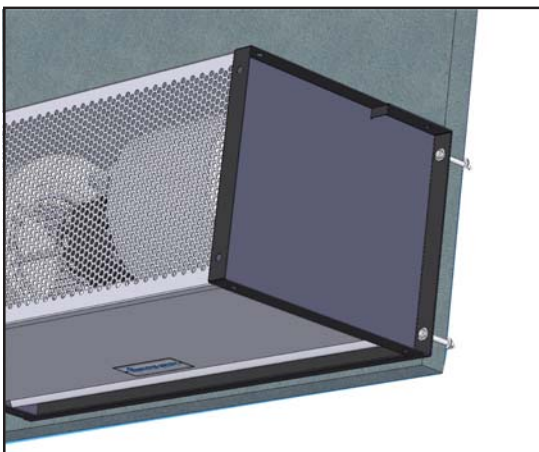
1. Have a minimum clearance of at least 1" between the sides and top of the unit and any combustibile material.
2. Have a minimum clearance of at least 6' between the bottom of the unit and the floor.
3. Be installed indoors only.

**J. Proceed to one of the following sections, depending on application and door type:**

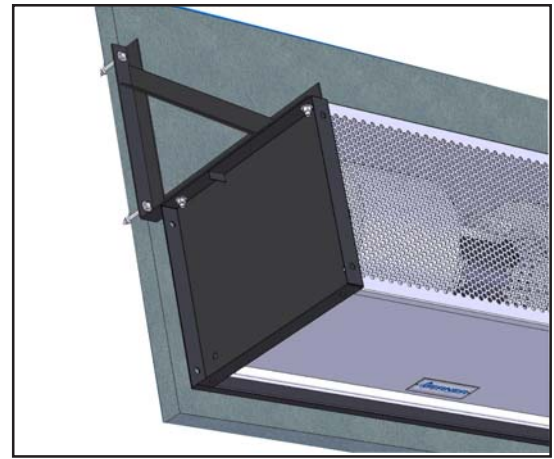
- Section III: Wall Mounting
- Section IV: Suspended Mounting
- Section V: Vertical Mounting
- Section VI: Tandem Mounting Brackets

### III. WALL MOUNTING

- A. Wall mounting works well with standard hinged doors or sliding doors.
- B. The VSA/VSB series endplates are equipped with  $\frac{1}{2}$ " holes for wall mounting. The unit may be attached to the wall using, at minimum,  $\frac{3}{8}$ " bolts through the holes on the back of the endplate. See **Figure 1**. Or, the unit may be attached using an optional wall mounting bracket or a combination of extension and wall mounting brackets (available from Berner) attached to the holes on the top of the endplate and the wall. See **Figure 2**.



Wall Mounting - Figure 1

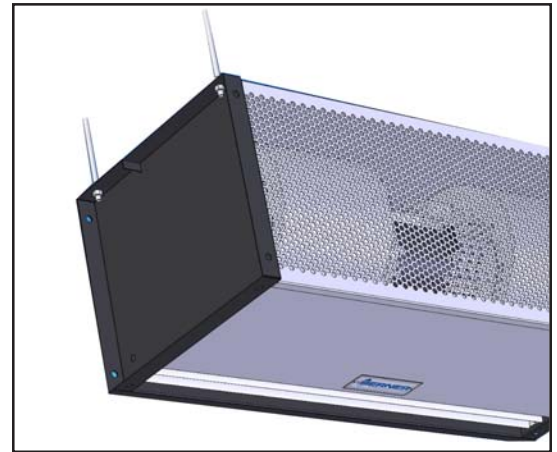


Wall Mounting Bracket - Figure 2

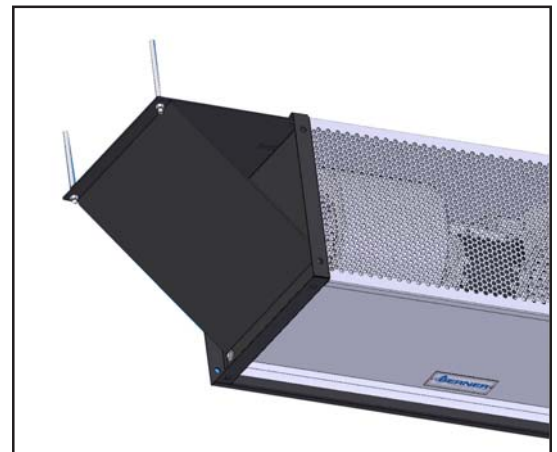
C. **Electrical Connections** - Proceed to **Section VII**.

### IV. SUSPENDED MOUNTING

- A. Suspended mounting works well with the majority of door types commonly found in an industrial setting, such as roll up doors, "high rise" track doors, "low-rise" turn back doors, and "high-rise" turn back doors.
- B. The VSA/VSB series endplates are equipped with  $\frac{1}{2}$ " holes for suspended mounting. The unit may be suspended using a minimum  $\frac{3}{8}$ " suspension rod (**Figure 3**), or using  $\frac{3}{8}$ " suspension rods and extension brackets (available from Berner). See **Figure 4**.



Threaded Rod Suspension - Figure 3

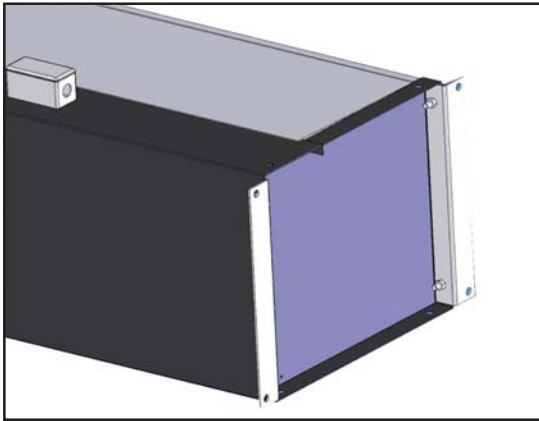


With Extension Brackets - Figure 4

C. **Electrical Connections** - Proceed to **Section VII**.

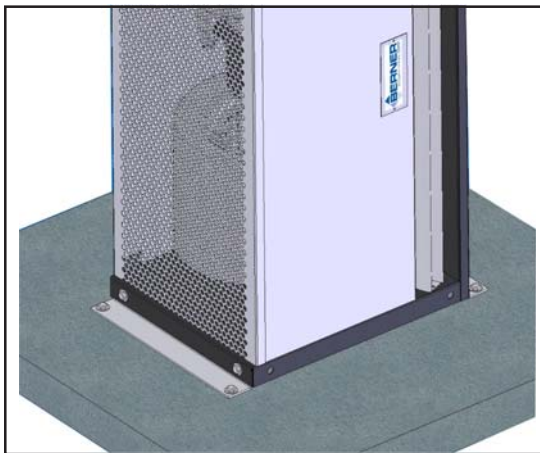
## V. VERTICAL MOUNTING

- A. Vertical mounting works well when the opening is taller than it is wide, or when the door type prevents a typical “over-door” mounting position.
- B. Optional Floor Mounting Brackets bolt to the unit endplate, and provide a rigid base to attach the unit to the floor. Two Brackets are required.
- C. To vertically mount a VSA/VSB unit using optional Floor Mounting Brackets, bolt brackets on the inside of the endplate with (4) 1/2 - 13 bolts as shown in **Figure 5**.



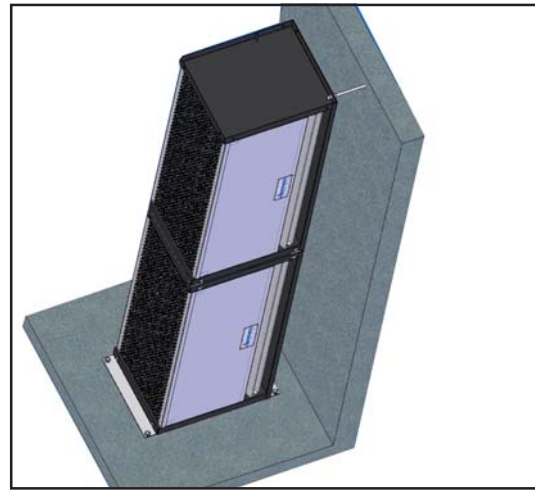
Floor Mounting Brackets - Figure 5

- D. Position the unit vertically in its intended position, and anchor it to the floor with a minimum 3/8" fastener. See **Figure 6**.



Floor Mounting - Figure 6

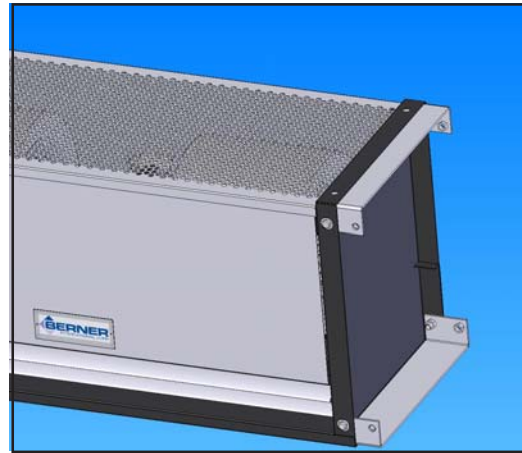
- E. To improve the stability of the installation, it is required that the top of the unit be attached to the wall. A common approach is to attach a minimum length of 3/8" threaded rod through one of the open mounting holes in the top endplate and affix the other end of the rod to the wall. See **Figure 7**.
- F. **Electrical Connections** - Proceed to **Section VII**.



Increased Stability - Figure 7

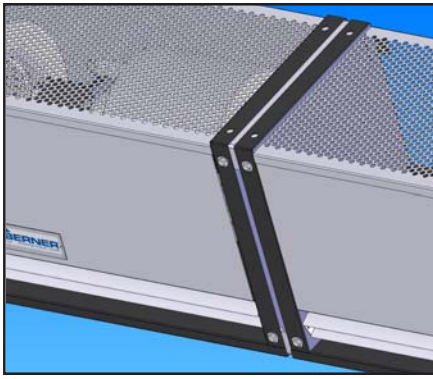
## VI. TANDEM MOUNTING BRACKETS (For Vertical Mount Installation)

- A. Optional Tandem Mounting Brackets are used to join two air curtains together in a vertical application when the door height exceeds 12'.
- B. Tandem Mounting Brackets connect the endplates of the units to be joined. Two brackets are required. Ideally, the units are joined together before the lower unit is bolted to floor.
- C. Using (4) 1/2 - 13 x 1" bolts, attach the Tandem Mounting Brackets to the inside of one of the unit's endplates as shown in **Figure 8**.

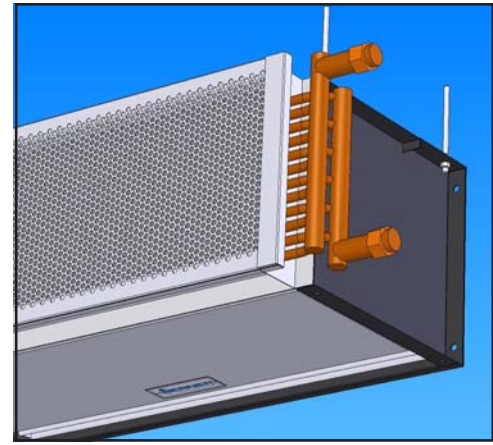


Tandem Mounting - Figure 8

- D. Slide the endplate of the next unit over the brackets installed in Step C and attach using (4) additional 1/2" bolts as shown in **Figure 9**.
- E. Assemble Floor Mounting Brackets to lower unit and attach to floor per steps C and D of Section V.
- F. **Electrical Connections** - Proceed to **Section VII**.



Tandem Mounting - Figure 9



Mechanical Connection - Steam/Hot Water - Figure 10

## VII. ELECTRICAL CONNECTIONS

All electrical wiring and connections **MUST** be performed by qualified personnel in accordance with the National Electrical Code ANSI/NFPA No. 70 (latest edition) or, in Canada, the Canadian Electrical Code, Part 1-C.S.A. Standard C22.1 and local codes and regulations.

- A. Check the rating nameplate on the top of the unit for supply voltage and current requirements. A separate line voltage supply with a suitable branch circuit protection device should be run directly from the main electrical panel to the unit. A disconnect switch for each branch circuit is a required part of this installation.
- B. All field wiring must be copper with a minimum insulation of 60°C within approved conduit. If any of the wire supplied with the unit must be replaced, it must be replaced with copper wiring with a minimum insulation of 90°C.
- C. Remove the Junction-Box cover.
- D. Connect the power supply to the unit. Connect all supply and control circuit wires according to wiring diagram provided.

**NOTE: For electric heated units provided with optional remote thermostat: Mount and wire the thermostat according to instructions and wiring diagram.**

## VIII. MECHANICAL CONNECTIONS

### A. ELECTRICALLY HEATED MODELS

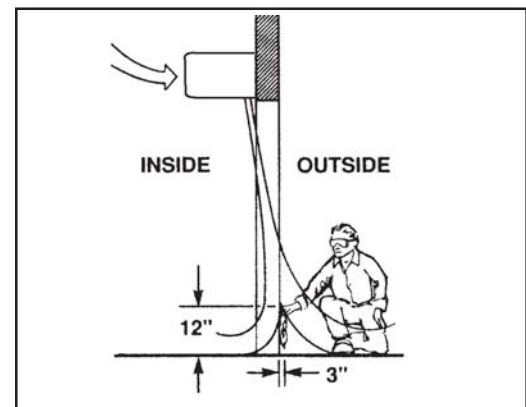
The heater circuit may be controlled by a remote thermostat or manually through the switch located on the discharge side of the unit. Overheating protection is provided by auto reset thermal cutouts built into the heater coil assembly (see the wiring diagram).

### B. STEAM OR HOT WATER HEATED MODELS

Piping should be done in accordance with local codes, regulations and standard practices. Connect the building system supply & return to the MNPT nipples on the heating coil. See Figure 10.

## IX. AIRFLOW ADJUSTMENTS

- A. With the air door operating and the door in its full open position, check to see that nothing is obstructing the airflow at the discharge nozzle vanes.
- B. Find the air stream split location. Hold a handkerchief by its corners, approximately 12" above the floor. Gently move the handkerchief back and forth in the doorway. Make sure the air is being directed to both the inside and the outside. See Figure 11. The split location is indicated where the handkerchief is vertical with minimal or no fluttering.
- C. Adjust the discharge nozzle vanes so the split location is approximately 3" outside the doorway. Adjust the speed controller so that the split location is approximately 12" above the floor.



Air Stream Split - Figure 11

## X. MAINTENANCE AND CLEANING

**CAUTION: ELECTRIC SHOCK HAZARD: Disconnect power when servicing unit. More than one disconnect may be required to de-energize unit.**

Keep your air door operating at peak efficiency by cleaning the blower wheels, motor(s) and intake grille. Build up of dust on the blower wheels can cause vibration, noise and

excessive wear on the motor bearings. The frequency of cleaning will depend on the environment where the unit is operating.

Dirty, dusty or greasy environments could require a cleaning schedule of once every two months. If the environment is not that dirty, the unit(s) should be scheduled for cleaning a minimum of once every (6) months.

To access the interior of the unit:

- A. Disconnect the power to the unit, and remove the intake grille by removing the screws on the top and bottom of the screen.
- B. Remove the bottom access panel by removing the Phillips head screws on the bottom of the unit.
- C. Vacuum and scrape (if necessary) to remove the build up of dirt and debris. The motor(s) are permanently lubricated and require no additional lubrication. Reinstall the cover and intake grille.
- D. Switch the power on after cleaning. **CAUTION: STAND CLEAR OF THE UNIT OR WEAR SAFETY GOGGLES AS LOOSE DEBRIS MAY BE PRESENT AND MAY EXIT THE NOZZLE.**

## XI. SERVICE

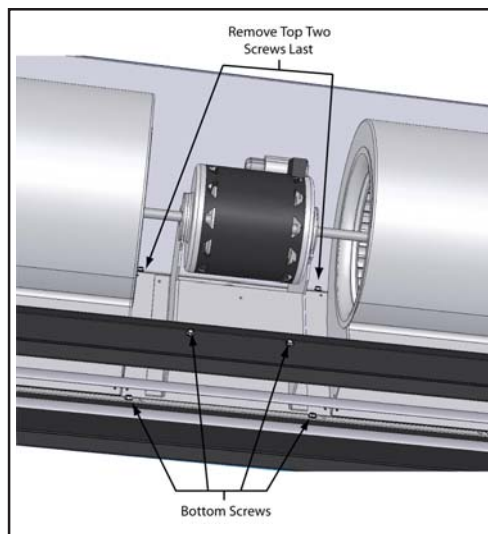
**CAUTION: ELECTRIC SHOCK HAZARD: Disconnect power when servicing unit. More than one disconnect may be required to de-energize unit.**

*Any service performed on the VSA/VSB series air door **MUST** be done by qualified personnel.*

Berner air doors require very little servicing. All parts are easily accessible for periodic inspection and maintenance. Units should be cleaned at least twice a year. Your particular application (the amount of dirt and dust in the air) and location of the unit(s) will determine how often your unit(s) will need to be cleaned and serviced. All motors have permanently lubricated, sealed, sleeve, or ball bearings and require no maintenance.

### A. BLOWER MODULE REMOVAL

1. Disconnect and Lockout power to the unit.
2. Remove the bottom access panel by removing the Phillips head screws on the bottom of the unit. The inlet screen does not have to be removed, but taking it off will make blower module removal easier.
3. Disconnect motor power wires/harness from motor.
4. If the unit has electric heat, there will be a series of insulated disconnects on the same side of the unit as the control panel. Disconnect them all.
5. Using a 5/16" socket on a 12" extension, loosen and remove the (6) self drilling screws from the blower plate and transverse. Remove the two screws at the top of the product last, as after they are removed, the module will be free to drop out of the cabinet. See **Figure 12** for location of all screws.



Location of Screws - Figure 12

6. Rotate the module top forward and drop it down through the bottom of the unit. See **Figure 13**.



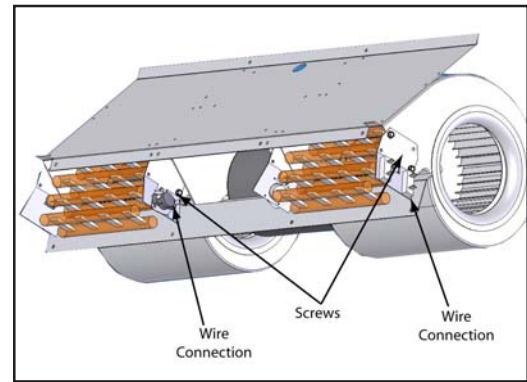
Removing the Blower Module - Figure 13

7. To remove the motor, first loosen the set screws in the fan wheel hubs by using a 5/32" Allen wrench. The set screw can be accessed up through the fan's discharge or on the back of the blower housing.
8. Next, remove one of the two blower housings by removing the (4) screws from the blower plate, and sliding it and its fan wheel off to the side.
9. Remove the motor clips from the motor mounts, lift the motor up and out of its cradle and slide it to the side. This should pull the motor shaft out of the remaining blower wheel.
10. Reinstall in reverse order of removal.

### B. REPLACEMENT OF ELECTRIC HEATER ELEMENT

1. Electric Heater Elements are attached to the end of the blower housings. To access them, follow "Blower Module Removal" section above.
2. Detach the wire mesh heater guard.
3. Disconnect the (4) power wires and (2) control wires per element.

4. Remove the (4) screws that hold the element to the blower housing. **See Figure 14** for location of screws and wire connections.
5. Install new element and connect all wires.
6. Reinstall Blower Module and connect all wires.



Location of screws - Figure 14

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## WARRANTY

Berner International Corp. warrants all new equipment to be free of defects in workmanship and material for a period of five years (5 years) on unheated models and two years (2 years) on heated models from the original date of shipment, provided the equipment has been properly cared for, installed and operated in accordance with the limits specified on the nameplate and The Company's instructions.

The Company will correct by repair or replacement, at its option and expense, any proven defects in said apparatus, subject to the above conditions, provided that immediate written notice of such defects is given to the Company. The warranty does not include any labor incurred for the removal or installation of defective part(s). The Company reserves the right to inspect, or have inspected by a qualified representative, any apparatus at the place of installation before authorizing repair or replacement. Repair or replacement will be made F.O.B. factory with any applicable transportation charges to be borne by the customer. Merchandise not of the Company's manufacture supplied in piece, or in component assemblies, is not covered by the above warranty, but the Company will give the customer the benefit of any adjustment as made with the Manufacturer.

This warranty is void if the apparatus has been tampered with in any way or shows evidence of misuse.

The Company will not assume any expense or liability for repairs made outside its factory without proper written consent from its service manager, nor for any transportation charges on apparatus returned to the factory without written authorization by the Company.

Nothing in the above warranty provisions, however, shall impose any liability or obligation of any type, nature or description upon Berner International Corp. if Berner has not received payment in full for the apparatus in question.

**THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.**

## LIMITATION OF DAMAGES

Notwithstanding anything to the contrary above, customer's exclusive remedy for any and all losses or damages resulting from the sale of The Company's equipment under this agreement, including but not limited to, any allegations of breach of warranty, breach of contract, negligence or strict liability, shall be limited, at The Company's option, to either the return of the purchase price or the replacement of the particular equipment for which a claim is made and proved. In no event shall The Company be liable for any special, consequential, incidental or indirect losses or damages from the sale of The Company's equipment under this agreement.

Serial Number \_\_\_\_\_ Model Number \_\_\_\_\_ Date Purchased \_\_\_\_\_

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*Berner reserves the right to alter specifications without prior notice.*