

IMPORTANT INSTRUCTIONS



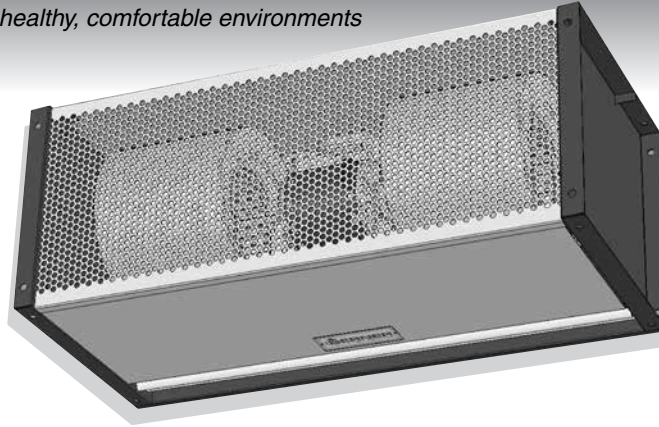
Saving energy and creating healthy, comfortable environments

READ AND SAVE
THESE INSTRUCTIONS

No.
Date

II-230
July, 2013

VS Series
AIR CURTAIN
/AIR DOOR
MADE IN THE USA



KS Series
AIR CURTAIN
/AIR DOOR
MADE IN THE USA

Installation & Maintenance Instructions

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

- A. Read all instructions before installing or using this air curtain.
- B. Use this unit only in the manner intended by the manufacturer and described in this manual. Any other use not recommended by the manufacturer may cause fire, electric shock, or injury to persons. If you have any questions, contact the manufacturer.
- C. 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.
- D. Installation work and electrical wiring must be done by qualified person(s) in accordance with all applicable national and local codes having jurisdiction, including fire-rated construction. See page 4, ELECTRICAL CONNECTIONS (NEC Code ANSI/NFPA No. 70).
- E. When cutting or drilling into wall or ceiling, do not damage electrical wiring and other hidden utilities.
- F. To reduce the risk of fire, do not store or use gasoline or other flammable vapors and liquids in the vicinity of the air curtain.
- G. This air curtain is hot when in use. To avoid burns, do not let bare skin touch hot surfaces. Keep combustible materials, such as furniture, pillows, bedding, papers, clothes, etc. and curtains at least 1 inch from the top, back, front, sides and at least 6 feet from the discharge of the air curtain.
- H. Extreme caution is necessary when any air curtain is used by or near children or invalids, and whenever the heater is left operating unattended.
- I. Do not operate any air curtain after it malfunctions. Disconnect power at the service panel and have the air curtain inspected by a reputable electrician before reusing.
- J. To disconnect the air curtain, turn controls to "off", and turn off power to the air curtain circuit at main disconnect panel.
- K. Do not insert or allow foreign objects to enter any ventilation or discharge opening as this may cause an electric shock or fire, or damage the air curtain.
- L. To prevent a possible fire, do not block the air intake or discharge of the air curtain in any manner.
- M. The air curtain has hot and arcing or sparking parts inside. Do not use it in areas where gasoline, paint, or flammable vapors or liquids are used or stored.
- N. This heater may include an audible or visual alarm to warn that parts of the heater are getting excessively hot. If the alarm sounds (or illuminates), immediately turn the heater off and inspect for any objects on or adjacent to the heater that may have blocked the airflow or otherwise caused high temperatures to have occurred. DO NOT OPERATE THE HEATER WITH THE ALARM SOUNDING (OR ILLUMINATING).

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 the 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 VS and KS Series air doors are designed to be mounted by their end flanges without the need for intermediate support. Each end flange contains (8) total 1/2" 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 VS and KS Series 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	Steam Heat	Hot Water Heat	Indirect Gas Heat*
VSA1036	80	86	106	106	264
VSA1042	86	92	116	116	277
VSA1048	91	97	125	126	290
VSA1060	102	108	141	142	323
VSA2060	148	160	187	188	374
VSA2072	157	169	199	200	391
VSA2078	163	175	209	210	404
VSA2084	168	180	218	218	417
VSA2096	178	190	234	235	445
VSA3096	218	236	274	275	499
VSA2108	221	233	278	284	499
VSA3108	261	279	318	324	553
VSA2120	228	240	290	294	517
VSA3120	268	286	330	334	571
VSA3132	289	307	359	363	611
VSA3144	303	321	376	383	639
VSA4144	343	367	416	423	811
VSA4156	359	383	438	445	815
VSA4168	371	395	457	464	842
VSA4180	384	408	475	483	870
VSA5180	424	454	515	523	937
VSA4192	396	420	494	503	897
VSA5192	436	466	534	543	964

* Weight includes heater and duct transition

TABLE 1

Model	Weight by Unit Type				
	Ambient	Electric Heat	Steam Heat	Hot Water Heat	Indirect Gas Heat*
VS B1036	83	89	112	118	267
VS B1042	89	95	123	130	280
VS B1048	94	100	132	141	293
VS B1060	105	111	148	148	326
VS B2060	154	166	197	211	394
VS B2072	163	175	210	225	410
VS B2078	169	181	215	233	424
VS B2084	174	186	224	243	436
VS B2096	184	196	242	266	465
VS B3096	227	245	285	309	624
VS B2108	227	239	286	289	519
VS B3108	270	288	332	359	678
VS B2120	234	246	298	301	537
VS B3120	277	295	341	370	696
VS B3132	298	316	370	403	751
VS B3144	312	330	390	427	780
VS B4144	355	379	433	470	823
VS B4156	371	395	456	495	854
VS B4168	383	407	472	517	881
VS B4180	396	420	491	539	909
VS B5180	439	469	534	582	1095
VS B4192	408	432	510	561	936
VS B5192	451	481	553	604	1122

* 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.

NOTE: Electric heated units are to be installed indoors only.

F. **IMPORTANT:** A minimum of 4" (8" preferred) clearance 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.**

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.**

I. **Electric heated units shall:**

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

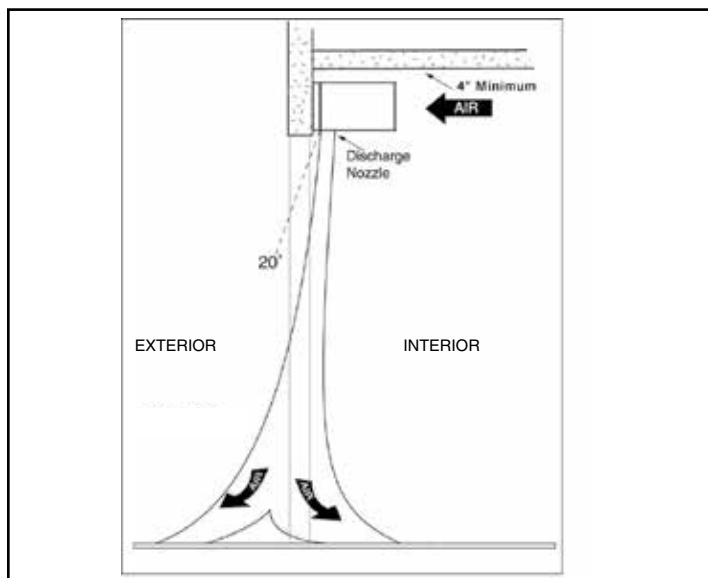
J. **Proceed to one of the following sections, depending on application and door type:**

Section III: Wall Mounting

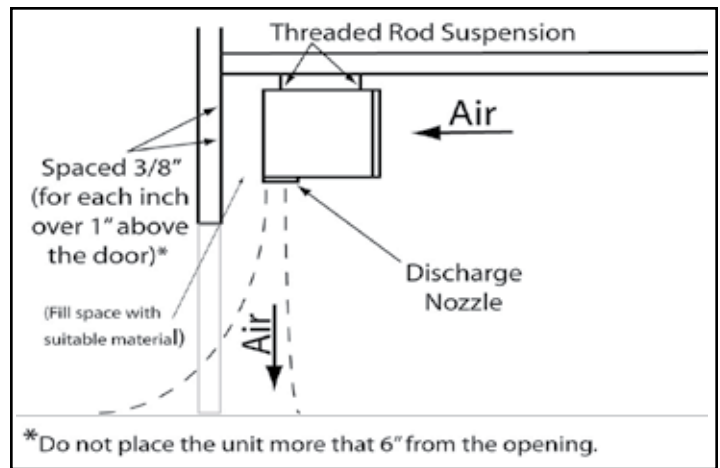
Section IV: Suspended Mounting

Section V: Vertical Mounting

Section VI: Tandem Mounting Brackets for Vertical Mounting



DRAWING 1



DRAWING 2

III. WALL MOUNTING

A. Wall mounting works well with standard hinged doors or sliding doors.

B. The VS and KS Series end plates 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 end plate. **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 end plate and the wall. **See Figure 2.**

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

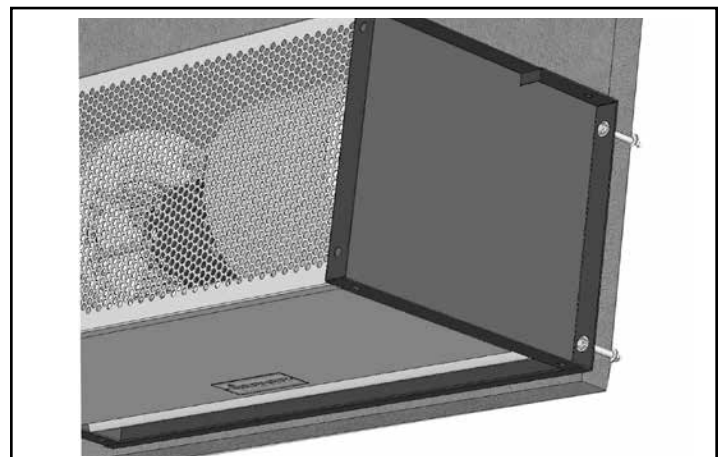


FIGURE 1 - Wall Mounting

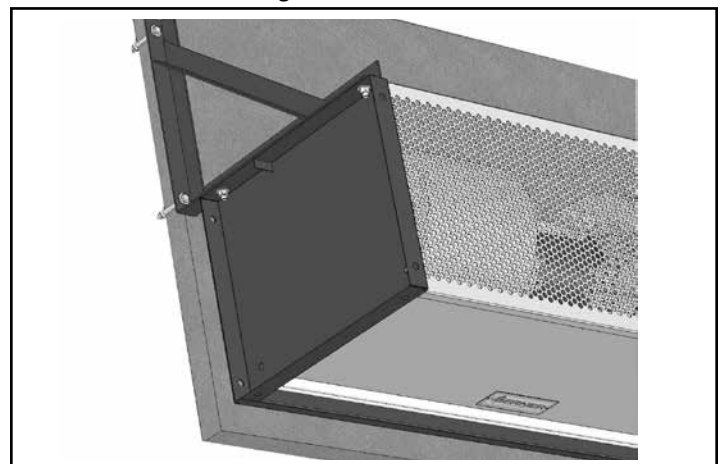


FIGURE 2 - Wall Mounting Bracket

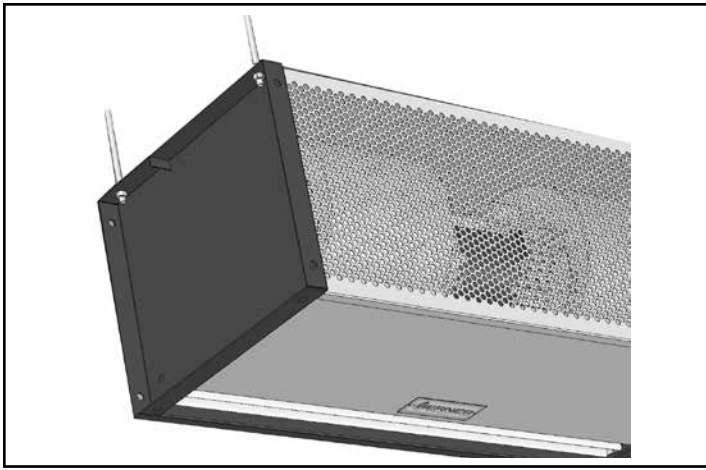


FIGURE 3 - Threaded Rod Suspension

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 VS and KS Series end plates are equipped with 1/2" holes for suspended mounting. The unit may be suspended using a minimum 3/8" suspension rod (**Figure 3**), or using 3/8" suspension rods and extension brackets (available from Berner). **See 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 (available from Berner) bolt to the unit end plate, and provide a rigid base to attach the unit to the floor. Two Brackets are required.
- C. To vertically mount a VS and KS Series unit using optional Floor Mounting Brackets, bolt brackets on the inside of the end plate with (4) 1/2 - 13 bolts as shown in **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.**
- 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 end plate and affix the other end of the rod to the wall. **See Figure 7.**
- F. **Electrical Connections** - Proceed to **Section VII.**

VI. TANDEM MOUNTING BRACKETS

(For Vertical Mount Installation)

- A. Optional Tandem Mounting Brackets (available from Berner) are used to join two air curtains together in a vertical application when the door height exceeds 16'.

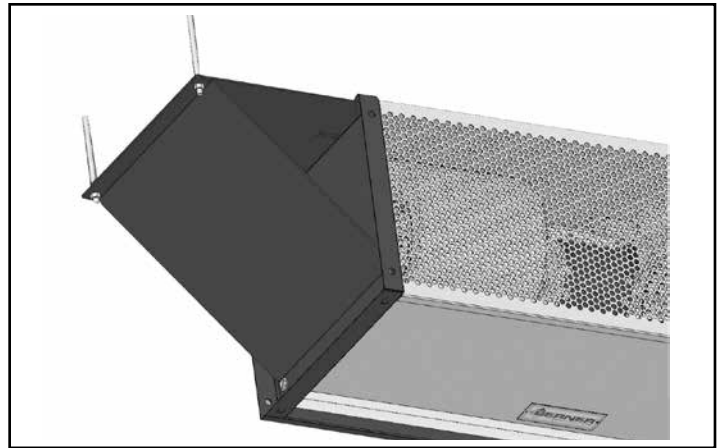


FIGURE 4 - With Extension Brackets

- B. Tandem Mounting Brackets connect the end plates of the units to be joined. Two brackets are required. Ideally, the units are joined together before the lower unit is bolted to the floor.
- C. Using (4) 1/2 - 13 x 1" bolts, attach the Tandem Mounting Brackets to the inside of one of the unit's end plates as shown in **Figure 8.**
- D. Slide the end plate 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.**

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.

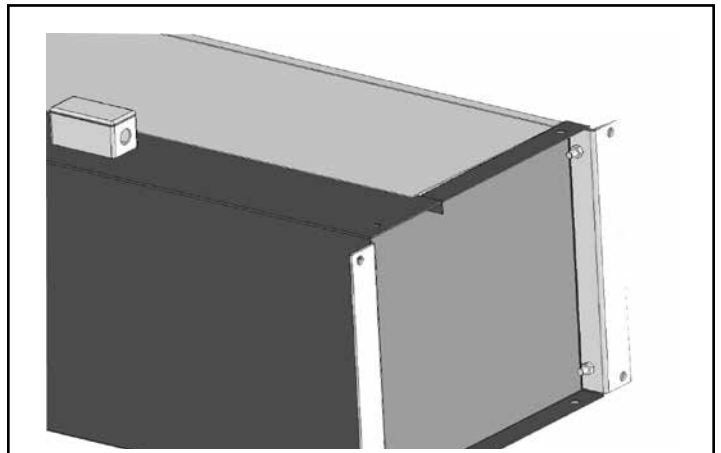


FIGURE 5 - Floor Mounting Brackets

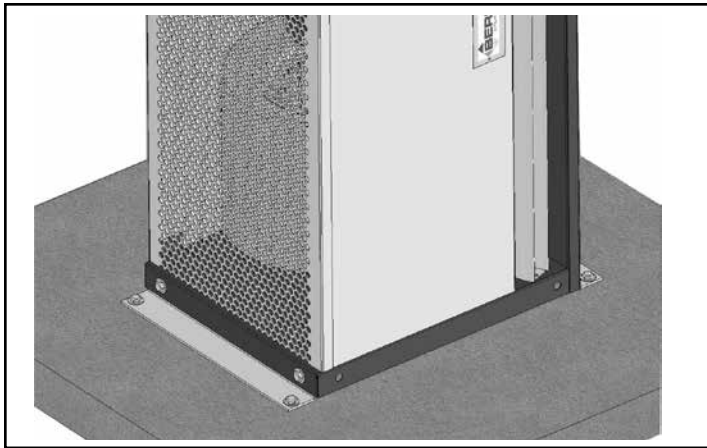


FIGURE 6 - Floor Mounting

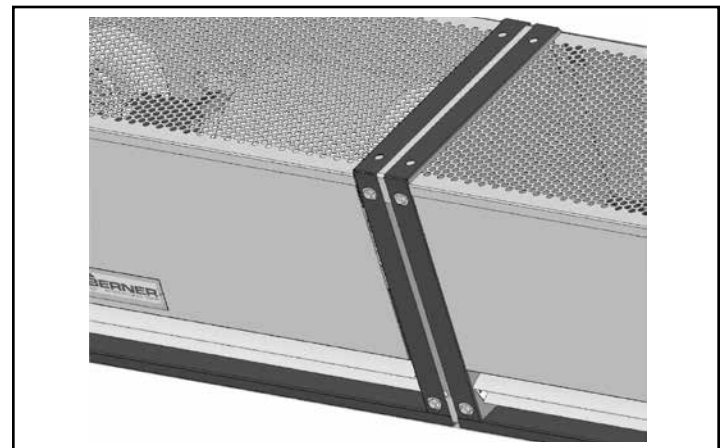


FIGURE 9 - Tandem Mounting

- 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.
- E. Re-install the Junction Box cover.

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. ELECTRIC 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 and return to the MNPT nipples on the heating coil. **See Figure 10.**

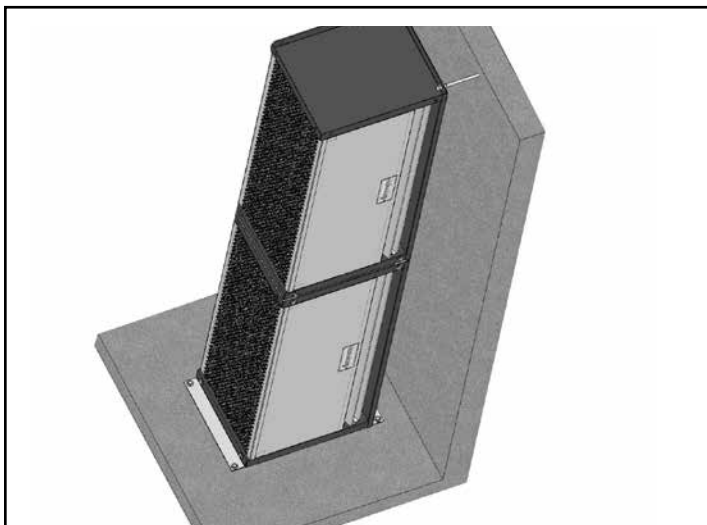


FIGURE 7 - Increased Stability for Vertical Mounting

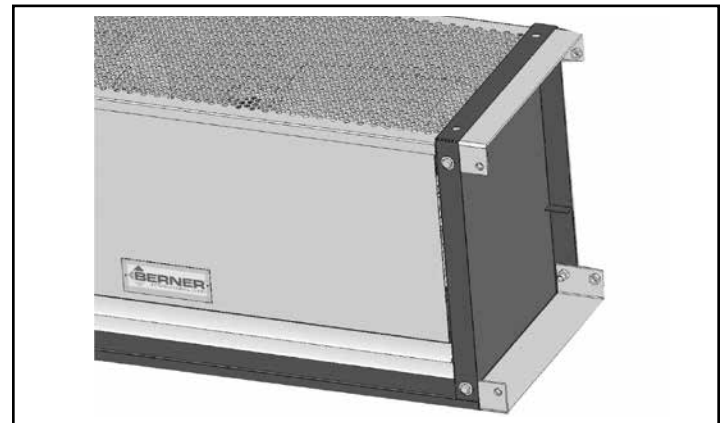


FIGURE 8 - Tandem Mounting for Vertical Mounting

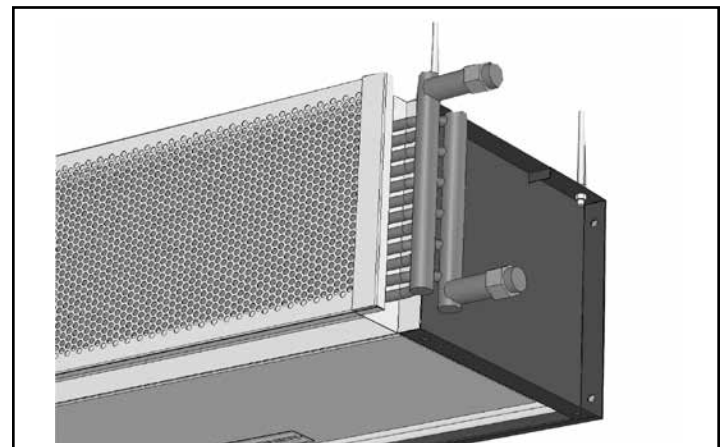


FIGURE 10 - Mechanical Connection - Steam/Hot Water

IX. OPERATING INSTRUCTIONS

A. GENERAL OPERATION

Air curtain operation may be divided into four areas: control package, fan activation, fan speed selection, and heat activation. The air curtain must be properly installed before it is used.

1. Control packages control the unit's sequence of operation. Unit modes/control packages are built into the unit and may not be changed in the field.. Refer to your wiring diagram for specifics about activation connections and sequence of operation.
 - a. Basic Control Package – The unit is activated by a door switch. The door switch may be line voltage or low voltage (24V).
 - b. Deluxe Control Package – The unit is activated by a door switch, but has a factory installed time delay allowing the unit to keep running for a period of time after the door closes.
 - c. Comfort Plus Control Package – Available only on heated units, the unit is activated by the door switch OR by the thermostat to provide supplemental heating.
2. Unheated units will have the fans activated by a door switch or sensor. The unit may be single speed and require no fan speed selector (On/Off), or may have multiple fan speeds which require either a unit or remote mounted switch (Off, High, Med, Low).
3. Heated units will have fans activated by a door switch or sensor, but may also be activated by the thermostat in Comfort Plus Mode. The unit may be single speed and controlled by either a unit or remote mounted switch (Fan, Off, Heat), or may have multiple fan speeds which can be set by either a unit or remote mounted switch (Low, Med, High, Off, Low heat, Med Heat, High Heat).
4. Heat activation is controlled by either a unit or remote mounted thermostat, and a unit or remote mounted switch.

B. AIR STREAM ADJUSTMENT

1. With the air curtain operating and the door in its full open position, check to see that nothing is obstructing the airflow at the discharge nozzle vanes.

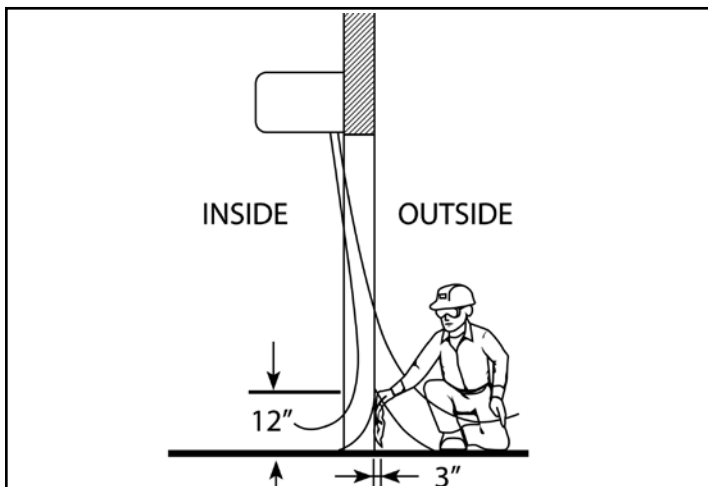


FIGURE 11 - Air Stream Split

2. 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.
3. The split location should be approximately 3" outside the doorway. If necessary adjust the discharge nozzle vanes by de-energizing the unit, loosening the nozzle vane locking screws and adjusting vanes.

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 curtain 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 VS and KS Series air curtain 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 from the unit.
2. Remove the Bottom Access Panel. The Inlet Screen and Top Access Panel do not need to be removed, but taking them off can make the process easier.
3. Disconnect the wire harness from the motor(s). If the unit has electric heat, label and remove power wires and thermal cutout circuit wires from the heater assemblies. **See Figure 14.**
4. Removing the blower module requires removing (4) #12 self-drilling sheet metal screws. Using a 5/16" hex driver, first remove the (2) screws that go through the Transverse into the Motor Mount. **See Figure 12.**

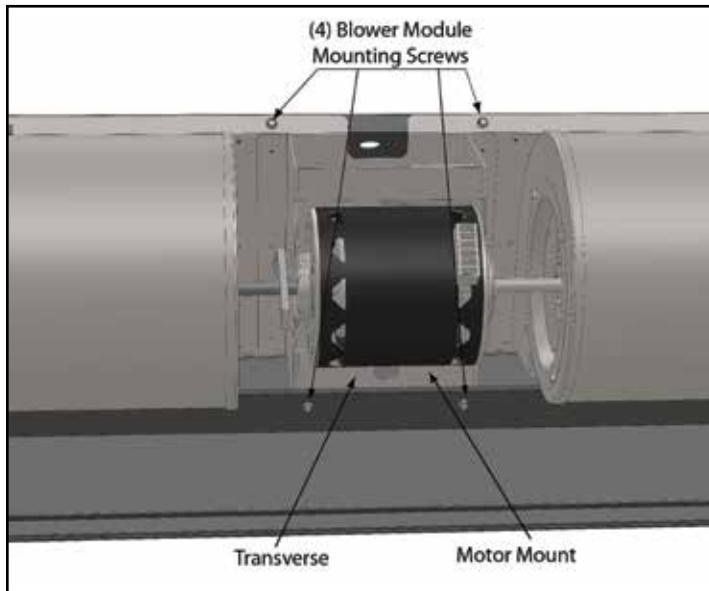


FIGURE 12 - Location of screws

5. After removing the (2) screws in this step, the approximately 40 lbs. module will be free to drop down out of the unit. While holding the module in place by pushing up onto the motor, remove the top, final (2) screws that go through the Blower Plate into the Main Channel. **See Figure 12.**
6. Gripping the motor and motor mount, slowly rotate the top of the module forward and then down and out of

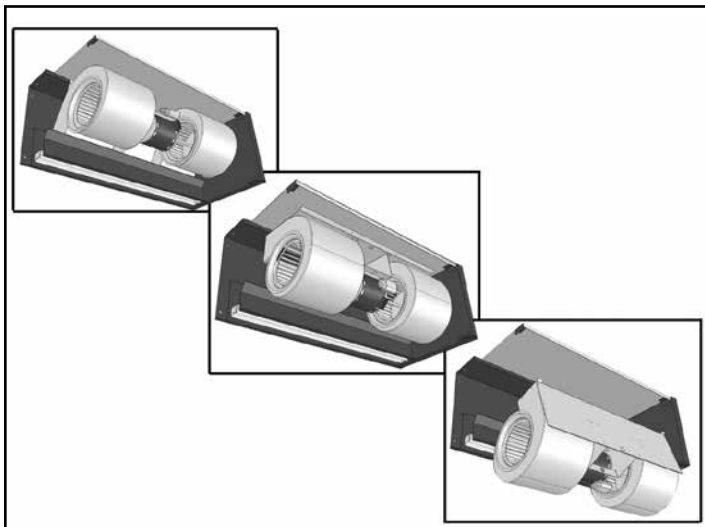


FIGURE 13 - Removing the Blower Module

the unit. **See Figure 13.**

7. To remove the motor, first loosen the set screws in the fan impeller hubs using a 5/32" Allen wrench. The set screw can be accessed up through the fan discharge or through the small hole on the back of the blower housing.
8. Next, remove the blower housings by removing the (4) self-drilling screws from the back of the fan housing. The fan housing and fan impellers may now be slid off of the motor shaft.
9. To remove the Motor, remove the motor clips from the motors, and disconnect the motor ground wire from the Motor Mount.
10. Reinstall in reverse order.

B. REPLACEMENT OF ELECTRIC HEATER ELEMENT

1. The blower module does not need to be removed to clean or replace electric heater assemblies.
2. **See Figure 14.** There are (4) heater assemblies per Blower Module. All have (2) power connections. The "Half" heater assemblies also have (2) connections for the thermal cutout circuit. Label and remove all wires on the heaters to be replaced.
3. The (2) "Full" heaters are each held in place by (3) self-drilling screws that go through the heater mounting bracket into the fan housing. The (2) "Half" heaters are each held in place by (2) self-tapping screws that go through the heater frame into the mounting bracket that is attached to the fan housing. Remove all fasteners on the heaters to be replaced.
4. Reinstall new heaters in reverse order.

NOTE: New heaters temporarily emit the smell of burnt oil when they are energized for the first time. This is normal and will only occur for the first few minutes of operation.

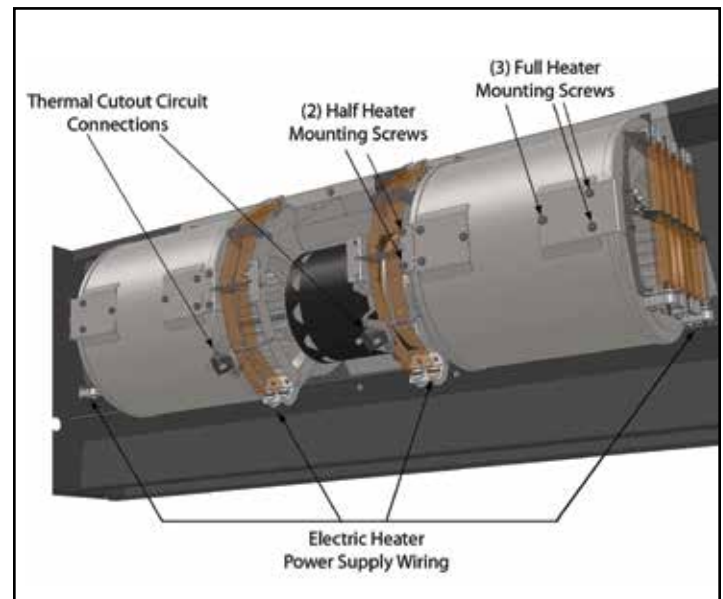


FIGURE 14 - Location of screws

XII. WARRANTY

Berner International Corp. ("The Company") 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 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 HERE OF 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.



Saving energy and creating healthy, comfortable environments

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