



# OWNER & OPERATIONS MANUAL

## COMFORTSHIELD

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**THIS WARRANTY CERTIFICATE TO BE RETAINED BY CUSTOMER**



**GENERAL WARRANTY STATEMENT**

We warranty all Enershield products to be free from defects in material and workmanship under normal use and service. Our warranty covers the product only as to materials or workmanship and not for fitness for purpose or merchantability. In the event that products are found to be defective in materials or workmanship, the extent of our liability will be replacement of defective parts only.

**PERIOD OF COVERAGE**

**Thermalshield (TS) and Microshield (MCS) models:**

**ONE YEAR WARRANTY:** The above warranty applies for one (1) years from the original date of purchase to all parts and components in the Enershield product identified above except air filters which are not included in any part of this warranty.

**Comfortshield (CS), Durashield (DS), Durashield-HD (DSH), Ultrashield (US), Xtremeshield (XS) and Megashield (MS) models:**

**FIVE YEAR WARRANTY:** The above warranty applies for five (5) years from the original date of purchase to all parts and components in the Enershield product identified above except air filters which are not included in any part of this warranty.

**GENERAL CONDITIONS**

This warranty **DOES NOT COVER** the cost of labor for any adjustments or service calls, nor does it include the cost of labor for replacing defective parts or components.

This warranty **DOES NOT APPLY** to Enershield product or any part thereof, if it has been subject to misuse, abuse, neglect, accident or alteration.

This warranty is in lieu of all other warranties expressed or implied, and in no event shall Enershield Industries Ltd. be liable for any special indirect or consequential damages.

Service or other labor charges not included in this warranty may be covered by a service agreement through the seller at the time of purchase. Such agreement or contract shall be separate and apart from this factory equipment warranty.

Serial #: \_\_\_\_\_

Installation Date: \_\_\_\_\_

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## INSPECTION UPON ARRIVAL

Inspect unit upon arrival. In the event damage has occurred, report immediately to carrier and notify the Enershield Industries Ltd. office.

Confirm the unit(s) rating plate to verify the power supply meets the unit(s) requirements.

Confirm that the unit(s) supplied corresponds to the unit(s) ordered.

Report any deviations directly to your Enershield sales representative.

## HANDLING

To avoid damage prior to installation, leave the air barrier packaged on its skid or in its crate until day of installation.

Store in a clean and DRY environment.

Do not stack wrapped units!!!

Lift wrapped/crated units from the designated end only.

Fork extensions should be utilized on crates or pallets 8' and longer.

Do not drop.

Not for use in high humidity or freezer environments.

# **IMPORTANT!!!**

Read and save these Instructions.

Understand the instructions thoroughly prior to beginning installation of your Air Barrier. Placement of this equipment relative to the door is essential for proper function. This product uses facility waste heat to seal the opening. **IT IS NOT A HEATED UNIT!!!**

**“WARNING” -TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT USE THIS FAN WITH SOLID STATE SPEED CONTROL DEVICE.”**

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

Use this unit only in the manner intended by the manufacturer. If you have questions, contact the manufacturer.

**“WARNING”** 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.

Installation work and electrical wiring must be done by qualified person(s) in accordance with all applicable codes and standards, including fire-rated construction.

When cutting or drilling into wall or ceiling, do not damage electrical wiring and other hidden utilities.

## **SAFETY NOTICE!!!**

Individual frames are very heavy. Use adequate means to handle.

Any and all lifting equipment should only be operated by qualified personnel.

Ensure Air Barrier is stable BEFORE beginning to lift. Secure it if necessary.

Do not walk under Air Barrier or allow others to do so while it is being lifting into position.

Remove or identify any and all obstructions/hazards prior to lifting the Barrier.

Lift on level ground only.

**DO NOT** install the barrier on the outside of the building.

**DO NOT** install the barrier on the “dirty” side of the environment.

**DO NOT** lift the barrier into position from the opposite side of the door.

Ensure wall/ceiling structure is adequate to support the weight of the Air Barrier.

Air Barriers are not designed or capable of replacing doors; they will only reduce the amount of heat or cold lost while the door is open.

Ensure all protective guards and screens are in place prior to operating!

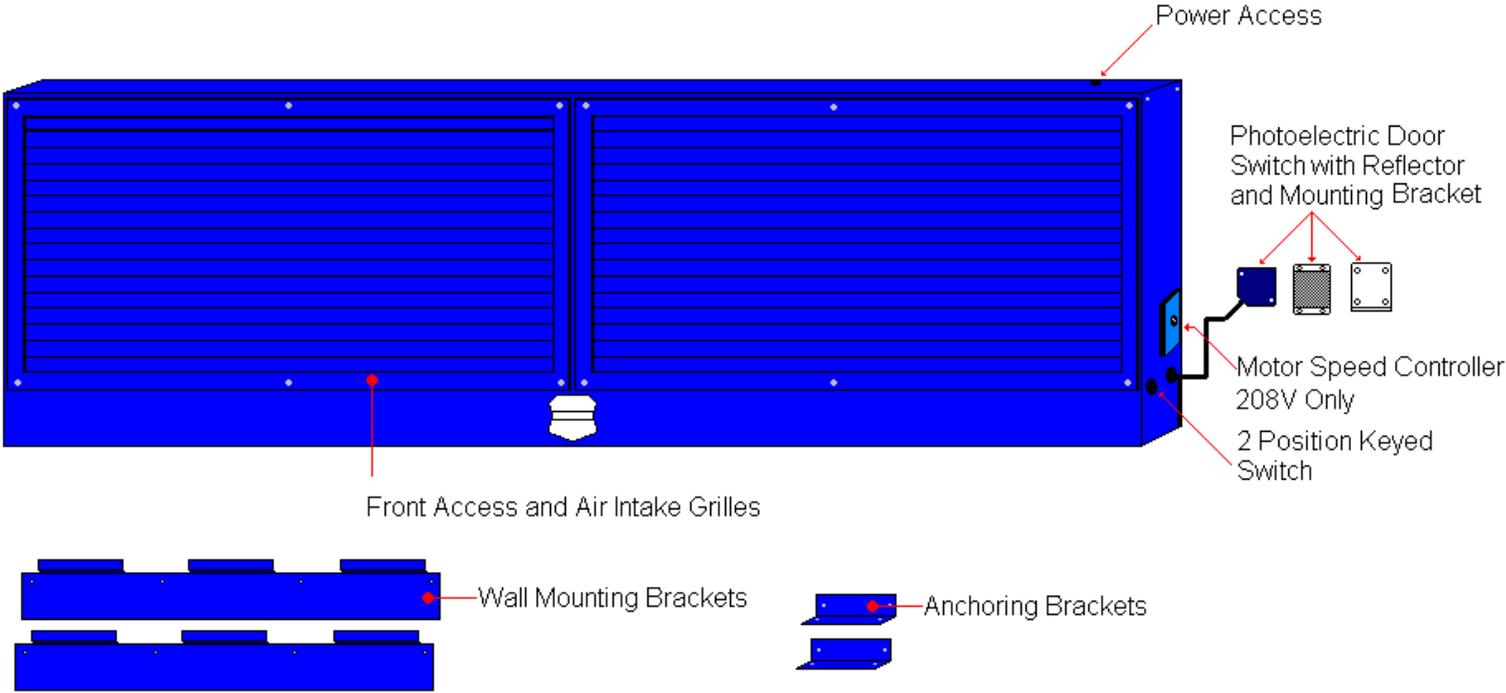
Rotating parts: keep hands and loose clothing clear while unit is operating.

# Savings and Comfort

Open doors account for a considerable amount of the energy loss in a building. A correctly installed Air Barrier can reduce the heat loss through the door as much as 90 %. An Air Barrier prevents cold draught allowing facilities to keep their doors open for extended periods in winter time, creating a more comfortable work environment thus saving a substantial amount of energy. It has also proved beneficial in certain situations to enhance manufacturing processes where atmosphere and temperature are critical. In the summer time Air Barriers can be operated in order to keep out hot air/humidity, dust and insects and cooling temperatures in.

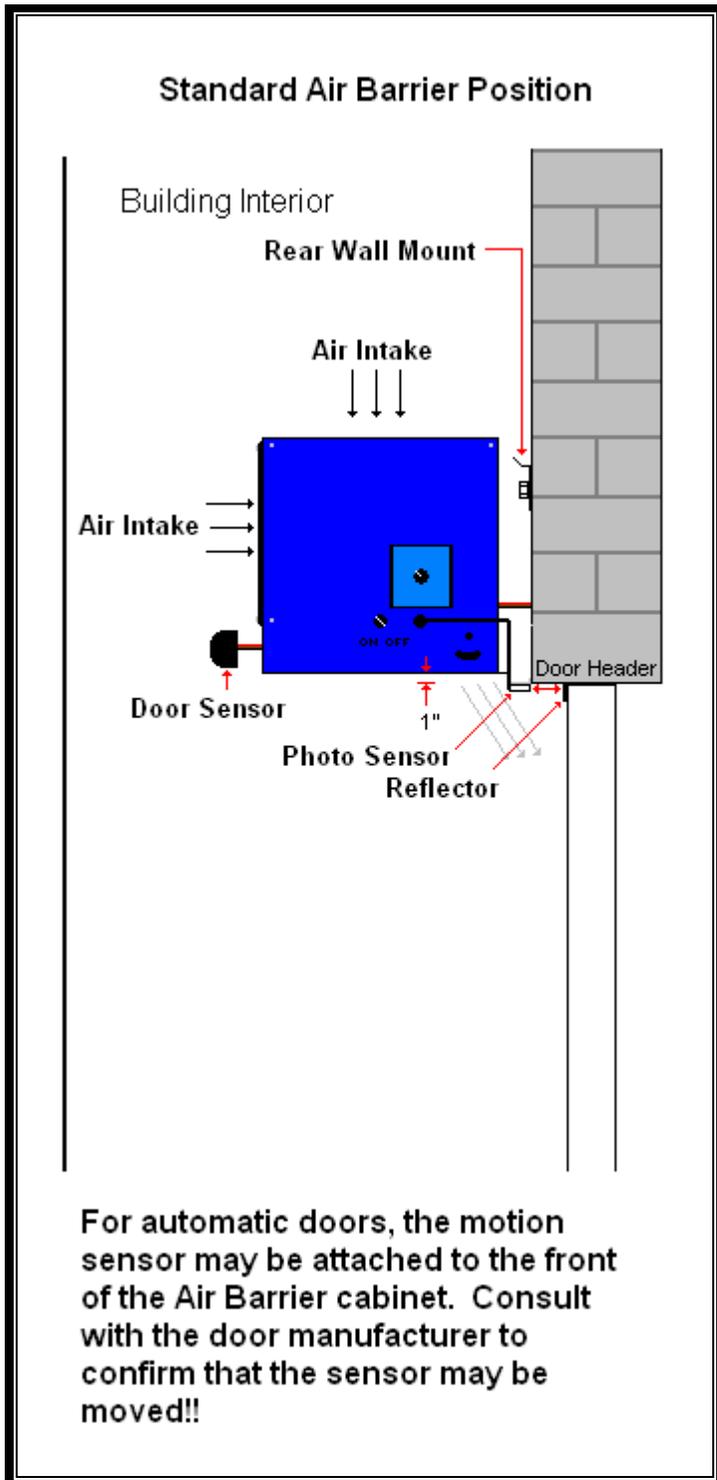
- Properly operated Air Barrier helps minimize high cost of energy by sealing door opening by up to 90%
- Maintain a more comfortable environment for employees (I.E. Service, Production & Shipping/Receiving Areas).
- Keep out cold drafts, dust, fumes, insects & other contaminants.
- Reduce door cycles, wear & tear, and associated costs while providing clear unobstructed doorways.
- Improve productivity by maintaining more consistent temperatures.

We are confident you will enjoy not only the benefits of energy savings but also an enhancement to comfort with the installation of an Enershield Air Barrier. We appreciate not only your interest in our technology but for giving us the opportunity to show you why we are the leaders in the Air Barrier industry. Thank you.



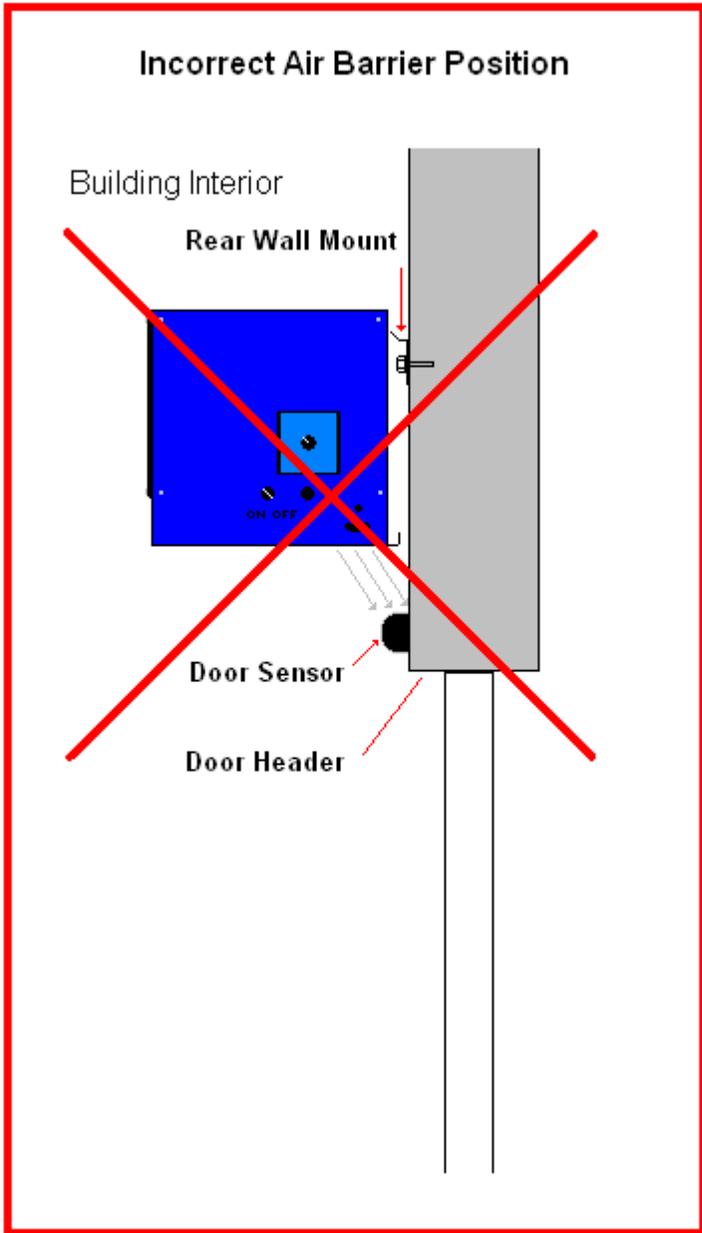
## INSTALLATION GUIDE

Mounting a Comfortshield Air Barrier Using Rear Wall Mounting Bracket. The following procedure is similar for each model of CS. Filled block wall, precast concrete panels, wood or steel framed with backing.

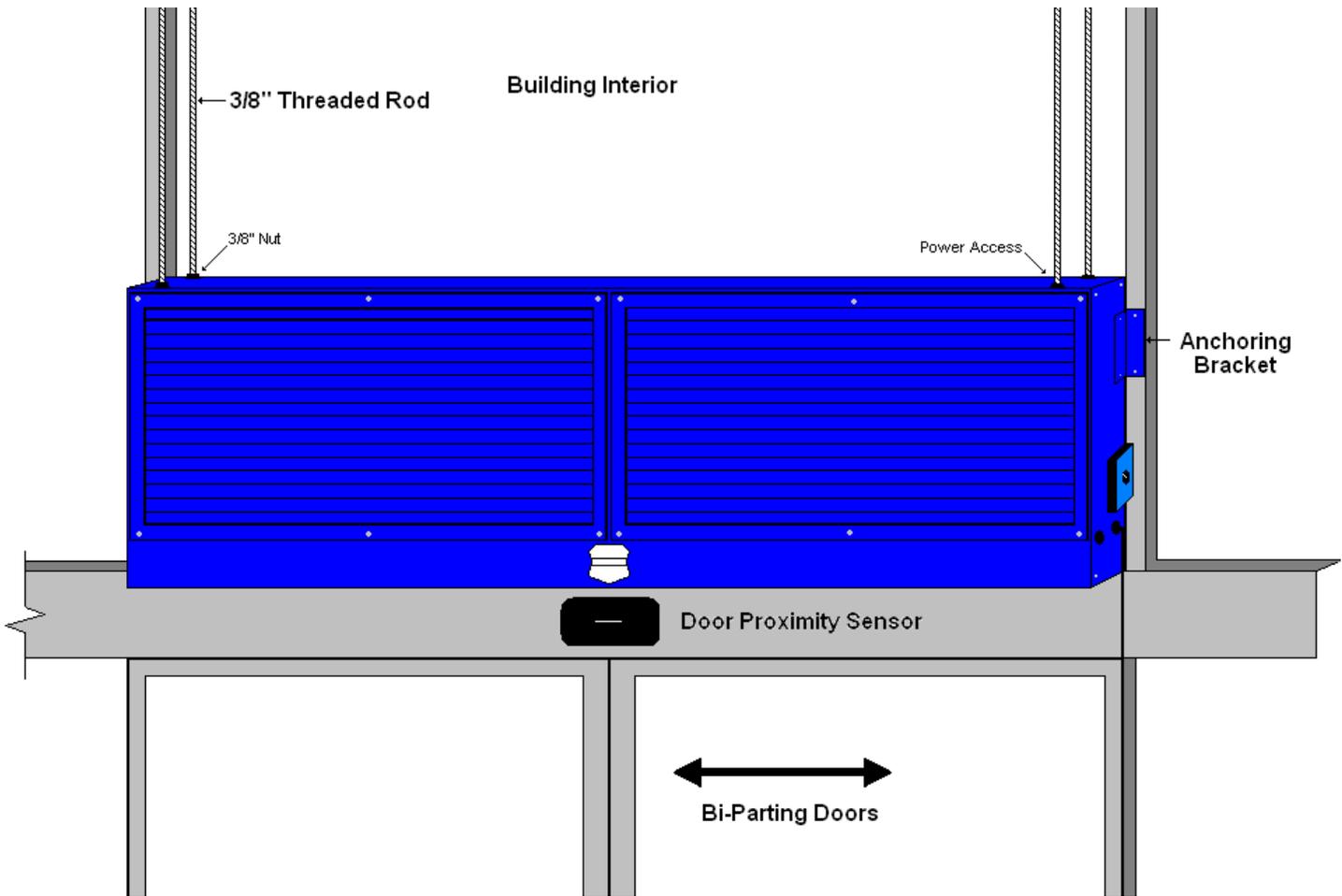


Rear Mounting Bracket(s) and Anchoring angle brackets are included. All other hardware is to be provided by the installer.

# WARNING!!!



# Hanging a Comfortshield



Each cabinet comes equipped with 4 holes in the top capable of supporting the Air Barrier from 3/8" threaded rod if required.

Ensure ceiling structure is adequate to carry the load.

Center the Air Barrier on door.

Suspend threaded rod.

Remove intake screens.

Lift barrier into place and align threaded rod with the holes in top of the cabinet.

Secure with 3/8" nuts, lock washers and flat washers on both sides of cabinet. (See above diagram)

Threaded rod should extend into the cabinet a maximum of 1".

Air Barrier should be set 1" above the door opening.

If it is necessary to place above door height it will be necessary to move the barrier in 1/2" for every 1" above door to ensure the air stream does not deflect off the door header.

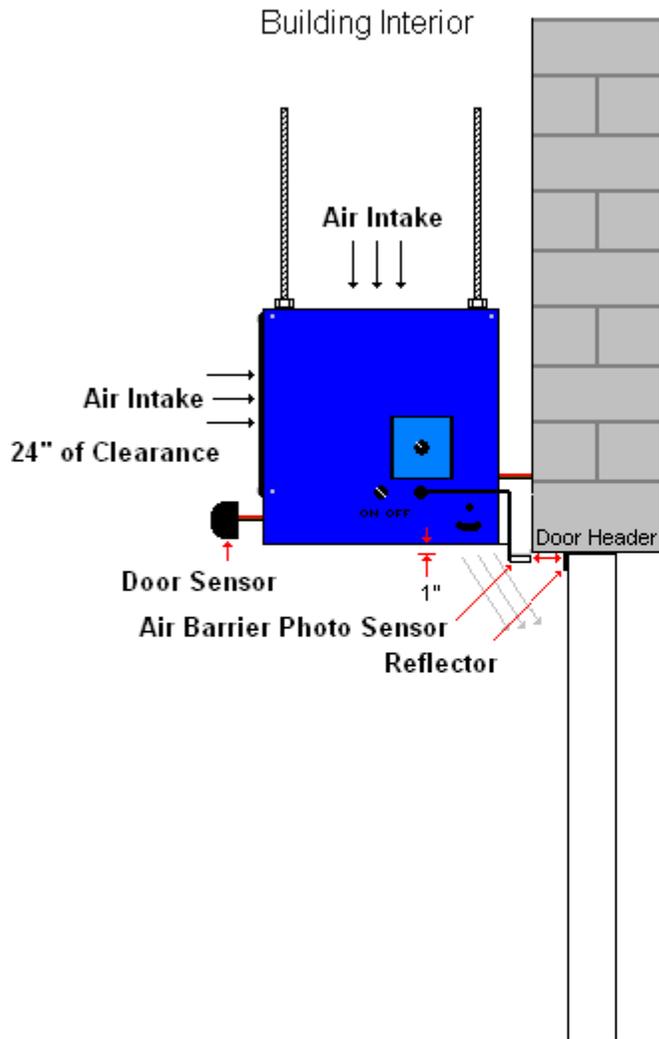
Use stabilizing bracket supplied to secure the Air Barrier to wall. The anchoring brackets will have to be lengthened if the Air Barrier is mounted above the door header.

Mount photo sensor and reflector.

See mounting of photo sensor diagrams for specific door style. (See pages 13-14.)

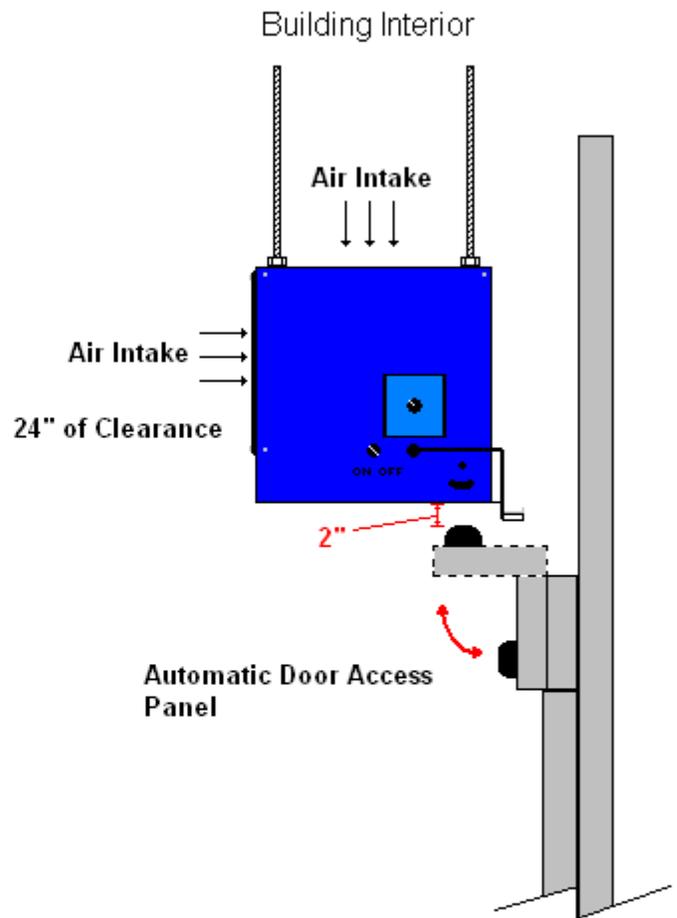
**NOTE:** Customer/installer is responsible for ensuring support structure and components being used will carry the load. Threaded rod, nuts, and washers supplied by other.

### Standard Air Barrier Position



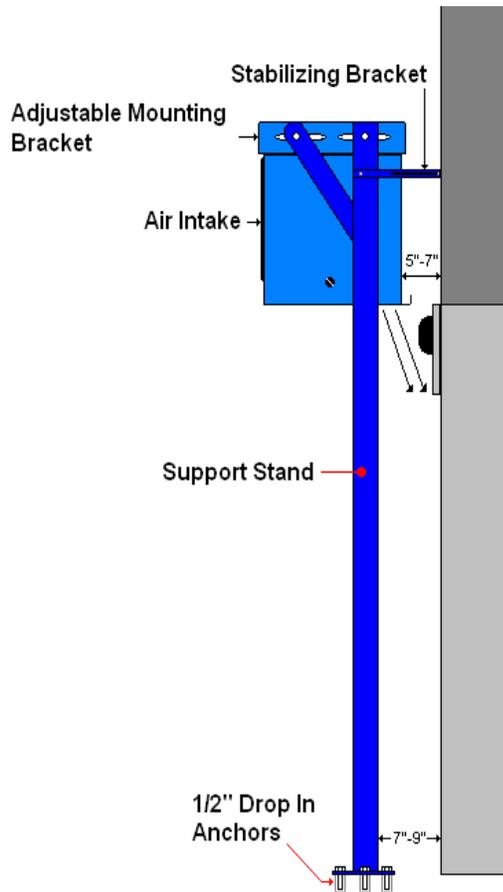
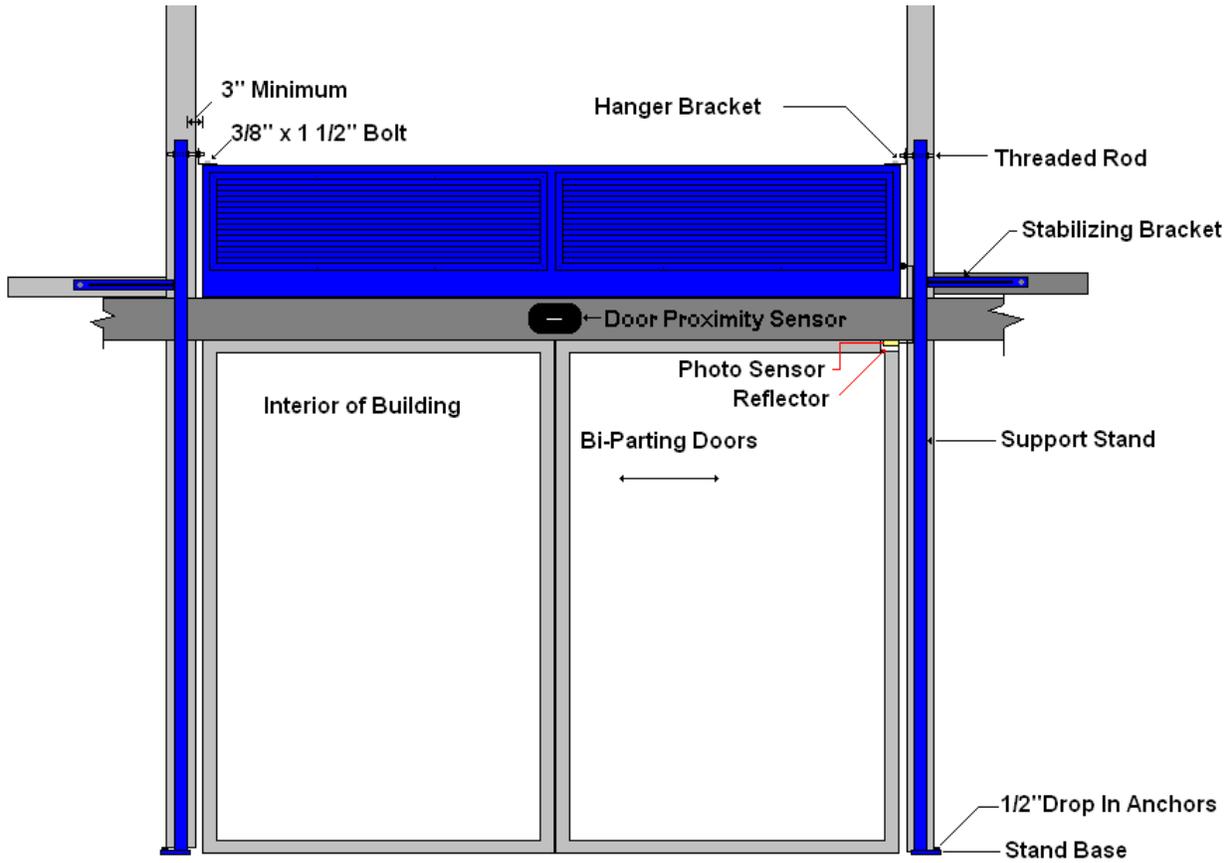
For automatic doors, the motion sensor may be attached to the front of the Air Barrier cabinet. Consult with the door manufacturer to confirm that the sensor may be moved!!

### Raised Air Barrier Position



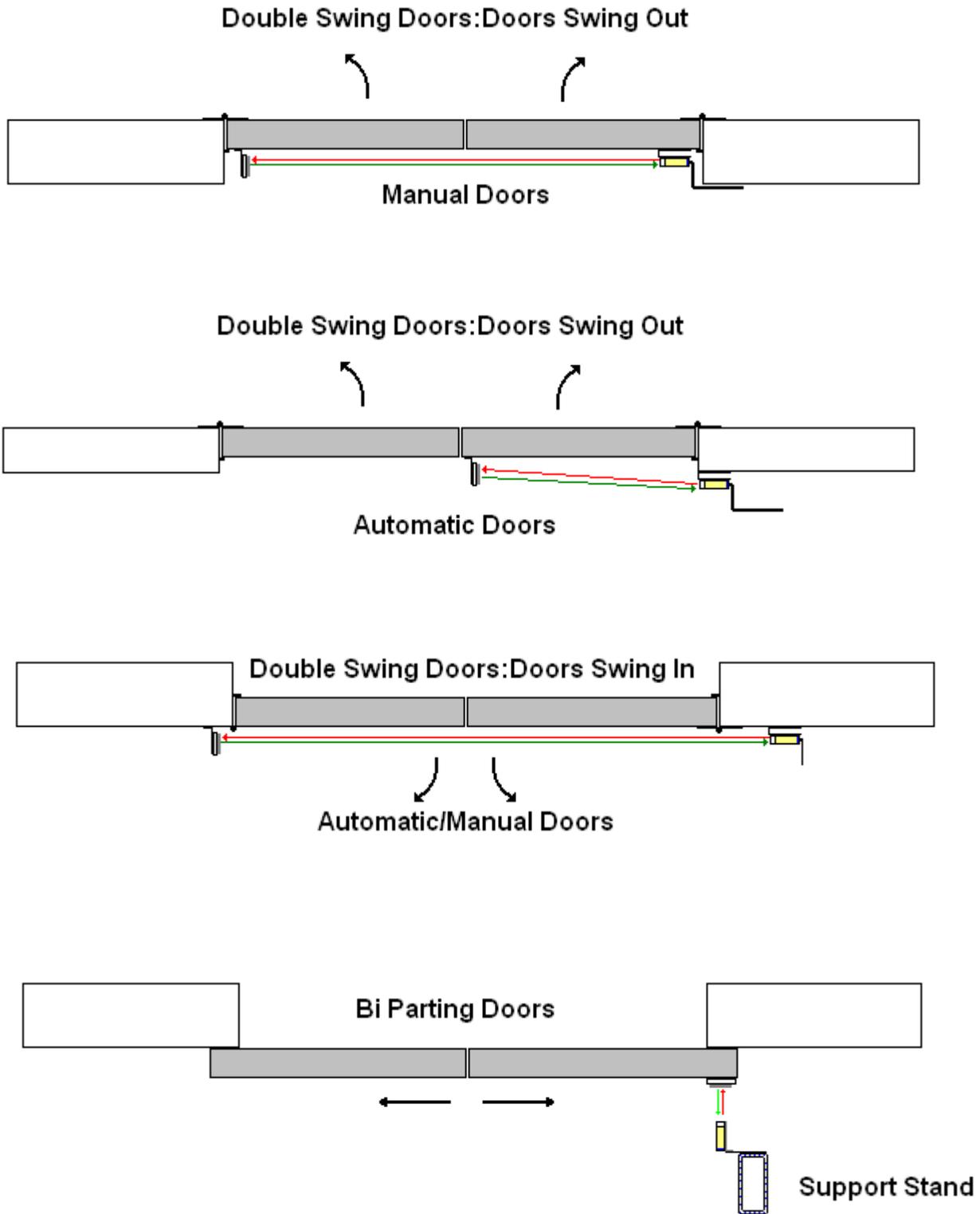
Note: For every inch the barrier is placed above the door header, it must be moved away from the wall 1/2"

# SUPPORTING A COMFORTSHIELD USING THE OPTIONAL STAND

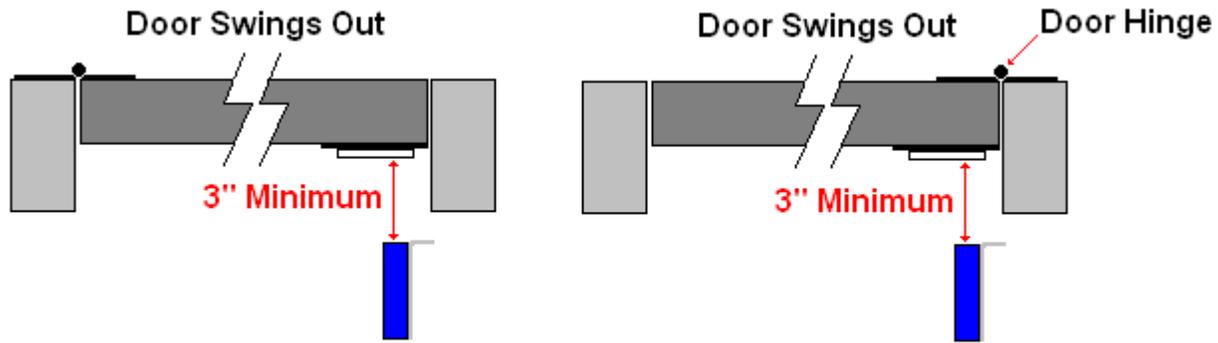


# Photo sensor installation

Choose the door style that is applicable, and mount the sensor and reflector as shown.  
NOTE: The sensor is factory set and needs only to be mounted and aligned with the reflector.



## Positioning Photo Sensor on Single Swing Door



**Attach reflector directly to door with self drilling screws provided.**

Enershield Industries has endeavored to provide the best and most direct methods of mounting the photo sensor. However, due to the vast range of door styles and applications it is possible that the methods described will not suit every application and custom brackets may have to be fabricated by the installers.

### Initial Photo Sensor Set Up

The sensor has been factory set.

Determine the door style that most accurately fits the application and Mount Photo Sensor and Reflector accordingly. (See pgs 13-14)

Ensure an unobstructed path for the photo sensor.

## Set Up and Use of Enershield Air Barriers

The principle of using a current of air as an invisible “barrier” between hot and cold zones in entrance areas is an unobstructed and efficient way to seal a door opening. Enershield Air Barriers are energy efficient, inexpensive to install and operate. We have evolved the Air Curtain concept to provide maximum efficiency, minimal costs and simple installation.

### Initial Set Up

Confirm all covers and screens are in place

Keep by-standers clear of the Barrier for the initial start-up.

Keep the area free of loose articles or debris.

Turn breakers and disconnect switches on.

Turn the keyed switch to the on position.

Open the door. Air Barrier activates.

Set diffuser and check air split at the floor see pg.14-15

Tighten diffuser in its final position

Close door(s). The Barrier will deactivate after 15s.

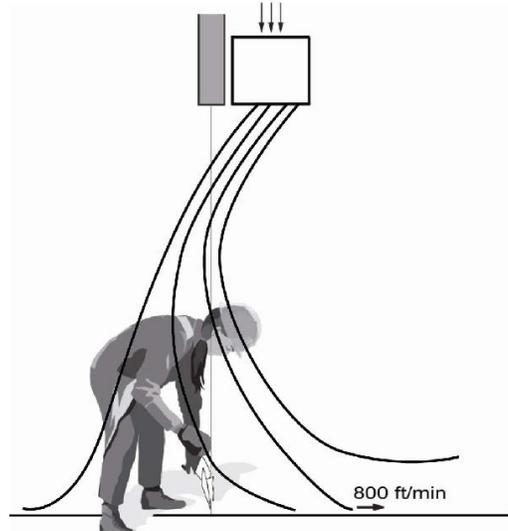
The off time delay on the CS Air Barriers has been factory set to 15s.

The time off delay may be adjusted as necessary. See page 14

Adjust the motor speed controller to set the air velocity to the desired level. (Note: The motor speed has been factory set. Adjusting the velocity up or down will have a negative impact on the efficiency).  
Heated Air Barriers will require the thermostat to be set to the desired level.

In the event that the conditions of the building change or wind velocities differ from that of initial set up nozzle adjustments may require some re-adjusting. The Air Barrier should be set so that a small part of the air stream is directed out of the opening, while the rest of the air blows back into the facility. By doing this, the cold outside air is kept out, while the warm indoor air is kept inside (reverse applies for summer months). Nozzle adjustments are easily done and should be tightened after initial set up, in the event that the nozzle direction has changed angle the nozzles slightly outwards and retighten.

Approx. 10-15 % of the airflow should be directed outwards into the open air. This “loss” is necessary to prevent cold draft by the floor as illustrated in the above figure 1c. Air velocity by the floor should be approx. 800 ft/min (3-4 m/s). Use a handkerchief to determine the split location as illustrated in diagram below.



OUTSIDE

INSIDE

Approx. 10-15 % of the airflow should be directed outwards in order to prevent cold draft by the floor. To find the airflow’s split location hold a handkerchief by the corner approximately 2-3 inches above the floor and move it gently back and forth in the doorway. The split location should be in the middle of the doorway or a little outside.

Adjust nozzle slightly outwards approx. 10-15 degrees.

Place handkerchief or Kleenex 2-3 inches above floor.

Move back and forth in the door way looking for split location.

Split location should be slightly outside the doorway to allow for and external wind conditions trying to push the air stream inward.

Once split location has been determined tighten nozzle adjustment bolts to insure stability of nozzle.

In the event you are having difficulty finding the proper split location call our toll free number, 1-866-464-3667 and we can assist you.

## Proper Use of an Air Barrier

The Air Barrier is activated by either the photo sensor switch (which immediately activates upon door opening) or an on/off switch. The Air Barrier should operate in conjunction with the door opening and should be in operation whenever there is a 10 degree swing in external to internal temperature. For example in the spring/fall months the Air Barrier is sometimes turned off due to indoor and outdoor temperatures being moderately similar. In the event that the indoor and outdoor temperatures have a greater difference than 10 degrees the Air Barrier should be operating to maximize the building efficiency. An Air Barrier operating with a greater than 10 degree difference from internal to external temperature will save you money with regards to energy costs for either heating or cooling. Never block air intake to try to minimize the amount of air discharged.

Air Barrier should be activated by either photo sensor switch or on/off switch.

Air barrier should be activated whenever the door is opened and the internal and external temperatures vary by 10 degrees (i.e. outside temperature is 10 degrees and internal temperature is 22 degrees or internal temperature is 25 degrees and outside temperature is 37 degrees with humidity making it feel even hotter).

Air intake should never be blocked by any piece of material or article.

Air barrier should be operated to seal off door opening from external temperatures, vehicle fumes, insects and bugs, bird or dust infiltration.

## Maintenance

**CAUTION!!! Shock Hazard-Lock out power before servicing**

Every 3 Months.

If the environment is exceptionally dirty check monthly

Check	Remedy
Blower Wheel is Centered in its housing	Re-center if necessary and tighten (204 in lbs)-apply thread locker
Foreign material in blower	Remove material
Excess buildup of dirt on blower wheel	Blow the wheel clean with compressed air
Rubber pads on mounting arms	Replace when worn
Motor mount bolts are tight	Tighten as required.
Intake screen is free of debris	Clean as required
Photo sensor/reflector alignment	Re-align as required.
Photo sensor lens/reflector lens is clean	Clean with a soft cloth as required
Correct Diffuser Position (See pg. 15)	Air split should be at center of door frame.
Intake Screen is free of debris	Clean if necessary
Heat Coil (If equipped)	Clean as necessary-Care should be taken so as not to damage the coil fins

## Resetting and programming the Photo Sensor

Should the sensor need to be reset the following procedure applies.

Confirm alignment and ensure an unobstructed path.

PRESS and HOLD the “Teach” button.

The Green LED goes out and comes on again after about 3 seconds

The Yellow LED comes and after about 3 seconds.

Then the Green, Yellow and Red LED’s start flashing.

Release the “Teach” button.

The Green LED flashes to indicate that the RESET is in progress.

The sensor has now returned to its initial status.

Turn on the power.

PRESS and HOLD the “Teach” button.

The Green LED goes out and comes on again after about 3 seconds.

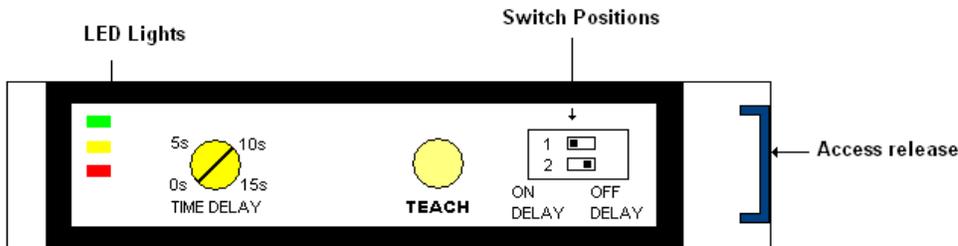
Release the “Teach” button when the Green LED comes on.

The Green LED flashes indicating the teaching is in progress.

When the Green LED stays on the teach process is complete and the system is ready to use.

If the Red LED starts flashing very rapidly the teaching has failed and the reset procedure will have to be repeated.

This may occur if a misalignment has occurred, the reflector is too close, or an object passed between the sensor and reflector during the “teach” process.



## Trouble Shooting Guide

### Symptom

Unit does not activate

Check	Possible cause	Corrective action
Breakers or disconnects turned off	No power to unit	Turn all appropriate switches on
Line voltage	No power to unit Door is closed	Supply correct power Open door
Plug	Barrier is not plugged in	Plug in
Sensor	Incorrect set-up of photo sensor	Re-teach sensor, reposition sensor leaving 3" between sensor and reflector
Switch is closing the contact block	Contact block positioned incorrectly on keyed switch	Reposition contact block on switch body.
Key position	Key is in the off position	Turn the key to on.
Speed controller	Controls are in the off position	Turn controls to the on position

Power to unit but it will not start

Photo sensor	Faulty Photo sensor	Replace photo sensor
Line voltage	Incorrect voltage	Supply correct voltage
Key position	Key is in the off position	Turn key to the on position

Little or no air

ON/OFF switch, breaker, disconnect	Unit not turned On	Turn switched to on position
Intake screen, inside of cabinet	Air intake obstructed	Clear obstruction
Diffuser is clean	Air exhaust obstructed	Clear obstruction
Blower fins	Blowers plugged	Clean blowers
Filters	Filters plugged (if equipped)	Clean or replace
	Faulty capacitor(motor won't start)	Replace capacitor
Heat coils	Heat coil plugged(if equipped)	Blow coils clean
Speed controller position	Speed controller turned down	Turn up speed controller

Unit fails to deactivate

Check	Possible Cause	Corrective Action
Photo sensor and reflector position	Incorrect Photo sensor placement	Re-align photo sensor and reflector
Dirty sensor lens, missing reflector, dirty reflector, object in path of sensor	Obstruction between sensor and reflector	Remove obstruction, clean sensor/reflector
Lens on sensor	Dirty photo sensor	Wipe sensor window/ reflector clean
Photo sensor	Time delay set to 15s	Turn time delay dial to zero
Control Contactor	Contactors welded closed	Replace contactor
Faulty door	Door is not closing properly	Repair door

### Noisy operation

Sheared hub, motor bearing	Failed component ( Scraping, grinding)	Replace component
Blower rubbing on housing	Blower migration (scraping, grinding)	Reposition blower and tighten
Motor, blower bolts intake screen, diffuser	Loose component (rattle, hum, vibration)	Tighten loose component
Supply voltage vs. wiring diagram, unit voltage requirements	Incorrect voltage (High pitched whine, slow start up)	Rewire
Blowers, diffuser	Foreign object (rattle, scrapping)	Remove object
Capacitor or contactor	Faulty capacitor or dirty contactor	Replace capacitor, blow out contactor

### Motor(s) are running hot

Confirm voltage is appropriate for the motors	Voltage is incorrect for motor	Rewire or replace motor(s)
	Capacitor has failed	Replace capacitor
Blower blades	Fan blades plugged or broken	Replace blower, clean blades
Confirm single phase power is available	Voltage phase is incorrect	Correct the power supply

### Breakers Trip

Motor voltage and supply power are compatible	Voltage is incorrect for motor	Change motor, supply correct voltage
Incorrect breaker size	Breaker Size to small	Replace breaker with the correct capacity
Check wiring against motor name plate	Wiring is incorrect	Re-wire motor
Motor wiring is loose, faulty motor	Motor	Re-wire, replace motor

Note: Any and all maintenance should be carried out by qualified personnel. Lock out all sources of power and work from a secure platform