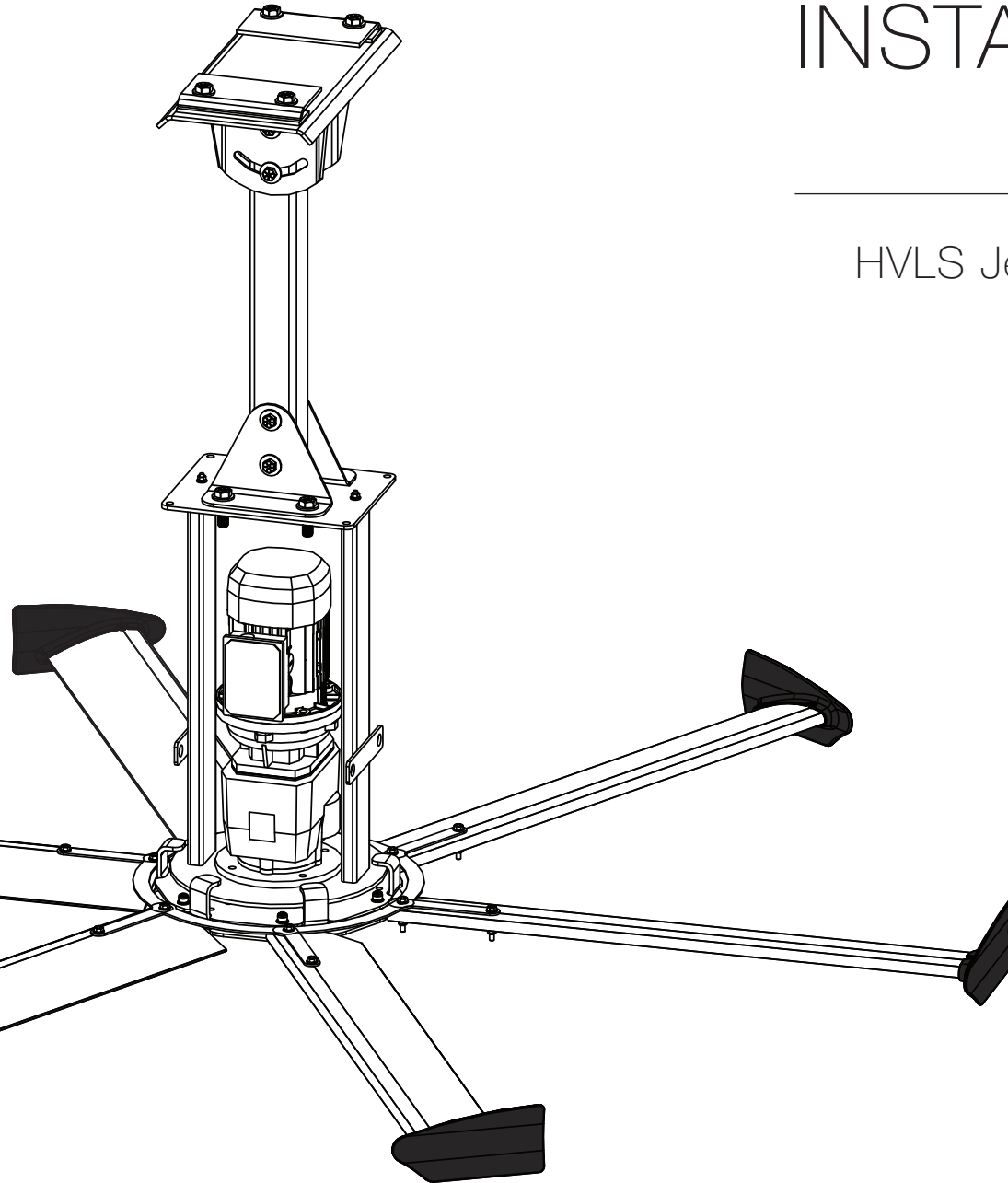


# INSTALLATION GUIDE

---

HVLS Jet by Big Ass Fans



# PRE-INSTALLATION CHECKLIST

**I have the appropriate mount to accommodate the roof pitch and my building structure.**

Big Ass Fans can only be mounted to I-beams or angle iron. Do not directly mount the fan to single purlins, trusses, or bar joists. Consult a structural engineer for mounting methods not covered in this manual.

**A structural engineer approved the mounting structure.**

The mounting structure must be able to withstand the torque forces generated by the fan. The largest Big Ass Fan generates up to 300 ft·lb (406.7 N·m) of torque during operation.

**I am familiar with the function of the safety cable.**

**If my fan's extension tube is 4 ft (1.2 m) or longer or if the fan is installed near any building fixtures, I will secure the fan with the provided guy wires as a safety measure.**

**The fan will be installed so that the airfoils are at least 10 ft (3.05 m) above the floor.**

**The fan will be installed so that the airfoils have a minimum of 2 ft (0.61 m) of clearance from obstructions and the building structure.**

The distance of the fan from the ceiling should be measured from the top of the winglets to the ceiling.

**The fan will be installed so that it is not subjected to high winds such as from an HVAC system or near a large garage door.**

If the fan is mounted at the same level or higher than a diffuser, the winglets must be at a distance that is at least 1x the measure of the fan's diameter. If the fan is mounted at the same height or below a diffuser, the winglets must be at a distance that is at least 2x the measure of the fan's diameter.

**The distance between multiple fans must be at least 2.5x the fans' diameter when measured from the centers of the fans.**

**The upper mount is the correct size for the I-beam.**

**The airfoils and other fan components are those that were shipped with the motor unit.**

If installing multiple fans, do not mix and match fan components.

**The supply power circuit is appropriate for the VFD, and power wiring is routed to the site of fan and the controller installation.**

See the specification label on the fan or consult the Owner's Manual included in the fan box for power requirements.

# READ AND SAVE THESE INSTRUCTIONS



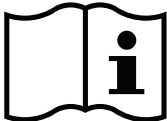
## WARNING AND CAUTION SYMBOL

Indicates a hazard with a medium level of risk that could result in injury or death or damage to property if not avoided.



## ELECTRICAL WARNING SYMBOL

Indicates an electrical hazard with a medium level of risk that could result in death or serious injury if not avoided.



Installation Guide  
October 2016  
Rev. B

Original English Instructions



Conforms to ANSI/UL STD 507: Electric Fans  
Certified to CAN/CSA C22.2 Fans & Ventilators

This product was manufactured in a plant whose Management System is certified as being in conformity with ISO 9001.

## Legal

Improper installation, delivery, or maintenance, including, but not limited to, any of the following actions by the customer or agent of the customer will constitute a breach of and will void all warranties:

- Failure to follow the required installation procedures specified in this Installation Guide and in all other documentation supplied with the fans and related equipment including documentation provided by the manufacturers of the individual fan and control components;
- Failure to follow all relevant codes and ordinances, including, but not limited to, the National Electric Code (United States), applicable national and local electrical codes, and state and local building codes;
- Failure to follow electrical engineering industry standards regarding the approved method of installing solid-state electrical equipment having the characteristics of the fans, the fan controls, and their related components, even if such standards are not specifically referenced in any instructions or literature supplied by Big Ass Solutions or provided by manufacturers.

HVLS Jet is a trademark of Delta T Corporation. All other trademarks used herein are the properties of their respective owners. No part of this document may be reproduced or translated into a different language without the prior written consent of Big Ass Solutions. The information contained in this document is subject to change without notice. For the most up-to-date information, see the online installation guide at [www.bigassfans.com](http://www.bigassfans.com)

[www.bigasssolutions.com/patents](http://www.bigasssolutions.com/patents) ▪ [www.bigasssolutions.com/warranties](http://www.bigasssolutions.com/warranties)

# IMPORTANT SAFETY INSTRUCTIONS

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

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

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

**WARNING:** The installation of all Big Ass Fan models covered under this manual must be installed in accordance with the requirements specified in this installation manual and with all national and local electrical codes. Code compliance is ultimately YOUR responsibility! Failure to comply with these codes could result in personal injury or property damage.

**WARNING:** Before servicing or cleaning the fan, 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.

**WARNING:** Big Ass Fans must be installed with part(s) that are marked (on their cartons) to indicate the suitability with this model. Other similar part(s) cannot be substituted.

**WARNING:** This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a responsible person.

**CAUTION:** Exercise caution and common sense when powering the fan. Do not connect the fan to a damaged or hazardous power source. Do not attempt to resolve electrical malfunctions or failures on your own. Contact Big Ass Fans if you have any questions regarding the electrical installation of this fan.

**CAUTION:** Do not bend the airfoils when installing or servicing the fan. Do not insert foreign objects between rotating airfoils.

**CAUTION:** Use this fan only in the manner intended by Big Ass Fans. If you have questions, contact Customer Service.

**CAUTION:** Do not operate fan with damaged cord or plug. Return fan to authorized service facility for examination or repair.

**ATTENTION:** If installing the fan in the United States, the fan must be installed per the following National Fire Protection Association (NFPA) guidelines:

- The fan must be centered approximately between four adjacent sprinklers.
- The vertical distance from the fan to the sprinkler deflector must be at least 3 ft (91.4 cm).
- The fan must be interlocked to shut down immediately upon receiving a waterflow signal from the alarm system.



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# TECHNICAL SPECIFICATIONS

Note: All controllers produce 3-phase output power regardless of input phase.

## HVLS Jet

Diameter	Motor Size	Minimum Circuit Size	Full Load Amps (Fan)
8 ft (2.4 m)	1.0 hp (0.75 kW)	25 A @ 100–125 V, 1 $\Phi$ 15 A @ 200–240 V, 1 $\Phi$ 10 A @ 200–240 V, 3 $\Phi$ 10 A @ 400–480 V, 3 $\Phi$	8.8 A
10 ft (3.0 m)			8.8 A 5.0 A 2.5 A
12 ft (3.6 m)	1.5 hp (1.1 kW)	25 A @ 200–240 V, 1 $\Phi$ 15 A @ 200–240 V, 3 $\Phi$ 10 A @ 400–480 V, 3 $\Phi$	13.3 A
14 ft (4.3 m)			8.1 A 4.1 A
16 ft (4.9 m)	2.0 hp (1.5 kW)	25 A @ 200–240 V, 1 $\Phi$ 15 A @ 200–240 V, 3 $\Phi$ 10 A @ 400–480 V, 3 $\Phi$	13.3 A 8.1 A 4.1 A
18 ft (5.5 m)			
20 ft (6.1 m)			
24 ft (7.3 m)			

# BEFORE INSTALLING YOUR FAN

Review the following pre-installation procedures and checks to ensure you have all necessary items for installation.

## Tools

The largest Big Ass Fan weighs a maximum of 415 lbs (188 kg). A suitable means for lifting the weight of the fan, such as a scissor lift, at least two personnel, and the following tools will be required. *Note: Depending on your application, additionally tools may be required.*

- Standard wrench set
- Standard socket set and ratchet
- Torque wrench capable of 40 ft·lb (54.2 N·m) & 3/4" socket
- Phillips and flat head screwdrivers
- Standard allen wrench set
- 1/4" nut driver
- 5/16" nut driver
- #10 to #14 AWG strippers
- Medium channel locks
- Multimeter

## Power supply guidelines

If you are unfamiliar or uncomfortable with the installation of electrical components, do not attempt to install the fan without an electrician. This guide is merely a recommendation of proper installation.

- ✓ **Dedicated Branch Circuit Protection.** Each fan requires dedicated branch circuit protection.
- ✓ **Circuit Requirements.** Refer to the Owner's Manual and fan label for appropriate circuit requirements for your fan size.
- ✓ **Conduit.** Controller output/motor input leads cannot share a conduit with any other controller's AC supply feed.
- ✓ **Local Disconnect.** If required, a local disconnect should be installed per NEC and all local codes.
- ✓ **Onboard VFD.** If you are installing an onboard variable frequency drive (VFD), route the power wiring to the location where the fan will be mounted.
- ✓ **Manual Disconnect.** To satisfy some local code requirements, it may be necessary to install a manual disconnect at the fan motor location when the fan assembly is not within "line-of-sight" from the VFD. A non-fused, 600 V, 3-phase, blade style disconnect should be used to satisfy this "line-of-sight" requirement.

## Power wiring guidelines

- ✓ To reduce the risk of electric shock, wiring should be performed by a qualified electrician. Incorrect assembly can cause electric shock or damage to the motor or controller.
- ✓ The electrical installation of the fan must be in accordance with the National Electrical Code, ANSI/NFPA 70-2014, if applicable, and all local codes.
- ✓ See the Electrical Installation section for complete input power guidelines.

# Hardware

Fan hardware for hanging the fan and airfoils is provided on hardware boards. Verify you have all of the following required hardware before beginning the installation process.

## Mounting Hardware Board<sup>1</sup>

### Upper Mount Hardware

- (4) 1/2-13 x 2" Bolts
- (8) 1/2" Flat Washers
- (4) 1/2-13 Nylock Nuts

### Extension Tube Hardware

- (2) 1/2-13 x 4-1/2" Bolts
- (4) 1/2" Flat Washers
- (2) 1/2-13 Nylock Nuts

### Lower Yoke Hardware

- (2) 1/2-13 x 4-1/2" Bolts
- (4) 1/2" Flat Washers
- (2) 1/2-13 Nylock Nuts

### Motor Unit Hardware

- (4) 1/2-13 x 1-3/4" Bolt
- (8) 1/2" Flat Washer
- (4) 1/2-13 Nylock Nut

### Safety Cable Shackle

## Airfoil and Winglet Hardware Boards

### Airfoil Hardware

- (12) 5/16-18 x 2" GR 8 Bolt
- (24) 5/16" Flat Washer
- (12) 5/16-18 Nylock Nut

### Winglet Hardware

- (6) 10-24 x 3/4" Barrel
- (6) 10-24 x 1/2" Bolt

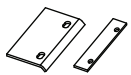
### Guy Wire Hardware<sup>2</sup>

- Locking Carabiners
- 1/4" Beam Clips
- 1/4-20 x 1" Eyebolts
- 1/4-20 Hex Nuts
- Gripples
- Guy Wires
- Wire Rope Clips

1. Square washers are included and are only used if you are mounting the fan to angle irons. The number of square washers used depends on the number of angle irons used.
2. Guy wires and hardware are only included with your order if the fan's lateral movement needs to be restrained. Big Ass Fans recommends using guy wires if the extension tube is four feet or longer, or if the fan is exposed to high winds or similar conditions, or if the fan is near building structural components.

# Parts

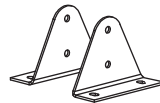
Check that the fan boxes have all the parts before beginning installation. **If you ordered multiple fans, be sure to keep the components of each fan together. The fans each have differently rated components that are not interchangeable. Note: Illustrations are not to scale.**



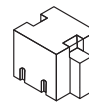
(2) Beam Clip  
(2) Spacer



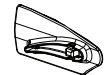
Upper Mount<sup>1</sup>



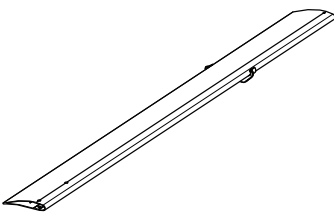
Lower Yoke



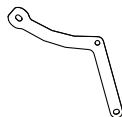
EPM Module & Fire Relay<sup>2</sup>



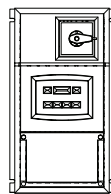
Winglets



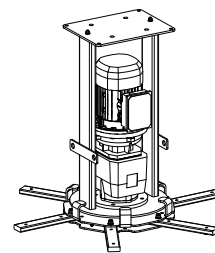
Airfoils



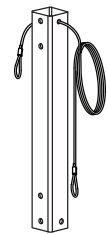
Airfoil Retainers



Wall Controller



Main Fan Unit

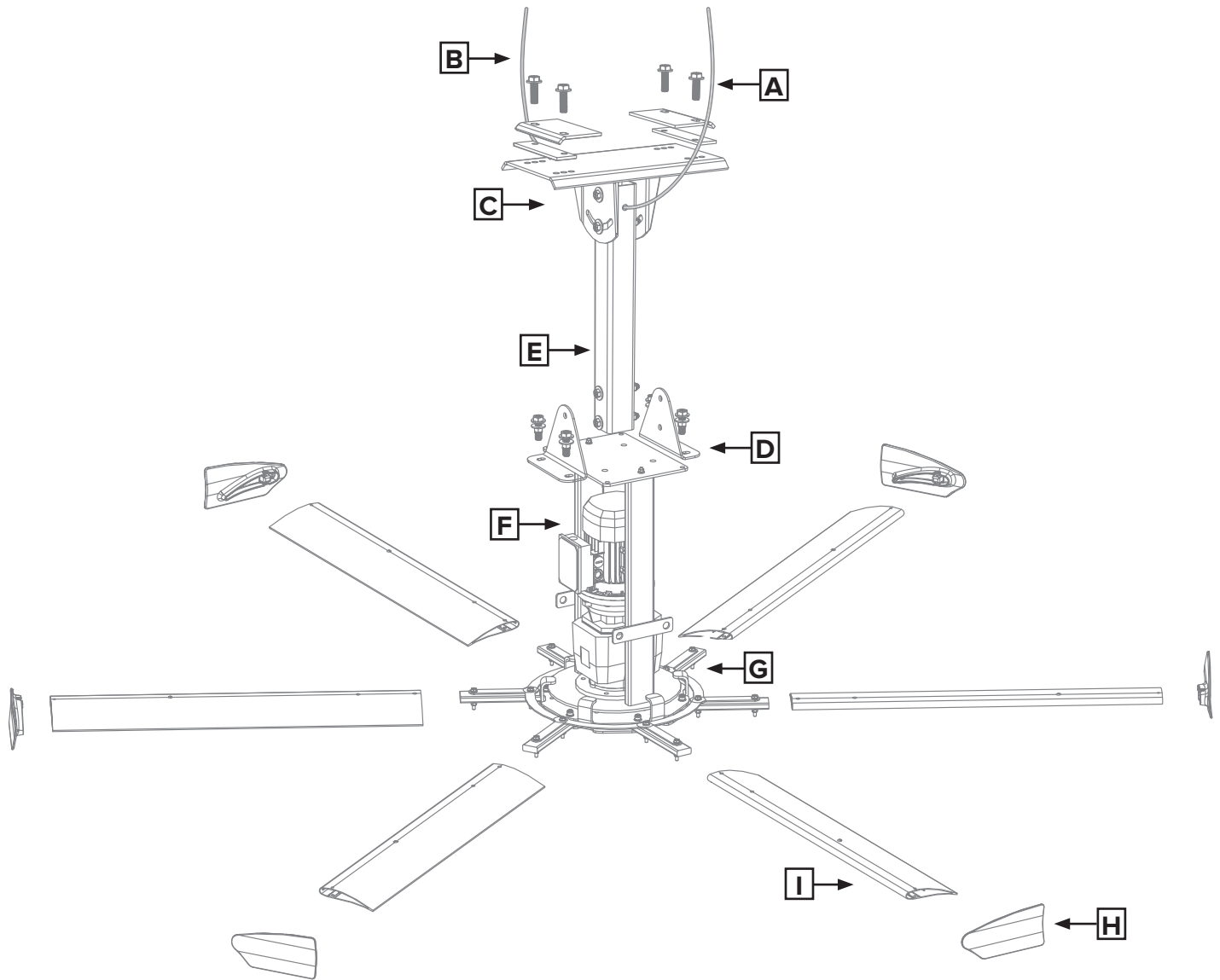


Extension Tube<sup>3</sup>

1. The upper mount may differ from the picture. Confirm that you have the appropriate mount for your roof pitch.
2. The fire relay is not shown. If multiple fans are to be installed, make sure to install the exact EPM included with the fan's packaging. *EPMs are not interchangeable!*
3. The safety cable is preattached to the extension tube (or packaged separately if the extension tube was not ordered).

# FAN DIAGRAM

Contact Customer Service if you are missing any parts or hardware needed for installation.



**A** Safety Cable

**B** Beam Clips & Spacers

**C** Upper Mount

**D** Lower Yoke

**E** Extension Tube

**F** Motor

**G** Hub

**H** Winglet

**I** Airfoil

# WHERE TO INSTALL YOUR FAN

Before beginning installation, check that the building structure and fan location meet Big Ass Solutions' safety guidelines by confirming the below requirements.

- Fans mounted on fabricated I-beams, which are common in steel buildings, could cause the beam to flex and the fan to move significantly during operation. If this flexing causes a clearance problem, we suggest installing the I-Beam Stabilizer Kit. Contact Customer Service for more information.
- The fan's lateral movement must be secured using guy wires if the fan's extension tube is 4 ft (1.2 m) or longer or if the mounting structure requires it. If the fan is close to any building fixtures it is recommended to secure the fan with guy wires as a safety measure.
- The fan must be installed so that it is plumb to the ground
- All fan parts must be  $\geq 2$  ft (61 cm) from all obstructions. The fan installation area must be free of obstructions such as lights, cables, sprinklers, or other building structure components.
- The fan must be installed so that it is  $\geq 10$  ft (3 m) above the finished floor.
- Review the Mounting Reference Guide in your Owner's Manual to ensure you have the appropriate mount.

## Clearance guidelines

*If your fan application does not meet these requirements, contact Customer Service to discuss alternative installations or other fan options.*

### General clearance

- Multiple fans must be spaced at a center-to-center distance that is no less than 2.5x the fan diameter.
- The fan must be installed so that it is  $\geq 10$  ft (3 m) above the finished floor.

### Ceiling clearance

The fans must be installed at the distance listed below according to your fan size. The distance of the fan from the ceiling should be measured from the top of the winglets to the ceiling.

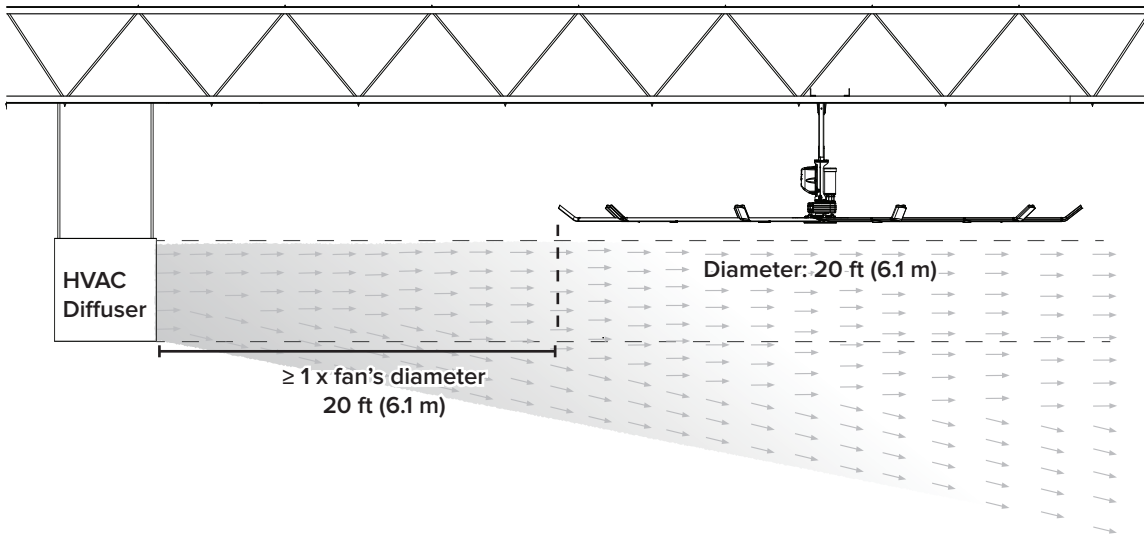
Fan Diameter	Distance from Ceiling
8–14 ft (2.4–4.3 m)	5 ft (1.5 m)
16–18 ft (4.9–5.5 m)	6 ft (1.8 m)
20–24 ft (6.1–7.3 m)	7 ft (2.1 m)

# Clearance from HVAC equipment and radiant heaters

The fan must be installed at the minimum distances shown below in relation to HVAC (Heating, Ventilation, and Cooling) systems. See the manufacturer's requirements for the minimum clearance to combustibles.

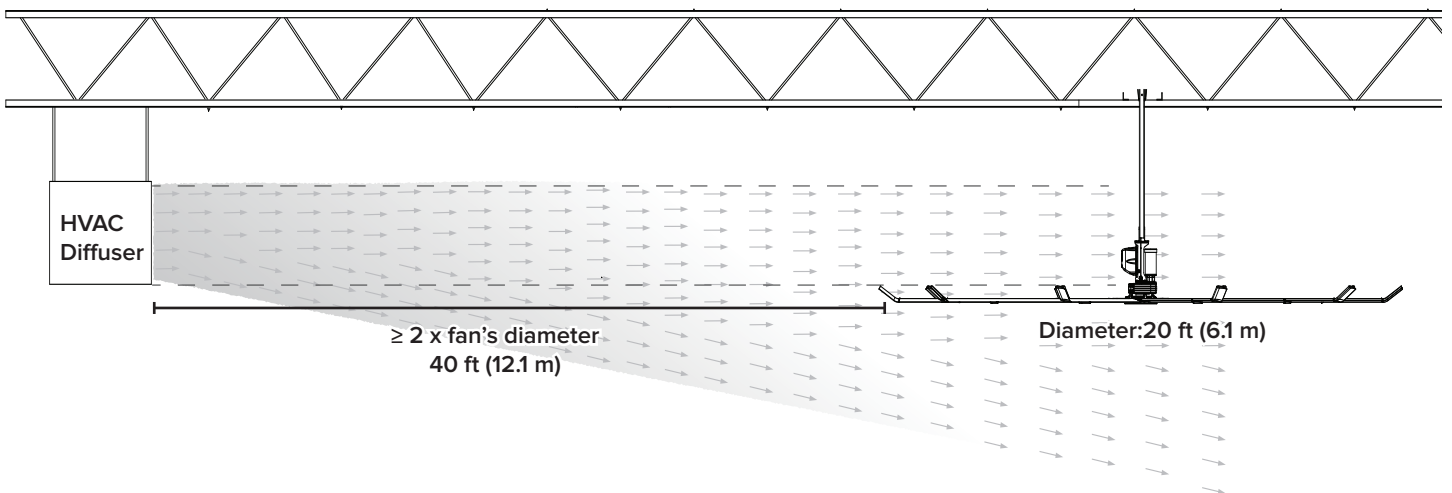
## Fan located at or above HVAC discharge or intake

If the fan is at the same level or above the HVAC diffuser, it must have a clearance of  $\geq 1x$  fan's diameter.



## Fan located below HVAC discharge or intake

If the fan is located below the HVAC diffuser, it must have a clearance of  $\geq 2x$  the fan's diameter.

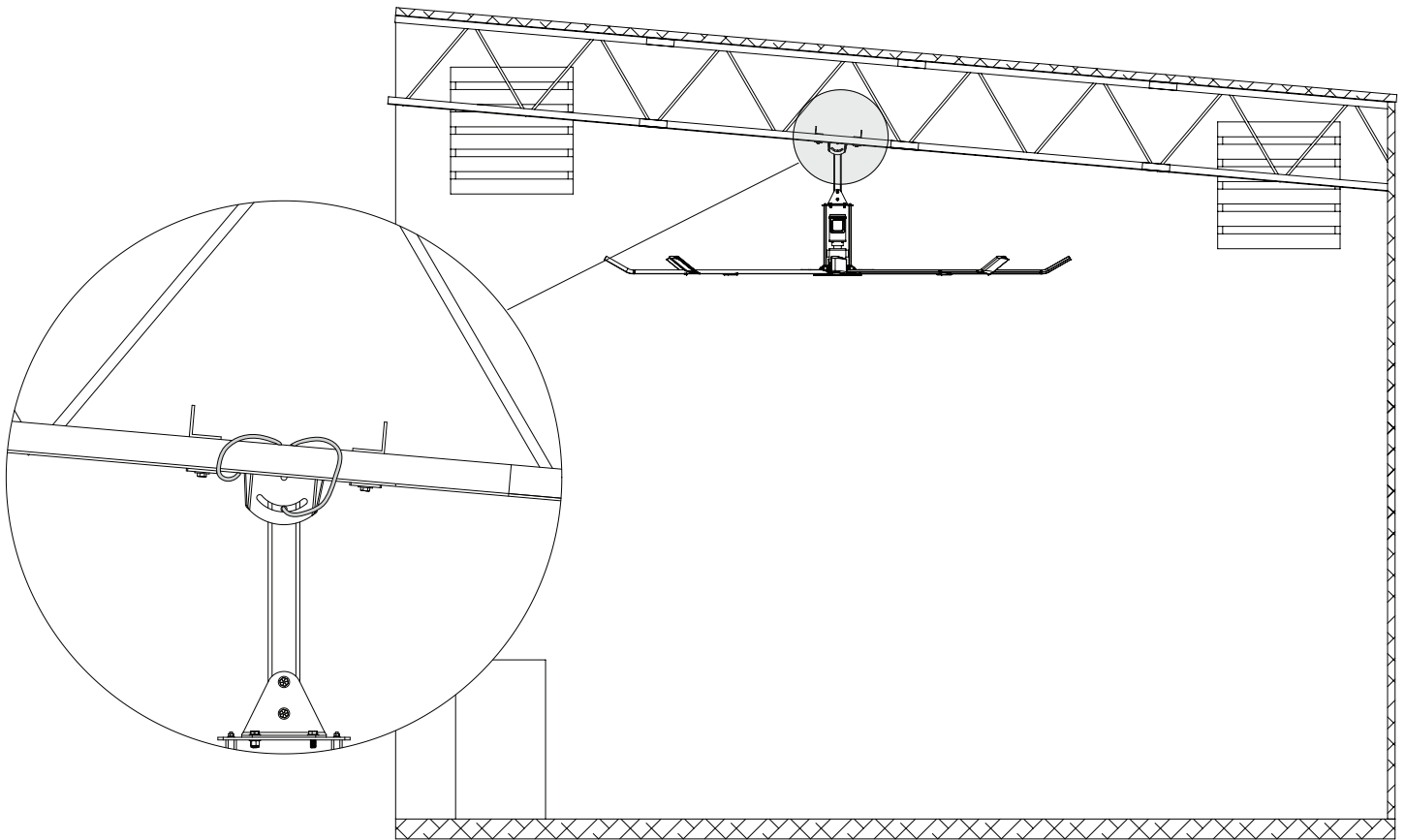




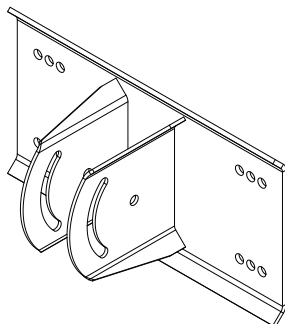
# Understanding roof pitch

To ensure your fan is properly mounted, it must hang plumb to the ground with the upper mount installed using the bolt holes at the widest locations possible. To accommodate building structures on which the standard upper mount does not allow the fan to properly orient itself, the 90-Degree Offset mount should be purchased.

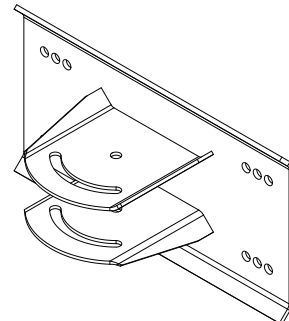
The example below shows a situation in which the 90-Degree Offset mount must be used so that the fan hangs plumb to the ground. If you are uncertain of your roof pitch or do not have the correct mount to properly hang your fan, consult a structural engineer or contact Big Ass Fans Customer Service.



**Standard Upper Mount**



**90-Degree Offset Mount**

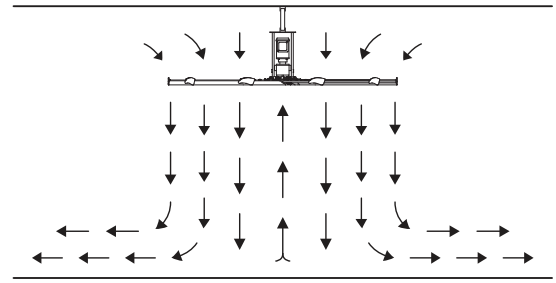


# Understanding airflow patterns

Correct fan placement is crucial for maximizing airflow distribution while adhering to safety standards.

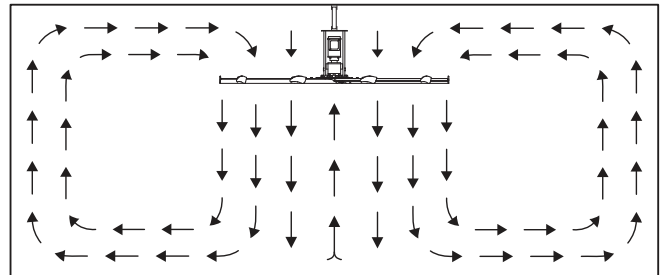
## Airflow in an open area

The airflow moves from the fan toward the floor. When airflow hits the floor, it moves outward in all directions. The deflection of air off the floor is called a “floor jet.”



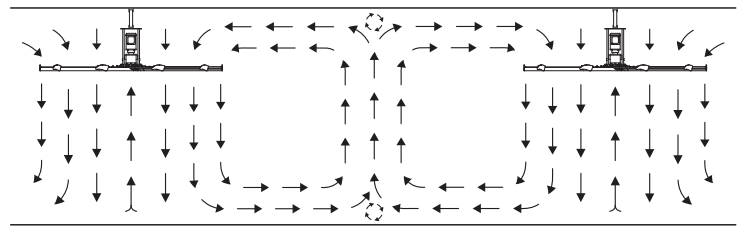
## Airflow in an enclosed area

The floor jet radiates outward until it reaches the walls, which deflect the jet upward. After it hits the ceiling, the upward flow is directed inward to the low pressure area above the fan where it is then pulled down toward the floor. This creates a convection-like air current that gathers momentum. Once this current is established, the fan begins to move air outside the current, escalating its cooling effects.



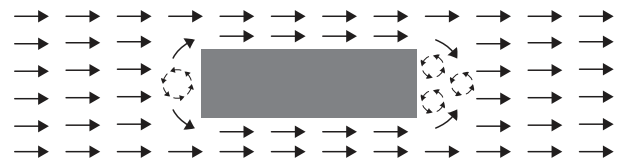
## Airflow with multiple fans

Where there are multiple fans appropriately spaced, the expanding jets of adjacent fans meet to create a pressure zone. The pressure zone acts like a wall, causing each fan to behave like a single enclosed fan. Typically, a single fan’s performance will increase when working in conjunction with other fans.



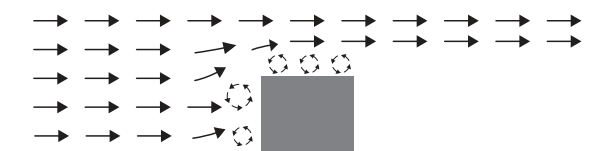
## Airflow with streamlined obstruction

Obstructions on the floor tend to block the horizontally moving air. Thin or streamlined obstructions do not block much airflow, regardless of size. The air tends to flow smoothly around these obstructions, losing little momentum, and leaving only a small stagnant area behind the obstruction.



## Airflow with wide, blunt obstruction

A wide, blunt, or flat-faced obstruction forces the air to change direction, turning upward and outward. There is a stagnant area behind these obstructions that is wider and higher than the obstructions themselves.



## General airflow tips

Below are some techniques that make a dramatic difference in congested areas of your facility. Treat air like water, and scoop, direct, and channel it to where it is needed most.

- Make sure people are not hidden behind structures that would block airflow. This may seem obvious, but work areas are routinely blocked by shelving, crates, and machinery.
- Position large obstructions so that their smallest profiles are perpendicular to the direction of air movement. For example, a sheet metal press brake might have five times the frontal area if it is facing the airflow rather than if it is turned sideways.
- Wherever possible, position welding curtains, partitions, sheet materials, etc., to scoop air into the work area rather than deflect it.
- Take advantage of the air moving near the floor by creating ground level openings in your work area. It is better to have a work area blocked by materials stacked to the ceiling with an opening below than to have low stacks 3 ft (0.9 m) to 6 ft (1.8 m) high sitting on the floor.

# INSTALLATION

**⚠ WARNING:** The fan should not be installed unless the structure on which the fan is to be mounted is of sound construction, undamaged, and capable of supporting the loads of the fan and its method of mounting. A structural engineer should verify that the structure is adequate prior to fan installation. Verifying the stability of the mounting structure is the sole responsibility of the customer and/or end user, and Big Ass Fans hereby expressly disclaims any liability arising therefrom, or arising from the use of any materials or hardware other than those supplied by Big Ass Fans or otherwise specified in these installation instructions.

**⚠ CAUTION:** Before beginning installation, confirm that you have the appropriate mount for your roof pitch.

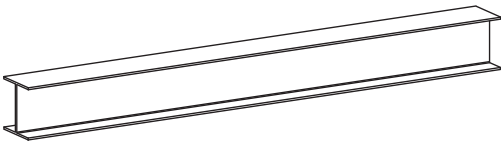
**⚠ WARNING:** Ensure there are no persons below the fan unit during installation!

## Overview

Big Ass Fans can only be hung from an I-beam or angle irons. Consult a structural engineer for installation methods not covered in this manual. Follow the steps on the following pages to install your fan.

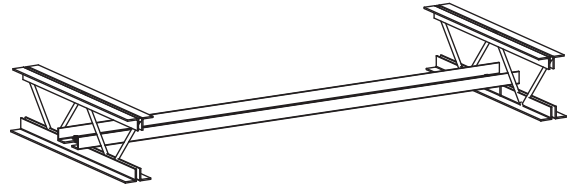
### I-Beam

- It is not recommended to mount a Big Ass Fan to a fabricated I-beam. Do not direct mount the fan to an I-beam. The I-beam on which the fan will mount must be part of the existing building structure.



### Angle Irons

- Do not install the fan from a single purlin, truss, or bar joist.
- Unsupported angle iron spans should not exceed 12 ft (3.7 m).
- The angle irons must be fastened to the roof structure at each end.



# 1a. Prepare I-Beam

## ATTENTION

If you are mounting your fan to angle irons, proceed to the following page.

Measure the flange width of the I-beam from which the fan will be hung. Select the mounting holes that match the flange width of the I-beam from the diagrams below.

Proceed to step 2.

### Small Upper Mount

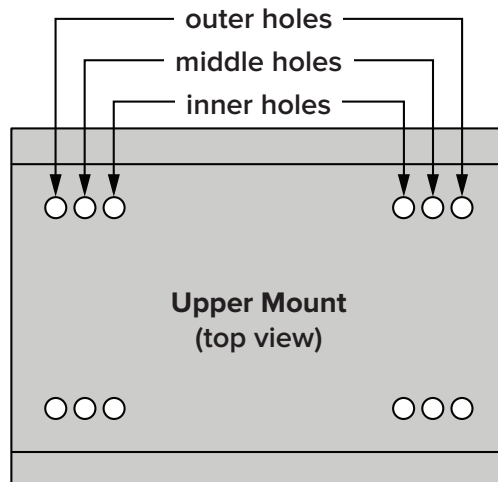
13-3/4" x 10" (349 mm x 258 mm)

I-Beam Flange Width	Mounting Holes
5" to 6-5/8" (127 to 168 mm)	Inner holes
> 6-5/8" to 8-1/4" (> 168 to 210 mm)	Middle holes
> 8-1/4" to 9-7/8" (> 210 to 250 mm)	Outer holes

### Large Upper Mount

18-1/2" x 10" (470 mm x 258 mm)

I-Beam Flange Width	Mounting Holes
9-7/8" to 11-3/8" (250 to 289 mm)	Inner holes
> 11-3/8" to 13" (> 289 to 330 mm)	Middle holes
> 13" to 14-5/8" (> 330 to 371 mm)	Outer holes



## 1b. Prepare the Angle Irons

- ⚠ **CAUTION:** Do not install the fan from a single purlin, truss, or bar joist.
- ⚠ **CAUTION:** Unsupported angle iron spans should not exceed 12 ft (3.7 m).
- ⚠ **CAUTION:** The angle irons must be fastened to the roof structure at each end.

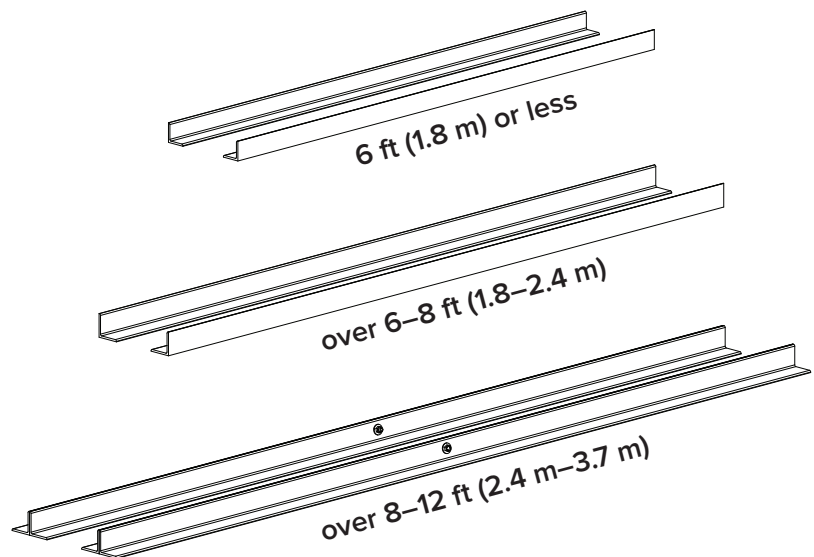
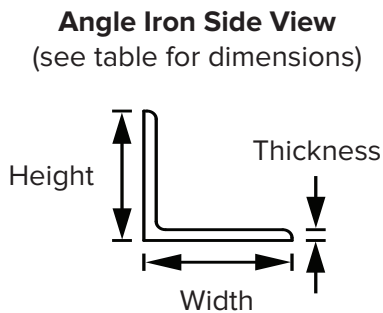
If you are mounting your fan to an I-Beam, see the previous page. Consult a structural engineer for installation methods not covered in this manual.

### A. Select proper angle irons


Follow the table below when selecting angle irons for fan installation. Note: Angle irons and angle iron hardware are not included with the fan.

Angle iron span (between mounting points)	Minimum Angle Iron dimensions (W x H x T)	Number of angle irons needed
6 ft (1.8 m) or less	2.5" (6.4 cm) x 2.5" (6.4 cm) x 0.25" (0.6 cm)	2
6 ft to 8 ft (1.8 m to 2.4 m)	3" (7.6 cm) x 3" (7.6 cm) x 0.25" (0.6 cm)	2
8 ft to 12 ft (2.4 m to 3.7 m)	3" (7.6 cm) x 3" (7.6 cm) x 0.25" (0.6 cm)	4*

\*Two pairs of angle irons needed.

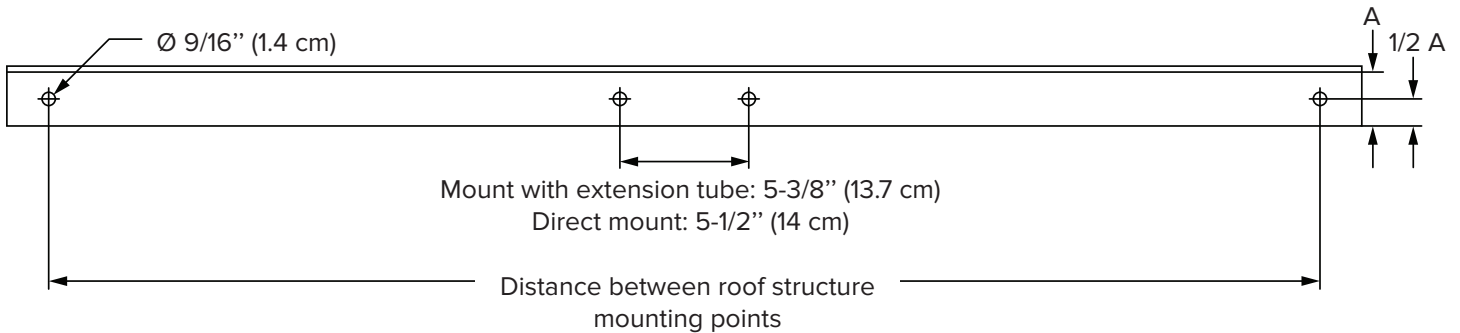


## B. Pre-drill angle irons

 **Before drilling the angle irons, confirm that you have the appropriate mount to accommodate the roof pitch of your mounting structure.**

Drill two  $\text{Ø}9/16''$  (1.4 cm) holes exactly  $5\text{-}3/8''$  (13.7 cm) apart in the centers of two angle irons.

Measure the distance between the mounting points of the roof structure that the angle irons will span. Measure the same distance on the angle irons and drill  $\text{Ø}9/16''$  (1.4 cm) holes through each end of the angle irons. Drill holes in two angle irons if the span is 8 ft (2.4 m) or less. Drill holes in four angle irons if span is greater than 8 ft (2.4 m).



## C. Fasten angle irons together (if span is longer than 8 ft [2.4 m])

If the angle iron span is 8 ft (2.4 m) or less, skip this step and proceed to step D.

If the angle iron span is longer than 8 ft (2.4 m), use double angle irons. Locate the center of the angle iron length. Drill a  $\text{Ø}9/16''$  (1.4 cm) hole through the center of the vertical wall of the angle iron. Drill a total of four angle irons.

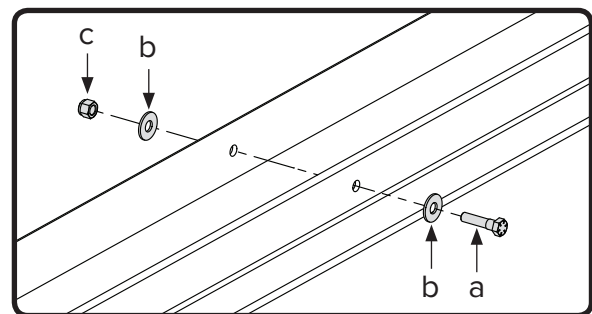
Place two drilled angle irons back to back. Fasten the angle irons together with  $\text{Ø}1/2\text{-}13$  Grade 8 hardware. Align the angle irons to each other and tighten the bolts to 40 ft-lb (54.2 N·m) using a torque wrench and  $3/4''$  socket.

Repeat this step for the remaining two angle irons.

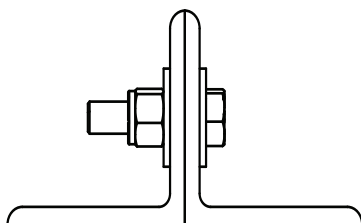
Proceed to step D.

### Grade 8 Hardware (Installer-Supplied):

- (2)  $1/2\text{-}13$  Bolt
- (4)  $1/2''$  Washer
- (2)  $1/2\text{-}13$  Nylock Nut



Side view



## D. Fasten angle irons to roof structure mounting points

### Single Angle Iron

Fasten the angle irons to the roof structure mounting points at each end with Grade 8 hardware as shown. Do not tighten the hardware until the upper mount has been mounted to the angle irons (step 5). We recommend orienting the angle irons so that the horizontal legs are facing each other (or the vertical legs are on the outside). Proceed to step 5.

#### Grade 8 Hardware (Installer-Supplied):

- (4) 1/2-13 Bolt
- (8) 1/2" Washer
- (4) 3" Square Washer (supplied; see diagram)
- (4) 1/2-13 Nylock Nut

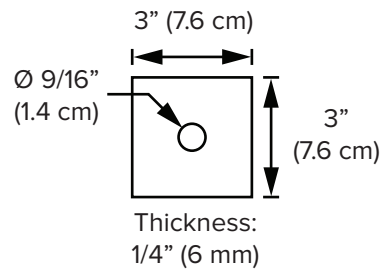
### Double Angle Iron

Fasten the angle irons to the roof structure mounting points at each end with Grade 8 hardware as shown. The angle irons with fan mounting holes should be positioned on the inside, facing each other. Do not tighten the hardware until the upper mount has been mounted to the angle irons.

#### Grade 8 Hardware (Installer-Supplied):

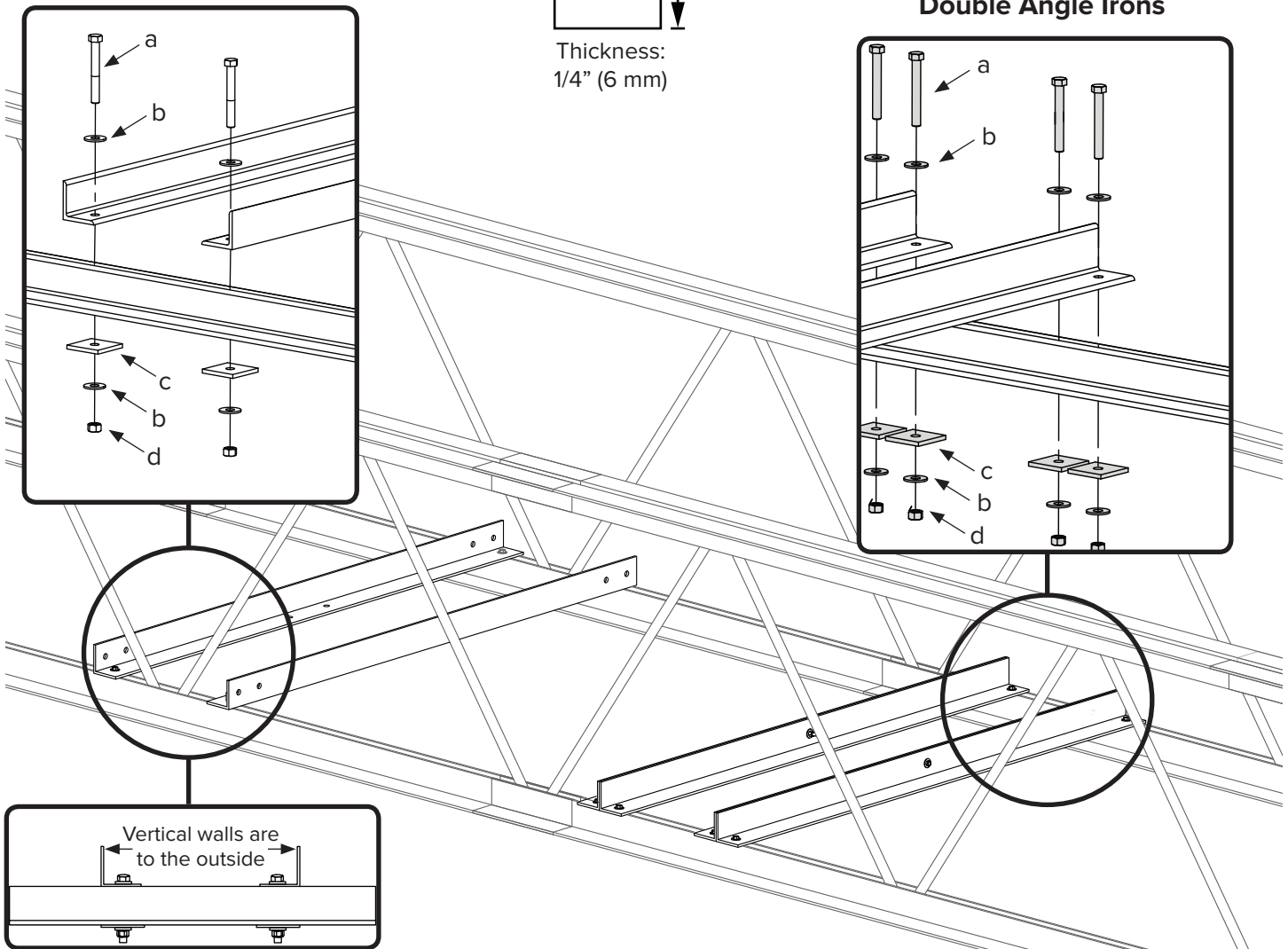
- (8) 1/2-13 Bolt
- (16) 1/2" Washer
- (8) 3" Square Washer (supplied; see diagram)
- (8) 1/2-13 Nylock Nut

### Square Washer



### Single Angle Irons

### Double Angle Irons





## 2. Directly Mount Main Fan Unit to Angle Irons

### ATTENTION

If you are installing the fan with an extension tube, skip to step 3a (I-beam) or 3b (angle irons).

**⚠ CAUTION:** The main fan unit is heavy. Use caution when raising it. A 24-ft (7.3-m) fan weighs a maximum of 415 lbs (188 kg). A suitable means for lifting the weight of the fan, such as a scissor lift, and at least two (2) installation personnel will be required.

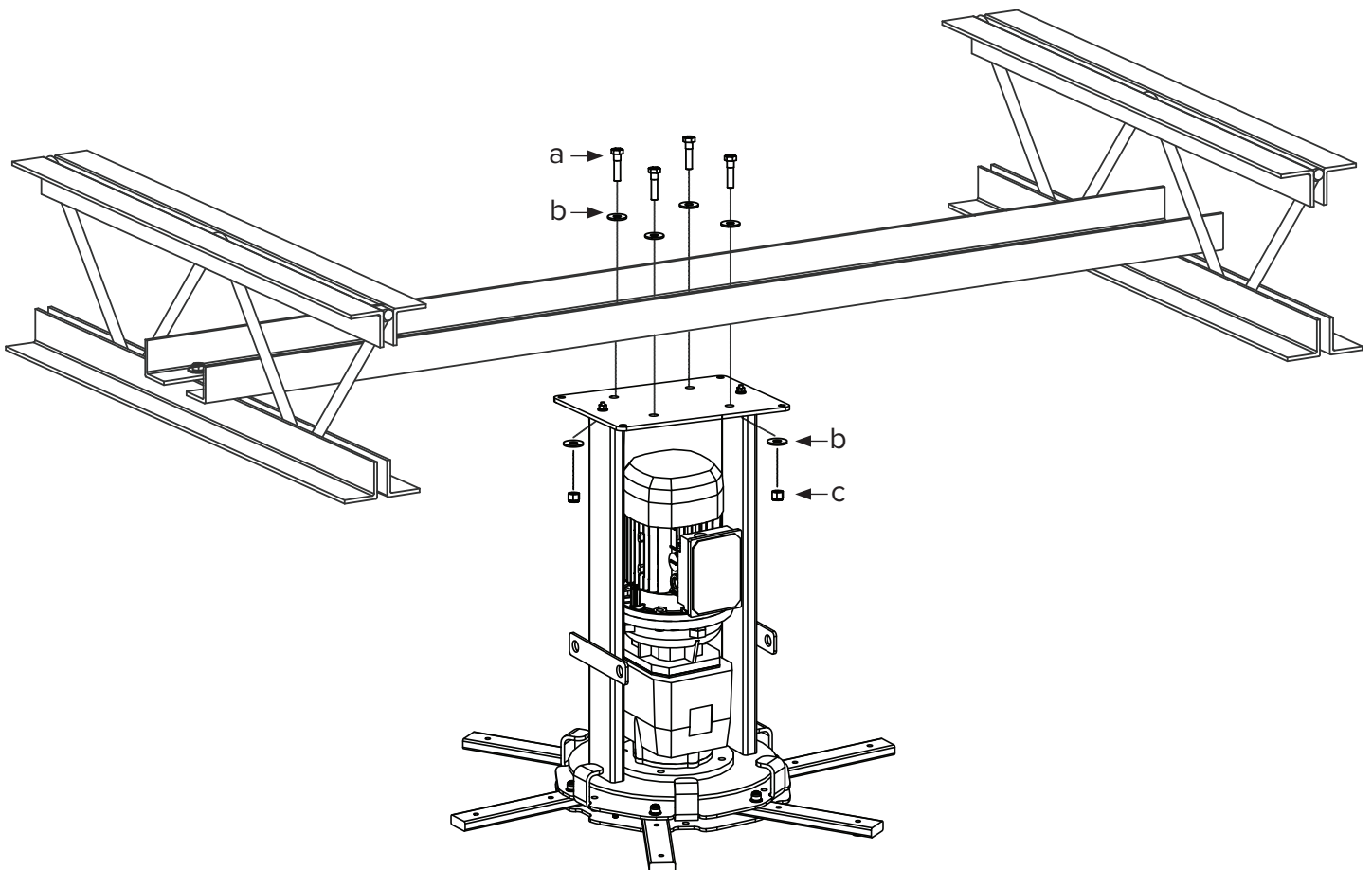
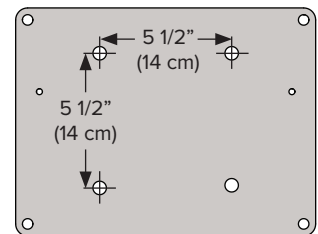
Attach the main fan unit directly to the angle irons with the Main Fan Unit Hardware. Consult the diagram below for distances between the angle irons. Tighten the bolts to 40 ft·lb (54.2 N·m) using a torque wrench and 3/4" socket.

After securing the main fan unit to the angle irons, tighten all the bolts securing the angle irons to the roof structure to 40 ft·lb (54.2 N·m) using a torque wrench and 3/4" socket.

Proceed to step 5.

#### Main Fan Unit Hardware:

- (4) 1/2-13 x 1-3/4" GR 8 Bolt
- (8) 1/2" Flat Washer
- (4) 1/2-13 Nylock Nut



### 3a. Attach Upper Mount to I-Beam

If you are mounting the fan to angle irons, skip to step 3b on the following page.

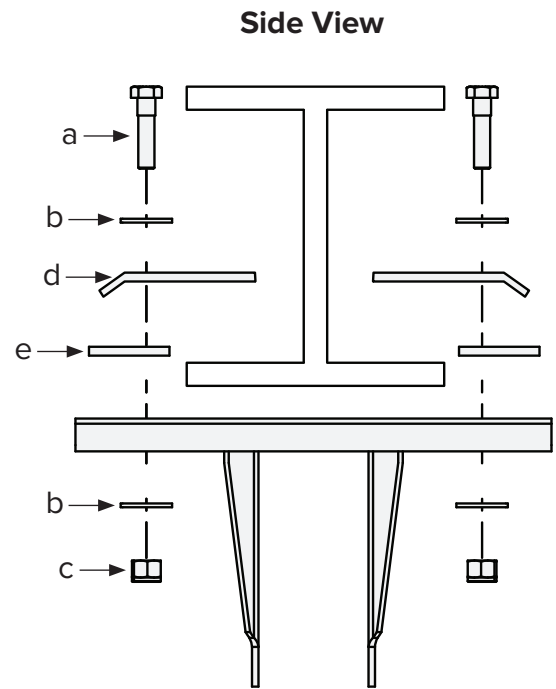
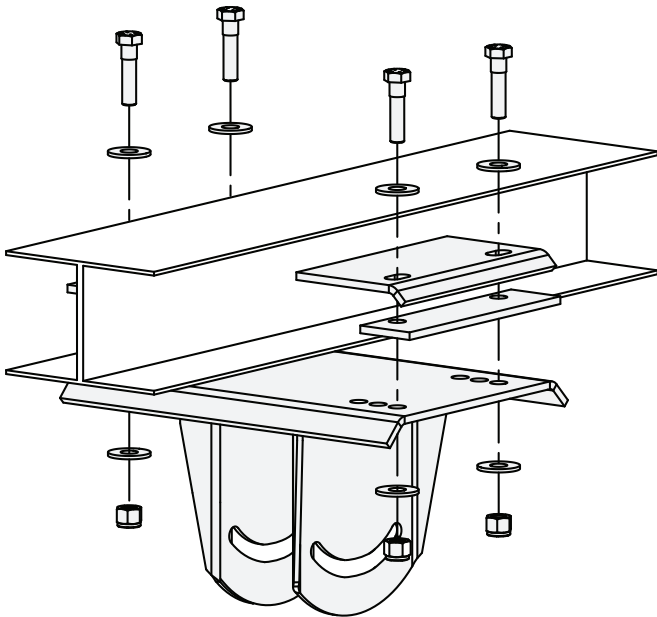
*Note: Spacers are only used on I-Beams when the beam flange exceeds 3/8" (1 cm).*

Secure the upper mount to the I-beam with the Upper Mount Hardware. Tighten the bolts to 40 ft-lb (54.2 N·m) using a torque wrench and 3/4" socket.

Proceed to step 4.

#### Upper Mount Hardware:

- a. (4) 1/2-13 x 2" GR 8 Bolt
- b. (8) 1/2" Flat Washer
- c. (4) 1/2-13 Nylock Nut
- d. (2) Beam Clip
- e. (2) Spacer



### 3b. Attach Upper Mount to Angle Irons

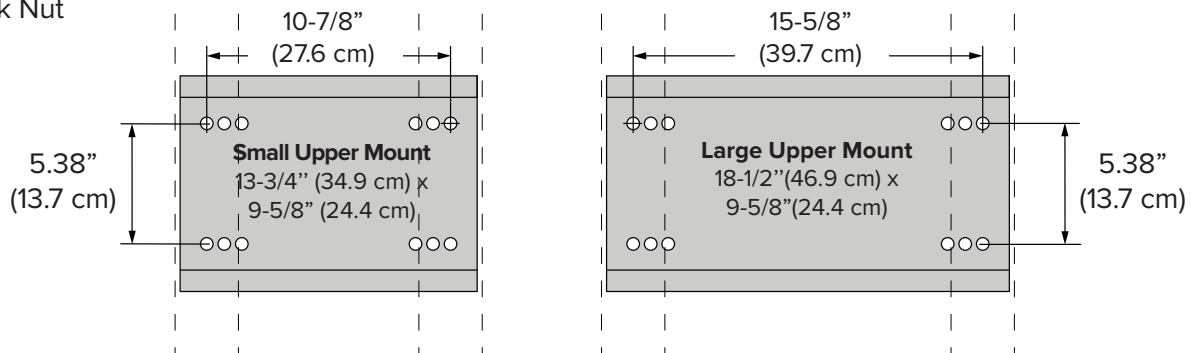
Secure the upper mount directly to the angle irons with the Upper Mount Hardware as shown. The angle irons should be aligned with the outermost holes of the upper mount. Consult the diagrams below for distances between the angle irons. *Do not use beam clips on angle irons!*

Tighten the bolts to 40 ft-lb (54.2 N-m) using a torque wrench and 3/4" socket. After attaching the upper mount to the angle irons, tighten all the bolts securing the angle irons to the roof structure to 40 ft-lb (54.2 N-m).

Proceed to step 4.

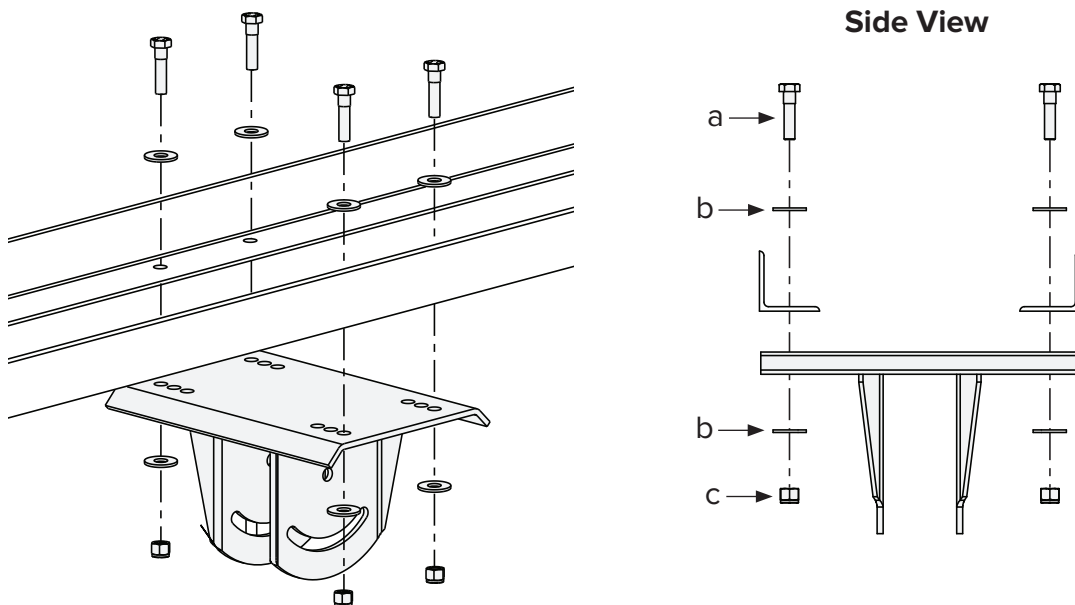
#### Upper Mount Hardware:

- a. (4) 1/2-13 x 2" GR 8 Bolt
- b. (8) 1/2" Flat Washer
- c. (4) 1/2-13 Nylock Nut



Note: Dashed lines represent angle irons.

**The angle irons should be aligned with the outermost holes on the upper mount. Do not use beam clips on angle irons!**



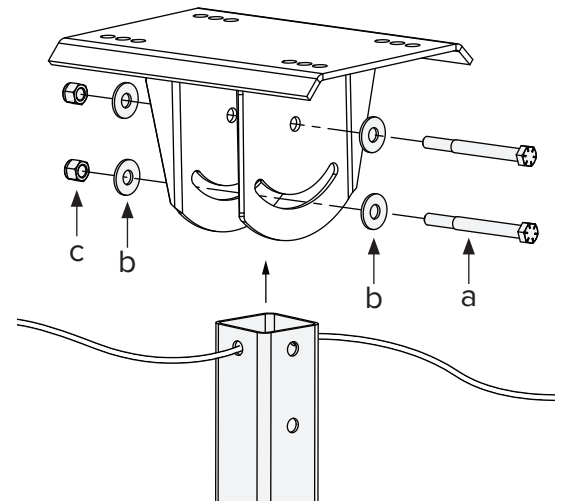
## 4. Attach the Extension Tube

Fasten the extension tube to the upper mount with the Extension Tube Hardware. Ensure the extension tube is hanging plumb to the ground, and then tighten the hardware so that it is snug, but not fully tightened.

*Note: If the mounting structure requires a non-standard length of extension tube, see “Cutting the Extension Tube.”*

### Extension Tube Hardware:

- a. (2) 1/2-13 x 4-1/2” GR 8 Bolt
- b. (4) 1/2” Flat Washer
- c. (2) 1/2-13 Nylock Nut



## 5. Secure the Safety Cable

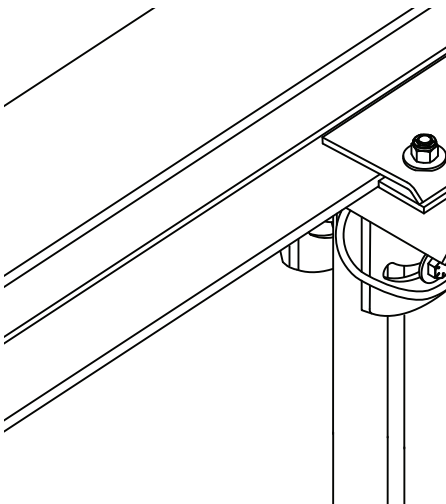
### ATTENTION

**The safety cable is a crucial part of the fan and must be installed correctly. If you have any questions, call Customer Service for assistance.**

*Note: If your fan installation includes an extension tube, the safety cable is already attached to the extension tube. If you are mounting the fan without an extension tube, the safety cable is packed separately.*

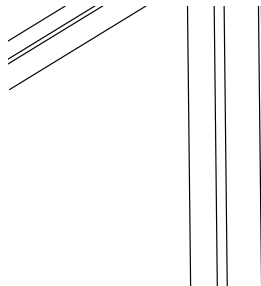
### I-Beam mount

Secure the safety cable by wrapping it around the I-beam and connecting the looped ends with the shackle as shown. The cable must be drawn tightly around the I-beam, leaving as little slack as possible. If possible, the shackle should be on the topside of the I-beam. Securely tighten the shackle.



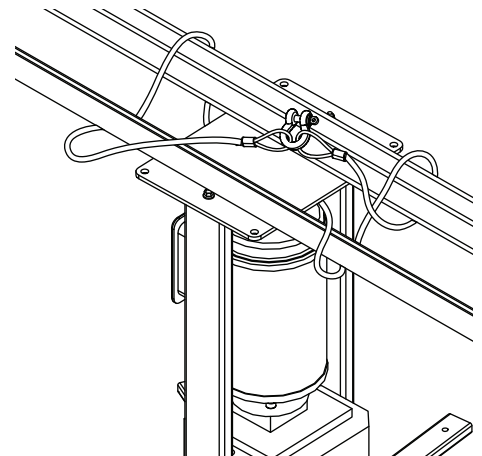
### Angle iron mount (with extension tube)

Secure the safety cable by wrapping it around the angle irons and connecting the looped ends with the shackle as shown. The cable must be drawn tightly around the angle irons, leaving as little slack as possible. If possible, the shackle should be on the topside of the angle irons. Securely tighten the shackle.



### Angle iron mount (no extension tube)

Route the cable through the motor frame and around the angle irons as shown. Connect the looped ends of the cable with the shackle. The cable must be drawn tightly around the angle irons, leaving as little slack as possible. If possible, the shackle should be on the topside of the angle irons. Securely tighten the shackle.

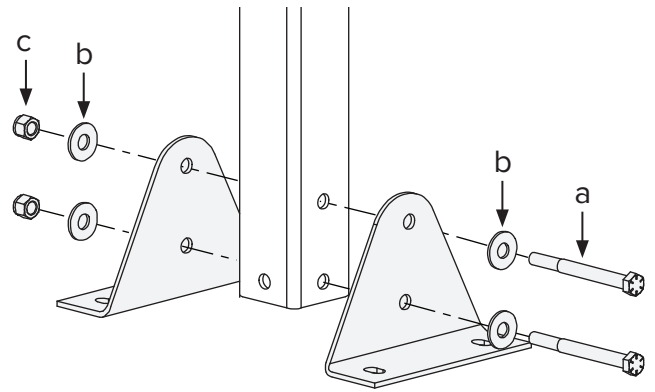


## 6. Attach Lower Yoke

Attach the lower yoke to the bottom of the extension tube with the Lower Yoke Hardware as shown. Tighten the hardware so that it is snug, but not fully tightened.

### Lower Yoke Hardware:

- a. (2) 1/2-13 x 4-1/2" GR 8 Bolt
- b. (4) 1/2" Flat Washer
- c. (2) 1/2-13 Nylock Nut



## 7. Attach Main Fan Unit

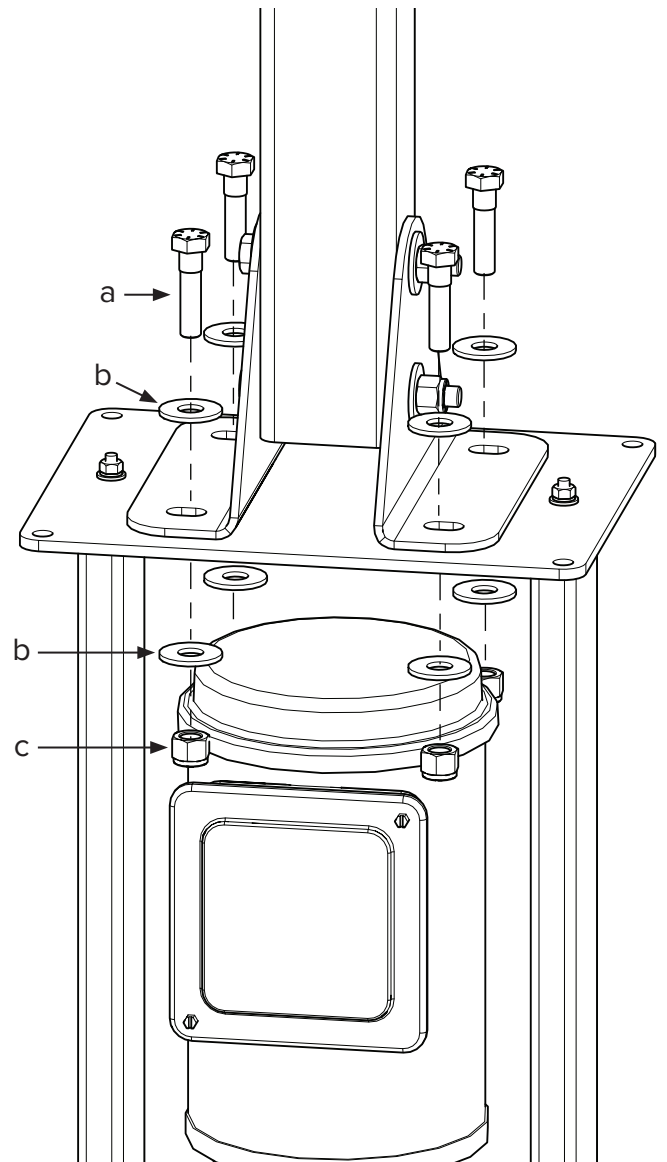
**⚠ CAUTION: The main fan unit is heavy. Use caution when raising it.**

Attach the main fan unit to the lower yoke with the Main Fan Unit Hardware. Do not rest the main fan unit on the ground! Make sure the lower cable is positioned between the lower yoke brackets as shown on the right.

Tighten the bolts to 40 ft·lb (54.2 N·m) using a torque wrench and 3/4" socket. Do not discard the main fan unit packaging. It should be used if the fan is ever moved or relocated.

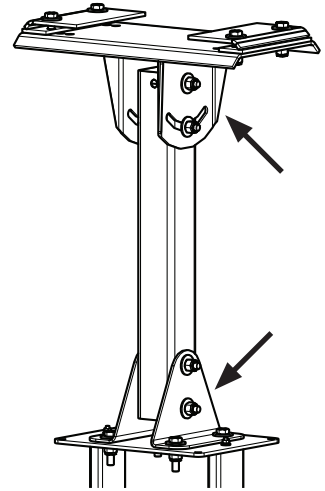
### Main Fan Unit Hardware:

- a. (4) 1/2-13 x 1-3/4" GR 8 Bolt
- b. (8) 1/2" Flat Washer
- c. (4) 1/2-13 Nylock Nut



## 8. Confirm Orientation

After securing the main fan unit to the lower yoke, allow the fan to hang so that the extension tube is plumb to the ground. When it is properly positioned, fully tighten all mounting hardware to 40 ft·lb (54.2 N·m).



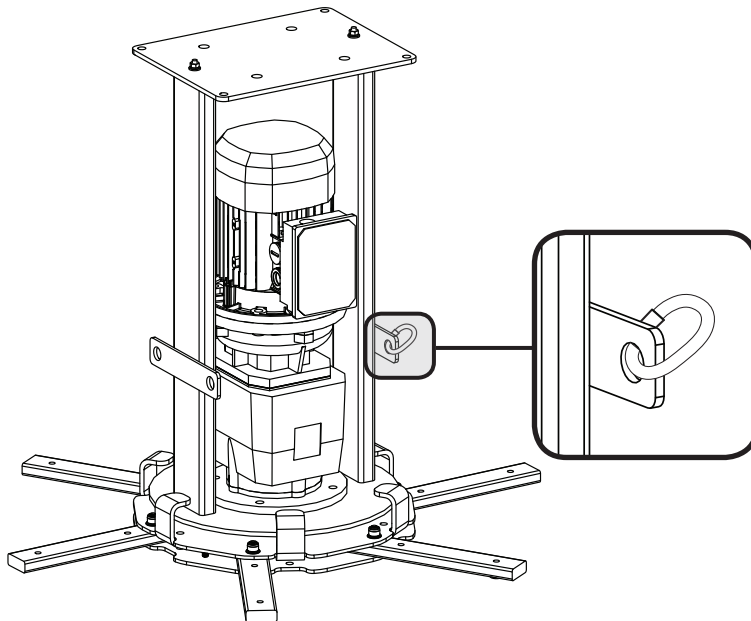
## 9. Install Guy Wires

### ATTENTION

Guy wires are intended to constrain the fan's lateral movement and are only included with fans that have extension tubes 4 ft (1.2 m) or greater in length. Depending on the conditions at the installation site, guy wires may be needed for fans with shorter tubes to prevent any lateral movement. If guy wires are needed and were not included with your fan order, contact Big Ass Fans Customer Service.

### A. Attach locking carabiners to main fan unit

Attach the (4) locking carabiners to the guy wire brackets on the main fan unit as shown. Securely tighten the carabiners.



## B. Attach beam clamps

For best results, the guy wires should be installed at 45° in the X-Y, Y-Z, and X-Z planes as shown below. If the angle deviates by more than 15°, contact Customer Service for assistance.

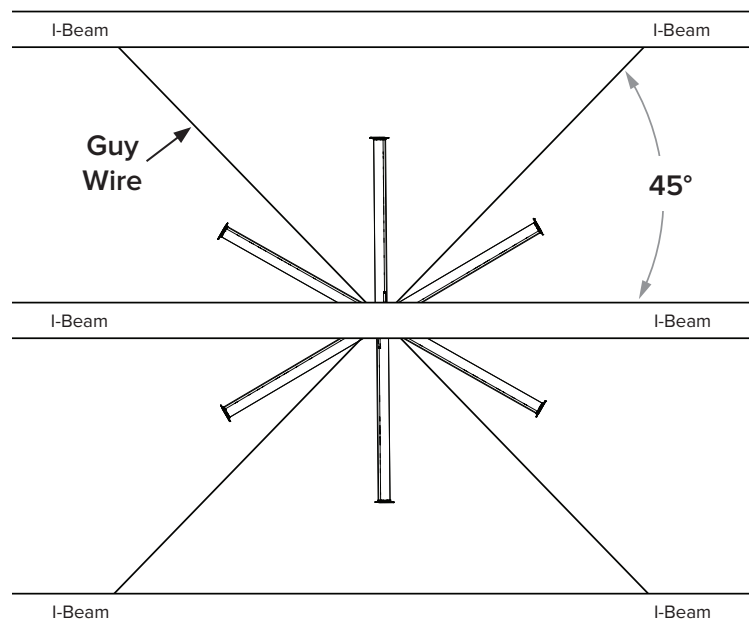
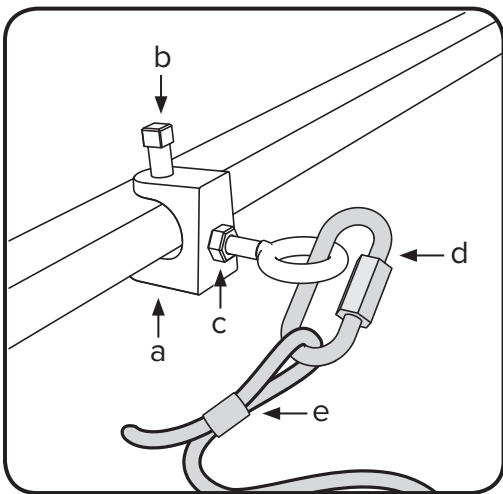
Attach the beam clamp to the mounting structure. The guy wire should be approximately 45° from the horizontal plane. Place the beam clamp accordingly. Fully tighten the set screw to secure the clamp.

Fasten the small eyebolt and nut onto the beam clamp. The nut will be on the outside of the beam clamp. Loop the crimped end of the guy wire into the locking carabiner and secure to the eyebolt as shown. Securely tighten the carabiner.

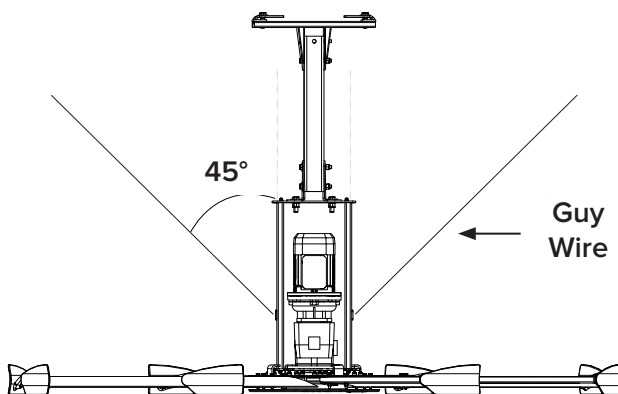
### Guy Wire Hardware:

- a. 1/4" Beam Clamp
- b. 1/4-20 x 1" Eyebolt
- c. 1/4-20 Hex Nut
- d. Locking Carabiner
- e. Guy Wire

**Beam Clamp**



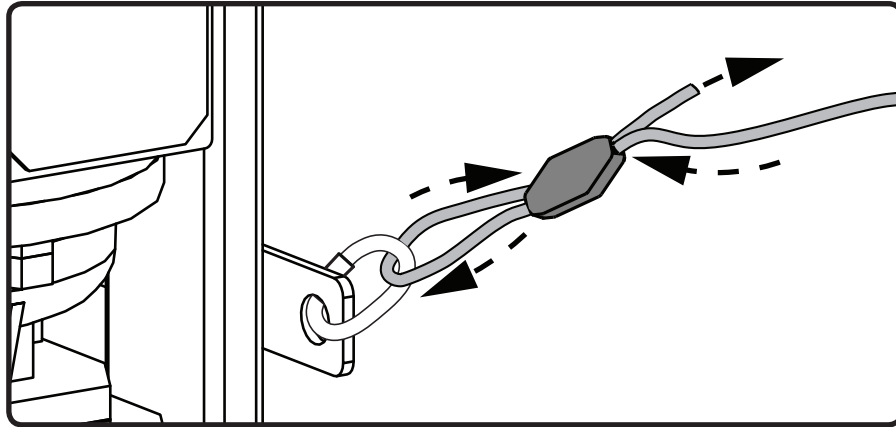
*Note: I-beams shown above. Your mounting structure may differ.*



### C. Route guy wire through Gripple®

Route the guy wire through the Gripple, the carabiner on the fan, and then back through the Gripple as shown. Do not tighten the Gripple until the remaining guy wires have been installed.

*Note: To back the guy wire out of the Gripple, insert 1/16 (1.5 mm) Allen wrench into the small hole on the Gripple.*



### D. Install remaining guy wires

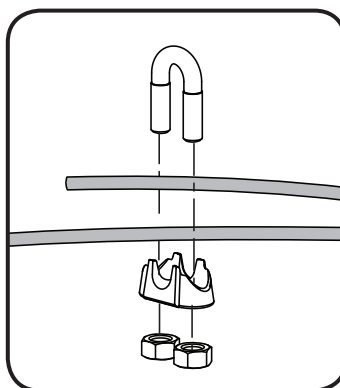
**⚠ CAUTION: Over-tightening the guy wires could throw the fan off balance.**

Repeat steps B and C to install the three remaining guy wires.

Evenly cinch all four guy wires into place using the Gripples. The guy wires should be taut, evenly spaced around the fan, and away from the path of the airfoils. Maintain a distance of 6" to 8" between the Gripple and the carabiner.

Once all of the guy wires are taut, secure their loose ends with the wire rope clips and torque to 4.5 ft·lb (6.1 N·m). Ensure all electrical cords/cables are unobstructed by the guy wire system.

#### Wire Rope Clip





# 10. Mount the Variable Frequency Drive (VFD)

**⚠ WARNING:** To reduce the risk of electric shock, wiring should be performed by a qualified electrician! Incorrect assembly can cause electric shock or damage the motor and the controller! Hazard of electrical shock!

**⚠ WARNING:** The installation of a Big Ass Fan must be in accordance with the requirements specified in this installation manual and with any additional requirements set forth by the National Electric Code (NEC), ANSI/NFPA, and all local codes. Code compliance is ultimately YOUR responsibility!

## ATTENTION

If you are mounting the VFD to the fan motor frame instead of the wall (onboard VFD option), skip this step and refer to the instructions that are packaged with the wall controller.

### A. Select a Mounting Location

Adhere to the following guidelines when selecting the VFD location:

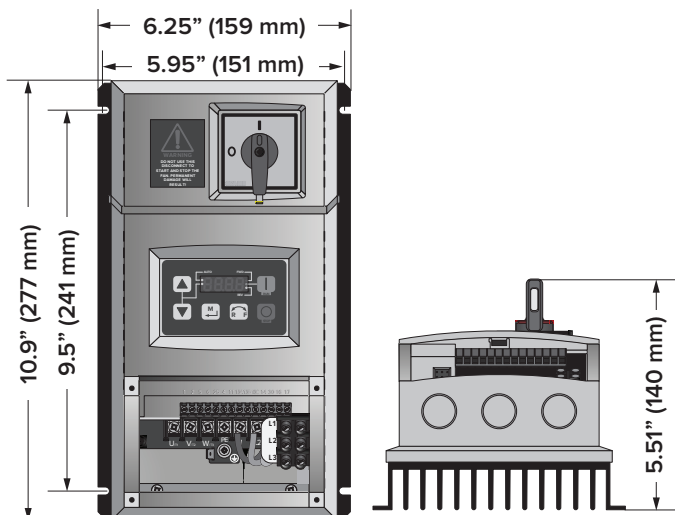
- Install the controller on a flat surface that is readily accessible, free from vibration, and where there is adequate distance from foreign objects or moving equipment.
- Do not mount any controller adjacent to or above a heat source or heat-producing equipment.
- The ambient temperature must be between 14° F (-10° C) and 122° F (50° C) with a relative humidity range of 0 to 95% non-condensing.
- Do not expose the controller to a corrosive atmosphere or direct sunlight.
- When mounting the controller, keep in mind that the fan should be visible from the controller.
- A minimum distance of 6" (15.2 cm) should be maintained between controllers.

### B. Mount the VFD

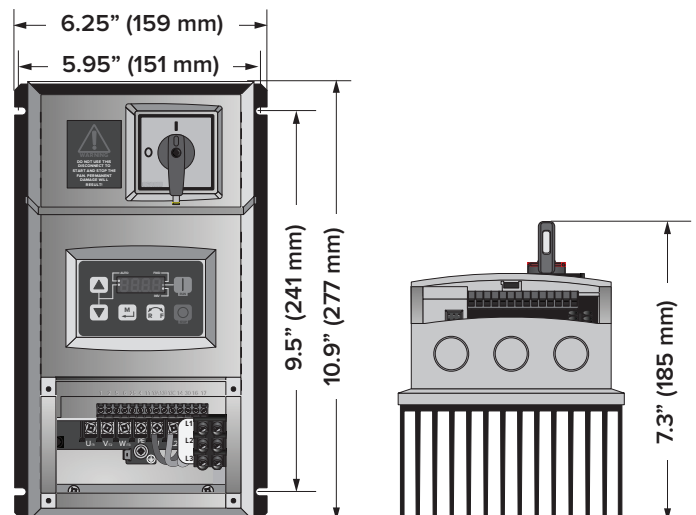
If the controller has been in storage or disconnected from power for more than one year, apply AC supply power to the controller for a period of two hours prior to operation in order to recondition the internal DC bus capacitors.

Mount the VFD to the wall using a #8–#10 screw. Refer to the diagrams below for mounting hole dimensions.

#### 1 hp Controller



#### 2 hp Controller



# 11. Install the Electronic Programming Module (EPM)

## ATTENTION

If installing multiple fans, make sure to install the exact EPM included in each fan's packaging. EPMs are not interchangeable!

The Electronic Programming Module (EPM) contains all programming information specific to fan operation. It must be installed prior to applying power to the VFD. This module is provided as part of the fan's accessory kit.

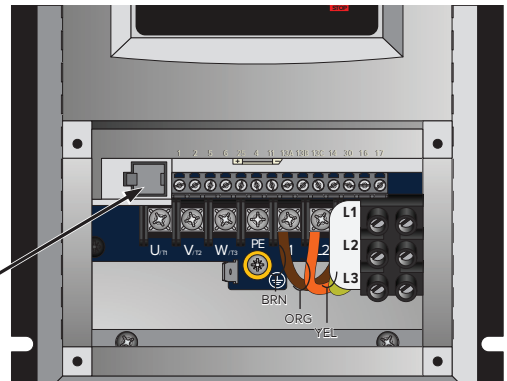
To install the EPM, disconnect the fan from power (refer to the position of the disconnect switch below). Insert the EPM in the location shown below. *Note: The EPM can only be inserted one way. Do not force it!*



Disconnect Switch



EPM



# 12. Wire the Fan and VFD

**⚠ WARNING:** To reduce the risk of electric shock, wiring should be performed by a qualified electrician! Incorrect assembly can cause electric shock or damage the motor and the controller!

Make sure power wiring is routed to the installation site. See Electrical Guidelines in the following section for instructions and guidelines on wiring your fan.

**👉** If you are mounting the controller to the fan motor frame instead of the wall (onboard VFD option), skip this section and refer to the mounting instructions that came with the Onboard VFD kit.

Fan Diameter	Minimum Supply Circuit Size
8–10 ft (2.4–3.0 m)	25 A @ 100–125 V, 1 $\Phi$ 15 A @ 200–240 V, 1 $\Phi$ 10 A @ 200–240 V, 3 $\Phi$ 10 A @ 400–480 V, 3 $\Phi$
12–24 ft (3.6–7.3 m)	25 A @ 200–240 V, 1 $\Phi$ 15 A @ 200–240 V, 3 $\Phi$ 10 A @ 400–480 V, 3 $\Phi$

# 13. Install the Airfoils

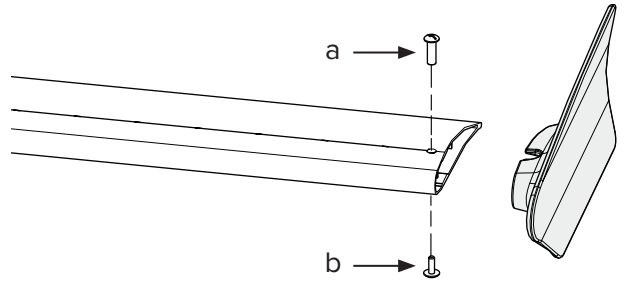
 **Disconnect power to the fan before installing the airfoils.**

## A. Attach winglets to airfoils

Attach a winglet to each airfoil using the Winglet Hardware. Both a Phillips head and flat head screwdriver are required to properly secure the fasteners. Attach winglets to all six airfoils before attaching the airfoils to the fan.

### Winglet Hardware:

- a. 10-24 x 3/4" Barrel
- b. 10-24 x 1/2" Bolt



## B. Attach airfoils to hub

Slide airfoils onto the tabs of the fan hub. The airfoils must be attached to the fan hub with the curved sides facing downward.

Attach the airfoil retainers with the Airfoil Hardware. Moving clockwise around the fan hub, position the airfoil retainers end over end as shown. Hole A of the retainer should be positioned over top of Hole B. Do not tighten the bolts until all the airfoil retainers have been attached!

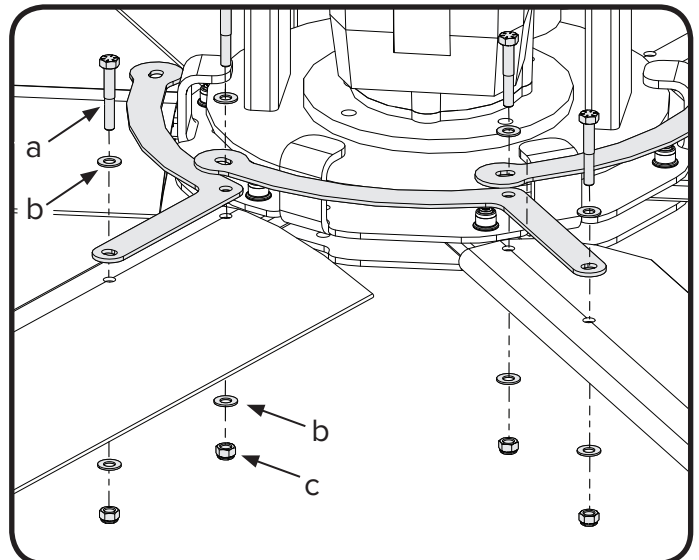
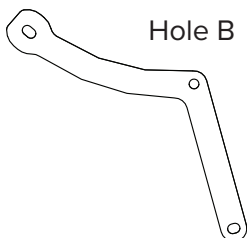
Tighten the bolts along the outer perimeter to **29 ft·lb (39.3 N·m)** using a torque wrench and 1/2" socket. After the outer perimeter bolts are torqued, tighten the bolts along the inner perimeter to **29 ft·lb (39.3 N·m)** using a torque wrench and 1/2" socket.

### Airfoil Hardware:

- a. 5/16-18 x 2" GR 8 Bolt
- b. 5/16" Flat Washer
- c. 5/16-18 Nylock Nut

### Airfoil Retainer

Hole A



# ELECTRICAL GUIDELINES

- ⚠ **WARNING:** Installation must comply with specifications from National Electrical Codes and standards (NEC, VDE, BSI, etc.) regarding wire types, conductor sizes, branch circuit protection, and disconnecting devices.
- ⚠ **WARNING:** To avoid a possible shock hazard and/or nuisance tripping caused by induced voltages, unused wires in the conduit must be grounded at both ends. For the same reason, VFD output wires should not share a conduit with another VFDs output leads, or other power circuits (lighting, motors, etc.).
- ⚠ **CAUTION:** MC or “Metal clad” cable cannot be used for controller output/motor leads. Both stranded and solid core varieties must be avoided. Do not use solid core cable of any size or insulation class for motor wiring. Use of such types of cabling may result in nuisance tripping or premature equipment failure.

## Cable Types

A variety of cable types are acceptable for variable frequency drive installations. *For many installations, unshielded cable is adequate if it can be separated from sensitive circuits.* In all cases, parallel runs of control and motor cabling should be avoided when unshielded cable is used. Do not use cable with an insulation thickness of less than 15 mils.

- UL installations in 50° C ambient must use 600 V, 75° C or 90° C wire.
- UL installations in 40° C ambient should use 600 V, 75° C or 90° C wire.

### Acceptable unshielded types

THHN, THNW, or similar wire is acceptable for drive installations in dry environments if adequate free air space and/or conduit fill rate limits are provided. *Do not use THHN or similarly coated wire in wet areas.* Any wire chosen must have a minimum insulation thickness of 15 mils and should not have large variations in insulation concentricity.

### Acceptable shielded types

The drain conductor included with shielded cables must be connected to both the motor frame and the PE/Ground terminal of the Variable Frequency Drive.

Location	Rating / Type	Description
Standard (Option 1)	600V, 75° C or 90° C (167° F or 194° F) RHH/RHW-2	<ul style="list-style-type: none"> <li>• Four tinned conductors with XLPE insulation</li> <li>• Foil shield and tinned copper drain wire with 85% braid coverage</li> <li>• PVC Jacket</li> </ul>
	Belden 29501-29507 or equivalent	
Standard (Option 2)	Tray rated 600 V, 75° C or 90° C (167° F or 194° F) RHH/RHW-2	<ul style="list-style-type: none"> <li>• Three tinned copper conductors with XLPE insulation</li> <li>• 5 mil single helical copper tape (25% overlap minimum) with three bare copper grounds in contact with shield</li> <li>• PVC Jacket</li> </ul>
	Shawflex 2ACD/3ACD or equivalent	
Class I & II Division I & II	Tray rated 600 V, 75° C or 90° C (167° F or 194° F) RHH/RHW-2	<ul style="list-style-type: none"> <li>• Three bare copper conductors with XLPE insulation with impervious corrugated continuously welded aluminum armor</li> <li>• Black sunlight resistant PVC jacket overall</li> <li>• Three copper grounds on #10 AWG and smaller</li> </ul>

### Output disconnects


A device, such as a contactor, that routinely disconnects and reapplies output power to the motor for the purpose of starting and stopping the motor cannot be used.

## Recommended wire size

A minimum of 14 AWG is acceptable for motor leads. Power feeders to controllers must be governed by the fuse size included with the VFD and/or required circuit breaker.

## Grounding

The nature of Variable Frequency Drive systems must be considered prior to and during the installation of Big Ass Fans. Due to high frequency content on the output side of the VFD, measures must be taken to ensure that all grounding connections conform to the recommendations made in this section.

The VFD's safety ground  must be connected to system ground. Ground impedance must conform to the requirements of national and local industrial safety regulations and electrical codes. The integrity of all ground connections should be periodically checked. All ground leads for downstream conduit boxes must be kept separate from the motor ground and terminated on the VFD's PE terminal.

### Motor ground

The motor ground must be connected to a ground terminal on the VFD to aid in keeping high frequency electrical noise off of the building's ground grid.

### Shielded motor cable terminations

Either of the safety ground terminals on the drive provides a grounding point for the motor cable shield. The motor cable shield connected to one of the drive terminals must also be connected to the motor frame. If no drain lead is present, the cable must be stripped back so that the braid can be twisted and soldered to a pigtail for proper termination.

## Input voltage irregularities

 **CAUTION: Controllers damaged by input voltage irregularities may not be covered by the your warranty!**

The VFDs are suitable for direct connection to input power within the rated voltage of the VFD, but are sensitive to rapid changes in supply voltage. The table shows input power conditions that may cause nuisance tripping such as Overvoltage and Undervoltage faults. If any of the conditions exist as described, you can install one of the devices listed under the heading "Corrective Action" on the input side of the VFD. **One device is required for each VFD!**

Input Power Condition	Corrective Action
Low line impedance (less than 1% reactance)	Install a line reactor. Contact Big Ass Solutions Customer Service if you need to order a line reactor.
Line has power factor correction capacitor	
Line has frequent power interruptions (voltage sags or swells)	
Line has intermittent noise spikes in excess of 6,000 V (lighting)	
Phase-to-ground voltage exceeds 125% of normal line-to-line voltage	Install a Delta/Wye isolation transformer with grounded secondary (1:1 turns ratio)
Ungrounded distribution system	
Supply transformer exceeds established kVA limit	Install a line reactor
More than one controller, one per branch circuit	

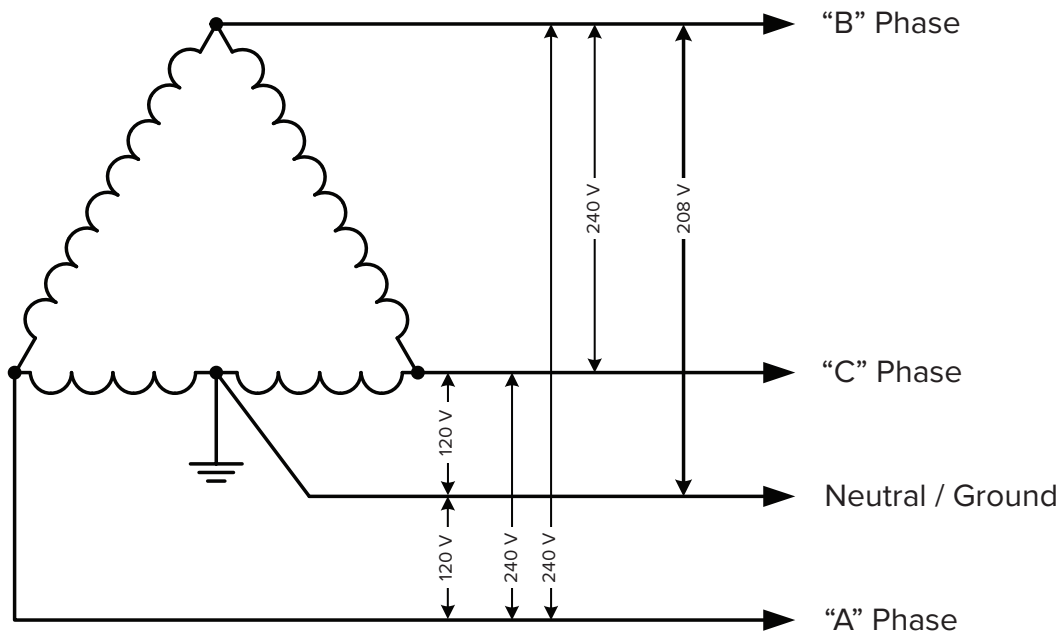
# Delta secondary

**⚠ CAUTION:** Care must be taken when connecting to a three-phase 240/120 V secondary as shown below. All VFD models rely on internal references made between each incoming phase and ground. To prevent nuisance tripping such as Overvoltage and Undervoltage faults, 200–240 V, three phase VFDs should be connected so that the High leg, or “phase B,” terminates on “L2” of the VFD’s input power terminals.

**⚠ CAUTION:** Avoid installations utilizing supply transformers with a 480V delta secondary (ungrounded, corner grounded, open). Proper fan operation cannot be guaranteed due to a lack of proper phase-to-ground voltage references.

There are many different arrangements available for industrial and commercial power distribution in North America. The most common are the following:

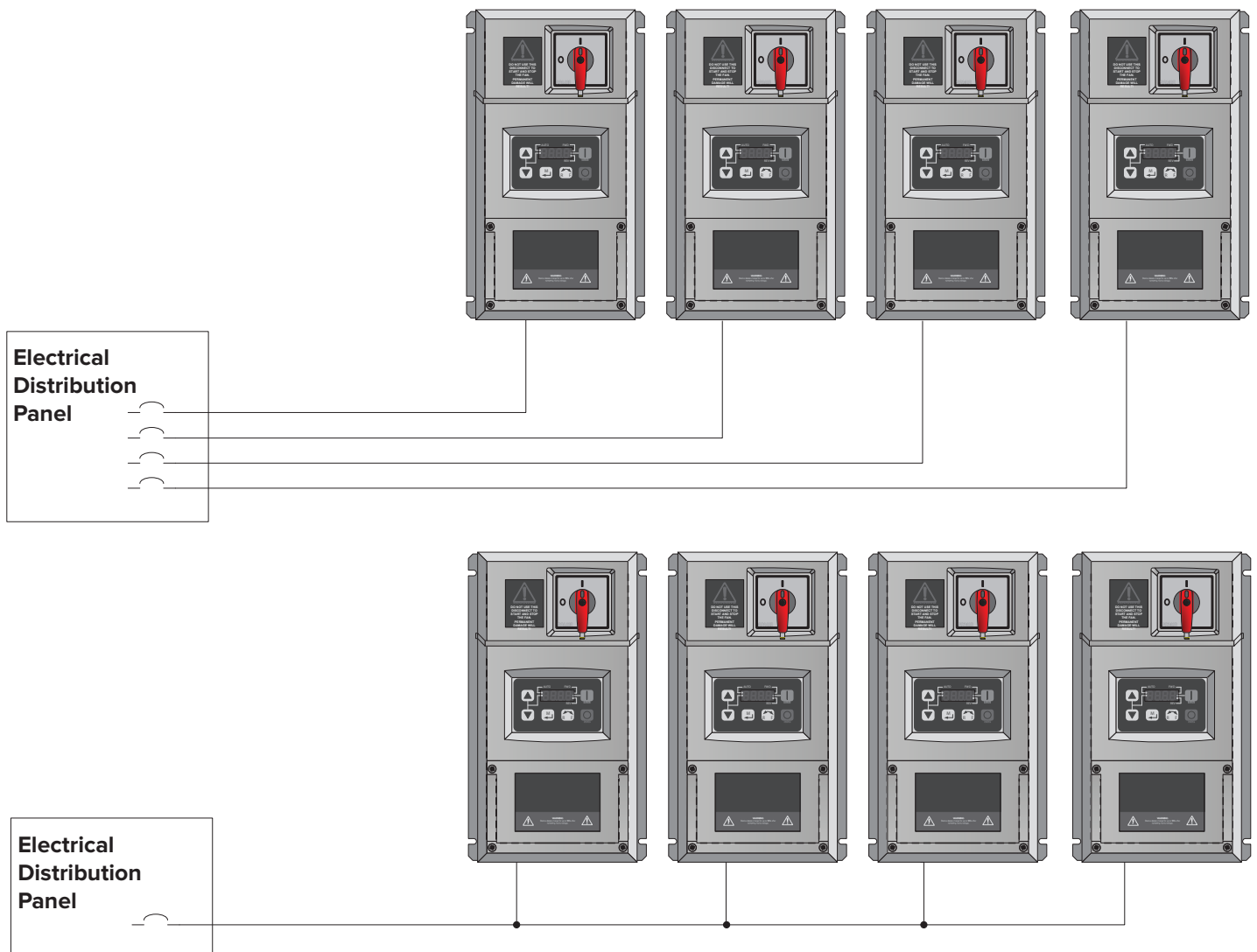
- **480 V/277 V Three-Phase (Wye Secondary).** Provides 480 V between phases, and 277 V from each phase to Neutral/Ground.
- **208 V/120 V Three-Phase (Wye Secondary).** Provides 208 V between phases, and 120 V from each phase to Neutral/Ground.
- **240 V/120 V Three-Phase (Delta Secondary).** Provides 240 V between phases for three-phase loads, 120 V from phase “A” and “C” to Neutral/Ground, and 208 V from phase “B” to Neutral/Ground as shown below. In this transformer arrangement, phase “B” is commonly referred to as a “Wild Leg” or “High Leg,” and shall be marked accordingly with an orange finish or other effective means per NEC 110.15.



# Branch circuit protection

**⚠ CAUTION: VFDs may not be daisy chained on a branch circuit without providing either one fused disconnect or circuit breaker per controller.**

The VFD does not contain individual branch circuit over-current protection. Local code and/or NEC requirements may not permit installation of multiple VFDs on a shared feeder. Confirm prior to installation.



# VFD Wiring: ESFR (Early Suppression Fast Response)

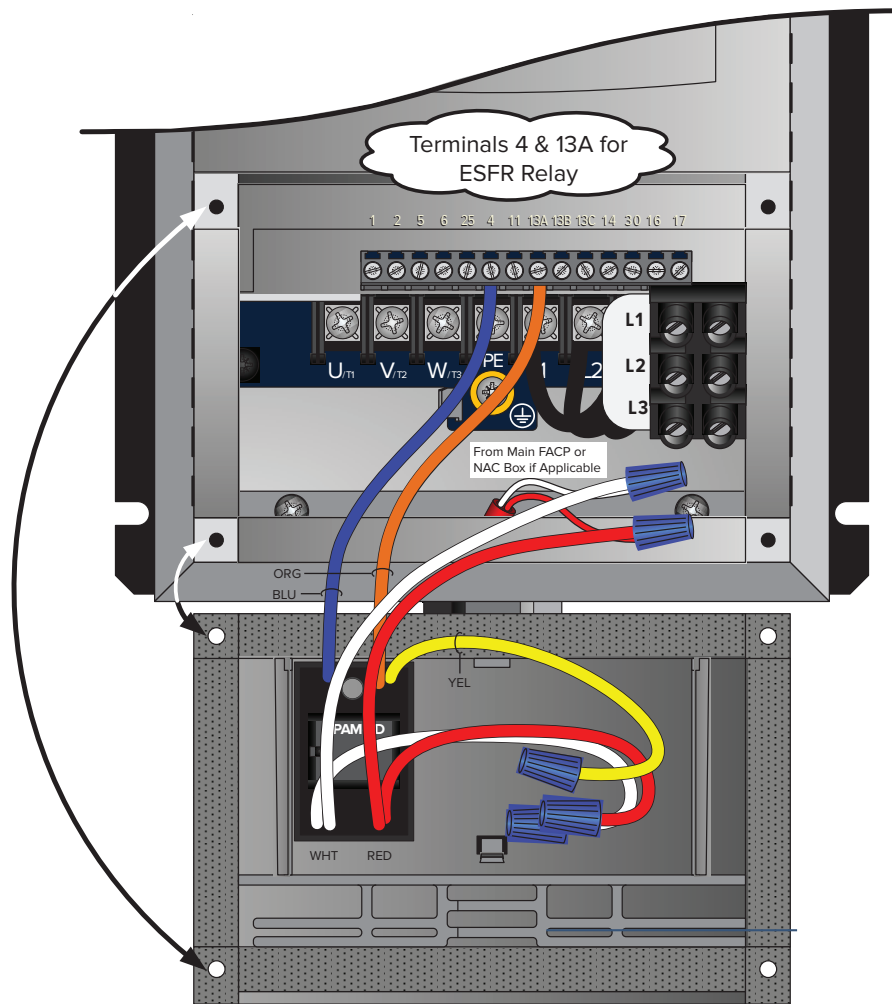
**⚠ WARNING:** Improper installation can cause electric shock or damage to the motor and controller. A qualified electrician should perform the installation.

If installing the fan in the United States, the fan must be installed per the following National Fire Protection Association (NFPA) guidelines:

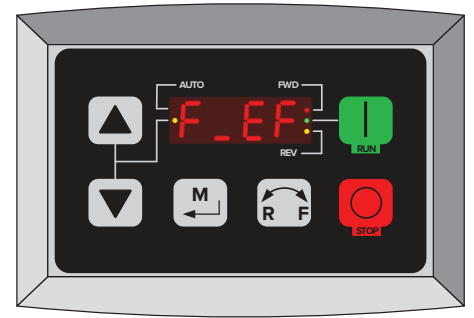
- The fan must be centered approximately between four adjacent sprinklers.
- The vertical distance from the fan to the sprinkler deflector must be at least 3 ft (91.4 cm).
- The fan must be interlocked to shut down immediately upon receiving a waterflow signal from the alarm system.

The fire relay included with the fan is needed only if the fan will be installed in a building that has a fire sprinkler system. The fire relay integrates the fan with the sprinkler system and shuts down the fan upon receiving an alarm signal from the system. If the building in which the fan will be installed has a sprinkler system, you must install the relay according to the instructions below.

A contact closure across the digital input terminals 4 and 13A will result in fan shutdown. The included relay uses a Normally Open (N.O.) contact as shown below. The relay coil must be energized by the FACP for fan shutdown. Optionally, the normally closed (N.C.) relay contact can be used. The relay coil must remain energized by the FACP for fan operation. This would be considered a fail safe or fail open wiring arrangement. Two additional relay coil leads are provided to facilitate supervision pass-through where required.



Relay is mounted to the backside of the access cover.



An alarm condition will stop the fan and issue an “F\_EF” external fault on the controller’s display.

Relay Coil/Contact Details			
White (X2)	(-)	C	Blue
		NC	Yellow
Red (X2)	(+)	NO	Orange
Coil: 20–32 VDC @ 20 mA			



# VFD Wiring: 100–125 V & 200–240 V, 1 $\Phi$ Controller

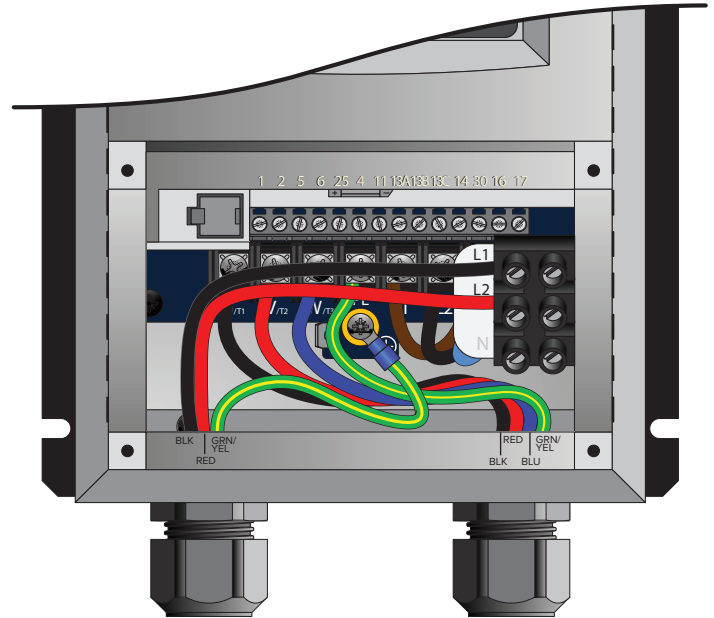
**⚠ WARNING:** Wait three minutes after disconnecting before servicing!

**⚠ WARNING:** Improper installation can cause electric shock or damage to the motor and controller. A qualified electrician should perform the installation.

The diagrams below shows wiring options for a 100–125 V and 200–240 V, single-phase VFD. *Note: The VFD does not contain fusing! Power must be supplied to this controller via a dedicated circuit breaker or properly fused disconnect!*

## 200–240 V, 1 $\Phi$ , 50/60 Hz Controllers

The neutral terminal is not used when wiring the VFD for 200–240 V, 1  $\Phi$ . A disconnect and EMI filter are included with this VFD.

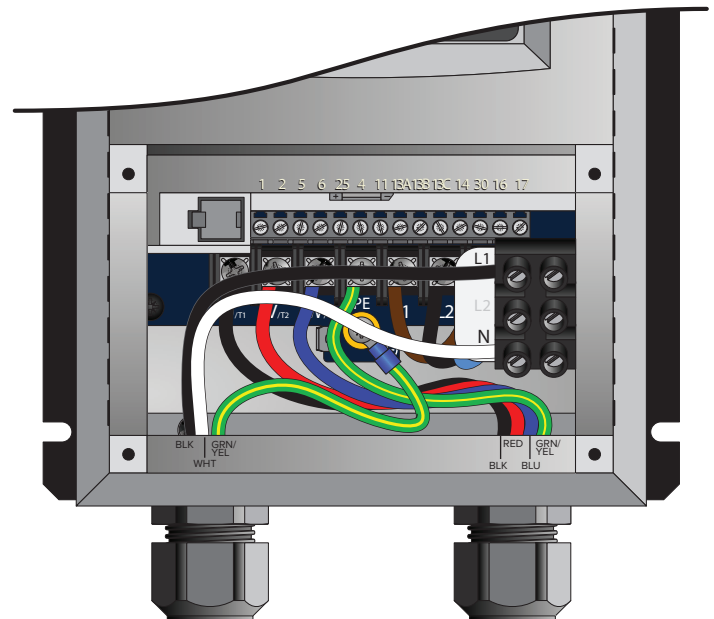


**AC Input Wiring  
2W plus GND**

**Motor Output Wiring  
3W plus GND**

## 100–125 V, 1 $\Phi$ , 50/60 Hz Controllers (Optional)

The L2 terminal is not used when wiring the VFD for 100–125 V, 1  $\Phi$ . A disconnect is included with this VFD.



**AC Input Wiring  
2W plus GND**

**Motor Output Wiring  
3W plus GND**

# VFD Wiring: 200–240 V, 3 $\Phi$ Controller

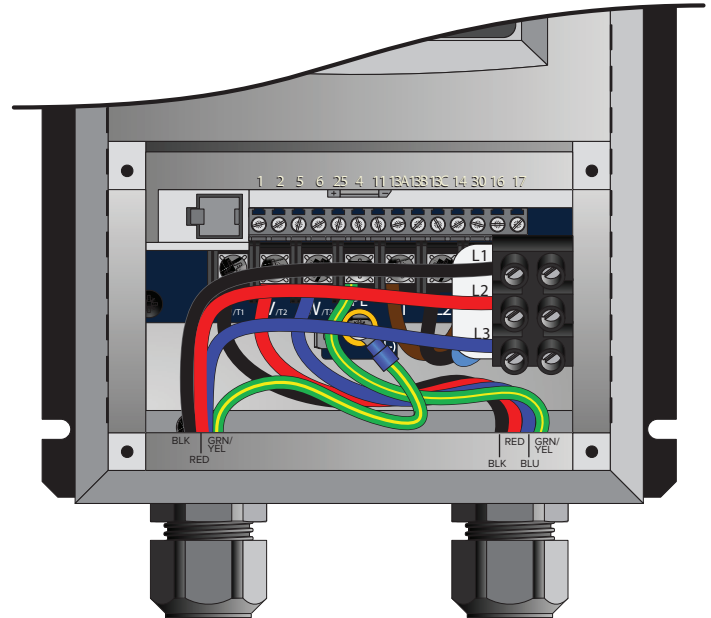
**⚠ WARNING:** Wait three minutes after disconnecting before servicing!

**⚠ WARNING:** Improper installation can cause electric shock or damage to the motor and controller. A qualified electrician should perform the installation.

The diagrams below shows wiring options for a 200–240 V, three-phase VFD. *Note: The VFD does not contain fusing! Power must be supplied to this controller via a dedicated circuit breaker or properly fused disconnect!*

## 200–240 V, 3 $\Phi$ , 50/60 Hz Controllers

A disconnect is included with the VFD for 200–240 V, 3  $\Phi$ . An EMI filter is not included with this VFD.

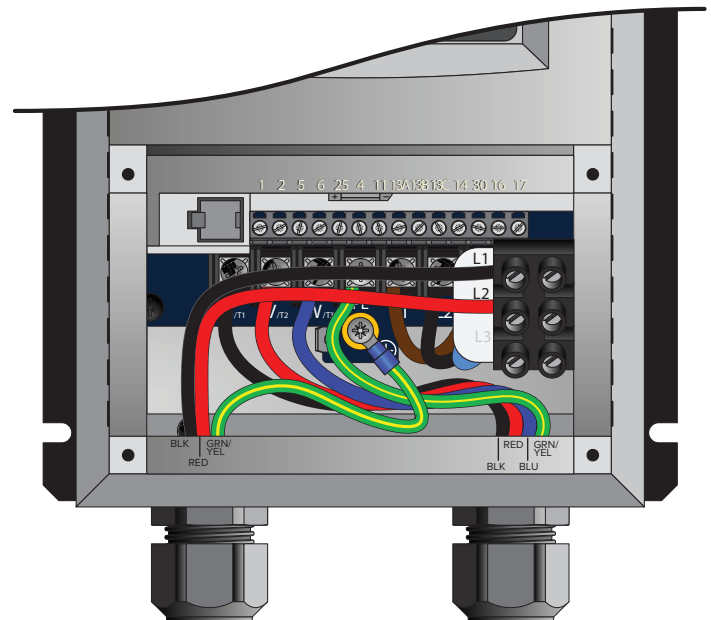


**AC Input Wiring**  
3W plus GND

**Motor Output Wiring**  
3W plus GND

## Optional 1 $\Phi$ Wiring for 200–240 V, 3 $\Phi$ , 50/60 Hz Controllers

The L3 terminal is not used when wiring the VFD for 200–240 V, 1  $\Phi$ . A disconnect is included with the VFD. An EMI filter is not included with this VFD.



**AC Input Wiring**  
2W plus GND

**Motor Output Wiring**  
3W plus GND

# VFD Wiring: 400–480 V, 3 $\Phi$ Controller

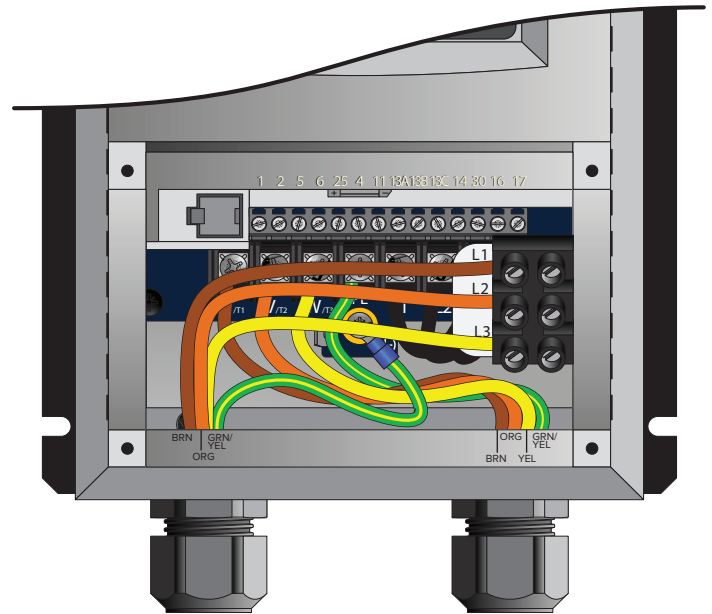
**⚠ WARNING:** Wait three minutes after disconnecting before servicing!

**⚠ WARNING:** Improper installation can cause electric shock or damage to the motor and controller. A qualified electrician should perform the installation.

The diagram below shows wiring options for a 400–480 V, three-phase VFD. *Note: The VFD does not contain fusing! Power must be supplied to this controller via a dedicated circuit breaker or properly fused disconnect!*

## 400–480 V, 3 $\Phi$ , 50/60 Hz Controllers

An EMI filter and disconnect are included with the VFD for 400–480 V, 3  $\Phi$ .



**AC Input Wiring  
3W plus GND**

**Motor Output Wiring  
3W plus GND**

# Daisy Chaining the Fans

**⚠ WARNING: Wait three minutes after disconnecting before servicing!**

The following illustrations and parameter changes enable daisy chaining of multiple fans. The first fan provides a start/stop contact and 0–10 VDC analog speed reference for the first downstream VFD, which then provides a new start/stop contact and 0–10 VDC analog speed reference for the following downstream VFD. This preferred method of linking the VFDs together ensures minimal signal loss of command signals in larger multi-fan systems.

## Assertion Level Switch (ALSW)

The VFD ships with the onboard digital I/O configured for Sourcing (PNP) operation. Terminal 4 provides +15 VDC to be used as a supply voltage for user-supplied switches and accessories. For this 3-wire daisy chaining application, the downstream VFDs must be switched to Sinking (NPN) operation. Terminal 4 will then provide a DC common connection and allow the analog signal and start/stop signal to share that common. **The Assertion Level switch above terminal 4 must be switched from (+) to (-) on all downstream VFDs for proper daisy chaining operation prior to powerup, parameter changes, and operation.**

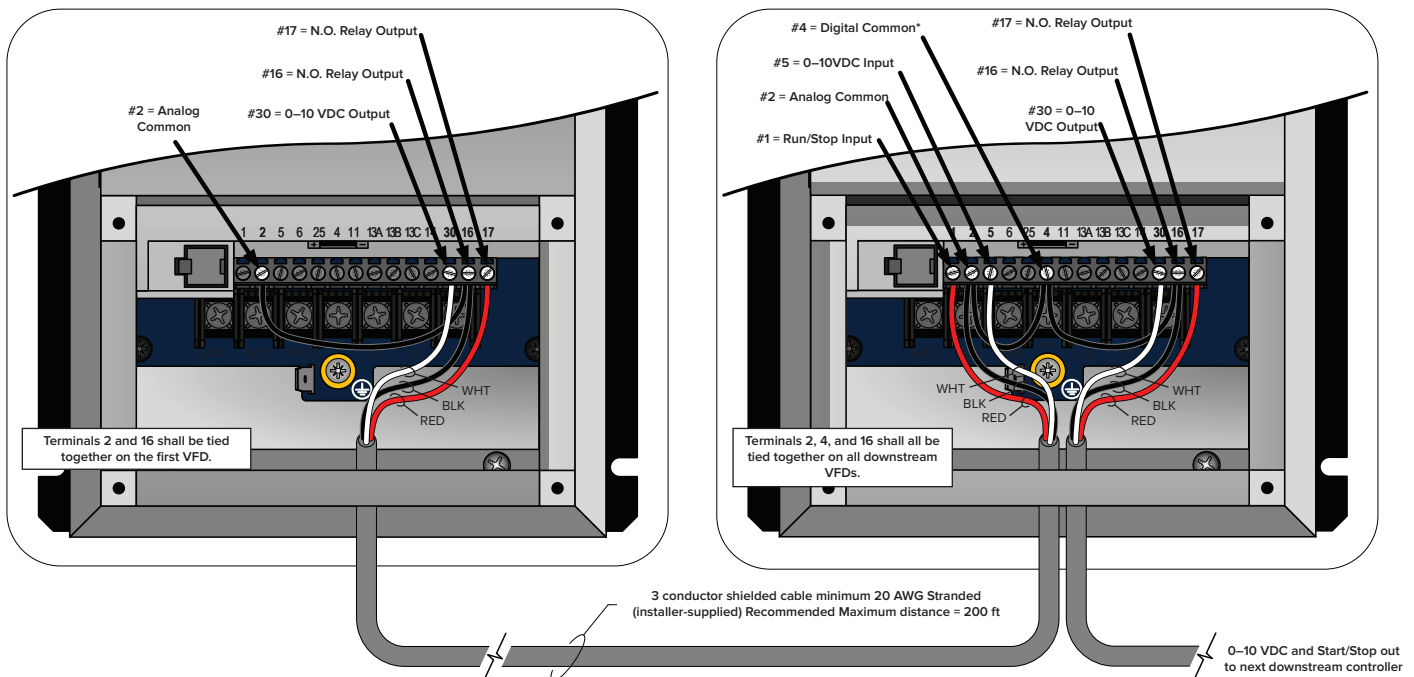
### Parameter changes (for first controller)

Parameter	Description
<b>P140</b>	Relay Output Function Change from “0” for None to “1” for Run.
<b>P150</b>	TB-30 Output Change from “0” for None to “1” for 0–10 VDC output (scaled to drive output frequency).
<b>P152</b>	TB-30 Scaling Frequency Change to equal the frequency setting of P103 Maximum Frequency.
<b>P161</b>	Speed at Max Signal Change to equal the frequency setting of P103 Maximum Frequency.

### Parameter changes (for downstream VFDs)

Parameter	Description
<b>P120</b>	Assertion Level Change from “2” for High to “1” for Low
<b>P100</b>	Start Control Source Change from “0” for keypad operation to “1” for Terminal Strip.
<b>P101</b>	Standard Reference Source Change from “0” for keypad operation to “1” for 0–10VDC analog input operation.

*Note: Depending on the AWG and distance of the low voltage wiring, the downstream fans may run slightly slower than the leading fan. If this occurs, P161 Speed at Max Signal can be used to introduce a minor command reference overshoot to compensate for the analog voltage drop. At each downstream fan (beginning with the first), adjust the value of P161 up 0.1–0.2 Hz increments until the fan’s output frequency matches that of the lead fan.*

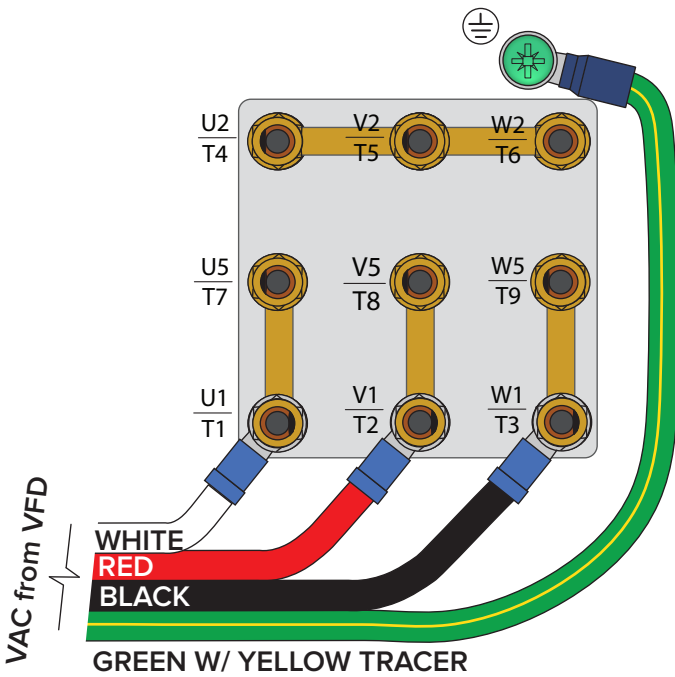


# Motor Wiring: 9-Lead, Dual Voltage, Wye Motor Configurations

The motor wiring configurations shown below are applicable to 9-lead, dual voltage, wye wound motors rated for 230/460 VAC and 330/600 VAC. Consult the motor nameplate and/or wiring placard for verification of required wiring connections. Motors with terminal blocks require ring terminals and a 7 mm nut driver for termination. The diagrams below include L2 and L3 swap to yield proper motor rotation. *Note: Swapping leads to reverse rotation is done only on the output side of the drive.*

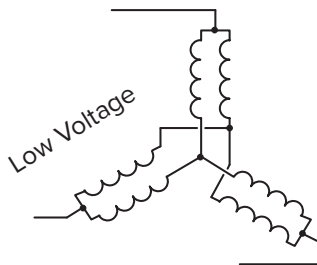
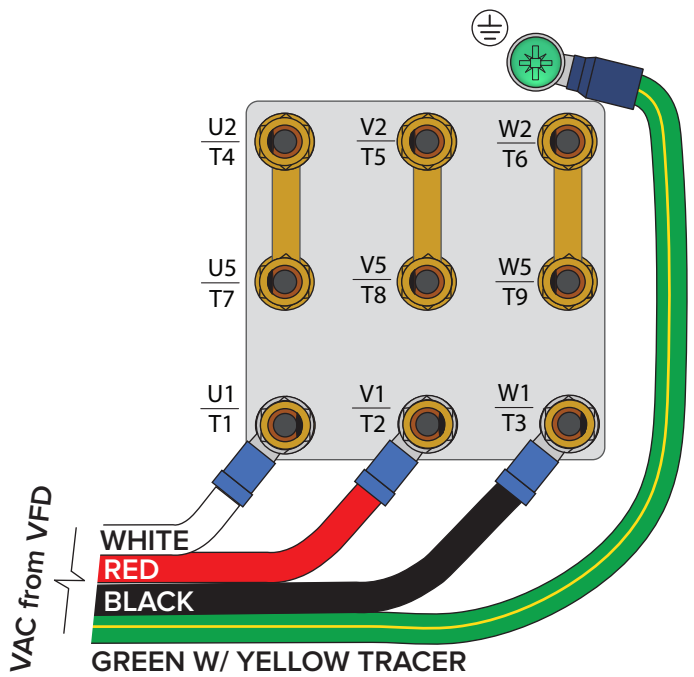
## Low Voltage

200–240 VAC, 50–60 Hz  
330–350 VAC, 50–60 Hz

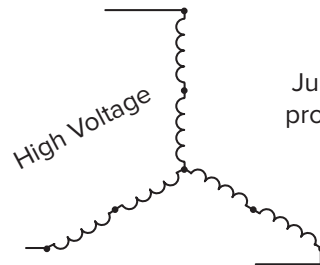


## High Voltage

400–480 VAC, 50–60 Hz



Low Voltage



High Voltage



Jumper bars are provided with the motor

# OPERATING THE FAN

**WARNING:** The following startup procedures apply to standard model controllers. Procedures may vary depending on installation options and system automation. The installer should verify proper wiring, terminations, and proper voltage supply before proceeding. High voltage gloves and arc flash protection are recommended.



**Drive Idle/Stopped Screen**



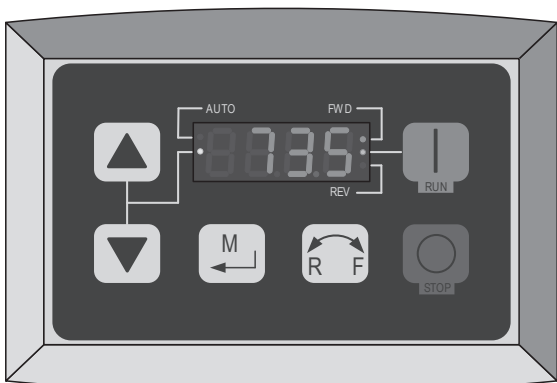
## Starting and stopping the fan

The RUN and STOP buttons control the fan start and stop functions. **To start the fan**, press the green RUN button. **To stop the fan**, press the red STOP button.



## Adjusting fan speed

The Arrow buttons control speed adjustment. **To adjust fan speed**, press the Up or Down Arrow button. Single presses will increase or decrease the speed in 1-2% increments. Pressing and holding the Up or Down Arrow button will slowly and continuously adjust fan speed until the button is released.



**Fan Speed Percentage Display**  
(73.5% Running FWD)

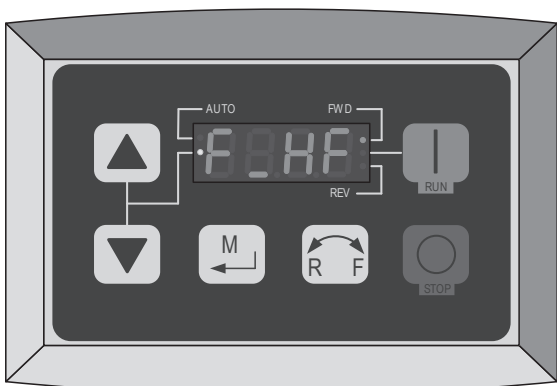


then



## Reversing direction of fan rotation

The direction of fan rotation can be reversed when the fan is stopped or running. To reverse the direction of rotation, press the Direction button, and then press the Memory/Enter button (as shown on the left). The associated Direction indicator will flash, indicating the pending change.



**Typical Fault Message Display**  
(Incoming Line Over-Voltage Shown)

# OPERATING THE FAN

Big Ass Fans are the highest quality, most meticulously engineered HVLS fans on the planet, moving a lot of air with their size, not speed. Moving at a low speed means less energy used for operation, translating into more energy savings year-round. Follow the procedures below to ensure the most efficient operation of your Big Ass Fan.

## To ensure proper fan rotation:

1. Turn on the fan.
2. Verify that the fan is rotating in the counterclockwise direction (when viewed from below).
3. If the fan is not rotating counterclockwise, reverse the direction of rotation. See the previous page for instructions on changing the direction of rotation.

## Heating season

The HVLS Jet fan returns heat from the ceiling to floor level more efficiently than small ceiling fans. For maximum energy savings, the fan should be operated continuously during the heating season and should not be operated in reverse (clockwise). Big Ass Fans are designed to operate efficiently at very low speeds, so turning the fan very slowly in the forward direction (counterclockwise) will provide enough air movement to circulate the hot air at the ceiling down to the floor without causing a draft.

Adjust the fan speed to the appropriate starting fan speed listed in the table below.

Floor-to-ceiling height (ft)	Starting fan speed	Display %
< 40	15 Hz	20–30%
≥ 40	20 Hz	30–40%

Stand directly below the tips of the airfoils with hand outstretched. If you feel a draft, slightly decrease the fan speed by 0.5 Hz (1–2%). Repeat until the draft is no longer noticeable.

## Cooling season

The cooling effect created by the breeze from the HVLS Jet fan keeps occupants comfortable with the thermostat at a higher setting. During the cooling season, every degree higher that the thermostat is reset reduces the energy consumed by the air conditioner by 1.5–2%. To minimize energy usage during the cooling season, operate the fan only when building occupants are present.

Adjust the fan speed to the appropriate starting fan speed listed in the table below.

Floor-to-ceiling height (ft)	Starting fan speed	Display %
< 40	25 Hz	40–50%
≥ 40	40 Hz	60–70%

Increase the speed of the fan until desired air speed or maximum fan speed is reached. In air conditioned facilities, increase the thermostat setting by 2–7° F to save energy.





# MAINTENANCE

**⚠ 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 questions, contact Big Ass Solutions.**
- b. **Before servicing or cleaning unit, switch power off at the 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.**

**⚠ When servicing of a component in the fan requires the removal or disconnection of a safety device, the safety device must be reinstalled or remounted as previously installed.**

Please take a few moments each year to perform the following preventive maintenance inspection on your fan to ensure its safe and efficient operation. Before contacting Customer Service, try mending the issue using the troubleshooting procedures listed in the previous section. If you have any questions, contact Customer Service.

*Note: Actual installation setup may differ from picture.*

## Annual preventive maintenance

Perform the following maintenance procedures each year using the “Maintenance Checklist”:

1. Check for the presence of the safety cable and shackle. The cable should be wrapped around the I-beam/ angle irons leaving as little slack as possible. The shackle should be securely tightened and located on the topside of the I-beam/angle irons.
2. Ensure all mounting bolts are present and torqued to 40 ft·lb (54.2 N·m). There are four bolts for direct mount installations, and 12 bolts for installations with extension tube.
3. Inspect motor terminations inside the junction box and tighten if necessary.
4. Check the gear reducer for oil leakage. If leakage is present, contact Customer Service.
5. Ensure all 12 bolts securing the airfoils to the fan are present and torqued to 29 ft·lb (39.3 N·m).
6. Ensure airfoils are secured to one another by airfoil retainers (6).
7. Ensure the bolts securing the winglets to the airfoils are securely tightened.
8. Inspect for signs of corrosion, discoloration, pitting, or flaking of metal.
9. Inspect the airfoils and hub for signs of damage or cracks.
10. Check guy wires (if installed) for fraying or damage.

## General preventive maintenance

- Check all connections in the controller and tighten as needed. Using a vacuum, remove all dust and debris from the inside and outside of the controller.
- Verify proper fan rotation. The fan should be turning counterclockwise when viewed from the floor.
- Dust the airfoils, motor, and motor housing. If desired, use a gentle cleaner or degreasing agent to polish the foils. Do not use Clorox® or other chlorine based cleaners! This could result in the release of toxic/fatal fumes.
- Observe the motion of the fan during operation. The fan should not wobble or precess. If any wobble is noticed, ensure the mounting structure is rigid enough to support the fan and that the guy wires, if used, are sufficiently taut. If guy wires were not used, Big Ass Fans suggests installing them. Contact Customer Service.



# GENERAL TROUBLESHOOTING

Some issues can be resolved before requesting service. Review the troubleshooting tips listed below before contacting Customer Service for support.

## Customers in the United States

For questions about your product or customer service inquiries, please call our toll free number (877-BIG-FANS) or visit [www.bigassfans.com/service](http://www.bigassfans.com/service).

## Customers outside of the United States

For questions about your product or customer service inquiries, please contact your local Big Ass Solutions representative or fill out a contact form at [www.bigassfans.com/service](http://www.bigassfans.com/service).

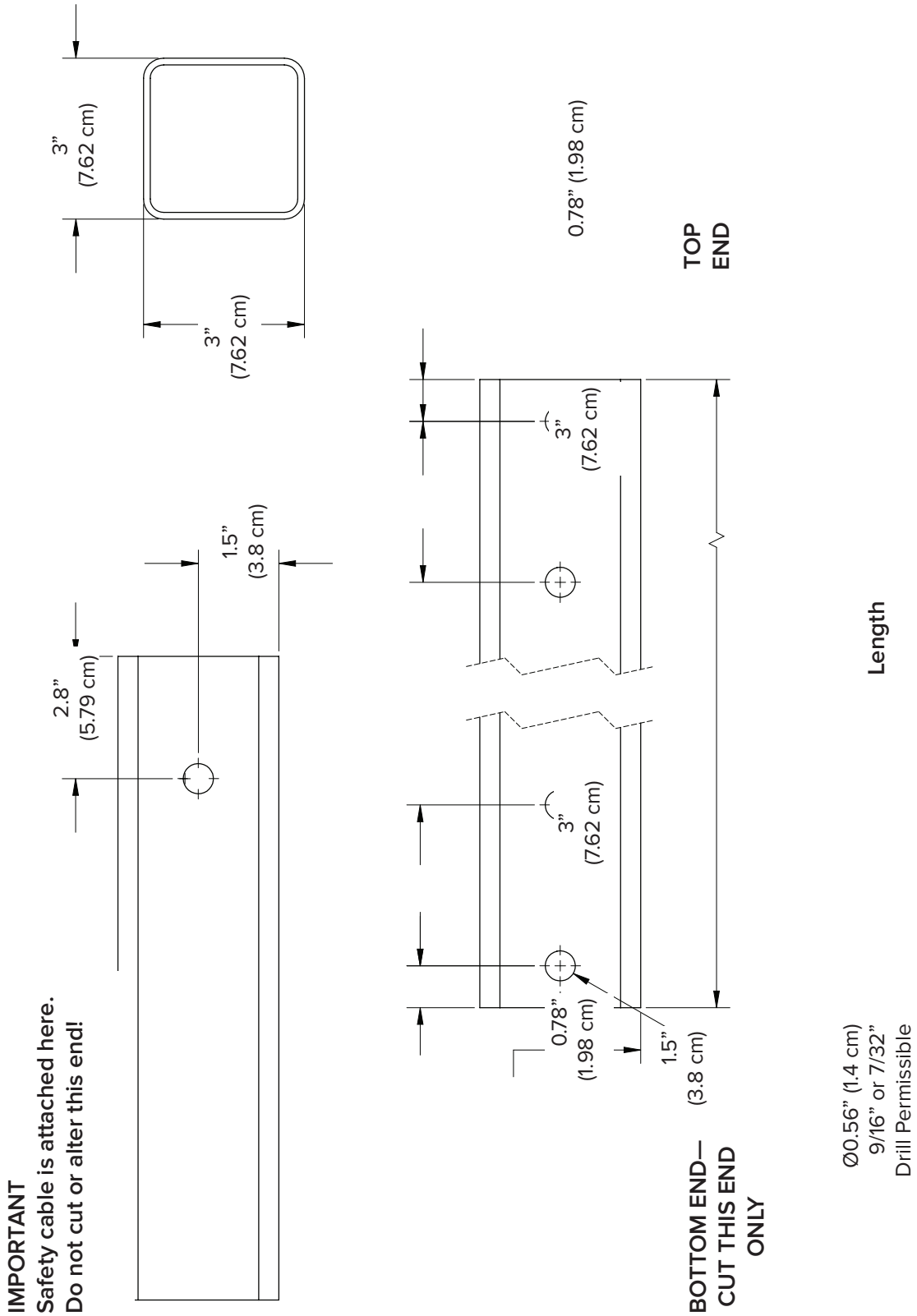
Symptom	Possible solution(s)
<i>The fan is turning in the wrong direction.</i>	To be effective, the fan should be rotating in the counterclockwise direction when viewed from the floor. If the fan is not rotating in the counterclockwise direction, press the F/R button on the controller.
<i>A popping noise is coming from the fan.</i>  Airfoil noise comes from airfoils that are not tightened to the specified torque.	Disconnect the fan from power, and then tighten the airfoil fasteners to 29 ft-lb (39.3 N-m). If the popping still occurs, verify that the airfoils are not contacting each other. If they are, contact Big Ass Solutions Customer Service.
<i>The fan will not start.</i>	Verify the following: <ul style="list-style-type: none"> <li>• Make sure that all wires are securely connected.</li> <li>• Verify that supply power is adequate and functional.</li> </ul> If the fan still does not start, contact Customer Service.
<i>The VFD generates radio frequency noise (RF).</i>  VFDs generate RF noise in many ways, but this can be prevented using the proper wiring practices outlined in “Electrical Installation”	Verify the following: <ul style="list-style-type: none"> <li>• Do not run your controller and sensitive equipment on the same power line.</li> <li>• Ensure proper grounding at the motor, controller, and from the controller to the utility.</li> </ul> If the noise is still present, contact Customer Service.
<i>The motor makes noise when fan speed is increased.</i>  Audible high frequency carrier noise may be an indicator of a stall condition.	Verify motor currents are within limits. Reference the technical specifications in this manual to confirm motor currents for your fan size.
<i>The fan wobbles during operation.</i>	<ul style="list-style-type: none"> <li>• Verify that the mounting structure is rigid enough to support the fan and that the fan is not being exposed to external air forces.</li> <li>• If guy wires were installed, confirm proper installation. If guy wires were not installed, contact Customer Service.</li> </ul>

*Note: Some motor, gearbox, or drive noise is to be expected and is normal.*

# Cutting the extension tube

**⚠ CAUTION:** Ensure the safety cable is not damaged after cutting and drilling the extension tube!

If your mounting structure requires a non-standard extension tube length, use the guidelines below to cut the extension tube.



# Troubleshooting the controller

Some controller issues can be resolved before requesting service. Review the below warning and fault messages before contacting Customer Service for support.

## Status and warning messages

Error code	Description and corrective action
<b>CE</b>	<p><b>EPM Contains Earlier Firmware Version</b>  <i>This error will appear when you try to change a VF-D parameter and the EPM firmware is older than the VFD's firmware.</i></p> <p><b>To correct this condition</b>, press the STOP button, and then press the Memory/Enter button. Use the UP/DOWN button to scroll to <b>P199</b>. Press the Memory/Enter button. Use the UP/DOWN button to scroll to a setting of <b>5</b>. Press the Memory/Enter button to save the change. The VFD is now able to read/write the EPM properly.</p>
<b>CL</b>	<p><b>Current Limit</b>            Verify proper motor wiring and HP. Check for short circuits. Increase acceleration time.</p>
<b>DEC</b>	<p><b>Decel Override</b>  <i>Fan is stopping too fast, causing a DC Buss overvoltage. Drive is backing off the deceleration rate to prevent HP (Over-voltage) fault.</i></p>
<b>Err</b>	<p><b>Error</b>  <i>Invalid data or invalid command entered.</i></p>
<b>FCL</b>	<p><b>Fast Current Limit</b>            Overload            Check for short circuits throughout the load. Increase accel time.</p>
<b>FSt</b>	<p><b>Flying Restart Attempt after Fault</b></p>
<b>GE</b>	<p><b>Program Attempt Made in OEM Settings Mode</b>  <i>(P199=1)</i>            Parameter changes are not permitted.</p>
<b>GF</b>	<p><b>Reset EPM to OEM Defaults Failure</b>  <i>The EPM's OEM dataset is missing or corrupt.</i></p>
<b>LC</b>	<p><b>Fault Lockout</b>  <i>Auto restart failure after five unsuccessful restart attempts.</i></p>
<b>SP</b>	<p><b>Start Pending</b>  <i>The drive has tripped and is waiting to restart.</i></p>
<b>Stop</b>	<p><b>Fan Stopped</b>  <i>Output frequency is 0 Hz.</i></p>

## Fault messages

Error code	Description and corrective action
F_AF	<b>High Temperature fault</b> Check for excessive load or a dirty heatsink. Improve the drive cooling ability.
F_AL	<b>Assertion Level fault</b> Check the assertion level switch relative to P120.
F_bF	<b>Personality fault</b> <i>Drive hardware error</i> Cycle power, and then reprogram EPM. If the fault will not clear, replace the drive and EPM.
F_CF	<b>Control fault</b> <i>Drive hardware error</i> Cycle power, and then reprogram EPM. If the fault will not clear, replace the drive and EPM.
F_cf	<b>Incompatible EPM fault</b> <i>Drive hardware error</i> Cycle power, and then reprogram EPM. If the fault will not clear, replace the drive and EPM.
F_EF	<b>External fault</b> Digital input programmed for this feature has been energized/de-energized depending on programming. P121-P124
F_F1	<b>EPM fault</b> <i>EPM is missing or defective.</i> Replace the EPM.
F_F2 to F12	<b>Hardware Failure</b> Replace the drive.
F_FoL	<b>4–20 mA Signal Loss</b> Check signal source and wiring, i.e., SmartSense wiring error.
F_GF	<b>OEM Defaults Data Fault</b> <i>The OEM parameters in the EPM module do not match the anticipated defaults according to the VFD. This fault may appear immediately upon VFD power-up.</i> <b>To correct this condition</b> , press the STOP button, and then press the Memory/Enter button. Use the UP/DOWN button to scroll to <b>P199</b> . Press the Memory/Enter button. Use the UP/DOWN button to scroll to a setting of <b>0</b> . Press the Memory/Enter button to save the change. The VFD is now able to read/write the EPM properly.
F_HF	<b>High Voltage fault</b> Check AC incoming power or increase fan deceleration time.
F_LF	<b>Low Voltage fault</b> Check AC incoming power

## Fault messages (cont.)

Error code	Description and corrective action
<b>F_OF</b>	<b>Output Transistor fault</b> <i>Short circuit, excessive load, excessive cable charging current</i> Verify correct load (motor HP, motor wiring, cable length, cable type).
<b>F_OFI</b>	<b>Motor Short to Ground</b>
<b>F_PF</b>	<b>Motor Thermal OL</b> Check actual motor current against FLA (P108)
<b>F_rf</b>	<b>Flying Restart fault</b> <i>Failed motor speed sync attempt</i>
<b>F_SF</b>	<b>Single Phase fault</b> <i>Incoming AC line phase loss</i> Check supply power.
<b>F_UF</b>	<b>Start fault</b> <i>Start command was present on powerup.</i> Cycle start command.

## 179 diagnostics running display options

Error code	Description and corrective action
<b>P500</b>	<b>Fault History</b> <i>(n.xxx)</i> N = 1–8 xxx = Fault code
<b>P501</b>	<b>Software Version</b>
<b>P502</b>	<b>Drive ID</b>
<b>P503</b>	<b>Internal Code (x.yz)</b>
<b>P505</b>	<b>DC Buss Voltage</b> <i>(divided by 1.414 = approximate line input voltage)</i>
<b>P506</b>	<b>RMS Equivalent Motor Voltage at Drive Output Terminals</b>
<b>P507</b>	<b>Motor Load</b> <i>(% of drive output rating)</i>

## 179 diagnostics running display options (cont.)

Error code	Description and corrective action
P500	<b>Fault History</b> (n.xxx) N = 1–8 xxx = Fault code
P501	<b>Software Version</b>
P502	<b>Drive ID</b>
P503	<b>Internal Code (x.yz)</b>
P505	<b>DC Buss Voltage</b> (divided by 1.414 = approximate line input voltage)
P506	<b>RMS Equivalent Motor Voltage at Drive Output Terminals</b>
P507	<b>Motor Load</b> (% of drive output rating)
P508	<b>Actual Motor Current in Amperes</b>
P509	<b>Torque as a Percentage of Motor Rated Torque</b> (vector mode only)
P510	<b>Drive Output Power in kW</b>
P511	<b>Total kWh for Drive Lifetime</b>
P512	<b>Heatsink Temperature Degrees Celsius</b>
P520	<b>0–10 VDC Input Voltage (VDC)</b>
P521	<b>4–20mA Input Current (mA)</b>
P525	<b>Analog Output Level (VDC)</b>
P527	<b>Actual Drive Output Frequency (Hz)</b>
P528	<b>Network Speed Command (Hz)</b>
P540	<b>Total Runtime (hours)</b>
P541	<b>Total Powered-On Time (hours)</b>
P550	<b>Fault History</b> (n.xxx) N = 1–8 xxx = Fault code



# WARRANTY RETURN INSTRUCTIONS

Congratulations on your purchase of a Big Ass Fan! We are delighted that you have chosen our product to improve the quality of your indoor environment, and hope you'll have much pleasure using the fan for years to come.

## Replacement of products under warranty acknowledgment & return instructions

If you believe a part failed during normal operation and is covered under warranty, Big Ass Solutions will ship a replacement part to you pursuant to your notice that you will be replacing the original part within 10 days. The replacement part will be shipped to you prior to our receipt of the item that failed, and prior to our evaluation of this part to determine the reasons for its failure and whether it is covered under warranty.

In order to evaluate the cause of the product failure, we will need you to return the original part to our offices within 10 working days of receipt of the replacement part. Should the part be covered under warranty, you will not be charged for the replacement item; however, you will be charged for the replacement part plus shipping if (1) the part is not under warranty because the source of failure is outside the scope of the warranty, or (2) the warranty period has expired. If there is no warranty coverage, we will send you a detailed letter of explanation. We also will charge you for the replacement item plus shipping and handling if you do not return the original item within 10 days of the receipt of the replacement item.

## Instructions for returning the original item

1. Please use the return label that is included in the box containing the replacement part. The return shipment address is:

Big Ass Solutions  
ATTN: RMA# \_\_\_\_\_  
800 Winchester Road  
Lexington, KY 40505

2. Use the packaging for the replacement part to return the original part.
3. Include the packing list we have provided which includes the RMA#.
4. If the part weighs over 50 lbs., you will be provided a prepaid Bill Of Lading. To schedule a freight pick up, please contact Customer Service. We will only charge back the freight costs if the original part is not under warranty, or if you do not return the original component within 10 days of receipt of the replacement.
5. If the part weighs 50 lbs. or less, please use the provided prepaid UPS Ground shipping label and drop off at your nearest UPS pickup location.

If you have questions, please contact us at 1-877-BIG-FANS.

# Warranty claim form instructions

1. Complete the Warranty Claim Form and Responsibility Agreement in this manual, and fax them to 859-967-1695, Attn: Customer Service. These pages will be faxed back to you for your records, and will include our acknowledgment and a Return Materials Authorization (RMA) number. **Do not return any item without first being assigned an RMA# by Big Ass Solutions Customer Service.**
2. No more than 10 days prior to the date you have made arrangements to replace the component part, call Customer Service at 1-877-BIG-FANS to arrange for replacement component delivery and original component pickup. At that time, we will fax you a written acknowledgment of your call that includes a reminder of the return instructions. Note: Even if you are not able to replace the component immediately following your initial notice to us, returning the Warranty Claim Form and Responsibility Agreement will effectively stop the warranty clock from running. You can then make the product exchange when you are prepared to do so. However, the warranty period will continue to run until we receive these completed pages back from you, and no warranty will be honored without receipt of these pages within the warranty period. We will not send out any replacement part until you have called to let us know that you have scheduled installation of the replacement. This ensures that the replacement part is not lost or damaged while awaiting installation, and that you are not billed for the replacement because you have waited too long to return the original component (see Responsibility Agreement).
3. When you receive the replacement part, you have 10 working days to remove and replace the existing component and return it to us at **800 Winchester Road, Lexington, KY 40505.**
  - a. Upon receiving the replacement part, verify that replacement part order is correct. If order is incorrect or damaged, notify Big Ass Fan Company within 24 hours after receiving order.
  - b. Use care unpacking the replacement component, as you will need to use *both* the packaging from the replacement part and the packing list and a return address label included inside this packaging to return the original part. If the original packaging and return documents are not used, you will be responsible for any damage incurred in transit as well as any additional costs involved. **Note: The RMA# must appear on the outside of the box being returned. Items without an RMA# will not be accepted.**
  - c. Use the delivery service or one of the truck lines specified in the acknowledgment for return of the part. We will refuse receipt of any shipment that is returned via an unauthorized carrier. If you prefer, we can make all arrangements for delivery and pickup.
  - d. Fax a copy of the bill of lading or other tracking information to 859-967-1695 when the item has been shipped so that we know to expect delivery of the original part.
4. If we do not receive the original part back within 15 working days from the date you receive delivery of the replacement, you will be invoiced for the cost of the replacement part, plus freight, on Net 15 terms (see Responsibility Agreement), and this invoice will be due and payable. If you subsequently return the replacement part to us after payment has been made, we will refund any payment made for the replacement part, unless we subsequently determine that the part is not covered under warranty.



# WARRANTY CLAIM FORM

800 Winchester Road  
Lexington, KY 40505  
Phone: 855-490-3048  
Fax: (859) 967-1695  
www.bigassfans.com

Name (print): \_\_\_\_\_ Signature: \_\_\_\_\_

Company: \_\_\_\_\_

Shipping Address: \_\_\_\_\_

City/State/ZIP: \_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

Items Returned: \_\_\_\_\_ Date of Purchase: \_\_\_\_\_

**Reason(s) for Returning Item** (please provide detail, including length of time after fan had been in operation that problem was noticed, nature of problem, any attempts you made to remedy the problem, etc.):

**ATTENTION: Do not return any item without first being assigned an RMA# by Big Ass Solutions Customer Service Department. The RMA# must appear on the outside of the box being returned. Items without an RMA# will not be accepted.**

**Date Replacement Parts Should Be Shipped (if known):** \_\_\_\_\_ (Please do not request shipment until you are prepared to install. You may call us at 855-490-3048 to arrange shipment when you have scheduled installation.)

**Acknowledgment of Receipt of Warranty Return Notification**  
(to be completed by Big Ass Solutions)

**Acknowledged By:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**RMA#:** \_\_\_\_\_

**Authorized Truck Line(s):** \_\_\_\_\_



# RESPONSIBILITY AGREEMENT

800 Winchester Road  
Lexington, KY 40505  
Phone: 855-490-3048  
Fax: (859) 967-1695  
www.bigassfans.com

To: Big Ass Solutions

The undersigned understands and acknowledges receipt of the Warranty Claim Form and Instructions and agrees that Big Ass Solutions has the right, upon receipt of returned merchandise, to make final determination as to whether this merchandise should be replaced at no cost under Big Ass Solutions' stated warranty policy.

The undersigned further agrees that if Big Ass Solutions determines that this merchandise does not qualify under its stated warranty policy, Big Ass Solutions can invoice for the replacement merchandise, plus shipping and handling for the original part and all replacements, and such invoice will be paid within 15 days of receipt of the same.

The undersigned agrees to ship to Big Ass Solutions' location at 800 Winchester Road, Lexington, KY 40505 all of the merchandise replaced by Big Ass Solutions, including, but not necessarily limited to, defective or failed components, within 10 working days of the receipt of the any replacements.

The undersigned further agrees that if said replaced merchandise has not been shipped to Big Ass Solutions within 10 working days, Big Ass Solutions can invoice for the replacement merchandise plus shipping and handling, and the invoice will be paid within 15 days of receipt.

**Signed:** \_\_\_\_\_

**Title:** \_\_\_\_\_

**For:** \_\_\_\_\_

(Name of Company)

**Date:** \_\_\_\_\_



# CHECK-IN PROCEDURE

(Big Ass Fans Certified Installers Only)

2348 Innovation Drive  
Lexington, KY 40511  
Phone: 1-859-233-1271  
www.bigasssolutions.com

**ATTENTION**

**These items must be completed prior to any additional installation crew members entering jobsite or any installation material being unloaded.**

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

Company: \_\_\_\_\_ Job Name: \_\_\_\_\_

Address: \_\_\_\_\_ Purchase Order No.: \_\_\_\_\_

City/State/ZIP: \_\_\_\_\_

Contact Name: \_\_\_\_\_ Phone: \_\_\_\_\_

E-mail: \_\_\_\_\_

**\*\*SEE THE FOLLOWING PAGE FOR NFPA 13 REGULATIONS\*\***


- Fan placement is to be in accordance with agreed upon original Scope of Work and Layout. If this is to change, please note change and consult Field Service Manager for approval.
- Installation techniques have been discussed (type of conduit, L-brackets if required, mounting technique explained). If the extension tubes exceed 4 ft (1.2 m), guy wires are explained and fully understood.
- Times in/out, duration, and schedule presented and accepted.
- Time (please list the number of employees and total duration of jobs):  
  
\_\_\_\_\_
- Safety rules and regulations have been brought to installer's attention (e.g., badges, safety harnesses, vests, hard hats, footwear, lock out/tag out, certification processes, work area free of trash and debris, etc.). If there are any areas that are forbidden or secure, they are brought to the supervisor's attention and instructed not to enter. If there are any special site conditions (i.e., open areas and operating machinery to be avoided), they are also brought to the supervisor's attention and instructed how to bypass the area if required.  
Safety Rules and Regulations listed:  
  
\_\_\_\_\_
- The facility manager understands all electrical requirements, i.e., breaker size, voltage, brand, main panel space, and they are in accordance with original Scope of Work and Layout.  
Additional comments:  
  
\_\_\_\_\_

## National Fire Protection Association Standard

In accordance with NFPA 13 Standard from the National Fire Prevention Association as referenced in sections 12.1.4 and 11.1.7: High Volume Low Speed (HVLS) Fans:

The installation of HVLS fans in buildings equipped with sprinklers, including ESFR sprinklers, shall comply with the following:

- The maximum fan diameter shall be 24 feet (7.3 m).
- The fan shall be approximately centered between four adjacent sprinklers.
- The vertical clearance from the fan to sprinkler deflector shall be a minimum of 3 feet (0.9 m).
- All fans shall be interlocked to shut down immediately upon receiving a water flow signal from the alarm system in accordance with the requirements of NFPA 72- National Fire Alarm and Signaling Code.

 **WARNING: The fan should not be installed unless the structure on which the fan is to be mounted is of sound construction, undamaged, and capable of supporting the loads of the fan and its method of mounting. Verifying the stability of the mounting structure is the sole responsibility of the customer and/or end user, and Big Ass Fans hereby expressly disclaims any liability arising therefrom, or arising from the use of any materials or hardware other than those supplied by Big Ass Fans or otherwise specified in the installation instructions.**

If this installation will be performed outside the scope of work or not within the specifications of Big Ass Fans by customer's request, please provide specific details:

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Please sign below if both parties agree that all aspects of this installation have been thoroughly explained and are of clear understanding and agreement of the installation to be completed.

**Customer Signature:** \_\_\_\_\_

**Printed Name:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Contractor Signature:** \_\_\_\_\_

**Printed Name:** \_\_\_\_\_ **Date:** \_\_\_\_\_

The supervisor is to hold all documents until the job is complete and send all forms back to Field Service Manager. This will consist of the service/work order, Check-In document, and Close-Out document. The installation crew will not receive payment until all forms are signed by the facility manager and the supervisor. These documents will then be forwarded to the Field Service Manager at Big Ass Fans.



# CLOSE-OUT PROCEDURE

(Big Ass Fans Certified Installers Only)

2348 Innovation Drive  
Lexington, KY 40511  
Phone: 1-859-233-1271  
www.bigasssolutions.com

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

Company: \_\_\_\_\_ Job Name: \_\_\_\_\_

Address: \_\_\_\_\_ Purchase Order No.: \_\_\_\_\_

City/State/ZIP: \_\_\_\_\_

Contact Name: \_\_\_\_\_ Phone: \_\_\_\_\_

E-mail: \_\_\_\_\_

**\*\*SEE THE FOLLOWING PAGE FOR NFPA 13 REGULATIONS\*\***

**The field crew supervisor and facility manager are to walk through the completed installation.**

<input type="checkbox"/>	The installation is complete and on time in accordance with the original Check-In document. If not, explain:
<input type="checkbox"/>	Conduit runs are installed in accordance with the Check-In document, Scope of Work, and Layout. If not, explain:
<input type="checkbox"/>	The fans are correctly placed in accordance with both the Check-In document, Scope of Work, and Layout. If not, explain:
<input type="checkbox"/>	Breaker size and wire type are in accordance with the Check-In document, Scope of Work, and Layout. If not, explain:
<input type="checkbox"/>	All safety rules and regulations met in accordance with the Check-In document, Scope of Work, and Layout. If not, explain:
<input type="checkbox"/>	Fans have been running for over an hour and operate without visible defect or issue.
<input type="checkbox"/>	The fan is spinning in the correct direction (counterclockwise when viewed from floor).
<input type="checkbox"/>	Angle irons are securely fastened and are without any apparent problems in accordance with installation techniques discussed at check-in.
<input type="checkbox"/>	If extension tube is 4 ft (1.2 m) or longer, guy wires are in place and there is no evidence of a wobble.
<input type="checkbox"/>	Supervisor or contractor has supplied and explained the Installation Guide. If not, explain:
<input type="checkbox"/>	The supervisor or contractor has explained and I understand how to operate fan including starting/stopping, speed operation, and power disconnect. If not, explain:
<input type="checkbox"/>	Time in/out and duration are in accordance with Check-In document.
	Additional comments:

## National Fire Protection Association Standard

In accordance with NFPA 13 Standard from the National Fire Prevention Association as referenced in sections 12.1.4 and 11.1.7: High Volume Low Speed (HVLS) Fans:

The installation of HVLS fans in buildings equipped with sprinklers, including ESFR sprinklers, shall comply with the following:

- The maximum fan diameter shall be 24 feet (7.3 m).
- The fan shall be approximately centered between four adjacent sprinklers.
- The vertical clearance from the fan to sprinkler deflector shall be a minimum of 3 feet (0.9 m).
- All fans shall be interlocked to shut down immediately upon receiving a water flow signal from the alarm system in accordance with the requirements of NFPA 72- National Fire Alarm and Signaling Code.

**⚠ WARNING: The fan should not be installed unless the structure on which the fan is to be mounted is of sound construction, undamaged, and capable of supporting the loads of the fan and its method of mounting. Verifying the stability of the mounting structure is the sole responsibility of the customer and/or end user, and Big Ass Fans hereby expressly disclaims any liability arising therefrom, or arising from the use of any materials or hardware other than those supplied by Big Ass Fans or otherwise specified in the installation instructions.**

**NOTE: The customer's initials are required as acknowledgment for the following instances:**

- \_\_\_\_ **Return Trip Required – Additional Charges Apply (Customer not Ready/Lift Issues)**
- \_\_\_\_ **Work Completed Outside Scope of Work (if applicable)**
- \_\_\_\_ **Installation Not Performed Per BAF Recommendations or Specifications For Any Reason**
- \_\_\_\_ **Customer Understands and Approves Additional Charges As Explained in amount of \$ \_\_\_\_\_ (if applicable)**
- \_\_\_\_ **Other (Please Explain Below)**

If any portion of this installation was performed outside the scope of work or not within the specifications of Big Ass Fans at any capacity or for any reason, please provide specific details below:

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Signatures of both parties are **required** below to acknowledge that this installation has been completed to customer's satisfaction, to activate fan(s) warranty, and to issue payment to contractor (with required documentation):

**Customer Signature:** \_\_\_\_\_

**Printed Name:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Contractor Signature:** \_\_\_\_\_

**Printed Name:** \_\_\_\_\_ **Date:** \_\_\_\_\_

The supervisor is to hold all documents until the job is complete and send all forms back to Field Service Manager. This will consist of the service/work order, Check-In document, and Close-Out document. The installation crew will not receive payment until all forms are signed by the facility manager and the supervisor. These documents will then be forwarded to the Field Service Manager at Big Ass Fans.



# CONTACT US

Talk to a Big Ass Fan Expert. Call us at one of the numbers below or visit [www.bigasssolutions.com](http://www.bigasssolutions.com)

## Customer Service

### U.S.A. & Rest of the World

2348 Innovation Drive  
Lexington, KY 40511  
1-877-244-3267

### Canada

6300 Northwest Dr, Unit 3  
Mississauga, ON L4V 1J7, Canada  
1-844-924-4277

### Australia/Oceania

Unit 22, 1029 Manly Road  
Tingalpa QLD 4173, Australia  
(07) 3292 0100

### South & Southeast Asia

18 Tampines Industrial Crescent #06-07  
Singapore 528 605  
+65 6709 8500

### East Asia

Room 808, Tai Yau Building  
181 Johnston Road  
Wan Chai, Hong Kong  
+852 2836 5808

## Manufacturing & Warranty

### Manufacturing

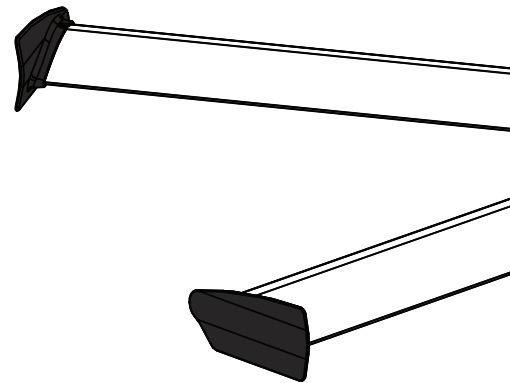
2425 Merchant Street  
Lexington, KY 40511  
1-877-244-3267

### Warranty Returns

800 Winchester Road  
Lexington, KY 40505  
1-877-244-3267







JET-INST-121-MUL-01

Rev. B



**BIGASS**  
FANS

2425 Merchant St., Lexington, KY 40511  
**1 (877) BIG-FANS | WWW.BIGASSFANS.COM**