

Industrial HVLS Fan

This guide applies to fans manufactured beginning January 2021.

⚠ WARNING
Do not install, operate or service this product unless you have read and understand the Safety Practices, Warnings, and Installation and Operating Instructions contained in this guide and User's Manual 6021140. Failure to do so could result in death or serious injury.

Quick Installation Guide

Part No. 6016101F

INTRODUCTION

Welcome and thank you for choosing this industrial fan from 4Front Engineered Solutions, Inc..

This quick installation guide contains basic information that you need to safely install and operate your fan. Please read and keep this quick installation guide before using your new fan. For more information, please consult our website at www.epicfans.com. You may also scan the QR codes located throughout this guide for additional information. The QR code below links to the User's Manual [PN 6021140 - Industrial 5 Blade HVLS](#). Other smaller QR codes link to installation videos on the topic.

SAFETY SIGNAL WORDS

You may find safety signal words such as DANGER, WARNING, CAUTION or NOTICE throughout this guide. Their use is explained below:

⚠ DANGER	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
⚠ WARNING	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
⚠ CAUTION	Indicates a potentially hazardous situation which, if not avoided may result in minor or moderate injury.
NOTICE	Notice is used to address practices not related to personal injury.

SAFETY PRACTICES

⚠ WARNING
To reduce the risk of personal injury, do not bend the blade brackets when installing the brackets, balancing the blades or cleaning the fan. Do not insert foreign objects in between, rotating fan blades.

⚠ DANGER
To reduce the risk of fire, electric shock and injury to persons, HVLS fan motor assemblies must be installed with the blade assemblies that are marked on their cartons to indicate the suitability with this model. Other blade assemblies cannot be substituted.

Videos: Unpacking the Fan and Handling Fan Components



Click [here](#) to view.



Click [here](#) to view.

⚠ WARNING
Support directly from building structure. Do not install the fan unit onto structure of insufficient strength. Consult a professional engineer or registered architect. Improper installation of the fan could result in death or serious injury.

⚠ CAUTION
To reduce the risk of injury to persons, install fan so that the blade is at least 3.05m (10') above the floor.

MAINTENANCE AND SERVICE:

⚠ DANGER

If the fan does not operate properly using the procedures in the User's Manual, BE CERTAIN TO REMOVE POWER FROM THE UNIT AND LOCK-OUT THE DISCONNECT ON THE POWER CIRCUIT. Call your local distributor for service.

All electrical troubleshooting and repair must be done by a qualified technician and meet all applicable codes.

⚠ WARNING

Variable Frequency Drive (VFD) fan controllers contain high voltage capacitors. Before working on the fan controller, ensure isolation of the main voltage supply and verify voltage has bled off prior to beginning work. Failure to do so may result in death or serious injury.

If you have problems or questions, contact your local distributor for assistance.

INSTALLATION AND OPERATION:

⚠ WARNING

Installation of the equipment must comply with local and national electrical codes and must be in accordance with ANSI/NFPA 70-2014.

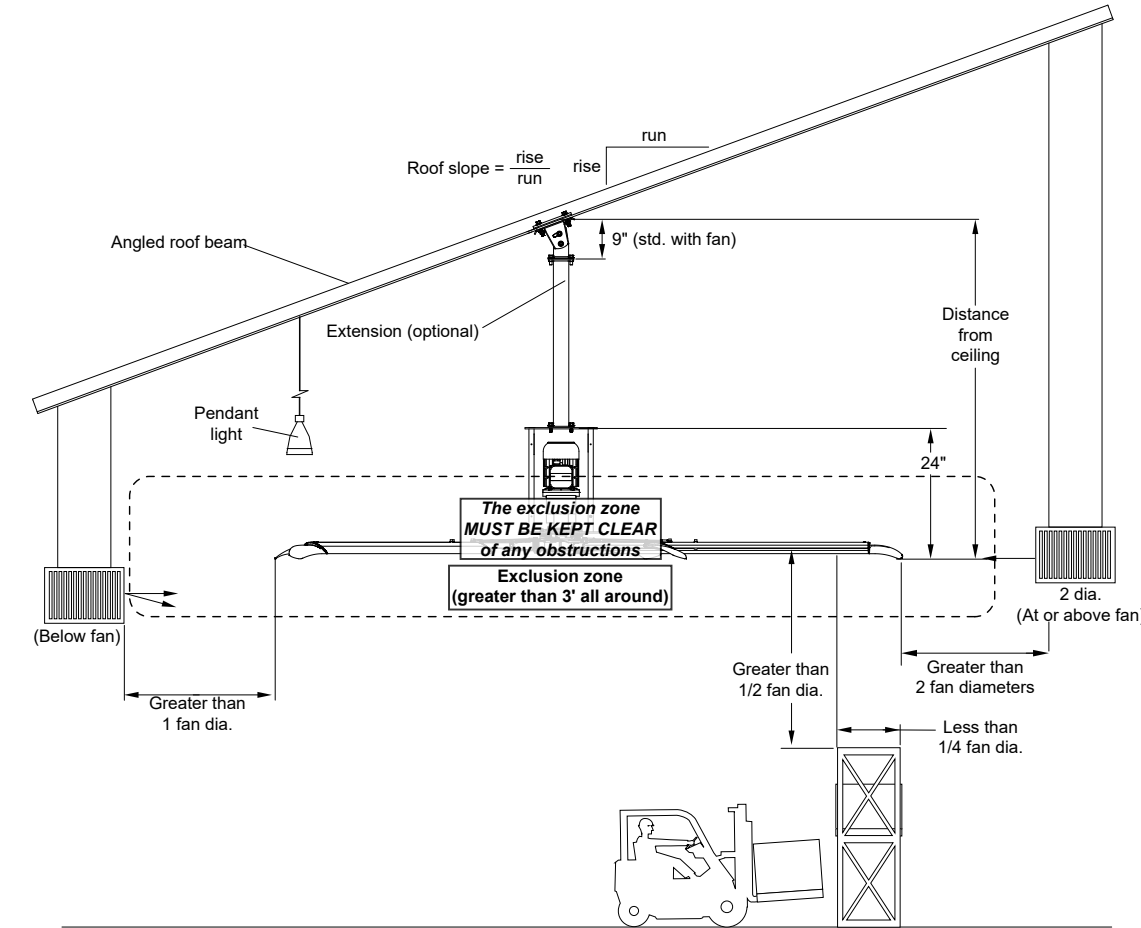
DO NOT USE THE FAN IF IT APPEARS DAMAGED OR DOES NOT OPERATE PROPERLY. Inform your supervisor immediately.

⚠ WARNING

Do not operate the fan until all personnel, building structure and equipment are clear of all moving parts and exclusion zones. Install guards as required.

To reduce the risk of electric shock, do not expose to water or rain.

Figure 1



INSTALLATION CONSIDERATIONS

ROOF SLOPE

Roof Slope*	0	2/12	3/12	4/12	Hanging Weight (lbs)	Max. Torque (ft. lb)	Blade length (in)
Roof Angle*	0	9.5°	14.0°	18.4°			
Fan Diameter (ft)	Extension requirement from mounting point (ft)						
8	0	1	1	2	160	300	21.16
10	0	1	2	2	181	300	33.16
12	0	1	2	2	190	300	45.16
14	0	2	2	3	194	300	57.16
16	0	2	2	3	208	300	69.16
18	0	2	3	3	206	300	81.16
20	0	2	3	4	220	300	93.16
24	0	2	3	4	258	300	117.16

*Consult factory for assistance with fan placement and extension selection.

ROOF ANGLES

For roof angles in excess of 20°, consult factory. The extension lengths shown are minimum recommendations only, based solely on roof pitch and fan diameter. Other considerations must be evaluated when determining extension requirements, such as placement of lights, sprinkler systems, HVAC systems, etc. OSHA requirements state that fan blades must be a minimum of 10' above the floor.

CLEARANCE FROM HVAC EQUIPMENT

For applications near HVAC equipment (diffusers, radiant heaters, exhaust fans, louvers, etc.), the HVLS fan must be installed at minimum distances.

- Fans located above HVAC equipment must have a minimum clearance of greater than or equal to one fan diameter. See [Figure 1](#).

- Fans located at or below HVAC equipment must have a minimum clearance of greater than or equal to two fan diameters. See [Figure 1](#).

Video: Fan Placement



Click [here](#) to view.

INSTALLATION

For open structure roof designs, the fan should only be hung from either I-beam or angle iron. Do not hang from purlins, strut channel, joists or truss structure unless all of the following apply:

- The truss can handle the load of our fan;
- The bottom chords of the truss are larger than 5" but smaller than 10.5" combined;
- The fans are installed at the strongest point load on the truss.

For solid beam or laminated wood beam mounting, use the laminated wood beam mounting kit available from 4Front.

If the fan is part of a networked system, ensure placement is in accordance with the building layout. Fan network identification number is located on the front panel of the VFD box.

NOTICE

For fans that will be subjected to high cross winds (open bay doors or air conditioning diffuser ducts), the fan must be at least one fan diameter (as measured from the end of the winglet) from open bays or A/C ducts mounted below the blade plane, or there must be at least two fan diameters (as measured from the end of the winglet) for A/C ducts mounted at or above the blade plane. Incorrect placement may result in damage.

ASSEMBLE FAN MOUNT

- Fasten pivot brackets to the extension tube with ears outboard. Leave the 1/2" dia. x 4-1/2" bolts and nylock nuts finger tight. See [Figure 2](#).

Video: Mounting Options



Click [here](#) to view.

INSTALL FAN MOUNT

STANDARD I-BEAM

- Locate fan mount assembly on bottom of building support beam. Align mount assembly so that it is centered and square to the beam. Orient mount such that the pivoting axis is aligned with the building slope if required.

- Install clamps. For thick flange I-beams add shims as required. Fasten using the supplied 1/2" dia x 2-1/2" screws and lock nuts. Torque to 44-48 ft-lbs. See [Figure 4](#).

LAMINATED WOOD BEAM MOUNTING — (OPTIONAL KIT 6014915)

- Attach laminated wood beam brackets to the wood beam using a min. of four 1/2" dia. grade 5 thru bolts and self-locking nuts (not supplied). Ensure brackets are square to the bottom of the beam.

- Attach mount assembly to the laminated wood beam brackets using the supplied 1/2" dia x 2-1/2" screws and lock nuts and washers. Torque to 44-48 ft-lbs. See [Figure 5](#).

TRUSS MOUNT

NOTE: Do not span gaps longer than 96".

- To span two trusses or purlins with a gap of 96" or less, span the gap using two 4" x 4" x 1/4" steel angle irons. See [Figure 6](#).

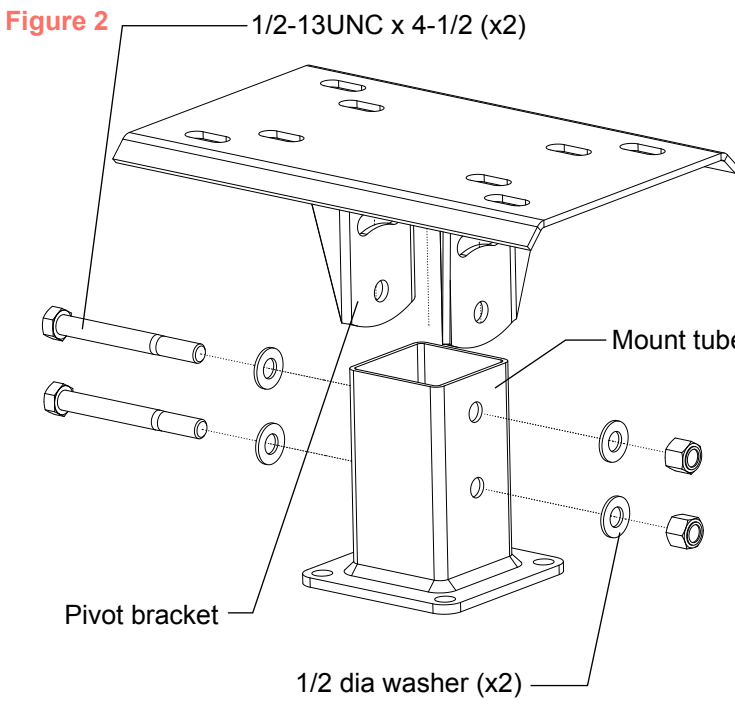


Figure 2

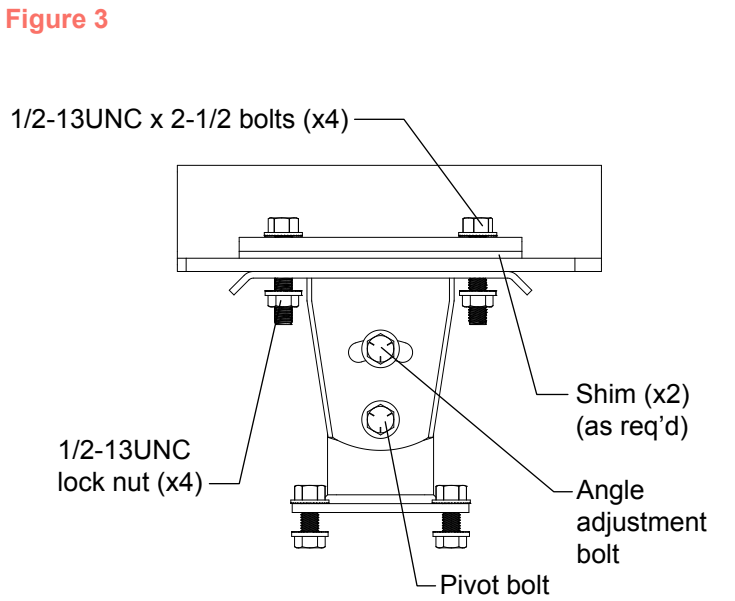


Figure 3

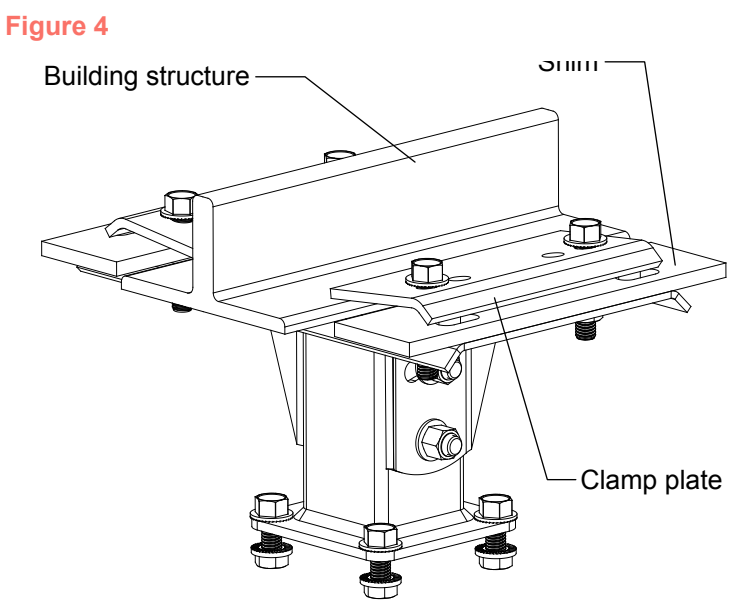


Figure 4

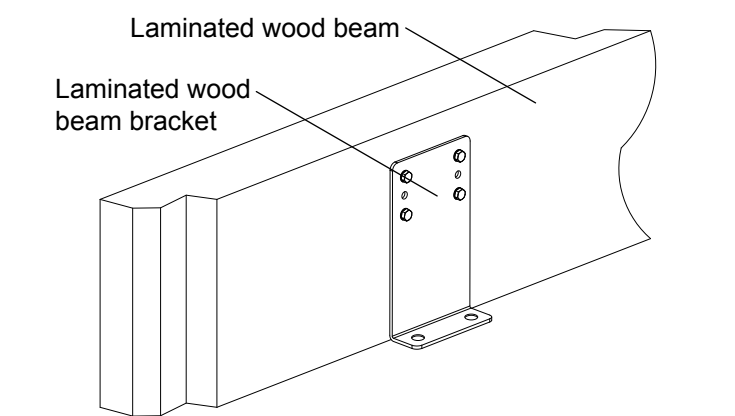


Figure 5

NOTE:

All fan blade parts must be greater than 3' from all obstructions including lights, cables, sprinklers and other building components and greater than one half (1/2) fan diameter from any wall to the end of the blade.

⚠ WARNING

Failure to maintain exclusion zones outlined here could result in fan failures, including blade separation, which could result in death or serious injury. DO NOT operate fans when physical obstructions or HVAC air flows extend into exclusion zones. Regularly inspect fans to ensure exclusion zones remain clear of interference before operating fan.

CLEARANCE FROM SOLID OBSTRUCTIONS

For applications near solid obstructions the HVLS fan must be installed at minimum distances.

- Fans located above solid obstructions such as racks, walls, etc. must have a minimum vertical clearance of greater than or equal to 1/2 fan diameter above and less than or equal to 1/4 fan diameter inside the fan blade arc. See [Figure 1](#).

INSTALL POWERHEAD (MOTOR/GEARBOX ASSEMBLY)

- Leave foam protective cap on the hub assembly until the powerhead is ready to be installed. Using a powered lift, orient the powerhead with the blade hub down. Block the motor as required for installation using the bottom of the frame assembly. Do not support using the hub or hub cap.
- Raise the powerhead up until it contacts the bottom of the fan mount assembly. See [Figure 7](#).
- Immediately attach safety cable. See [Figure 8](#).
 - Slide two of the supplied 1/4" dia cable clamps over each end of the cable spaced 6" apart.
 - Slide the ends through the cable clamps.
 - Make sure that the cable goes through the motor frame. See [Figure 8](#).
 - Securely tighten the clamp fasteners. Make sure the u-bolts are over the free ends of the cable.
 - Ensure assembly does not interfere with fan motor housing.
- Fasten the powerhead to the mount assembly using the supplied 1/2" dia x 1-1/4" bolts and self-locking nuts. See [Figure 9](#).

GEARBOX VENT PLUG

- Locate ventilation plug on gearbox. See [Figure 10](#).
- Pull and remove plastic shipping seal and discard.
- Remove the yellow seal removal note and discard.

INSTALL GUY WIRES

Guy wires are designed to keep the fan from moving from side-to-side during operation. This movement may be due to impacts on the fan or winds impinging on the blades that would cause the fan to sway.

NOTICE

Failure to attach guy wires may result in loss of warranty.

⚠ WARNING

If a mounting extension has been used, ensure that the longer guy wires accompanying the extension are used. Ensure that the angle formed by the guy wire with the roof structure is less than 45°. See [Figure 11](#). Avoid any sharp edges or corners to reduce fatiguing and fraying of the guy wires. Failure to attach guy wires may result in severe injury or death.

- Adjust turnbuckles to their longest position.
- Attach the quick link with attached turnbuckle to the fan as shown. Repeat for all four quick links. See [Figure 12](#).
- Attach one end of the guy wire to the building structure. Ensure the structure has sufficient strength to withstand the wire tension. Repeat for all four guy wires.
 - Slide two of the supplied 1/8" dia cable clamps over one end of the wire.
 - Feed that end of the wire though the building structure and back through the clamp fasteners.
 - Securely tighten the clamp fasteners so that it cannot slip. Make sure the u-bolts are over the free end of the cable.
- Individually tighten the turn buckle on each cable until each cable is taut and the powerhead unit hangs plumb. Use a spirit level to verify powerhead unit hangs plumb.
- Tighten pivot and angle adjustment bolts on fan mount. Torque to 44-48 ft-lbs. See [Figure 3](#).

INSTALL VFD BOX

⚠ WARNING

The VFD box must be installed outside and a safe distance from the blade diameter for service purposes.

NOTICE

The maximum length of the cable between the VFD box and the motor is 150 linear feet. Do not run motor cables in the same conduit as the input voltage.

Do not run the motor cables in the same conduit as other motor cables.

If you mount multiple VFD panels in the same location, tie the grounds in series.

- Verify voltage and phase before mounting. Ensure voltage shown on VFD box is correct.
- Mount VFD box outside the fan blade arc. Orient box such that front panel is accessible and visible with the connectors on top of the panel. Do not drill additional holes in the VFD box.
- Route the fan S.O. cable from the fan to the VFD box. Ensure the cable is supported throughout its routing.
- Route supply power from the building source to the VFD box.
- Wire VFD box in accordance with wiring details located in the User's Manual (PN 6021140 – HVLS User's Manual).
- Attach remote signal (blue) CAT5e cable

INSTALL MOTOR COVER

- Ensure that the motor S.O cable has been routed to VFD box and is secured. See electrical installation instructions.
- Locate each motor cover and install the cover fasteners. Do not over tighten. See [Figure 13](#).

Figure 6

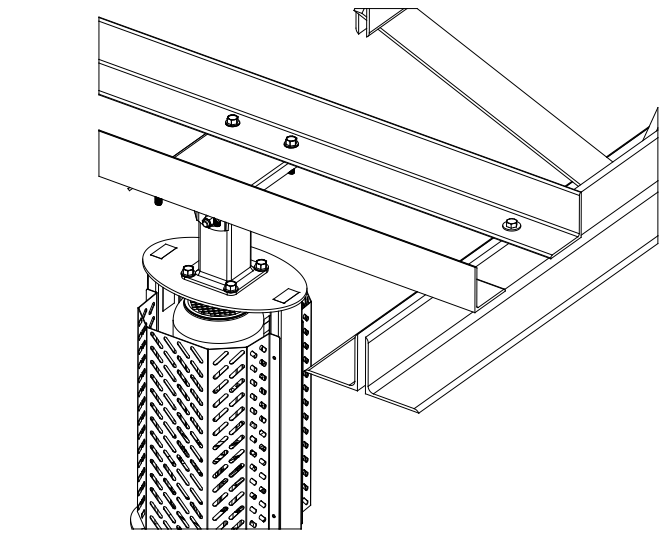


Figure 7

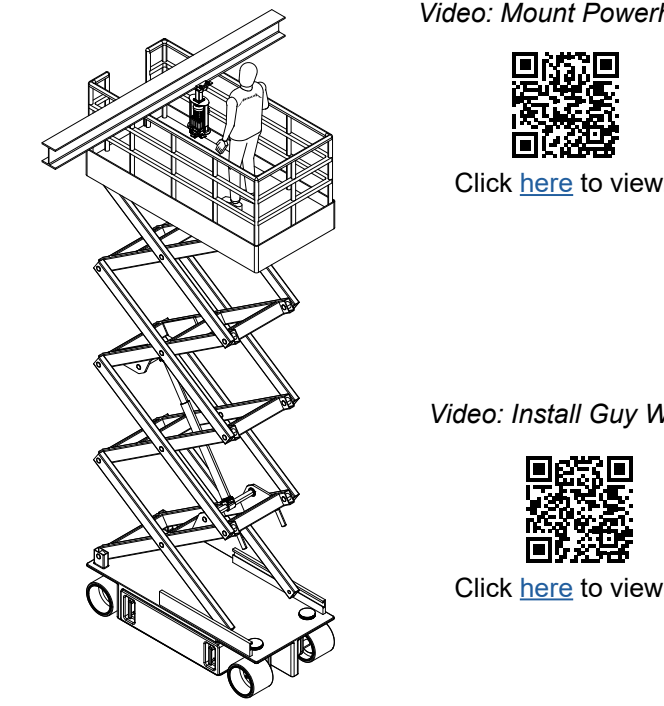


Figure 8

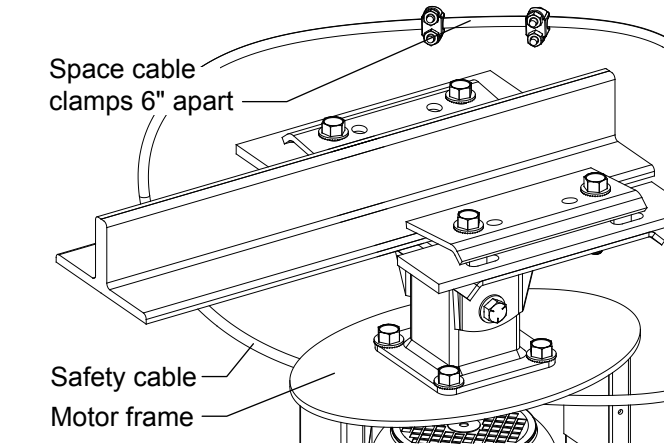


Figure 9

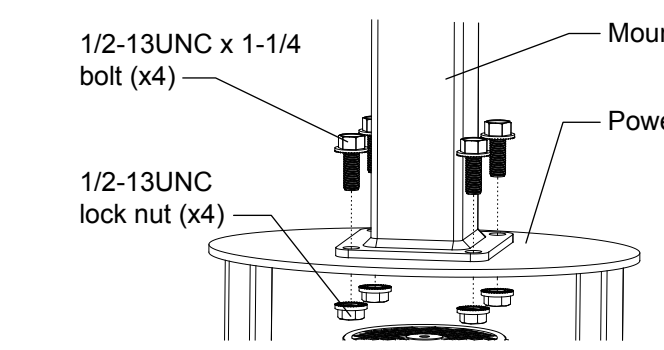


Figure 10

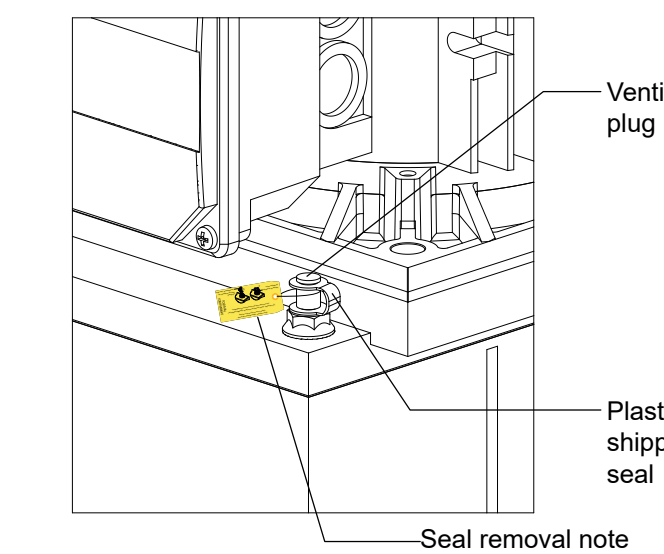


Figure 11

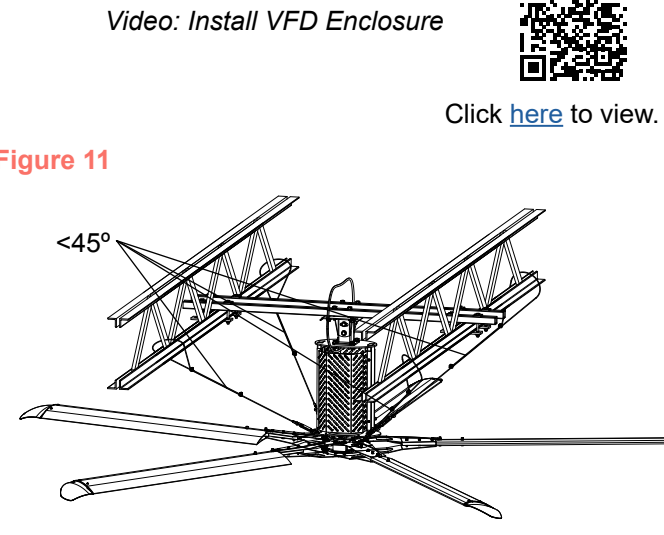


Figure 12

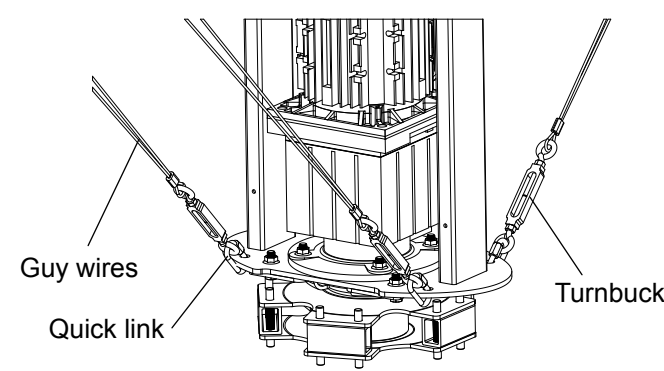
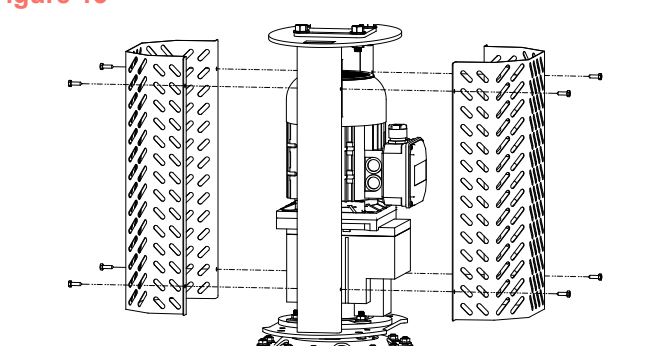


Figure 13



INSTALL BLADES

NOTE: Blade assemblies come pre-assembled from the factory. Do not attempt to disassemble.

- The hub assembly has special blade retention lock nuts pre-assembled to it. Remove them now and use them to mount the blade assemblies in the steps below. Use only the factory-supplied lock nuts provided for blade mounting.
- With the blade oriented such that the blade retention lanyard is on top, support the blade assembly from below. Orient and guide the assembly onto the top attachment studs on the hub assembly.
- Spread the strut arms slightly onto the upper studs as shown. Angle the blade upward as needed to slide blade onto studs. See [Figure 14](#).
- Still supporting the blade assembly, rotate the blade assembly down as shown and allow the bottom blade strut to ride up and over the bottom attachment studs on the hub assembly. See [Figure 15](#).

NOTICE

Do not lean on blade. Damage to strut may occur.

- Install blade retention lock nuts. Hand tighten nuts ensuring strut arms are firmly pressing against hub. Torque blade retention nuts to 24-28 ft-lbs. See [Figure 16](#).
- Repeat for each blade assembly.

VERIFY CLEARANCE AND CABLE TENSION

- Rotate fan by hand and observe clearance of each blade with closest obstruction. If necessary, reposition fan. Blade tips droop when not in operation and rise when in operation. Reference the [Installation Considerations](#) section for minimum clearance.
- Verify guy wire tension by attempting to move powerhead in any horizontal direction. If movement is detected, re-tension guy wires.
- Lock the individual turnbuckles using the stop nut on each and secure it with the turnbuckle strap. See [Figure 17](#).

ELECTRICAL INSTALLATION

⚠ DANGER

Before doing any electrical work, make certain the power is disconnected and properly locked or tagged off. Failure to do so may result in death or serious injury. Do not route control wiring for any other device through the control box. Ensure that the voltage and phase of the incoming power agrees with the label located on top of the VFD box and fan. Be certain power is off when wiring to the control box. Failure to do so could result in electrical shock, death or serious injury.

NOTE: Reference wiring diagrams in the User's Manual (PN 6021140 – HVLS User's Manual) for all field connections..

INSTALL REMOTE CONTROL

NOTICE

Do not over-torque mounting screws. Damage to display screen may occur if mounting screws are over-torqued. It is the installer's responsibility to torque properly.

- Mount touch screen remote to factory supplied junction box inside building as close to the fan assembly as practical. Direct line of sight is preferred. See [Figure 18](#).

NOTE: Blue CAT5e cable has terminated ferrules at the remote end. PROTECT these ferrules during cable routing.

- Route the remote signal (blue) cable (6015651) from the top of the VFD box, through the hole in the factory supplied junction box and wire the four leads of the remote signal (blue) cable to the orange connector of the touch screen remote control. Excess blue cable length should be neatly coiled and secured near VFD box.
- Mount the touch screen to the junction box 45" from center to ground using the fasteners provided.

NOTE: For cable runs exceeding 1000', consult factory.

VERIFY OPERATION — STANDARD INSTALLATION

Once installation is complete, the initial view of the touchscreen control will prompt the installer to set and confirm the fan quantity and size.

- Use the on-screen keypad to enter the number of fans. See [Figure 19](#).

- Use the UP/DOWN arrows to select the size of the fan and press the SET button. Ensure selected size matches the size specified on the label on the front of the VFD box.

- If it matches select the YES button on the following confirmation screen, if it differs, select the NO button and try again. See [Figure 20](#).

Operate the industrial fan following the operating instructions in the User's Manual. Check for proper rotation direction, stability and noise level.

Train authorized personnel how to use the industrial fan using the operating instructions in the User's Manual.

NOTE: FOR OPTIONAL NETWORKED UNITS, SEE SEPARATE MANUAL 6021140.

Figure 14

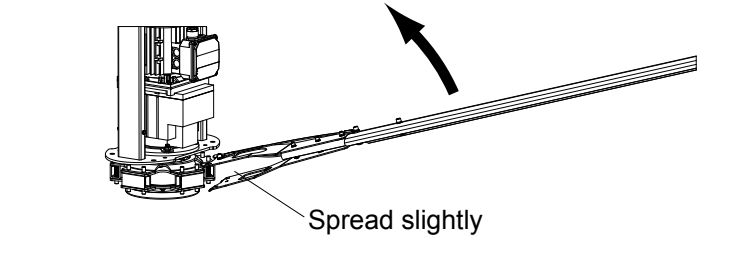


Figure 15

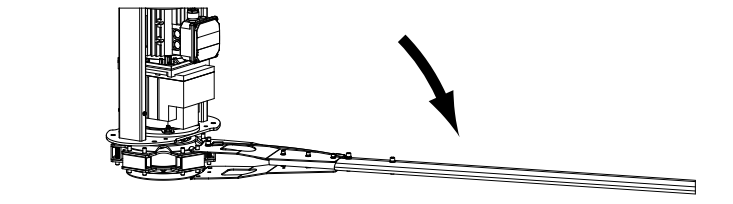


Figure 16

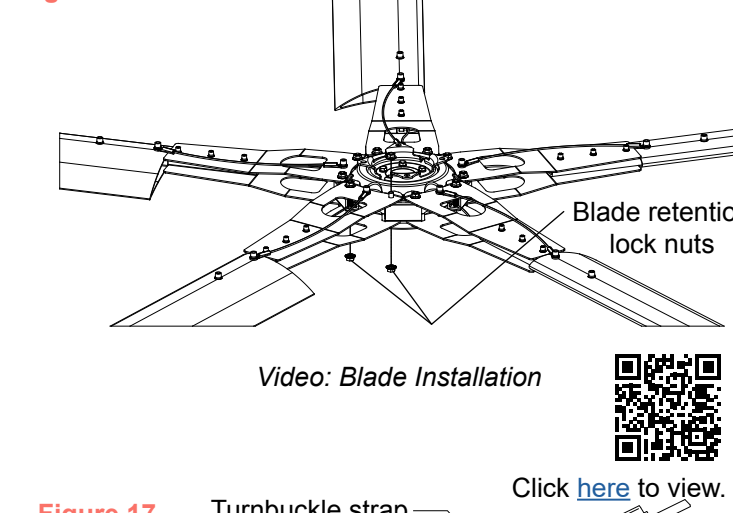


Figure 17

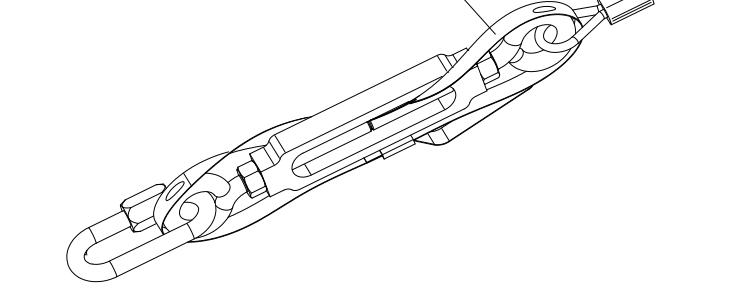


Figure 18

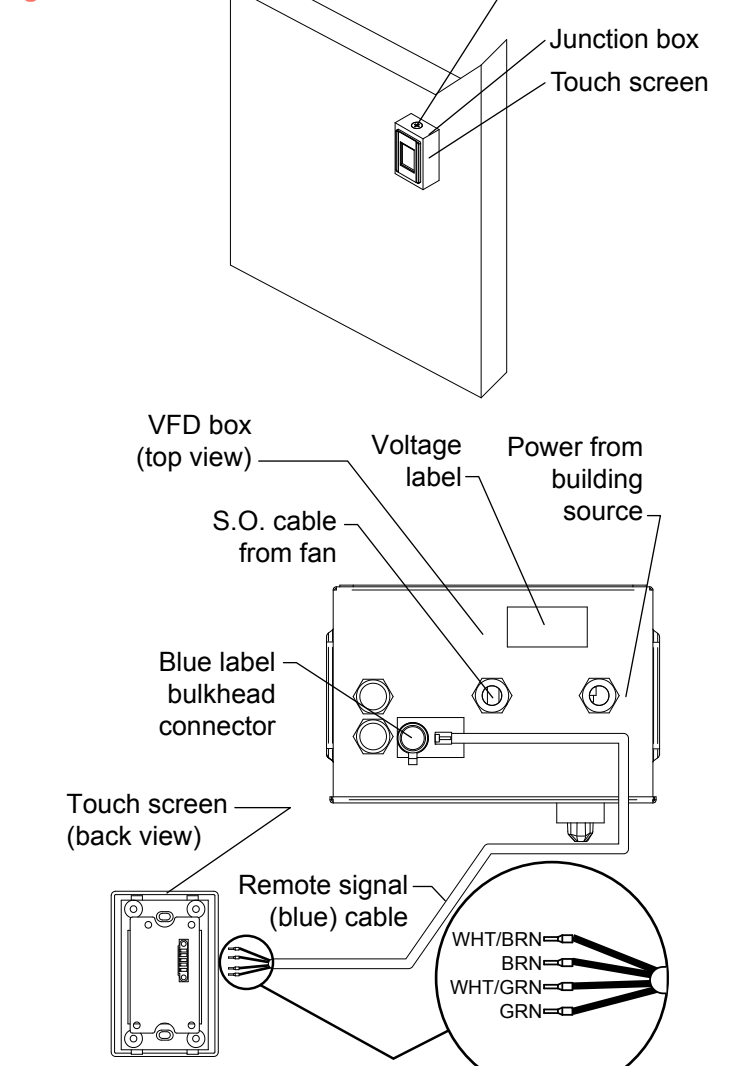


Figure 19

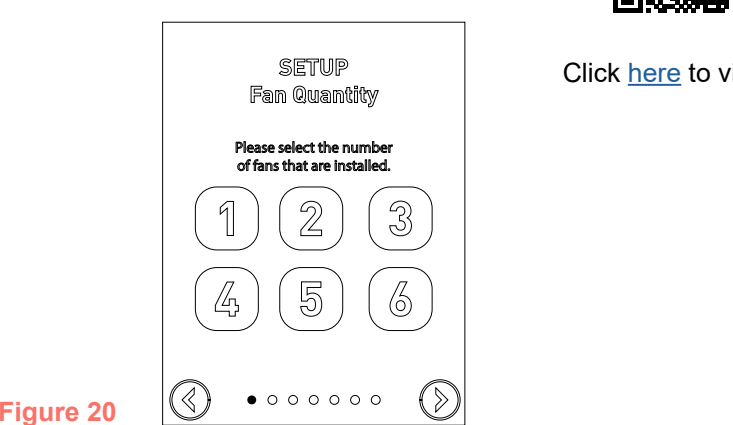


Figure 20

