Direct Drive HVLS Fan
User's Manual

E506041

This manual applies to fans manufactured beginning January 2024 with the serial number F61709236 or greater.

⚠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 manual. Failure to do so could result in death or serious injury.

User's Manual
Installation, Operations
Maintenance and Parts

Part No. 6022221C

Part of ASSA ABLOY

LIMITED PRODUCT WARRANTY

Warranty information for the Direct Drive HVLS Fan can be found by scanning the QR codes or clicking the links below.

Click here to view the 4Front U.S. and Canada Warranty.

Click here to view the International Warranty.

TABLE OF CONTENTS

INTRODUCTION

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

USER MANUAL

This User's Manual contains information you need to safely install, operate, and maintain the fan. It also contains a complete parts list and information about ordering replacement parts. Please keep and read this User's Manual before using your new fan.

HOW TO USE HOW TO USE THIS MANUAL

This section explains the visual clues and conventions that will help you quickly locate the information you need. Other conventions and icons identify interactive elements that will provide additional information when using the online version of this manual.

BASIC ELEMENTS

- Names of menus, buttons, icons, and fields are highlighted in bold text
- Text highlighted in blue indicates a link you can click to navigate to another topic.

INTERACTIVE ONLINE ELEMENTS

These elements are available in the online version of the document. The URL for the online version is provided on the back page of the manual. Scan the QR code above the URL for quick access to the online document.

- Numbered blue circles on diagrams and figures indicates a link to more information about the numbered part or element. Click on the circle for additional information.
- A pointing hand icon next to a figure indicates that the figure is interactive. Click on the figure for a different view of the feature or part or for additional information.
- A play button (triangle) on a figure indicates a video that provides additional information about the part or feature. Click on the triangle to play the video.

The blue TOC icon at the top of every page takes you back to the Table of Contents.

SAFETY SIGNAL WORDS

You may find safety signal words such as DANGER, WARNING, CAUTION, or NOTICE in the User's Manual. The use of Safety Signal Words is explained below.

WARNING AND CAUTION SYMBOL

This symbol is the Safety alert symbol. It is used to alert you to potential personal injury hazards, Obey all safety messages that follow this symbol to avoid possible death or injury..

⚠DANGER

DANGER SYMBOL

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

ELECTRICAL WARNING SYMBOL

Indicates an electrical hazard with a medium level of risk that could result in death or serious injury.

⚠CAUTION

CAUTION SYMBOL

Indicates a potentially hazardous situation, which, if not avoided may result in minor or moderate injuries.

⚠WARNING

WARNING SYMBOL

Indicates a potentially hazardous situation, which, if not avoided, could result in death or serious injury.

NOTICE

NOTICE SYMBOL

Notice is used to address practices not related to personal injury.

OPERATIONAL SAFETY

⚠WARNING

READ THESE SAFETY PRACTICES BEFORE INSTALLING, OPERATING, OR SERVICING THE FAN.

READ AND FOLLOW THE OPERATING INSTRUCTIONS IN THIS MANUAL BEFORE OPERATING THE FAN. If you do not understand the instructions, ask your supervisor for instruction.

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

⚠DANGER

To reduce the risk of fire, 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.

Be certain to follow the instructions in this manual.

⚠WARNING

Installation of the equipment must comply with local and national electrical codes and must be in accordance with ANSI/NFPA 7-1999.

Do not use this fan until you have received proper training. Improper use could result in property damage, bodily injury and/or death. Read and follow Operating Instructions on page <?> before use. If you do not understand the instructions, ask your supervisor to explain them to you or call your local distributor.

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

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 electrical shock, do not expose to water or rain.

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.

⚠WARNING

Before service, inspection, or cleaning, make certain the power is disconnected and properly locked out.

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

Keep your body clear of moving parts at all times.

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

If it is necessary to make troubleshooting checks inside the VFD box with the power on, USE EXTREME CAUTION. Do not place fingers or un-insulated tools inside the enclosure. Touching wires or other parts inside the enclosure could result in electrical shock, death, or serious injury.

⚠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.

⚠WARNING

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

⚠CAUTION

Installation work and electrical wiring must be done by qualified person(s) in accordance with all applicable codes and standards.

⚠CAUTION

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

⚠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.

⚠CAUTION

When service or replacement of a component in the fan requires the removal of disconnection of a safety device, the safety device is to be reinstalled or remounted as previously installed.

⚠WARNING

Risk of fire, electric shock, or injury to persons during cleaning and user-maintenance. Disconnect the fan from the power supply before servicing.

⚠WARNING

Stay alert, watch what you are doing, and use common sense when installing fans. Do not install fans when tired, or under the influence of drugs, alcohol, or medications. A moment of inattention while installing fans may result in serious personal injury.

⚠CAUTION

The installation of this fan requires the use of some power tools. Follow the safety procedures found in the owner's manual for each of these tools and do not use them for purposes other than intended by the manufacturer.

OWNER'S RESPONSIBILITIES

The owner's responsibilities include the following:

The owner should recognize the inherent danger of the interface between the fan and shop worker. The owner should, therefore, train and instruct operators in the safe use of the industrial fan.

Nameplates, cautions, instructions and posted warnings shall not be obscured from the view of operating or maintenance personnel for whom such warnings are intended. Warnings which are worn or non-legible should be replaced.

Manufacturer's recommended periodic maintenance and inspection procedures in effect at date of shipment shall be followed, and written records of the performance of these procedures should be kept.

Direct Drive fans that are structurally damaged or have experienced impacts from external sources, shall be removed from service, inspected by the manufacturer's authorized representative, and repaired as needed before being placed back in service.

The owner shall see that all nameplates and caution and instruction markings or labels are in place and that the appropriate operating and maintenance manuals are provided to users.

Modifications or alterations of Direct Drive fans shall be made only with written permission of the original manufacturer.

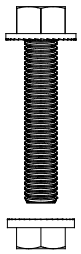
NATIONAL FIRE PROTECTION ASSOCIATION STANDARD

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 (7.3m).
- The fan shall be approximately centered between four adjacent sprinklers.
- The vertical clearance from the fan to the sprinkler deflector shall be a minimum of 3 feet (0.9m).
- 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.

HARDWARE

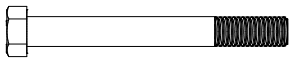
Mount — Building



(x4) 1/2-13UNC x 2-1/2

(x4) 1/2-13UNC lock nut

Mount — Assembly



(x2) 1/2-13UNC x 4-1/2 bolt

(x4) 1/2 dia. washer

(x2) 1/2-13UNC nyloc lock nut

Mount — Motor frame

(x4) 1/2-13UNC x 1-1/4 bolt

(x4) 1/2-13UNC lock nut

Mount — Blade

(x20) 3/8-16UNC lock nut

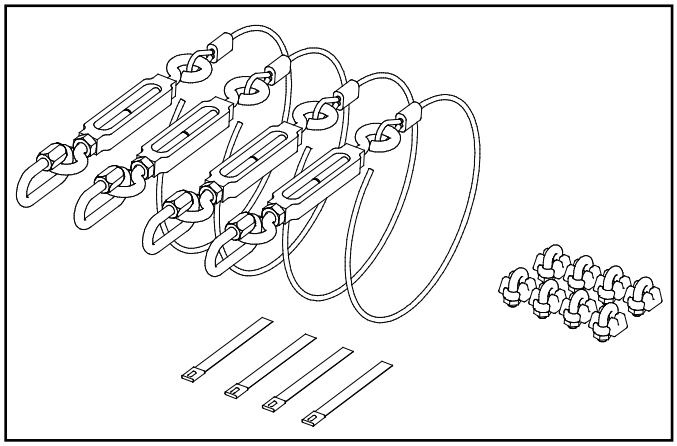
Mount — Fan cover

SCREW, TEKS4, HWH, #12-24 X 7/8

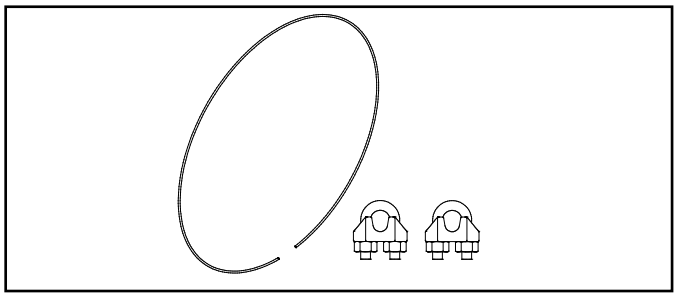
Fastener torque requirements

Description	Torque	Wrench size
1/2 dia mount hardware	44-48 ft-lbs.	3/4 hex
3/8 dia blade mount hardware	24-28 ft-lbs.	9/16 hex
Cable clamp, guy wire	Secure tight	5/16 nut driver
Cable clamp, safety cable	Secure tight	1/2 nut driver
Motor cover fastener	Secure tight	5/16 nut driver

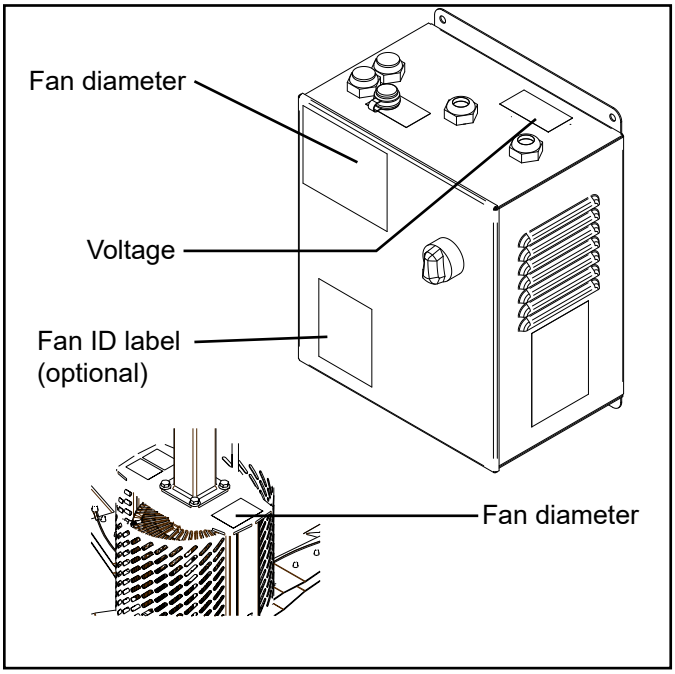
Guy wire assembly



Safety cable



Identification labels



NOTE:

Additional spare hardware is provided as a courtesy.

FAN KIT

PACKING KIT (STANDARD)

1. Blade Box - Five (5) blades
2. Fan Motor Box
   a. Motor assembly with covers.
   b. Remote control panel with junction box (optional)
   c. Category 5e cable - 100 ft (blue) (optional)
   d. Mounting hardware - See Hardware on page 13
   e. Variable Frequency Drive (VFD) box

REQUIRED TOOLS

- Wrenches: 7/16, 9/16, 3/4 (x2), 1/2
- Sockets: 7/16, 1/2, 9/16, 3/4
- Nut drivers: 1/4, 5/16
- Torque wrench: 15-60 Ft-lbs (for use with sockets)
- Wire strippers
- 1/4” cable cutter
- Tape measure
- Spirit level, short
- Gloves
- For laminated wood beam installations, a drill and 1/2” dia. drill bit are required.

PRIOR TO FAN INSTALLATION

1. Ensure the supplied voltage matches the fan voltage. A label containing voltage information specific to the individual fan is located on top of the VFD box.
2. Ensure the blade length matches the fan model size by consulting the fan model designation located on the side of the fan powerhead frame.
3. Ensure all mounting hardware shown in Hardware on page 13 is present.

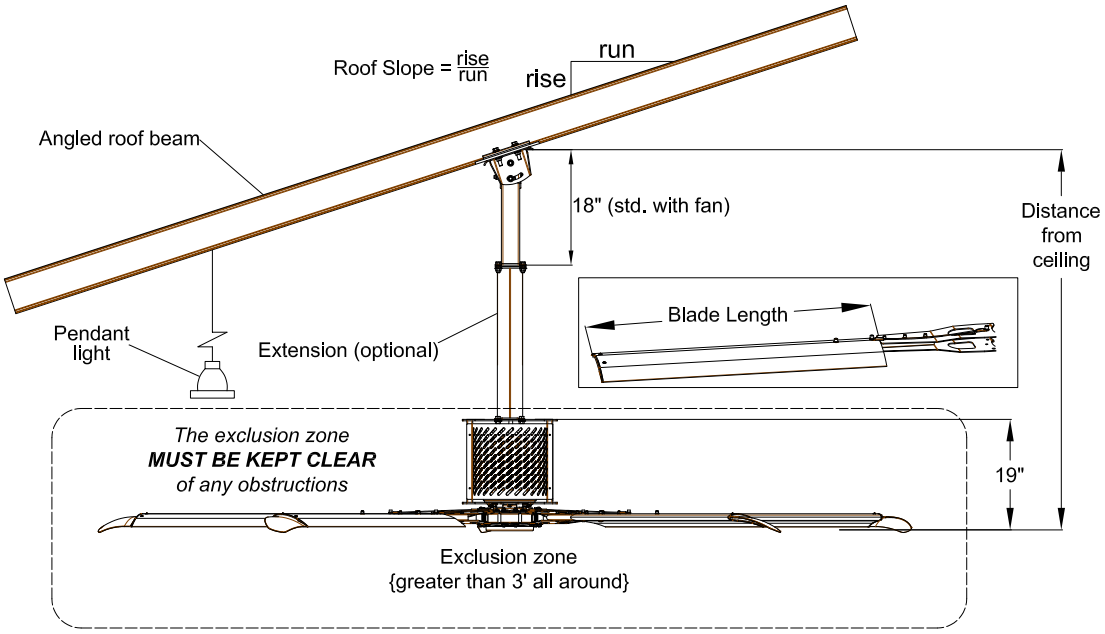
FOR OPTIONAL NETWORK (IFAN OR MULTI-FAN FANS ONLY)

Ensure the Fan Network Address number matches the network layout drawing where applicable.

Consult the square Network Address label on the front of the VFD enclosure.

INSTALLATION CONSIDERATIONS

Figure 1



ROOF SLOPE

NOTICE

The chart below does not account for any possible obstructions below the mounting positions. All fans must still maintain 3' between blades and typical obstructions.

DIRECT DRIVE FAN							
Roof Slope*	0	2/12	3/12	4/12	Hanging Weight (LB)	Maximum Torque (Ft. Lb.)	
Roof Angle*	0	9.5°	14.0°	18.4°			Blade Length (in)
Fan Diameter	Extension requirement from mounting point (FT)						
8	0	1	1	2	179.1	300	21.16
10	0	1	2	2	187.4	300	33.16
12	0	1	2	2	195.8	300	45.16
14	0	2	2	3	230.0	300	57.16
16	0	2	2	3	238.7	300	69.16
18	0	2	3	3	247.0	300	81.16
20	0	2	3	4	255.4	300	93.16
24	0	2	3	4	272.1	300	117.16

* Non-standard obstructions may require additional length to the extensions. Please consult the factory for additional clarification on non-standard obstructions and assistance with fan placement and extension selection.

TOC

⚠ WARNING

Failure to maintain exclusion zones outlined in this section 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 the fan.

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.

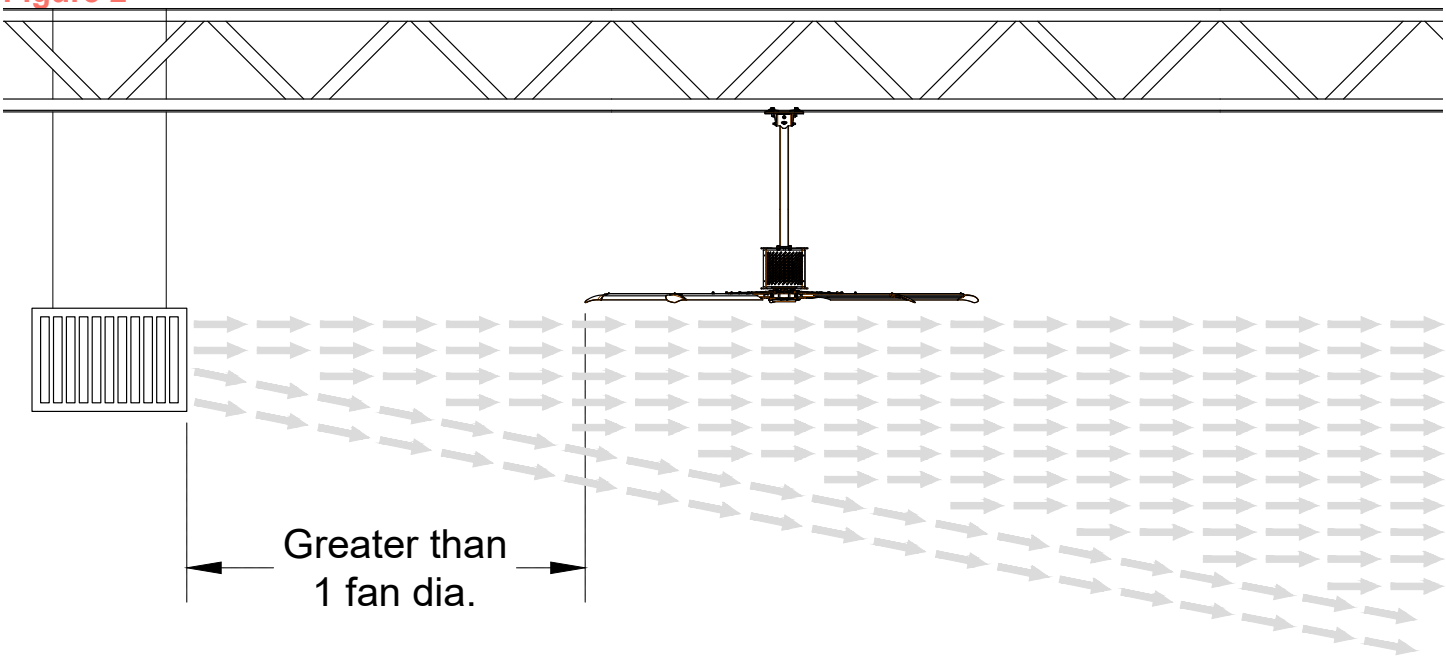
ROOF ANGLES

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

CLEARANCE FROM HVAC EQUIPMENT

For applications near HVAC equipment, such as diffusers, radiant heaters, exhaust fans, louvers, etc., the HVLS fan must be installed at minimum distances. Refer to the figures below. Fans located above HVAC equipment must have a minimum clearance of greater than or equal to 1 fan diameter. See **Figure 2**.

Figure 2

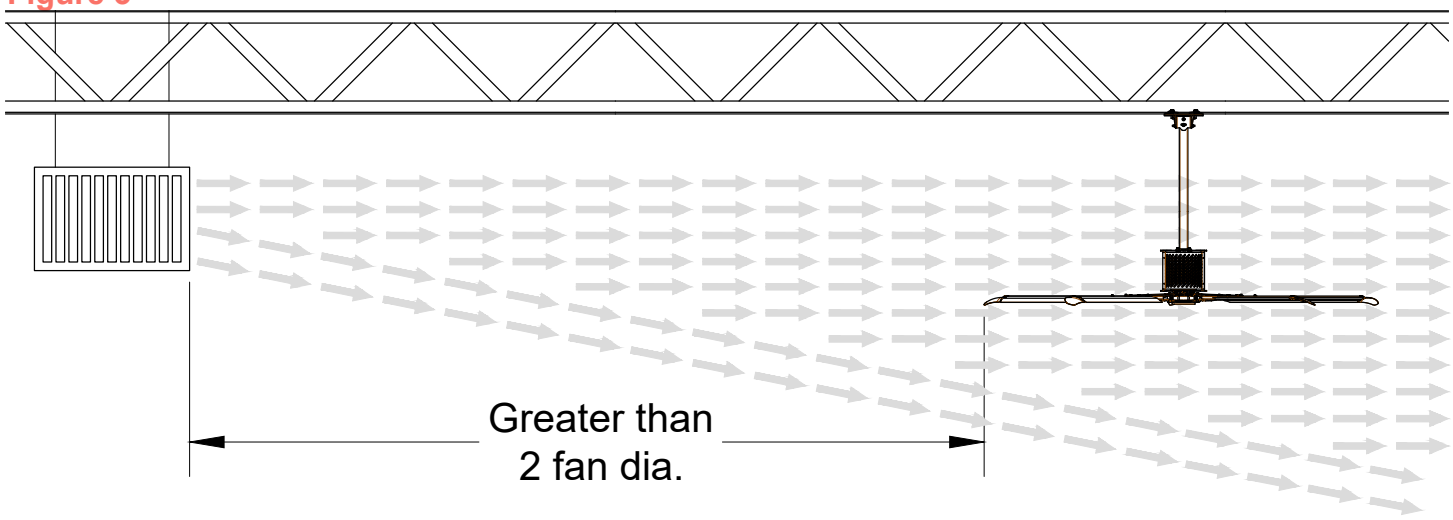


Placement of the Fan

Click here to view the video

Fans located at or below HVAC equipment musts have a minimum clearance of greater than or equal to 2 fan diameters. See **Figure 3**.

Figure 3



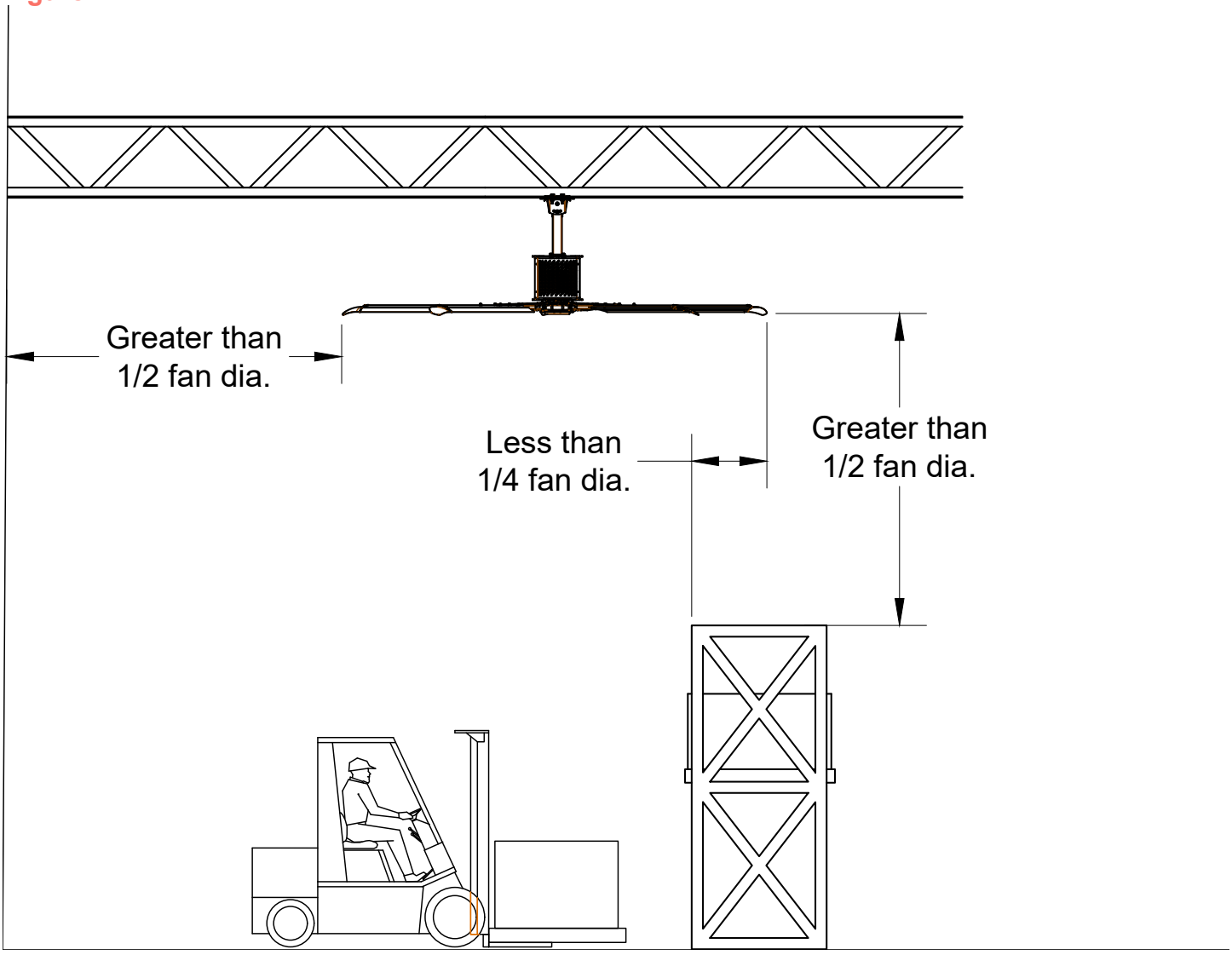
CLEARANCE FROM SOLID OBSTRUCTIONS

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

Fans located near solid obstructions, such as walls racks or columns greater than 1FT wide, should have a minimum distance of one half (1/2) fan diameter from the end of the blade.

Fans located above solid obstructions, such as racks, walls, etc. must have a minimum distance of greater than or equal to 1/2 fan diameter above the obstruction. The obstruction below must also be less than or equal to 1/4 fan diameter inside the fan blade arc. See **Figure 4**.

Figure 4



BUILDING STRUCTURE

For open structure roof designs, the fan should only be hung from either an I-Beam or angle iron. Do not hang from purlins, posts, or a truss structure unless all of the following apply:

- The truss can handle the load of the fan
- The bottom chords of the truss are larger that 5” but smaller than 10 1/2” combined.
- The fans are installed at the strongest point load on the truss.

If you have questions on whether or not the truss can handle the load, you must consult a local structural engineer.

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

Ensure fan blade clearance meets the requirements shown in **Figure 1** through **Figure 5.**

> ***NOTICE***
>
> *Consult a professional engineer or registered architect for specific mounting concerns.*

PLACEMENT AND SPACING

Consult your local distributor to help you plan the most efficient installation of your fans.

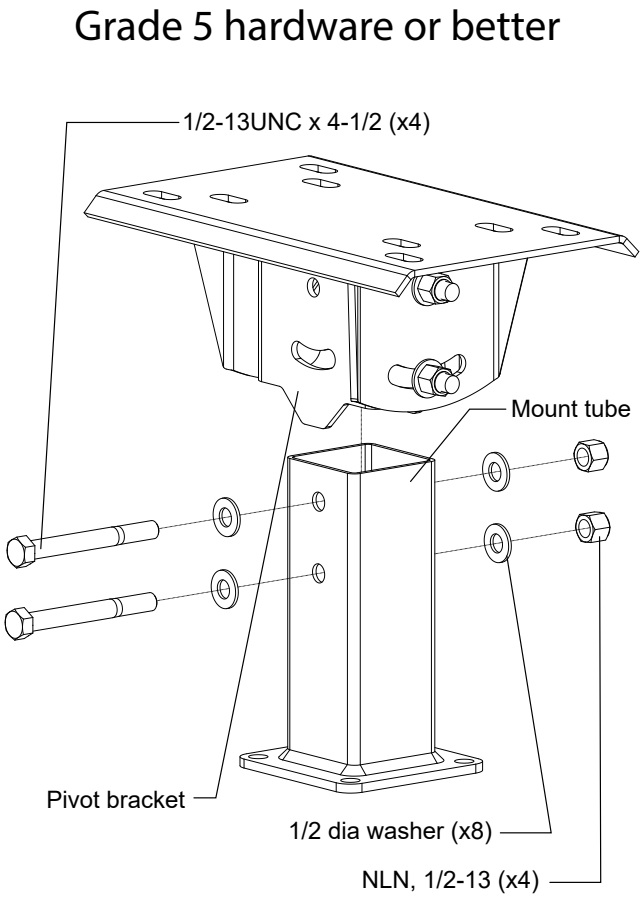
Ensure you place the fan so that the fan blades are a minimum of 10’ from any manned working surface (floor or mezzanine).

Ensure the fan blades do not extend into the exclusion zone.

Extensions are available if you need them. See **Figure 2**.

Avoid mounting fans directly under lights or skylights to avoid visual strobing.

Figure 5



(Grade 5 hardware required)

NOTICE

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

NOTICE

Be sure to comply with all local and national codes during installation.

INSTALLATION

⚠DANGER

Before installation, make certain that the power is disconnected and properly locked out.

For fans that will be subjected to high cross winds due to 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.

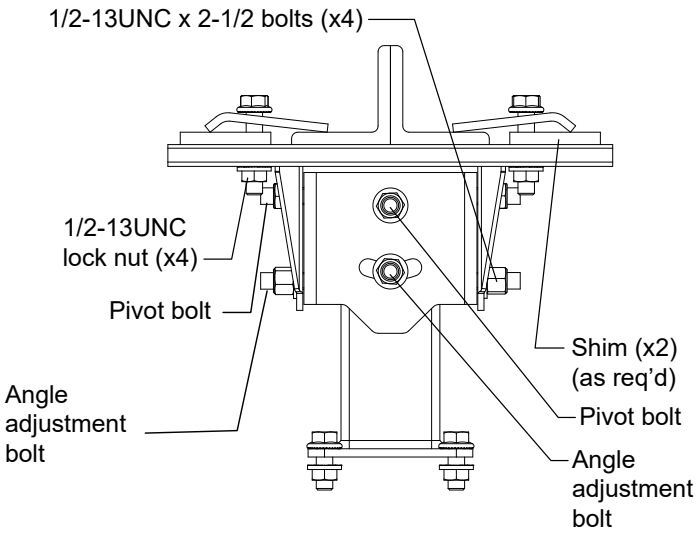
INSTALL FAN MOUNT

1. Fasten the pivot brackets to the extension tube with ears outboard.
2. Leave the 1/2” dia. x 4-1/2” bolts and nylock nuts finger tight. See **Figure 6**.

STANDARD I-BEAM

1. Locate the fan mount assembly on the bottom of the building support beam.
2. Align the mount assembly so that it is centered and square to the beam.
3. Orient the mount such that the pivoting axis is aligned with the building slope, if required.
4. Install the clamps.
5. Add shims as required for thick flange I-Beams.

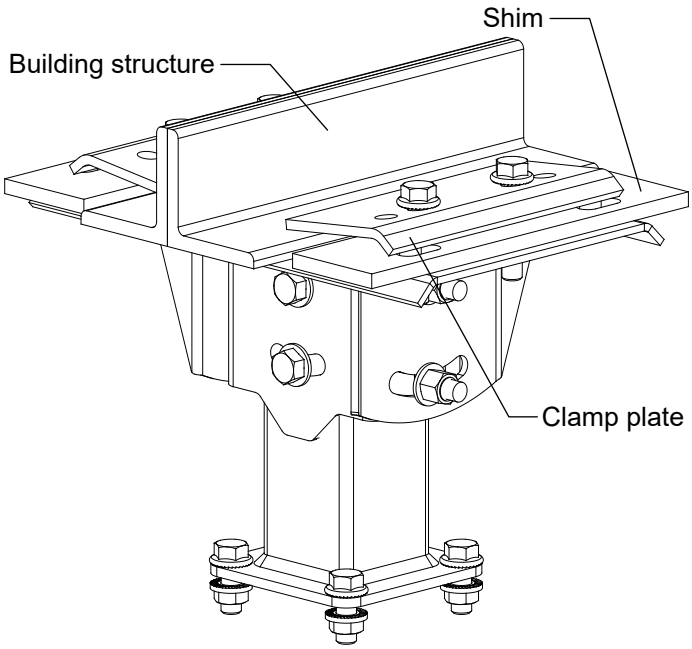
Figure 6



Mounting Options

Click here to view the video

Figure 7



6. Fasten the clamps using the supplied 1/2” dia. X 21/2” screws, lock nuts, and washers.
7. Torque to 44-48 ft-lbs. See **Figure 7.**

LAMINATED WOOD BEAM MOUNTING (OPTIONAL KIT 6018028)

1. Attach the laminated wood beam brackets to the wooden beam using a minimum of four 1/2” dia. grade 5 thru bolts and the self-locking nuts (not supplied),
2. Ensure the brackets are square to the bottom of the beam.
3. Attach the mount assembly to the laminated wood beam brackets using the supplied 1/2” dia. x 2-1/2” screws, nylock lock nuts, and washers.
4. Torque to 44-48 ft-lbs. See **Figure 8**.

TRUSS MOUNT

1. To span two trusses or purlins with a gap of 96” or less, span the gap using two 4” X 4” steel angle iron. See **Figure 9**.

> **NOTICE**
>
> *Do not span gaps longer than 96”.*

Figure 8

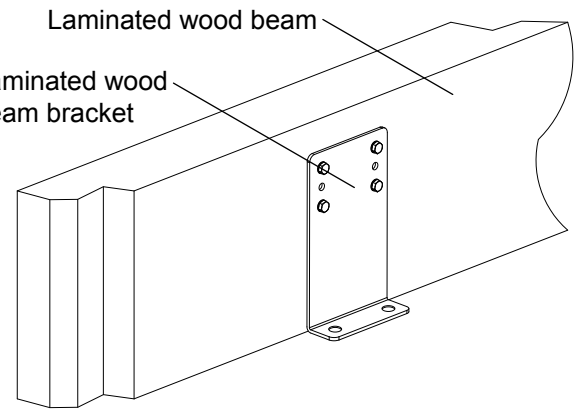
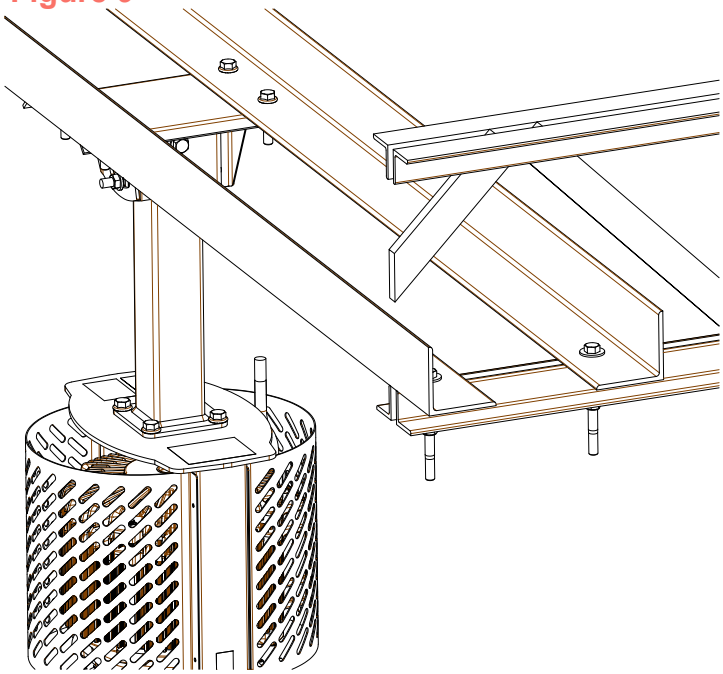


Figure 9



INSTALL THE POWERHEAD (MOTOR ASSEMBLY)

The power head may be oriented as required for aesthetics or commonality.

Leave the protective bumper on the bottom of the power head assembly until the power head is mounted in place.

1. Using a powered lift, orient the powerhead with the blade hub down.
2. Block the motor as required for installation using the bottom of the frame assembly.

   Do not support it using the hub or hub cap.
3. Raise the power head up until it contacts the bottom of the fan mount assembly. See **Figure 10**.
4. Use the supplied hardware to attach the powerhead to the bottom of the mount assembly. See **Figure 11.**
5. Immediately attach the safety cable.

   The torque rating must be 44-48ft-lbs. See **Figure 11**.

   a. Slide two of the supplied 1/4” dia. cable clamps over each end of the cable spaced 6” apart.

   b. Slide the ends through the cable clamps.

   c. Make sure the cable goes through the motor frame.

   d. Securely tighten the clamp fasteners.

   e. Make sure the u-bolts are over the free ends of the cable.

   f. Ensure the safety cable does not interfere with the fan motor housing.

   g. Trim any excess cable or wrap the cable multiple times to ensure the cable does not interfere with the fan motor housings or hub.

Figure 10

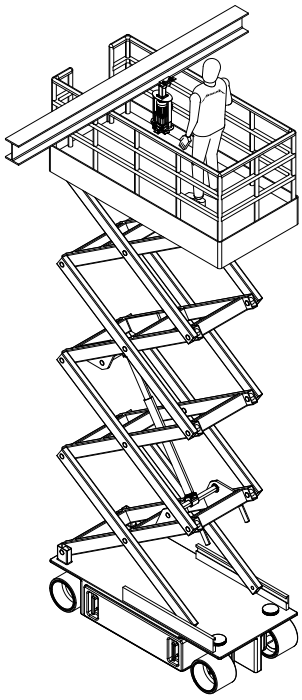
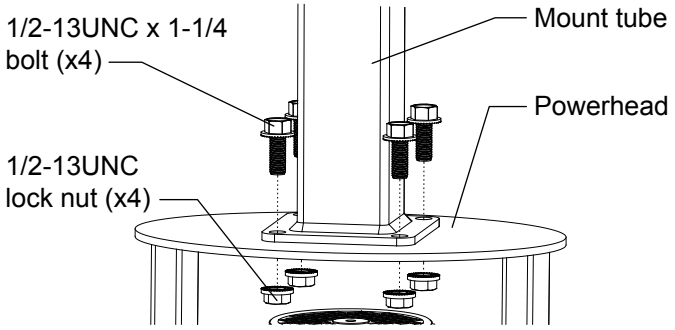


Figure 11



Mounting the Powerhead

Click here to view the video.

INSTALL THE VFD BOX

Verify the voltage and phase before mounting the box. Ensure the voltage from the building source wiring matches the voltage listed on the 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 input voltage.

Do not run 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.

1. Mount the VFD box outside the fan blade arc.

   Orient the box so that the front panel is accessible and visible with the connectors on top of the panel.

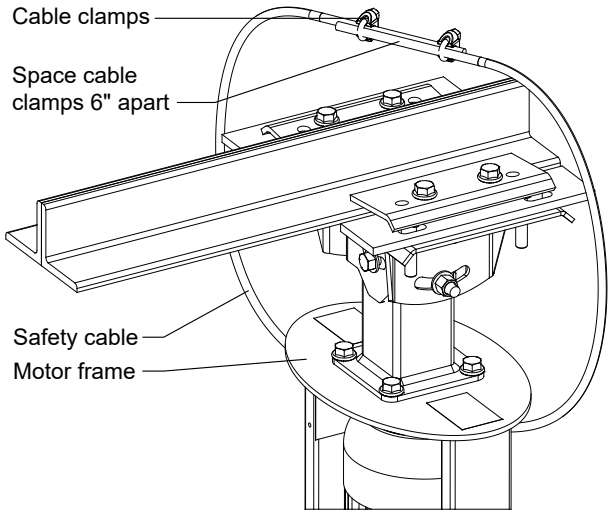
2. Route the fan S.O. cable from the fan to the VFD box and check to make sure the cable is supported throughout its routing.

3. Ensure the cable is supported throughout its routing.

4. Route the supply power from the building source to the VFD box.

5. Wire the VFD box in accordance with the Electrical Schematics on page <?>.

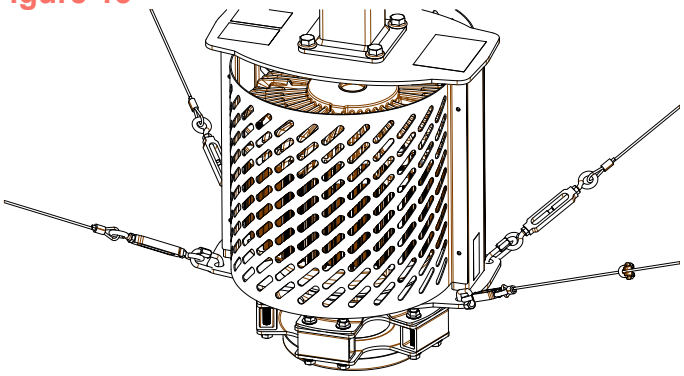
Figure 12



Installing the VFD Enclosure

Click here to view the video

Figure 13



INSTALL GUY WIRES

Guy wires are designed to constrain lateral movement of the fan when it is operating. This movement may be due to impacts on the fan or winds impinging on the blades causing the fan to sway.

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

The longest extension allowed is 20'. Any extensions longer than 12' must use the secondary guy wire kit (6020303 — standard and 6020304 — stainless steel).

Consult a professional engineer or registered architect for specific mounting concerns.

⚠WARNING

If you have used a mounting extension, make sure you use the longer guy wires accompanying the extension.

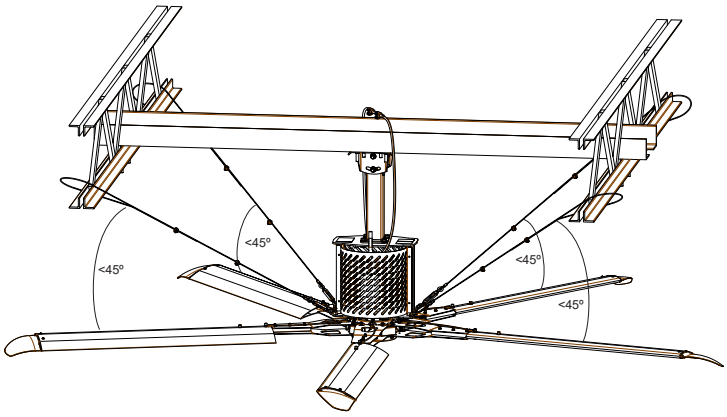
Ensure the angle formed by the guy wire with the roof structure is less than 45°. See **Figure 14**.

Avoid all 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.

1. Adjust the turnbuckles to their longest position.
2. Attach the quick link wire with the attached turnbuckle to the fan as shown in **Figure 15**.
3. Repeat for all four quick links.
4. Attach one end of the guy wire to the building structure.
5. Ensure the structure has sufficient strength to withstand the wire tension.
6. Repeat for all four guy wires.

Figure 14



Install Guy Wires
Click here to view the video

a. Slide two of the supplied 1/8” dia. cable clamps over one end of the wire.

b. Feed that end through the building structure and back through the clamp fasteners.

c. Securely tighten the clamp fasteners so that they cannot slip.

d. Make sure the u-bolts are over the free end of the cable.

7. Individually tighten the turnbuckles on each cable until each cable is taut and the powerhead unit hangs plumb.

   Use a spirit level to verify the power head unit hangs plumb.

8. Tighten the pivot and angle the adjustment bolts on the fan mount.

9. Torque to 44-46 ft-lbs. See **Figure 16**.

INSTALL MOTOR COVER

⚠WARNING

Do not install motor covers when installing in temperatures above 45C (113F).

1. Check that the motor S.O. cable has been routed to the VFD box and ensure it is secured.

2. Locate each motor cover and install the cover fasteners. Do not over tighten the fasteners.

   See **Figure 15**.

Figure 15

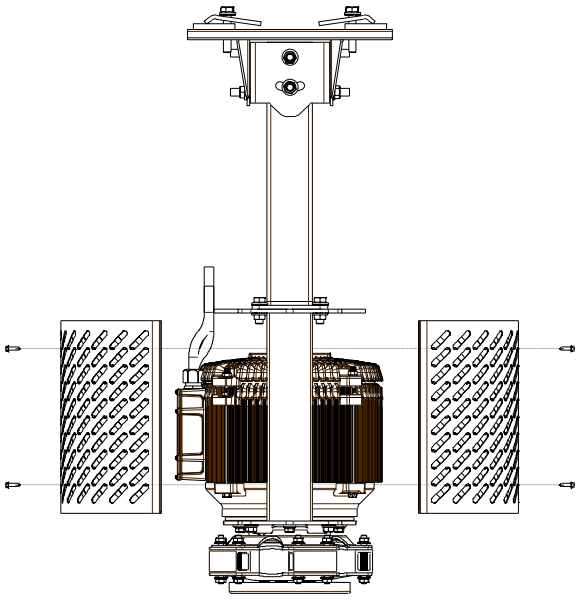
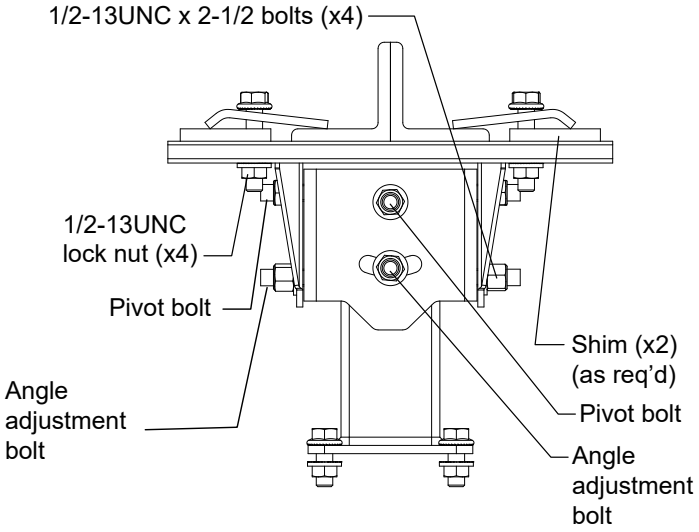


Figure 16



INSTALL BLADES

⚠WARNING

To reduce the risk of personal injury, do not bend the blade brackets when installing the brackets or cleaning the fan.

Do not insert foreign objects in between rotating fan blades.

Blade assemblies come pre-assembled from the factory.

Do not attempt to disassemble them. The hub assembly has special blade retention lock nuts pre-assembled to the hub. Remove them and use them to mount the assemblies as shown in the steps below.

Use only the factory supplied lock nuts provided for blade mounting.

1. Remove the special blade retention lock nuts.
2. With the blade oriented so that the blade retention lanyard is on top, support the blade assembly from below. See **Figure 17**.
3. Orient and guide the assembly onto the top attachment studs on the hub assembly.
4. Spread the strut slightly onto the upper studs as shown.
5. Angle the upward needed to slide the blades onto the stud. See **Figure 18**.
6. Still supporting the blade assembly, rotate the blade assembly down and allow the bottom blade strut to ride up and over the bottom attachment studs on the hub assembly. See **Figure 19**.

Installing the Blades

Click here to view the video.

Figure 17

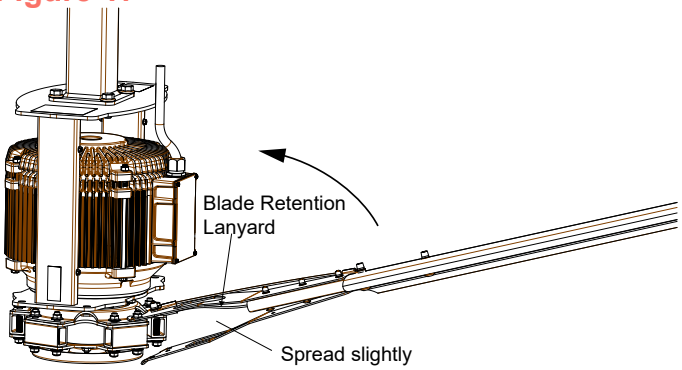
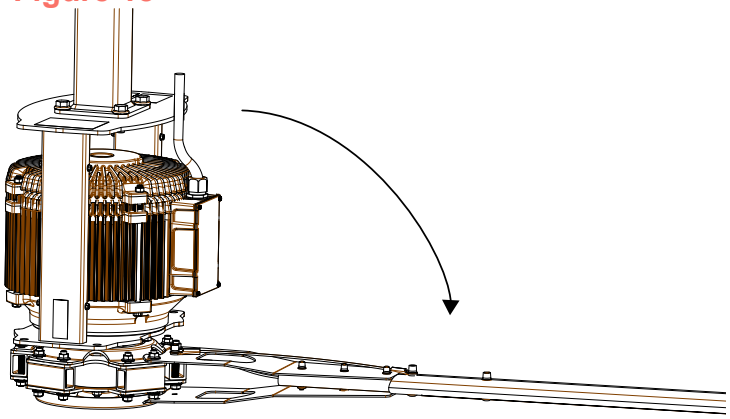


Figure 18

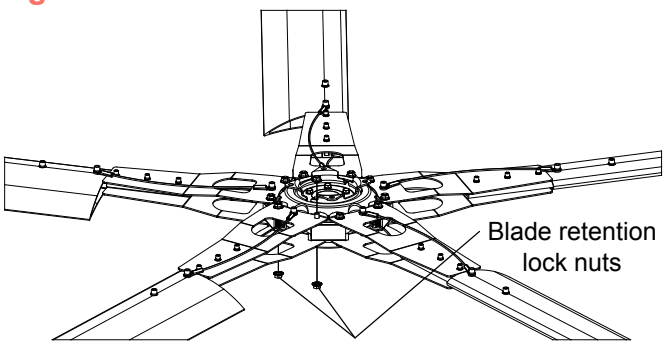


NOTICE

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

7. Install the retention lock nuts.
8. Hand tighten the nuts to ensure the strut arms are firmly pressing against the hub.
9. Torque the blade retention nuts to 24-28 ft-lbs. See **Figure 19.**
10. Repeat steps 1 through 9 for each blade assembly.

Figure 19



VERIFY CLEARANCE AND CABLE TENSION

1. Rotate the fan by hand and observe the clearance of each blade with the closest obstruction.

   If necessary, reposition the fan.

NOTICE

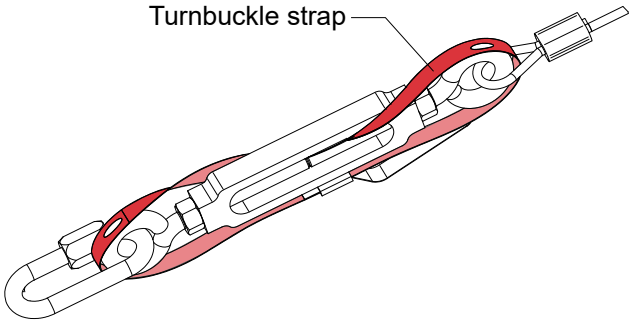
Blade tips droop when they are not in operation and rise when in operation

Verify the guy wire tension by attempting to move the powerhead in any horizontal direction.

If you detect movement, re-tension the guy wires.

2. Lock the individual turnbuckles using the stop nut on each.
3. Secure the turnbuckle with the turnbuckle strap. See **Figure 20**.

Figure 20



INSTALL THE REMOTE CONTROL

NOTICE

Do not over-torque the mounting screws.

Damage to the display screen may occur if you over-torque the mounting screws.

It is your responsibility to torque the screws properly.

1. Mount the touchscreen remote 53” above the floor to the factory supplied junction box inside the building.

   Mount the touch screen as close to the fan assembly as practical. See **Figure 21.**

NOTICE

For remote signal (blue) CAT5e cable runs exceeding 1000’, consult the factory.

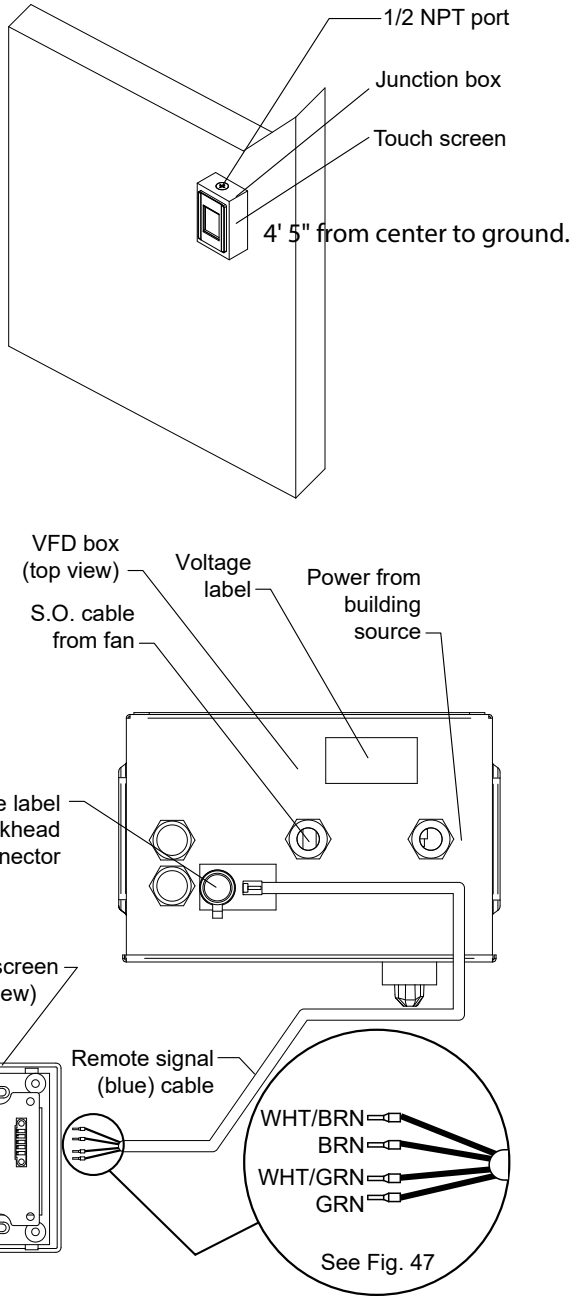
Blue CAT5e cable has terminated ferrules at the remote end. PROTECT these ferrules during cable routing.

2. Route the remote signal (blue) cable (6015651) from the top of the VFD box through the hole in the factory supplied junction box.
3. Wire the four leads of the remote signal cable (blue) to the orange connector of the touch screen remote control.
4. Neatly coil any excess blue cable length and secure it near the VFD box.
5. Mount the touch screen to the junction box using the provided fasteners.

Install Remote Control

Click here to view the video.

Figure 21



ELECTRICAL SCHEMATICS

DANGER

Before doing any electrical work, make certain the power is disconnected and properly locked out and tagged out.

Failure to do so may result in death or serious injury.

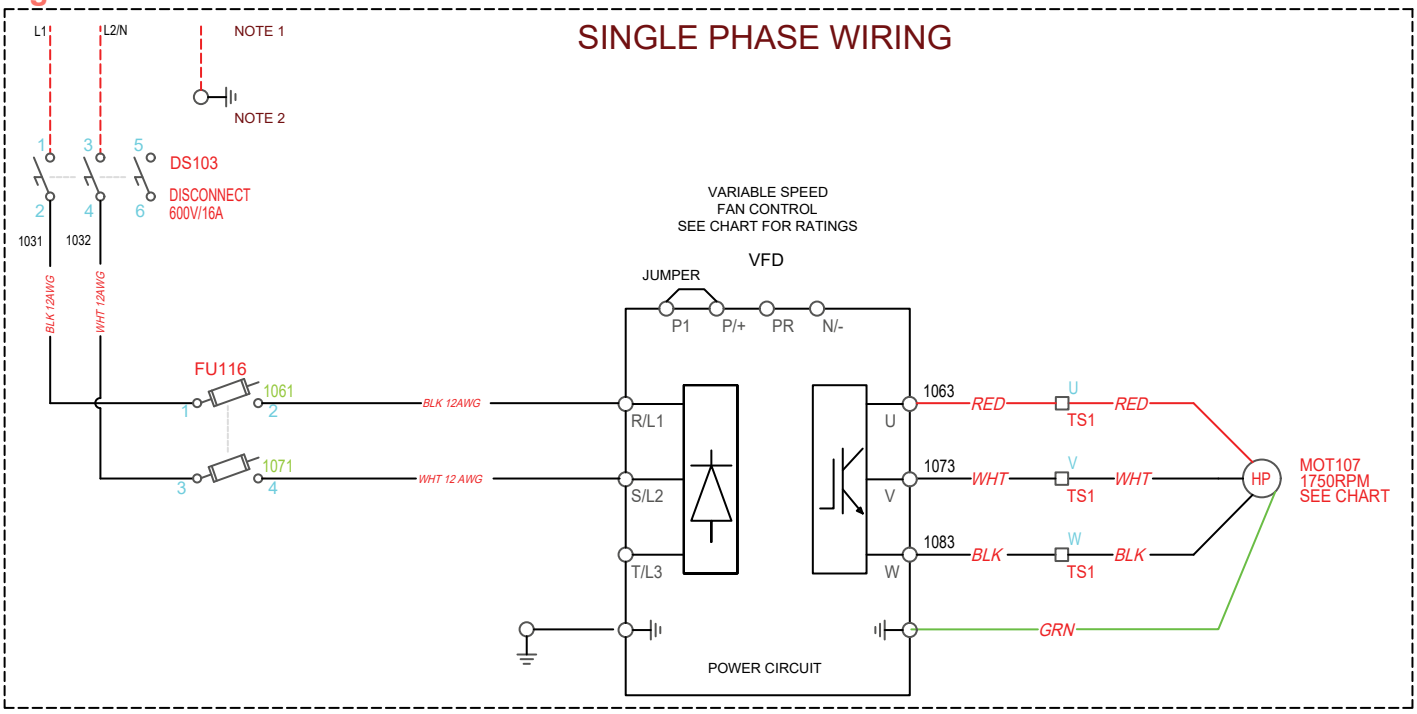
All electrical troubleshooting and repair must be done by a qualified technician and meet all applicable codes.

Do not route control wiring for any other device through this control box. Ensure the voltage and phase of the incoming power agrees with the label on the top of the VFD box and fan.

Be certain the power is off when wiring to the control box. Failure to do so may result in electrical shock, death, or serious injury.

1PH WIRING DETAILS

Figure 22



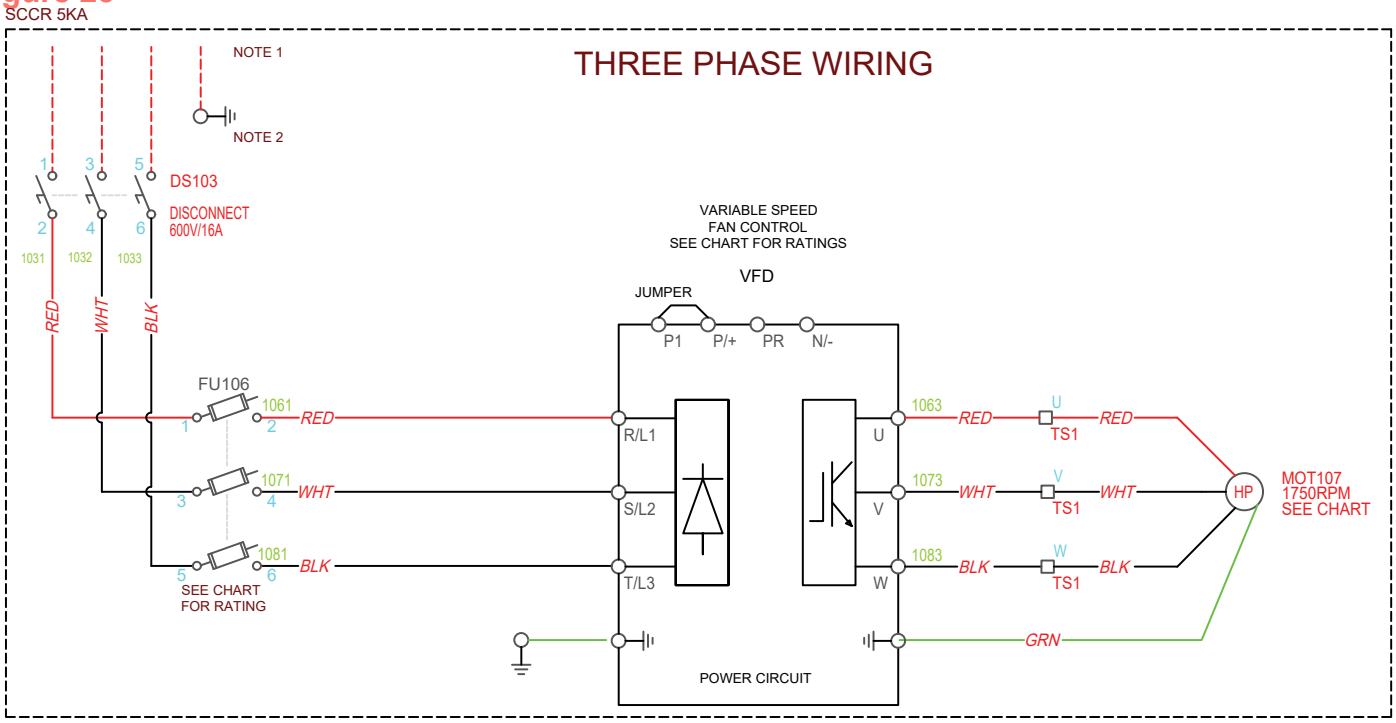
NOTICE

Terminals will accept stranded wire only.

SIZING CHART			
	6022500 6022504 6022508 6022512	**6022501 6022505 6022509 6022513**	**6022520 6022542 6022454 6022517**
VOLTAGE	120V/1PH/50 60HZ	230V/1PH/50 60HZ	230V/1PH/50 60HZ
FLA	19.3A	12.6A	13.0A
FUSE	KTKR20	KTKR15	KTKR10
MOTOR	0.8kW, 6 FLA@ 230V/60HZ	0.8kW, 6 FLA@ 230V/60Hz	1.2kW, 5.6 FLA@ 230V/60HZ
VFD	100-120/1PH 1HP/0.75KW/4.2A	200-240/3PH 3HP/2KW/10A	200-240/3PH 3HP/2KW/10.0A
O/L	4.2	6.0	5.6

3PH WIRING DETAILS

Figure 23

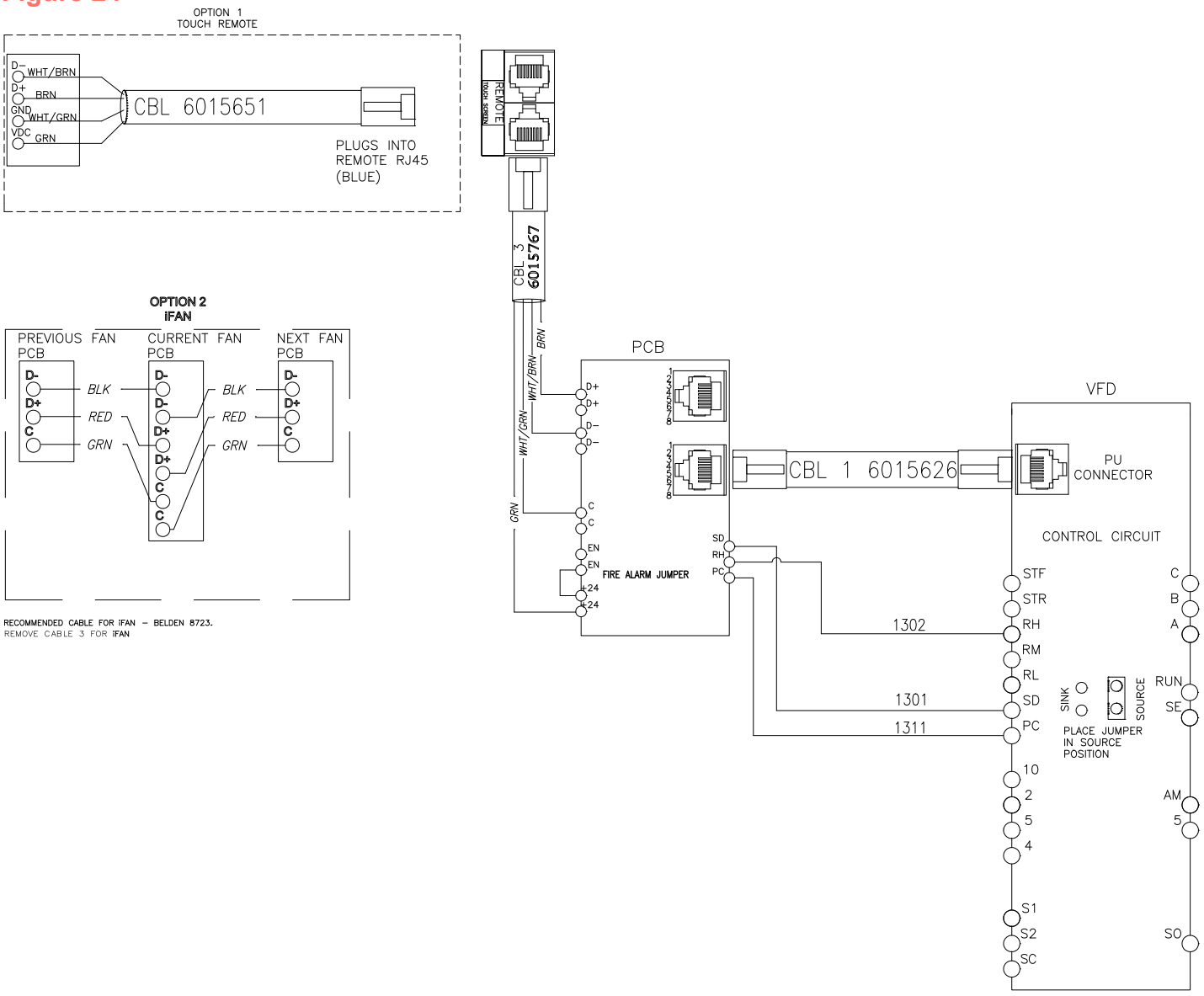


SIZING CHART				
	6022502 6022506 6022510 6022514	**6022503 6022507 6022511 6022515**	**6022540 6022543 6022546 6022518**	**6022541 6022544 6022547 6022519**
VOLTAGE	230/3PH/50 60HZ	460V/3PH/50 60HZ	230V/3PH/50 60HZ	460V/3PH/50 60HZ
FLA	7.3A	3.8A	7.5A	3.4A
FUSE	KTKR10	KTKR5	KTKR10	KTKR5
MOTOR	0.8kW, 6.0 A@FLA 230V/60HZ	0.8kW, 6.0 FLA@ 460V/60HZ	1.2kW, 5.6AFLA @ 230V/60HZ	1.2KW, 2.8 FLA@ 460V/60HZ
VFD	200-240/3PH/1PH 3HP/2KW/10.0A	380-480/3PH 3HP/2KW/5.0A	200-240/3HP 3HP/2KW/10.0A	380-480/3PH 3HP/2KW/5.0A
O/L	6.0	3.0	5.6	2.8

- Field wiring is to be a minimum 14AWG, 600V, 90°C.
- The safety ground must be connected to the earth ground rod via the plant ground or bus bar. Grounding points must comply with national and local industrial safety regulations and/or electrical codes.

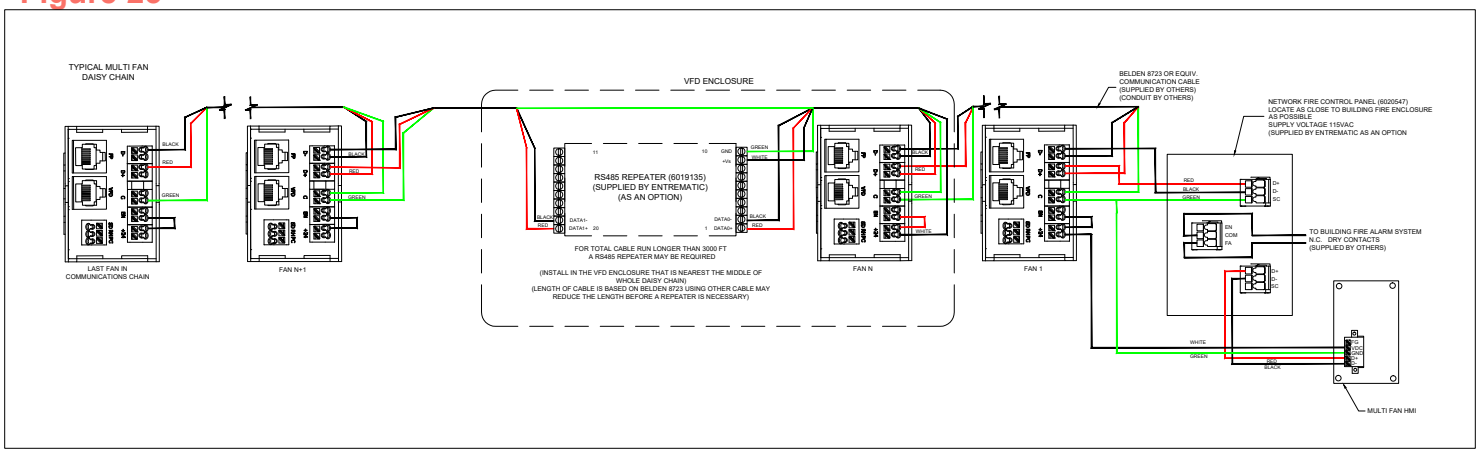
VARIABLE FREQUENCY DRIVE I/O

Figure 24



MULTI-FAN WIRING DETAILS — OPTIONAL

Figure 25



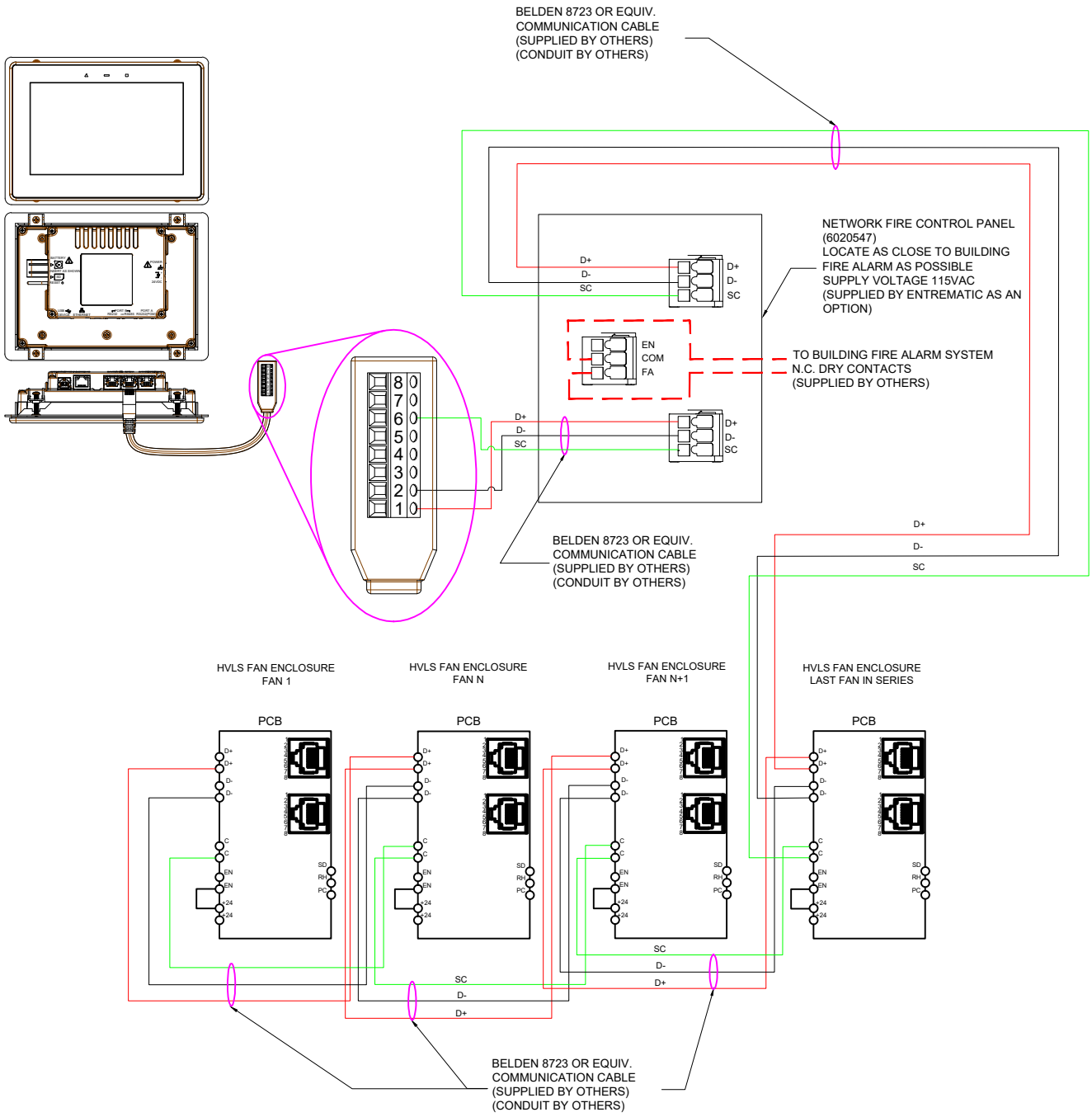
- The recommended cable for multi-fan and iFAN is Belden 8723

Download this drawing

Click here to view this drawing.

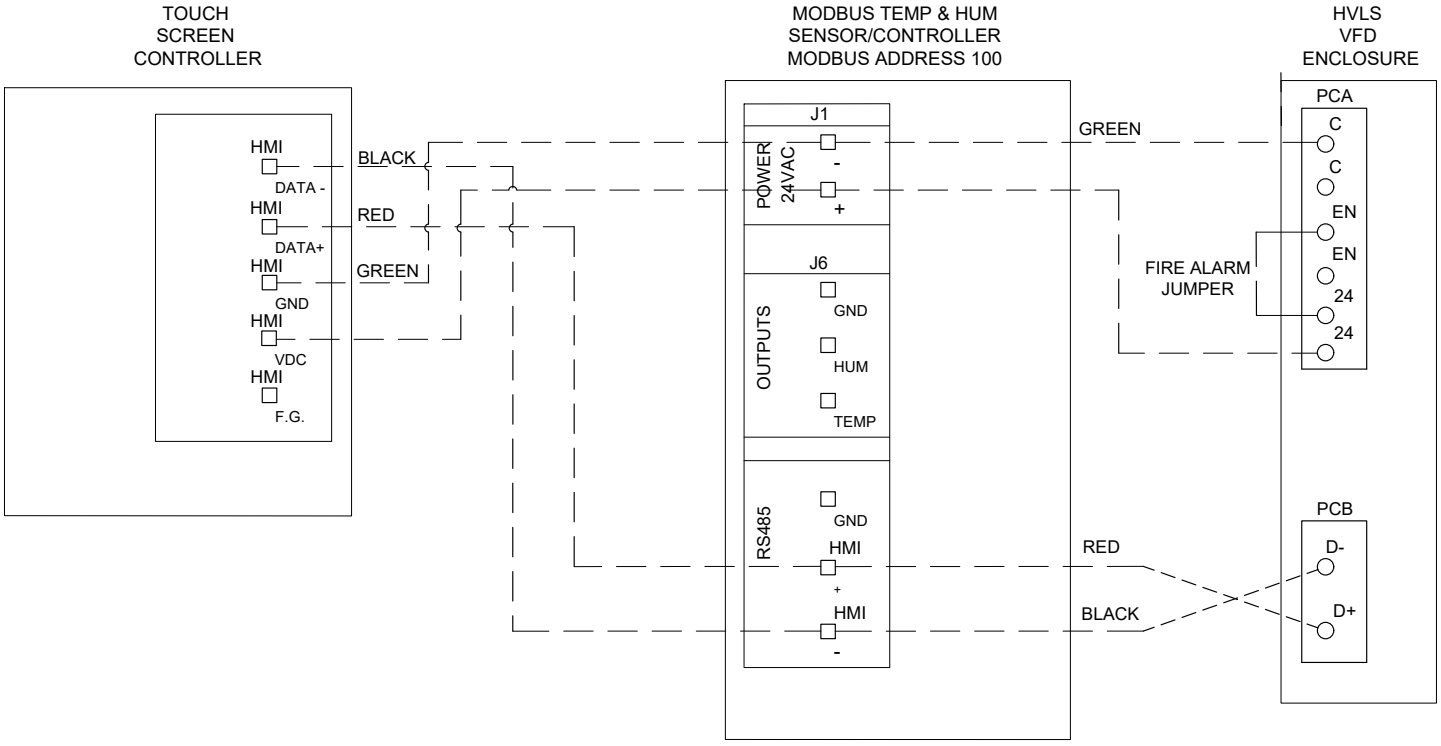
IFAN WIRING DETAILS

Figure 26



TEMPERATURE/HUMIDITY CONTROL WIRING DETAILS — OPTIONAL

Figure 27



FIRE CONTROL SYSTEM FAN SHUTDOWN — OPTIONAL

This fan includes a fire alarm option. This option allows the fan to be shut down by the fire control system in case of an emergency.

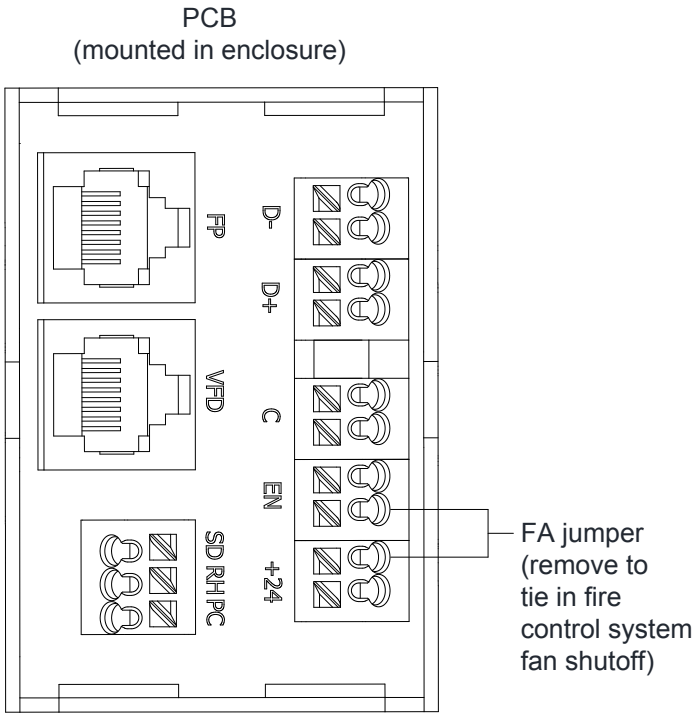
NOTICE

Ensure the fire alarm jumper is in place or the building fire control system is connected and the jumper removed.

NOTICE

The normally closed (NC) contacts must be dry contacts. They open in the event of an active alarm.

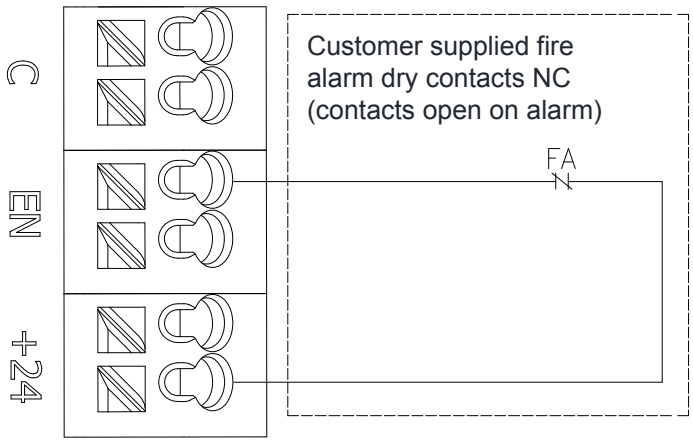
Figure 28



ENABLE THE FIRE CONTROL SHUTDOWN

The fire control system fan shutdown option is not enabled when shipped. To enable the shutdown option: 1

1. Remove the jumper between enable (EN) and (24).
2. Replace the jumper with a set of dry, normally closed contacts. See the schematics for the optional fire control panels. See 1PH Wiring Details on page 32.



TEST THE FIRE CONTROL SHUTDOWN SYSTEM

To test the fire control system fan shutdown operation:

1. Remove the wire from the NC contact at the building fire control panel. See **Figure 24**.

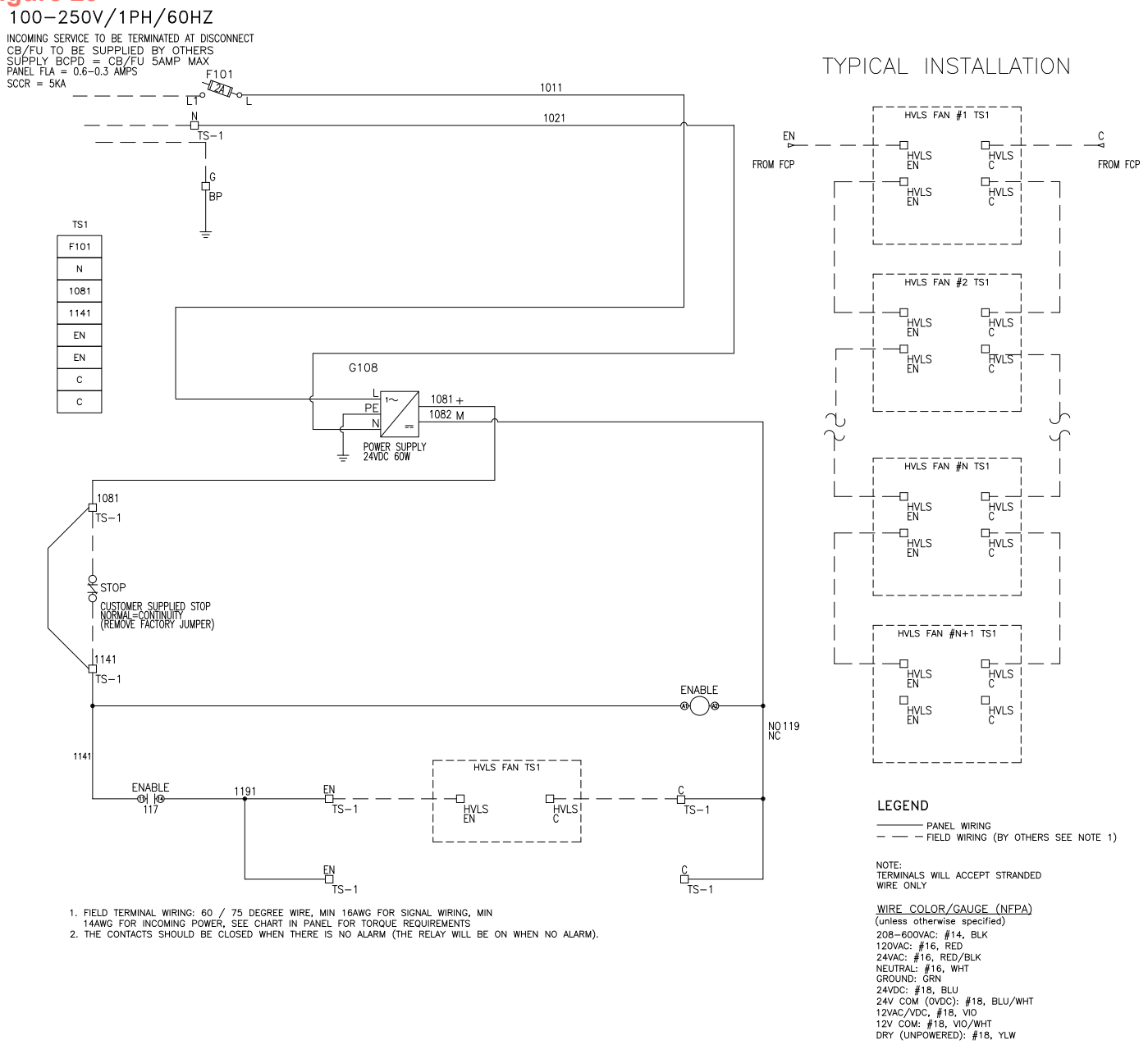
   The fan should coast to a stop. To enable the fire control system fan shutdown option,:

> **NOTICE**
>
> *If you leave the jumper is left installed, the fan will not shut down due to fire control system contacts.*

.

FIRE CONTROL SYSTEM FAN SHUTDOWN — STANDARD INSTALLATION (6015291)

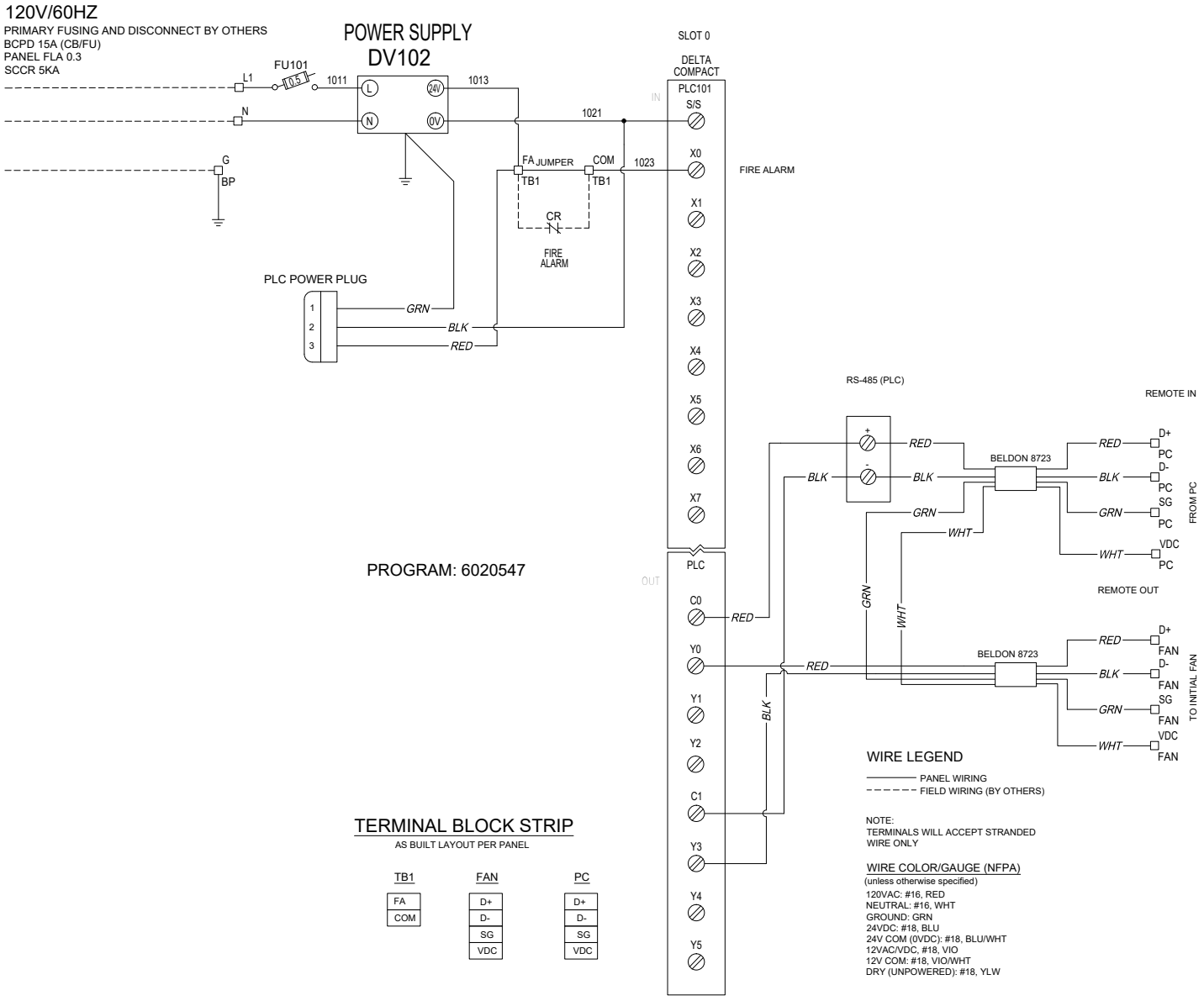
Figure 29



1. FIELD TERMINAL WIRING: 60 / 75 DEGREE WIRE, MIN 16AWG FOR SIGNAL WIRING, MIN 14AWG FOR INCOMING POWER, SEE CHART IN PANEL FOR TORQUE REQUIREMENTS
2. THE CONTACTS SHOULD BE CLOSED WHEN THERE IS NO ALARM (THE RELAY WILL BE ON WHEN NO ALARM).

FIRE CONTROL SYSTEM FAN SHUTDOWN — NETWORK INSTALLATION (6020547)

Figure 30



550-600V SUPPLY WIRING DETAILS — OPTIONAL

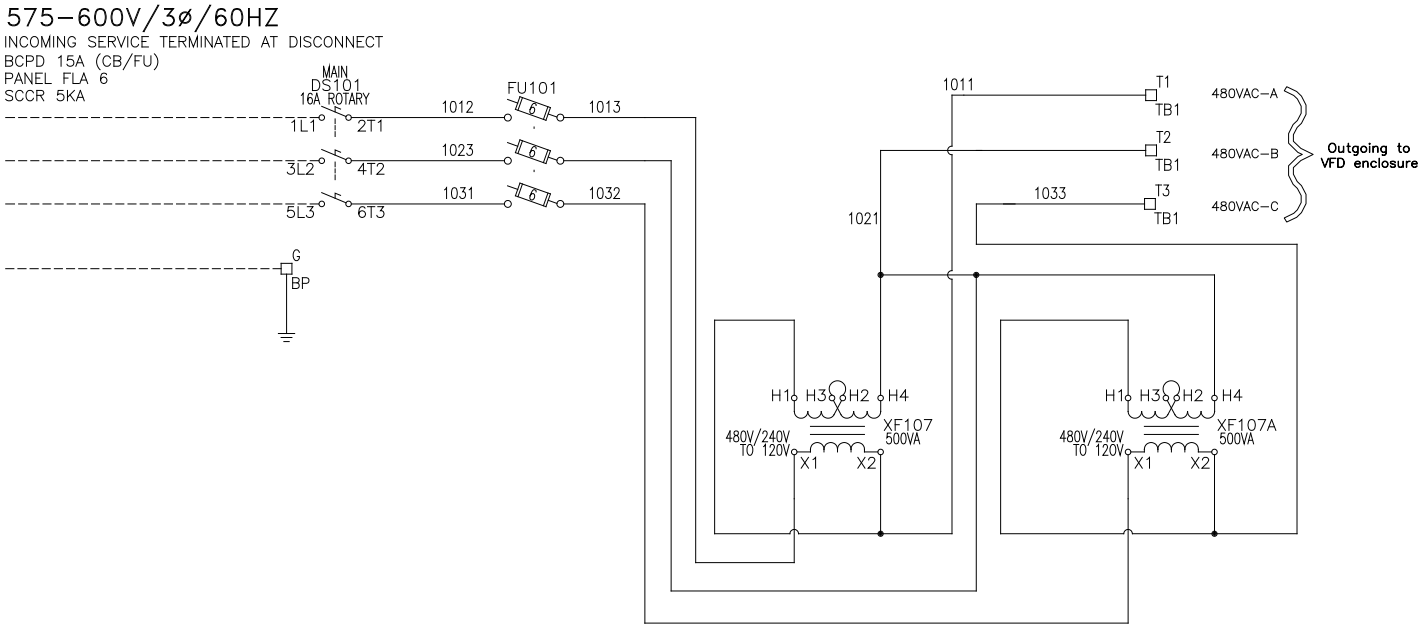
To connect a 480V fan to a 550-600V building supply, you must install a step down transformer assembly (6017277) between the power supply and the VFD enclosure. Wiring (by others) must be 600V rated 14 awg. All wiring must be installed in accordance with any national, state or local code requirements.

NOTICE

The transformer assembly is rated for one single fan load only. Each fan must have its own step down transformer assembly (6017277).

1. Locate and mount the step down transformer outside the blade arc and near the VFD transformer assembly.
2. Route the supply power from the building source to the step down transformer.
3. Follow Install Motor Cover on page 28 using the power from the step down transformer as the power source.

Figure 31



HMI SETUP

The Human Machine Interface (HMI) program controls up to a total of six fans. The program also allows the use of two types of accessories:

- Temperature Control
- High Wind Shutdown (anemometer)

Both accessories can be used with a single fan configuration. If the program is configured for multiple fans, you can only use the anemometer. Once you complete the installation, the initial touchscreen control prompts you to configure your fan system. Follow the prompts on the HMI screen to complete these tasks.

DEFINE THE NUMBER OF FANS

1. Press the number of fans (1-6) the HMI will control. See **Figure 33.**

   The number you selected changes to green.

SET THE DIAMETER OF THE FANS

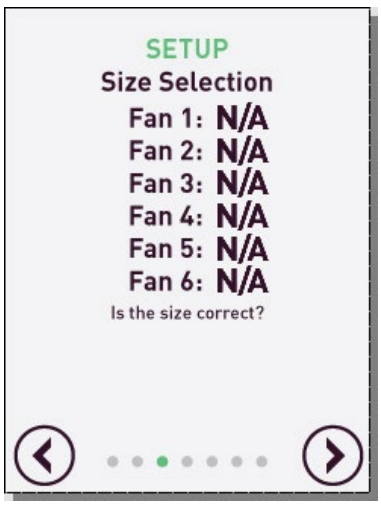
> **NOTICE**
>
> *The fan size is on the front of the VFD enclosure, the fan shipping container, and the blade shipping carton.*

1. Press the left or right arrow to select the fan for which you want to set the diameter.
2. Press the up or down arrow to select the diameter for the selected fan. See **Figure 34**.
3. Repeat steps 1 and 2 until you have set the diameter for all fans, and then advance to the next screen.
4. Verify that the sizes displayed are correct. If so, press the right arrow.

Figure 33

Figure 34

Figure 35



ENABLE THE TEMPERATURE CONTROL OPTION (OPTIONAL)

NOTICE

The Temperature Control options require the use of an optional temperature sensor (Std: 6013861 or 4X: 6016700). The 4X option should only be used if the temp sensor part number 6016700 is being used.

If you chose a single fan for the Fan Quantity on the first screen, the Enable Temperature Control screen displays.

1. Press **Yes** to enable the temperature control.

   OR

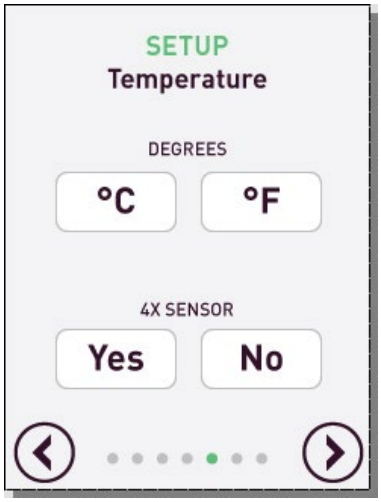
   Press **No** to disable.

2. Press the right arrow to continue. See Figure 32.

   If you enable Temperature control, the temperature settings screen

Figure 32

Figure 33



SET THE TEMPERATURE SETTINGS

1. Press **C** for Centigrade or **F** for Fahrenheit.
2. Press **Yes** if you are using a NEMA 4X temperature sensor; otherwise, press **No**. See Figure 33.

ENABLE THE WIND CONTROL OPTION

NOTICE

The Wind Control option requires the use of an anemometer supplied by 4FRONT (6020770).

Figure 34

1. Press **YES** to enable the wind shutdown option; otherwise press **NO**.

   The option you selected changes to green. See Figure 34.

SET THE UNIT OF WIND SPEED

> ***NOTICE***
>
> *The maximum speed and duration is set at the factory. If you want to change these properties, you must contact the factory.*

- MPH for miles per hour
- KM/H for kilometers per hour
- Knots for nautical miles per hour
- M/S for meters per second

The dot next to your selection changes to green. See Figure 35.

Figure 35

CORRECT ERRORS DURING HMI CONFIGURATION

If you make an error when configuring the HMI program, you can go back to the Main setup screen to correct it. To access the Main screen:

1. Press the menu icon in the bottom left-hand corner of the screen.
2. Press the setup icon.
3. Enter the passcode (default 1111).

   The setup screen displays.

POST CONFIGURATION TASKS

After you configure the HMI program for your location, you should:

1. Operate the fan using the Operating Instructions on page 49.
2. Check the fan for proper rotation direction, stability, and noise level.
3. Train authorized personnel how to use the fan using the Operating Instructions on page 49.

TEMPERATURE CONTROL INSTALLATION — OPTIONAL

1. Mount the temperature control unit to the factory supplied junction box.

   The junction box is inside the building 60” above the floor.

   See Temperature/Humidity Control Wiring Details — Optional on page 38.

WIND CONTROL INSTALLATION — OPTIONAL

NOTICE

The Wind Control option requires the use of an anemometer supplied by 4FRONT (6020770).

1. Attach a 3/4” schedule 40 pipe (1.06” dia.) or 1” dia. structural pipe fitting to the outside of the structure so that it protrudes no less than 24” above the highest peak of the structure.

   This hardware is supplied by others.

2. Mount the wind speed/direction sensor to the pipe.

   You can pass the data cable through the center of the mounting pipe or the outside of the mounting pipe.

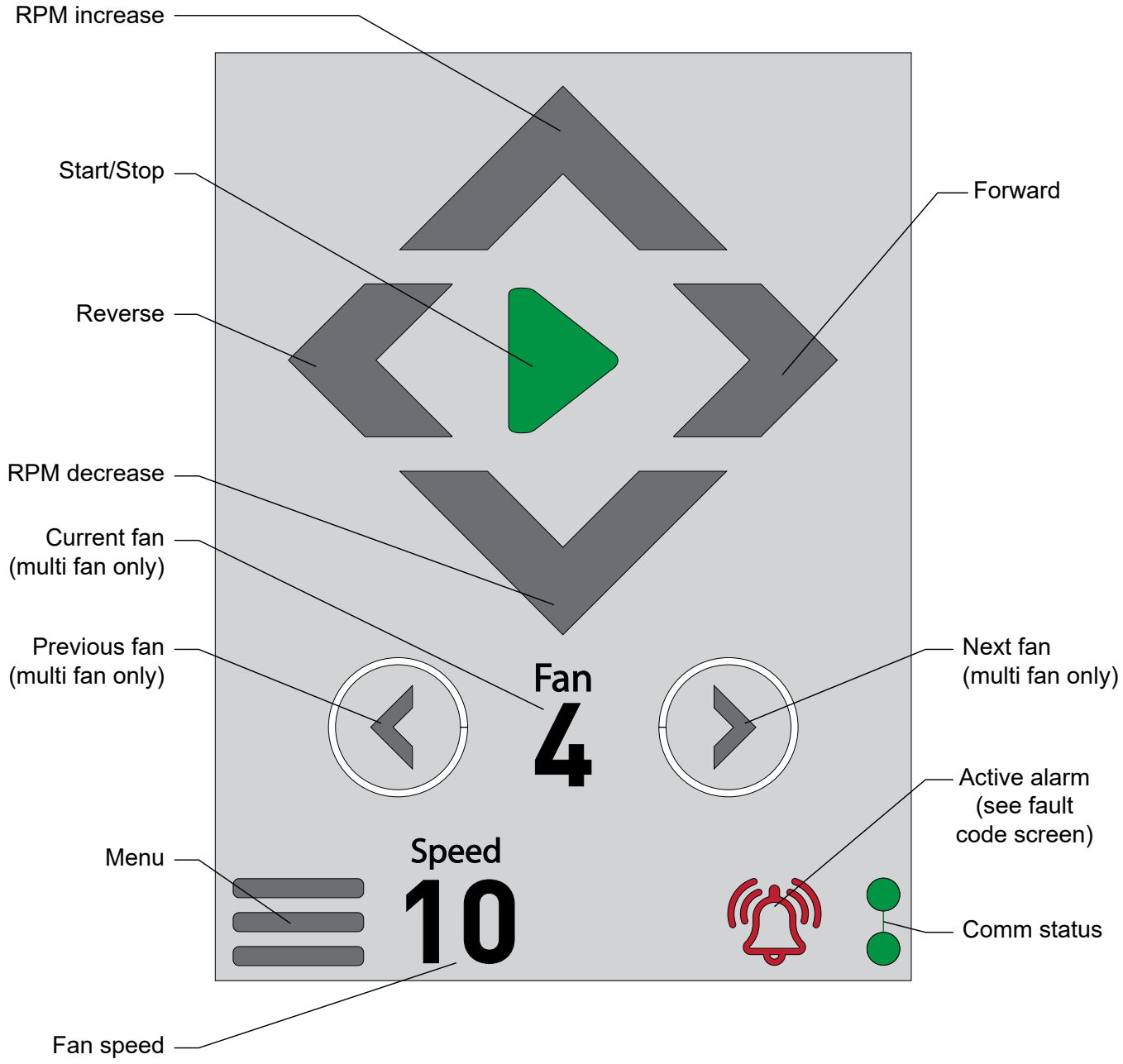
3. Route the data cable and terminate it at the VFD box.

   If a longer data cable is required, use Belden 8723 or equivalent to extend the length.

OPERATING INSTRUCTIONS

FAN CONTROL SCREEN

Figure 36



⚠WARNING

Before operating the industrial fan, read and follow the Safety Practices, Warnings and Operating Instructions in this manual. Use by untrained personnel could result in death or serious injury.

VERIFY PRIOR TO OPERATION

Before operating the fan, verify the following:

- The voltage and phase are correct
- The clearance from obstructions matches the requirements
- All safety cables are present and properly installed
- All fasteners are properly torqued
- No personnel are in the movement area

LOGIN SCREEN

If the passcode has been enabled, you must login before operating the fan.

START THE FAN

If you have enabled using a passcode, you must log in before operating the fan.

The default passcode is 1111.

NORMAL FAN OPERATION

1. Verify communication status in the bottom right-hand corner is green.

   If it is not, communications is not working properly.

Figure 37

2. Press the **Start** button, and then select the beginning fan rotation direction. See **Figure 37**.
3. Set the desired speed by pressing either **RPM increase** or **RPM decrease** until your desired speed displays.

   Maximum speed is 10.

   Minimum speed is 1.

CHANGE THE FAN DIRECTION

It is not necessary to stop the fan to change its direction,

- Select **Forward** or **Reverse** to change the fan direction.

DIAGNOSTIC SCREEN

The Diagnostic screen shows the following information. See **Figure 382**.

- Service Provider Information
  - Contact this provider for all fan service issues.
- Fan Information
  - VFD serial number
  - Motor sped (x10)
  - Motor current (x10)
  - Fan alarm, if the alarm is present
  - Fire alarm, if the alarm is present
  - Wind alarm, if enabled and present

Figure 38

BUTTON INFORMATION

To navigate back to the previous screen, press the green return arrow.

- The Wind button displays the Wind Control screen.
- The Fault Code button displays the Active Alarm screen.
- The Temp button displays the Current Temperature screen.
- The Passcode button displays the Passcode screen.
- The Setup button displays the Setup screen.

FAULT CODE

If a fault code alarm displays, press the Fault Codes button to display the fault codes. See Figure 39.

If the fan is currently under a Fault Code, the Active Default displays in the Active Fault Code screen.

If the fan is currently under a Fault Code, the Active Fault Code number that caused the fault displays in the top right-hand corner of the screen. To resolve the Fault Code:

1. Press the **Fault Code Directory** button to display a description of the Fault Code.
2. Match the number with the error code in the directory.
3. Resolve the issue causing the fault.
4. Press the **Reset** button to allow the fan to operate.

   The last four faults display in the Fault History.

Figure 39

FAULT CODE DEFINITIONS

CODE	DESCRIPTION
0	No Alarm/Fan OK
16	Overcurrent during acceleration
17	Overcurrent at speed
18	Overcurrent during deceleration/stop
32	Overvoltage during acceleration
33	Overvoltage at speed
34	Overvoltage during deceleration/stop
48	Inverter overload
49	Motor overload
82	Input phase loss
96	Stall prevention
112	Brake transistor alarm
128	Ground fault overcurrent at start
129	Output phase loss
144	External thermal relay operation
145	PTC thermistor operation
176	Parameter storage device fault
177	PU disconnection
178	Retry count excess
192	CPU fault
196	Output current detection value exceeded
197	Inrush current limit circuit fault
199	Analog input fault
201	Safety circuit fault
245	CPU fault

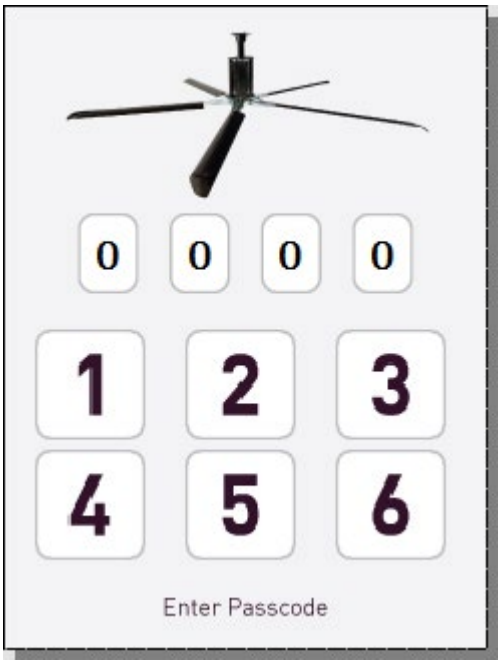
PASSCODE PROTECTION

You can assign a passcode to the remote to prevent unauthorized use.

1. Press the **Menu** button on the main screen.
2. Press the **Passcode** button on the Diagnostic screen.
3. Type your passcode.

> **NOTICE**
>
> *The default passcode is 1111. If you have customized your passcode, enter your customized passcode.*

Figure 40



ENABLE YOUR PASSCODE

By default the passcode is disabled.

Press the unlocked padlock icon to enable the passcode entry requirement.

DISABLE THE PASSCODE

Press the locked padlock icon to disable the passcode entry requirement.

UPDATE YOUR PASSCODE

1. Enter your new passcode using the numeric keyboard.
2. Press the Update Passcode button. See **Figure 41.**

   When the passcode is enabled, the system automatically logs you out after two minutes.

Figure 41

MULTI-FAN CONTROL — OPTIONAL

Press the **Previous** or **Next** fan buttons until you reach the fan you want to control. See **Figure 42**.

The All option lets you control all of the fans at the same time.

Figure 42

TEMPERATURE CONTROL — OPTIONAL

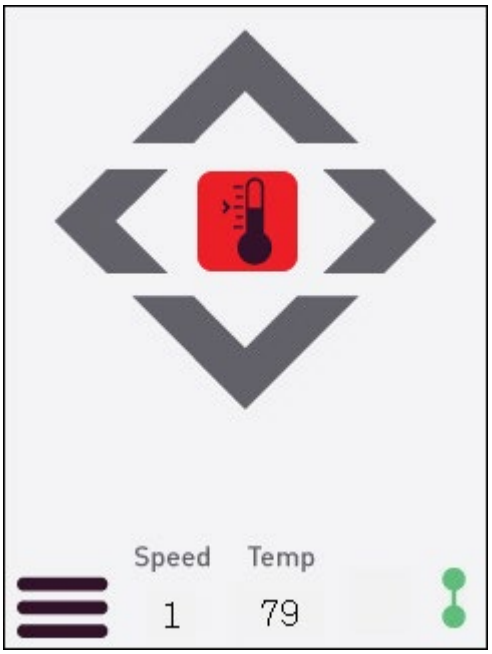
To enable temperature control:

1. Cycle through Start/Stop/Temp control until you reach Temp. See **Figure 43**.
2. To access the temperature settings screen from the main menu, press the menu button, and then press the Temp button.
3. Type the temperature to start the fan automatically. See **Figure 44**.

   At this temperature, the fan automatically starts at speed 2.
4. Type a value to increment the temperature for the next speed setting.

   This value is added to the start temperature you entered in the previous step and sets the temperatures at which the fan switches to speeds 4, 6, 8, and 10.

Figure 43



EXAMPLE

If you enter 70° as the start temperature and 3 as the increment, the fan automatically starts at speed 2 when the temperature is 70°.

When the temperature reaches 73°, the fan switches to speed 4.

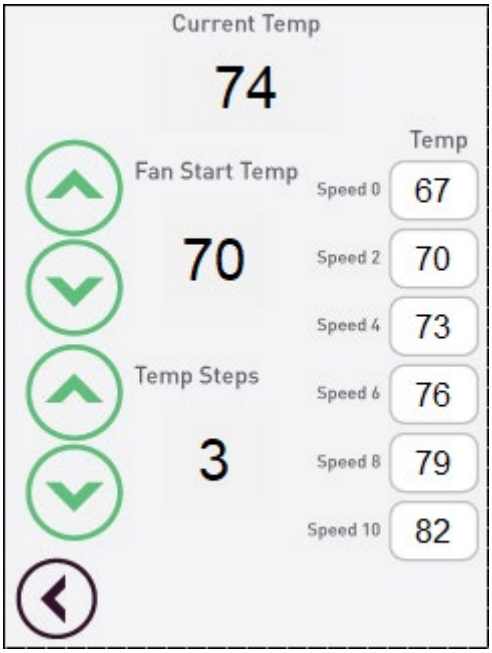
When the temperature reaches 76°, the fan switches to speed 6.

The fan decreases in speed as the temperature decreases until the temperature falls below the start point. When the temperature falls below the start point minus the increment value, the fan automatically shuts off. The fan stops on its own.

DISABLE THE TEMPERATURE CONTROL

To disable temperature control, cycle through Start/Stop/Temp control.

Figure 44



PLANNED MAINTENANCE

⚠DANGER

Before service, inspection, or cleaning make certain that the power is disconnected and properly locked out.

⚠WARNING

Before servicing the fan, read Operational Safety on page 8 and Operating Instructions on page 49. Failure to do so could result in death or serious injury.

To ensure the continued proper operation of your fan, perform the following planned maintenance procedures.

ANNUAL MAINTENANCE

1. Inspect the control panel for loose connections and tighten as required.
2. Use dry air (shop air) blow out debris from fan motor cooling fan.

NOTICE

The fan motor cooling fan is located on the top of the powerhead motor.

3. Inspect the motor for leaks.
    a. If leaks are present, contact your distributor.
4. Inspect the mounting hardware and tighten as required.
    a. Torque to 44-48 ft-lbs.
5. Inspect the safety and guy wires for chaffing or wear.
    a. Ensure the turnbuckle nut is secure.
    b. Replace the nut as required.
6. Inspect the guy wires for tension.

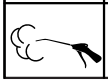
a. Re-tighten as required.

7. Clean fan blades as required.

   a. Use a soft dry cloth.

   b. If necessary, use a mild detergent to clean surfaces.

Figure 45

Legend	
Symbol	**Description**
	**Cleaning** (Frequency - Quarterly)
	**Visually Inspect** (Replace Damaged Or Worn)
	**Blow with Compressed Air** (Frequency - Annually)

TROUBLESHOOTING GUIDE

⚠WARNING

Before servicing the industrial fan, read and follow Operational Safety on page 8 and Operating Instructions on page 49. Failure to do so could result in death or serious injury.

⚠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.

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

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.

The functions of the fan are controlled by a Variable Frequency Drive (VFD). Error codes display on the touchscreen Fault Code screen.

Use the following table to find the condition that most closely matches your situation and make the recommended adjustments.

PROBLEM	POSSIBLE CAUSE	SOLUTION
The fan does not operate.	No power to the control panel.	Ensure the disconnect is in the ON position Check for primary power at the terminals.
	Primary fuse(s) are blown.	Replace fuse(s).
Fan does not operate, but the control panel has power.	There is an obstruction preventing movement.	Check the fan unit. Ensure there are no obstructions preventing movement.
	The remote is not properly connected.	Check the connections between the remote and the VFD.
	The VFD defaulted.	Check for the VFD fault. Check theVariable Frequency Drive Fault Codes on page 61.
	The fire circuit is open.	A Red fire alarm indicator displays. The fire alarm is active if the fire circuit is open. Review the building fire system and reset it, if necessary.
The fan is operating, but turning in the wrong direction.	Wire sequence	Switch two phases of the output wiring from the VFD to the motor.
	Intermittent connectivity inside the remote control panel.	Make sure the connections inside the remote control touchscreen are secure.
The fan is operating, but shows excessive wobble.	The guy wires are not tensioned properly.	Re-tension the guy wires. See Install the VFD Box on page 26.
	A winglet is missing.	Replace the winglet.
The fan is generating a ticking noise and the tick increases with speed.	The blade bolts are not properly tightened.	Loose the blade nuts, Support the blade level horizontally before torquing the bolts to 24-28 ft-lbs.

VARIABLE FREQUENCY DRIVE FAULT CODES

The Variable Frequency Drive (VFD) are shown on the VFD display.

Figure 46

	Operation Panel Indication		Name
Error message	E - - -	E---	Faults history
	HOLd	HOLD	Operation panel lock
	LOCd	LOCD	Password locked
	Er 1 to Er4	Er1 to 4	Parameter write error
	Err.	Err.	Inverter reset
Warning	OL	OL	Stall prevention (overcurrent)
	oL	oL	Stall prevention (overvoltage)
	rb	RB	Regenerative brake pre-alarm
	TH	TH	Electronic thermal relay function pre-alarm
	PS	PS	PU stop
	MT	MT	Maintenance signal output
	UU	UV	Undervoltage
	SA	SA	Safety stop
Alarm	Fn	FN	Fan alarm
Fault	E.OC1	E.OC1	Overcurrent trip during acceleration
	E.OC2	E.OC2	Overcurrent trip during constant speed
	E.OC3	E.OC3	Overcurrent trip during deceleration or stop
	E.OU1	E.OV1	Regenerative overvoltage trip during acceleration
	E.OU2	E.OV2	Regenerative overvoltage trip during constant speed
	E.OU3	E.OV3	Regenerative overvoltage trip during deceleration or stop

	Operation Panel Indication		Name
Fault	E.THT	E.THT	Inverter overload trip (electronic thermal O/L relay function)
	E.THM	E.THM	Motor overload trip (electronic thermal O/L relay function)
	E.FIN	E.FIN	Heatsink overheat
	E.ILF	E.ILF *	Input phase loss
	E.OLT	E.OLT	Stall prevention stop
	E. BE	E. BE	Brake transistor alarm detection
	E. GF	E.GF	Output side earth (ground) fault overcurrent at start
	E. LF	E.LF	Output phase loss
	E.OHT	E.OHT	External thermal relay operation
	E.PTC	E.PTC*	PTC thermistor operation
	E. PE	E.PE	Parameter storage device fault
	E.PUE	E.PUE	PU disconnection
	E.RET	E.RET	Retry count excess
	E. 5	E.5	CPU fault
	E.CPU	E.CPU	
	E.CDO	E.CDO*	Output current detection value exceeded
	E.IOH	E.IOH *	Inrush current limit circuit fault
	E.AIE	E.AIE *	Analog input fault
	E.SAF	E.SAF *	Safety circuit fault

COMPONENTS AND SPECIFICATIONS

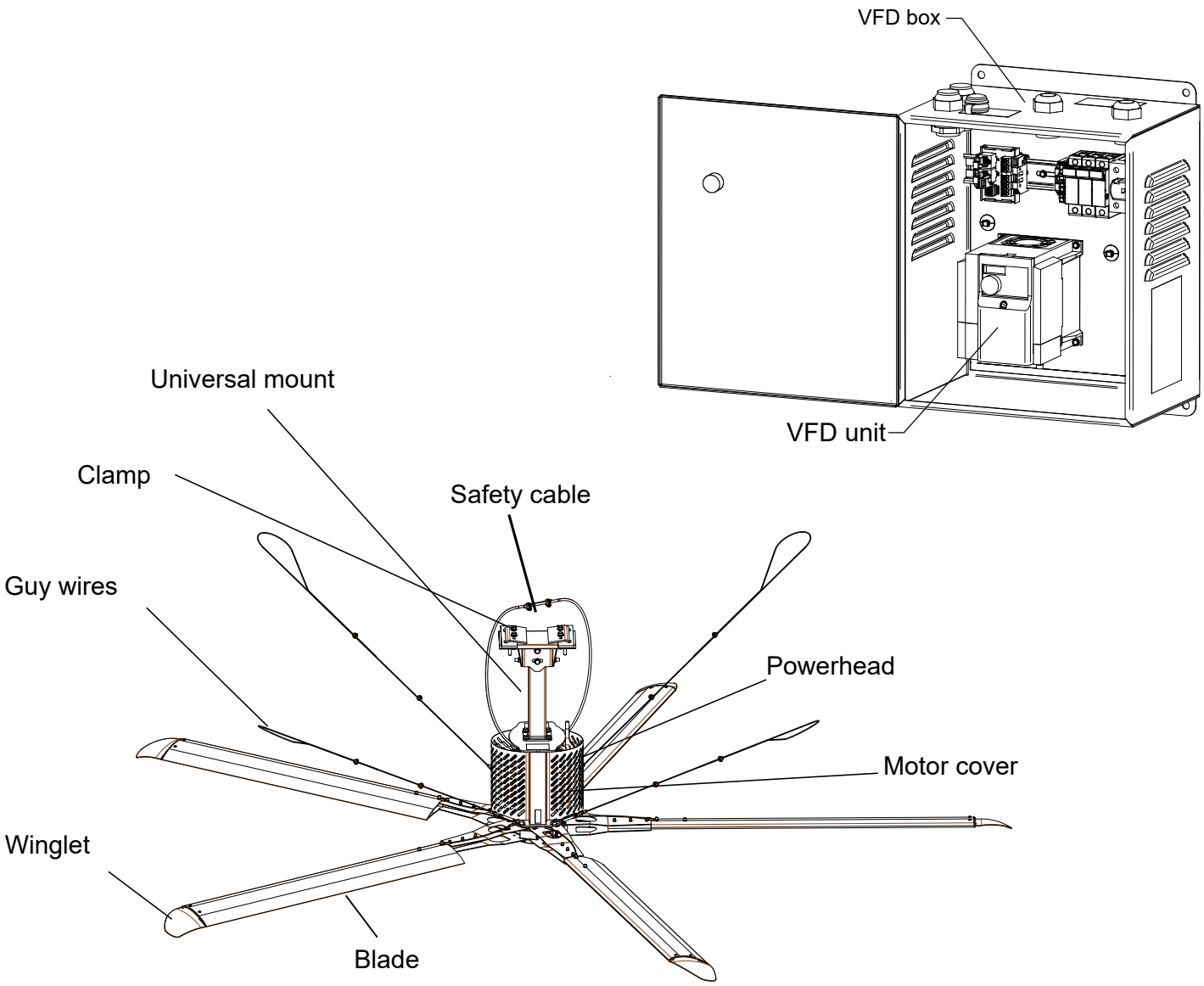
VFD BOX

- NEMA 1
- Solid State VFD (Variable Frequency Drive)
- 120VAC, 1PH before the 208-240VAC
- 208-240VAC 1PH, 208 – 480 VAC 3PH
- Line reactor (where required)
- Class CC fuses
- UL and UL-C listed panel and components
- Power disconnect

MOTOR

- IP65 DC Brushless Direct Drive Motor
- 0.8kW or 1.2kW
- Continuous duty three phase

Figure 47


VFD box
VFD unit
Universal mount
Clamp
Safety cable
Guy wires
Powerhead
Motor cover
Winglet
Blade

PARTS LIST

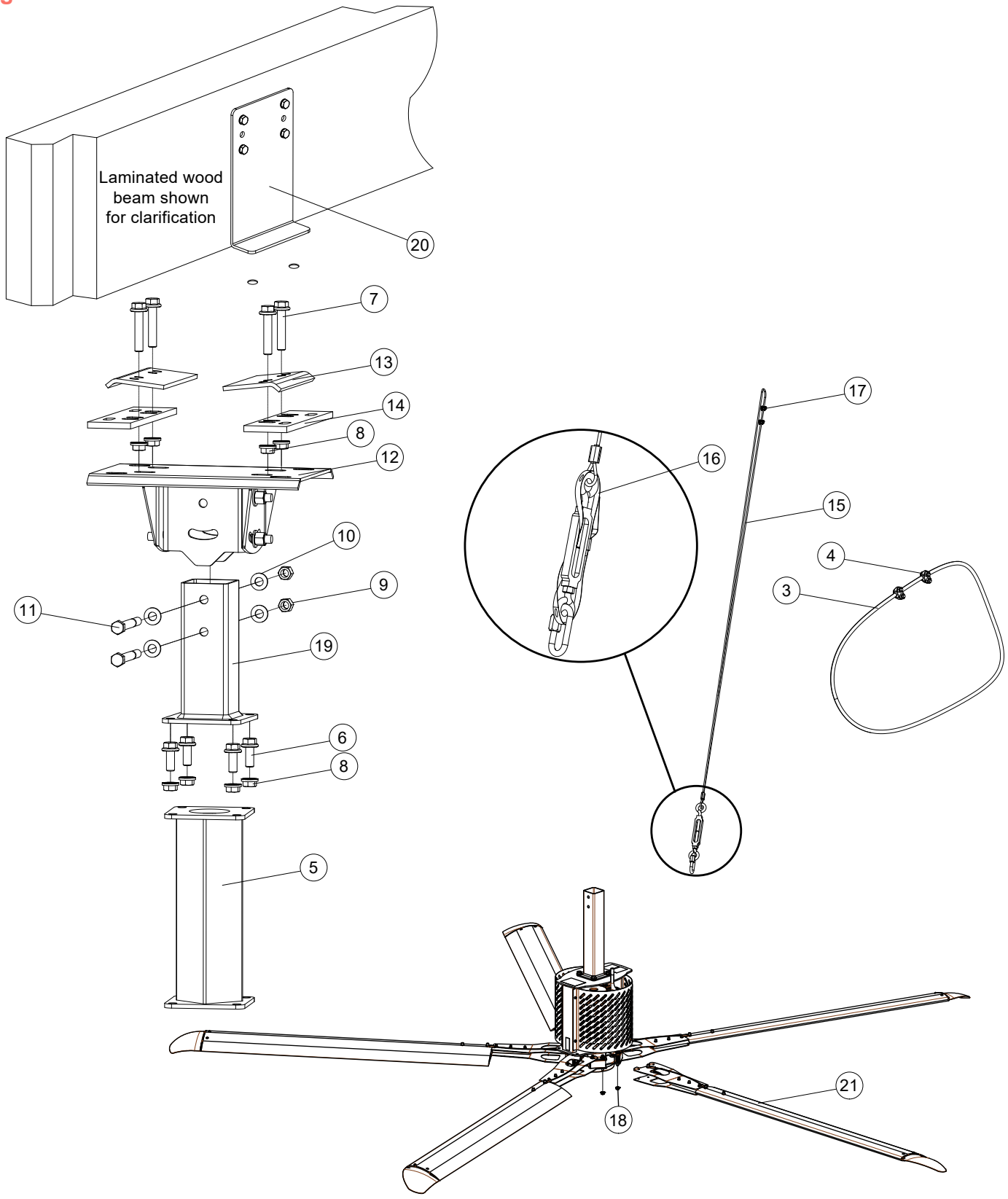
DANGER

To ensure proper function, durability and safety of the product, only replacement parts that do not interfere with the safe, normal operation of the product must be used.

Incorporation of replacement parts or modifications that weaken the structural integrity of the product, or in any way alter the product from its normal working condition at the time of purchase from 4Front could result in product malfunction, breakdown, premature wear, death or serious injury.

FAN

Figure 48



NOTICE

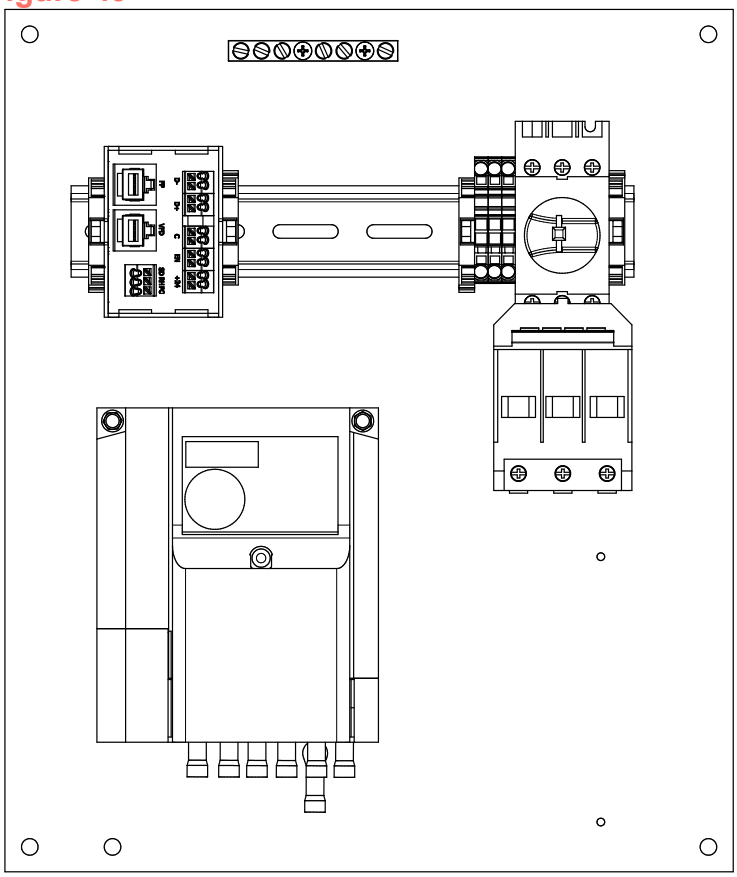
For corrosion resistant fans, consult factory for parts.

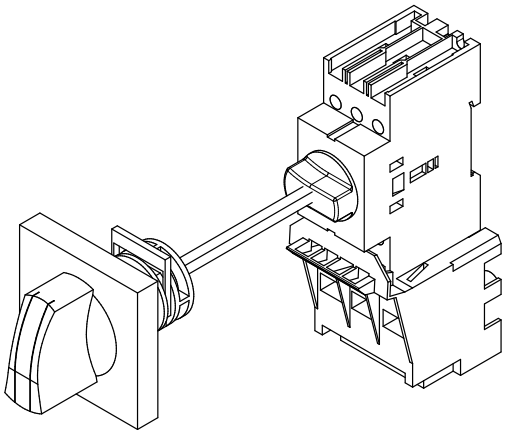
ITEM	QUANTITY	DESCRIPTION	PART NUMBER
1	1	DD Powerhead, 8/10/12/14 Low	6021600
		DD Powerhead, 16/18/20/24 Low	6021602
		DD Powerhead, 8/10/12/14 High	6021601
		DD Powerhead, 6/18/20/24 High	6021603
2	1	Silver Motor Cover	6023264
		Black Motor Cover	6023019
3	1	Safety Cable - 170" long - 6", 1', 2' ext	6014884
		Safety Cable - 242" long - 3', 4', 5' ext	6014887
		Safety Cable - 314' long - 6', 7', 8' ext	6014890
		Safety Cable - 386" long - 9', 10', 11', 12' ext	6015864
4	2	Cable clamp 1/4" PLD	441103
5	1	HVLS Ext Mnt 12"- optional	6015865
		HVLS Ext Mnt 24"- optional	6015866
		HVLS Ext Mnt 36"- optional	6015867
		HVLS Ext Mnt 48"- optional	6015870
		HVLS Ext Mnt 60"- optional	6015869
		HVLS Ext Mnt 72"- optional	6015870
		HVLS Ext Mnt 84"- optional	6015871
		HVLS Ext Mnt 96"- optional	6015872
		HVLS Ext Mnt 108"- optional	6015873
		HVLS Ext Mnt 120"- optional	6015874
		HVLS Ext Mnt 132"- optional	6015875
		HVLS Ext Mnt 144" - optional	6015876
6	4	1/2-13UNV x 1 1/4" LG Ser FLG	6015851
7	4	1/2-13UNC x 2 1/2" LG Ser FLg	6015852
8	8	Nut, HEX FLG, SER, 1/2-13UNC	6015853
9	2	LN 1/2 Nylon Insert Locknut	214505
10	4	PW - 1/2" ID - SAE	234260
11	2	HHB 1/2-13UNC x 4 1/2 LG GRD5	6013220
12	1	Pivot, Extra Wide Hanger Bracket Mount	6014914
		Pivot, Hanger Bracket Mount	6016400

ITEM	QUANTITY	DESCRIPTION	PART NUMBER
13	2	Plate Hanger Bracket Clamp	6014953
14	2	Plate, Clamp Spacer	6014954
15	1	Guy Wire Kit - 6FT, 7FT, 8FT (includes items 16 & 17)	6014914
		Guy Wire Kit - 9FT, 10FT EXT (includes items 16 & 17)	6015678
16	4	Secondary Strap Tie, Ball Lock	6015265
17	8	1/8" Wire Cable Clamp	6010900
18	20	Nut, Hex Flg, SER, 3/8-16UNF	6015118
19	1	Fan Mount Extension - STD	6022261
20	1	Laminated Wood Beam Bracket Set - Optional	6018028
21	5	8' Black Blade Assy	6020503
		10' Black Blade Assy	6020504
		12' Black Blade Assy	6020505
		14' Black Blade Assy	6020506
		16' Black Blade Assy	6020507
		18' Black Blade Assy	6050508
		20' Black Blade Assy	6020509
		22' Black Blade Assy	6020510
		24' Black Blade Assy	6020511
		8' Clear Blade Assy	6020512
		10' Clear Blade Assy	6020513
		12' Clear Blade Assy	6020514
		14' Clear Blade Assy	6020515
		16' Clear Blade Assy	6020516
		18' Clear Blade Assy	6020517
		20' Clear Blade Assy	6020518
		22' Clear Blade Assy	6020519
		24' Clear Blade Assy	6020520
22		SCREW, TEKS4, HWH, #12-24 X 7/8	6023493

VFD BOX

Figure 49





VFD PANEL 120V/1P

		VFD PANEL, 120V/1P, 8FT	6022500
		VFD PANEL, 120V/1P, 10FT	6022504
		VFD PANEL, 120V/1P, 12FT	6022508
		VFD PANEL, 120V/1P, 14FT	6022512

ITEM	QUANTITY	DESCRIPTION	PART NUMBER
1	1	Interface, HVLS, DIN Mount	6015547
2	1	Mitsubishi VFD, DD, 120V/1P	6022070
3	2	Fuse 20A, 60V, KTKR20	6011801
4	1	Rotary Disconnect	6021193
5	1	Disconnect Handle	6021191
6	1	Disconnect Shaft 150MM	6021194

VFD PANEL 230V/1PH

		VFD PANEL, 230V/1P, 8FT	6022501
		VFD PANEL, 230V/1P, 10FT	6022505
		VFD PANEL, 230V/1P, 12FT	6022509
		VFD PANEL, 230V/1P, 14FT	6022513
		VFD PANEL, 230V/1P, 16FT	6022517
		VFD PANEL, 230V/1P, 18FT	6022520
		VFD PANEL, 230V/1P, 20FT	6022542
		VFD PANEL, 230V/1P, 24FT	6022545

ITEM	QUANTITY	DESCRIPTION	PART NUMBER
1	1	INTERFACE, HVLS, DIN MOUNT	6015547
2	1	MITSUBISHI VFD, DD, 240V/1P/3P	6022071
3	2	FUSE 15A, 600V, KTKR15	6011800
4	1	ROTARY DISCONNECT	6021193
5	1	DISCONNECT HANDLE	6021191
6	1	DISCONNECT SHAFT 150MM	6021194

VFD PANEL 230V/3P

		VFD PANEL, 230V/3P, 8FT	6022502
		VFD PANEL, 230V/3P, 10FT	6022506
		VFD PANEL, 230V/3P, 12FT	6022510
		VFD PANEL, 230V/3P, 14FT	6022514
		VFD PANEL, 230V/3P, 16FT	6022518
		VFD PANEL, 230V/3P, 18FT	6022540
		VFD PANEL, 230V/3P, 20FT	6022543
		VFD PANEL, 230V/3P, 24FT	6022546

ITEM	QUANTITY	DESCRIPTION	PART NUMBER
1	1	INTERFACE, HVLS, DIN MOUNT	6015547
2	1	MITSUBISHI VFD, DD, 240V/1P/3P	6022071
3	3	FUSE 10A, 600V, KTKR10	6014015
4	1	ROTARY DISCONNECT	6021193
5	1	DISCONNECT HANDLE	6021191
6	1	DISCONNECT SHAFT 150MM	6021194

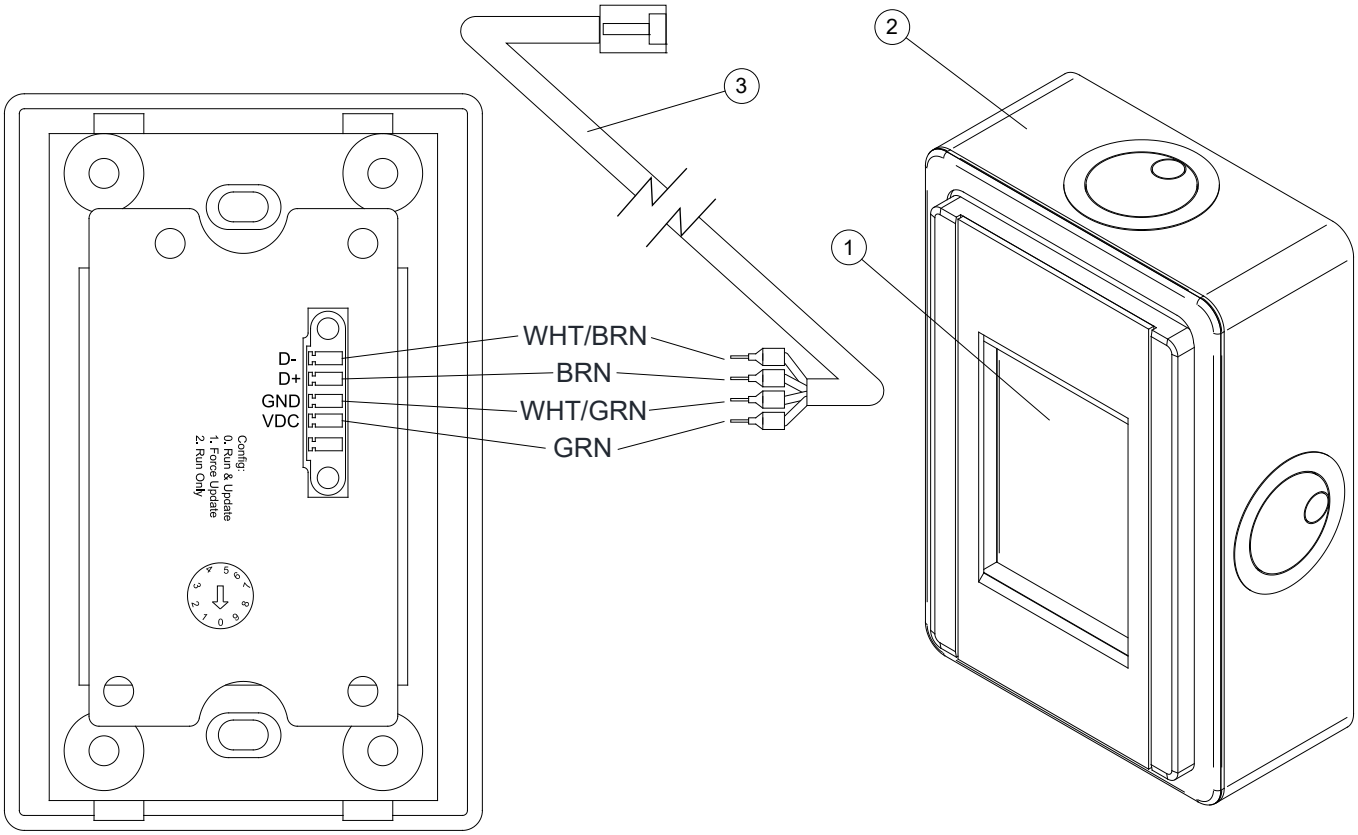
VFD PANEL 480V/3P

		VFD PANEL, 480V/3P, 8FT	6022503
		VFD PANEL, 480V/3P, 10FT	6022507
		VFD PANEL, 480V/3P, 12FT	6022511
		VFD PANEL, 480V/3P, 14FT	6022515
		VFD PANEL, 480V/3P, 16FT	6022519
		VFD PANEL, 480V/3P, 18FT	6022541
		VFD PANEL, 480V/3P, 20FT	6022544
		VFD PANEL, 480V/3P, 24FT	6022547

ITEM	QUANTITY	DESCRIPTION	PART NUMBER
1	1	INTERFACE, HVLS, DIN MOUNT	6015547
2	1	MITSUBISHI VFD, DD, 480V/1P	6022072
3	3	FUSE 5A, 600V, KTKR5	6011797
4	1	ROTARY DISCONNECT	6021193
5	1	DISCONNECT HANDLE	6021191
6	1	DISCONNECT SHAFT 150MM	6021194

REMOTE CONTROL PANEL

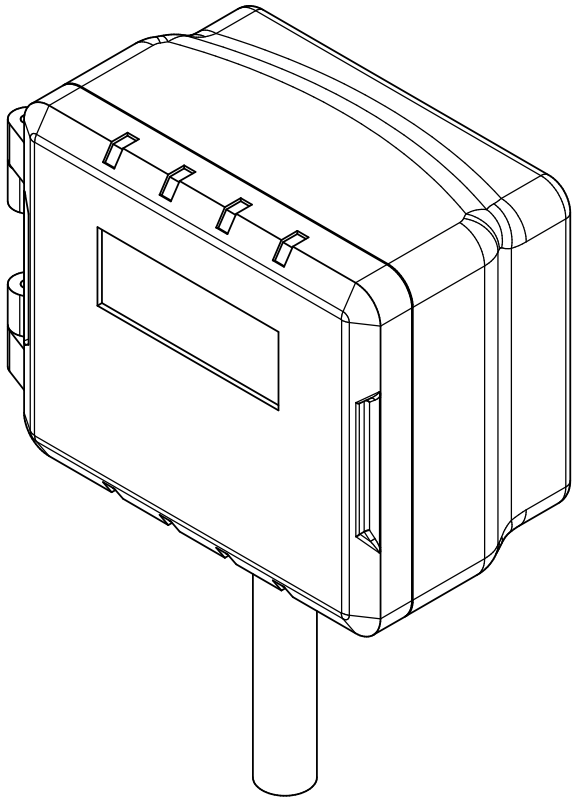
Figure 50



ITEM	QUANTITY	DESCRIPTION	PART NUMBER
1	1	Touch screen Controller, Kelley	6015758
		Touch screen Controller, Serco	6015759
		Touch screen Controller, Epic	6023293
2	1	J-Box, Plastic, Ivory	6015648
3	1	Cable Cat5, 100’ w/Ferrule (Blue)	6015651

TEMPERATURE CONTROL — OPTIONAL

Figure 51



ITEM	QUANTITY	DESCRIPTION	PART NUMBER
1	1	Temp Control Assembly	6022769

NOTES

Please contact your local distributor for assistance.

TOC

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Carrollton, TX 75006

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Fax: (972) 323-2661

APS Resource
262.518.1000

Scan this code or click here to locate an APS Resource distributor.

For replacement parts, please call the number above.