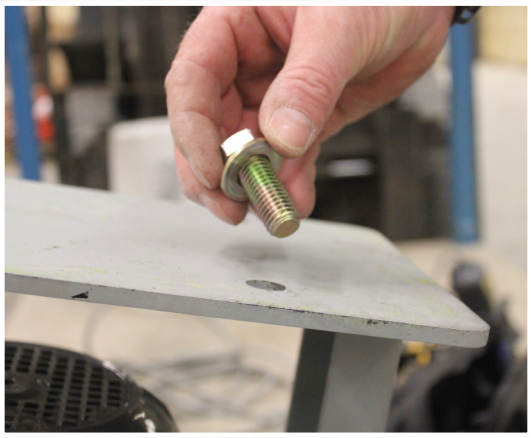
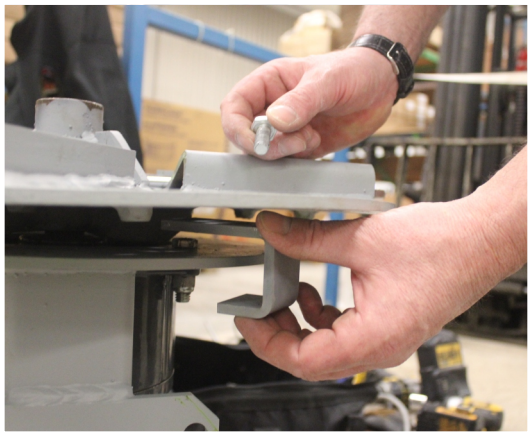
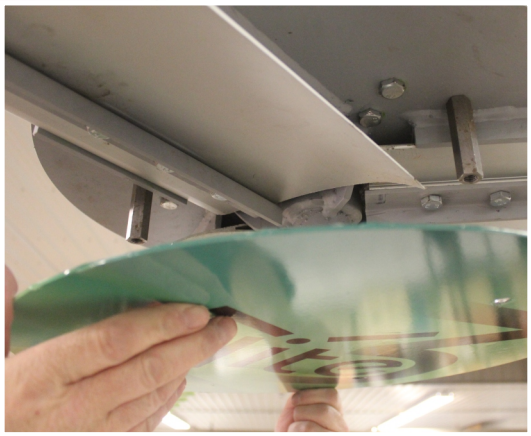
Alite 3
HVLS FANS

A Fan of the Fundamentals
(15') 4.7 m | (23') 7.1 m







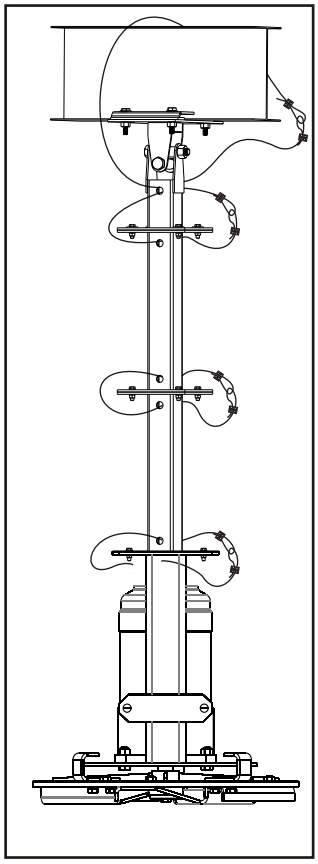
Installation Manual

IMPERIAL INSTRUCTION - METRIC HARDWARE

ENVIRA-NORTH
SYSTEMS LIMITED

1-866-771-7766
bigair@enviranorth.com
www.enviranorth.com

Fan Components



CABLE DETAIL

Note: Alite 3 blades are not shown in the assembly to allow greater detail of parts. See Fig.20 for finished assembly.

(4) Bolts M14-2.0 x 54mm
(8) Washers Flat M14
(4) Nylocks M14-2.0

Structural Support of the building

(1) Mounting Plate + (2) Shim Plates + (2) Holding Plates

(4) Bolts M14-2.0 x 65mm
(8) Washers Flat M14
(4) Nylocks M14-2.0

Safety Cable
(1) Cable 5mm SS
(Length 6.5ft (2m))
(4) Cable Clamps 5mm

Standard Mount:
(Available in approx 1ft (300mm), 2ft (600mm) or 3ft (1220mm) lengths, custom lengths are optional)

(4) Bolts M14-2.0 x 40mm
(8) Washers Flat M14
(4) Nylocks M14-2.0

Safety Cable
(1) Cable 5mm SS
(Length 3.3ft (1m))
(4) Cable Clamps 5mm

Extension

Typical Guy Wire:
(4) Cable 3mm SS
(66ft (20m) length provided to equal 4 @ 16.4ft (5m))
(8) Thimbles 6mm SS
(16) Cable Clamps 3mm

Fan Drive Assembly
(Includes Hub)

(3) Blade Plates
(9) Bolts M10-1.5 x 60mm
(9) Washers Flat M10
(3) Blades (Not Shown)

(1) Hub Cover
(3) Standoff M/F M10
(3) Bolts M10-1.5x12mm
(3) Washers Flat M10
(3) Washers Lock M10

Fig.1

Note: All bolts are "Class 8.8"
FT= Fully Threaded
(#) = Quantity Supplied

Electrical Safety

WARNING! Ignoring the following instructions can cause physical injury or death, or damage to the equipment.

WARNING! Only qualified electricians are allowed to install the drive and connections to the motor!

Never work on the drive, motor cable or motor when input power is applied.
After disconnecting the input power, always wait for 5 minutes to let the intermediate circuit capacitors discharge before you start working on the drive, motor or motor cable.
Always ensure by measuring with a multimeter (impedance at least 1 Mohm) that
1. There is no voltage between the drive input phases U1, V1 and W1 and the ground.
2. There is no voltage between terminals BRK+ and BRK- and the ground.
   Do not work on the control cables when power is applied to the drive or to the external control circuits. Externally supplied control circuits may carry dangerous voltage even when the input power of the drive is switched off.

General Safety

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

• Installation work and electrical work must be done by qualified person(s) in accordance with all applicable codes and standards, including fire-rated construction.
• The installation is to be in accordance with the National Electrical Code, CSA C22.1, ANSI/NFPA 70, and local codes.

Index

1/ Tools Required to Install Product

- Level
- Cable cutters (for stainless steel aircraft cable)
- Ratchet or impact gun
- Basic imperial socket set up to 7/8" will fit bolt heads and nuts
- Basic imperial wrench set up to 7/8" will fit bolt heads and nuts
- Lifting device or scaffolding

CAUTION

THIS UNIT HAS AN UNGUARDED IMPELLER. DO NOT USE IN LOCATIONS READILY ACCESSIBLE TO PEOPLE OR ANIMALS.

TO REDUCE THE RISK OF INJURY TO PERSONS, INSTALL FAN SO THAT THE BLADE IS AT LEAST 3.05 METERS (10 FEET) ABOVE THE FLOOR.

WARNING

SUPPORT DIRECTLY FROM BUILDING STRUCTURE

CAUTION

MOUNT WITH THE LOWEST MOVING PARTS AT LEAST 3.05 METERS (10 FEET) ABOVE FLOOR OR GRADE LEVEL.

2/ Required Steps Before Installation

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

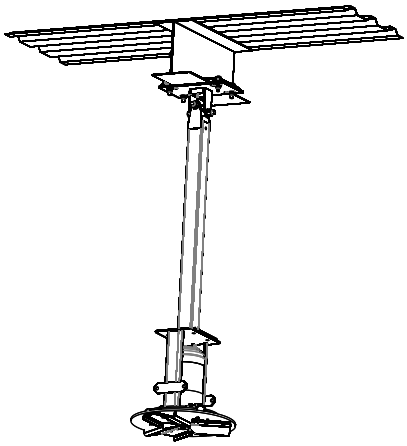
- The Alite 3 Must Be Installed With The Proper Length Of Blades to Match The VFD That Are Marked To Indicate Their Suitability With This Model.
- No Other Blades Or VFD Can Be Substituted.

- Check to see if you have all the tools required for the installation.
- Verify that all fan components were received.
- Check drawings and layouts provided to locate where the Alite 3 HVLS Fan is to be installed.
- Ensure work area is safe and that all security, policies and procedures for the facility are met.
- Inspect the lift device or mobile platform.
- Each person installing the Alite 3 HVLS Fan must use a safety harness at all times.
- Other safety requirements may be required for installation.
- All workspace safety requirements, lock out procedures and hoarding of construction zone for the assembly and installation must be met and followed.

Start your installation.

3/ Different Mounting Applications

NOTE: The following mounting applications are representations only and are subject to change without notice**.** Contact your sales representative or the Envira-North office for complete mounting instructions.

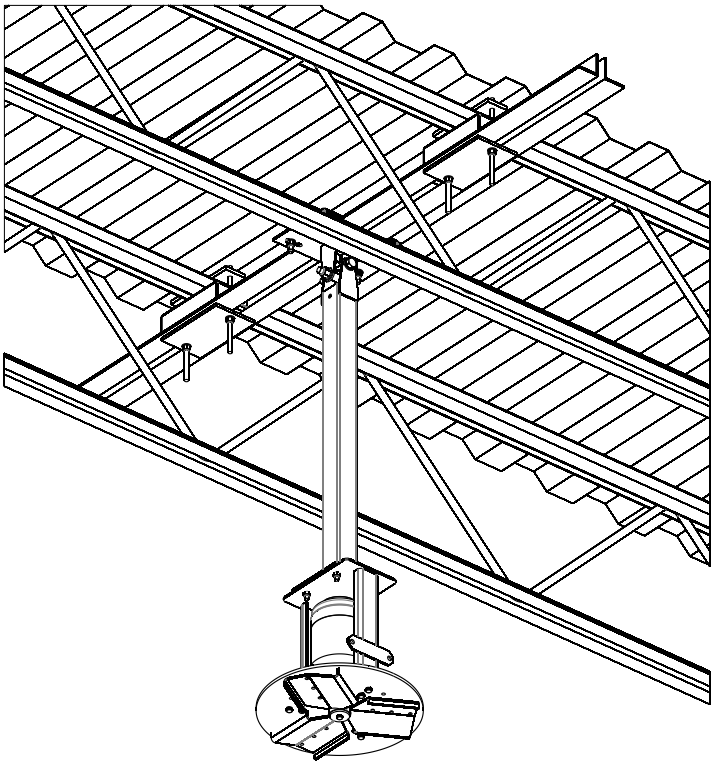


"I" Beam Mounting

Fig.2

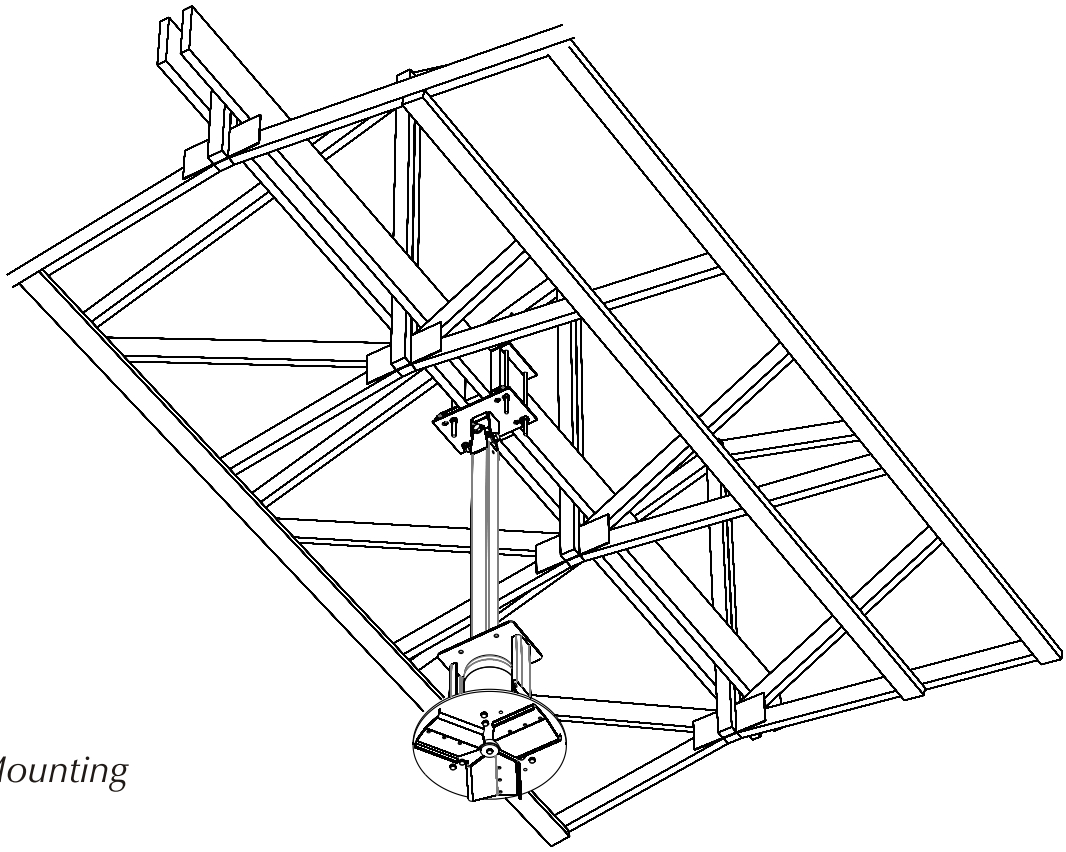
⚠ **Warning:** Use of any other mounting hardware or technique is strictly prohibited.
Only use mounting hardware/ brackets supplied by Envira-North.

3/ Different Mounting Applications (continued)



"OWSJ" Mounting

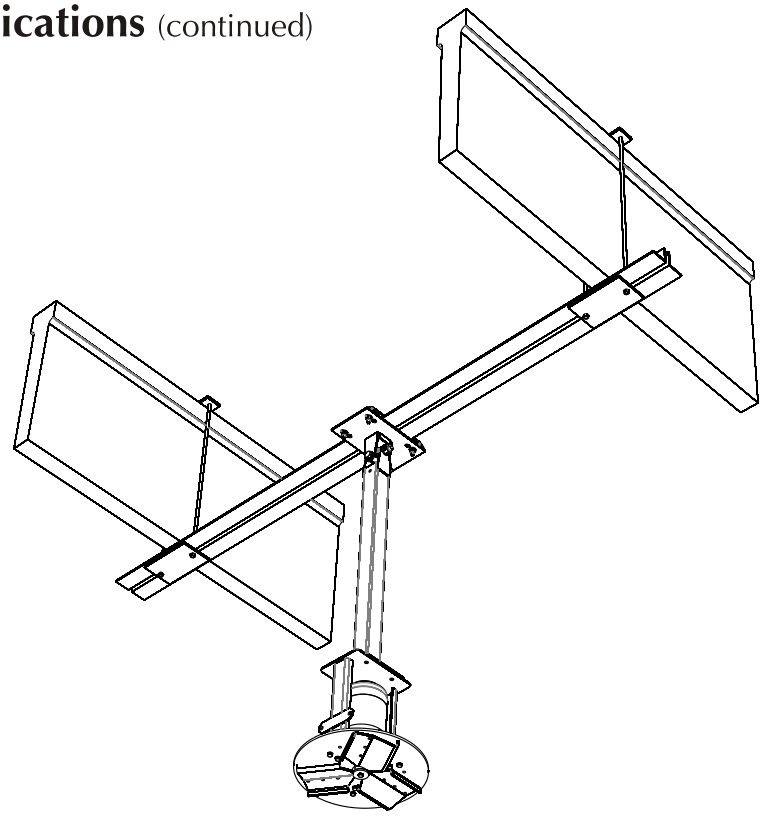
Fig.3



"Wood" Beam Mounting

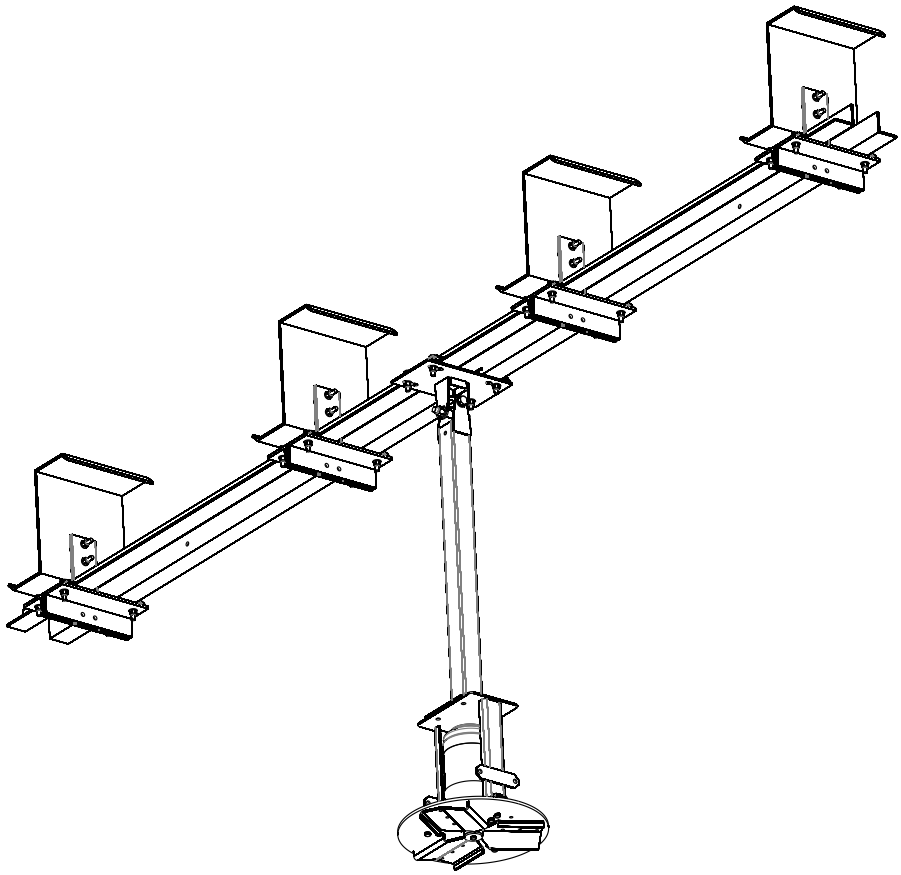
Fig.4

3/ Different Mounting Applications (continued)



"Concrete" Beam Mounting

Fig.5



Purlin "Z" Mounting

Fig.6

4/ Standard Mount

A Standard Mount package is used with all Alite 3 HVLS Fan assemblies (except "Wood" Beam Mounting).

Standard drop mounts of approximately 1ft , 2ft and 4ft (300mm, 600mm and 1220mm) are available.

The package includes:

(2) mfg "I" Beam clamps
(2) mfg "I" Beam spacers (may or may not be required for assembly)
(1) Upper Pivot Plate
(1) Upper Pivot (pre-assembled)
(1) Stem for 1ft , 2ft and 4ft (300mm, 600mm & 1220mm) packages
(4) Bolts, Nuts & Washers
(1) Cable 5mm SS (Length 6.5ft (2m))
(4) Cable Clamps 5mm (not shown)

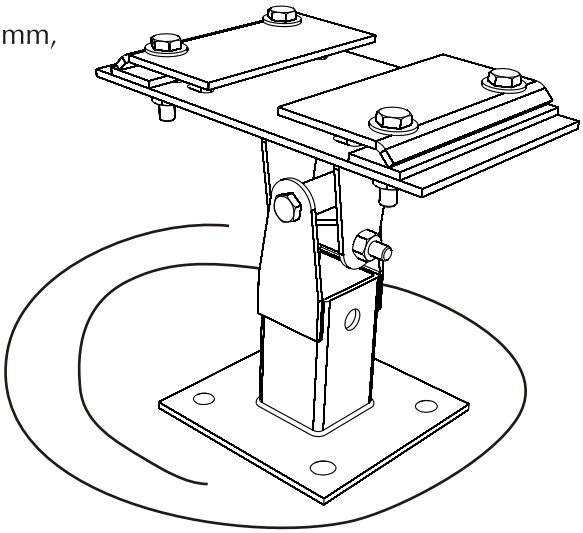


Fig.7

NOTE: Spacer may or may not be required. This is dependent upon the thickness of the support structure.

Installing the Mount

1. Sandwich the "I" Beam or OWSJ Beam between the mfg "I" Beam clamps and the upper pivot plate. Insert the mfg "I" Beam spacers if required.
2. Insert the bolts, washers and torque the nylocks to 110 ft/lbs (150Nm) (Fig.8).
3. Position the safety cable as per Fig.8, loop at both ends.
4. Using a 7/16" wrench, fasten cable clamps as typical cable clamp installation (Fig.9). Cable should be relatively snug.

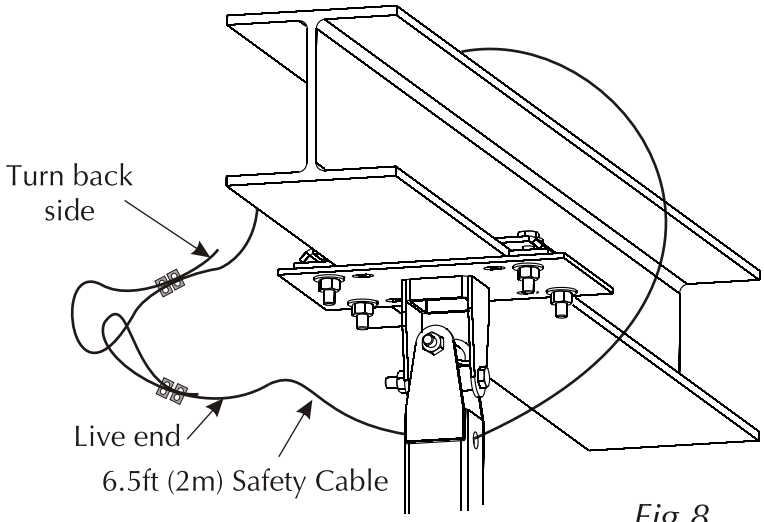


Fig.8

Typical Cable Clamp Installation

When placing cable clamps on the wire, it is imperative that the U-bolt side of the clip is placed on the short turn back side and the saddle goes on the long side (the "live" end).

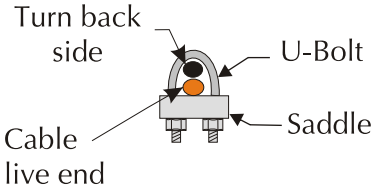


Fig.9

5/ Extensions

The package includes:
(1) Extension (standard 2ft or 4ft (600mm or 1220mm))
(4) Bolts M14-2.0 x 36mm
(8) Washers Flat M14
(4) Nylocks M14-2.0
(1) Cable 5mm SS (Length 3.3ft (1m))
(4) Cable Clamps 5mm

Depending on your assembly, your package may include an extension. The extension with the standard mount will make up the overall drop length.

If a specific drop distance is required, a custom extension may be an option and can be ordered.

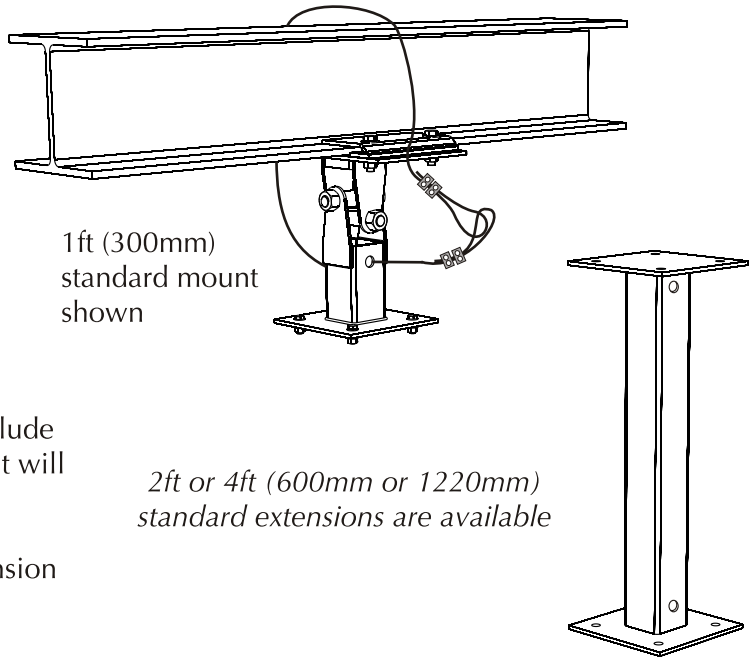


Fig.10

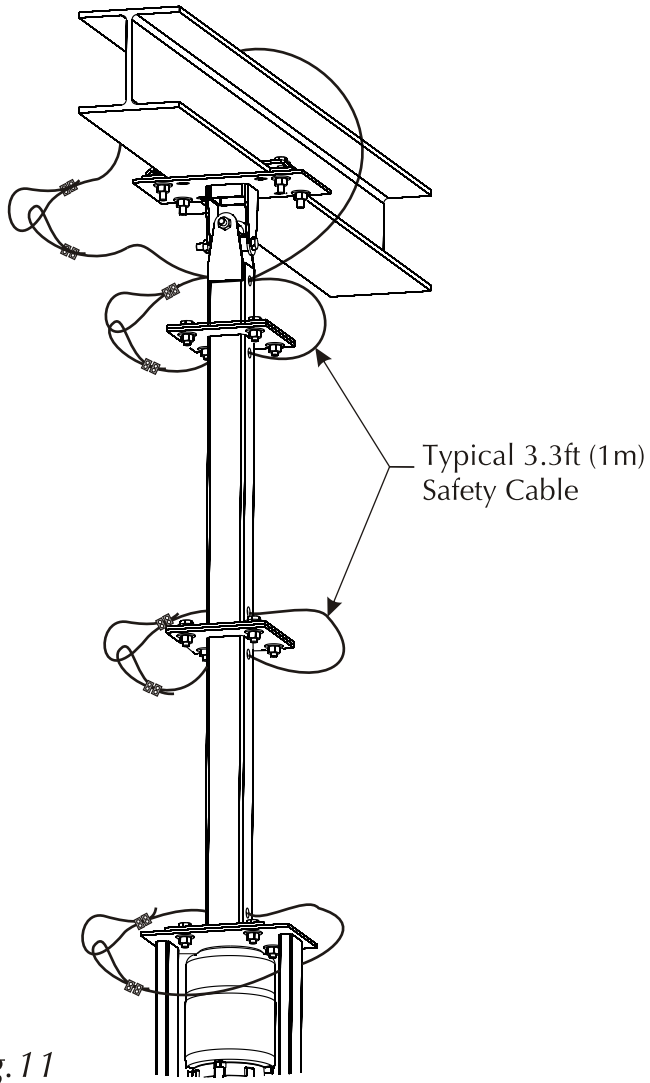


Fig.11

You are only allowed to use a maximum of two extensions per assembly!

Installing the Extension

1. Using a 7/8" wrench, fasten the top plate of extension to the bottom plate of the standard mount using M14 bolts, nuts and washers.
2. Position the safety cable as per Fig.11, loop at both ends.
3. Using a 7/16" wrench, fasten the cable clamps 2 per end and as per typical cable clamp installation (Fig.9). Cable should be relatively snug.

Every connection between components (mounts, extensions and fan frame) must include a safety cable as shown throughout this manual, loop at both ends.

6/ Main Hub and Drive Assembly

The package includes:

(1) Hub
(1) Fan frame
(1) Safety Washer & Bolt
(1) Gear Motor
(3) Safety Clips

All these items pre-assembled

(4) Bolts M14-2.0 x 40mm
(8) Washers Flat M14
(4) Nylock M14-2.0
(1) Cable 5mm SS (Length 3.3ft (1m))
(4) Cable Clamps 5mm

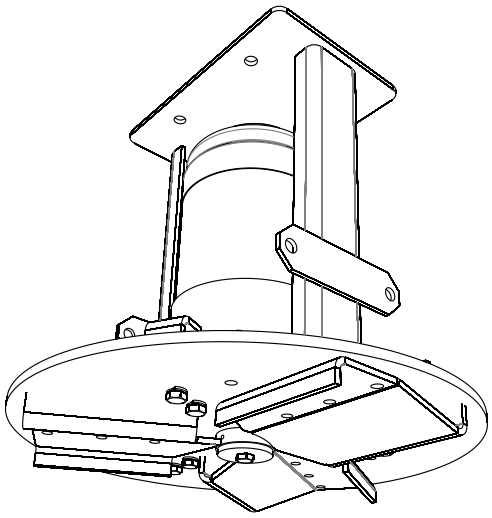


Fig.12

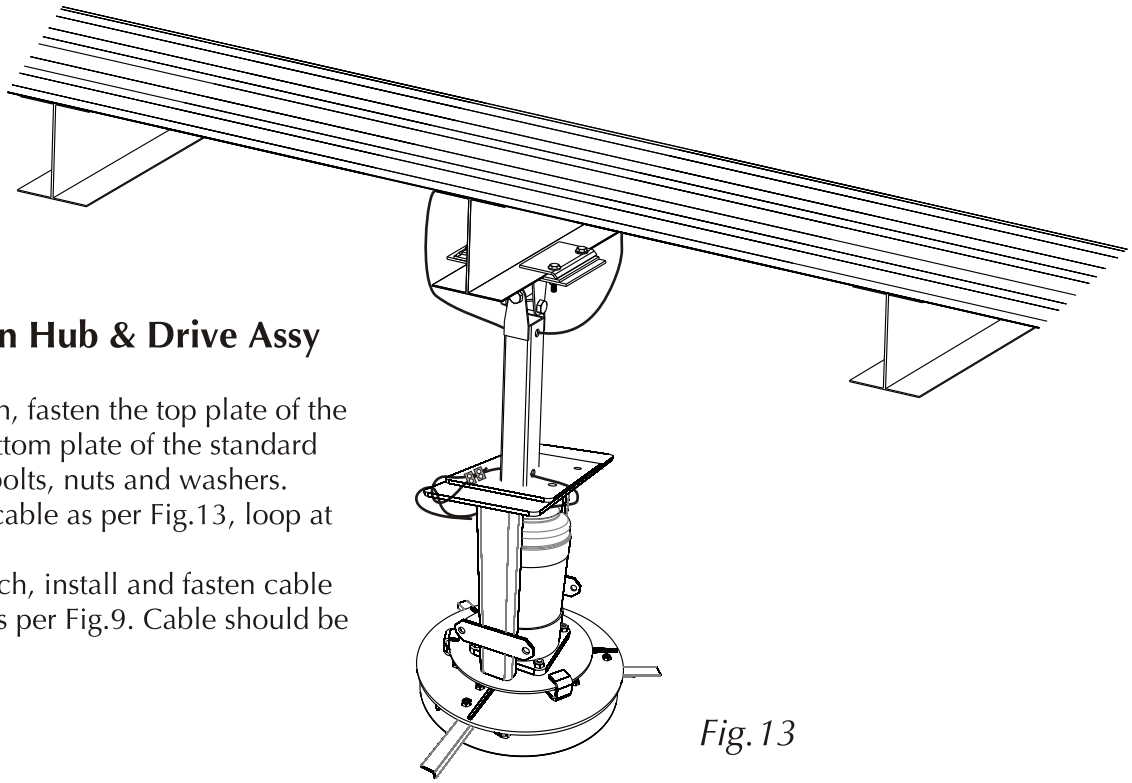


Fig.13

Installing the Main Hub & Drive Assy

1. Using a 7/8" wrench, fasten the top plate of the fan frame to the bottom plate of the standard mount using M14 bolts, nuts and washers.
2. Position the safety cable as per Fig.13, loop at both ends.
3. Using a 7/16" wrench, install and fasten cable clamps 2 per end as per Fig.9. Cable should be relatively snug.

7/ Guy Wires

The package includes:
(4) Cable 1/8″ SS (66 ft (20m) length provided to equal 4 @ (16.5ft) 5m)
(8) Thimbles 1/4″ SS
(16) Cable Clamps 1/8″

Extra hardware required:
(4) Forged Eye Bolts M6-1.0 x 100mm
(4) Nuts M6-1.0
(4) Nylocks M6-1.0
(8) Washers Flat M6

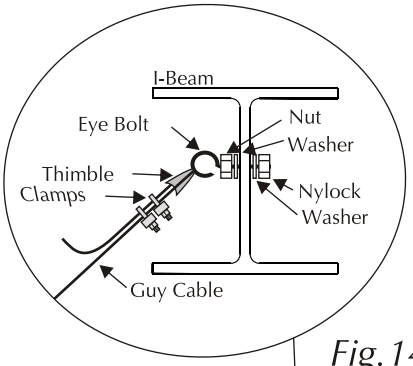


Fig.14

DO NOT USE TURNBUCKLES

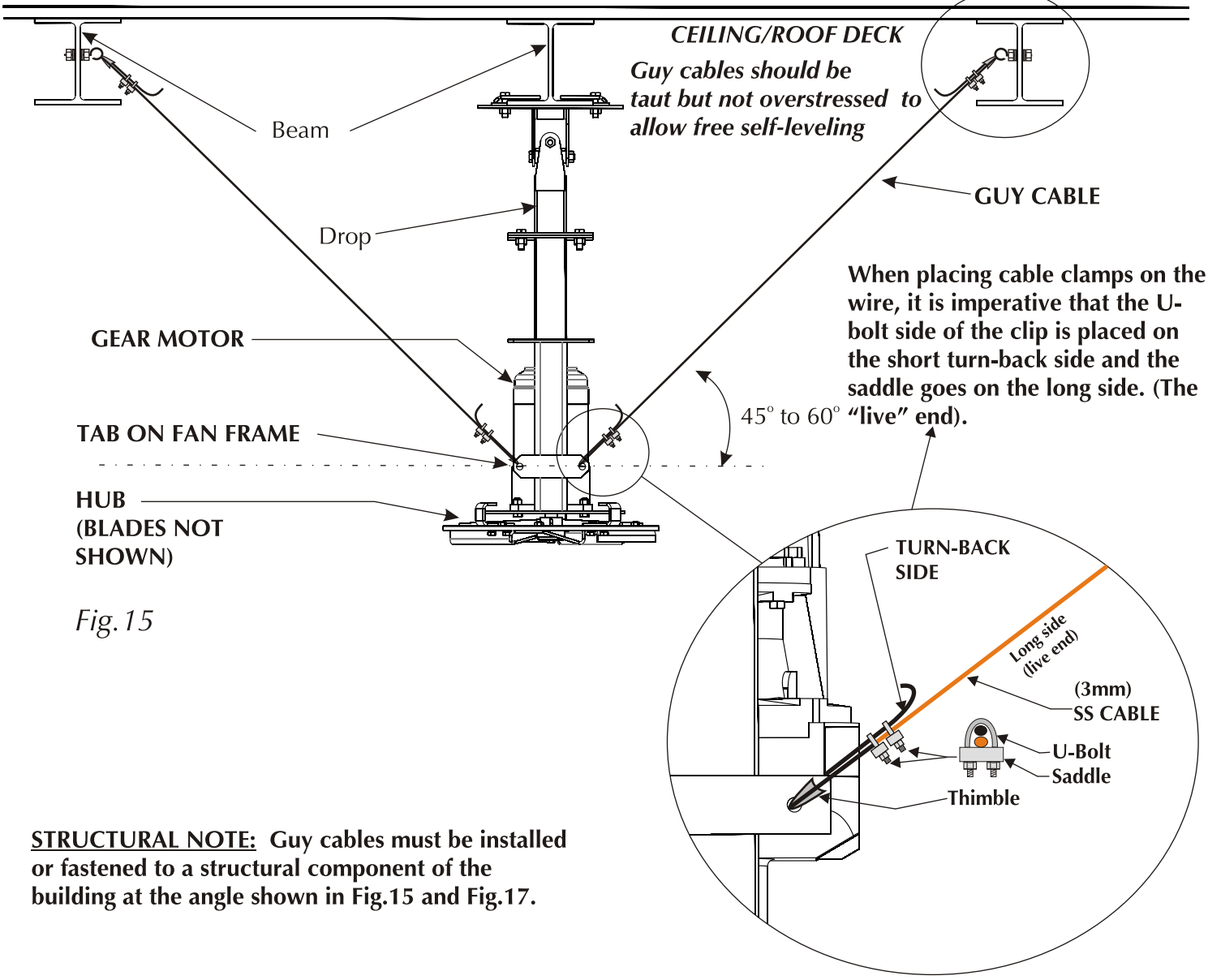


Fig.15

Fig.16

STRUCTURAL NOTE: **Guy cables must be installed or fastened to a structural component of the building at the angle shown in Fig.15 and Fig.17.**

Installing Guy Wires

1. Determine mounting position on ceiling and establish the angle between 45°-60° for the cable. Determine correct location on the I Beam to drill 5/16" (8mm) diameter hole for the eye bolt. For example, if fan is 3.3ft (1.2m) down from ceiling, cables should be mounted approximately 3.3ft (1.2m) away from fan.
2. Using a 3/8" wrench, install eye bolt with nuts and washers in I Beam as per Fig.15.
3. Measure the run of cable required and cut cable approximately 2ft (0.6m) longer. **NOTE:** longer runs than 14ft (4.5m) will require additional cable.
4. Secure it with 1 thimble and 2 cable clamps using a 5/16" wrench (Fig.16). Repeat using the other 3 pieces of guy wire cables, thimbles and cable clamps (Fig.16).
5. Guy wires should be taut but not over-stressed to allow free self-levelling. They should also be approx. 90° apart (Fig.17).

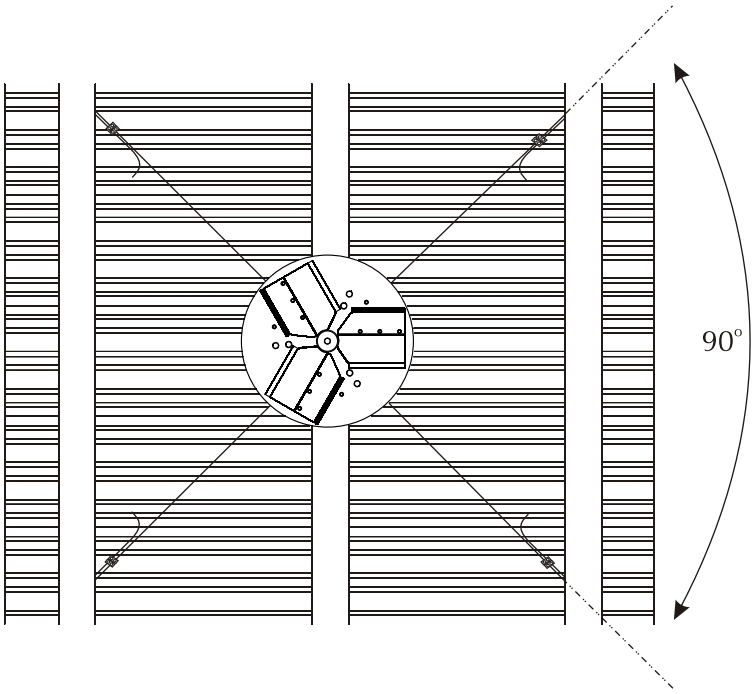


Fig.17

NOTE: Fans hanging lower than 10ft (3m) will require additional cable.

IMPORTANT LEVELLING INSTRUCTIONS:

Check to see if the fan is level by placing your level vertically on the side of the fan frame. If adjustment is needed, slightly tighten the guy wires on the appropriate side.

8/ Blade Assembly

WARNING! TO REDUCE INJURY TO PERSONS, OBSERVE THE FOLLOWING:

• 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.

The assembly includes:

(3) Blade Plates
(9) Bolts M10-1.5 x 60mm
(9) Washers Flat M10
(3) Blades

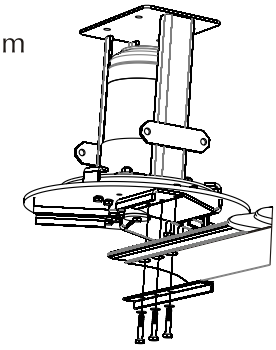


Fig.18

Installing the Blade Assembly

1. Using a 5/8" wrench, clamp a blade between blade plate and hub using M10 bolts and washers. There are 3 bolts per blade.
2. Continue until all 3 blades have been fastened and tightened down, torqued to 40 ft/lbs (55Nm).
3. Turn the fan by hand to ensure that there are no obstructions with the blades.

9/ Hub Cover

The assembly includes:
(1) Hub Cover
(3) Standoff M/F M10
(3) Bolts M10-1.5x12mm
(3) Washers Flat M10
(3) Washers Lock M10

1. Line up the holes in the standoff attached to the fan frame with the holes in the bottom of the hub cover.
2. Using M10 bolts with a lock washer and a flat washer, thread each M10 bolts into each of the holes in the hub cover and standoffs.
3. Tighten bolts with a 5/8" wrench and make sure hub cover is secure.

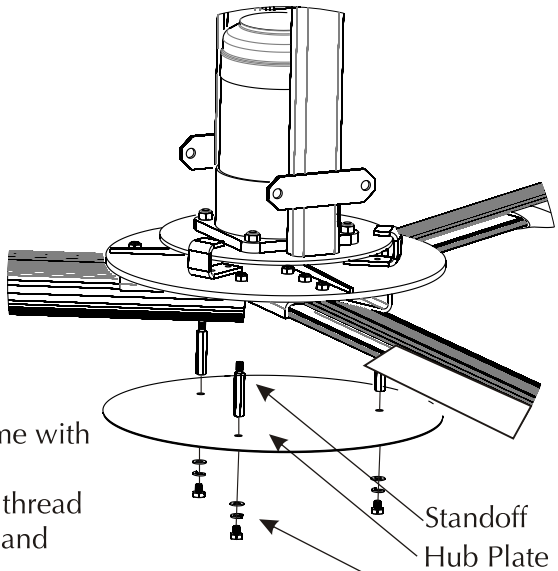


Fig.19

Final Steps

IMPORTANT LEVELLING INSTRUCTIONS:

After your fan is installed, check the level again by placing your level vertically on the side of the fan frame. If adjustment is needed slightly tighten the guy wire on the appropriate side.

Once levelled your fan is installed and ready for electrical installation / connection.

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

- Only qualified electricians are allowed to install the drive and connections to the motor!

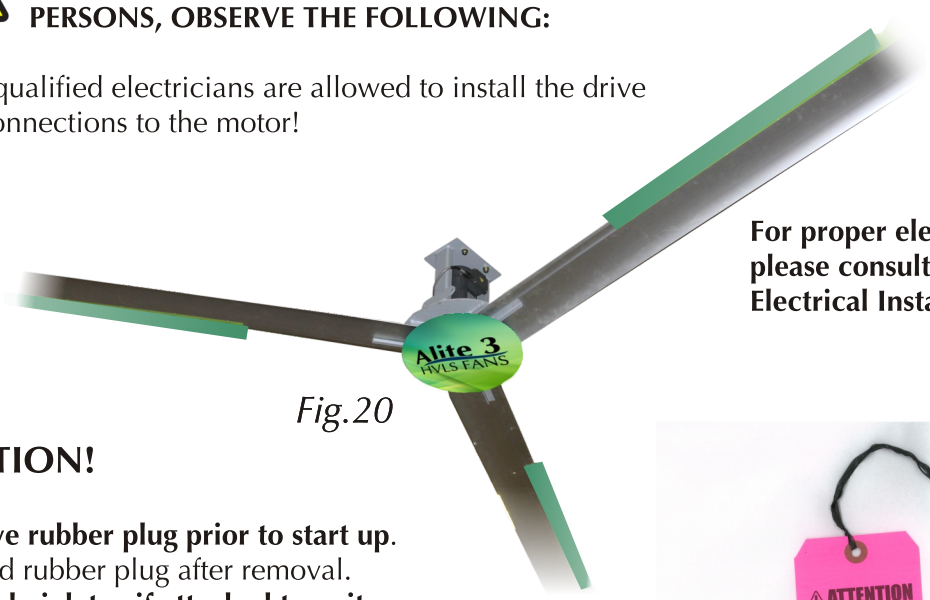


Fig.20

For proper electrical connection please consult the Envira-North Electrical Installation Manual.

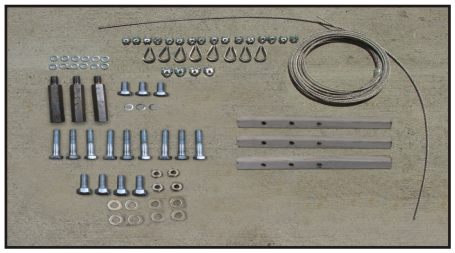
ATTENTION!

1. **Remove rubber plug prior to start up**.
2. Discard rubber plug after removal.
3. **Discard pink tag if attached to unit.**
3. If yellow sticker is attached to unit, it can remain in place.

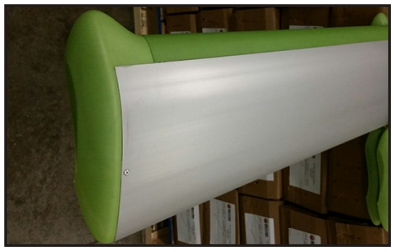
For proper electrical connection please consult the Envira-North Electrical Installation Manual.

Itemized Checklist

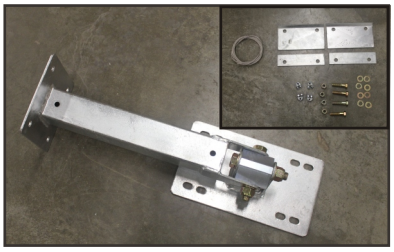
and



WP Fan Package
15ft, 23ft (4.7m, 7.1m)
EN780x1074-1174



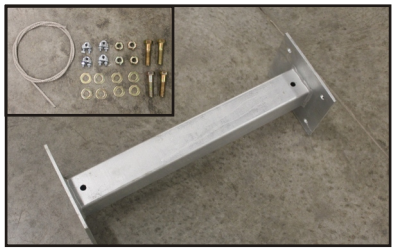
Sailfin 1 Blade Set
15ft, 23ft (4.7m, 7.1m)
EN625x5816/EN625x5910



Packaged UMH Mount
1ft, 2ft, 4ft
(300mm, 600mm, 1220mm)
EN400x2001-04

Fan Control AC Tech VFD
EN300x0206-0406

Optional Component



Packaged Extension Mount
2ft, 4ft (600mm, 1220mm)
EN405x1002-04

Recommended Maintenance Schedule

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

1. No maintenance shall be done on the fan, mount or guy wires while it is in operation or powered.
2. No maintenance shall be done on the fan controller while powered unless the task involves reprogramming or troubleshooting the electrical system.
3. No maintenance shall be done within a 20ft (6m) horizontal radius of the fan and 4ft (1.2m) below and none above the blade level while it is in operation.
4. While doing maintenance on the fan, mount, or guy wires, a safety barrier shall be erected at a radius of 6m of the centre of the fan.
5. The fan controller must be locked out while maintenance is ongoing on the fan, mount, or guy wires.
6. All personnel working on the fan, mount, or guy wires, shall wear the appropriate personal safety equipment as mandated by local, provincial, and national regulations.
7. A risk assessment shall be performed before any maintenance is done on the fan, mount, guy wires and fan controller.
8. A tailboard meeting shall be performed before any work is done. A checklist shall be completed and shall include any emergency contacts for the area.

Power Unit

Motor

Our motor or gear motor manufacturers supply Envira-North with gear motors built for our application. Designed for use with variable frequency drives.

Maintenance Schedule

Initial Six Months

- Check for hot spots
- Re-tighten all loose electrical connections

Repeat Every Eighteen Months Thereafter

Gear Motor

Maintenance Schedule

Initial Eighteen Months

- Check oil level

Every Three Years Thereafter

- Replace oil with recommended equivalent as specified on gear motor (acceptable oil fill level is within 3/8" (10mm) or closer to the fill level plug).

Recommended Maintenance Schedule Continued

Blades

The airfoil blades are designed for maximum efficiency and quietness with a minimum air disruption directly below the fan. All our blade shapes are extruded from aluminum alloy and heat-treated to T-6 condition. They are anodized to .0004 10 Microns clear for corrosion resistance and ease of cleaning. The blades have a one year warranty.

Maintenance Schedule

Initial Six Months

- Ensure blades are intact, level and clean as required

Every Eighteen to Thirty-Six Months Thereafter

Drop/Mounting

The drop and mounting system is designed to prevent vibration or horizontal movement from being transferred back into the building structure. The system is easily installed in almost any building and allows fans to hang level from beams.

Maintenance Schedule

Initial Six Months

- Physical check of fan guy wires, re-tightening of clamps if required
- Check all nuts/bolts/clamps (missing/loose/damaged)
- Physical check of safety cable, re-tightening of clamps if required

Repeat Every Eighteen Months Thereafter

Control Panel

Alite 3 controls are variable frequency drives which provide soft start/stop, variable speed control and overload protection for the motors. The VFD also allows fan control to be automated and/or integrated with other systems. The controls come with a one year limited warranty.

Maintenance Schedule

Initial Twelve Months

- Check for loose/discoloured wires
- Check for hot spots
- Re-tighten all loose electrical connections

Repeat Every Eighteen Months Thereafter

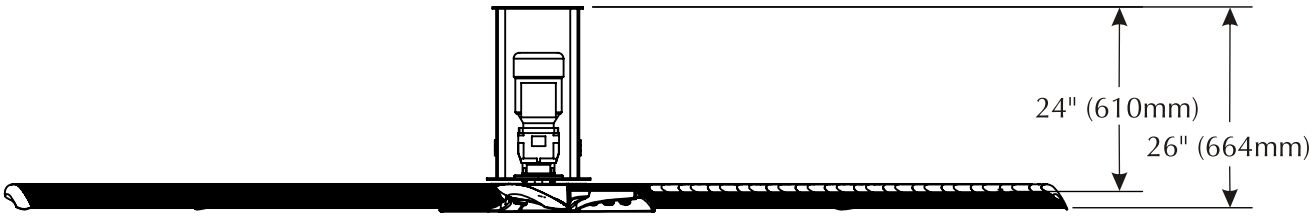
NOTE: Maintenance schedule is based on running 5,000 hrs / year and is a guide line to ensure safe and continuous operation of the fan(s). In case of extreme operating (e.g. high humidity, aggressive environment or large temperature variations), shorter intervals between service is recommended.

Safety Precautions

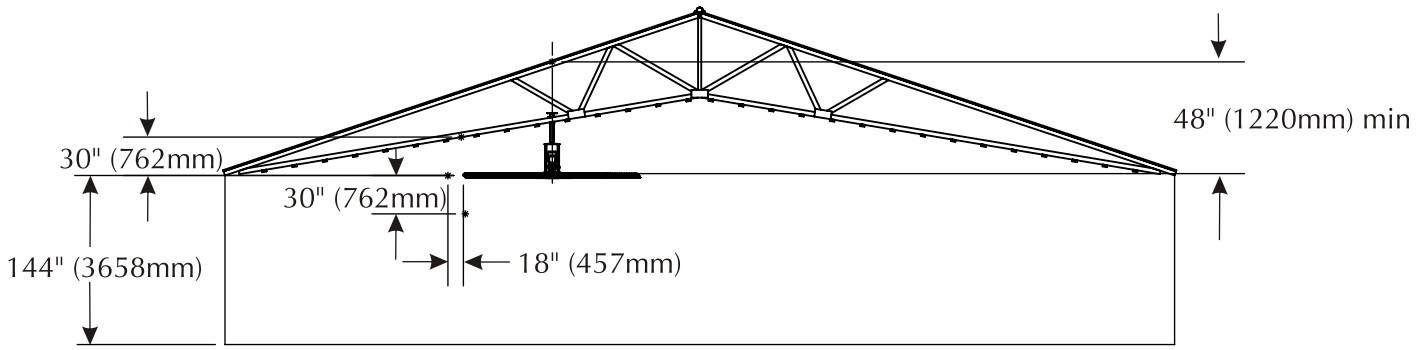
WARNING! TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS, OBSERVE THE FOLLOWING:

1. Safety cable installed as per Fig.11 in the *Alite 3 Installation Manual*.
2. Guy wire installed as per Fig.9, Fig.14, Fig.15, Fig.16 and Fig.17 in the *Alite 3 Installation Manual*.
3. Blade plates installed as per Fig.18 in the *Alite 3 Installation Manual*.
4. See page 17 for required clearances.
5. If installed in storage facility between racks, signs must be installed identifying fan locations.
6. The variable frequency drive has several safety devices such as current limit, motor overload, minimum and maximum speed control. The controller also features a Stop button for emergency stoppage.

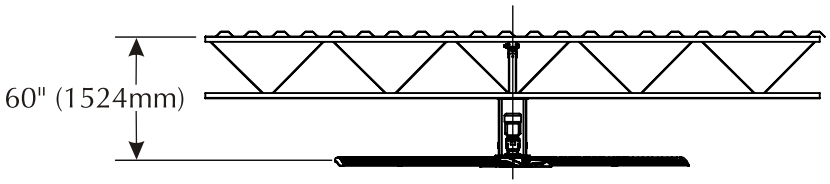
Alite 3 HVLS Fan Clearance Requirements



Fan Frame Detail



Sloped Roof



Flat Roof

Clearances

- Min 60" (1524mm) center of fan to roof deck for ideal operating performance without compromising overall fan performance
- Min 30" (762mm) from fan blade's leading edge to obstruction above or below fan
- Min 18" (457mm) from side of fan to any obstruction
- Min 144" (3658mm) floor to fan leading edge height

Contractor is responsible for verifying all site conditions to include field dimensions where applicable. If the contractor elects to make any changes without notifying Envira-North Systems Ltd the contractor is responsible for the same. All drawings are to be used as general architectural intent unless otherwise stamped. See Engineer drawings for structural design information. Contractor to ensure that all building departments and authorities are informed in regard to the work and that all permits are attained before commencing work.

Recommended Maintenance Checklist

Fan Size:

Serial #:

Location:

Date	Initials

Fan Size:

Serial #:

Location:

Date	Initials

Fan Size:

Serial #:

Location:

Date	Initials

Limitation of Warranty and Liability

The Alite 3 fans are of industrial grade construction and should provide many years of virtually maintenance-free use. Warranty duration is as follows:

a)	Air Foil Shaped Blade	1 year limited warranty
b)	Aluminum Alloy Hub	1 year limited warranty
c)	Gear Motor	1 year limited warranty
e)	VFD Control Panel	1 year limited warranty

Envira-North warrants that this product will, under normal use and service as specified by Envira-North, operate properly and be free of defects in materials and workmanship for a period of one year from the date of purchase by customer. The term “operate properly” in this context applies to mechanical, electrical and structural functions only. No guarantee, unless and except by separate written agreement, is made regarding dimensions of air movement generated or the effectiveness of this product for its intended purpose.

Warranty Exclusions

Please note that the following may or could void any or all of the above listed warranties.

- Not following required installation procedures as in installation guide and all other documentation supplied with the fans and related equipment supplied by manufacturers of individual fan and control components.
- Not following all relevant codes and ordinances, not limited to National Electrical Code, provincial or state and local building codes.
- Not following electrical engineering industry standards regarding approved method of installing solid-state electrical equipment having characteristics of fans and all components included in this product.
- Any modification to installation, product, controls without written authorization from Envira-North, even if attempting to diagnose and / or repair a problem.
- Misuse, abuse, accidents, unreasonable use or Acts of God.
- Incorrect electrical current, voltage or supply
- Running fans at higher than recommended speeds.
- Re-setting parameters of any control without prior approval from Envira-North.
- Failure to use all installation and mounting hardware supplied by Envira-North.
- Failure to perform periodic maintenance as detailed in the *Alite 3 Installation Manual*.

Limitation of Warranty and Liability

Envira-North reserves the right to make the final determination, based on its own evaluation of the components as to whether:

- The problem in question is the result of a defect in design, workmanship or materials and not the result of error, misuse or abuse on the part of the customer as stated above.
- Whether the problem or defect is material and requires action under this warranty.
- Whether the remedy of repair or replacement is appropriate.

Envira-North will not be responsible for remedial work necessary to correct installation procedures that do not conform to those established by the instructions, codes and standards, regardless of when the installation occurred.

With regard to electrical and electronic components provided by Envira-North that comprise part of the products, including motors, motor drives and variable frequency drives, Envira-North relies on the determination by the original manufacturer as to whether the failure of such component was the result a defect. If the manufacturer of such component determines that there was no defect and therefore refuses to cover it under warranty, Envira-North likewise will not warranty such item unless Envira-North determines that the failure of such electrical or electronic component was the result of a defect of design, workmanship or material within some other part of the products.

Warranty Duration

With respect to replacement or repair rendered, Envira-North warrants that the parts replaced or repaired will operate properly and be free from defects in materials and workmanship for a period of 90 days from the shipment date of the replacement products to the customer or for the remainder of the original warranty period, whichever is longer.

Warranty Claim Instructions

1. Contact your original dealer / salesman of the purchase when you first notice problem with the product.
2. It will be the responsibility of the dealer or salesman to assist the customer in determining what product is causing the problem.
3. If they cannot diagnose the problem, they are to contact Envira-North with all the necessary information.
4. The appropriate department will then be in contact with the customer to determine the cause of the problem.
5. Once diagnosed, submit a Purchase Order for a replacement unit complete with price.
6. A replacement unit will be shipped out upon receipt of the PO. This PO allows for an order to be established in the Envira-North System.
7. Once the units have been changed over, submit all reasonable costs to Envira-North for payment.
8. No credits or cheques will be issued until all original products are received back at Envira-North or unless Envira-North directs otherwise.

DECLARATION OF CONFORMITY

according to the
Safety of Machinery Directive (2006/42/EC),
the EMC Directive (2004/108/EC),
the Low Voltage Directive (2006/95/EC),
including amendments by the CE Marking Directive (93/68/EEC)

Type of equipment: *Alite 3 Ceiling Fan - Industrial*

Type designation: *#EN78XXX*

Manufacturer: *Envira-North Systems Ltd.* *92 Railway Street, P.O. Box 668 Seaforth, Ontario N0K 1W0 Canada*

Envira-North Systems Ltd.'s representative within the EEA (for manufacturers outside EEA): *N/A*

The following harmonized European standards or technical specifications have been applied:

Standard	Subject
EN 12100-1: 2010	Safety of Machinery - Basic Concepts, General Principles for Design - Part 1: Basic Terminology, Methodology.
EN 12100-2: 2010	Safety of Machinery - Basic Concepts, General Principles for Design - Part 2: Technical Principles.

With reference to the Safety of Machinery Directive:

The product complies with good engineering practice in safety matters within EU, provided that this equipment is installed for the application in which it is intended and is operated and maintained according to manufacturer instructions, (see Technical Construction File). The product is CE marked in year 2014. Envira-North Systems Ltd. has an internal production control system and formal quality control system that ensures compliance between the manufactured products and the technical documentation (this Declaration of Conformity and its associated Technical Construction File shall be retained and valid for a minimum of ten years following the below Date).

The applicable requirements of the following Directives have been applied:

EMC Directive (2004/108/EC)
Low Voltage Directive (2006/95/EC)

As manufacturer, we declare under our sole responsibility that the equipment follows the provisions of the Directives stated above.

CE

Signing Authority: Ian Wood
Date: October 31, 2014

Ian Wood
General Manager
Envira-North Systems Ltd.

Prepared By: Paul
Date: October 10, 2014

Paul M. Johnson, C.E.T., ASQ
President
Neoteric Enterprises Inc.