

TRI-LITE HVLS SERIES CEILING FANS

DESIGN & ENGINEERING GUIDE

PLEASE READ AND SAVE THIS GUIDE



ABOUT THESE FANS

Tri-Lite HVLS fans blanket a very large area by constantly moving air to create an expansive comfort zone. As a result, the big ceiling fan can create an evaporative cooling effect of three to four degrees Celsius throughout the facility.

During the heating season, the Tri-Lite HVLS fan technology can de-stratify uneven temperatures that can be in excess of fifteen degrees Celsius from ceiling to floor. This results in significant energy savings since heating system cycles less frequently.



TRI-LITE HVLS
with whale power technology



THE TUBERCLE ADVANTAGE

Tubercle Technology™ blades outperform all conventional airfoils.

They accomplish this by:

- Offering stall angles as high as 22°. Airfoil blades without whale technology stall at 8 degrees so whale power allows for much more air movement with fewer blades.
- Eliminating span-wise pumping; the primary cause of efficiency loss in all rotating systems.
- Eliminating tip stalling; the primary cause of blade noise and damaging vibration.
- Lowering noise by offering Tubercle Technology's™ hyper-stability which also lowers vibrations which cause wear and tear on the blades and drive train.

THE BENEFITS OF TRI-LITE HVLS FANS

- Quiet speed and efficient operation, no annoying high speed circulating and exhaust fans.
- Virtually maintenance free (recommended inspection every 20,000 hours).
- Inexpensive to operate.
- Greatly reduces "recovery" time when overhead doors are open with a constant air flow throughout the space.
- Provides a constant, even temperature from floor to ceiling and wall to wall.
- Will minimize the need for expensive duct work in new construction for both heating and air conditioning systems.
- A comfortable workplace environment increases productivity and decreases absenteeism.

INSTALLATION

Tri-Lite HVLS fans come as a complete system including power unit, mounting hardware, wiring kit (optional) and low voltage controller (optional). Having everything included in this complete package streamlines installation and eliminates the costly search for components and hardware.

SAFETY SYSTEMS

All Tri-Lite HVLS fans are supplied with superior safety equipment and harnessing systems to maintain an integral safety status and give the customer peace of mind. All fan installations include safety cables, guy wires, safety rings, thermal protection on motor to prevent overheating. If fans are installed between racks in a storage facility, signs should be posted identifying locations. The variable frequency drive also comes equipped with a current limit, motor overload sensor, minimum and maximum speed control.

WARRANTY

The Tri-Lite HVLS 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)	Steel Hub	1 year limited warranty
c)	Gear Motor	1 year limited warranty
d)	VFD Control Panel	1 year limited warranty

Please see the Tri-Lite HVLS fan installation manual for complete warranty information, including specifics and warranty exclusions. Use the above warranty information as a general guideline only.

FAN COMPONENTS

- (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 1m)
- (4) Cable Clamps 5mm

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

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

See Cable Detail
Drawing

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

Extension

- Typical Guy Wire:
- (4) Cable 3mm SS
(20m length provided
to equal 4 @ 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

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

SPECIFICATIONS HVLS-16230460-1HP (16')

General

Model NumberHVLS-16230460-1HP
 Diameter 16'
 Blade Whale Power Tubercle Technology™
 Number of Blades 3
 Motor Power 0.75 kW (1 Hp)
 Noise level 62 dBA
 Weight (no mount) 168 lbs*
 Packaged Fan- 60 em x 60 em x 73 em 157 lbs
 Packaged Blades- 28 em x 13 em x 253 em56 lbs

Performance (at max speed)

Airflow 52,662 CFM
 Maximum Speed 68 rpm
 Power Usage 368 W
 Maximum Effective Diameter 60'

Construction

Frame 914 mm Gage Steel/ Galvanized
 Hub 9.7mm Zinc Plated Steel
 Blades 6063 Extruded Anodized Aluminum
 Blade Leading EdgePlastic Extrusion
 Blade End Caps Plastic Extrusion
 Blade Leading Edge Colour Pantone Blue

Safety Components

Safety Cables5 mm Stainless Steel
 Guy Wires 3 mm Stainless Steel
 Safety Clips 6 mm Galvanized Steel

Mounting Hardware

Standard MountUniversal-Beam Clamp w/ Swivel
 Drop Extensions (Optional) 2' / 4'

Mounting*

Open Web Steel Joist (Optional)Steel Beam With Brackets
 Wood Beam Mount (Optional)..... Steel Machined Mount Plates
 Concrete Beam Mount (Optional) Steel Beam with Matching Mount Plates
 Purlin "Z" Mount (Optional)Steel Beam Brackets
 Steel Thickness Varies Depending on Beam Span Consult Factory for Specifics
 *Please see Tri-Lite HVLS Fans Installation Manual for more information regarding mounting hardware.

Gear Motor

Type Helical Inline Reducer
 HP 0.75 kW (1 Hp) - 50 Hz /60 Hz
 Ratio 25.85
 Volts..... 230 V /460 V
 Amps Consumed1.6 A @ 230 V
 Insulation Class F
 Torque 112 Nm (988lb.in.)

Fan Control

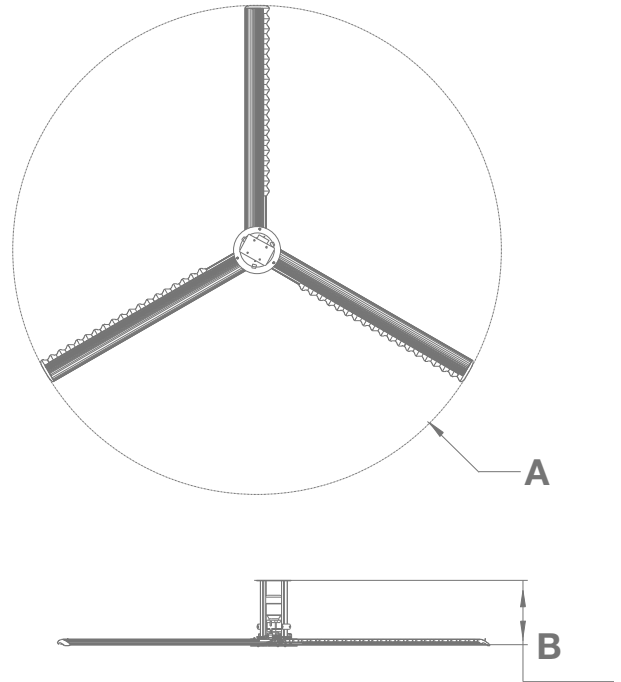
EnclosuresNEMA4 (IP65) or NEMA1
 Operation Key Pad
 Control Options (Not Included)Low Voltage / Temperature Control
 Standard Power 208 V /230 V /400 V /460 V
 Special Wiring (Thermostats, Fire Alarm Interface, Networking Etc.)(Optional)Consult Factory
 50 / 60 Hz Operation

Warranty*

Motor & Gearbox 1 Year
 Blades, Hub & Mounting System1 Year

*Please see Tri-Lite HVLS Fans Installation Manual for warranty specifications and exclusions.

DIMENSIONS



MODEL NUMBER	A	B
HVLS-16230460-1HP	185"	24"

SPECIFICATIONS HVLS-24230460-1HP (24')

General

Model NumberHVLS-24230460
 Diameter 24'
 Blade Whale Power Tubercle Technology™
 Number of Blades3
 Motor Power 0.75 kW (1 Hp)
 Noise Level 57 dBA
 Weight (no mount) 199 lbs*
 Packaged Fan - 60 em x 60 em x 73 em 157 lbs
 Packaged Blades - 28 em x 13 em x 375 em 82 lbs
 *Mounts, extensions & controls packages separately. Weights may vary.

Performance (at max speed)

Airflow 177,184 CFM
 Maximum Speed57 rpm
 Power Usage 621 W
 Maximum Effective Diameter 140'

Construction

Frame 914 mm Gage Steel I Galvanized
 Hub9.7mm Zinc Plated Steel
 Blades6063 Extruded Anodized Aluminum
 Blade Leading Edge Plastic Extrusion
 Blade End CapsPlastic Extrusion
 Blade Leading Edge Colour Pantone Blue

Safety Components

Safety Cables 5 mm Stainless Steel
 Guy Wires 3 mm Stainless Steel
 Safety Clips6 mm Galvanized Steel

Mounting Hardware

Standard MountUniversai-Beam Clamp w/ Swivel
 Drop Extensions (Optional) 2' /4'

Mounting*

Open Web Steel joist (Optional) Steel Beam With Brackets
 Wood Beam Mount (Optional) Steel Machined Mount Plates
 Concrete Beam Mount (Optional)Steel Beam with Matching Mount Plates
 Purlin "Z" Mount (Optional) Steel Beam Brackets
 Steel Thickness Varies Depending on Beam Span Consult Factory for Specifics
 *Please see Tri-Lite HVLS Fans Installation Manual for more information regarding mounting hardware.

Gear Motor

Type Helical Inline Reducer
 HP 0.75 kW (1 Hp) -50 Hz /60 Hz
 Ratio 25.85
 Volts 230 V /460 V
 Amps Consumed 2 .7A @ 230 V
 Insulation Class F
 Torque112 Nm (988 lb.in.)

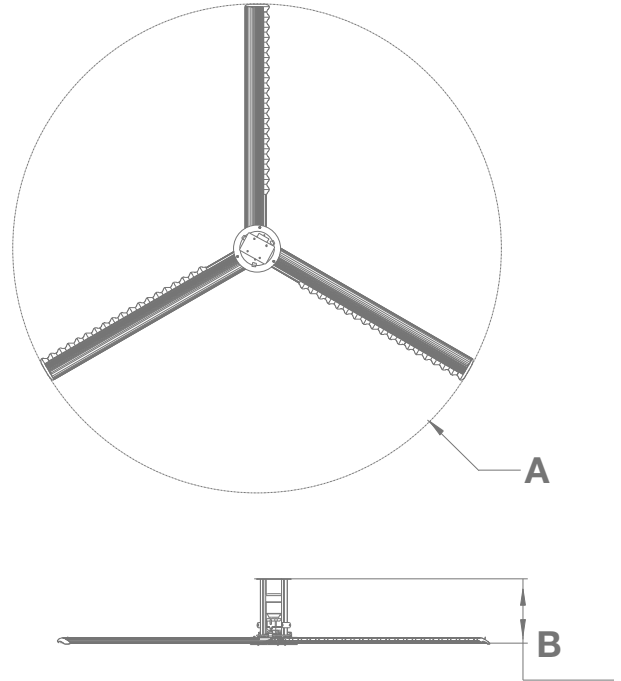
Fan Control

Enclosures NEMA4 (IP65) or NEMA1
 Operation Key Pad
 Control Options (Not Included)Low Voltage I Temperature Control
 Standard Power208 V /230 V /400 V /460 V
 Special Wiring (Thermostats, Fire Alarm Interface, Networking Etc.)(Optional) Consult Factory
 50 /60 Hz Operation

Warranty*

Motor & Gearbox1 Year
 Blades, Hub & Mounting System 1 Year

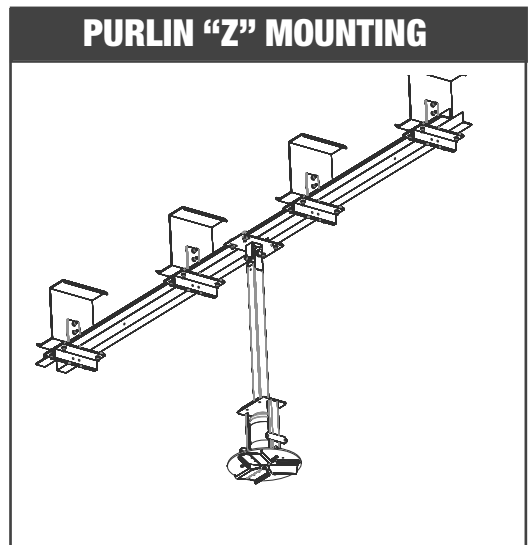
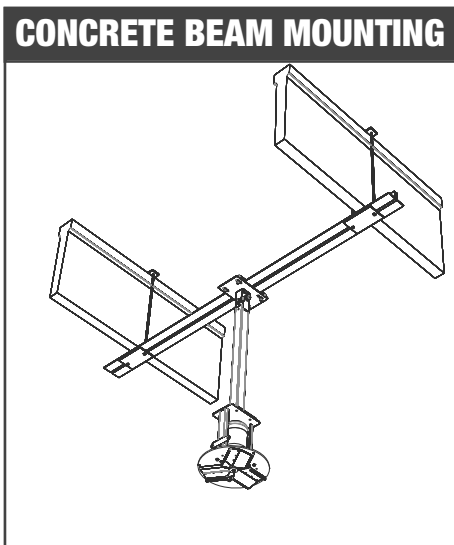
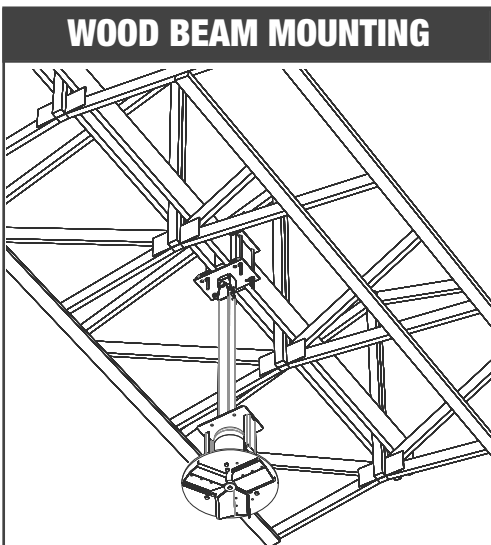
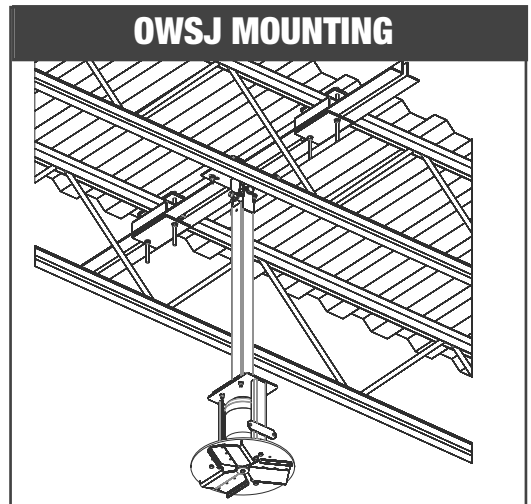
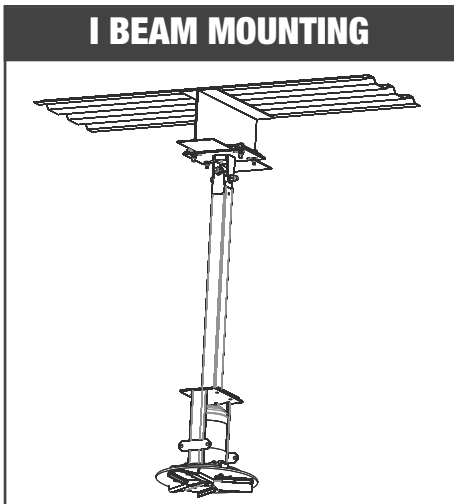
DIMENSIONS



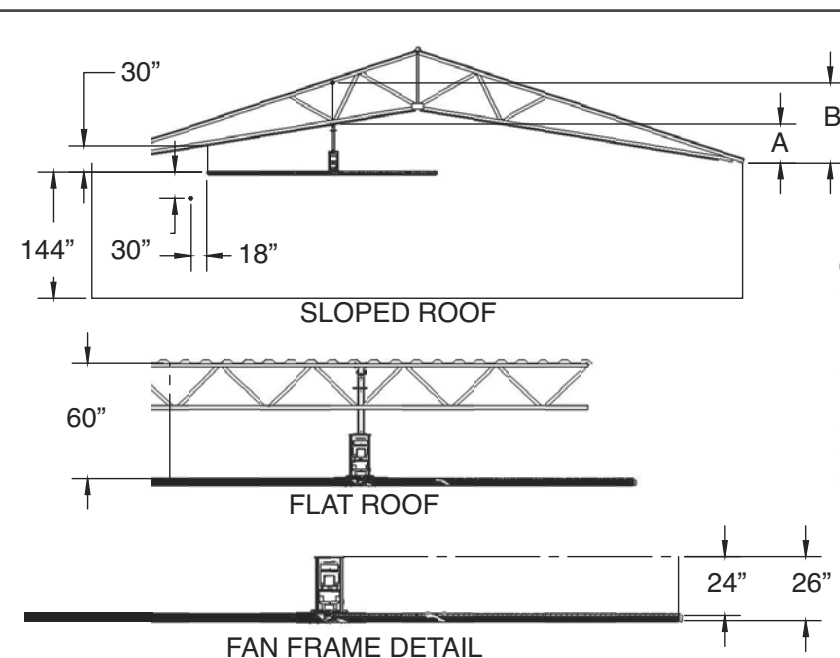
MODEL NUMBER	A	B
HVLS-24230460-1HP	279.5"	24"

DIFFERENT MOUNTING APPLICATIONS

NOTE: The following mounting applications are representations only and are subject to change without notice. Contact your Canarm sales representative for complete mounting instructions.



FAN BLADE CLEARANCE (Minimum Dimensions for Clearance)



OPEN CEILING - USE DIMENSION A, MINIMUM 60"

FINISHED TRUSS CEILING - USE DIMENSION B, MINIMUM 48"

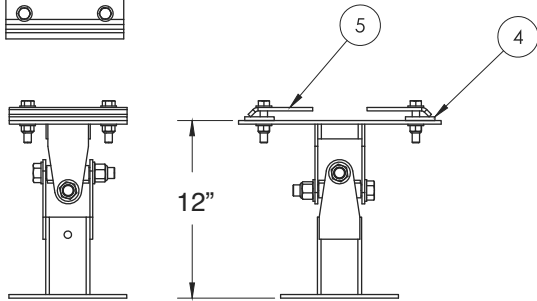
CLEARANCES:

- Min 60" center of fan to roof deck: or to finished ceiling for ideal operating performance without comprising overall fan performance.
- Min 30" from fan blade's leading edge to obstruction above or below fan.
- Min 18" from side of fan to any obstruction
- Min 18" from side of fan to any obstruction
- Min 18" from side of fan to any obstruction
- Min floor to fan leading edge height 144"
- To determine correct length for drop
 - establish method to mount the fan
 - determine necessary clearances
 - add clearance to distance required to mount location
 - select from standard UMH mounts' lengths available

NOTE: All dimensions are minimum requirements

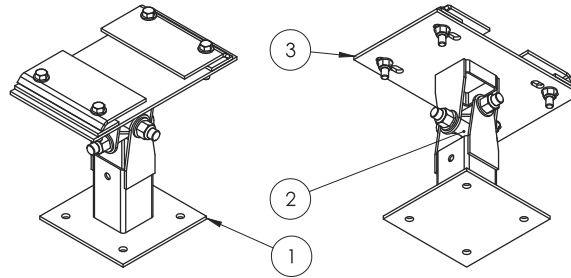
MOUNTS

1 FT UMH MOUNT

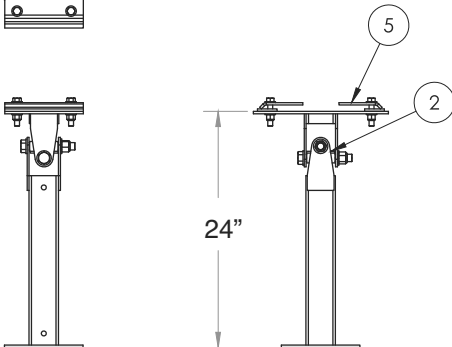
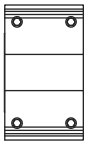


ITEM #	MODEL #	DESCRIPTION	QTY.
1	EN823X8425	DROP H TYPE 1 FT	1
2	EN823x8418	UMH COUPLER PC	1
3	EN823x8417	UMH UPPER PIVOT PLATE	1
4	EN823X8401	MANUFACTURED I-BEAM SPACER	2
5	EN823x8402	MANUFACTURED I-BEAM CLAMP	2

Subject to change without notice.

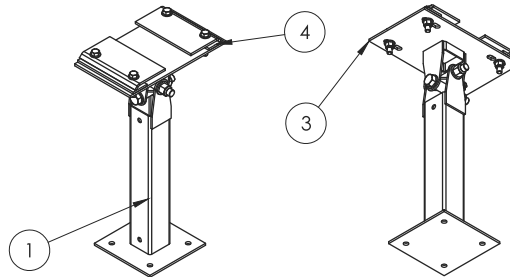


2 FT UMH MOUNT

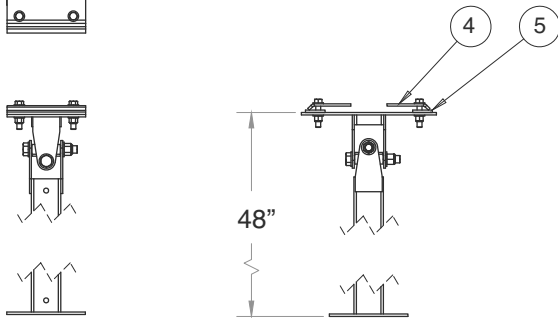
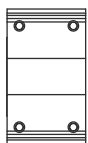


ITEM #	MODEL #	DESCRIPTION	QTY.
1	EN823X8426	DROP H TYPE 2 FT	1
2	EN823x8418	UMH COUPLER PC	1
3	EN823x8417	UMH UPPER PIVOT PLATE	1
4	EN823X8401	MANUFACTURED I-BEAM SPACER	2
5	EN823x8402	MANUFACTURED I-BEAM CLAMP	2

Subject to change without notice.

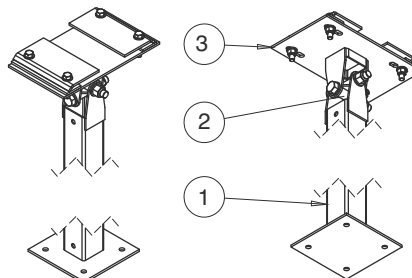


4 FT UMH MOUNT



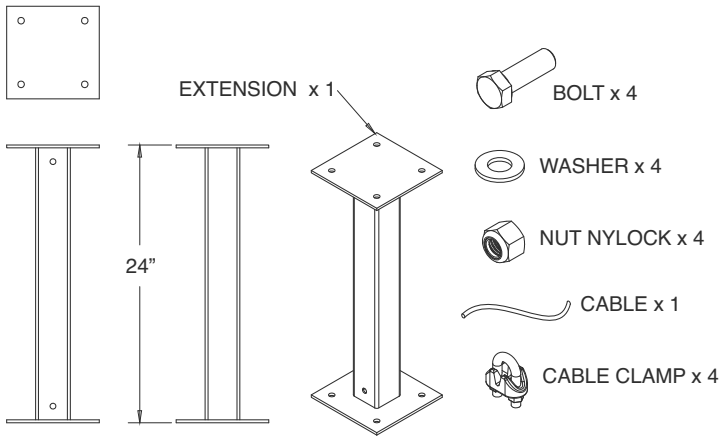
ITEM #	MODEL #	DESCRIPTION	QTY.
1	EN823X8428	DROP H TYPE 4 FT	1
2	EN823x8418	UMH COUPLER PC	1
3	EN823x8417	UMH UPPER PIVOT PLATE	1
4	EN823x8402	MANUFACTURED I-BEAM SPACER	2
5	EN823X8401	MANUFACTURED I-BEAM CLAMP	2

Subject to change without notice.

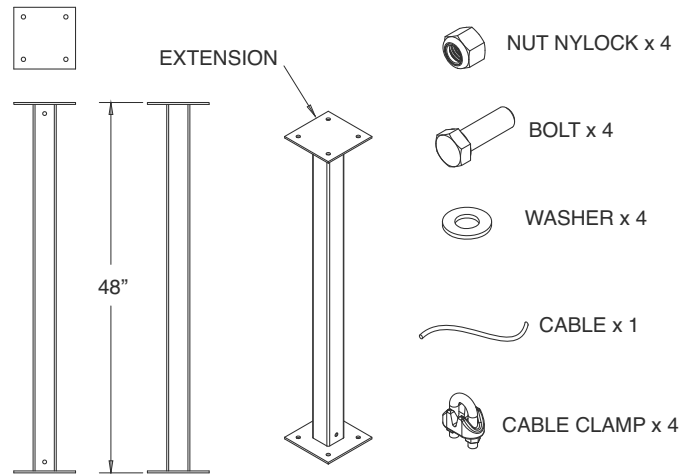


EXTENSION MOUNTS

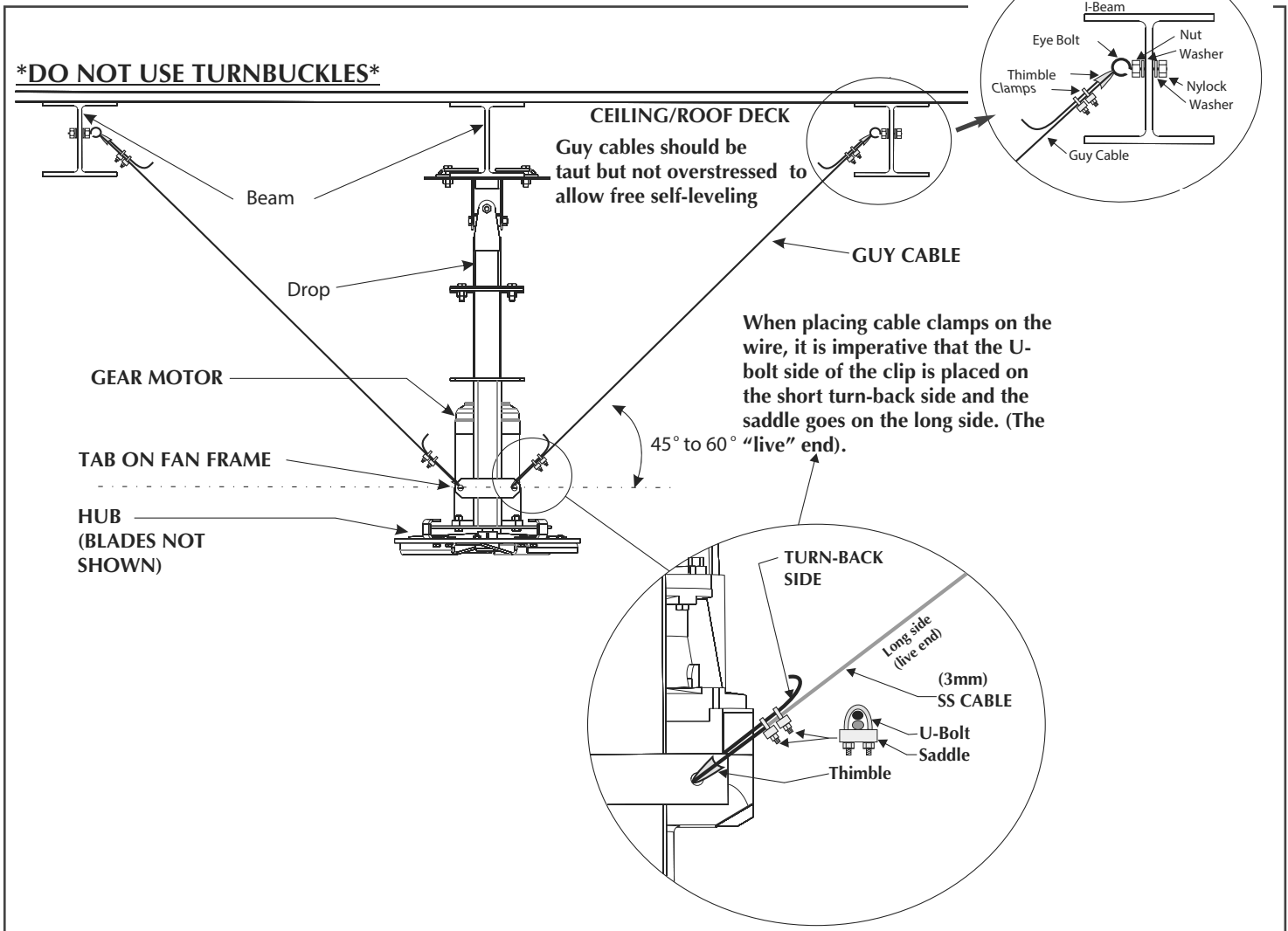
2 FT PKG EXTENSION MOUNT



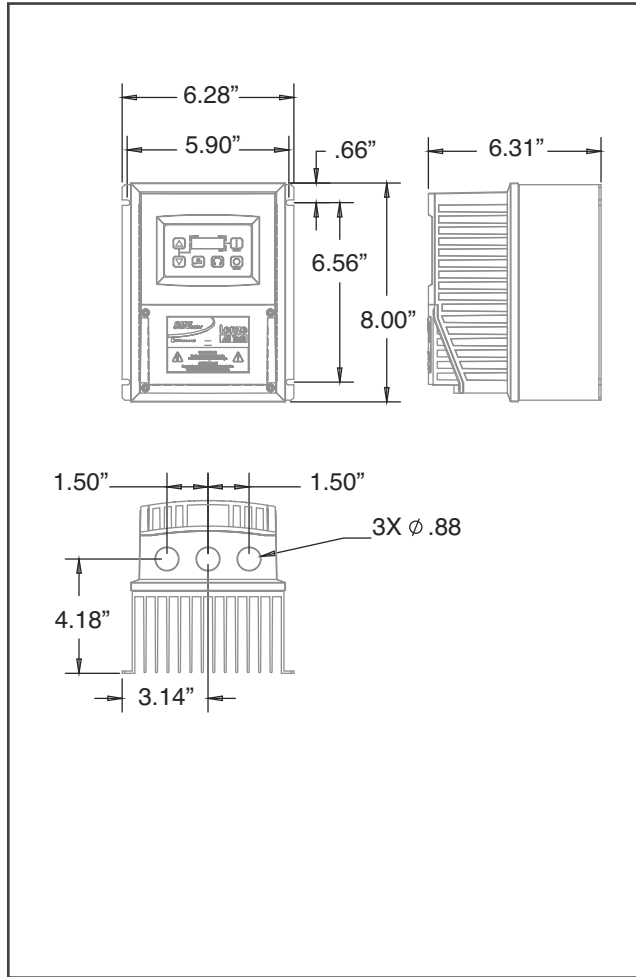
4 FT PKG EXTENSION MOUNT



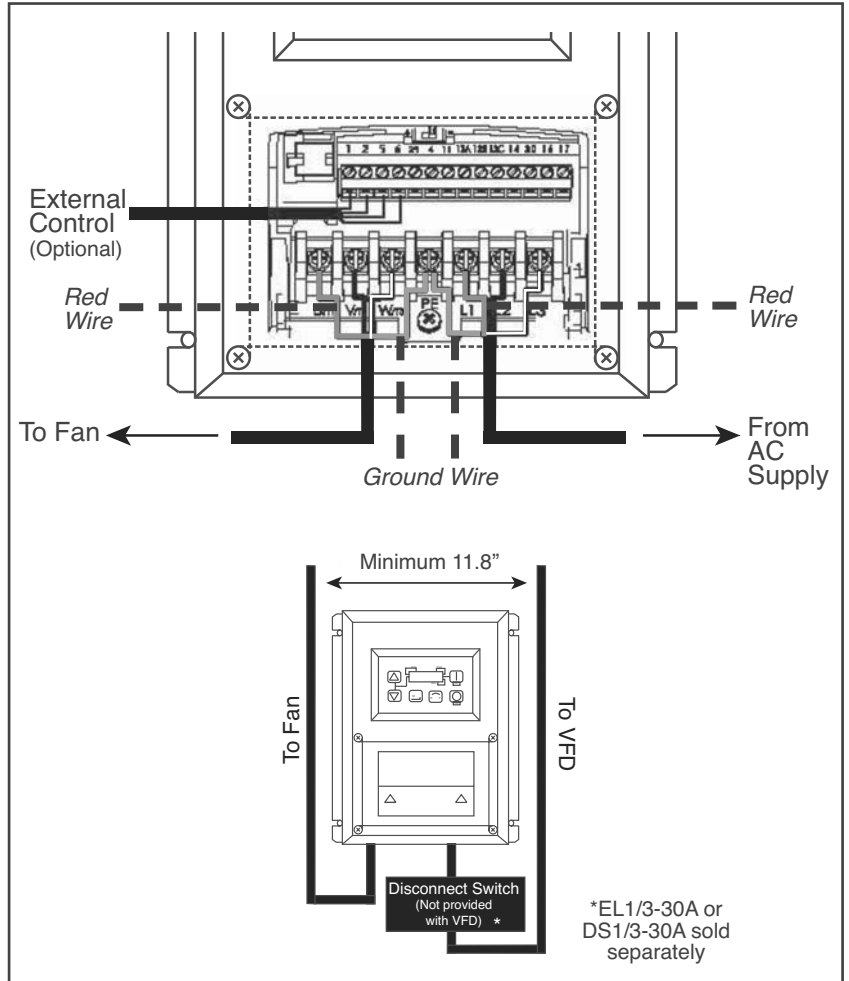
GUY WIRE MOUNTING



FAN CONTROL 2HP 230V NEMA 4 VFD



WIRE CONNECTIONS TO VFD (Variable Frequency Drives)



SAFETY & INSTALLATION

Tri-Lite HVLS Fans have the following measures in place to ensure the safety of our fans:

Safety Cable

This cable ties together the vertical drop and the gear motor frame to the physical structure of your building.

Blade Support Brackets

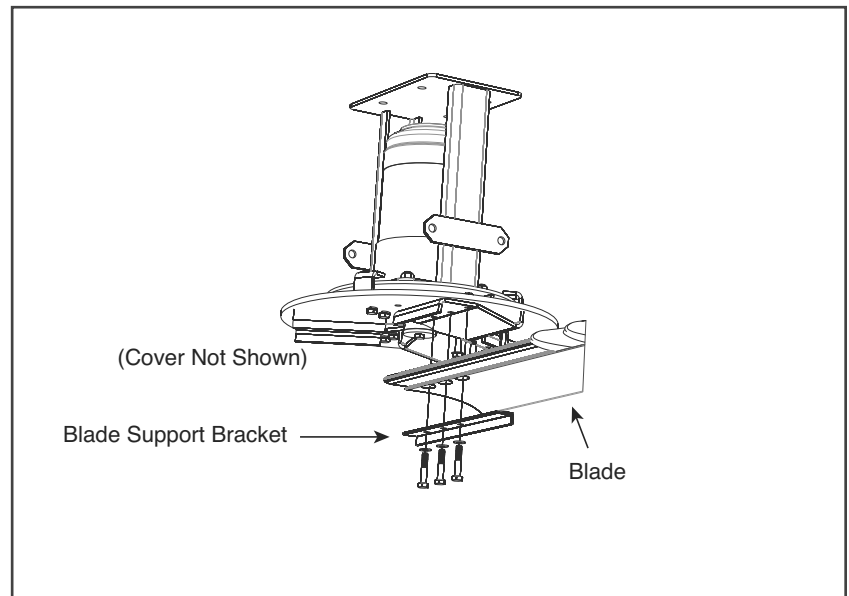
These clips help support the blade from underneath.

Guy Wires

The wires have two functions; first, to avoid unnecessary sway of the fan in case of unbalanced blade(s) and second, to avoid large movements due to wind or draft.

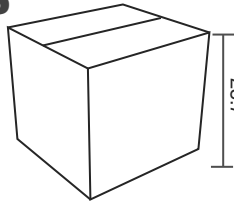
Mount

The mounting hardware has been designed and engineered to support the weight of the fan and provide a secure connection to the structure.

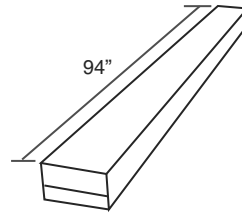


PACKAGING DETAILS

16' TRI-LITE HVLS

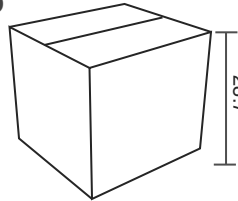


Dimensions
HVLS-16230460-1HP
 23.6" x 23.6" x 28.75"
 157 lbs

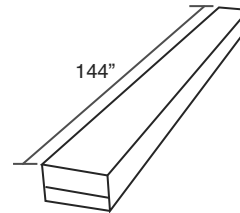


Dimensions
 Packaged Blades
 94" x 11.0" x 10.5"
 56 lbs

24' TRI-LITE HVLS



Dimensions
HVLS-24230460-1HP
 23.6" x 23.6" x 28.75"
 157 lbs



Dimensions
 Packaged Blades
 144" x 11.0" x 10.5"
 82 lbs

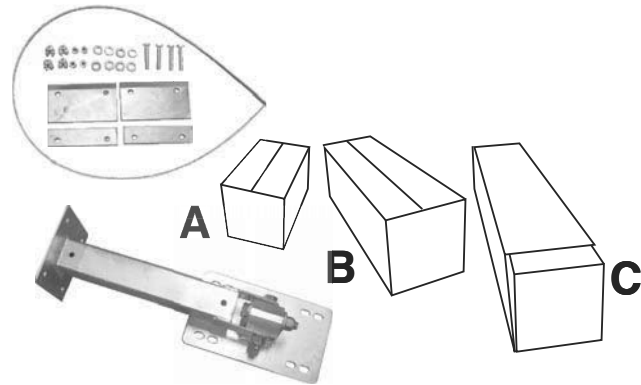
STANDARD FAN MOUNTING

A 1' Packaged UMH Mount
 15" x 9" x 9"
 22 lbs

C 4' Packaged UMH Mount
 51" x 9" x 9"
 46 lbs

B 2' Packaged UMH Mount
 28" x 9" x 9"
 33 lbs

Note: Custom lengths available upon request.

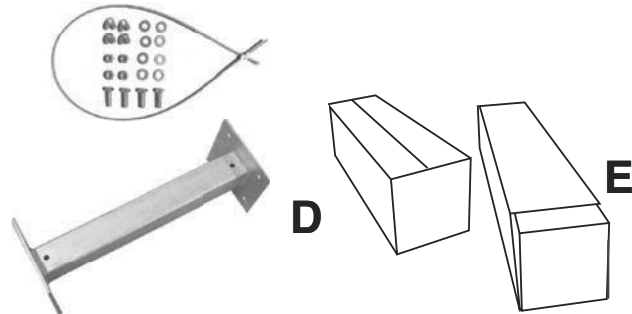


FAN EXTENSIONS

D HVLS-MBX2
 2' UMH Extension
 28" x 9" x 9"
 21 lbs

E HVLS-MBX4
 4' UMH Extension
 49" x 9" x 9"
 31 lbs

Note: Custom lengths available upon request.



VFD FAN CONTROLS

HVLS-ESV751N02YXB
 Variable Frequency Drive - 230V, 1Ø/3Ø
 Input (0 - 230V 3Ø Output)(NEMA1)

HVLS-ESV751N02YXC
 Variable Frequency Drive - 230V 1Ø/3Ø
 Input (0 - 230V 3Ø Output)(NEMA4)

HVLS-ESV751N04TXB
 Variable Frequency Drive - 480V, 3Ø
 Input (NEMA1)

HVLS-ESV751N04TXC
 Variable Frequency Drive - 480V, 3Ø
 Input (NEMA4)



DISCONNECT SWITCH

EL1/3-30A
 Disconnect Switch 30A, IP65

DS1/3-30A
 Disconnect Switch 30A, NEMA3R

INSTALLATION OR PRODUCT PROBLEMS?

Do not return to store of purchase. Contact **Canarm at 1-800-265-1833 (CANADA), 1-800-267-4427 (U.S.A.), 1-800-567-2513 (EN FRANCAIS)** Monday to Friday 8:00 - 5:00pm e.s.t. or visit www.canarm.com