



# INSTALLATION MANUAL

Air**Revolution** D3  
By MacroAir



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# Caution & Safety

**READ THE ENTIRE MANUAL BEFORE OPERATING THE FAN.** Ensure that all safety practices and instructions are followed during the installation, operation and servicing of the fan. Failure to apply these safety practices could result in death or serious injury. If you do not understand the instructions please call our Technical Department for guidance (Technical Support contact information can be found on page 55).

The fan installation should follow the recommendations outlined in this manual. MacroAir is not responsible for any injury or damage to people or property as a result of the user and/or installer not complying with the recommendations outlined in this manual.

All fan controls and incoming power should only be installed by qualified technicians familiar with the requirements of the NEC and local codes. Refer to appropriate portions of this manual for other important requirements. Failure to follow these guidelines will void the manufacturer's warranty.

**NOTICE:** All electrical controls are configured at the factory and are ready to use. No user adjustments are available. Follow the included wiring schematics and installation instructions when installing this device to ensure proper operation. Do not make any changes to any part of the fan without first consulting MacroAir.

Installation is to be in accordance with the national electrical code, ANSI/NFPA 70-1999 and local codes.

## **HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH.**

Read and understand this manual before installing or operating a fan unit. Installation, adjustment, repair, or maintenance must be performed by qualified personnel.

The user is responsible for compliance with all international and national electrical code requirements with respect to grounding of all equipment.

Many of the parts of this unit operate at line voltage. **DO NOT TOUCH.**

Install all covers before applying power or starting and stopping the unit.

## **DAMAGED EQUIPMENT**

Do not operate or install any fans or fan accessories that appear to be damaged.

Failure to follow this instruction can result in death, serious injury, or equipment damage.

## **SERVICE:**

If the fan does not operate properly using the procedures in this manual, **BE CERTAIN TO REMOVE ALL POWER TO THE UNIT** and contact our technical department for further assistance.

Keep all body parts clear of moving part at all times.

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

# Caution & Safety

## Key Safety System Components

MacroAir fans are engineered with key safety features to prevent pieces of the fan from falling in the unlikely event of a catastrophic failure. Used together, these systems and devices provide comprehensive protection of people, equipment and property. Follow the detailed instructions precisely when installing fans, including the following:

- Install Safety cable on EVERY fan. The Safety cable, if installed per MacroAir specifications, will prevent the fan from falling in the unlikely event that the mounting system should fail. A MacroAir fan should never be run without a properly installed Safety cable, which is supplied with every fan along with all required hardware. You must install a Safety cable for the warranty to be in effect. Refer to Step 3 on page 36.
- Install Guy wires on every fan, unless otherwise specified. Properly installing the Guy wires will keep the fan stable in case of earthquake or in "outdoor" installations where high wind conditions may occur. Refer to Step 4 on page 45.
- Install the complete set of extended airfoil safety links, which connect each airfoil to the adjacent airfoils and reinforce the area between the mounting holes. This is an important precautionary measure which will help prevent an airfoil from falling should one break off at the hub for any reason. Refer to Step 5 on page 49.

## Mark the Floor to Alert Personnel

When mounting a fan in an area where materials may be elevated into its path, MacroAir recommends marking or painting the floor with a large crosshatched circle to alert personnel of the overhead location of fans.

## Weight Considerations

We recommend that a building structure be capable of holding approximately twice the stated hanging weight of the fan. The maximum hanging weight for the AirVolution-D3 is 121 lbs. If there is any uncertainty in the strength of the building structure, a professional structural engineer should perform a thorough evaluation of the building prior to purchasing the fans. MacroAir provides guidelines for mounting fans; however, it is the sole responsibility of the building owner and installer to ensure the safety of the mounting system, that the building structure is sound and that the installation complies with all federal, state, and local codes.

## Torque

The maximum torque (twisting force) that must be handled by the mounting system, including the building structure. For a AirVolution-D3, the maximum potential torque is 51.6 ft-lbs.

## Check Federal, State, and Local Codes

Check all relevant codes to make sure that all product certifications, product listings, and building regulations are met. Code compliance is the responsibility of the installer.

## Windy Conditions

Fans should not be operated when wind is present. Fans should not be installed in applications where it is frequently windy.

# Fusing Chart

IT IS STRONGLY RECOMMENDED THAT THE FANS ARE FUSED TO PROTECT THE ELECTRICAL COMPONENTS.

Use the table below to select the correct **fast acting fuse** size for your application.

## Max Amp Draw / Recommended Fuse

Voltage and Phase	12ft	14ft	16ft	18ft	20ft	24ft
208-240 VAC 1-Phase	3.7A / 5	4.3 A / 5	3.2A / 5	4.5A / 5	5.7A / 10	6A / 10
208-240 VAC 3-Phase	2.6A / 5	2.9A / 5	2.4A / 5	3A / 5	3.6A / 5	3.8A / 5

Reference page 43 for installation.

# Fan Placement

## **Sprinkler Systems and Fan Placement**

In any installation where fire sprinklers are in place, fan should not interfere with their correct operation. Fans should be located no less than 3 feet below a sprinkler, and placed central to each sprinkler quadrant. Our custom motor controller can be connected to a fire suppression control system, which will emergency-stop fans in case of fire. Prior to installing fans, review all codes applicable to sprinkler systems and fans to ensure code compliance (refer to NFPA 13). Please call our Technical Department for guidance (Technical Support contact information can be found on page 55). However, it is your sole responsibility to see that the installation is completed to code and that it is correct.

## **Other Information on Placement and Spacing**

If possible, avoid mounting fans directly below lights or skylights to avoid any strobe effect caused by moving airfoils. Note, a large fan, 20 – 24 feet in diameter, performs best at 20 to 30 feet above the floor, but acceptable performance has been demonstrated as low as 10 feet and as high as 50 feet.

If the building has a mezzanine, fans should be mounted so a person can not reach a fan in any way from the upper level/deck. Make certain that fans are positioned so that the airfoil tips are at least 3 feet away from any area where a person may be able to extend outward to reach them.

# Fan Clearance

**WARNING: FANS ARE NOT MEANT TO BE OPERATED IN WINDY CONDITIONS.**

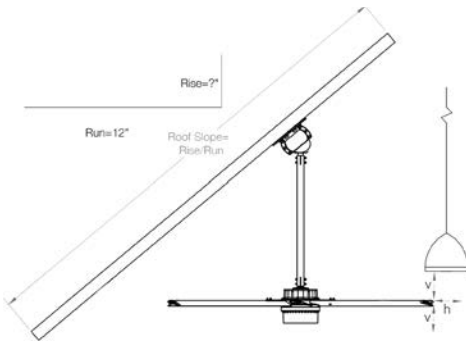
The Standard Mount should only be used if the mounting surface is not a compound angle. The UMH should be used for all compound angle surfaces.

Maximum Angle for Mount (feet)

Slope (in)	0	2/12	4/12	6/12	8/12	10/12
Roof Angle	0	9.5°	18.4°	26.6°	33.7°	39.8°
Diameter	Recommended Total Drop (Mount to Airfoil) Length					
12 feet	3	3	3	5	6	7
14 feet	3	3	4	5	7	8
16 feet	3	3	4	6	7	9
18 feet	3	4	5	7	9	11
20 feet	3	4	5	7	9	12
24 feet	3	4	7	9	12	17

\*Need Universal Mount with Guy wires

The extension lengths above are minimum recommendations only, based solely on roof pitch and fan diameter. Other factors, such as allowing for proper airflow into the fan must be evaluated when determining extension requirements. In addition, MacroAir strongly recommends that the fan airfoils must be a minimum of 10 feet (3.05 meters) above the floor. Contact Technical Support for assistance with fan placement and extension selection (technical support contact information can be found on page 55).



The table below shows the clearance needed from the fan to obstructions such as lighting, conduit, etc.

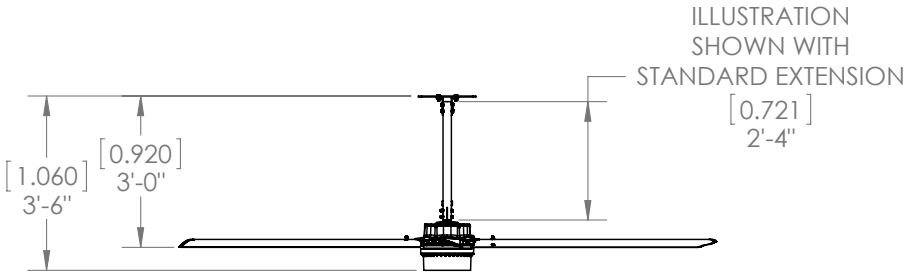
Minimum Clearance (Horizontal / Vertical inches):

Airfoil / Extension	2	3	4	5	6	7	8	9	10
12 feet	7 / 8	7 / 8	7 / 9	7 / 9	8 / 9	9 / 10	10 / 11	11 / 12	16 / 16
14 feet	7 / 9	7 / 9	7 / 10	7 / 10	8 / 11	9 / 11	10 / 12	11 / 13	13 / 14
16 feet	7 / 10	7 / 10	7 / 11	7 / 11	8 / 12	9 / 13	10 / 14	11 / 15	13 / 16
18 feet	7 / 12	7 / 12	7 / 12	7 / 13	8 / 14	9 / 15	10 / 16	11 / 17	13 / 18
20 feet	7 / 14	7 / 14	7 / 14	7 / 15	8 / 16	9 / 17	10 / 18	11 / 19	13 / 21
24 feet	7 / 19	7 / 19	7 / 20	7 / 20	8 / 21	9 / 22	10 / 24	11 / 25	13 / 27



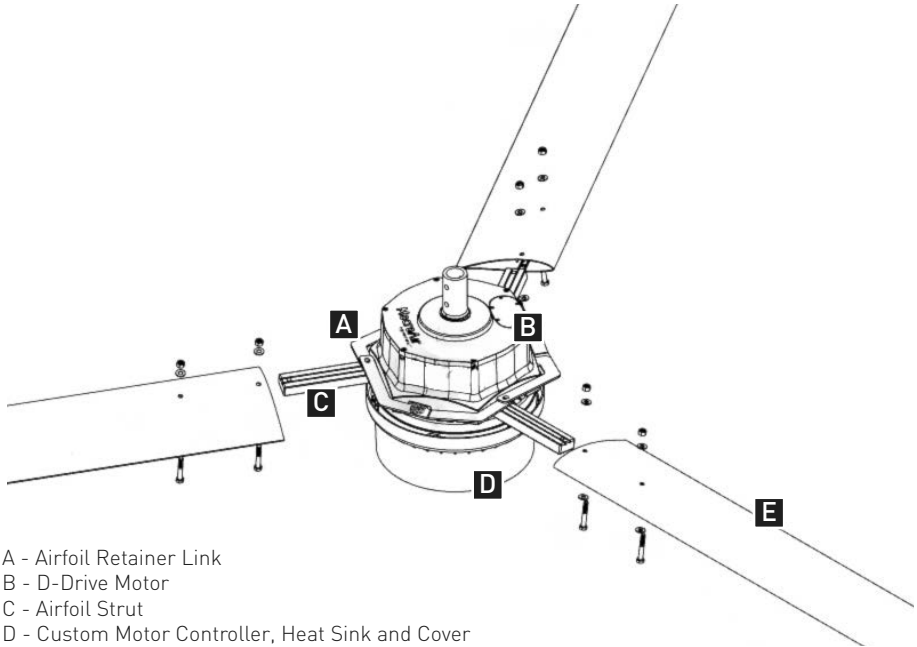
# Fan Dimensions

## AirVolution-D3



The AirVolution-D3 has a standard airfoil to mount clearance of 3 feet [0.914 m] with the Standard Mount. Refer to the Fan Clearance & Placement charts on page 6 for allowable mounting options.

# Fan Components



- A - Airfoil Retainer Link
- B - D-Drive Motor
- C - Airfoil Strut
- D - Custom Motor Controller, Heat Sink and Cover
- E - XL Airfoil

## Tools Required for Provided Hardware:

### Mounting:

- 9/16" Socket
- 9/16" Combo Wrench
- 3/4" Socket
- 3/4" Combo Wrench

### Extension:

- 9/16" Socket
- 5/16" Allen Wrench

### Cover:

- 5/32" Allen Wrench

### Airfoils:

- 1/2" Socket
- 1/2" Combo Wrench

## Step 1A - Standard Mount Installation

Use Step 1A if you purchased a Standard Mount. Use Step 1C if you purchased a Simple Mount. Use Step 1B if you purchased a Universal Mount.

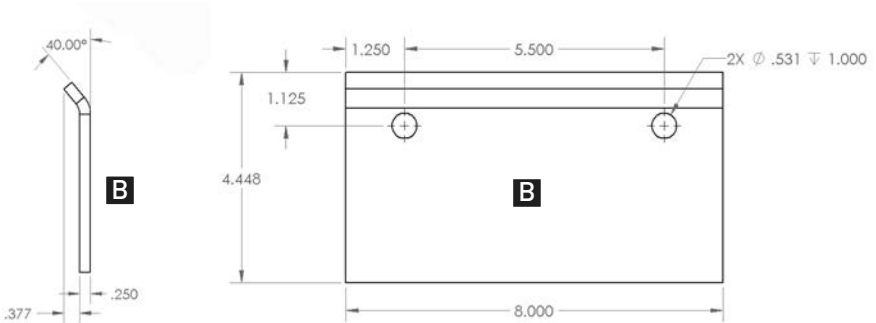
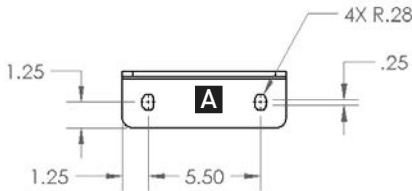
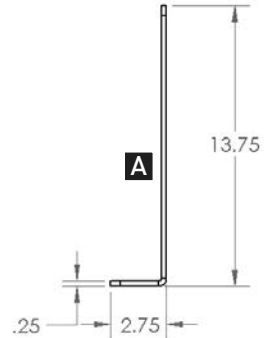
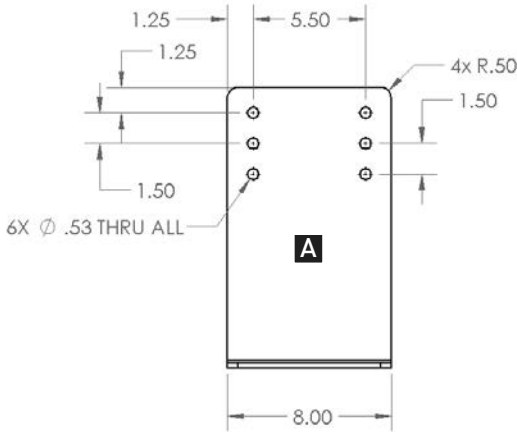
Choose the appropriate method for mounting the fan(s) based upon your specific application.



# Standard Mount

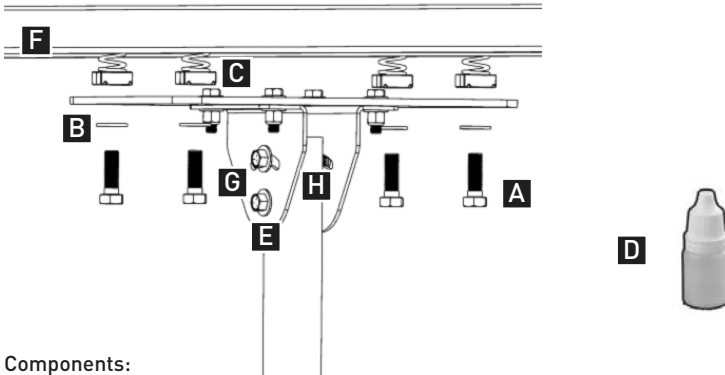
## Components:

- A - Glulam Bracket (Optional)
- B - I-beam Clamps (Standard)



# 1.1A Unistrut Span Mounting

**NOTE:** Mounting to Z-purlins requires span mounting. Mounting to trusses requires two or more trusses to be linked with Unistrut or angle iron.



## Components:

- A - 1/2"-13 x 1" Grade 5 Bolts (4)
- B - 1/2" Flat Washers
- C - 1/2"-13 Unistrut Spring Nuts (P1010) (4)
- D - Liquid Thread Lock
- E - Standard Mount
- F - 1-5/8" Unistrut Unpierced Channels (P1000 or P1001B) (2)
- G - Locking Hardware
- H - Extension Attachment Point

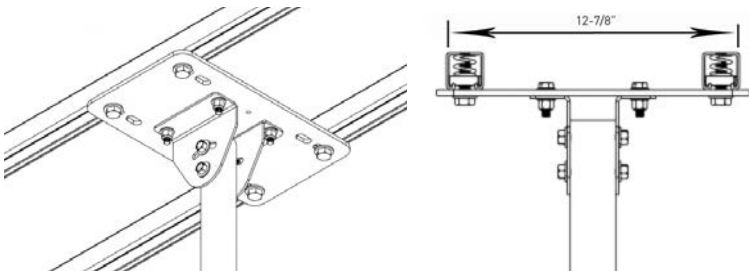
This method is used to span components of a building structure. The attachment point to the building structure can vary greatly and we recommend Unistrut be contacted so they may recommend the best method to attach the Unistrut to the building ([www.unistrut.us](http://www.unistrut.us)). If the spanning distance is greater than 6 feet (P1000) or 10 feet (P1001B), please consult a Structural Engineer. Please refer to page 3 for the maximum torque and weight.

**1.1.1A:** Span two pieces of 1-5/8" Unistrut open side facing down and space apart so there is 12-7/8" from outside edge to outside edge (See illustration for example).

**1.1.2A:** Once the Unistrut is in place, apply liquid thread lock to the recommended bolts and use the remaining recommended hardware to attach the mount to the Unistrut. Torque the bolts to 50ft-lbs. Recommended torque is based on 1/2-13" hardware.

**1.1.3A:** Tighten the locking hardware on the standard mount to 30 ft-lbs once the extension attachment point is level.

## Final Results:

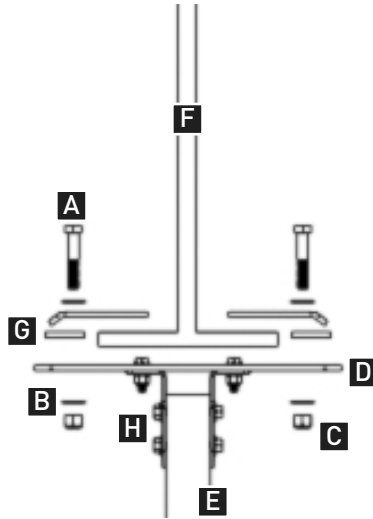


# 1.2A I-Beam Mounting

**NOTE:** Mounting to Z-purlins requires span mounting. Mounting to trusses requires two or more trusses to be linked with Unistrut or angle iron.

## Components:

- A - 1/2" -13 Grade 5 Bolts (4)
- B - 1/2" Flat Washers (8)
- C - 1/2" Nylon Locking Nuts (4)
- D - Standard Mount
- E - Extension Attachment Point
- F - I-beam
- G - Clamps and Shims
- H - Locking Hardware



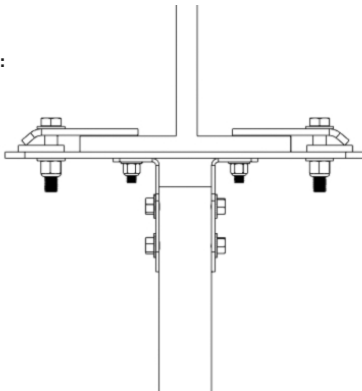
This method is used to install the Standard Mount to an I-beam.

**1.2.1A:** Assemble the mount with one shim and clamp and hand tighten the hardware. Hook the clamp on one side of the I-beam or purlin and tighten hardware until the mount is snug but can still be moved.

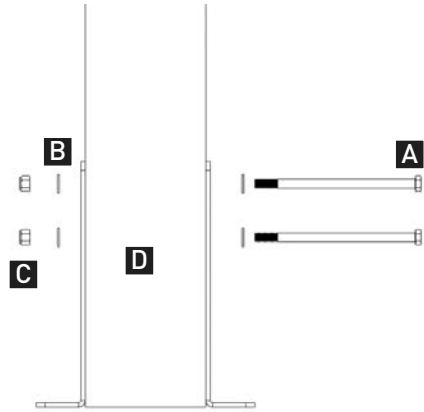
**1.2.2A:** Assemble the other shim and clamp on the other side and center the mount under the I-beam or purlin. Ensure the clamps have maximum engagement on both sides and torque the hardware to 75 ft-lbs.

**1.2.3A:** Tighten the locking hardware (H) on the mount to 30 ft-lbs once the fan is level.

## Final Results:



# 1.3A Glulam/Wood Beam Mounting (1 of 2)



## Components:

- A - 1/2" -13 Grade 5 Bolts (at least 2-1/2" longer than the beam is wide) (4)
- B - 1/2" Flat Washers (8)
- C - 1/2" Nylon Locking Nuts (4)
- D - Glulam

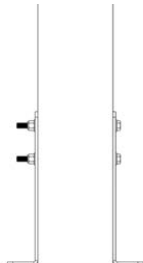
This method is recommended for Glulams or wood beams 5-1/8" or wider. For narrower attachment points please refer to the Unistrut mounting method to span across two or more beams to increase the structural integrity.

**1.3.1A:** Place a Glulam bracket against the beam and use a level or straight edge to line the bottom of the bracket up against the bottom of the beam. Trace the locations of four bolt holes and the two long sides of the Glulam bracket on the Glulam or wood beam.

**1.3.2A:** Once marked, flip the Glulam bracket over so the long side is against the bottom of the beam and line the short side up with the markings you previously made. Now mark the sides of the Glulam bracket along the bottom of the beam.

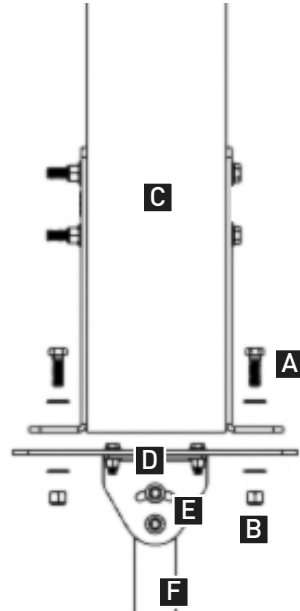
**1.3.3A:** Flip the Glulam bracket over to the other side of the beam and line the bottom of the bracket up with the marking along the bottom of the beam. Now mark the same four bolt hole locations and remove the bracket. Using a 1/2" wood bit drill out the four bolt holes from both sides.

**1.3.4A:** Install both brackets with the recommended hardware and hand tighten so the brackets are left moveable.





# 1.3A Glulam/Wood Beam Mounting (2 of 2)



## Components:

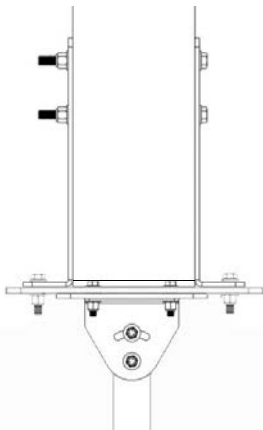
- A - 1/2"-13 Grade 5 Bolts (4)
- B - 1/2" Nylon Locking Nuts (4)
- C - Glulam
- D - Standard Mount
- E - Locking Hardware
- F - Extension Attachment Point

**1.3.5A:** Place the Standard Mount against the bottom of the brackets and use the provided bolt kit to assemble loosely.

**1.3.6A:** Once the Standard Mount is attached, tighten the Glulam brackets and ensure they are flush against the beam from top to bottom.

**1.3.5A:** Tighten the locking hardware on the mount to 30 ft-lbs once the fan is level.

## Final Results:



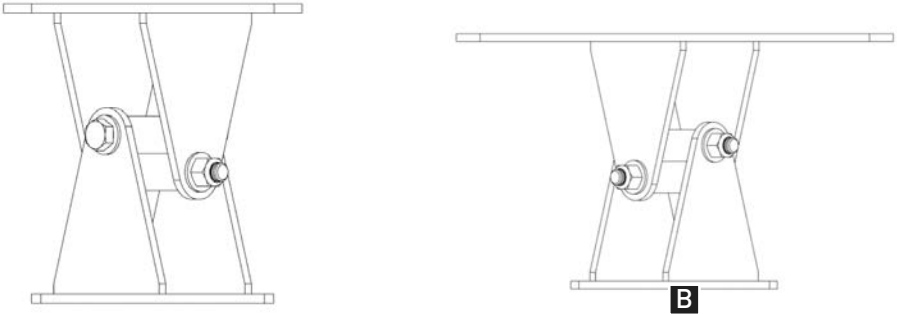
## Step 1B - Universal Mount Installation

Use Step 1B if you purchased a Universal Mount. Use Step 1C if you purchased a Simple Mount. Use Step 1A if you purchased a Standard Mount.

Choose the appropriate method for mounting the fan(s) based upon your specific application.

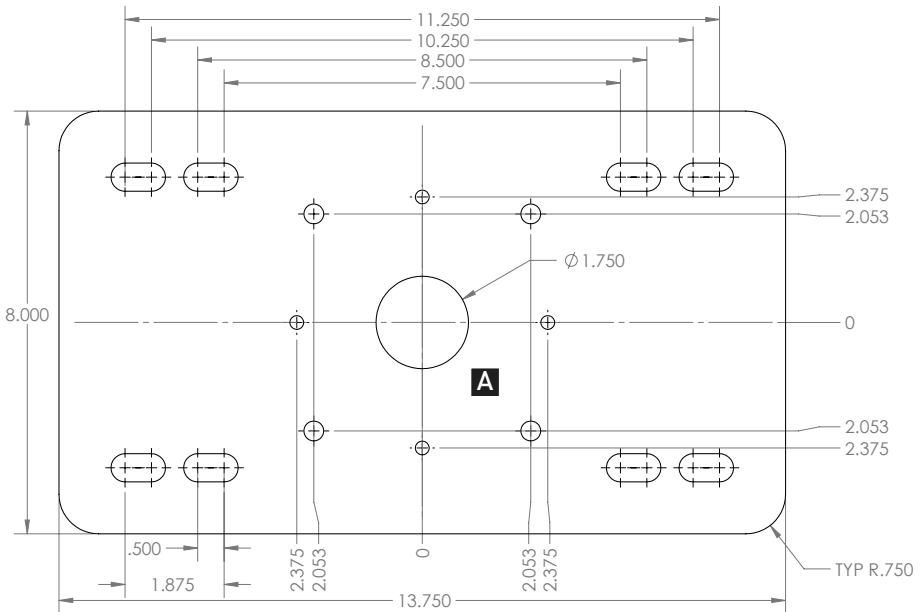
# Universal Mount

Guy wires are required for the Standard Mount for all drop lengths.



## Components:

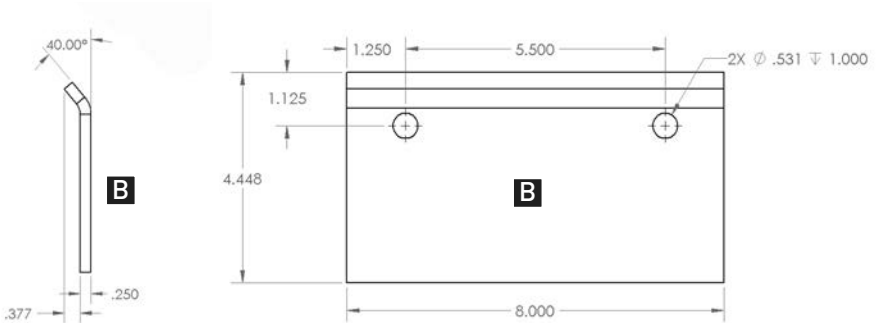
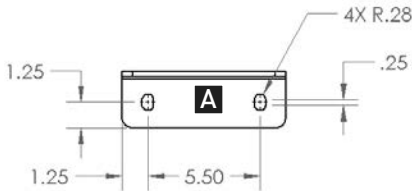
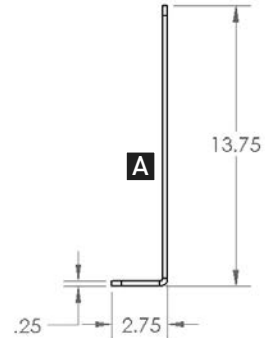
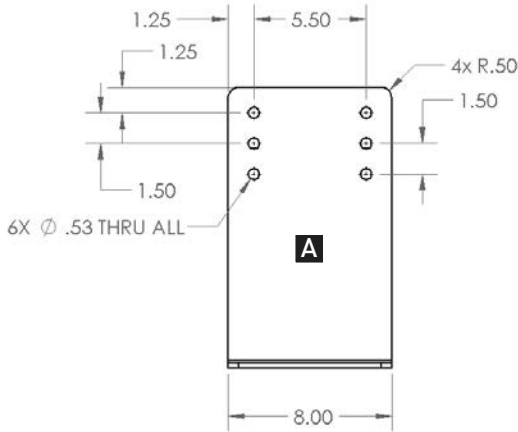
- A - Top Plate
- B - Extension Adapter Attachment Point



# Universal Mount

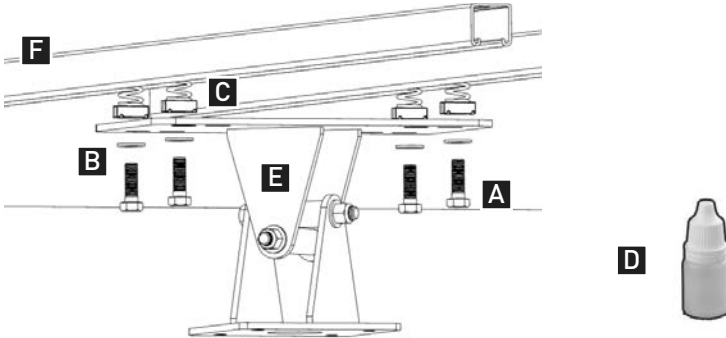
## Components:

- A - Glulam Bracket (Optional)
- B - I-beam Clamps (Standard)



# 1.1B Unistrut Span Mounting

**NOTE:** Mounting to Z-purlins requires span mounting.



## Components:

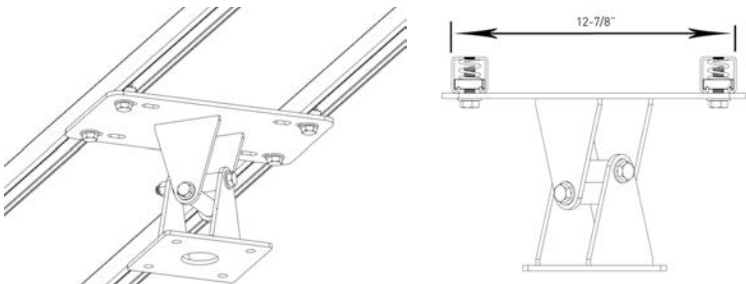
- A - 1/2" -13 x 1" Grade 5 Bolts (4)
- B - 1/2" Flat Washers (4)
- C - 1/2"-13 Unistrut Spring Nuts (P1010) (4)
- D - Liquid Thread Lock
- E - Universal Mount
- F - 1-5/8" Unistrut Channels (2)

This method is used to span components of a building structure. The attachment point to the building structure can vary greatly and we recommend Unistrut be contacted so they may recommend the best method to attach the Unistrut to the building ([www.unistrut.us](http://www.unistrut.us)). If the spanning distance is greater than 8 feet, please consult a Structural Engineer. Please refer to page 3 for the maximum torque and weight.

**1.1.1B:** Span two pieces of 1-5/8" Unistrut open side facing down and space apart so there is 12-7/8" from outside edge to outside edge (See illustration for example).

**1.1.2B:** Once the Unistrut is in place, apply liquid thread lock to the recommended bolts and use the remaining recommended hardware to attach the mount to the Unistrut. Torque the bolts to 50ft-lbs. Recommended torque is based on 1/2-13" hardware.

## Final Results:

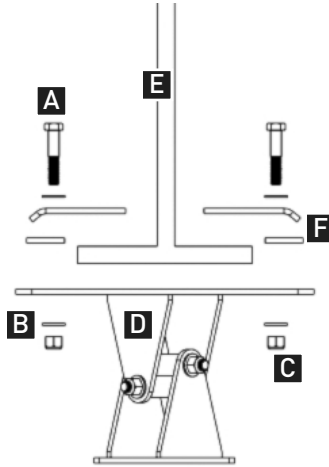


# 1.2B I-Beam Mounting

**NOTE:** Mounting to Z-purlins requires span mounting.

## Components:

- A - 1/2" -13 Grade 5 Bolts (4)
- B - 1/2" Flat Washers (8)
- C - 1/2" Nylon Locking Nuts (4)
- D - Universal Mount
- E - I-beam
- F - Clamps and Shims

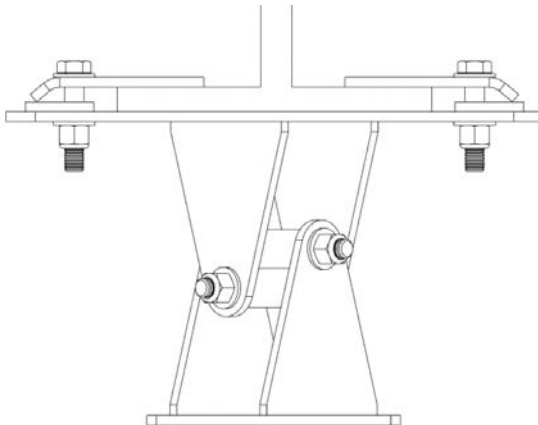


This method is used to install the Universal Mount to an I-beam.

**1.2.1B:** Assemble the mount with one shim and clamp and hand tighten the hardware. Hook the clamp on one side of the I-beam or purlin and tighten hardware until the mount is snug but can still be moved.

**1.2.2B:** Assemble the other shim and clamp on the other side and center the mount under the I-beam or purlin. Ensure the clamps have maximum engagement on both sides and torque the hardware to 75 ft-lbs.

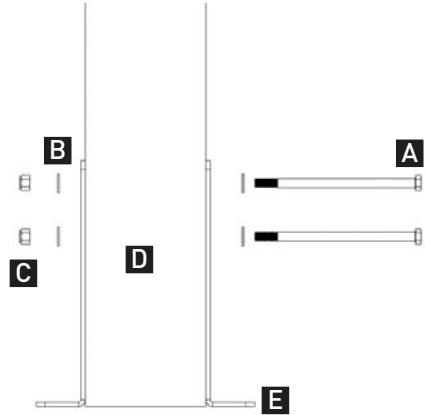
## Final Results:



# 1.3B Glulam/Wood Beam Mounting (1 of 2)

## Components:

- A - 1/2"-13 Grade 5 Bolts  
(at least 2-1/2" longer than the beam  
is wide) (4)
- B - 1/2" Flat Washers (8)
- C - 1/2" Nylon Locking Nuts (4)
- D - Glulam
- E - Glulam Bracket



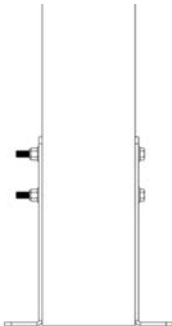
This method is recommended for Glulams or wood beams 5-1/8" or wider. For narrower attachment points please refer to the Unistrut mounting method to span across two or more beams to increase the structural integrity.

**1.3.1B:** Place a Glulam bracket against the beam and use a level or straight edge to line the bottom of the bracket up against the bottom of the beam. Trace the locations of four bolt holes and the two long sides of the Glulam bracket on the Glulam or wood beam.

**1.3.2B:** Once marked, flip the Glulam bracket over so the long side is against the bottom of the beam and line the short side up with the markings you previously made. Now mark the sides of the Glulam bracket along the bottom of the beam.

**1.3.3B:** Flip the Glulam bracket over to the other side of the beam and line the bottom of the bracket up with the marking along the bottom of the beam. Now mark the same four bolt hole locations and remove the bracket. Using a 1/2" wood bit drill out the four bolt holes from both sides.

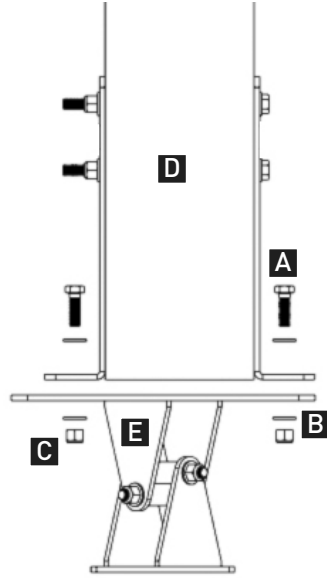
**1.3.4B:** Install both brackets with the recommended hardware and hand tighten so the brackets are left loose.



# 1.3B Glulam/Wood Beam Mounting (2 of 2)

## Components:

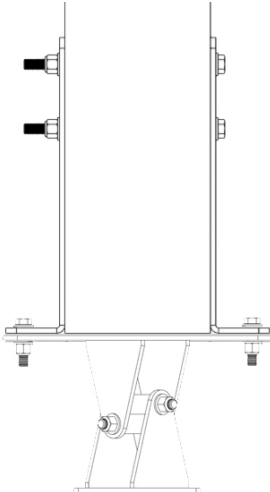
- A - 1/2"-13 Grade 5 Bolts (4)
- B - 1/2" Flat Washers (8)
- C - 1/2" Nylon Locking Nuts (4)
- D - Glulam
- E - Universal Mount



**1.3.5B:** Place the Universal Mount against the bottom of the brackets and use the provided bolt kit to assemble loosely.

**1.3.6B:** Once the Universal Mount is attached, tighten the Glulam brackets and ensure they are flush against the beam from top to bottom.

## Final Results:





## Step 1C - Simple Mount Installation

Use Step 1A if you purchased a Standard Mount. Use Step 1B if you purchased a Universal Mount. Use Step 1C if you purchased a Simple Mount.

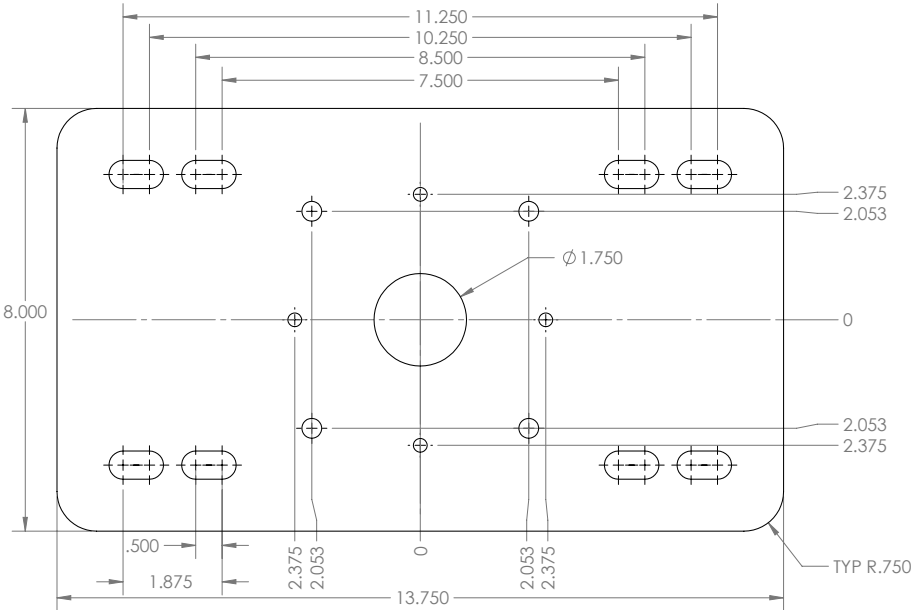
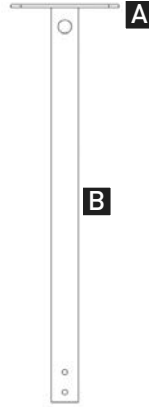
Choose the appropriate method for mounting the fan(s) based upon your specific application.

# Simple Mount

The Simple Mount only comes with a 3 foot drop length and does not require guy wires. It can only be used on a level mounting surface. For any angled surfaces, use other mounting options.

## Components:

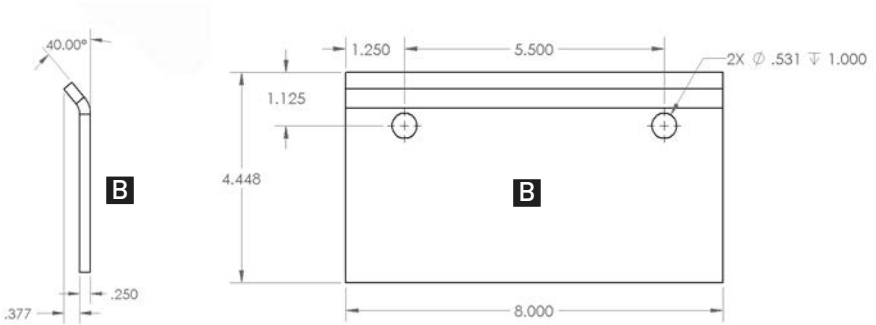
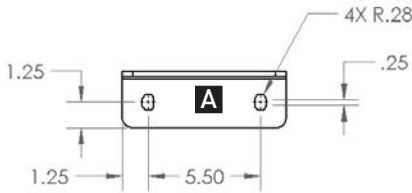
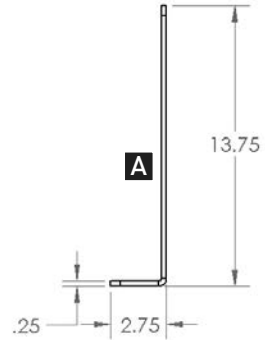
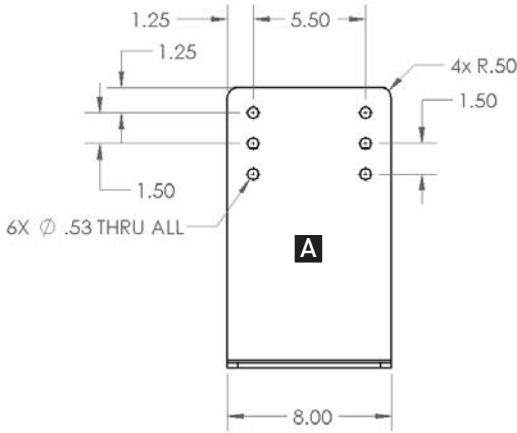
- A - Top Plate
- B - Motor Attachment Point



# Simple Mount

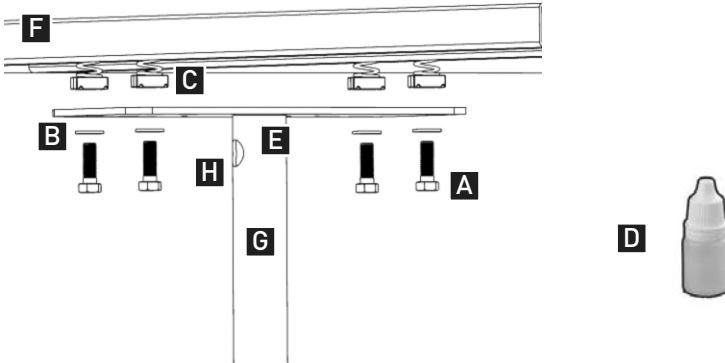
## Components:

- A - Glulam Bracket (Optional)
- B - I-beam Clamps (Standard)



# 1.1C Unistrut Span Mounting

**NOTE:** Mounting to Z-purlins requires span mounting. Mounting to trusses requires two or more trusses to be linked with Unistrut or angle iron.



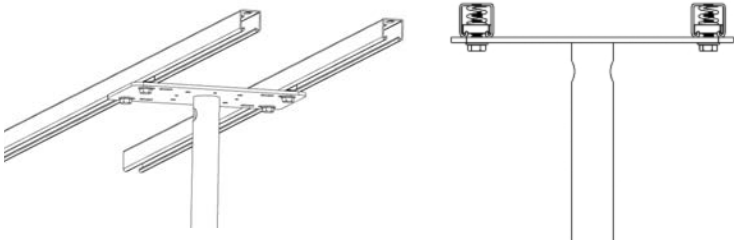
- A - 1/2"-13 x 1" Grade 5 Bolts (4)
- B - 1/2" Flat Washers
- C - 1/2"-13 Unistrut Spring Nuts (P1010) (4)
- D - Liquid Thread Lock
- E - Simple Mount
- F - 1-5/8" Unistrut Unpierced Channels (P1000 or P1001B) (2)
- G - Extension Attachment Point
- H - Wire Outlet

This method is used to span components of a building structure. The attachment point to the building structure can vary greatly and we recommend Unistrut be contacted so they may recommend the best method to attach the Unistrut to the building ([www.unistrut.us](http://www.unistrut.us)). If the spanning distance is greater than 6 feet (P1000) or 10 feet (P1001B), please consult a Structural Engineer. Please refer to page 3 for the maximum torque and weight.

**1.1.1C:** Span two pieces of 1-5/8" Unistrut open side facing down and space apart so there is 12-7/8" from outside edge to outside edge (See illustration for example).

**1.1.2C:** Once the Unistrut is in place, apply liquid thread lock to the recommended bolts and use the remaining recommended hardware to attach the mount to the Unistrut. Torque the bolts to 50ft-lbs. Recommended torque is based on 1/2-13" hardware.

## Final Results:

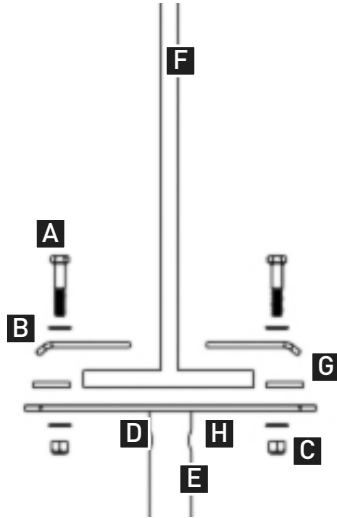


# 1.2C I-Beam Mounting

**NOTE:** Mounting to Z-purlins requires span mounting. Mounting to trusses requires two or more trusses to be linked with Unistrut or angle iron.

## Components:

- A - 1/2" -13 Grade 5 Bolts (4)
- B - 1/2" Flat Washers (8)
- C - 1/2" Nylon Locking Nuts (4)
- D - Simple Mount
- E - Extension Attachment Point
- F - I-beam
- G - Clamps and Shims
- H - Wire Outlet

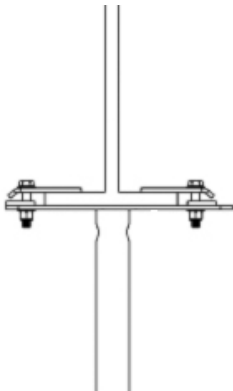


This method is used to install the Standard Mount to an I-beam.

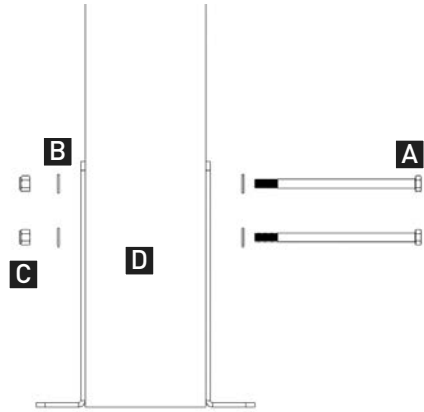
**1.2.1C:** Assemble the mount with one shim and clamp and hand tighten the hardware. Hook the clamp on one side of the I-beam or purlin and tighten hardware until the mount is snug but can still be moved.

**1.2.2C:** Assemble the other shim and clamp on the other side and center the mount under the I-beam or purlin. Ensure the clamps have maximum engagement on both sides and torque the hardware to 75 ft-lbs.

## Final Results:



# 1.3C Glulam/Wood Beam Mounting (1 of 2)



### Components:

- A - 1/2" -13 Grade 5 Bolts (at least 2-1/2" longer than the beam is wide) (4)
- B - 1/2" Flat Washers (8)
- C - 1/2" Nylon Locking Nuts (4)
- D - Glulam

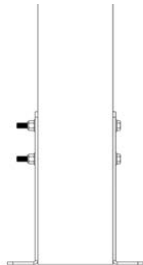
This method is recommended for Glulams or wood beams 5-1/8" or wider. For narrower attachment points please refer to the Unistrut mounting method to span across two or more beams to increase the structural integrity.

**1.3.1C:** Place a Glulam bracket against the beam and use a level or straight edge to line the bottom of the bracket up against the bottom of the beam. Trace the locations of four bolt holes and the two long sides of the Glulam bracket on the Glulam or wood beam.

**1.3.2C:** Once marked, flip the Glulam bracket over so the long side is against the bottom of the beam and line the short side up with the markings you previously made. Now mark the sides of the Glulam bracket along the bottom of the beam.

**1.3.3C:** Flip the Glulam bracket over to the other side of the beam and line the bottom of the bracket up with the marking along the bottom of the beam. Now mark the same four bolt hole locations and remove the bracket. Using a 1/2" wood bit drill out the four bolt holes from both sides.

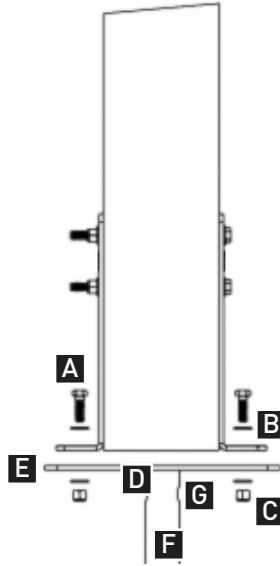
**1.3.4C:** Install both brackets with the recommended hardware and hand tighten so the brackets are left moveable.



# 1.3C Glulam/Wood Beam Mounting (2 of 2)

## Components:

- A - 1/2"-13 Grade 5 Bolts (4)
- B - 1/2" Flat Washers (8)
- C - 1/2" Nylon Locking Nuts (4)
- D - Glulam
- E - Simple Mount
- F - Extension Attachment Point
- G - Wire Outlet



**1.3.5C:** Place the Standard Mount against the bottom of the brackets and use the provided bolt kit to assemble loosely.

**1.3.6C:** Once the Standard Mount is attached, tighten the Glulam brackets and ensure they are flush against the beam from top to bottom.

## Final Results:



## Step 2A - Extension and Motor Unit Installation for Standard Mount

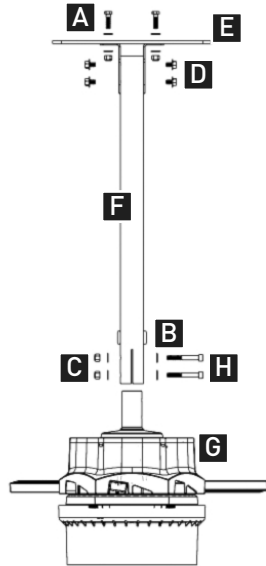
Attach the extension to the bottom of the mount and the motor to the bottom of the extension.



## 2.1A Extension and Motor Unit Installation

### Components:

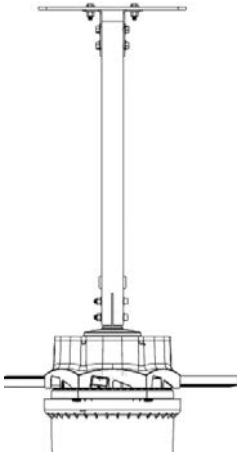
- A - 3/8"-16 x 1-1/4" Bolts (4)
- B - 3/8" Flat Washers (12)
- C - 3/8"-16 Nylon Locking Nuts (6)
- D - 3/8"-16 x 1/2" Serrated Flange Head Bolts (4)
- E - Standard Mount
- F - Extension
- G - D-Drive Motor Unit
- H - 3/8"-16 x 3" Grade 5 (or higher) Bolt (2)



**2.1.1A:** Using the provided hardware, attach the extension to the mount and then, attach the motor to the extension. It is recommended that only two of the four bolts are installed at this time, one for the mount to extension side and one for the motor to extension side. This is in order to more easily install the wiring. Do not torque them until the wiring and safety cable are installed. It may be necessary to partially remove the bolts to get the wiring past. Once the wiring and safety cable are installed, torque all four bolts to 30 ft-lbs.

**DO NOT RUN THE FANS WITHOUT AIRFOILS. THE FAN IS NOT CONFIGURED TO OPERATE WITHOUT AIRFOILS ATTACHED.**

### Final Results:



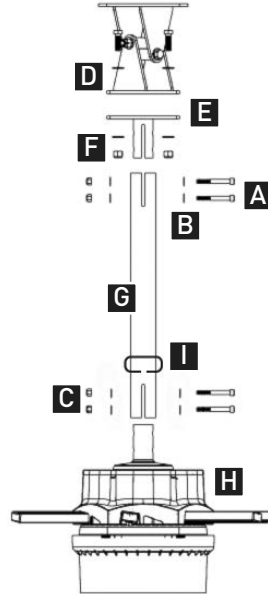
## Step 2B - Extension and Motor Unit Installation for Universal Mount

Attach the extension adapter to the bottom of the mount and attach the extension to the extension adapter. Then, attach the motor to the bottom of the extension.

## 2.1B Extension and Motor Unit Installation

### Components:

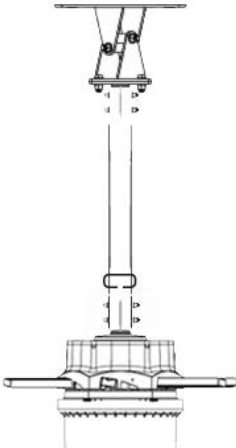
- A - 3/8" -16 Bolts (4)
- B - 3/8" Flat Washers (4)
- C - 3/8" -16 Nylon Locking Nuts (4)
- D - Universal Mount
- E - Extension Adapter
- F - 1/2" -13 Bolts
- G - Extension
- H - D-Drive Motor Unit
- I - Guy Wire Attachment Points (2)



**2.1.1B:** Using the provided extension adapter hardware attach the extension adapter to the bottom of the mount.

**2.1.2B:** Using the provided hardware attach the extension to the extension adapter, and then attach the motor to the extension. It is recommended that only two of the four bolts are installed until wiring is complete, one for the mount to extension side and one for the motor to extension side. Do not torque them until the wiring and safety cable are installed. It may be necessary to partially remove the bolts in order to get the wiring past. Once the wiring and safety cable are installed, torque the bolts to 30 ft-lbs.

### Final Results:



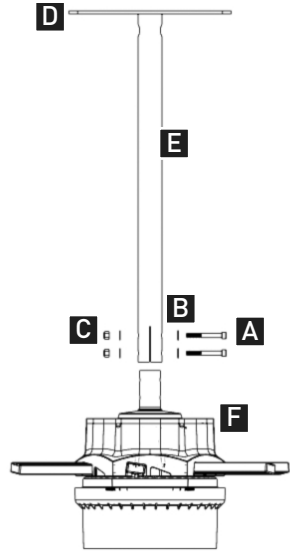
## Step 2C - Extension and Motor Unit Installation for Simple Mount

Attach the extension to the bottom of the mount and the motor to the bottom of the extension.

# 2.1C Extension and Motor Unit Installation

## Components:

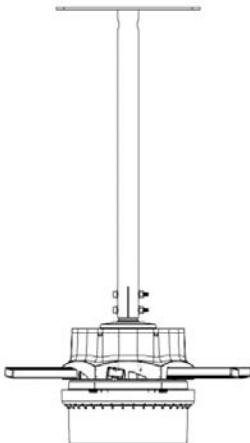
- A - 3/8"-16 x 3" Grade 5 Bolt (2)
- B - 3/8" Flat Washers (4)
- C - 3/8"-16 Nylon Locking Nuts (2)
- D - Simple Mount
- E - Extension
- F - D-Drive Motor Unit



**2.1.1C:** Using the provided hardware, attach the extension to the mount and then, attach the motor to the extension. It is recommended that only two of the four bolts are installed at this time, one for the mount to extension side and one for the motor to extension side. This is in order to more easily install the wiring. Do not torque them until the wiring and safety cable are installed. It may be necessary to partially remove the bolts to get the wiring past. Once the wiring and safety cable are installed, torque all four bolts to 30 ft-lbs.

**DO NOT RUN THE FANS WITHOUT AIRFOILS. THE FAN IS NOT CONFIGURED TO OPERATE WITHOUT AIRFOILS ATTACHED.**

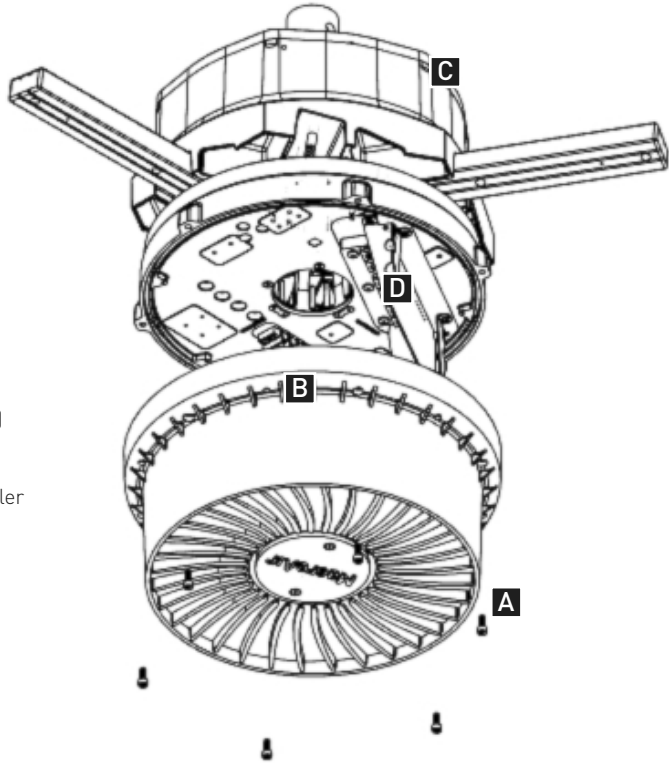
## Final Results:



## Step 3 - Safety Cable and Electrical Installation

Follow one of the methods outlined in subsequent pages to install the safety cable.

## 3.1 Safety Cable & Electrical Installation (1 of 3)



### Components:

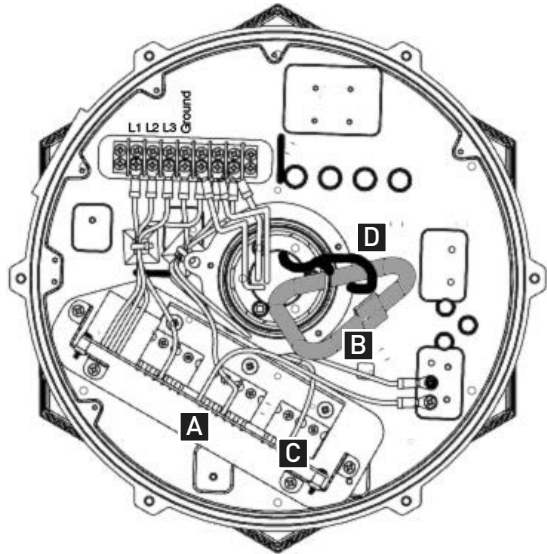
- A - #10-32 x 1/2" Bolts (6)
- B - Bottom Cover
- C - D-Drive Motor Unit
- D - Custom Motor Controller

**3.1.1:** Remove the six bolts from the bottom cover to expose the on board controller. Be careful not to touch the electrical circuits or components on the board.

## 3.1 Safety Cable & Electrical Installation (2 of 3)

### Components:

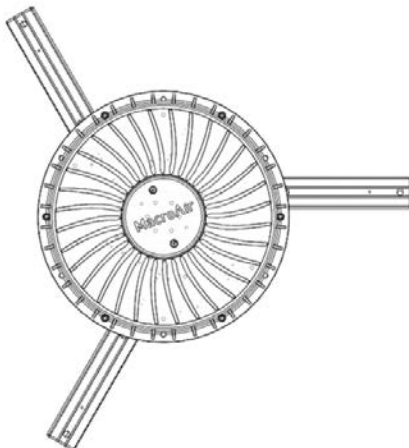
- A - Custom Motor Controller
- B - Quick Link
- C - RJ45 Jack
- D - Safety Cable (Wrapped around Quick Link)



**3.1.2:** Once removed, locate the RJ45 jack and the input power terminals (refer to page 39 for illustrations showing placement). The power cable or wires, shielded CAT5e remote cable, and steel braided safety cable are to be routed through the center of the motor, extension, and mount. The power cable or wires and shielded CAT5e remote cable can be routed up from the bottom together with the safety cable or down from the mount but the safety cable needs to be routed up from the bottom with the swaged end at the bottom. Secure this end to the triangle quick link that is attached to the rubber boot in the center of the drive / heat sink. Remove the slack in the safety cable by pulling the cable up slightly (refer to illustration above for reference). Use the provided ring terminal kit to terminate the ends of the power cable or wires and refer to NEC and local codes to ensure compliance.

**3.1.3:** Re-attach the bottom cover.

### Final Results:





# 3.1 Safety Cable & Electrical Installation (3 of 3)

## Components:

A - RJ45 Jack

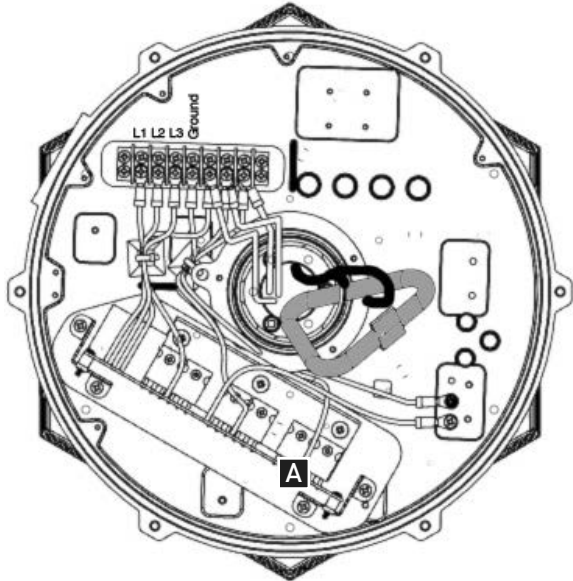
## For Single Phase:

**3.1.2A** :Connect the wires to the appropriate terminals as pictured in the diagram to the right.

## Voltage

208-240VAC

**WARNING:** Keep hands away from components.



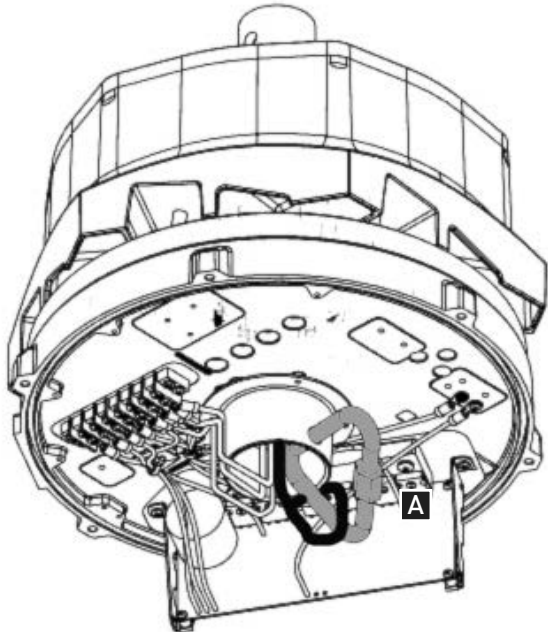
## For Three Phase:

**3.1.2B** :Connect the wires to the appropriate terminals as pictured in the diagram to the right.

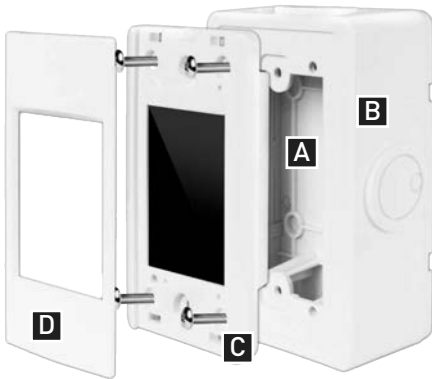
## Voltage

208-240VAC

**WARNING:** Keep hands away from components.



# 3.2 Touchpad Remote Mounting



## Components:

- A - Base Plate
- B - Front of Enclosure
- C - Touch Screen
- D - Bezel
- E - Single Gang Electrical Box (not provided)

### 3.2A Wall Mounting (Provided)

**3.2.1A:** Mount the base plate of the enclosure to the wall using the 4 provided wall anchors and screws.

**3.2.2A:** Snap the front of the enclosure to the base plate.

**3.2.3A:** Plug in the pre-wired shielded CAT5e cable from the fan into the RJ45 coupler inside the enclosure.

**3.2.4A:** Secure the touch screen to the enclosure using the 4 provided screws.

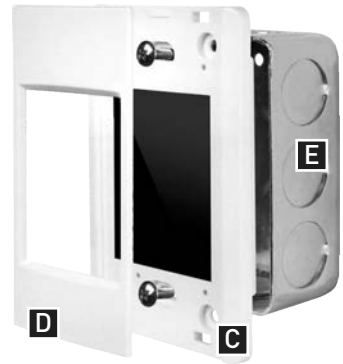
**3.2.5A:** Lock the provided bezel into place via the plastic tabs.

**3.2.6A:** Plug the provided shielded CAT5e cable from the fan into the RJ45 on the outside of the enclosure.

**Note:** The Touchpad Remote will automatically turn off after 30 seconds of inactivity. To turn the screen back on, simply touch anywhere on the screen.

**Note:** 100 feet of shielded CAT5e cable is provided standard. Up to 400 feet of cable can be ordered and 400 feet is the maximum distance allowed.

Refer to the next page for dimensions.



### 3.2B Flush Mounting (Not Provided)

**3.2.1B:** Install the single gang electrical box [not provided].

**3.2.2B:** Run the provided shielded CAT5e cable from the fan into the single gang electrical box.

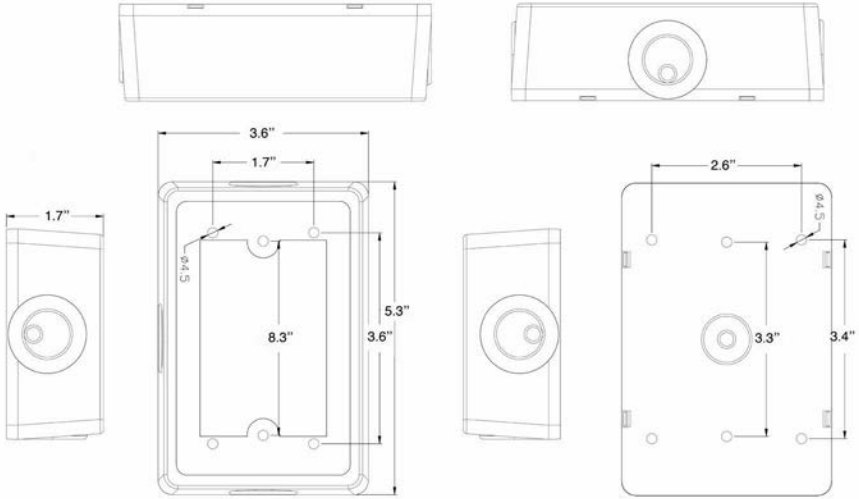
**3.2.3B:** Plug the remote cable into the pre-wired shielded CAT5e cable from the fan using the provided RJ45 coupler.

**3.2.4B:** Secure the touch screen to the enclosure using the 2 provided screws.

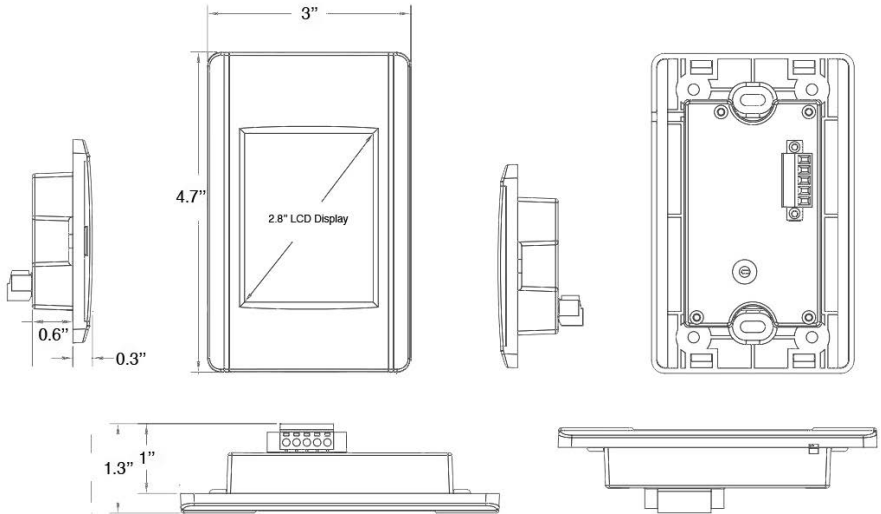
**3.2.5B:** Lock the provided bezel into place via the plastic tabs.

# 3.3 Touchpad Remote Dimensions

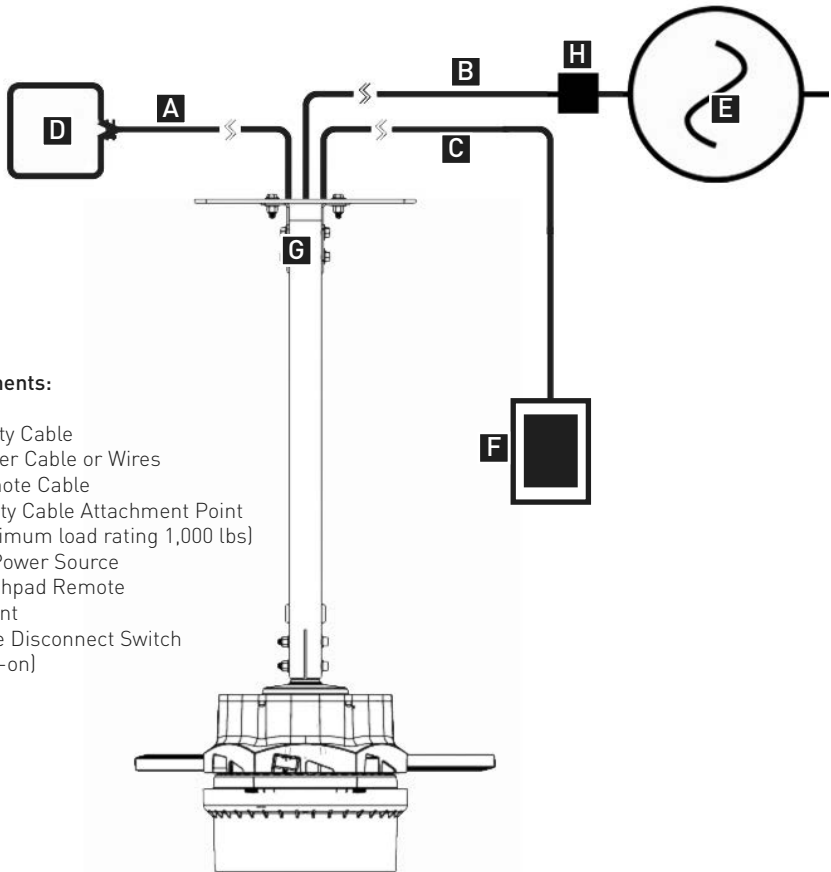
## Remote Enclosure



## Remote LCD Display



## 3.4 Safety Cable & Electrical Installation



### Components:

- A - Safety Cable
- B - Power Cable or Wires
- C - Remote Cable
- D - Safety Cable Attachment Point  
(Minimum load rating 1,000 lbs)
- E - AC Power Source
- F - Touchpad Remote
- G - Mount
- H - Fuse Disconnect Switch  
(add-on)

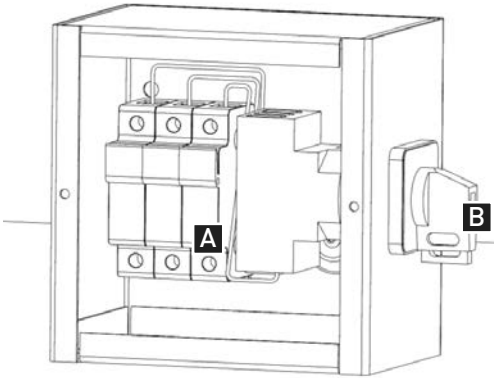
**3.4.1A:** For Glulam or wood beam installation, drill a hole through the beam above the center line and route the safety cable in a loop and attach the cable to itself with the provided cable clamps. Make sure that there is little to no slack in the safety cable. Avoid sharp edges.

**3.4.1B:** For I-beam installation, beam clamps can be used with eye bolts. Attach the beam clamps on both sides of the beam and route the safety cable through the eye bolts. Attach the cable to itself using the provided cable clamps and make sure that there is no slack. Avoid sharp edges.

**3.4.2:** Run the remote cable to the remote location. The cable can be run in conduit or open if desired as the cable is low voltage and shielded. To attach to the touchpad remote, simply plug the end of the remote cable into the RJ45 jack on the touchpad remote.

**3.4.3:** Connect to power in compliance with local and state codes. This device may require a disconnect that is outside of the swept area of the airfoils to comply with OSHA (not provided).  
**Refer to the above illustration for the Final Results.**

# 3.5 Fuse Disconnect Switch Installation



## Components:

- A - Fuse Block
- B - Disconnect Switch

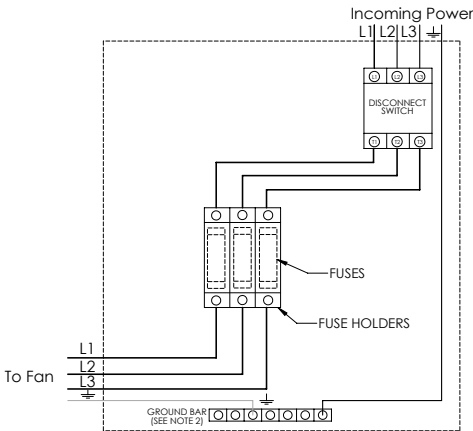
**NOTE: Ensure that there is no power when installing this component.**

The fuse disconnect switch is an optional component offered by MacroAir. Reference page 4 for fuse size based upon the incoming power and fan diameter.

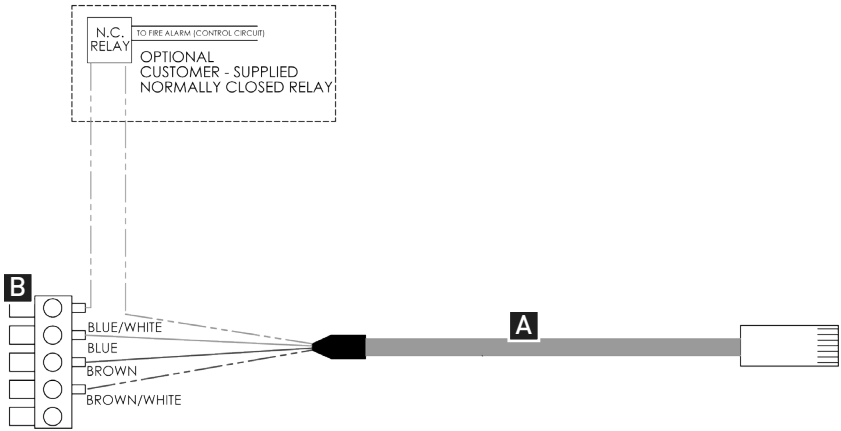
**3.5.1:** Mount the fuse disconnect switch outside of the swept area of the fan airfoils.

**3.5.2:** Wire the power cable from the fan to the bottom of the fuse block. Then, wire the incoming power source to the disconnect switch.

**3.5.3:** In the diagram below, a three phase system is shown. For a single phase system, phase 1 would be connected to L1, neutral would be connected to L2, and L3 would be left not terminated.



# 3.6 Emergency Disconnect Schematic



## Components:

- A - Remote Harness (found in single fan remote enclosure)
- B - Terminal Block Connector

**3.6.1:** Use the schematic above to connect the fan(s) to an emergency stop (i.e. fire alarm system).

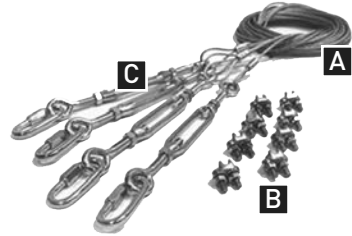
## Step 4 - Guy Wire Installation

Install the Guy wires and Guy wire cord.

# 4.1 Guy Wire Installation (1 of 2)

## Components:

- A - Guy Wires
- B - Cable Clamps
- C - Turnbuckles
- D - Guy Wire Attachment Points (2)

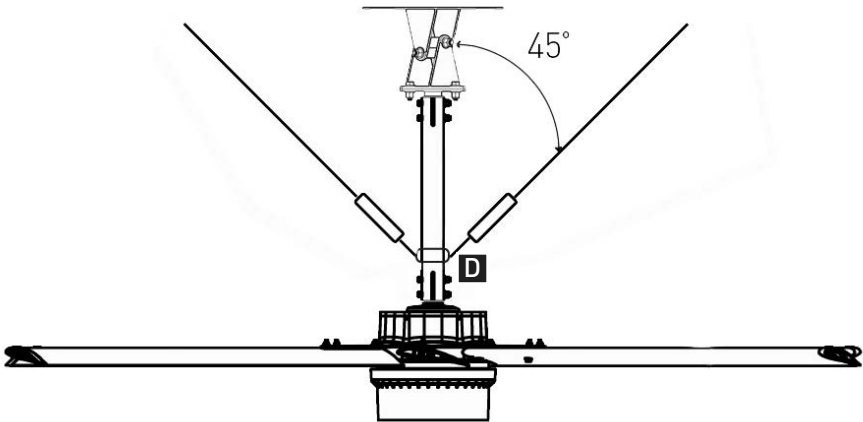


**4.1.1:** Attach the turnbuckle end of the Guy wires to the Guy wire loops located on the Guy wire brackets with the provided quick links.

**4.1.2:** When laying out the locations of the Guy wire mounting points, attempt to maintain a 45 degree angle between the ceiling and the Guy wires (as illustrated in the drawing below).

**4.1.3:** Avoid any sharp edges that may contact the Guy wire. Guy wires need to be attached to the building structure via 1/2" eye lags or bolts with the provided cable clamps.

**NOTE:** Do not wrap the Guy wires around the building structure.

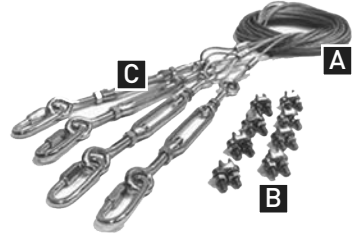




# 4.1 Guy Wire Installation (2 of 2)

## Components:

- A - Guy Wires
- B - Cable Clamps
- C - Turnbuckles
- D - Guy Wire Attachment Points (2)



**4.1.4:** With the aid of a level placed against the extension, tighten the turnbuckles by hand in a crisscross pattern while periodically checking to ensure that the fan is level.

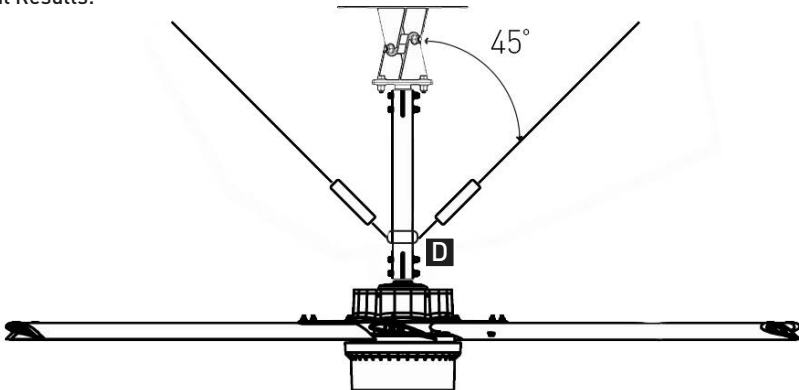
**4.1.5:** Tighten the turnbuckles until the fan unit is stable in the level position. Make sure to **not overtighten** the turnbuckles.

**4.1.6:** Once all of the Guy wires are snug and the fan unit is stable and level, tighten the jam nuts on the turnbuckles.

**NOTE:** Do not use tools to tighten the turnbuckles; only use tools to tighten the jam nuts.



## Final Results:



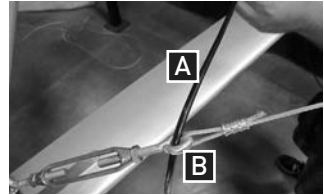
# 4.2 Guy Wire Cord Installation

## Components:

- A - Guy Wire Cord
- B - Eyelets
- C - Cord Lock

**4.2.1:** Insert the elastic cord through the top eyelet of each of the 4 turnbuckles as shown in pictures 1 & 2.

Picture 1



**4.2.2:** Pull one of the ends of the cord through one of the holes on the cord lock and then pull the end into the groove to lock it. Use pliers to properly secure the cord in the groove of the cord lock as shown in pictures 3 & 4.

Picture 2

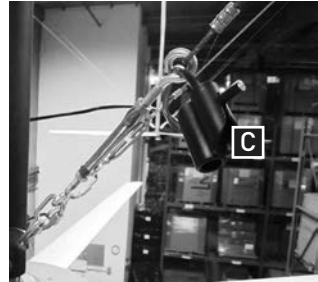


**4.2.3:** Repeat step 4.2.2 for the second end of the cord using the opposite hole and groove on the cord lock.

**4.2.4:** The safety cord should be pulled tight and fastened as shown in picture 5.

**NOTE:** The Guy wire cord is a redundant safety system for our fans. The Guy Wire Cord Kit applies to our fans with turnbuckles installed on the Guy wires. The turnbuckles may have been supplied by the installer or factory supplied by MacroAir. This system utilizes a polymer cord to secure the ends of the turnbuckles. In the event that one or more comes loose due to stresses that exceed their capacity, the turnbuckles would be captive above the airfoils and prevent additional damages and down time to your fan.

Picture 3



Picture 4



Picture 5



**THE CORD IS CUT TO A  
PREDETERMINED LENGTH  
FOR PROPER TENSION.  
DO NOT EXCESSIVELY  
STRETCH THE CORD.**

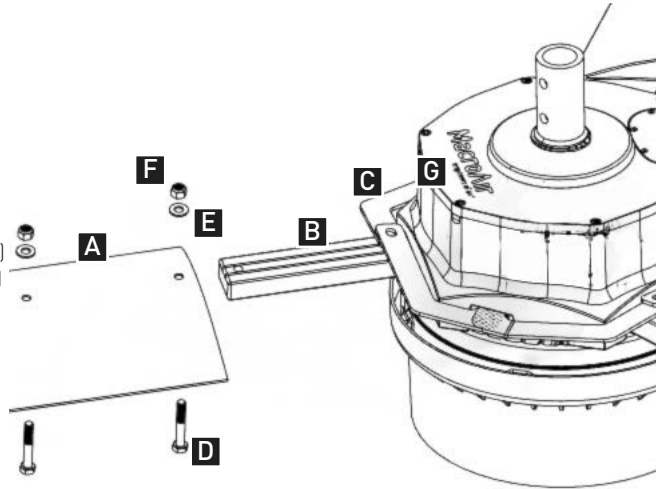
## Step 5 - Airfoil Installation

Attach the airfoils and safety retainer links to the airfoil struts.

# 5.1 Airfoil Installation

## Components:

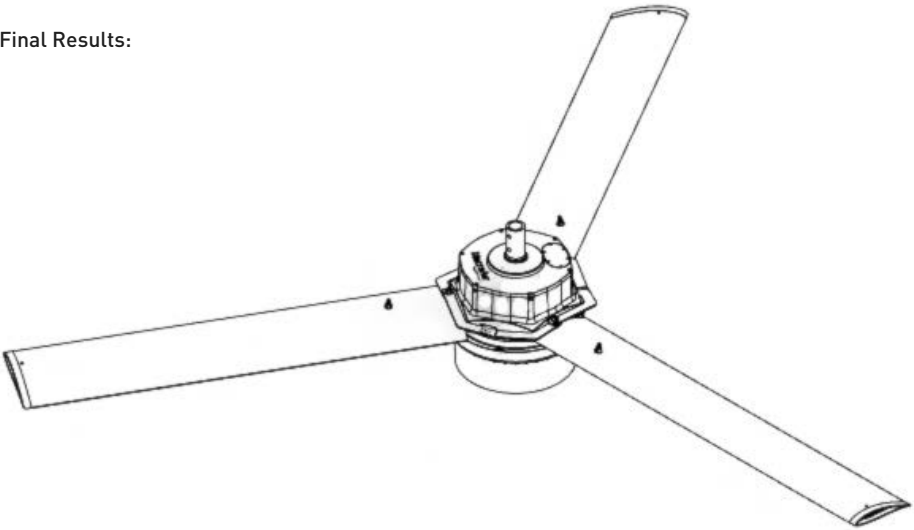
- A - Airfoil
- B - Airfoil Strut
- C - Safety Retainer Links (6)
- D - 5/16"-24 x 1/2" Bolts (6)
- E - 5/16" Washers (12)
- F - 5/16" Nuts (6)
- G - Motor Unit



**5.1.1:** Slide an airfoil over an airfoil strut and place a safety link on top. Insert the airfoil bolts from the bottom up (nuts on top) with washers and hand tighten the nuts.

**5.1.2:** Repeat last step until all airfoils and safety links are installed. Once everything is in place, torque the bolts to 20 ft-lbs.

## Final Results:



## Step 6 - Touchpad Remote Navigation and Operation

Choose one of the two methods to mount the touchpad remote and configure the fan diameter for initial operation.

# 6.1 Touchpad Remote Navigation

## Buttons:

A - Forward / Reverse: Alternate between forward and reverse operation

B - Power Button: Turn the screen off

C - Speed Up / Speed Down: Increase or decrease the speed of the fan

D - Speed Box: Real-time indication of fan speed

E - Navigation: Navigate to the next screen

F - Fan Diameter Selection: Hidden button to navigate back to the fan diameter selection screen



# 6.2 Touchpad Remote Operation

## Screens:

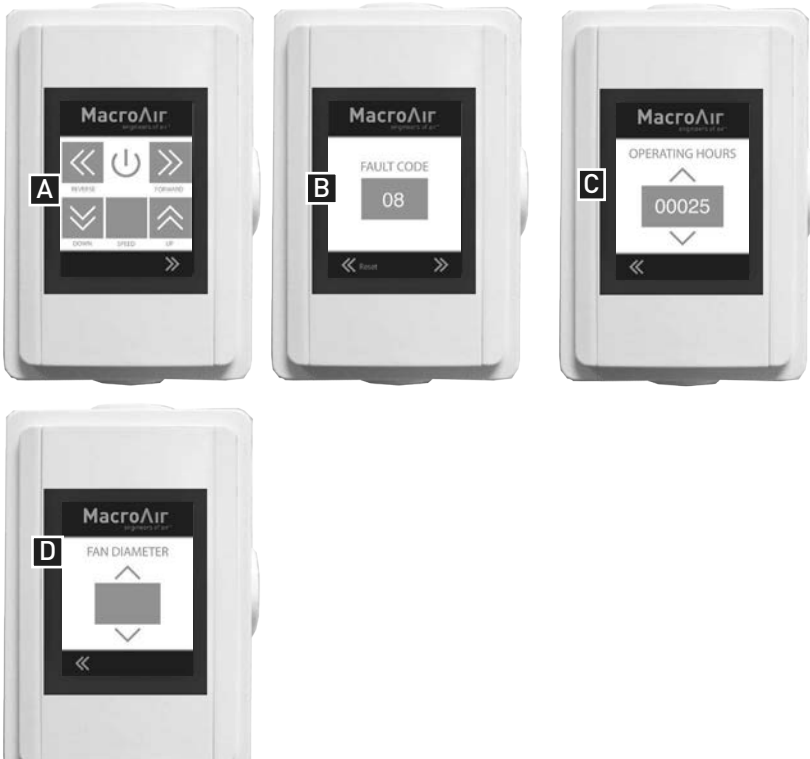
- A - Home Screen
- B - Fault Code Screen
- C - Operating Hours Screen
- D - Fan Diameter Selection Screen

## Instructions:

**6.2.1:** Once the fan is powered on, click the forward button and increase the speed by clicking the up button. The fan will do an initial blade detection: spinning in reverse to 10 RPM, accelerating for a few seconds, and then the fan will have recognized the fan diameter. It will then slow down and resume the commanded direction and speed (this operation will occur every time that the incoming power to the fan is cycled).

**6.2.2:** If the fan stops operating unexpectedly, navigate to the fault code screen and record any fault codes (if present). Click the reset button until the display reads '0'. Then, attempt to run the fan again. If the fan is still not operating, navigate to the fault code screen via the navigation arrows at the bottom of the screen and document the code(s) displayed and call technical support at 866-668-3247.

**6.2.3:** To view your fan's operating hours, navigate from the home screen to the far right screen.



# Maintenance Information

**Guy Wire Check (if applicable):** Checking a MacroAir fan's Guy wires (if applicable) for tension and inspecting for frayed sections could mitigate a problem before it occurs. Fan owners should confirm that the Guy wires are not wrapped around any sharp edges. MacroAir recommends attaching Guy wires to the building with eye bolts or eye lags. If they are not already installed with eye bolts or lags, we urge fan owners to install these in order to help keep the Guy wires from fraying. If Guy wires are installed with turnbuckles, jam nuts should periodically be checked to ensure tightness. If they are loose, the Guy wire cables may need to be re-tensioned.

**Airfoil Cleaning:** Depending on the type of commercial application the MacroAir fan is in, there can be quite a bit of dust or other particulates (including grease!) that cling to the fan's airfoils. While this may not affect fan performance, we recommend fan owners keep airfoils clean by having a maintenance person or skilled trade professional – who has experience using a lift – wipe the fan airfoils with a rag or sponge using hot water or regular cleaning solutions. Please do not use chlorine or any chemicals containing chlorine.

**Safety Cable Check:** Each MacroAir fan comes with a safety cable. Depending on the fan model, the safety cable either wraps around the building structure and the fan frame, or comes out of the top of the fan and wraps around the building structure. The safety cable is an important part of the safety system and acts as a last resort should an earthquake, collision, or similar catastrophic event occur. As such, it's vital for fan owners to ensure that it is intact and properly secured.

**Reverse Operation:** The beauty of MacroAir HVLS fans is that they are built to run in forward and reverse mode, however changing the direction of your fan can put initial stress on the fan if it has not been properly checked. It is a good idea to make sure Guy wires, safety cables and all bolts and nuts are tight. Cleaning the fan before switching directions will prevent dust and other particles from falling off the fan airfoils that are now turning in the opposite direction.

## **Maintenance Plan:**

Things to look for include: rust, cracked welds, unusual noise, hub migration/ movement, guy wire loosening or movement.

### **Years 1-5:**

One inspection on lift in first year and one from the ground per year after one full year of service.

### **Years 6-10:**

One inspection on lift per year.

### **Year 11 and beyond:**

Annual inspections from a lift and seasonal inspections both before and after the busy season from the ground.

NOTE: If there are issues or concern discovered during an inspection, please contact the service and technical support department at MacroAir for help.



# Technical Support

For installation assistance, application questions, technical sales support & any other inquiries, please contact our technical support team at (866) 668-3247.







AirVolution<sup>D3</sup>  
By MacroAir