



# Installation Manual

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## MacroAir Z Series





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|-----------------------------------|---|
| <b>Pre-Installation Checklist</b> | Pre-Installation Checklist . . . . . 2            |
|                                   | Caution & Safety . . . . . 3                      |
| <b>Introduction</b>               | Fan Clearance and Placement . . . . . 6           |
| <b>Pre-Installation</b>           | I-Beam/Glulam Chart,<br>Max Amp Draw . . . . . 8  |
|                                   | Fan Dimensions & Components . . . . . 9           |
|                                   | Universal Mount & Components. . . . . 10          |
|                                   | Control Panel & Components . . . . . 12           |
|                                   | Tools Required . . . . . 13                       |
| <b>Installation Overview</b>      | I-Beam . . . . . 14                               |
|                                   | Glulam . . . . . 15                               |
| <b>Installing the Fan</b>         | UMH I-Beam Mounting . . . . . 16                  |
|                                   | UMH Glulam Mounting . . . . . 19                  |
|                                   | UMH Unistrut Mounting . . . . . 22                |
|                                   | Mounting an Extension . . . . . 24                |
|                                   | Safety Cable Installation . . . . . 25            |
| <b>Installing Guy Wires</b>       | Guy Wire Installation . . . . . 26                |
|                                   | Guy Wire Band Installation . . . . . 28           |
| <b>Installing Fan Blades</b>      | Blade & Safety Link Assembly . . . . . 30         |
| <b>Wiring the Fan</b>             | Electrical & Safety Cable Installation . . . . 32 |
|                                   | Control Panel Overview . . . . . 33               |
|                                   | Control Panel Schematic . . . . . 34              |
| <b>Information</b>                | UMH Mounting . . . . . 36                         |
|                                   | Maintenance . . . . . 37                          |
|                                   | Troubleshooting . . . . . 38                      |
|                                   | Warranty. . . . . 39                              |

## Literature (Pg. 3)

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- ☐ **Order Verification.** I have verified the order information. All components are accounted for.
- ☐ **Read.** I have read this Installation Manual and all other instructions before installing this fan

## Power (Pg. 3-4)

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- ☐ **Power Requirements.** I have verified the incoming power supply is sufficient for the fan.

## Safety (Pg. 4-5)

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- ☐ **Safety Familiarity.** I am familiar with the safety components and features of the fan. I have verified the presence of a safety cable, safety retainer links and guy wires.

## Airfoils (Pg. 5-7)

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- ☐ **Height from Floor.** I have verified the airfoils will be at least 10ft (3.05 m) above the floor.
- ☐ **Application Clearance.** I have consulted the manual to determine that the airfoils will meet or exceed the clearance requirements regarding obstructions, or other fans.
- ☐ **Airfoil Reach.** I have verified the airfoils will be mounted such that they are at least 3 feet away from any area where someone can extend outward and reach them.
- ☐ **High Winds.** I have verified the fan will not be subjected to high winds from any outside influences, such as large garage door openings or HVAC systems.
- ☐ **Diffuser Interference.** If diffusers are present, I will ensure that the fan is mounted at least 1.5X the diameter of the fan away from any source of airflow.
- ☐ **Airfoil Compatibility.** I have verified the Airfoils and other fan components are those that shipped with the motor unit.
- ☐ **Installing Multiple Fans.** I will not mix and match any hardware or blades.

## Structure (Pg. 6-8)

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- ☐ **Application Suitability.** I have verified the application was approved by a structural engineer. I have checked the hanging weight and torque specs in the installation manual to ensure that the mounting structure can withstand the forces generated by the fan.
- ☐ **Structural Suitability.** I have verified the building structure is suitable for this fan mounting. The fan will be mounted to an I-beam or Glulam or similar. I will not mount the fan to a single purlin, truss, or bar joist. I will consult a structural engineer for mounting not covered herein.
- ☐ **Mount Suitability.** I have the appropriate mount for this application. I have verified in the installation manual that the mounting option provided is suitable for this application. I will consult a structural engineer for applications and mounting methods not covered herein.

## Caution and Safety

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This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved.

Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.

**⚠ ATTENTION: Safety.** READ THE ENTIRE MANUAL BEFORE OPERATING THE FAN. Ensure that all safety procedures 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.

**⚠ CAUTION: Non-Compliance.** The fan installation should follow the recommendations outlined in this manual. MacroAir is not responsible for any injury or damage to persons or property because of 'not complying' with the recommendations outlined in the manual.

## Electrical Guidelines

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**⚠ WARNING: Electrical Damage.** Improper electrical installation can cause damage to the fan and interfere with other electronic equipment. In addition to standard electrical safety considerations, please observe the following:

- **MacroAir Cables.** The wiring from the control panel to the fan **MUST** be by MacroAir supplied shielded cable.
- **Electrical Interference.** Separate incoming power and motor control cables by a minimum of six (6) inches.
- **Individual Fan Wiring.** Run wiring for each fan separately.
- **Multiple Fans.** Do not attempt to control multiple fans from one (1) control panel.
- **ALWAYS GROUND PROPERLY.** Connect the supplied cable glands to each end of the motor cable and tighten them securely at both the fan motor and control panel ends. Connect the ground bar in the control panel to ground at the main breaker and test.
- **Read.** Please refer to the installation instructions for more information.

**⚠ ATTENTION: Qualified Technicians.** All fan controls should only be installed by qualified technicians familiar with the requirements of the National Electrical Code (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.

## Electrical Guidelines cont.

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**⚠ ATTENTION: Factory Configured.** 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 motor control panel without first consulting MacroAir.

**⚠ ATTENTION: Code Compliance.** Installation is to be in accordance with the NEC, ANDSI/NFPA 70-1999 and local codes.

## Hazard of Electrical Shock, Explosion or Arc Flash:

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

**⚠ ATTENTION: Code Compliance.** The user is responsible for compliance with all international and National Electrical Code requirements with respect to grounding of all equipment.

**⚠ WARNING: Do Not Touch.** Many of the parts of this unit operate at line voltage. DO NOT TOUCH.

**⚠ WARNING: Covers.** Install all covers before applying power or starting and stopping the unit.

## Installation and Service

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**⚠ WARNING: Damage.** Do not operate or install any fans or fan accessories that appear to be damaged.

**⚠ WARNING: Death and Injury.** Failure to follow this instruction can result in death, serious injury, or equipment damage.

**⚠ WARNING: Disconnect Power.** 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.

**⚠ CAUTION: Moving Parts.** Keep all body parts clear of moving parts at all times.

**⚠ ATTENTION: Qualified Technicians.** All electrical troubleshooting and repair must be done by a qualified technician and meet all applicable codes.

## Key Safety Systems

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**⚠ ATTENTION: Safety.** 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 to people, equipment and property.

## Key Safety Systems, cont.

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**⚠ WARNING: Safety Cable and Guy Wires.** Install safety cable on EVERY fan. 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. The safety cable, if installed per MacroAir specifications, will prevent the fan from falling in the unlikely event that the mounting system should fail.

**⚠ WARNING: Safety Cable.** 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.

**⚠ WARNING: Blade Safety Links.** Install the complete set of extended blade safety links, which connect each blade to the adjacent blades and reinforce the area between the mounting holes. This is an important precautionary measure which will help prevent a blade from falling should one break off at the hub for any reason.

**⚠ ATTENTION: 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.

## Mounting Guidelines

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**⚠ WARNING: Weight Considerations.** We recommend that a building structure be capable of holding approximately twice the stated hanging weight of the fan. If there is some doubt of this, a professional contractor or architect 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.

**⚠ WARNING: Torque.** The maximum torque (twisting force) that must be handled by the mounting system, including the building structure, occurs at fan startup. For a 24-foot fan, maximum potential starting torque is 300 Ft-Lbs. When standard electrical controls are installed, the fan will never begin to approach this maximum because the standard variable-speed control system uses the soft-start fail, or when a fan is installed as a single-speed model without the variable speed control system (rare), full torque might be applied to the mounting system, so it is important that it be adequate to withstand 300 Ft-Lbs. torque.

**⚠ ATTENTION: 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.

**⚠ WARNING: Welding.** DO NOT attach the fan or fan mounting components to the building structure by welding that component to the structure. DO NOT cement the fan to the structure.

## Clearance Guidelines

**⚠ ATTENTION: Sprinkler Systems and Fan Placement.** In any installation where fire sprinklers are in place, do 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 standard variable-speed control system can be connected to a fire suppression control system, which will emergency-stop the fans in case of fire. (Reference p36, Digital Control Wiring Diagram)

**⚠ ATTENTION: Sprinkler Systems and Code Compliance.** Prior to installing fans, review all codes applicable to sprinkler systems and fans to ensure code compliance. Refer to the wiring diagrams packaged inside the control panel for proper installation. If further advice is needed, you may contact our support staff. However, it is your sole responsibility to see that the installation is completed to code and is correct.

## General Information on Fan Placement and Spacing

**⚠ ATTENTION: Strobe and Performance.** If possible, avoid mounting fans directly below lights or skylights to avoid any strobe effect caused by moving blades. 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.

**⚠ WARNING: Mezzanine Placement.** If the building has a mezzanine, fans should be mounted so a person cannot reach a fan in any way from the upper level/deck. Make certain that fans are positioned so that blade tips are at least 3 feet away from any area where a person may be able to extend outward to reach them.

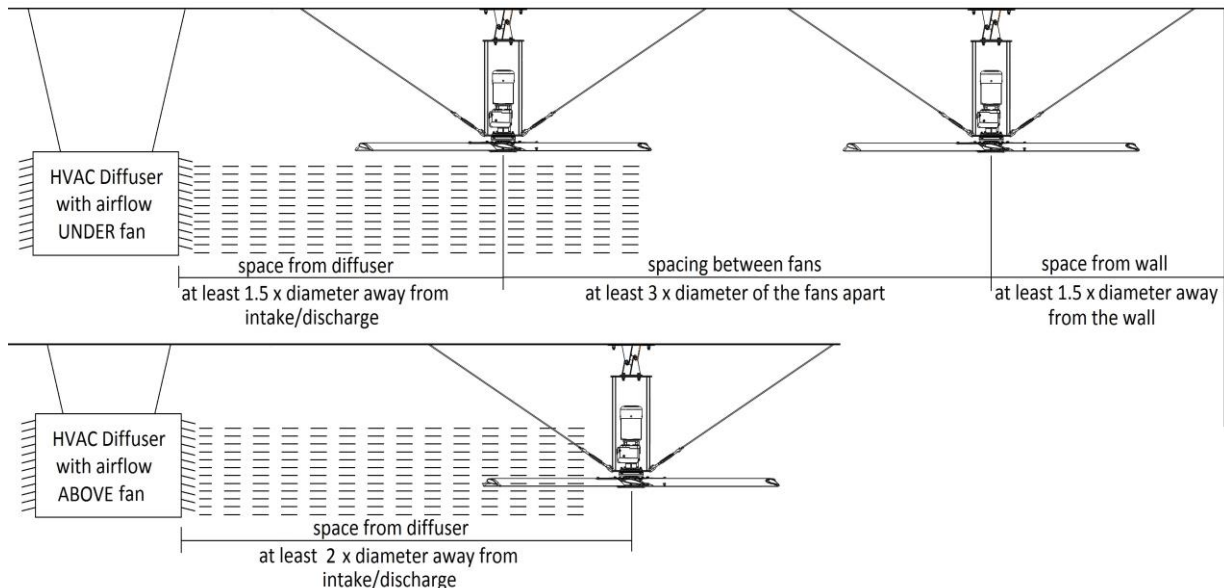


Figure 1: Fan Clearance and Placement

**⚠ ATTENTION: The minimum distance of a fan to a wall or similar obstruction should be no less than 1.5 times the diameter of the fan. Reference Figure 1.**



## General Information on Fan Placement and Spacing, cont.

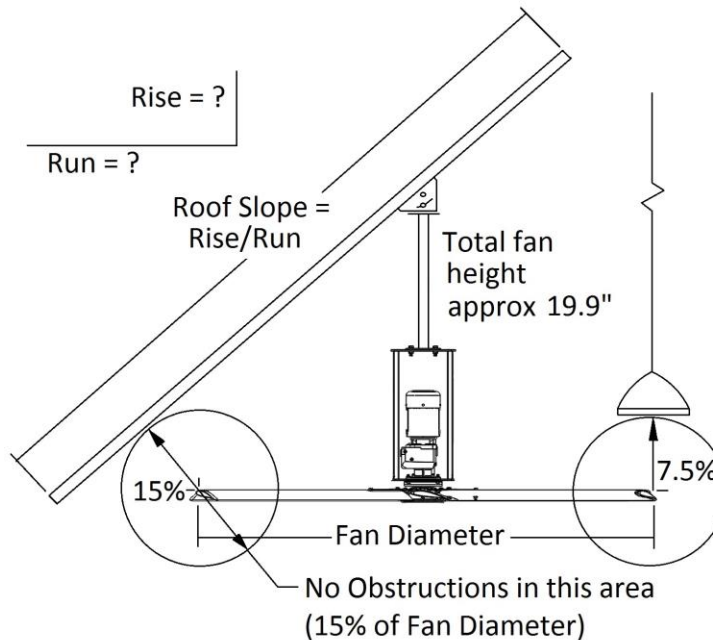


Figure 2: Roof Slope and Fan Clearance

| Slope (in) | 2/12                         | 4/12  | 6/12  | 8/12  | 10/12 |                  |
|------------|------------------------------|-------|-------|-------|-------|------------------|
| Roof Angle | 9.5°                         | 18.4° | 26.6° | 33.7° | 39.8° |                  |
| Diameter   | Recommended Extension Length |       |       |       |       | Clearance Radius |
| 8 feet     | N/A                          | N/A   | 1     | 1     | 2     | 7"               |
| 10 feet    | N/A                          | 1     | 1     | 2     | 3     | 9"               |
| 12 feet    | N/A                          | 1     | 2     | 3     | 4     | 11"              |
| 14 feet    | 1                            | 2     | 3     | 4     | 5     | 13"              |
| 16 feet    | 1                            | 3     | 4     | 5     | 7     | 14"              |
| 18 feet    | 2                            | 3     | 5     | 6     | 8     | 16"              |
| 20 feet    | 2                            | 4     | 5     | 7     | 9     | 18"              |
| 24 feet    | 3                            | 5     | 7     | 9     | 11    | 22"              |

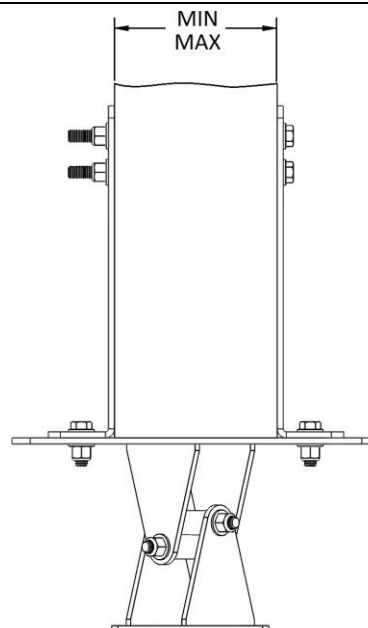
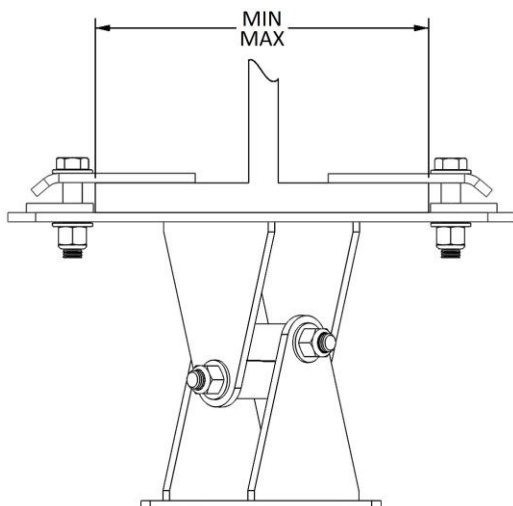
Figure 3: Roof Slope Table

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

The goal of Figures 2 and 3 are to determine the proper extension length to maintain a minimum blade clearance of 15% of the fan's diameter. The extension lengths above are minimum recommendations only, based solely on roof pitch and fan diameter. Other factors must be evaluated when determining extension requirements.

**⚠ ATTENTION: Minimum Height.** MacroAir requires that the fan blades must be a minimum of 10 feet (3.05 meters) above the floor. Contact MacroAir for assistance with fan placement and extension selection.

## I-Beam/Glulam Chart



| Std UMH/I-Beam Size Chart |     |              |     |              |     |
|---------------------------|-----|--------------|-----|--------------|-----|
| Range                     |     | Range        |     | Range        |     |
| Min                       | Max | Min          | Max | Min          | Max |
| 6.50-7.50"                |     | 7.88-8.88"   |     | 9.25-10.25"  |     |
| Extra-Wide UMH/I-Beam     |     |              |     |              |     |
| 11.76-13.26"              |     | 13.39-14.89" |     | 15.02-16.52" |     |
| Rapid Mount/I-Beam        |     |              |     |              |     |
| 6.50-7.50"                |     | 7.88-9.38"   |     | 10.25-11.25" |     |

| Std UMH/Glulam Size Chart |     |              |     |              |     |
|---------------------------|-----|--------------|-----|--------------|-----|
| Min Range                 |     | Mid Range    |     | Max Range    |     |
| Min                       | Max | Min          | Max | Min          | Max |
| 4.25-5.75"                |     | 5.63-7.13"   |     | 7.00-8.50"   |     |
| Extra-Wide UMH/Glulam     |     |              |     |              |     |
| 9.51-11.51"               |     | 11.14-13.14" |     | 13.77-14.77" |     |
| Rapid Mount/Glulam        |     |              |     |              |     |
| 5.13-5.75"                |     | 5.63-7.63"   |     | 8.00-9.50"   |     |

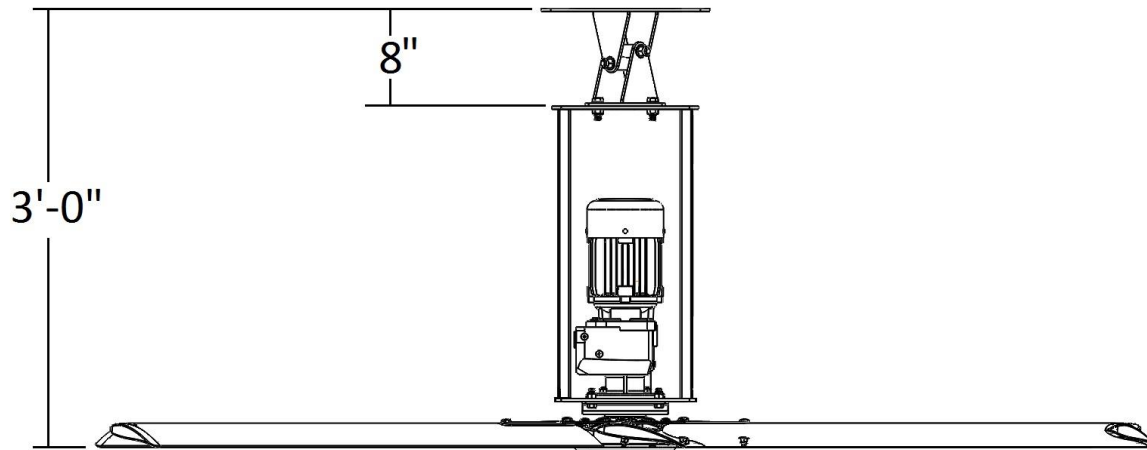
The Min Range dimension is determined by using the inside slots of the UMH Bracket. The Max Range by using the outside slots of the UMH bracket. The Mid Range by using a combination of Inside slots on one side and the outside slots on the other.

## Max Amp Draw

| VOLTAGE AND PHASE    | VFD MAX AMP DRAW |
|----------------------|------------------|
| 120VAC / 1 PHASE     | 16.6A            |
| 208-240VAC / 1 PHASE | 20.2A            |
| 208-240VAC / 3 PHASE | 10.8A            |
| 480VAC / 3 PHASE     | 4.3A             |
| 600VAC / 3 PHASE     | 2A               |

## Fan Dimensions

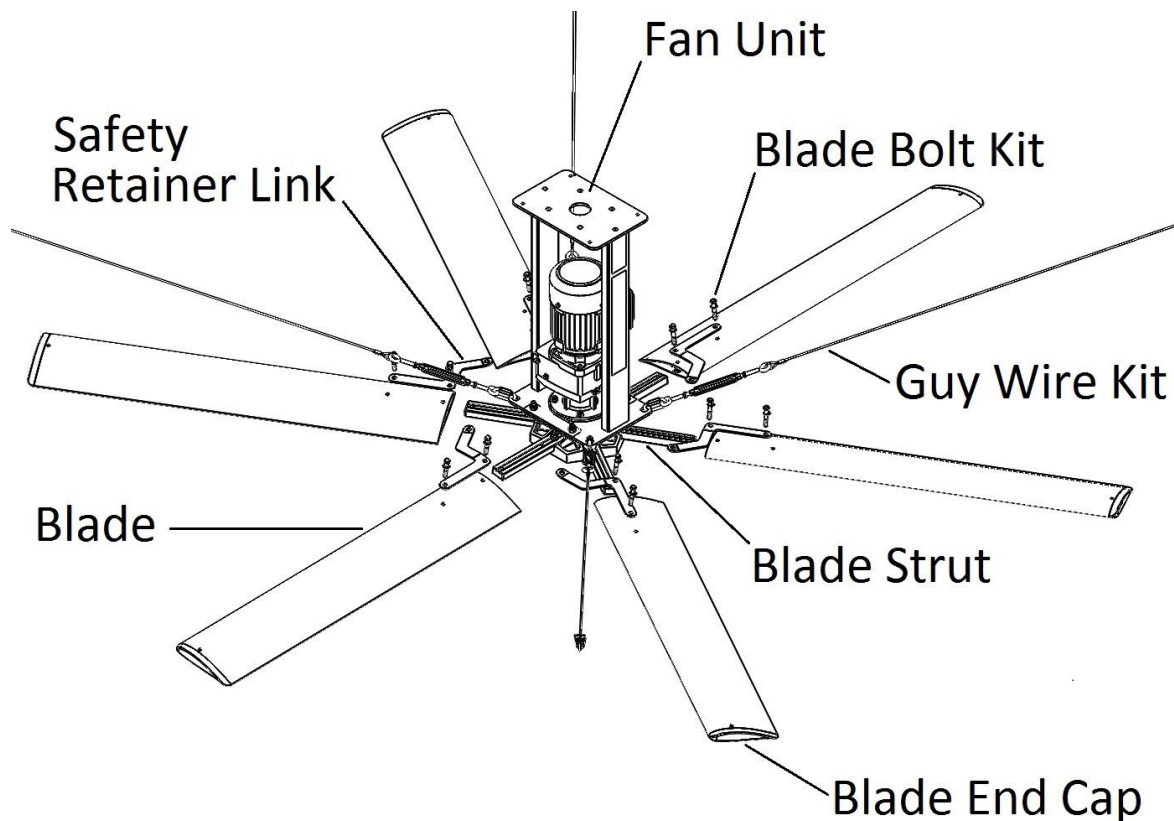
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Dimensions listed above are applicable to all MacroAir Z Series fans.

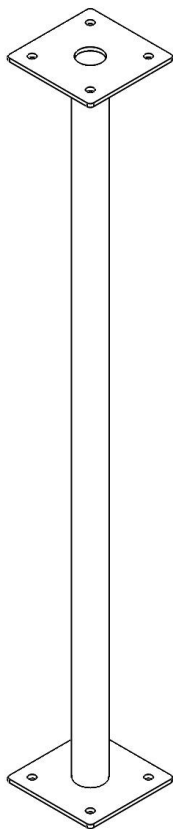
## Fan Components

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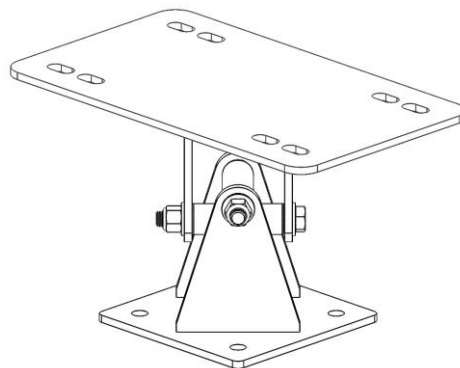


## Universal Mount & Components

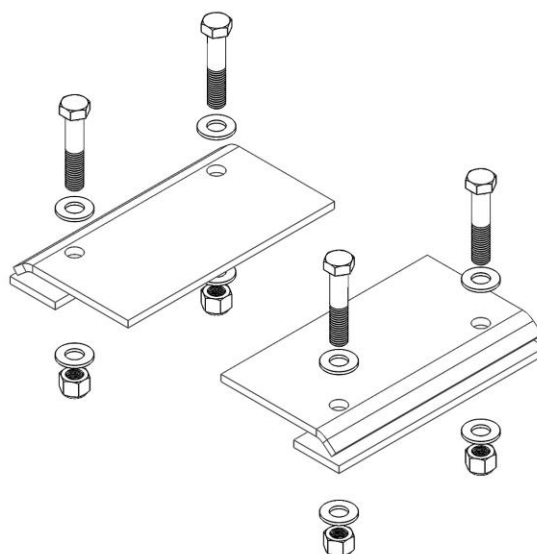
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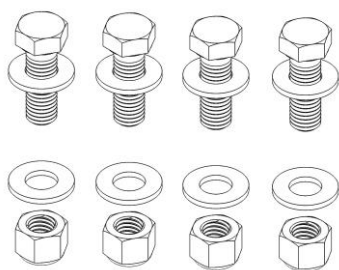
Universal Mount Extension  
(optional)



Universal Mount



I-Beam Clamps & I-Beam Bolt Kit  
 (2) I-Beam Clamps  
 (2) I-Beam Shims  
 (4) Hex Bolts 1/2"-32x2-1/2"  
 (8) Washers, 1/2" Flat  
 (4) Hex Nuts 1/2"-32, Nylon Lock

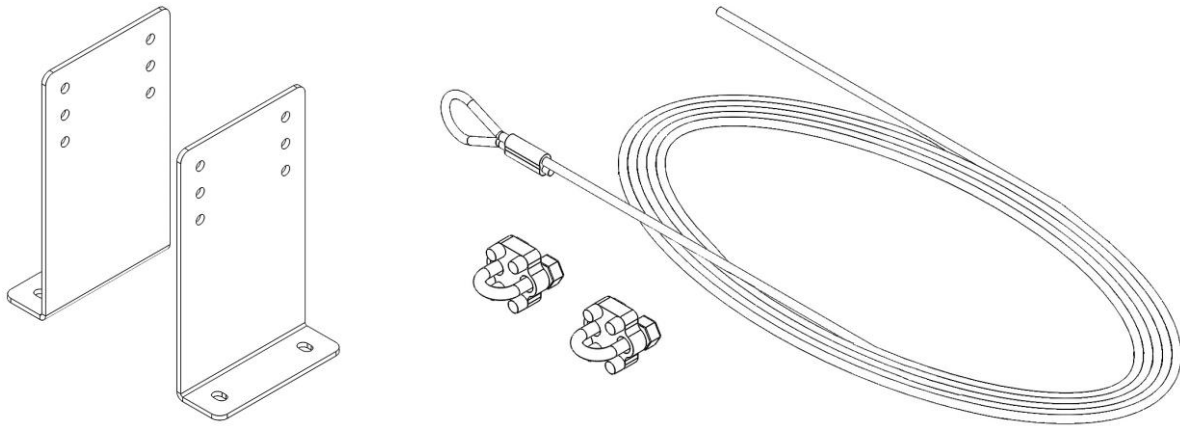


Universal Mount Bolt Kit  
 (4) Hex Bolts 1/2"-32x1-1/2"  
 (8) Washers, 1/2" Flat  
 (4) Hex Nuts 1/2"-32, Nylon Lock

Unistrut Mount Bolt Kit (optional)  
 Hardware Required but Not Provided:  
 (4) 1/2"-13 x 1-1/2" Hex Bolts  
 (4) 1/2" Flat Washer  
 (4) 1/2" Unistrut Spring Nut

## Universal Mount & Components (cont.)

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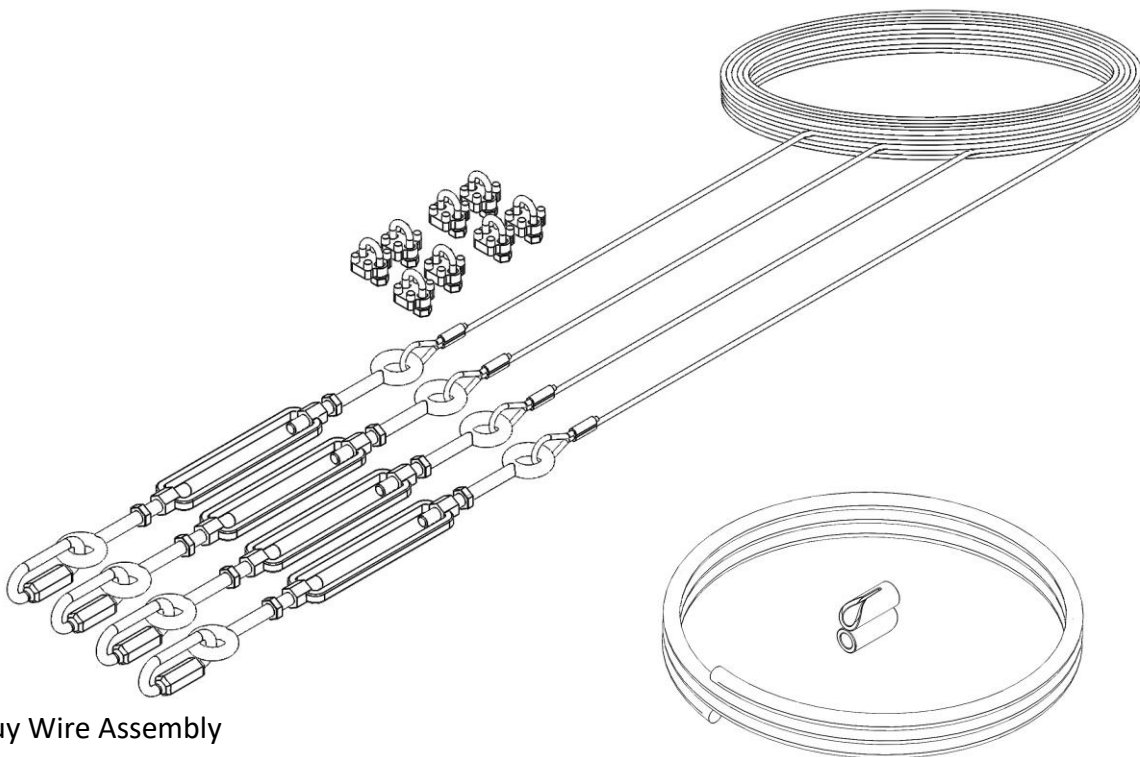
### Glulam Brackets (optional)

Hardware Required but Not Provided:

- (4) 1/2"-13 Grade 5 Hex Bolts (at least 2-1/2" longer than Glulam)
- (8) 1/2" Flat Washers
- (4) 1/2" Nylon Lock Nuts

### Safety Cable Kit

- (1) Wire Rope 3/16"
- (2) Wire Rope Clamps



### Guy Wire Assembly

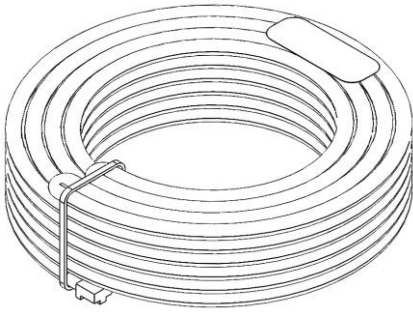
- (4) Wire Rope, 19ft (A), 23ft (B), 33ft (C)
- (4) Turn Buckles
- (4) 1/4" Quick Links
- (8) Wire Rope Clamps

### Guy Wire Band Kit

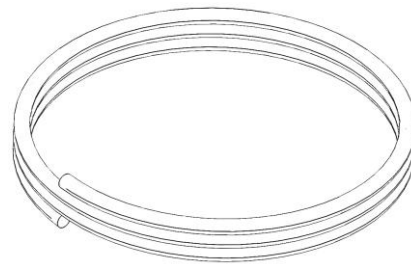
- (1) Elastic Cord
- (1) Cord Clip

## Control Panel & Components

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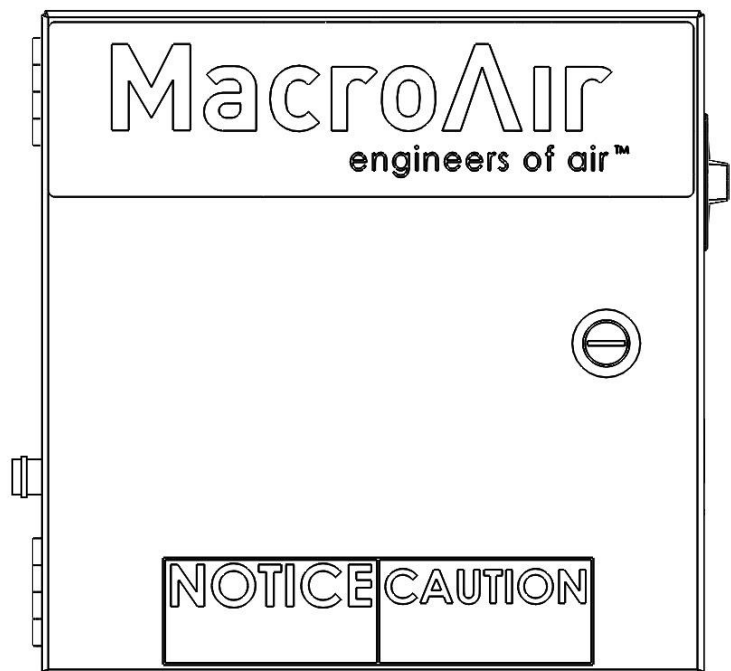


CAT5E Stranded Shielded Cable

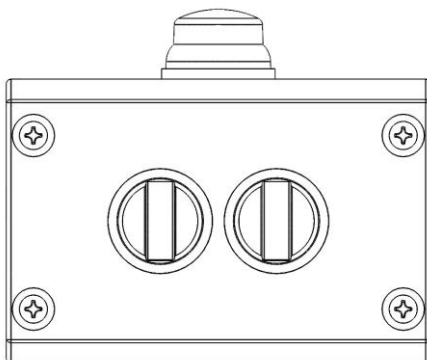


Motor Cable

Control Panel -----  
(Physical Enclosure 12"x12"x8")

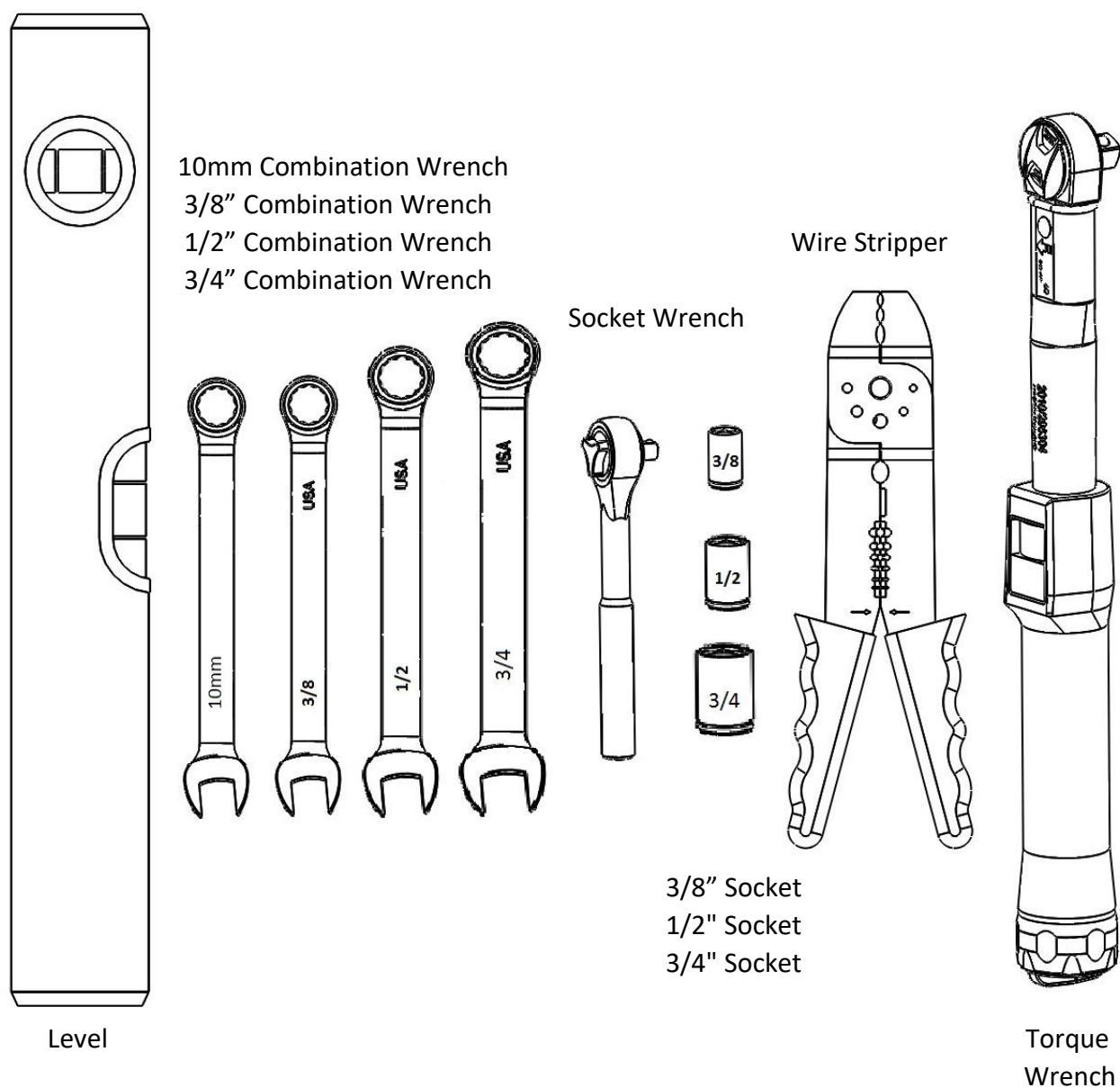


Motor Cable Gland -----  
(installed by customer)

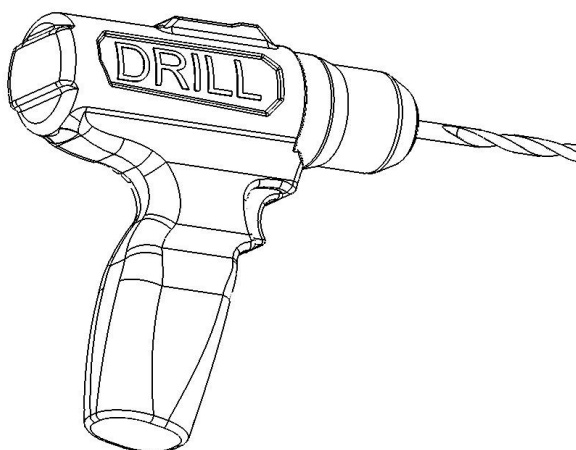


Analog Remote

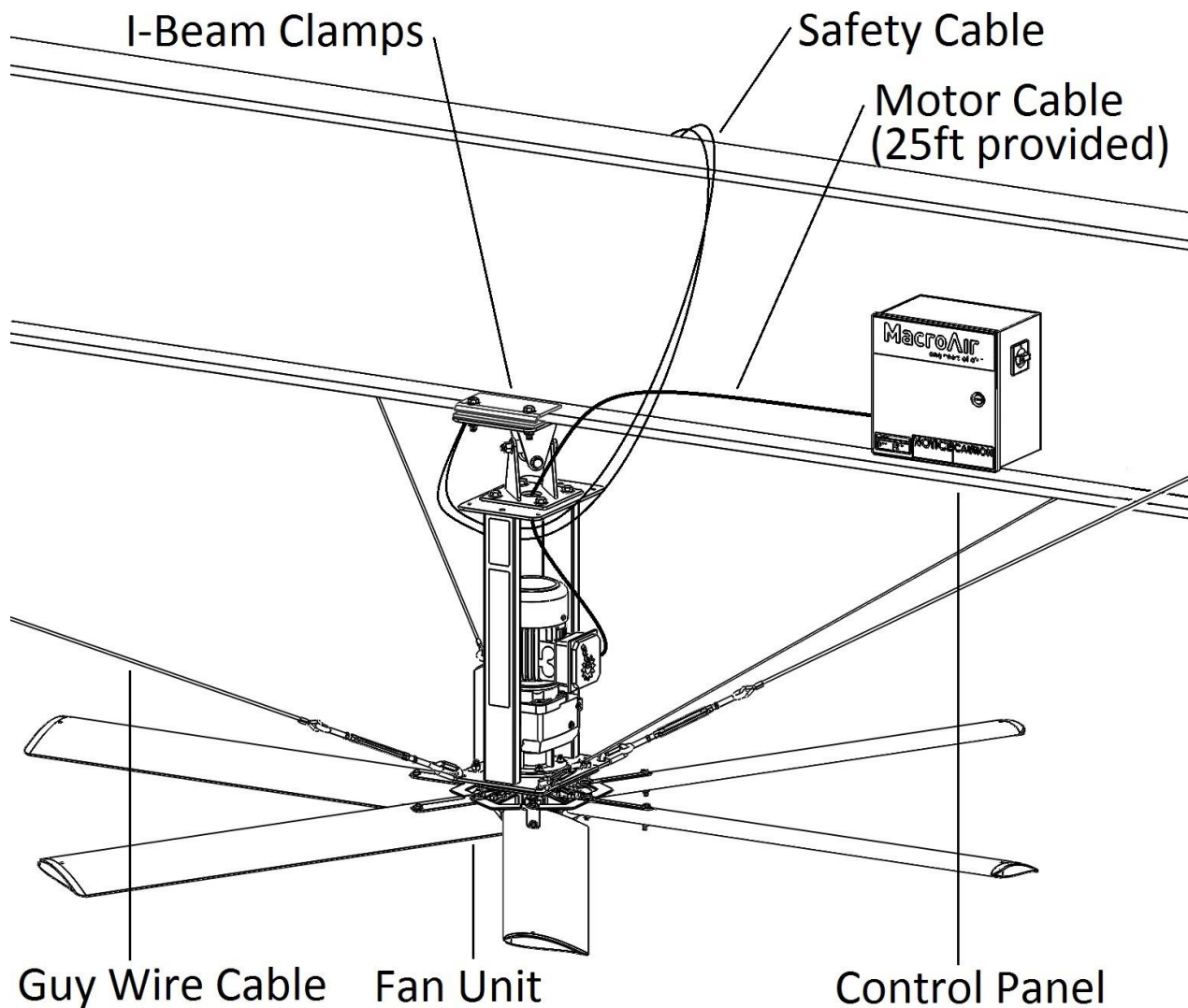
## Tools Required



Note: A drill and drill bits will also be required when mounting brackets and control panel to Glulam.



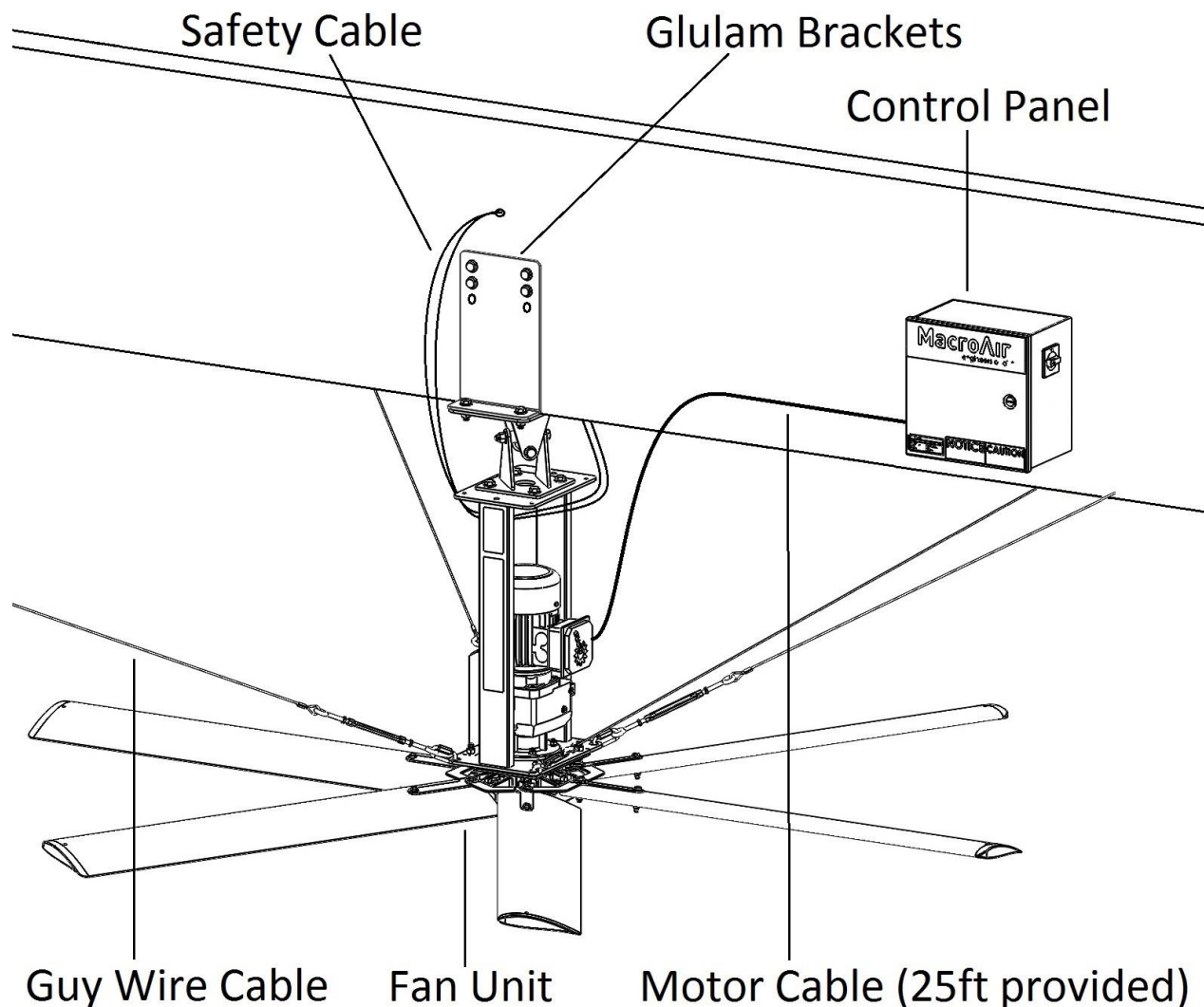
## I-Beam



1. Mount Fan Unit to base of Universal Mount (UMH) using hardware pack, combination wrench, and socket wrench.
2. The Safety Cable needs to be fed around I-Beam and through fan unit frame.
3. The Control Panel must be secured to the I-Beam within 25 feet of the fan, 5 feet outside of the swept area.

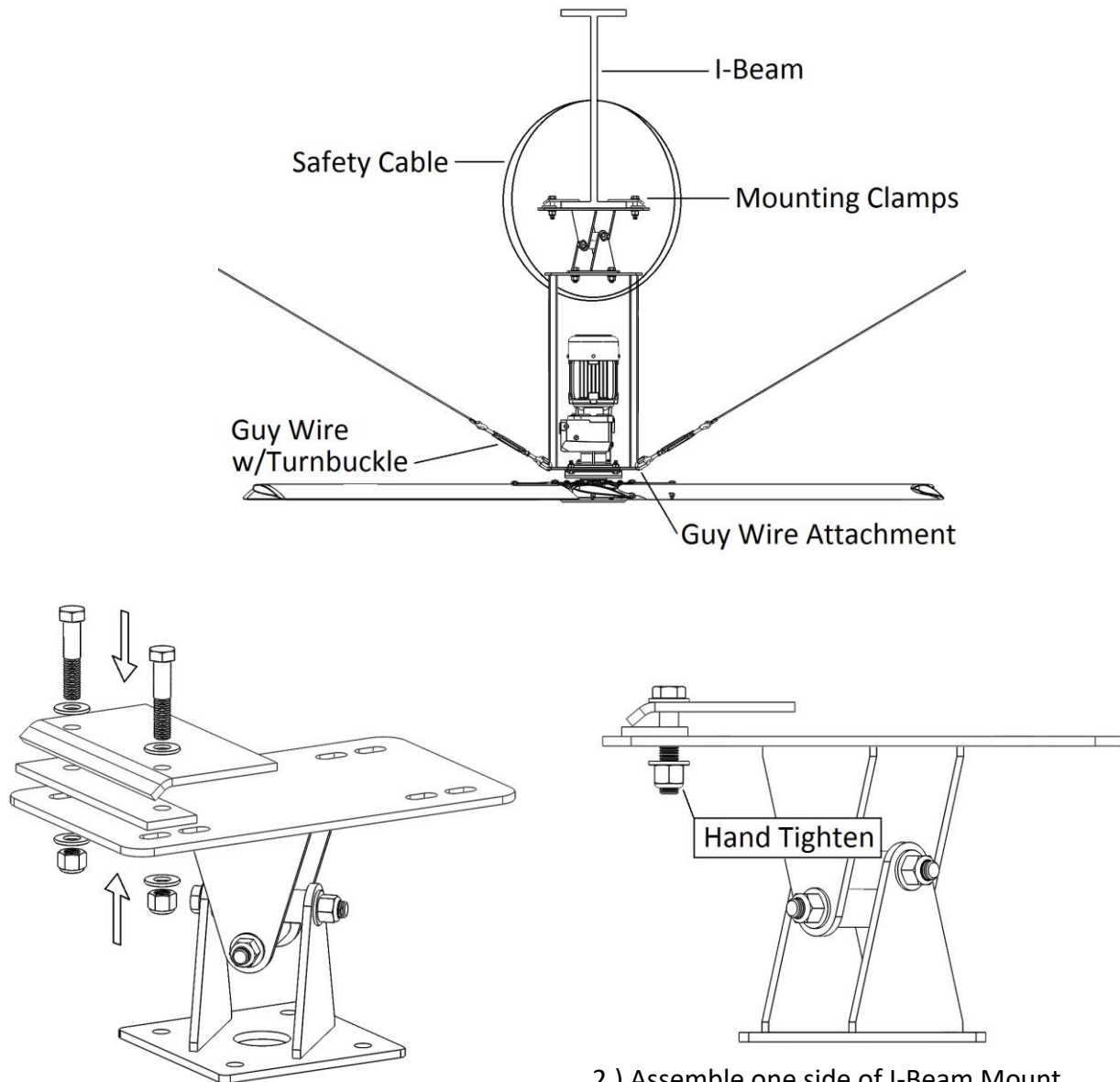


## Glulam



1. The Safety Cable needs to be fed through a hole in the Glulam, preferably above the center line of the Glulam.
2. The Control Panel must be secured to the Glulam via wood screws within 25 feet of the fan, 5 feet outside of the swept area.
3. The Glulam brackets need to be through-bolted to the Glulam as high as possible.
4. Attach fan frame to the bottom of the Universal Mount with the provided hardware, combination wrench, and socket wrench.

## UMH I-Beam Mounting



1.) Hand tighten Nuts to secure Clamp and Shim in place.

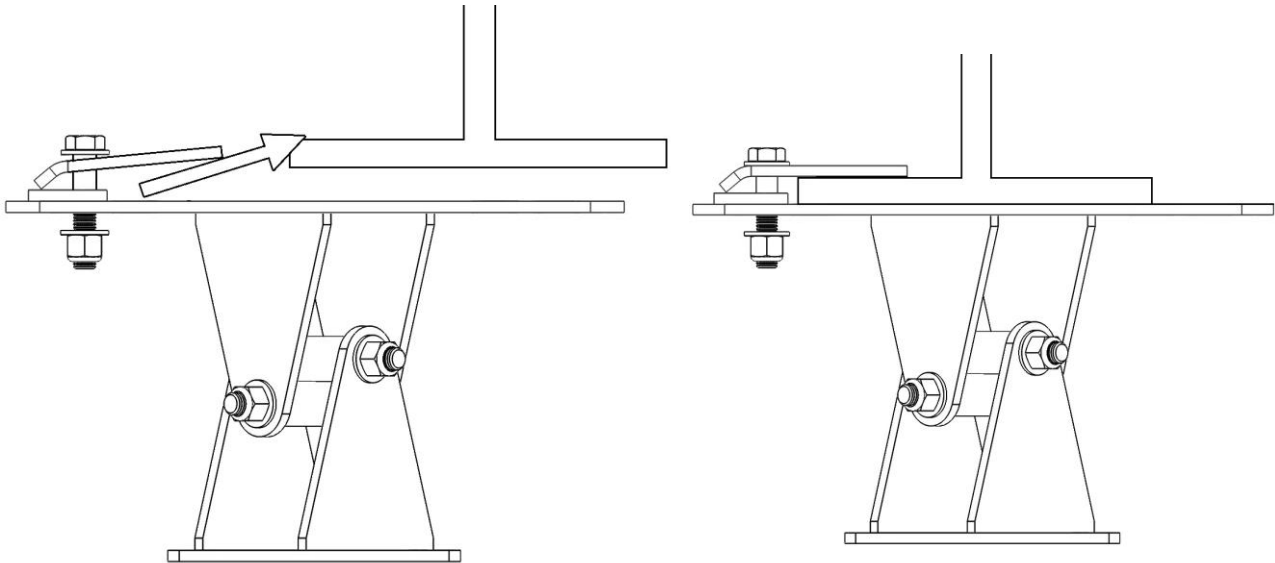
2.) Assemble one side of I-Beam Mount with (1) Clamp, (1) Shim and Hardware.

### I-Beam Clamps & I-Beam Bolt Kit

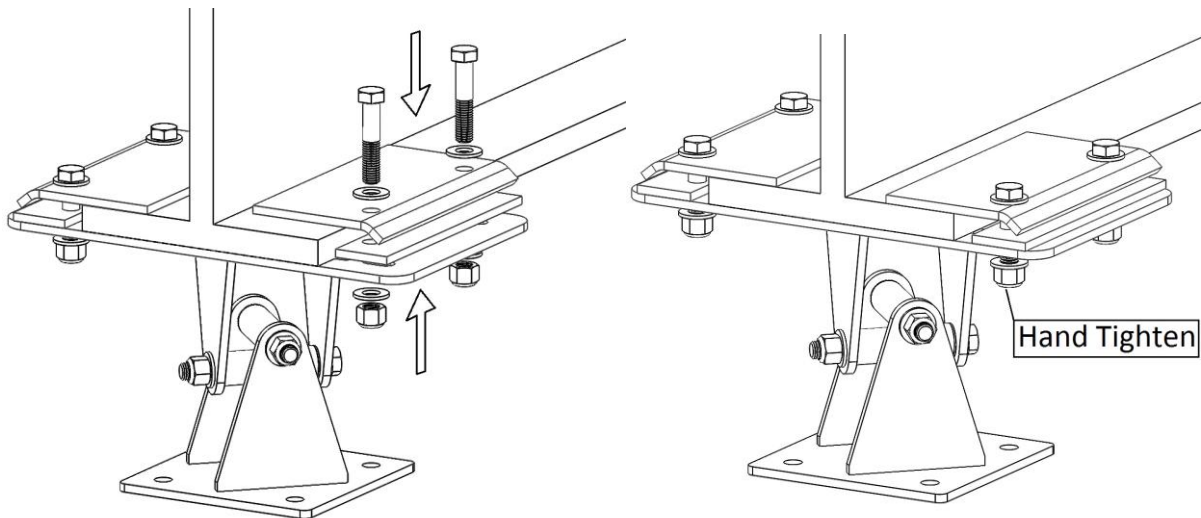
- (2) I-Beam Clamps
- (2) I-Beam Shims
- (4) Hex Bolts 1/2"-32x2-1/2"
- (8) Washers, 1/2" Flat
- (4) Hex Nuts 1/2"-32, Nylon Lock

## UMH I-Beam Mounting (cont.)

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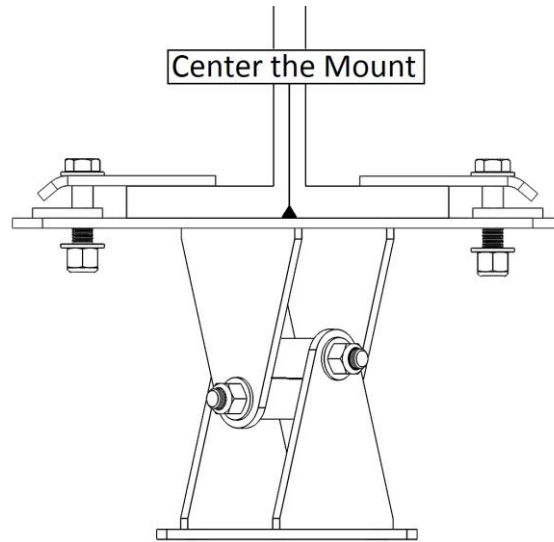
3. Position the UMH under the I-Beam so that one side of the beam is between the clamp and UMH.



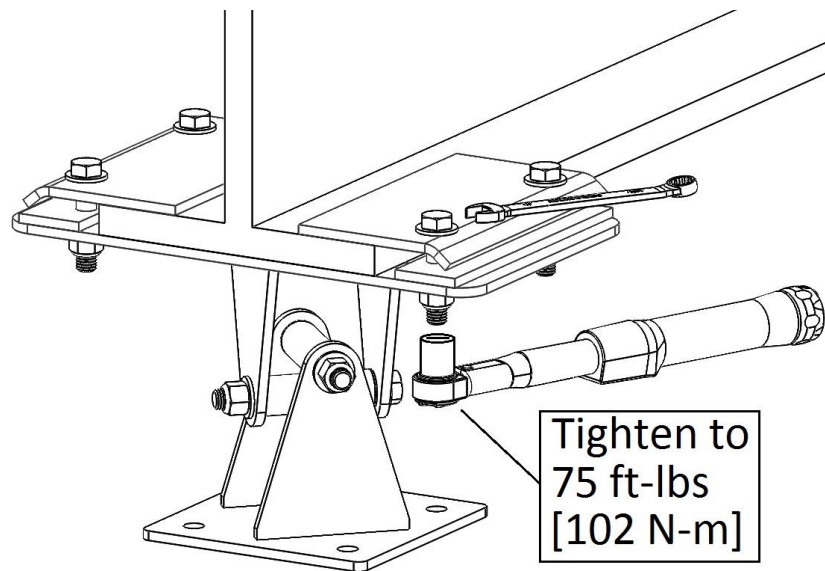
4. Assemble other side of I-Beam Mount with (1) Clamp, (1) Shim and Hardware.
5. Hand tighten nuts to secure Clamp and Shim in place.

## UMH I-Beam Mounting (cont.)

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6. Center the UMH on the I-Beam.

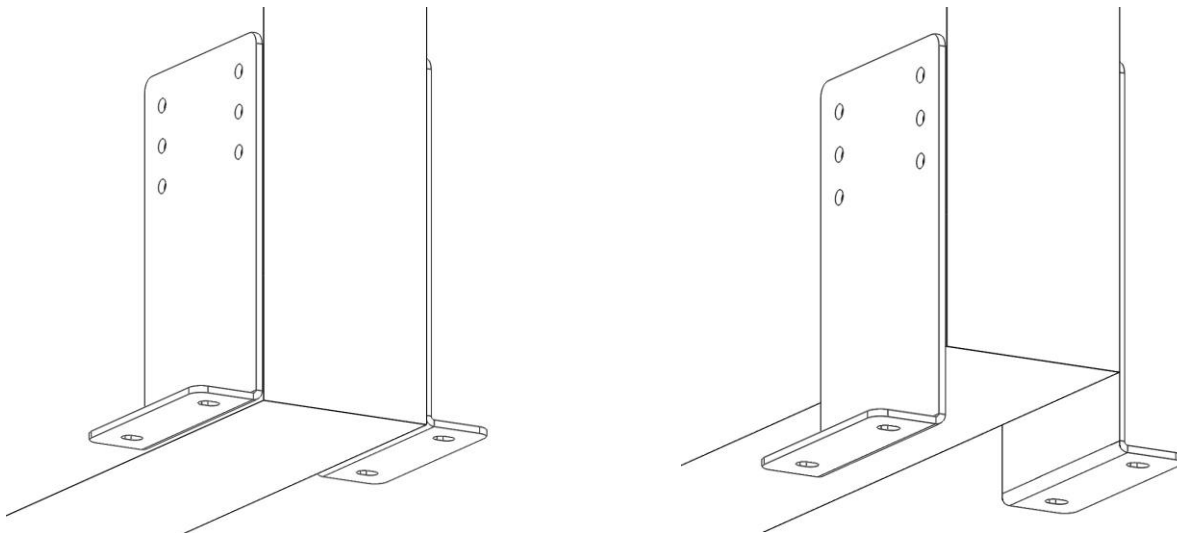
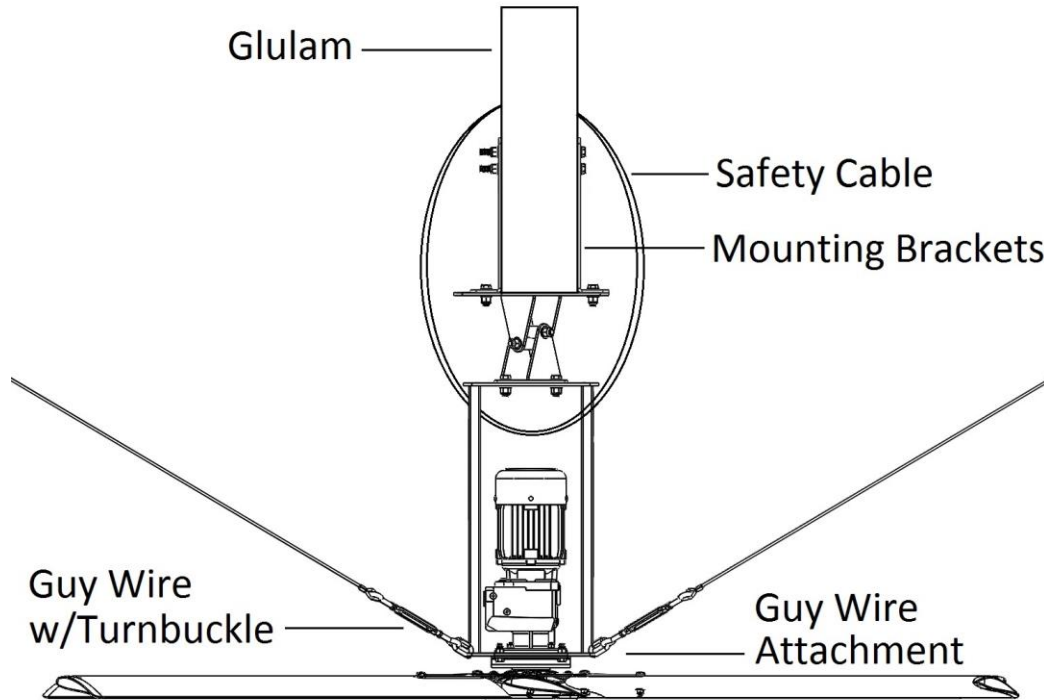


7. Using a 3/4" combination wrench and a 3/4" socket and torque wrench tighten all hardware to 75 ft-lbs. [102 N-m].

## UMH Glulam Mounting

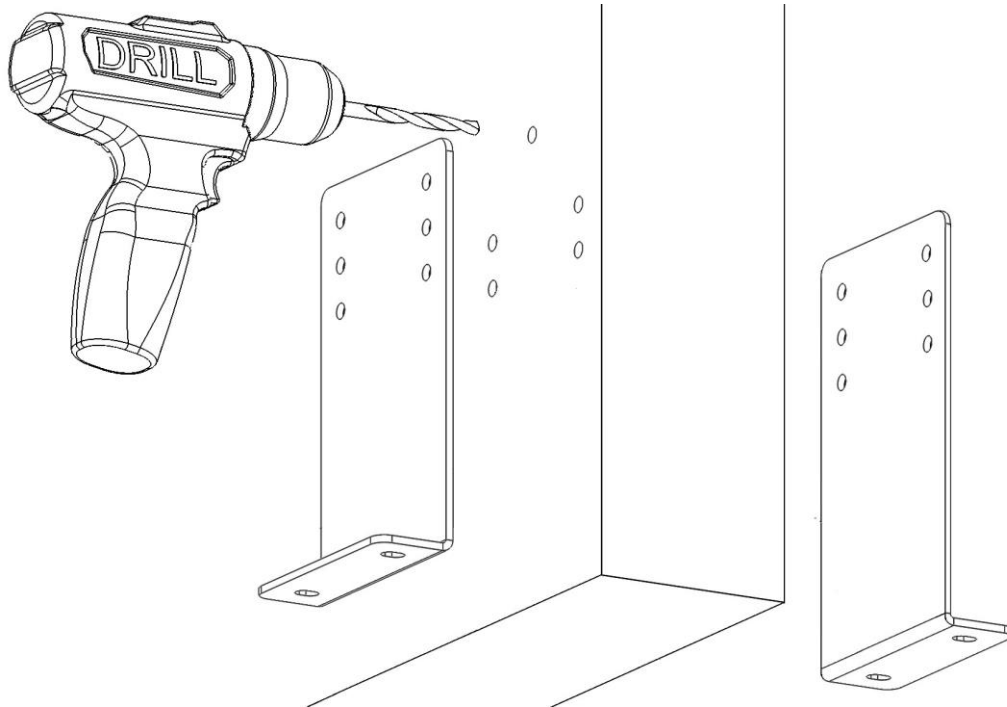
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This method is recommended for Glulams or wood beams 5-1/8" or wider. For narrower beams, span across two or more beams using the Unistrut mounting method. (Refer to page 23)

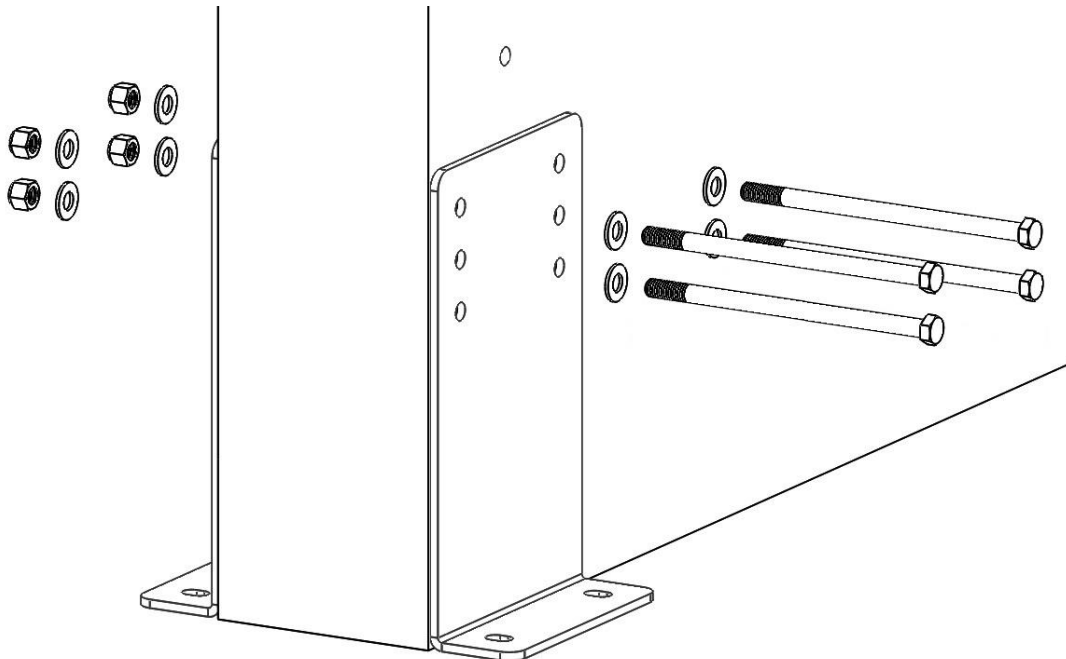


1. The Brackets can be located below the glulam if necessary but is not recommended. Locate brackets even with bottom of glulam.

## UMH Glulam Mounting (cont.)



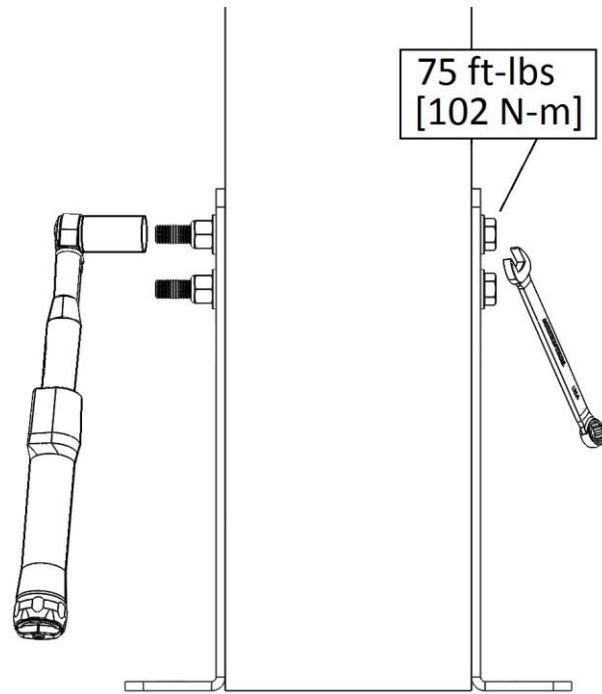
2. Drill maximum 5/8" diameter clearance holes through the glulam for (4) 1/2"-32 mounting bolts and (1) hole for the 3/16" diameter safety cable. The highest bolt hole should not be below the beam's center line unless the glulam is too tall. The hole for the safety cable should be centered above the brackets (preferably above the center line of the glulam).



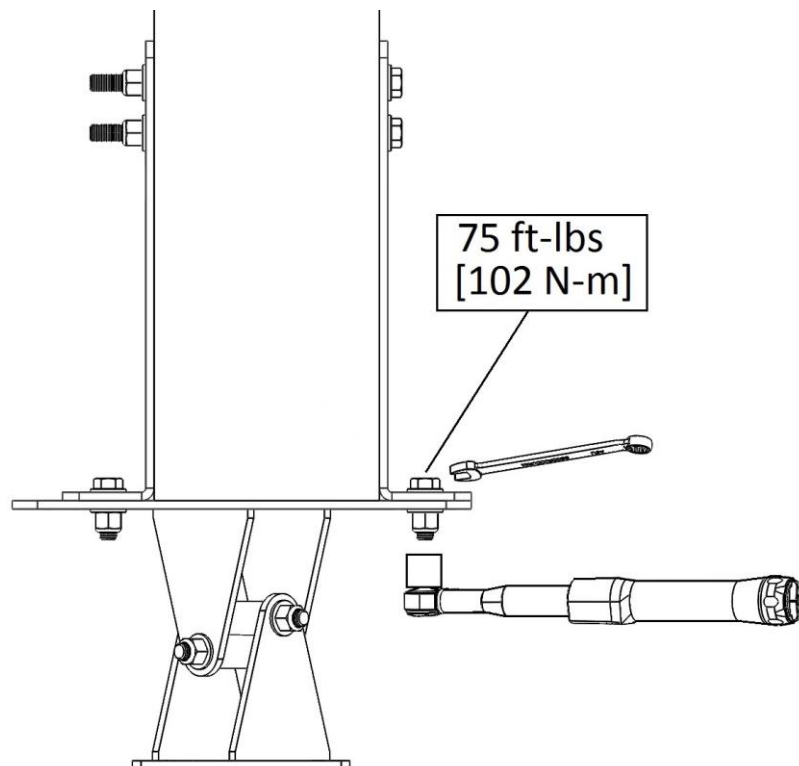
3. Secure the Glulam brackets to the Glulam via (4) 1/2"-13 grade 5 bolts (long enough to go through the entire beam with nylon lock nuts). Stack the Bolt, washer, washer, nut as shown above.

## UMH Glulam Mounting (cont.)

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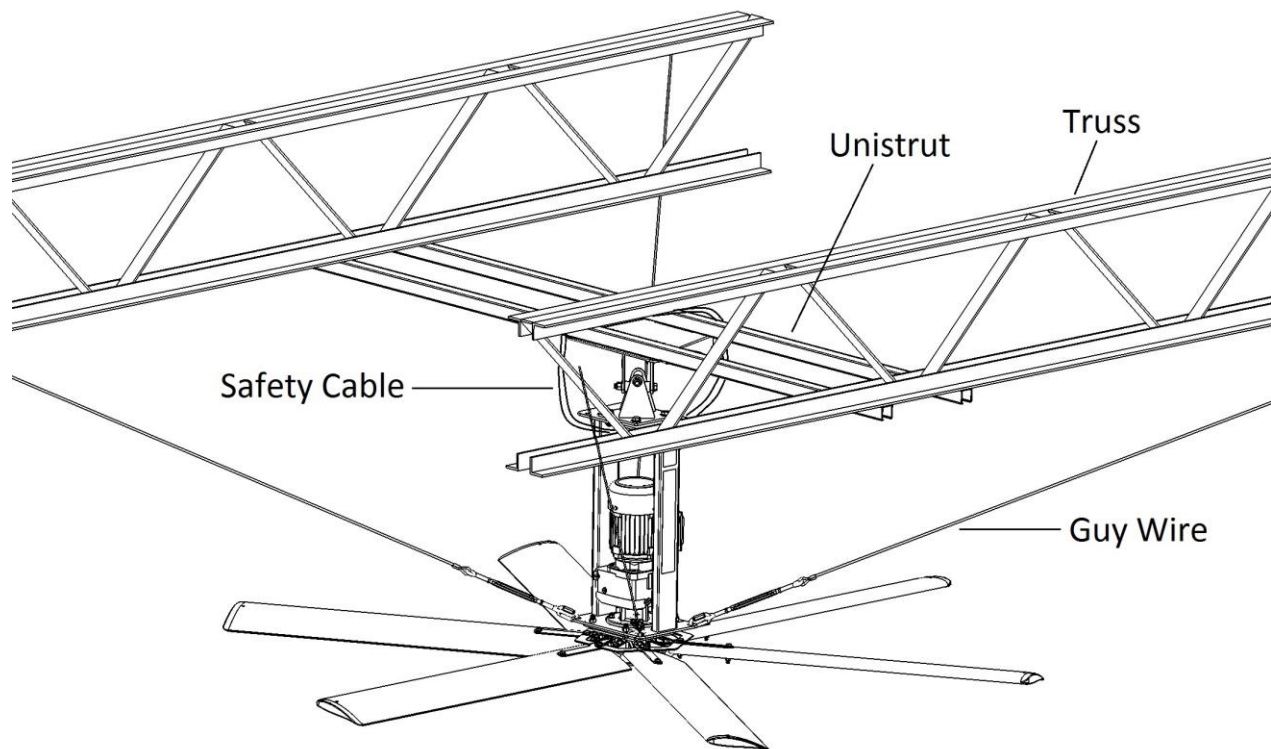
4. Using a 3/4" combination wrench and a 3/4" socket and torque wrench tighten all hardware to 75 ft-lbs.[102 N-m].
5. Mount the UMH to the glulam brackets using the Universal Mount Bolt Kit which contains (4) 1/2"-13 x 1.50" Hex Bolts, (8) 1/2" Washers and (4) 1/2"-13 Nylon Lock Nuts. Using a 3/4" combination wrench and a 3/4" socket and torque wrench tighten all hardware to 75 ft-lbs. [102 N-m].



## UMH Unistrut Mounting

This method is used to span components of a building structure. Attachment points to the building structure can vary greatly, so we recommend contacting Unistrut, so they can recommend the best method for attaching the Unistrut ([www.unistrut.us](http://www.unistrut.us)).

1. Two (2) pieces of 1-5/8" x 1-5/8" 12-gauge Unistrut need to span the trusses. Distance apart to be centered over the widest hole pattern in the UMH being used (see step 2). An "Extra Wide" UMH may be desired for this application. Maximum allowable distance between trusses is 8 ft. If the spanning distance is greater than 8 feet, please consult a Structural Engineer. Please refer to page 5 for the maximum torque and weight values.



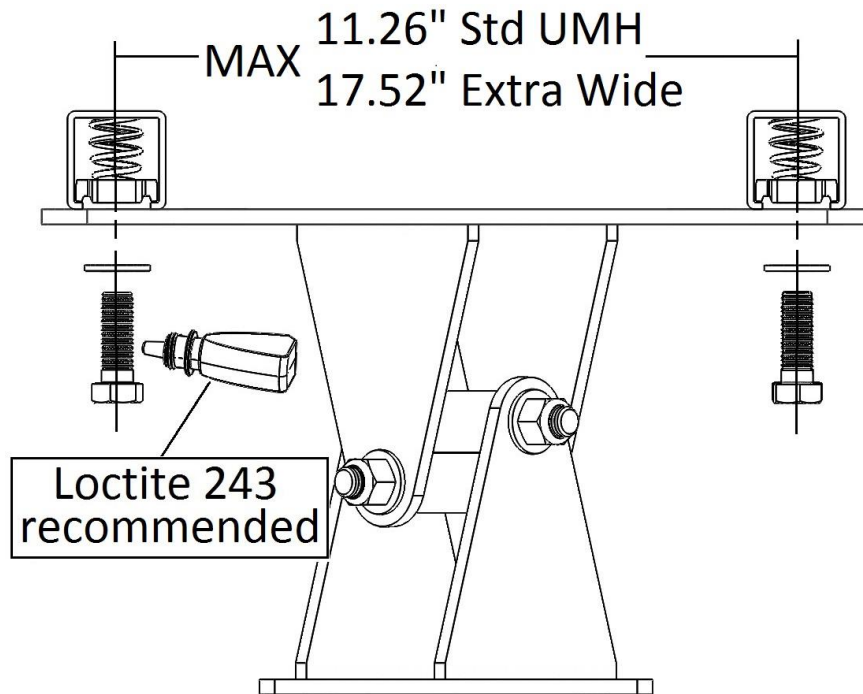
### Hardware Required but Not Provided:

- (4) 1/2"-13 x 1-1/2" Hex Bolts
- (4) 1/2" Flat Washer
- (4) 1/2" Unistrut Spring Nut
- (1) Loctite 243
- (1) Extra Wide UMH (optional)

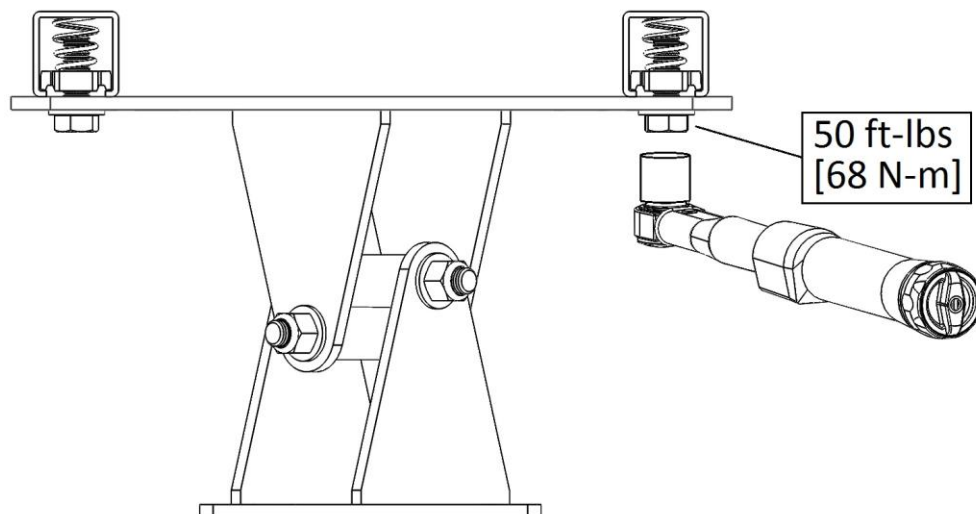


## UMH Unistrut Mounting (cont.)

2. Attach the UMH in the most desired position between the trusses using hardware indicated (not provided). Apply Loctite 243 to the 1/2"-13 bolts prior to mounting. Unistrut clamps are not permitted in this mounting method.



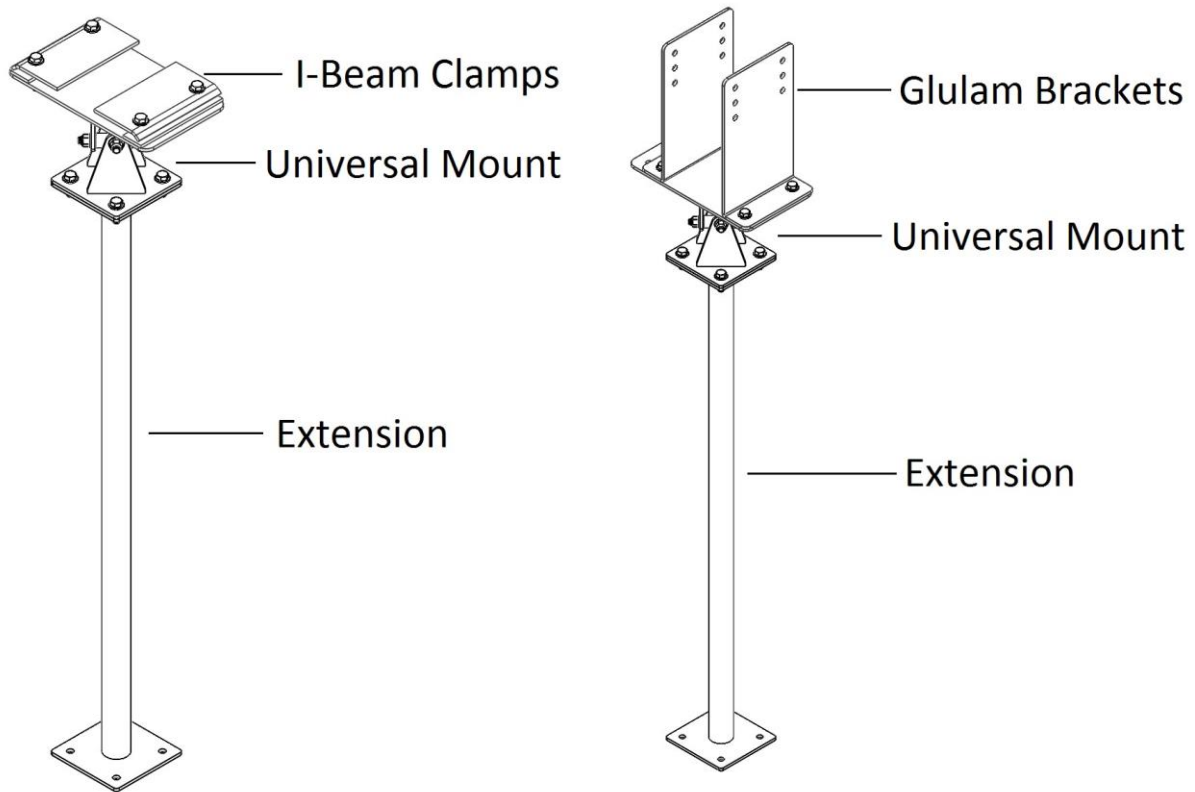
3. Using a Torque wrench, tighten hardware to 50 ft-lbs.



NOTE: Mounting to C- and Z-purlins requires Unistrut span mounting. Mounting to trusses under three (3) inches in width requires two or more trusses to be linked with Unistrut. We recommend contacting Unistrut, so they can recommend the best method for attaching the Unistrut ([www.unistrut.us](http://www.unistrut.us)).

## Mounting an Extension

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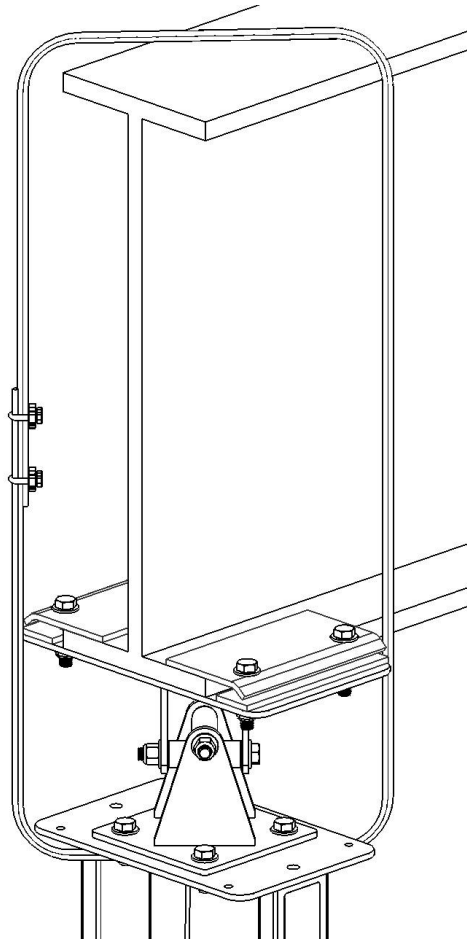
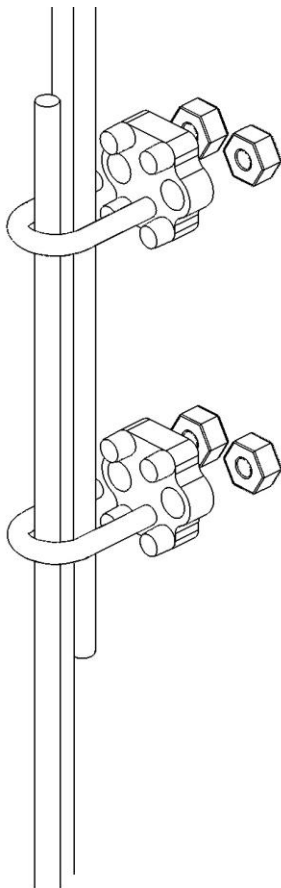
When an extension is used, attach the extension to the bottom of the Universal Mount and attach the top of the fan unit to the bottom of the extension with the provided hardware pack.

## Safety Cable Installation

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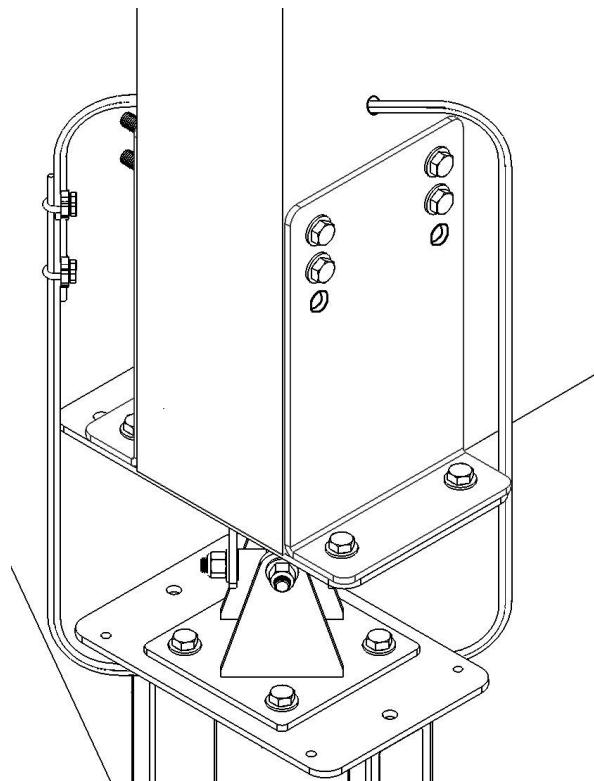
### I-Beam

1. Wrap safety cable through fan unit frame and around I-beam .
2. Secure two (2) safety cable clamps around the wire. Pull the cable taut and tighten both nuts using 3/8" combination wrench.



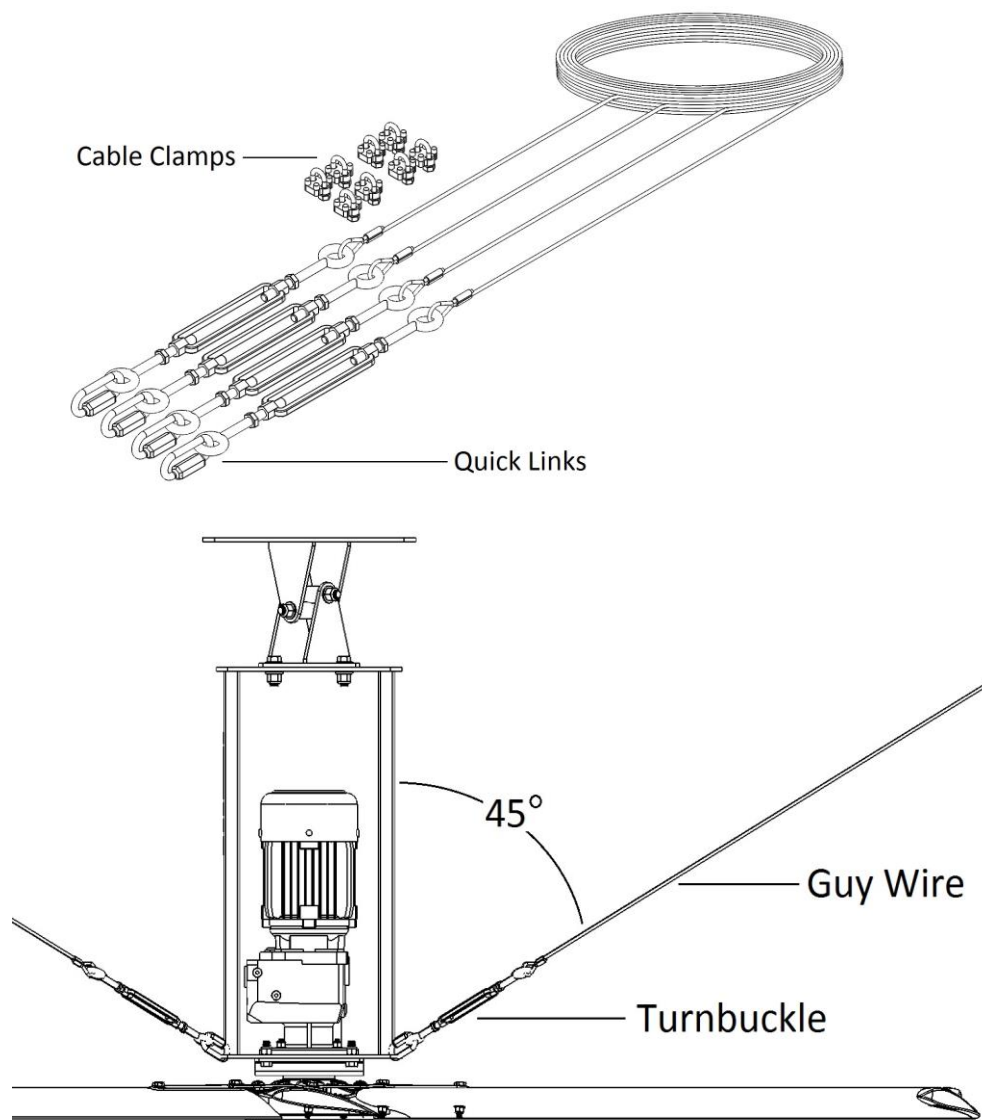
### Glulam

1. Wrap safety cable through fan unit frame and through hole drilled in Glulam above brackets.
2. Secure two (2) safety cable clamps around the wire. Pull the cable taut and tighten both nuts using 3/8" combination wrench.



## Guy Wire Installation

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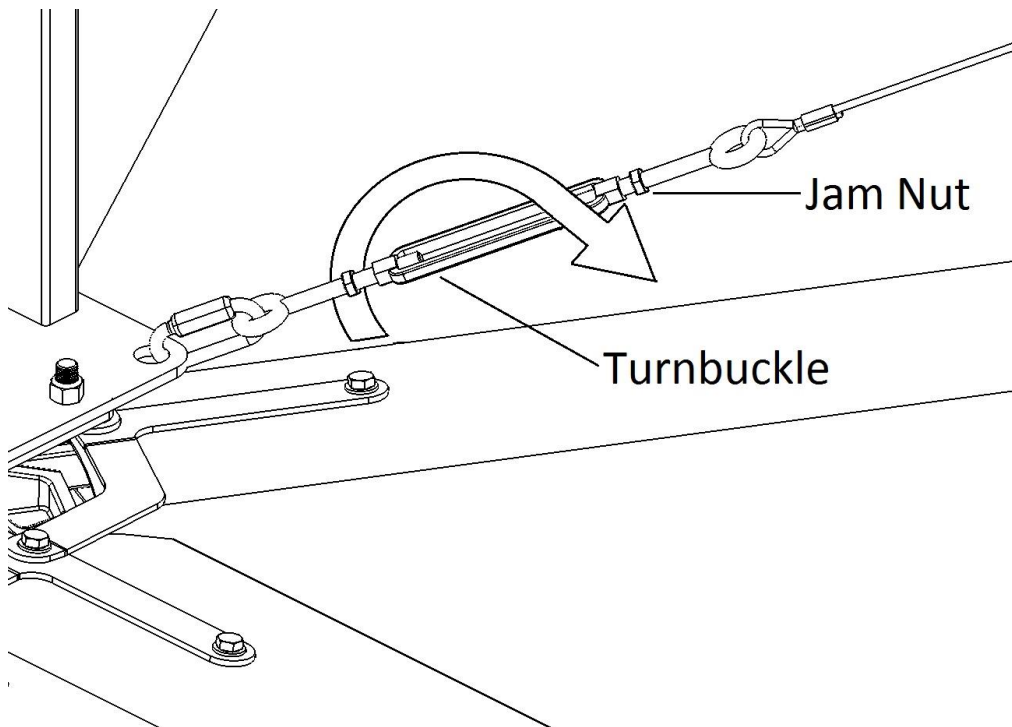
1. Attach the turnbuckle end of the guy wires to the four corners of the base of the frame through the hole provided at each corner.
2. When laying out the locations of the guy wire mounting points, **attempt to maintain a 45-degree angle** between the ceiling and the guy wires.
3. Avoid any sharp edges 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. Eye Lags or bolts are not supplied by MacroAir.

**⚠ WARNING: DO NOT wrap the guy wires around the building structure.**

4. Tighten down cable clamp nuts with a 10mm socket wrench.

## Guy Wire Tightening

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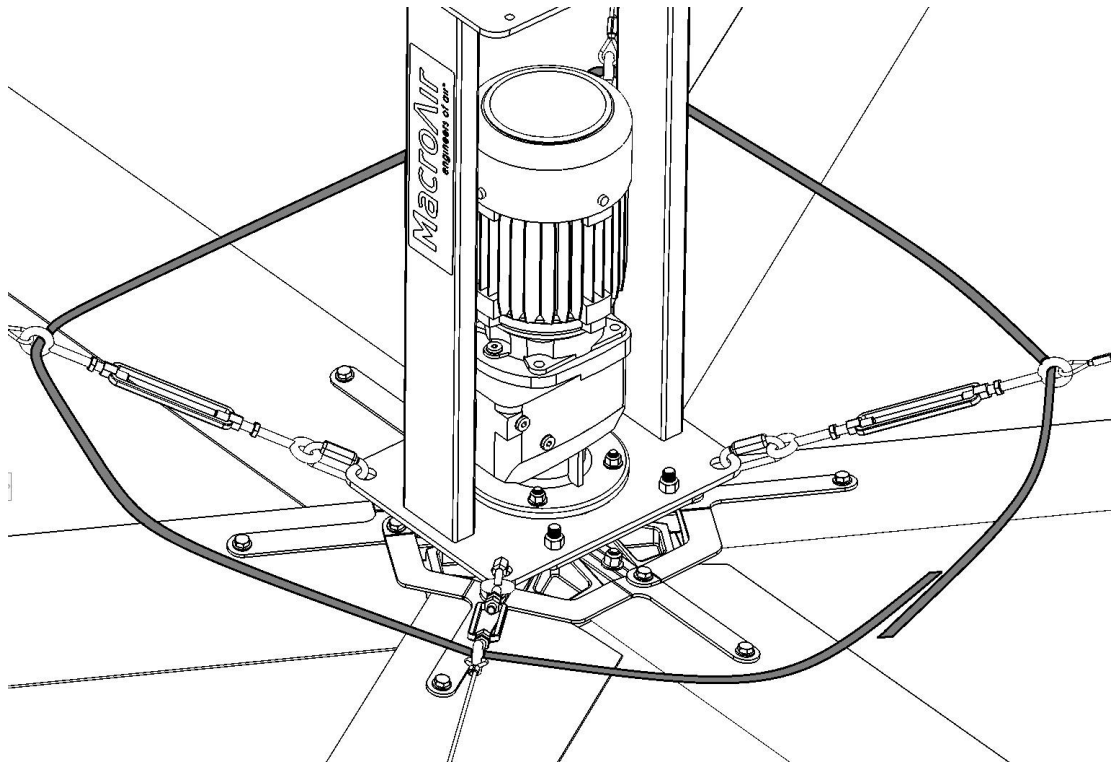


5. With the aid of a level placed against the fan unit, tighten the turnbuckles by hand in a crisscross pattern while periodically checking to ensure that the fan is level.
  6. Tighten the turnbuckles until the fan unit is stable in the level position.
- ⚠ **WARNING: Make sure to not overtighten the turnbuckles.**
7. Once all the guy wires are taut (stretched or pulled tight with no slack) and the fan unit is stable and level, tighten the jam nuts on the turnbuckles with a 1/2" combination wrench.
- ⚠ **WARNING: Do not use tools to tighten the turnbuckles; only use tools to tighten the jam nuts.**

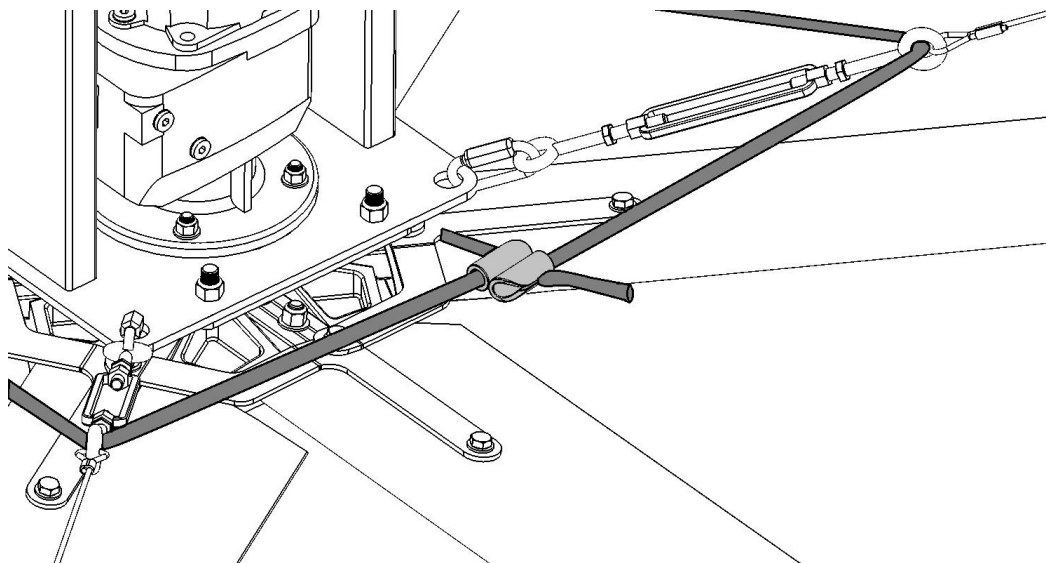
## Guy Wire Band Installation

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1. Insert the elastic cord through the top eyelet of each of the 4 turnbuckles.



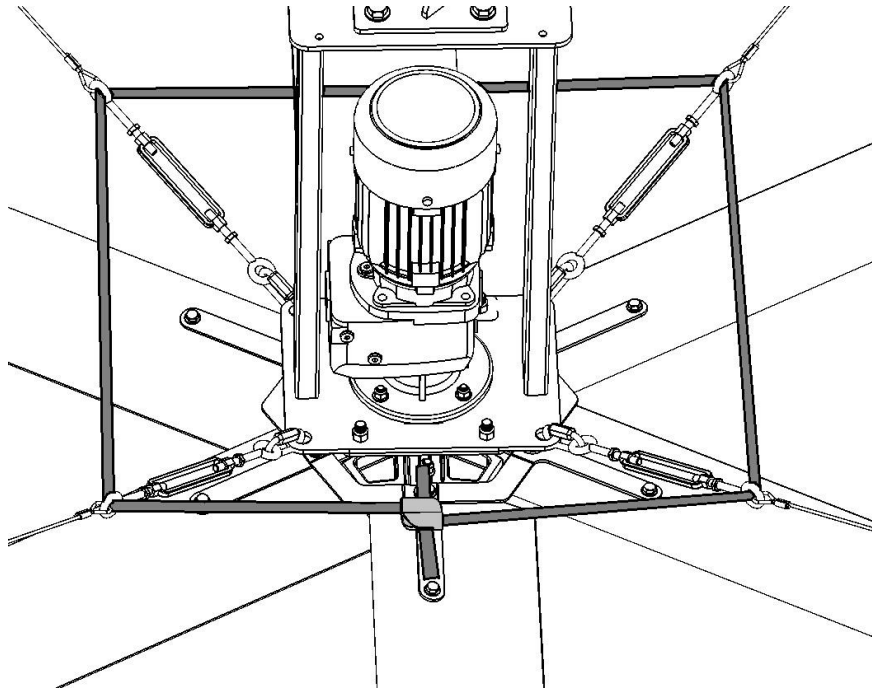
2. Pull one of the ends of the cord through one of the holes on the cable lock and then pull the end into the groove to lock it. Use pliers to properly secure the cord in the groove of the cable lock.
3. Repeat the previous instruction for the second end of the cord using the opposite hole and groove on the cable lock.



## Guy Wire Band Installation (cont.)

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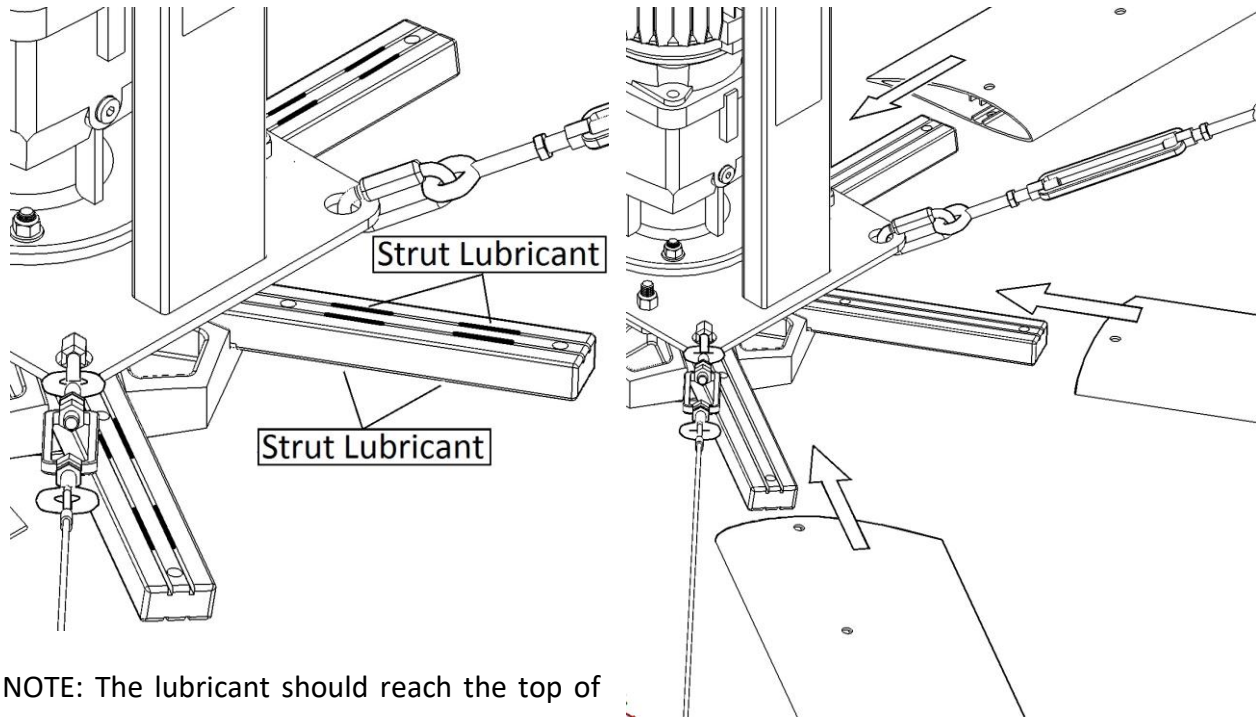
4. The safety cord should be pulled tight and fastened as shown below.



THE CABLE IS CUT TO A PREDETERMINED LENGTH AND TENSION.  
DO NOT EXCESSIVELY STRETCH THE ELASTIC CORD.

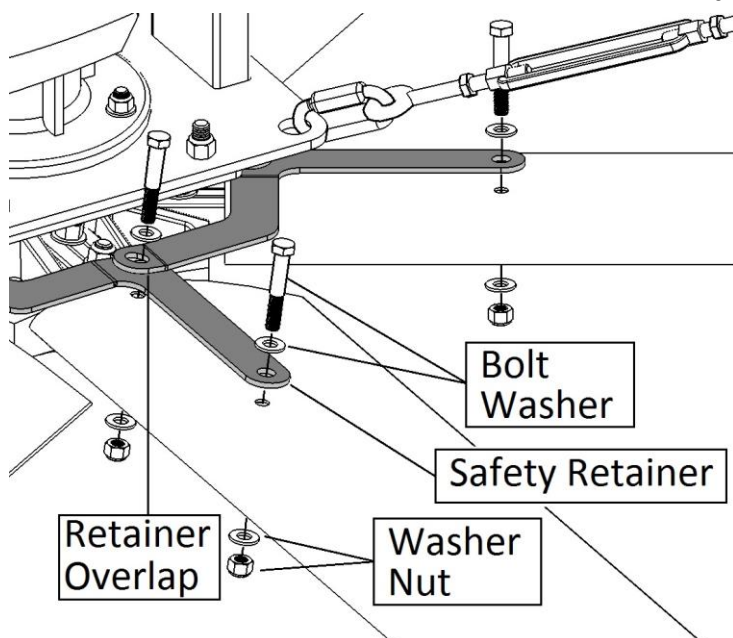
## Blade & Safety Link Assembly

1. Apply the provided lubricant in 4 spots on the top and 4 spots on the bottom of each strut as indicated. Each line of lubricant should be in a groove of the strut, approximately 1"-1.5" long and spaced as indicated.



NOTE: The lubricant should reach the top of the groove. It is not necessary to use the entire tube.

2. Slide the blades onto the blade struts and align the mounting holes in the blade with the mounting holes in the blade struts.

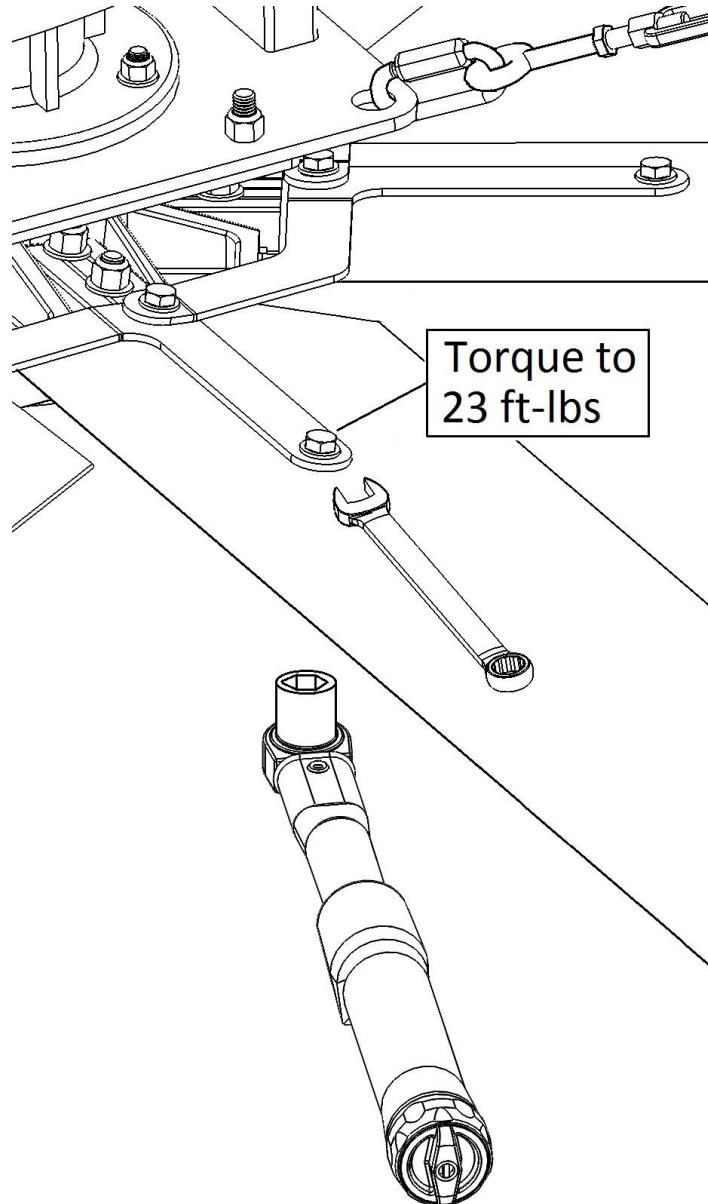


3. Once all the blades are in place, install the safety retainer links and blade bolts, washers, and nuts in a clockwise or counterclockwise manner. Overlap each safety retainer link with the previous safety retainer link.



## Blade & Safety Link Assembly (cont.)

4. Using a 1/2" combination wrench and a 1/2" socket and torque wrench tighten all blade hardware to 23 ft-lbs.



## Electrical & Safety Cable Installation

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**⚠ WARNING:** MOTOR CABLES AND INCOMING POWER MUST NEVER BE RUN IN THE SAME CONDUIT. FAILURE TO INSTALL PER MACROAIR INSTRUCTIONS, INCLUDING WIRING, MAY BE HAZARDOUS, CAUSE PREMATURE FAILURE, AND VOID THE MANUFACTURE'S WARRANTY.

**⚠ ATTENTION: Regulatory Notice, EMI (Electromagnetic Interference)**

Electromagnetic Interference (EMI) is any signal or emission, radiated in free space or conducted along power or signal leads, that endangers the functioning of radio navigation or other safety services or seriously degrades, obstructs, or repeatedly interrupts a licensed radio communications service. Radio communications services include but are limited to AM/FM commercial broadcast, television, cellular services, radar, air-traffic control, pagers, and personal communications services (PCS). These licensed services, along with unintentional radiators such as digital devices, variable frequency drives (VFDs), and other equipment such as fans with VFDs, contribute to the electromagnetic environment.

Electromagnetic compatibility is the ability of items of electronic equipment to function properly together in the electronic environment. MacroAir Fans variable frequency drives, VFDs, are designed to be in compliance with regulatory agency limits for EMI. However, there is no guarantee that interference will not occur in a particular installation. If MacroAir's products (fans) do cause interference with radio communications services, which can be determined by turning the fans off and on, please notify MacroAir technical support.

MacroAir Technologies' products are designed, tested, and classified for their intended electromagnetic environment. These electromagnetic environment classifications generally refer to the following harmonized definitions:

Class A is typically for business or industrial environment.

Class B (MacroAir products are **NOT** designed for typical residential environments covered under this classification).

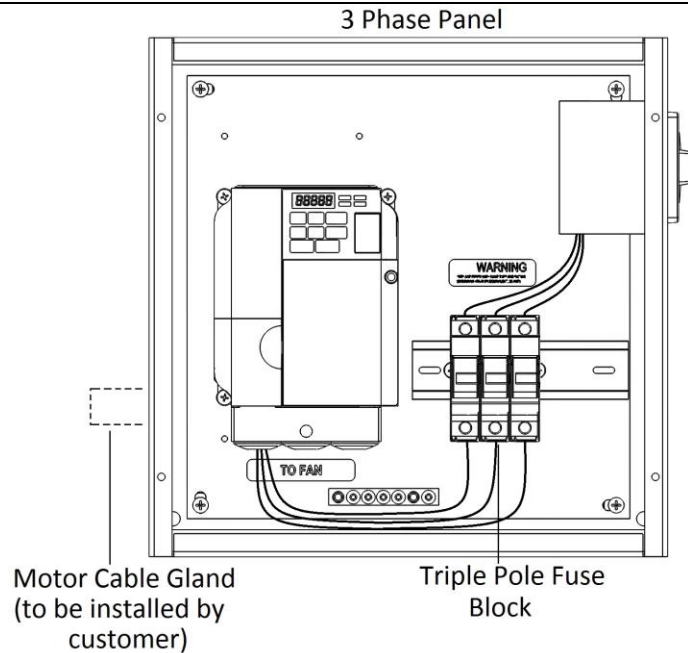
**CODE COMPLIANCE IS THE RESPONSIBILITY OF THE INSTALLER, AND ULTIMATELY, THE END USER.** All wiring should conform to the National Electric Code (NEC) 2005, ANSI/NFPA 70-1999, and all local codes. This fan control should only be installed by qualified technicians familiar with the requirements of the NEC and local codes.

**Note: MacroAir Technologies has a policy of continuous product improvement and reserves the right to change design and specifications without notice.**

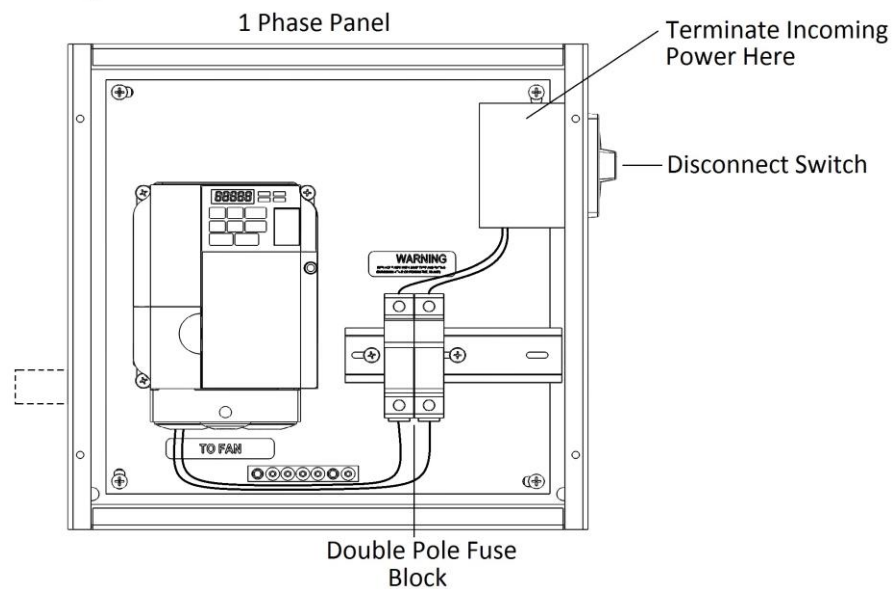
If you have any questions, please contact MacroAir technical support.

## Control Panel Overview

### 3 Phase



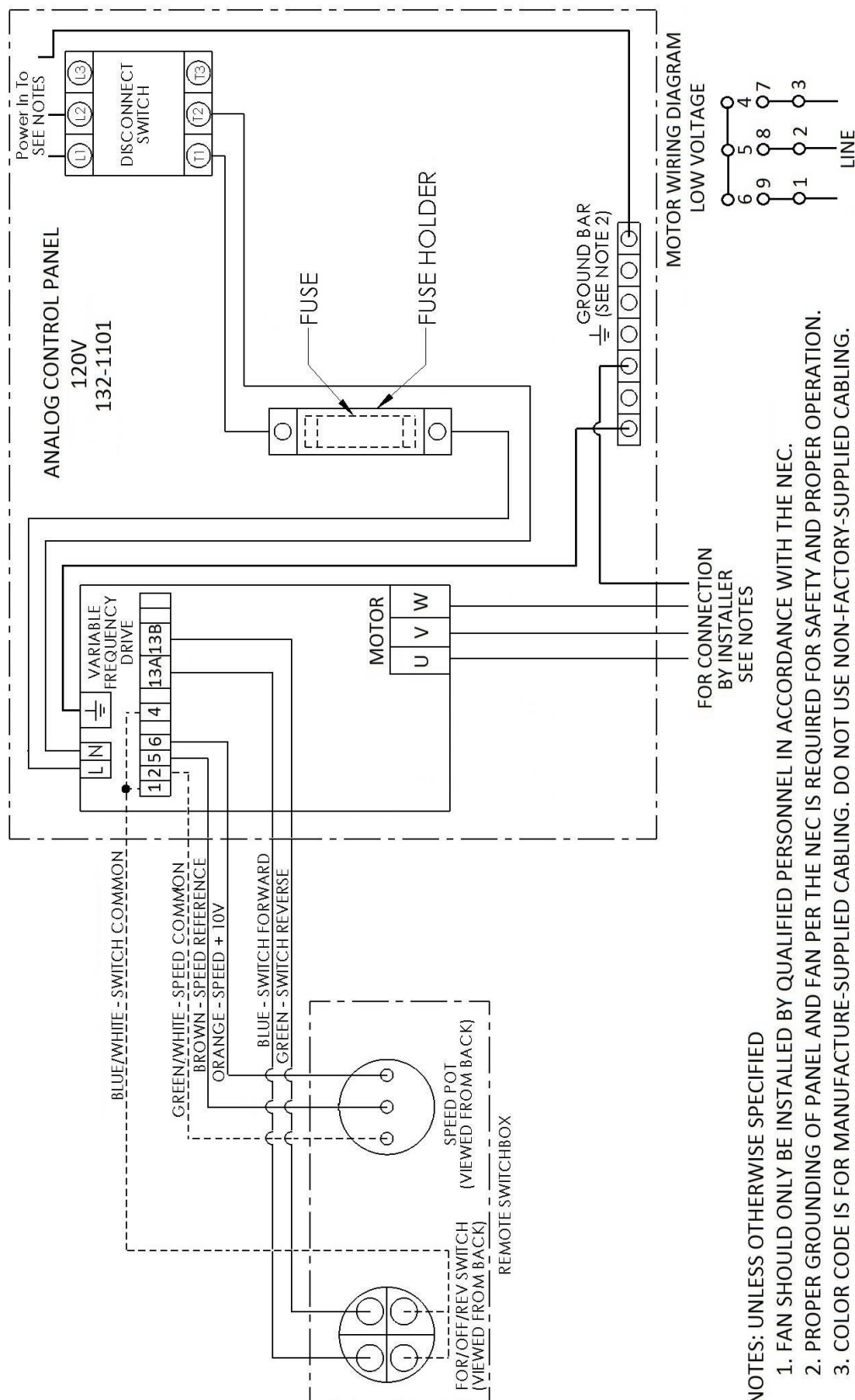
### 1 Phase



1. Control Panels come pre-wired, as illustrated above.
2. Make sure the control wiring is CAT5e shielded, stranded or greater.
3. The Motor Cable Gland does not come pre-installed. A unibit is required to drill the holes and install them.
4. **25 feet of shielded motor cable is provided and must be used with no additional cable to maintain factory warranty.**
5. Motors are shipped pre-wired for high voltage. For 120V and 208-240V applications, it is the responsibility of the installer to rewire motors for low voltage according to the wiring diagram on the motor.
6. Mounting hardware for mounting enclosure to an I-beam, Glulam or wall is not supplied by MacroAir. Physical enclosure of Control Panel is 12"x12"x8".



# 120V Control Panel Schematic

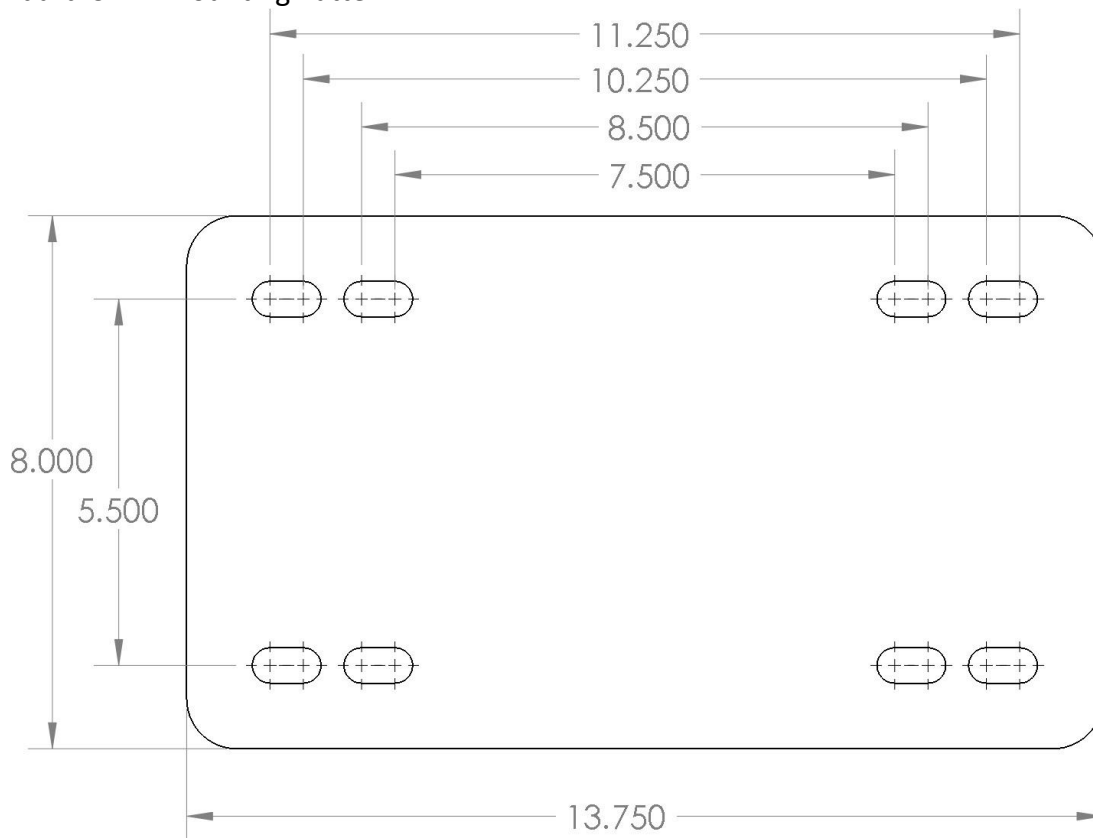


## NOTES: UNLESS OTHERWISE SPECIFIED

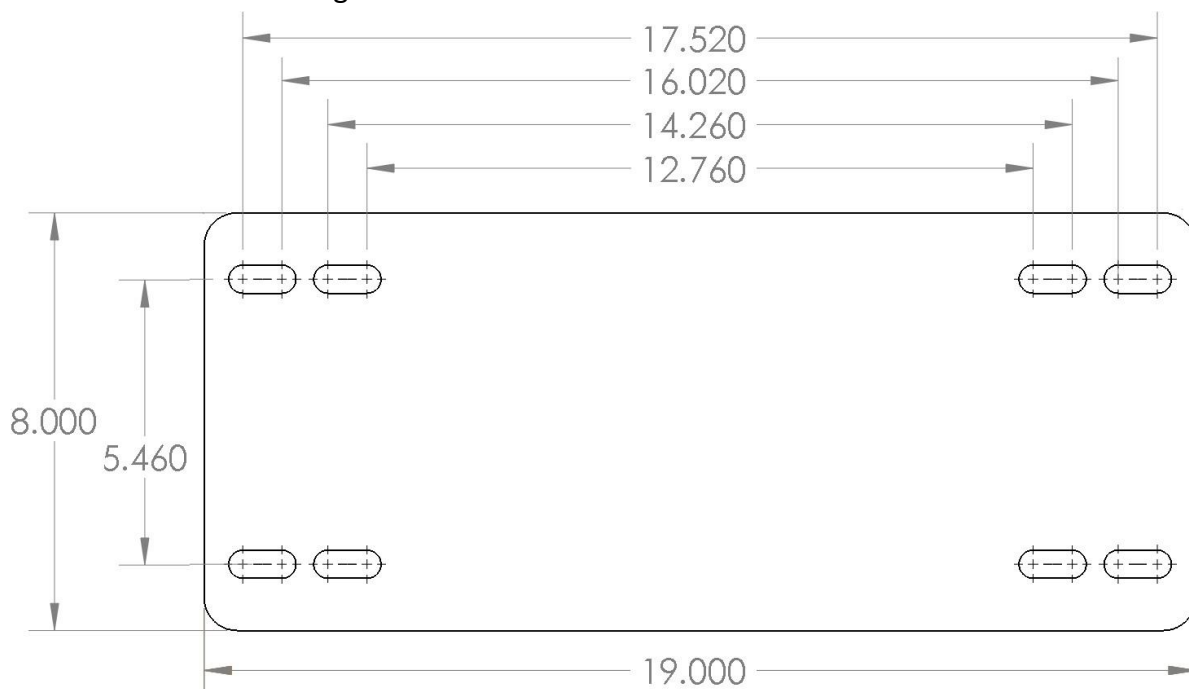
1. FAN SHOULD ONLY BE INSTALLED BY QUALIFIED PERSONNEL IN ACCORDANCE WITH THE NEC.
2. PROPER GROUNDING OF PANEL AND FAN PER THE NEC IS REQUIRED FOR SAFETY AND PROPER OPERATION.
3. COLOR CODE IS FOR MANUFACTURE-SUPPLIED CABLING. DO NOT USE NON-FACTORY-SUPPLIED CABLING.
4. LENGTH OF CABLE FROM DRIVE TO MOTOR TO BE 25 FEET OR LESS.

## UMH Mounting

### Standard UMH Mounting Pattern



### Extra Wide UMH Mounting Pattern



## Maintenance

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**Guy Wire Check (if applicable):** Checking a MacroAir fan's guy wires for tension and inspecting for frayed sections could mitigate a problem before it occurs. The guy wires should be under enough tension to prevent any movement in the motor unit or the extension tube. If the motor unit can be moved by pushing on it, the guy wires need to be tightened. Fan owners should confirm that the guy wires are not wrapped around any sharp edges. MacroAir recommends attaching guy wires to the building with eyebolts or eye lags. If they are not already installed with eye bolts or lags, we urge fan owners to install these 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 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 mild 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 the safety cable 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 when turning in the opposite direction.

**Maintenance Plan:** Things to look for include properly torqued fasteners, rust, cracked welds, unusual noise, hub migration/movement, guy wire loosening or movement.

**Years 1-10:** 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.

**CONTACT US:** For installation assistance, application questions, technical sales support & any other inquiries, please contact us at **(866) 668-3247**.

## Troubleshooting

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Please refer to the table below if you experience issues with the fan operation.

| Symptoms  | Possible Solution   |
|---|---|
| The fan is not turning and the lights on the VFD are lit.     | Flip disconnect switch to “OFF” for 30 seconds and then flip to “ON”. Ensure that the VFD is properly connected to the motor. |
| The fan is not turning and the lights on the VFD are NOT lit. | Confirm that there is power coming from the building.   |
| The fan is making a loud “clicking” noise.                    | Ensure that the anti-seize was properly applied to every blade strut.   |
| The fan is operating noisily.                                 | Confirm that there is nothing interfering with any moving parts.  |
| The fan is wobbling.  | Confirm that the fan is level and the guy wires are properly installed and tightened.   |

If your issue cannot be resolved using the table above, please contact MacroAir technical support at **(866) 668-3247**.



## Warranty

MacroAir warrants the Products listed in the table below will be free from defects in materials and workmanship under normal use and maintenance for the applicable Warranty Period. Other than the Warranty set forth in this document, no other written or oral warranties apply, and no employee, agent, dealer, or other person is authorized to give any other warranties on behalf of MacroAir.

### START DATE OF WARRANTY COVERAGE

The Warranty Period begins fifteen (15) days following shipment of the Product, or on the date the Product is installed (not to exceed sixty (60) days Customer receives the Product), whichever date is later. Customer should retain necessary documentation to verify the date of receipt and installation of the Product. Customer will be required to produce this documentation in order to obtain Warranty services from MacroAir. The Warranty specified herein applies only to Products purchased on or after July 15, 2019.

### PRODUCTS AND SYSTEMS COVERED BY THIS WARRANTY AND APPLICABLE WARRANTY PERIODS:

| Fan Type          | Mechanical: Blades, Hub & Frame | Standard Electrical <sup>1</sup> : Motor, Electrical Controls, Remote | Labor  |
|-------------------|---------------------------------|---|--------|
| Y Series          | Lifetime                        | 3 Years   | 1 Year |
| Z Series          | Lifetime                        | 2 Years   | 1 Year |
| AirVolution-D 780 | Lifetime                        | 3 Years   | 1 Year |
| AirVolution-D 550 | Lifetime                        | 3 Years   | 1 Year |
| AirVolution-D3    | Lifetime                        | 2 Years   | 1 Year |
| AirVolution-D 370 | Lifetime                        | 3 Years   | 1 Year |

### WARRANTY COVERAGE:

Subject to the exclusions herein, the MacroAir Warranty covers any defects in workmanship or materials of the covered Products under normal operation and prescribed maintenance when those defects adversely affect the ability of the Product to operate properly.<sup>2</sup> The Warranty only covers Products which have been installed in compliance with MacroAir's written installation instructions by a state-qualified or licensed electrical contractor and operated and maintained by the Customer in conformity with MacroAir's written instructions, and when the Product is purchased directly from MacroAir or a MacroAir Authorized Dealer.

This Warranty is subject to all provisions, conditions, limitations, and exclusions explained in this Warranty document.

\*Scan QR code or visit [macroairfans.com/warranty](http://macroairfans.com/warranty) for full warranty information.



<sup>1</sup> "Standard Electrical" means any common electrical component that is utilized across more than one fan line will assume the higher warranty period.

<sup>2</sup> "Operate properly" applies only to mechanical, electrical, and structural systems of the Product.



794 South Allen Street  
San Bernardino, CA 92408  
(866) 668-3247  
Macroairfans.com



MacroAir Z Series  
is UL Listed