MacroAir
engineers of air™

Installation Manual

AVD5 Series Fan
(Universal Mount)

Table of Contents

Pre-Installation Checklist

Literature (Pg. 3)

☐ **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)

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

Safety (Pg. 4-5)

☐ **Safety Familiarity.** I am familiar with the safety components and features of the fan. I have verified the presence of a safety cable, and guy wires (if applicable).

Airfoils (Pg. 5-7)

☐ **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 2X 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)

☐ **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

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 AND SAVE 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

⚠ **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 CAT5 motor control cables by a minimum of six (6) inches to avoid communication issues.

- **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.

Electrical Guidelines cont.

⚠ **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.

⚠ **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:

⚠ **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

⚠ **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

⚠ **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.

⚠ **WARNING: Safety Cable and Guy Wires.** Install safety cable on EVERY fan. Install guy wires on every fan using a UMH mount, 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.

⚠ **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

⚠ **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 the 24-foot fan, maximum potential starting torque is 112 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, however, 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 112 Ft-Lbs.

⚠ **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.

⚠ **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.

⚠ **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.
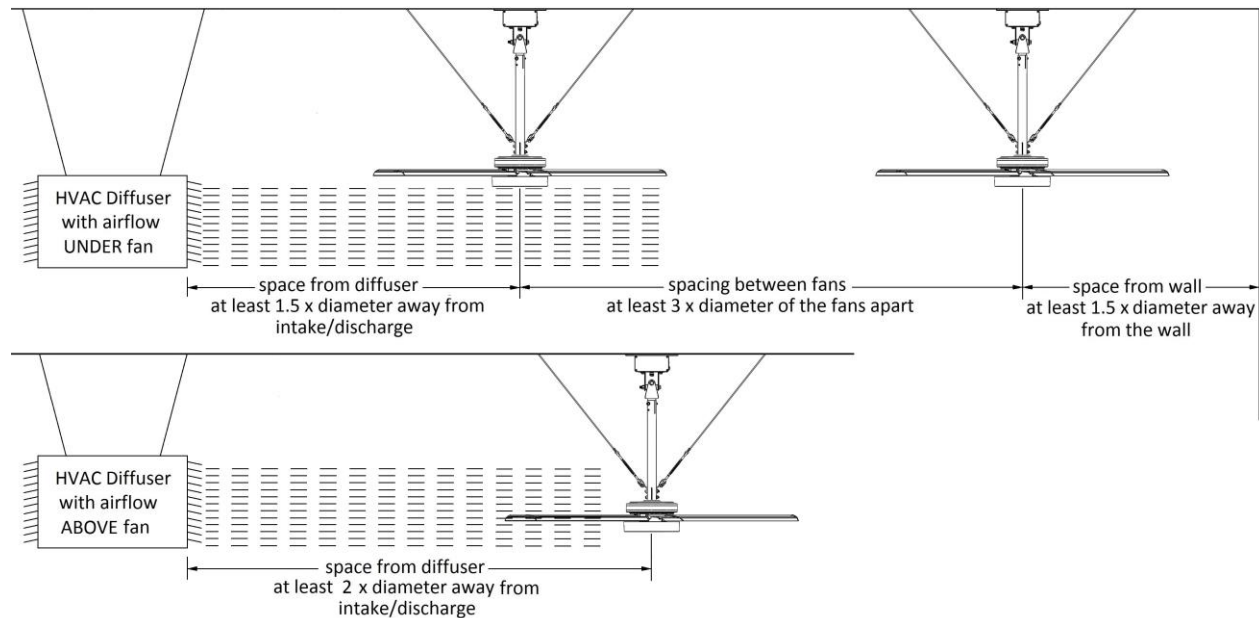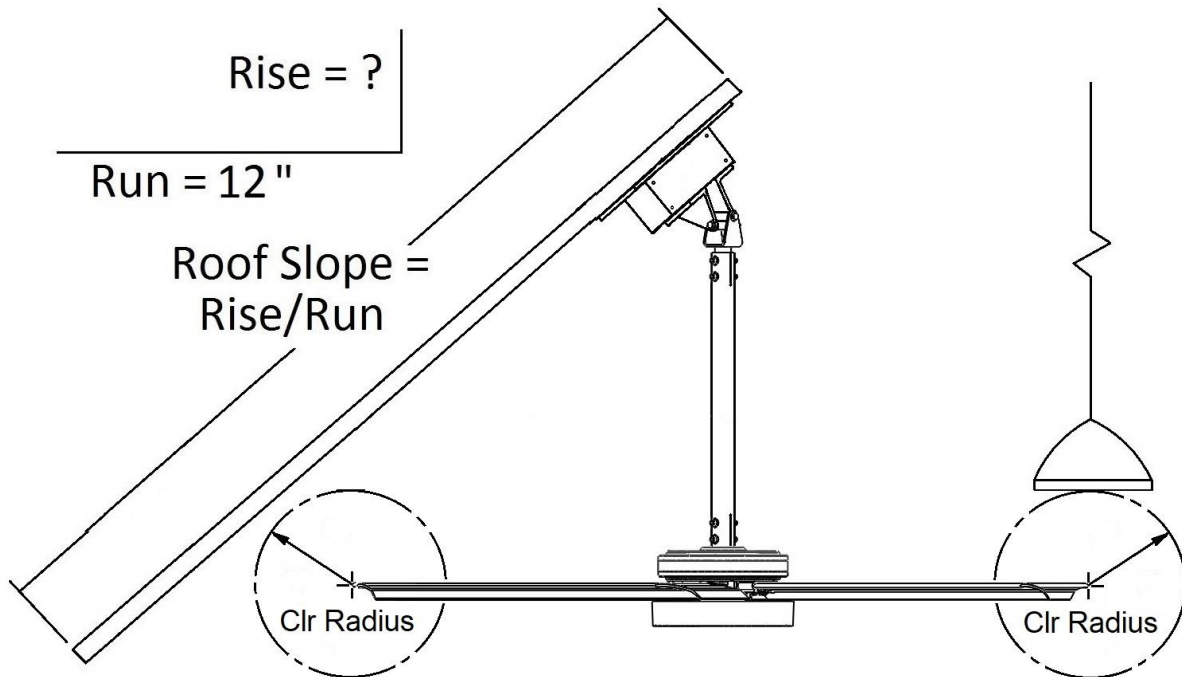
Figure 1: Fan Clearance and Placement

⚠ **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 1: Fan Clearance, Universal Mount (UMH)

Rise = ?

Run = 12 "

Roof Slope = Rise/Run

Clr Radius

Clr Radius

Fan shown in Fig. 1 for illustration purposes only.

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 Extension Length (Ft.)						Min Clr. Radius
8 feet	2	2	3	3	4	5	7"
10 feet	2	2	3	4	5	6	9"
12 feet	2	3	4	5	6	7	11"
14 feet	2	3	4	5	6	7	13"
16 feet	2	3	4	6	7	8	14"
18 feet	2	3	5	6	8	9	16"
20 feet	2	4	5	7	8	10	18"
24 feet	2	4	6	8	10	N/A*	22"

Figure 2: Maximum Angle & Clearance Radius.
        * Note: Extension longer than 10ft not recommended.

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

The goal of Figures 1 and 2 are to determine the proper extension length to maintain a minimum blade clearance of 3 feet from ceiling for optimal performance. 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.

Fan Dimensions

STANDARD
DROP LENGTH
[0.92 M]
36"
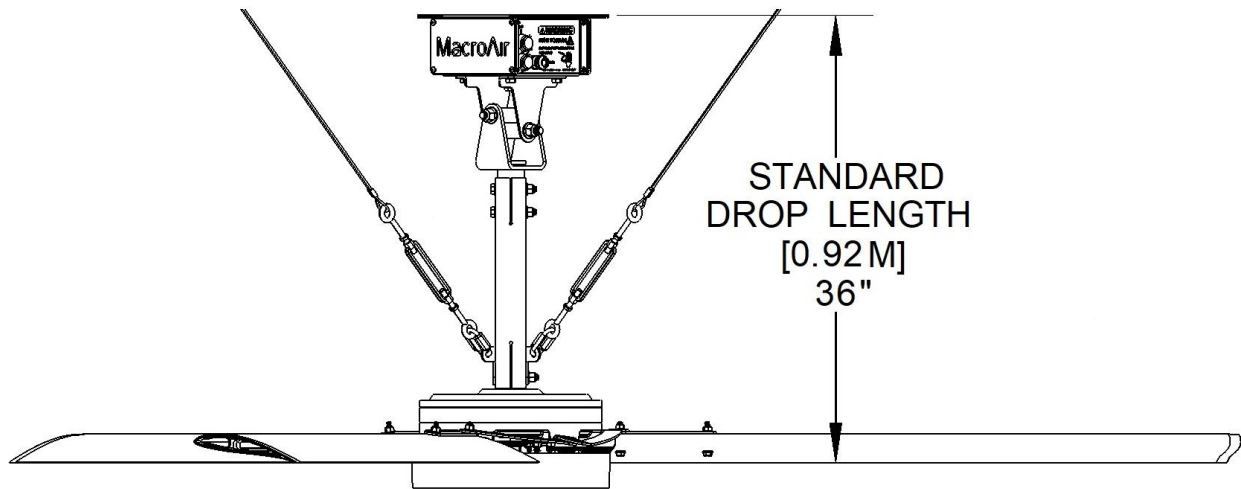
Dimensions listed above are applicable to all MacroAir AVD5 fans.

I-Beam/Glulam Chart

MIN
MAX

MIN
MAX
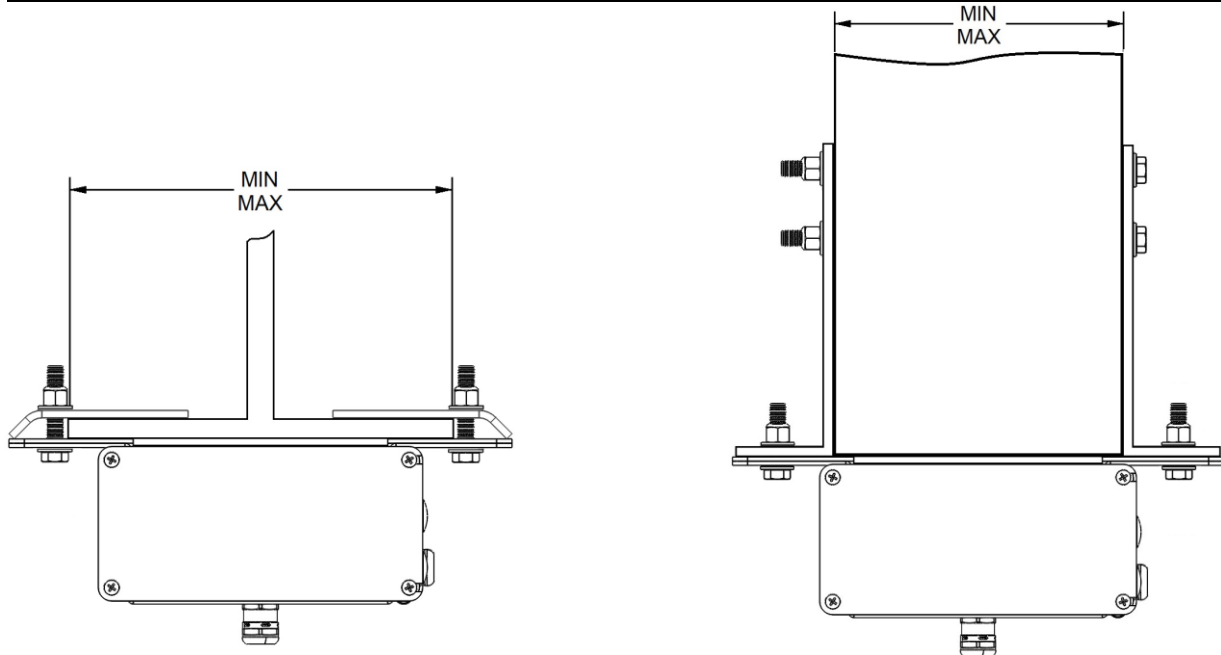
I-Beam Min/Max		
Minimum		Maximum
4.50"		9.50"

Glulam Min/Max		
Minimum	Mid	Maximum
2.00"	4.63"	7.50"

The Maximum Range dimension in these tables is determined by using the outside slots of the control panel. The Minimum Range dimension is determined by using the inside slots.

The Glulam mounting method (Referenced on pages 16, 20-22) 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 (Referenced on pages 23-24).

Max Amp Draw

Use this chart to determine the proper fuse for your AVD5 fan installation.

VOLTAGE and PHASE	MAX AMP DRAW							
	8FT	10FT	12FT	14FT	16FT	18FT	20FT	24FT
208-240VAC / 1 PHASE	3.8A	6.5A	5.1A	4.4A	3.7A	4.5A	5.4A	4.3A
208-240VAC / 3 PHASE	2.2A	3.8A	2.9A	2.5A	2.1A	2.6A	3.1A	2.5A
480VAC / 3 PHASE	1.6A	2.7A	2.1A	1.8A	1.5A	1.8A	2.2A	1.8A

Network Wiring Instructions

For clarification of approved networking principles and methods for installing MacroAir Fans, refer to the MacroAir network instructions included with your MacroAir Controller.

Fan Components
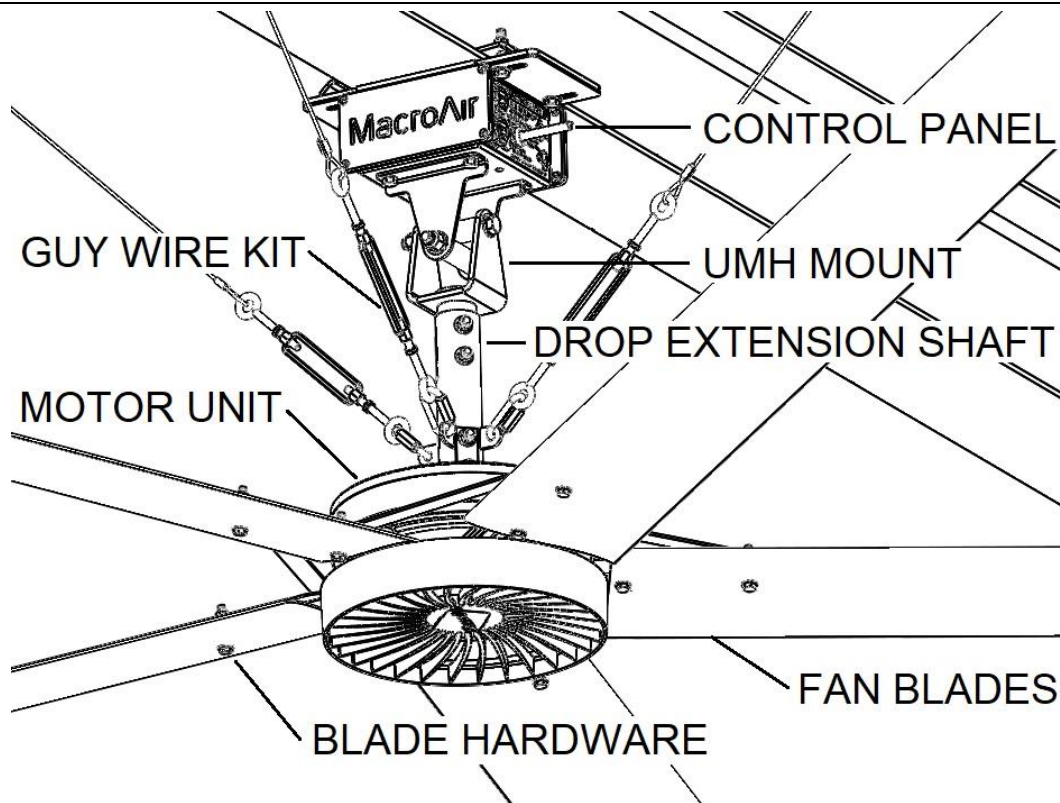
View of Assembled Fan

⚠ **ATTENTION: Guy Wires are required when a Universal Mount is used to mount the fan.**
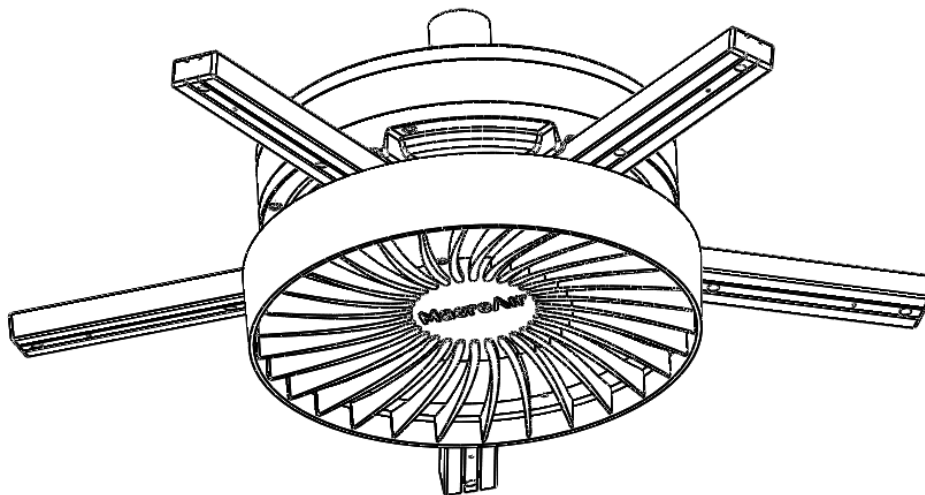
Motor Unit

Images are not to scale

Mounts & Components

(2) Guy Wire Bracket

UMH Mount
(shown w/mounting Bolt Kit)
(4) Hex Bolts 3/8"-16x3/4 "
(4) Washers, 3/8" Flat

Extension Tube

Extension Tube Bolt Kits
 (4) Hex Bolts 3/8"-16x2-3/4
 (8) Washers, 3/8"
 (4) Nuts, 3/8" Nylon Lock
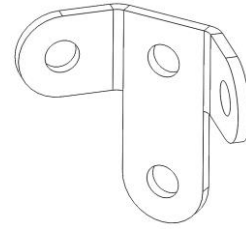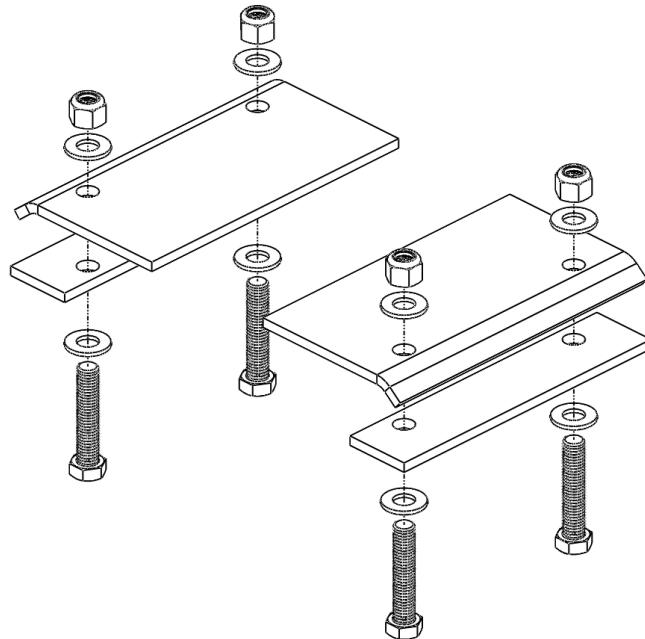
I-Beam Clamp & Bolt Kit
    (2) I-Beam Clamps
    (2) I-Beam Shims (Used when Req'd)
    (4) Hex Bolts 3/8"-16x2"
    (8) Washers, 3/8" Flat
    (4) Hex Nuts 3/8"-16, Nylon Lock

Unistrut Mount Bolt Kit (optional)
Hardware Required but Not Provided:
   (4) 3/8"-16 x 1-1/2" Hex Bolts
   (4) 3/8" Flat Washers
   (4) 3/8" Unistrut Spring Nut

Glulam Bolt Kit:
    (4) Hex Bolts 3/8"-16x1-1/4"
    (8) Washers, 3/8" Flat
    (4) Hex Nuts 3/8"-16, Nylon Lock

Images are not to scale

Mounts & Components (cont.)
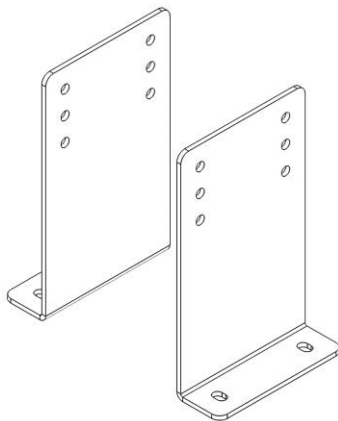
Glulam Brackets (optional)   Safety Cable Kit
Hardware Required but Not Provided: (1) Wire Rope 1/8"
(4) 3/8"-16 Grade 5 Hex Bolts (at least   (2) Wire Rope Clamps
    2-1/2" longer than Glulam)
(8) 3/8" Flat Washers
(4) 3/8" Nylon Lock Nuts
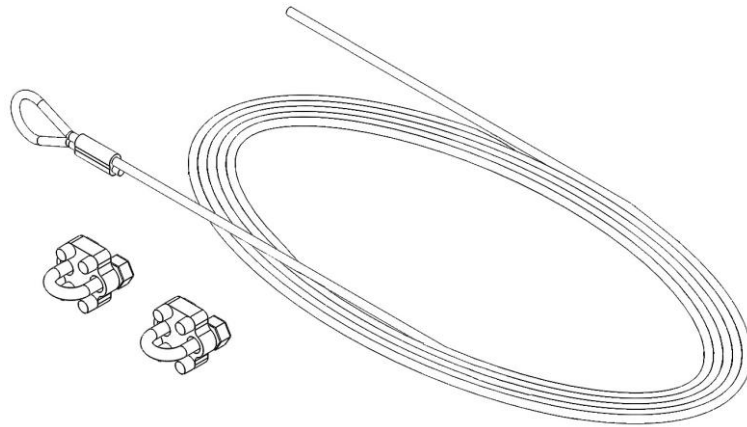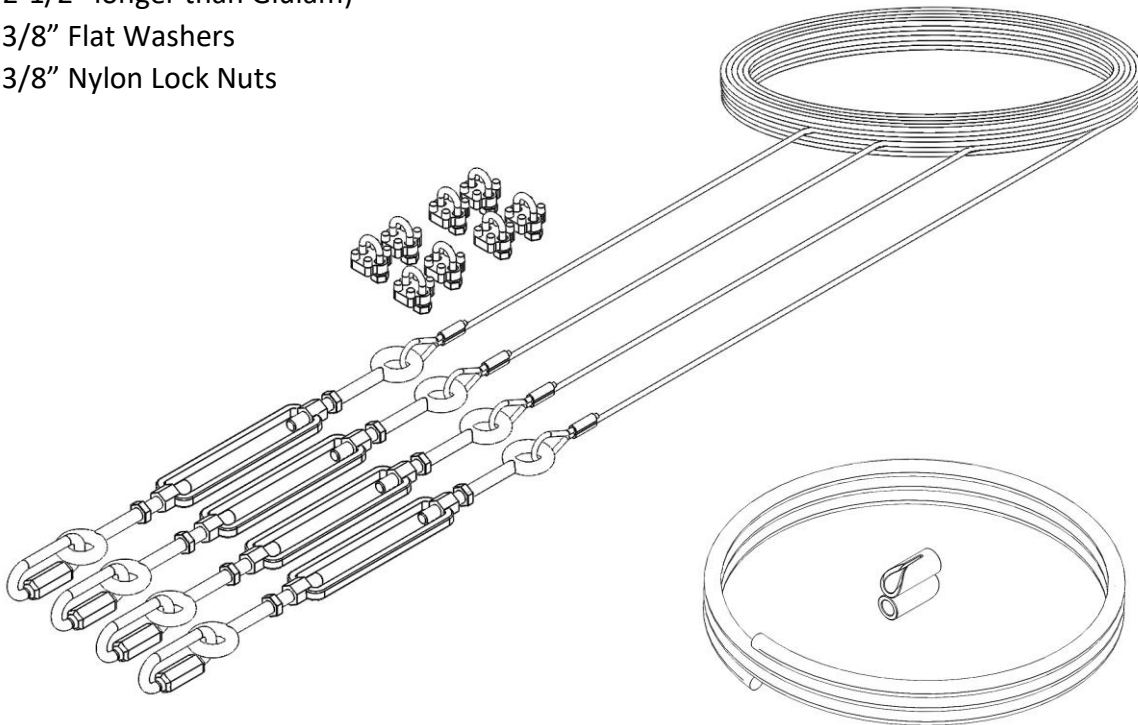
Guy Wire Assembly
(4) Wire Rope, 19ft (A), 23ft (B*), 33ft (C*)   Guy Wire Band Kit
(4) Turn Buckles   (1) Elastic Cord
(4) 1/4" Quick Links   (1) Cord Clip
(8) Wire Rope Clamps
* Kits B and C provided with longer drop lengths   Images are not to scale

⚠ **ATTENTION: Guy Wires are required when a UMH Mount is used to mount the fan.**

Control Panel & Components
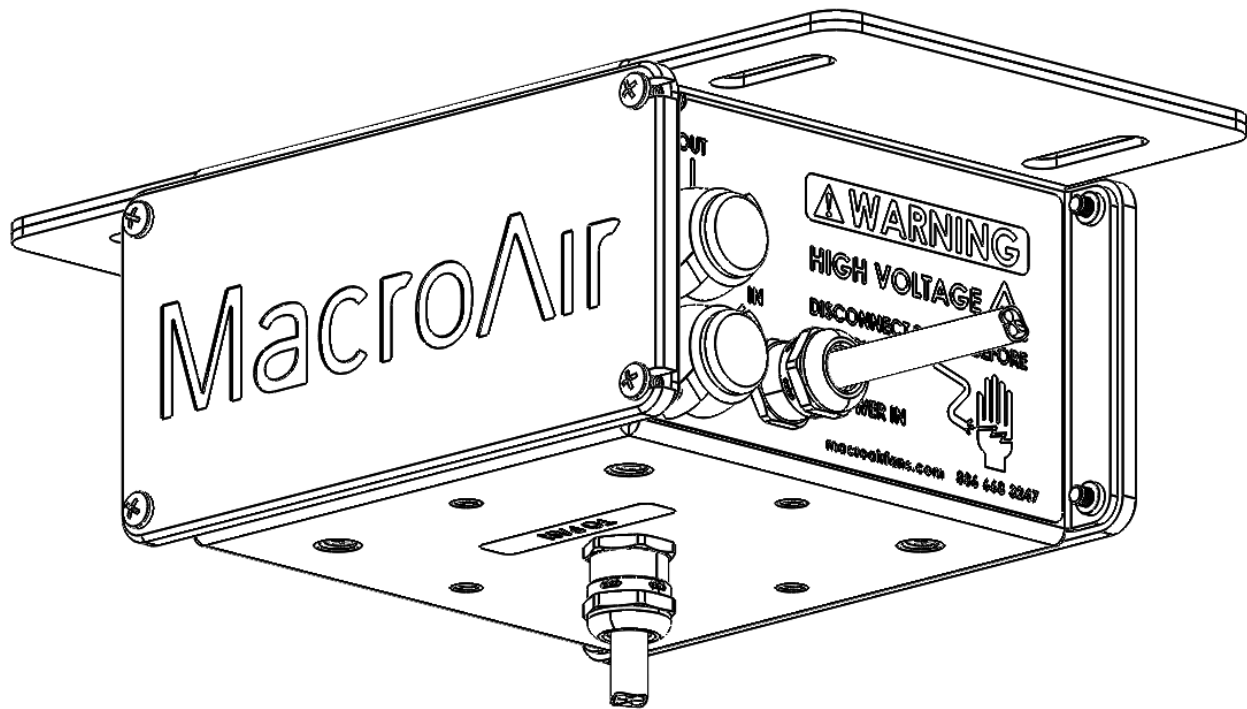
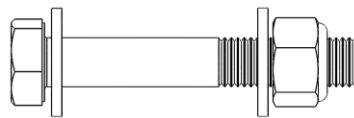Control Panel
(Mount using I-Beam Clamp or Glulam Brackets)

CAT5E Stranded Shielded Cable

Digital Touchpad Remote

Blade Bolt Kit
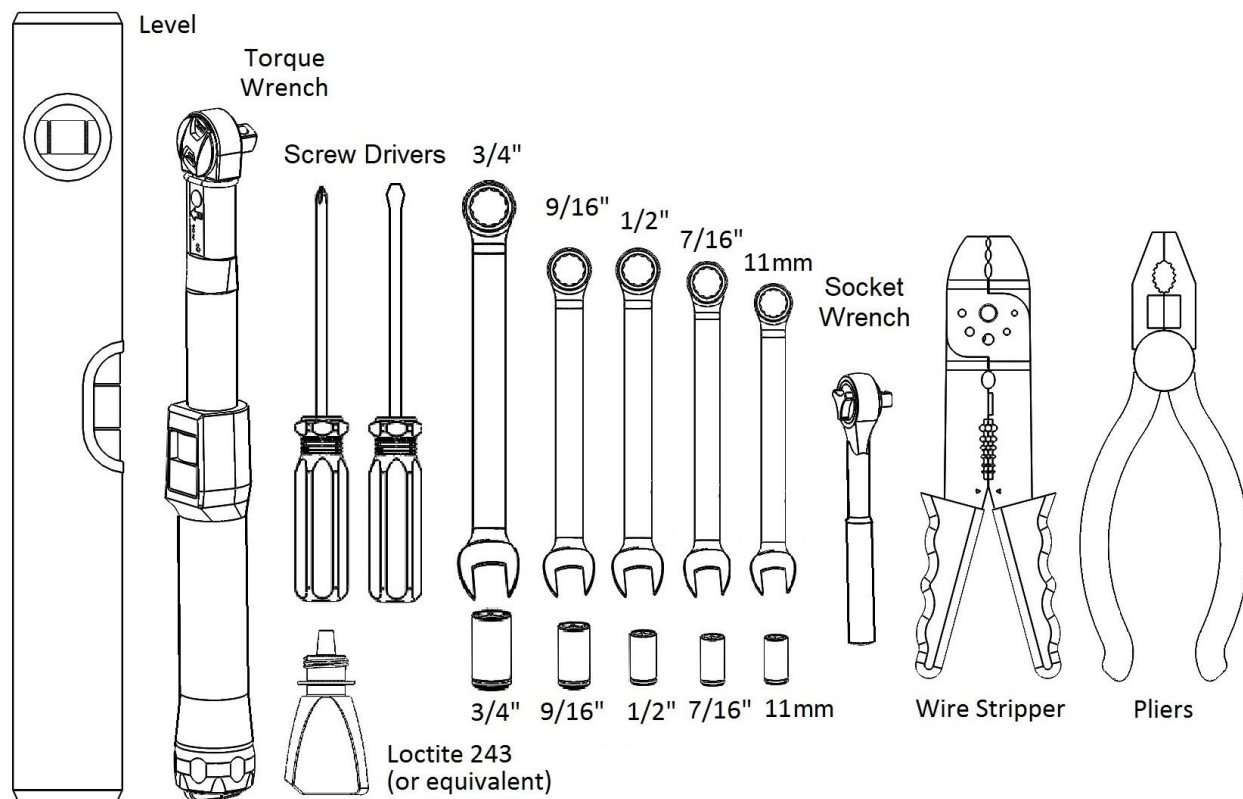(6) BOLT, HEX HD, 5/16"-24 X 2", GR5
(12) WASHER, FLAT, 5/16" PREFERRED NARROW
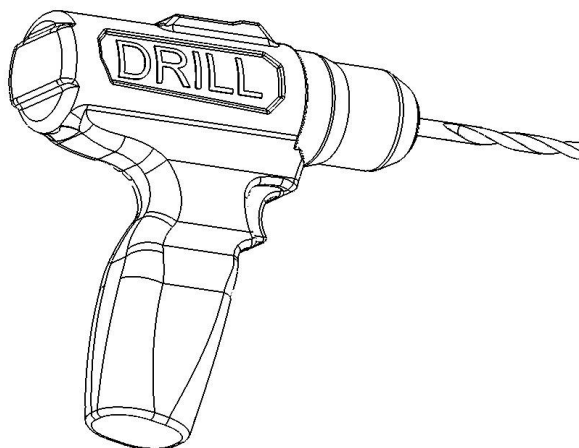(6) LOCK NUT, 5/16"-24, NYLON, GR5
(1) Loctite 243
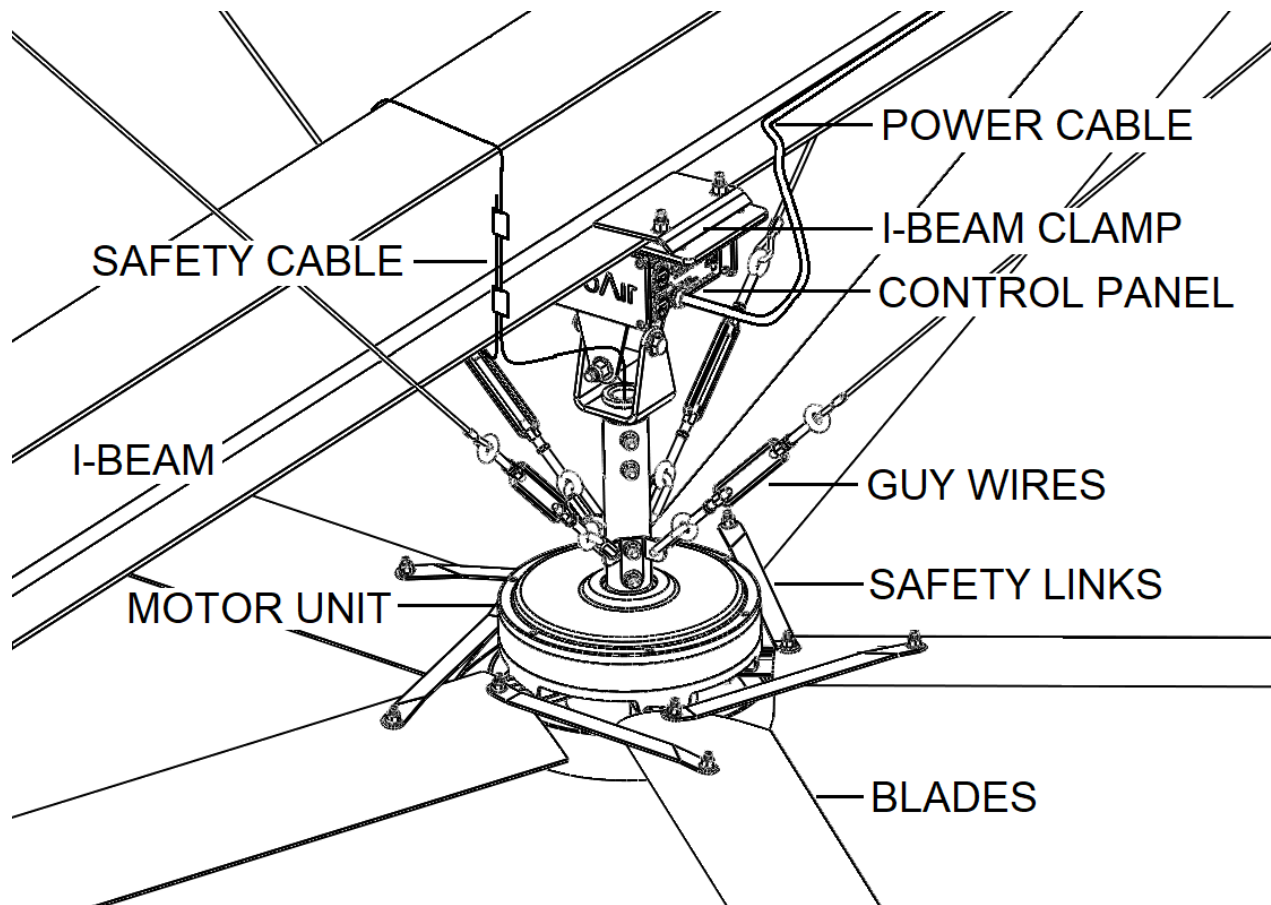
(6) Blade Safety Retainer Link

Images are not to scale

Tools Required

Level

Torque Wrench

Screw Drivers

3/4"

9/16"

1/2"

7/16"

11mm

Socket Wrench

Loctite 243 (or equivalent)

3/4" 9/16" 1/2" 7/16" 11mm

Wire Stripper

Pliers

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

DRILL

I-Beam

POWER CABLE

SAFETY CABLE

I-BEAM CLAMP

CONTROL PANEL

I-BEAM

GUY WIRES

SAFETY LINKS

MOTOR UNIT

BLADES

1. Mount Fan Motor Unit using Universal Mount (UMH) and drop extension onto the base of the control panel using hardware kit, combination wrench, and hex wrench.
2. The Control Panel must be secured to the I-Beam with I-Beam Clamps and hardware kit.
3. The Safety Cable exits top of UMH and needs to be fed around I-Beam and secured with provided cable clamps.

Glulam

GLULAM BRACKETS

SAFETY CABLE

POWER CABLE

CONTROL PANEL

GLULAM
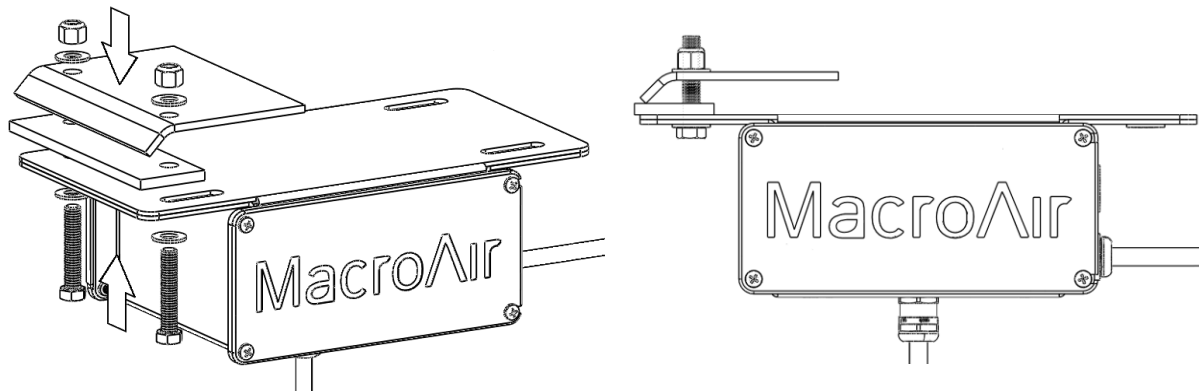
GUY WIRES

SAFETY LINKS

MOTOR UNIT

BLADES
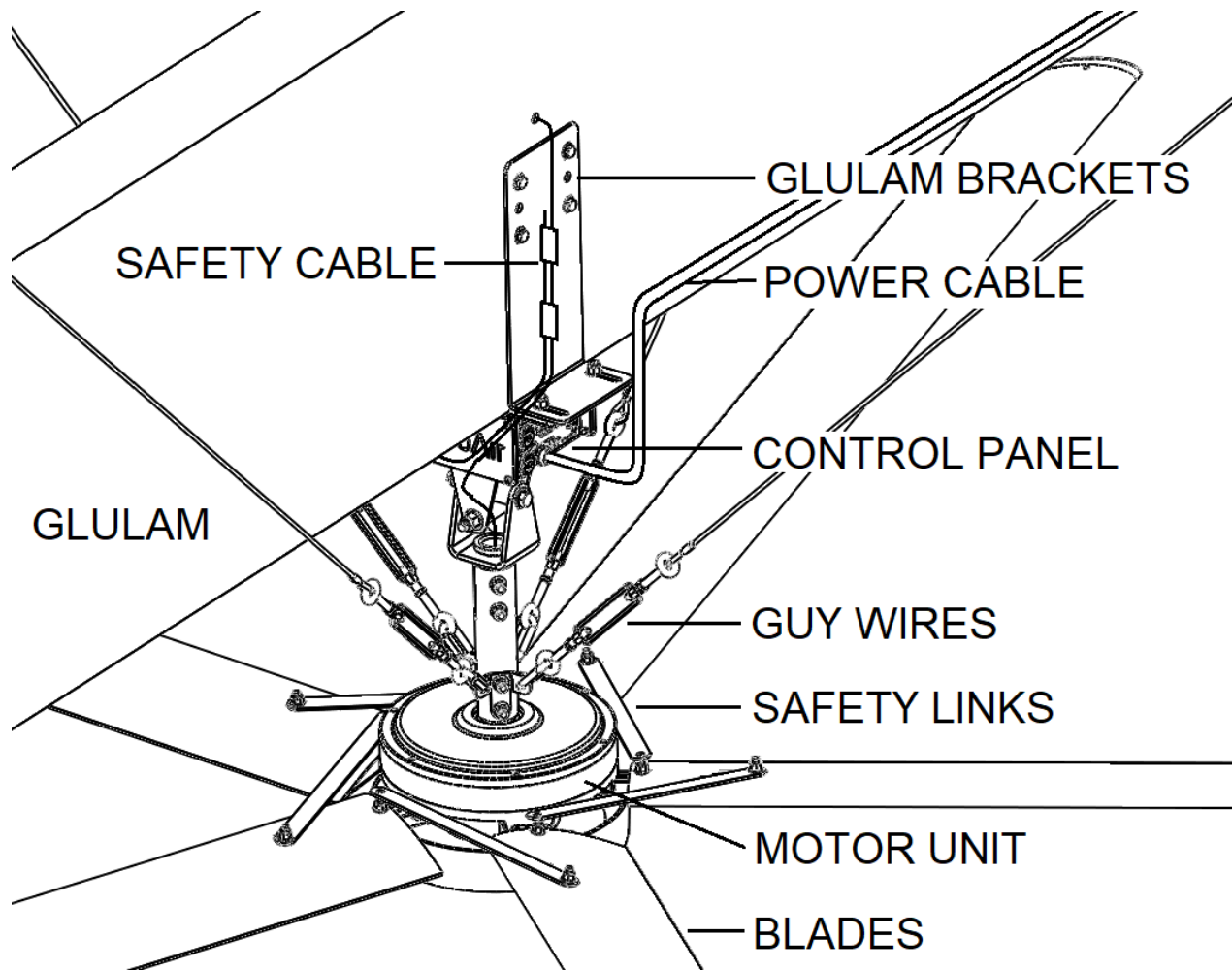
1. The Safety Cable needs to be fed through a hole in the Glulam, preferably above the center line of the Glulam.
2. The Control Panel must be secured to the Glulam with Glulam brackets and hardware kit. DO NOT discard the Glulam brackets and mount the control panel directly to the Glulam.
3. The Glulam brackets need to be through bolted to the Glulam as high as possible.
4. Mount Fan Motor Unit using Universal Mount (UMH) and drop extension onto the base of the control panel using hardware kit, combination wrench, and/or Allen wrench.
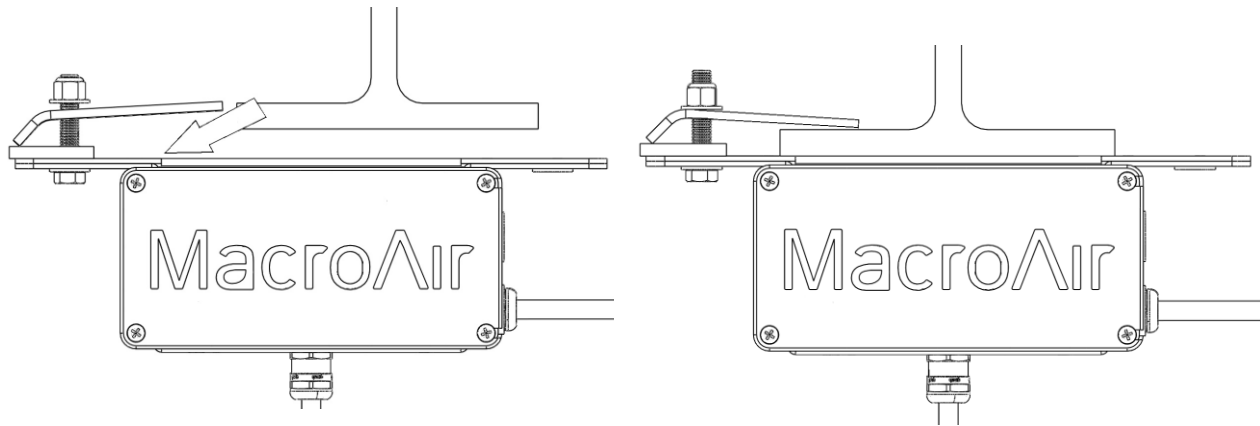
I-Beam Mounting

I-BEAM —————— SAFETY CABLE

I-BEAM CLAMPS ——

I-BEAM BOLT KIT ——

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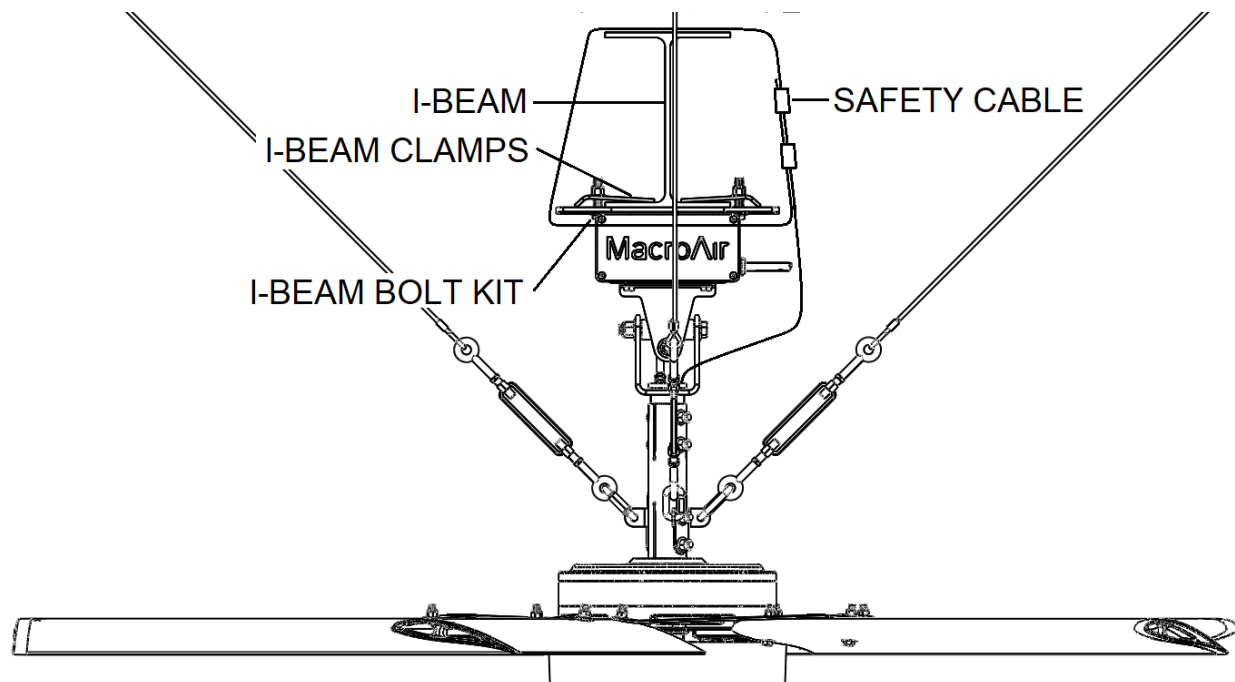
1.) Assemble one side of I-Beam Mount with (1) Clamp, and Hardware.
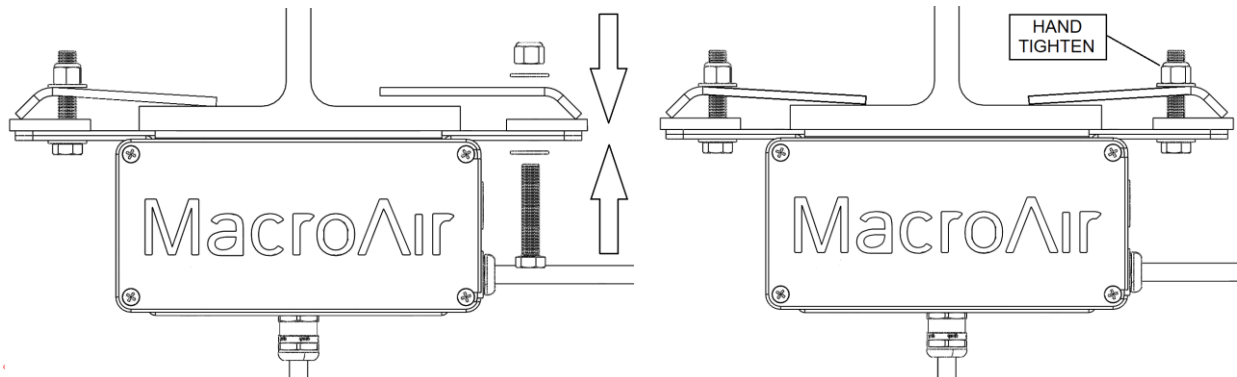
MacroAir

MacroAir

I-Beam Clamps & I-Beam Bolt Kit
   (2) I-Beam Clamps
   (2) I-Beam Shims (Use when Req'd)
   (4) Hex Bolts 3/8"-16x2"
   (8) Washers, 3/8" Flat
   (4) Hex Nuts 3/8"-16, Nylon
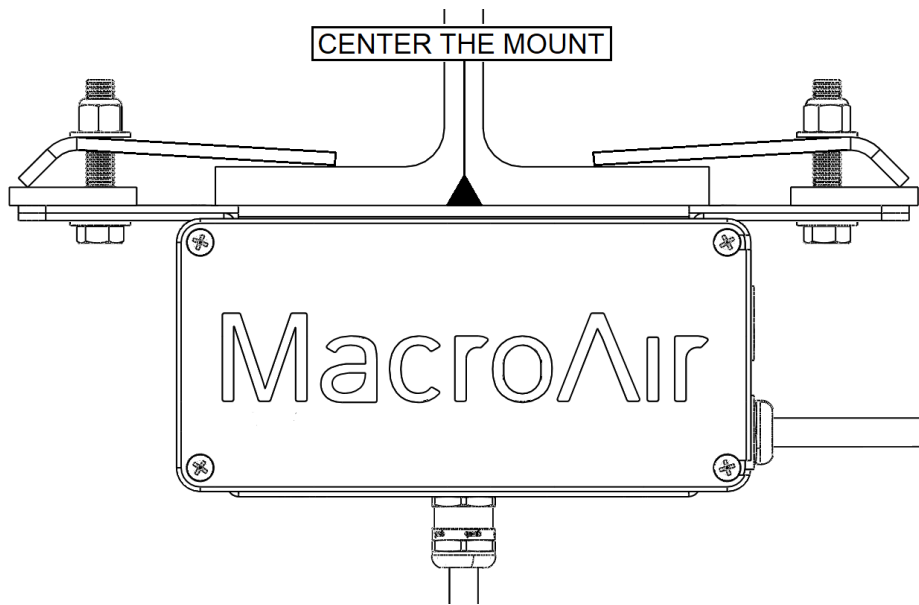
I-Beam Mounting (cont.)

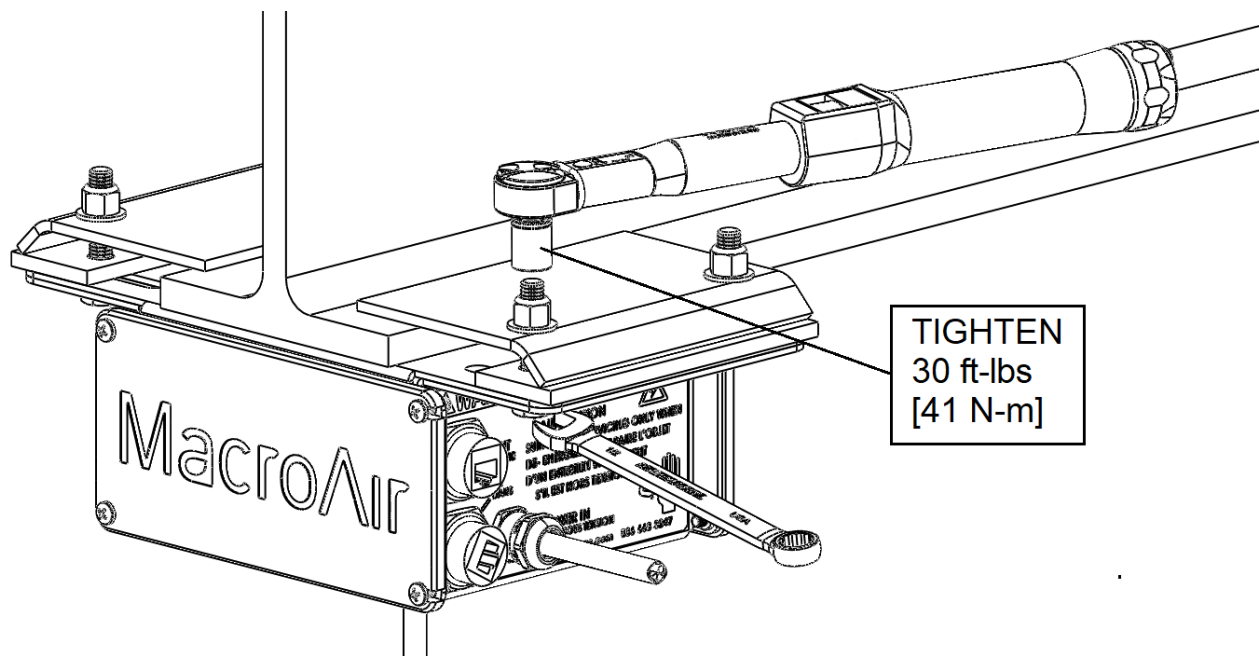2.) Position the Control Panel under the I-Beam so that one side of the beam is between the clamp and the mount.

3.) Assemble other side of I-Beam Mount with (1) Clamp and Hardware.

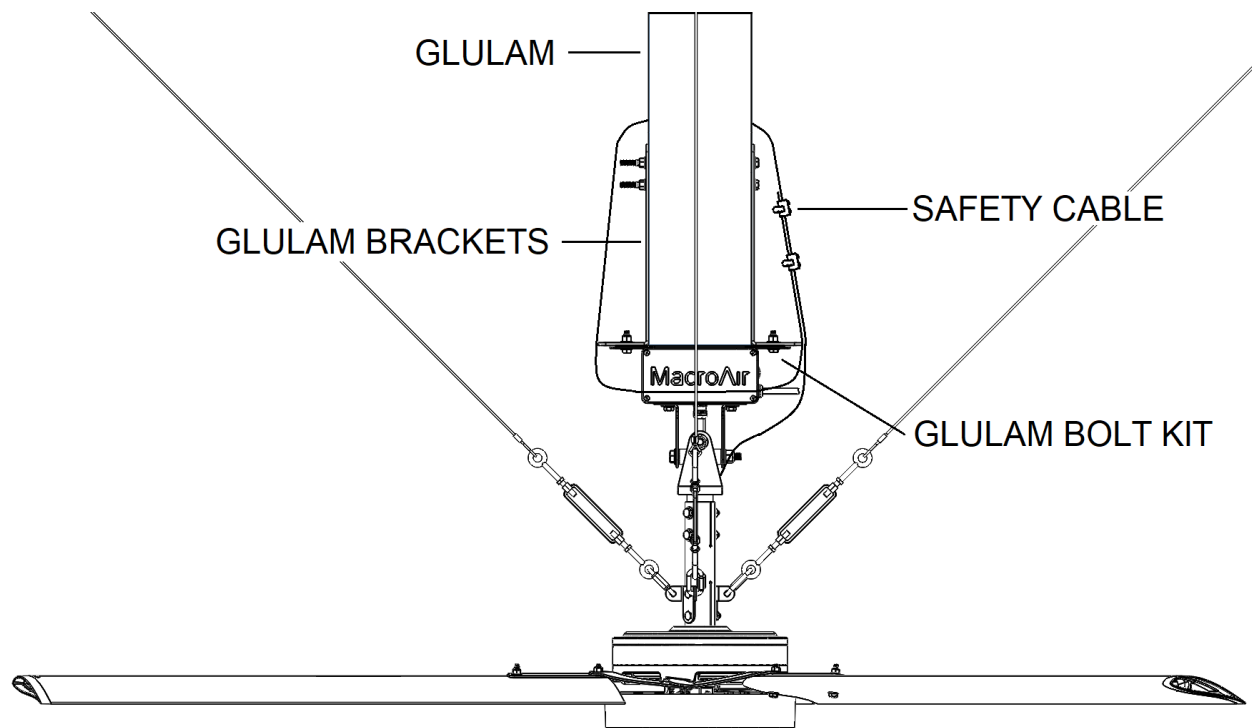4.) Hand tighten nuts to secure Clamp in place.

HAND TIGHTEN

I-Beam Mounting (cont.)

CENTER THE MOUNT

5.) Center the Control Panel on the I-Beam.
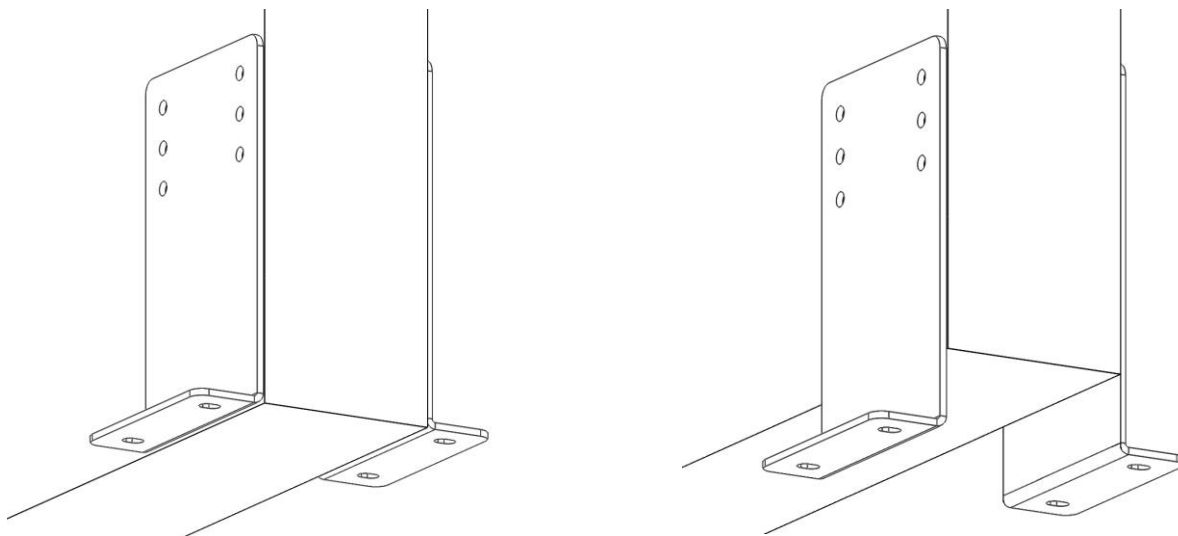
TIGHTEN
30 ft-lbs
[41 N-m]

6.) Using a 9/16" combination wrench and a 9/16"
socket and torque wrench tighten all hardware
to 30 ft-lbs. [41 N-m]. Note: An extension may
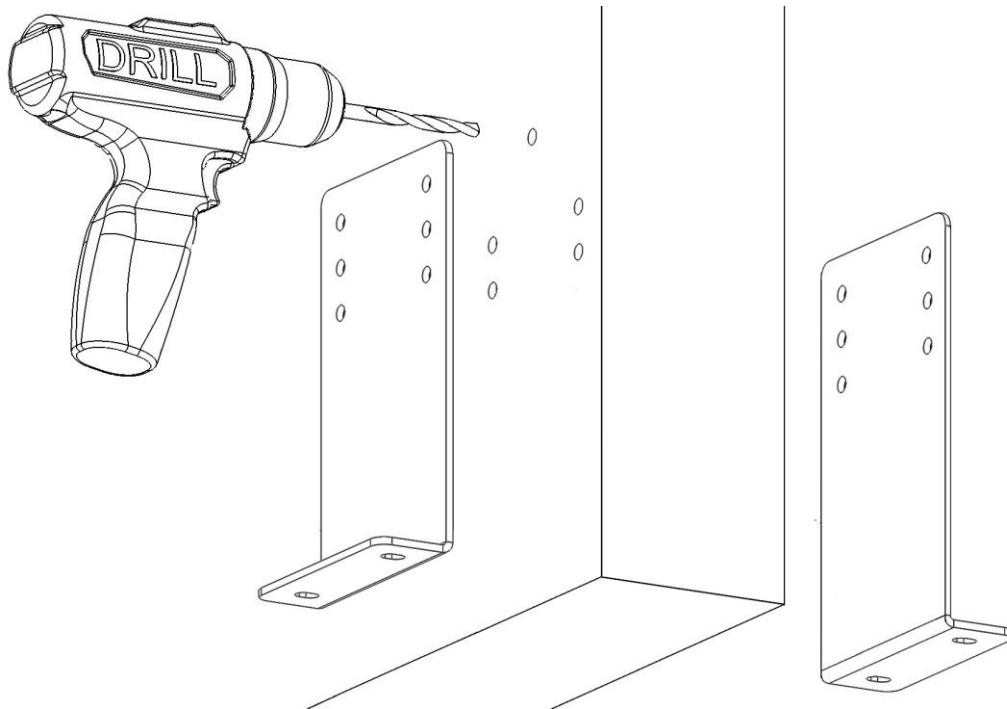be required.

Glulam Mounting

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 pages 23-24)


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

Glulam Mounting (cont.)

2. Drill maximum 1/2" diameter clearance holes through the glulam for (4) 3/8"-16 mounting bolts (not provided by MacroAir) 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).
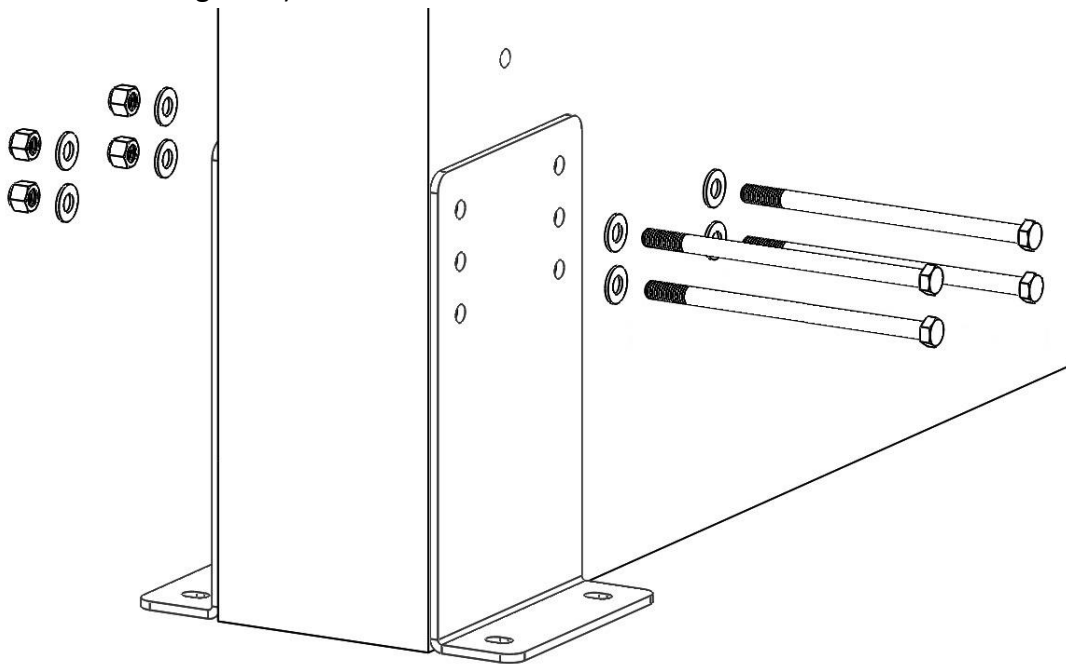

3. Secure the Glulam brackets to the Glulam via (4) 3/8"-16 grade 5 bolts (long enough to go through the entire beam with nylon lock nuts). Stack the Bolt, washer, washer, nut as shown above. Note: This hardware is not provided by MacroAir.

Glulam Mounting (cont.)
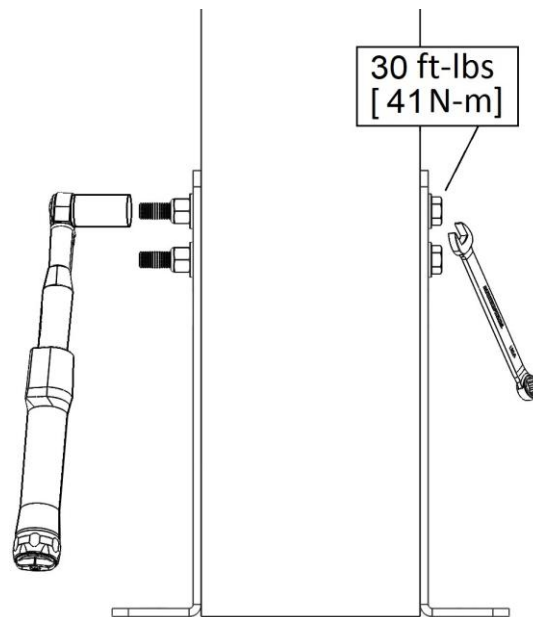
30 ft-lbs
[41 N-m]

4. Using a 9/16" combination wrench and 9/16" socket and torque wrench tighten all hardware to 30 ft-lbs.[41 N-m].

5. Mount the Control Panel to the glulam brackets using the Mount Bolt Kit which contains: (4) 3/8"-16 x 2" Hex Bolts, (8) 3/8" Washers and (4) 3/8"-16 Nylon Lock Nuts. Using a 9/16" combination wrench and a 9/16" socket and torque wrench tighten all hardware to 30 ft-lbs. [41 N-m].

TIGHTEN TO
30 ft-lbs
[41 N-m]
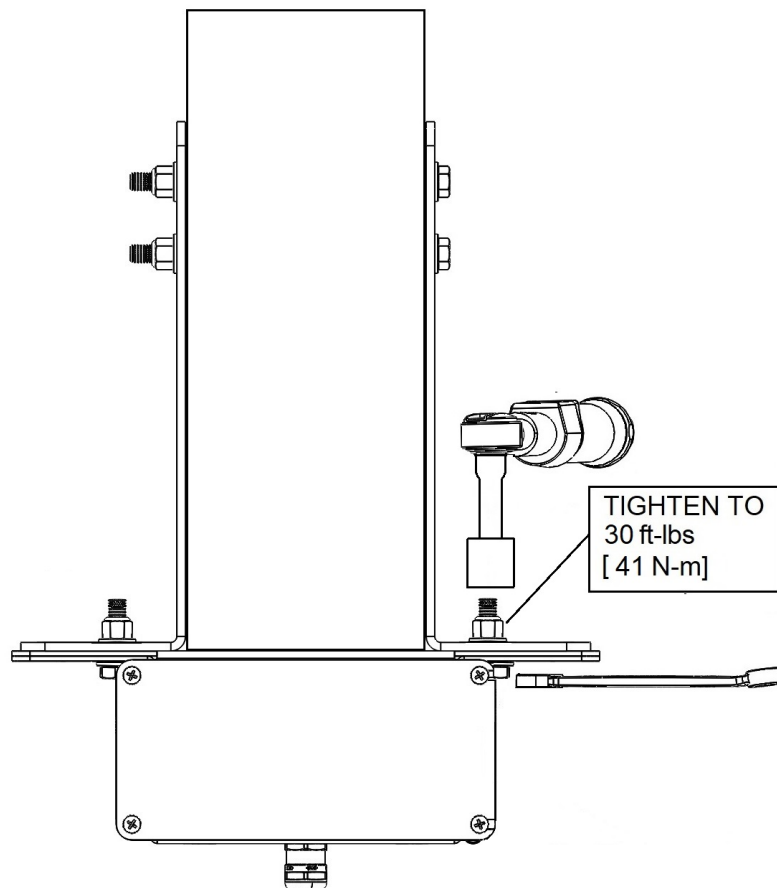
Unistrut Mounting

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).

1. Two (2) pieces of 1-5/8" x 1-5/8" 12-gauge (Heavy Duty) Unistrut need to span the trusses. Distance apart to be centered over the widest hole pattern in the Control Panel (see step 2). Maximum allowable distance between trusses is 8 feet. If the spanning distance is greater than 8 feet, please consult a Structural Engineer. Please refer to page 5 "Mounting Guidelines" for the maximum torque and weight guidelines.
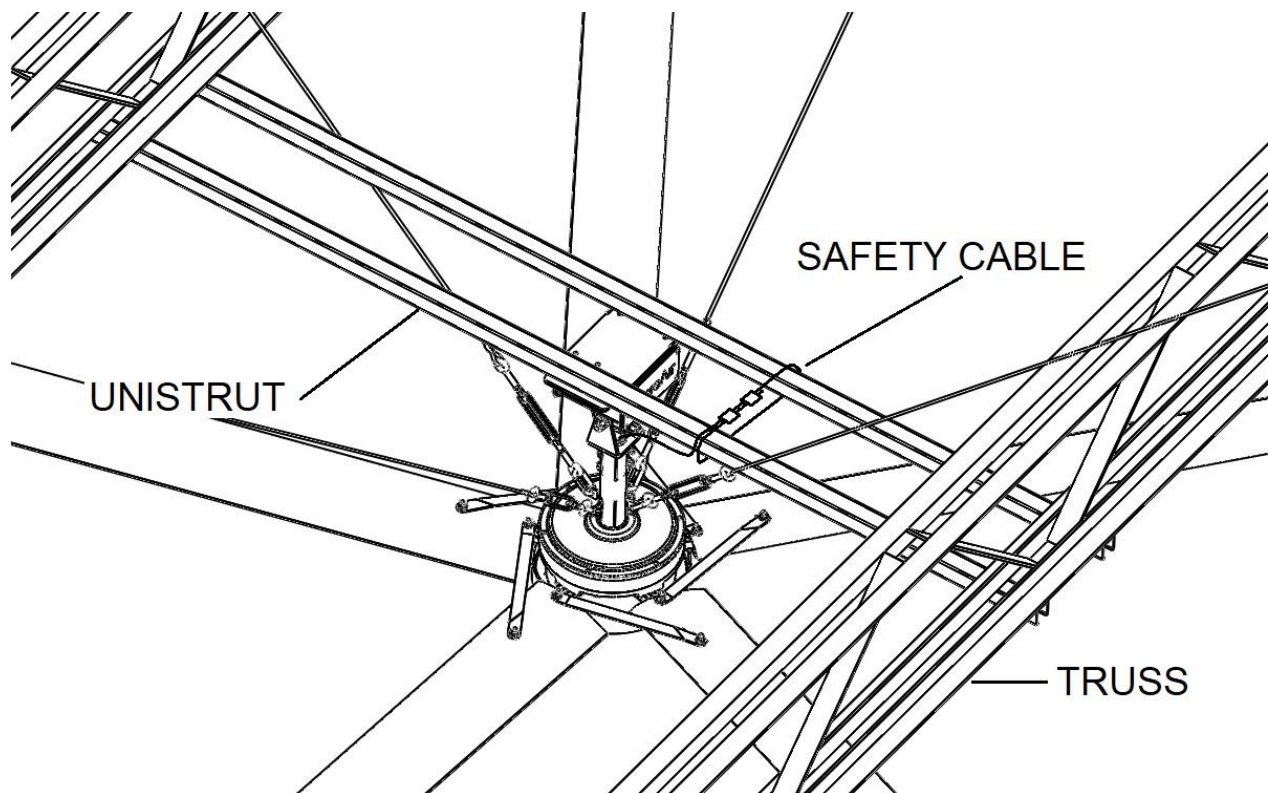

Fan shown in the above image is for illustration purposes only.

Hardware Required but Not Provided:
(4) 3/8"-16 x 1-1/2" Hex Bolts
(4) 3/8" Flat Washer
(4) 3/8" Unistrut Spring Nut
(1) Loctite 243

Unistrut Mounting (cont.)

2. Attach the Control Panel in the most desired position between the trusses using hardware indicated (not provided). Apply Loctite 243 to the 3/8"-16 bolts prior to mounting. Unistrut clamps are not permitted in this mounting method.


10" MAX WIDTH
STANDARD

LOCTITE 243
RECOMMENDED
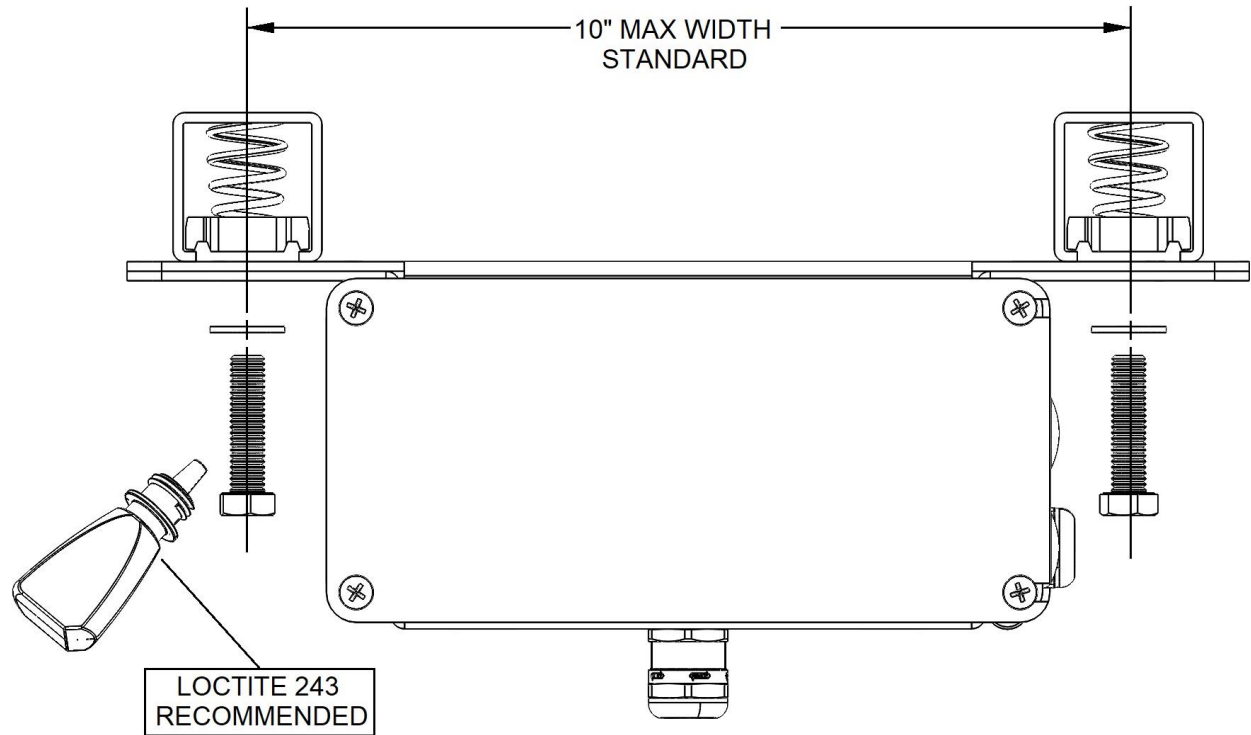
3. Using a Torque wrench, tighten hardware to 30 ft-lbs (41 N-m).

30 ft-lbs
[41 N-m]
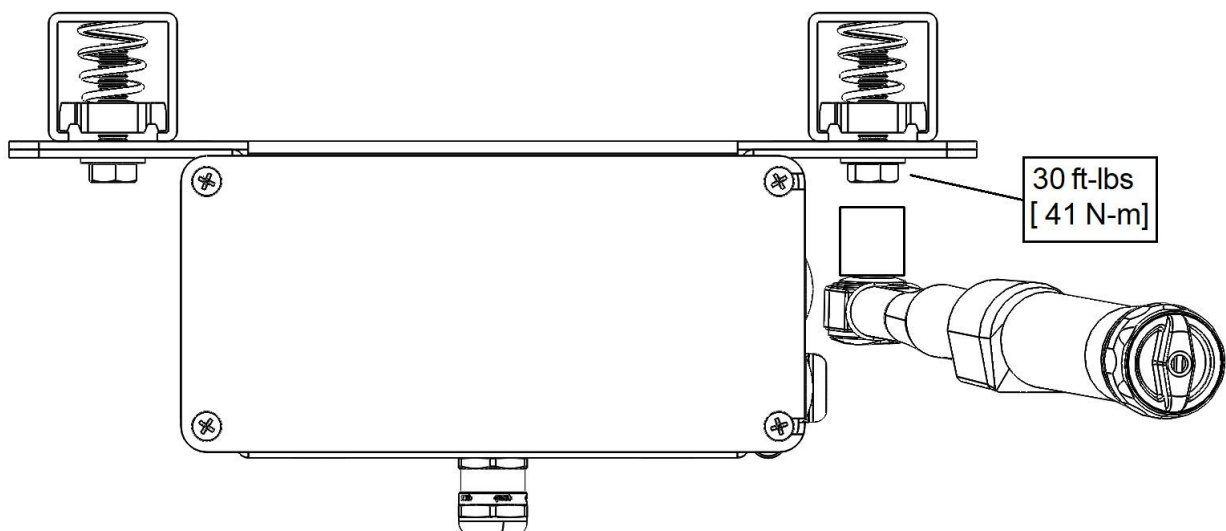
NOTE: Mounting to C- and Z-purlins requires Unistrut span mounting. Mounting to trusses under three (3) inches in width requires two or more trusses to be linked with Unistrut. We recommend contacting Unistrut or a licensed structural engineer for a recommendation on the best method for attaching the Unistrut (www.unistrut.us).

Mounting the Mount

Universal (UMH) Mount
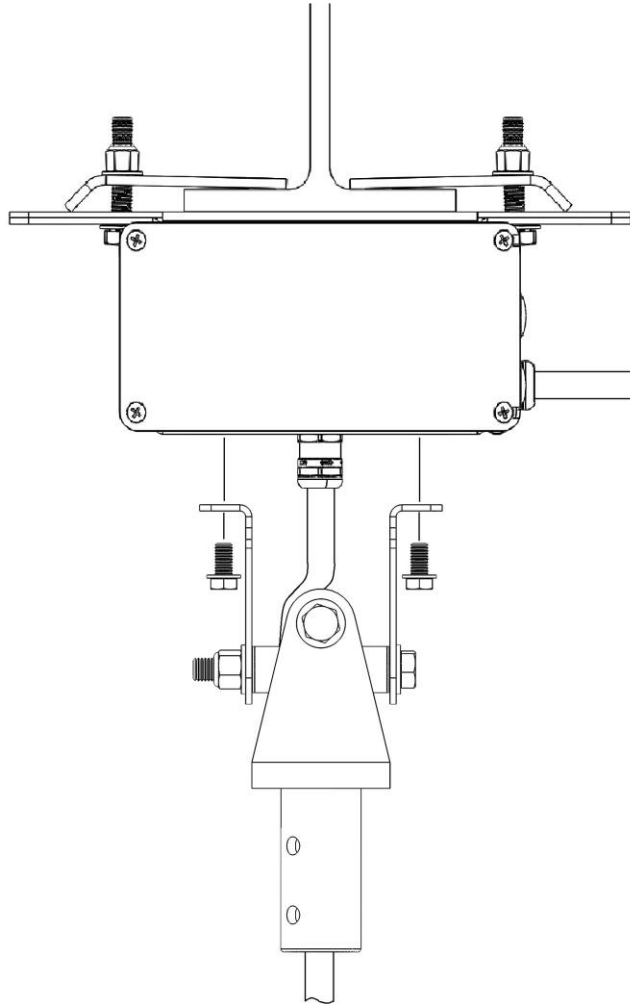
1. The UMH Mount is affixed to the bottom of the mounted Control Panel using the provided Bolt Kit consisting of:
   (4) Hex Bolts 3/8"-16x3/4"L
   (4) Washers, 3/8" Flat

2. Pass the motor power cable through the mount as the mount is installed. Continue the cable through the extension when installed (page 26) and through the motor when installed (page 27-30).

Mounting the Extension

1. Attach the extension to the bottom of the Universal Mount "UMH" (shown below) and attach the top of the fan unit to the bottom of the extension with the provided hardware pack. Tighten hardware to 30 ft-lbs [41 N-m] using torque and combination wrenches.

I-BEAM

I-BEAM CLAMP

CONTROL PANEL

UNIVERSAL MOUNT (UMH)

EXTENSION

GLULAM

GLULAM BRACKET

CONTROL PANEL

UNIVERSAL MOUNT (UMH)
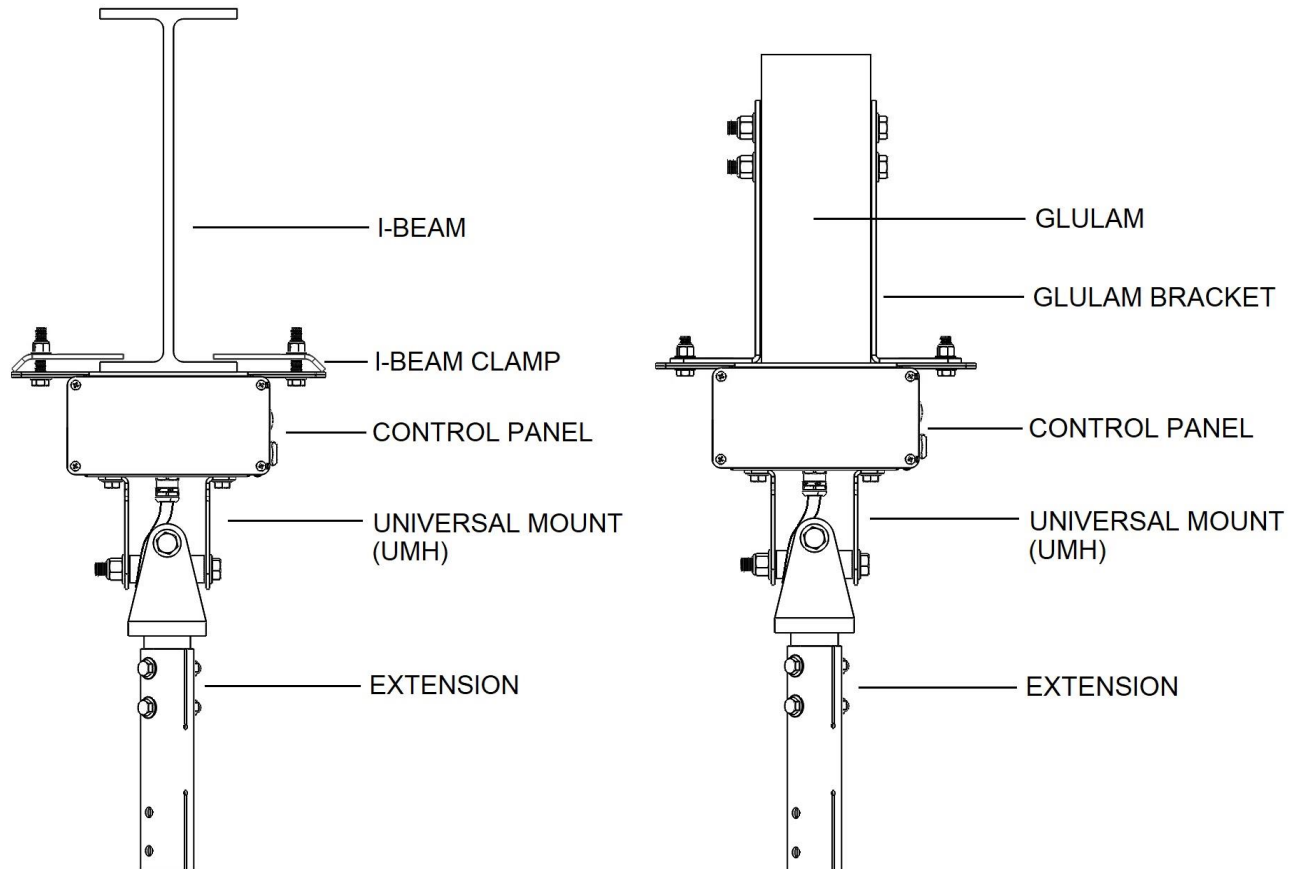
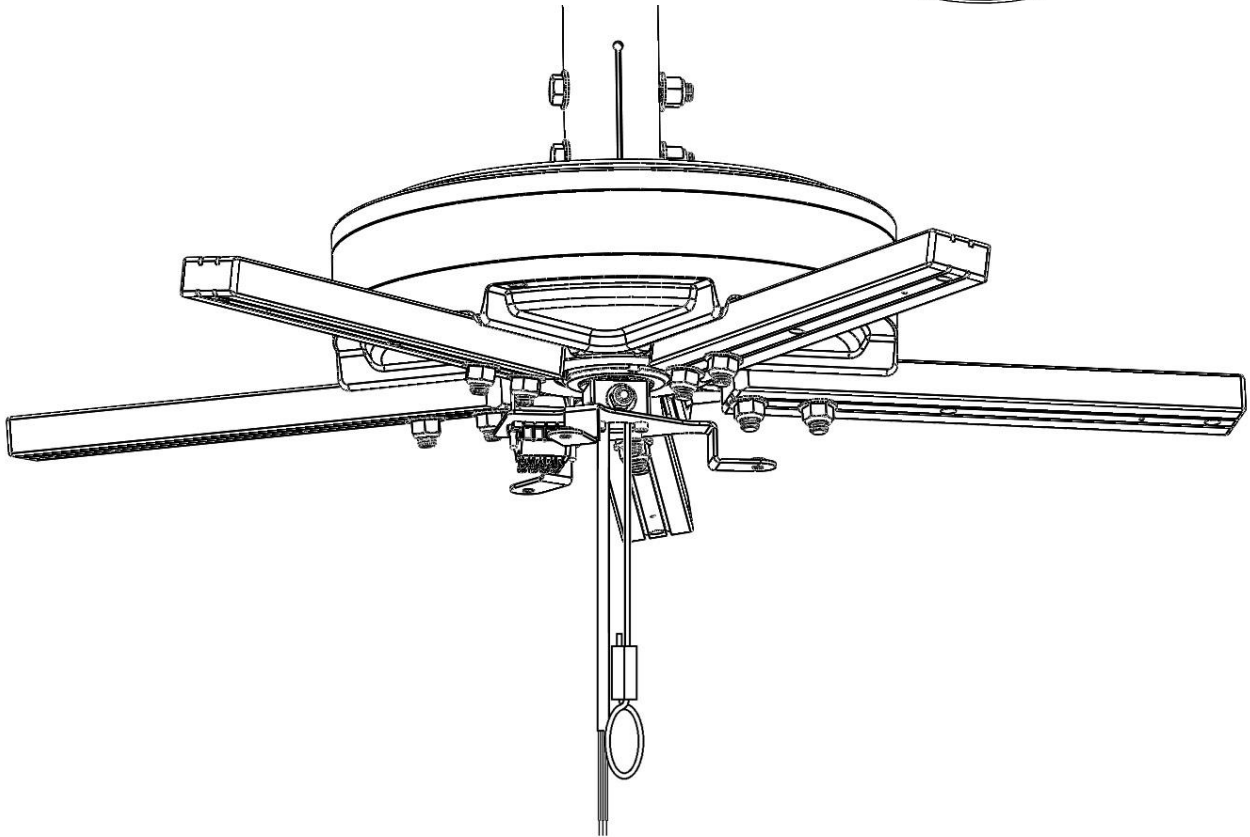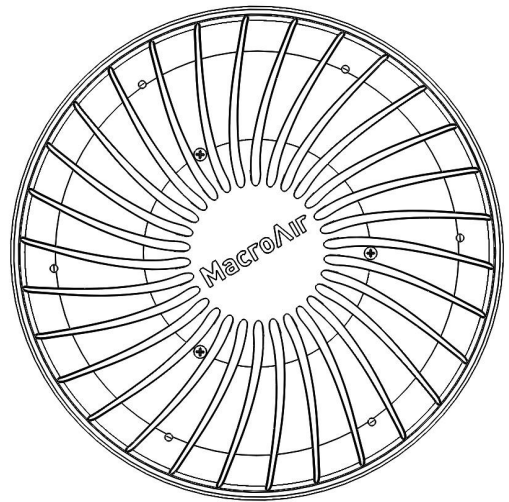EXTENSION

Motor and Safety Cable Routing

1. The Safety Cable is fed up through the Drop Extension Tube and out the open UMH mount. The motor cable and the safety cable is to be routed through the mount and extension as shown in the image to the right, after the mounts have been properly secured to the building.

2. When the motor is mounted to the bottom of the extension, the motor cable and safety cable will be passed through the fan housing for connection inside the fan unit, as shown in the image below. This procedure is discussed in the following instructions.

SAFETY CABLE

SAFETY CABLE LOOP

MOTOR POWER CABLE FROM CONTROLLER
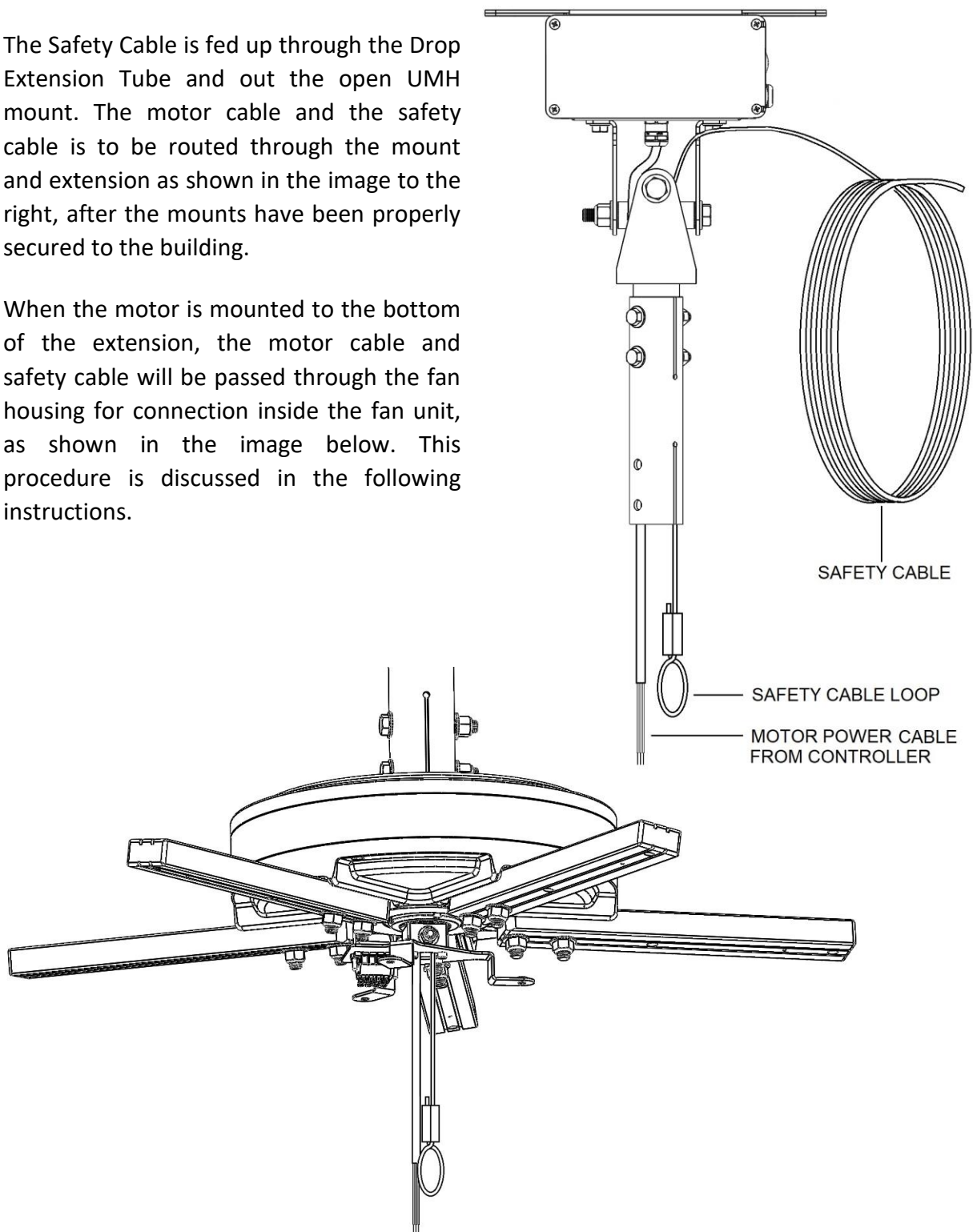
Struts and Safety Retainers: Please note that the motor assembly comes with struts and safety retainers installed. Many of the following images are shown without these components to provide clarity in the illustrated instruction. Do not remove these components to complete the following instructions.

Mounting the Motor Unit

1. Use a Phillips screwdriver to loosen the (3) #8-32 screws about the center of the cover. Do not remove the screws completely if they are captured on the cover with plastic lock washers. If washers are not present, set screws aside with cover (Do not discard).

2. Remove the bottom cover from the fan, ensure the screws are still captured on the cover with the (3) nylon washers (if washers are present). Set the bottom cover to one side.

3. Remove the electrical cover. Momentarily set this hardware to one side.

4. Raise the fan and carefully guide the motor shaft into the extension tube. Feed the safety cable and motor cable through the motor.
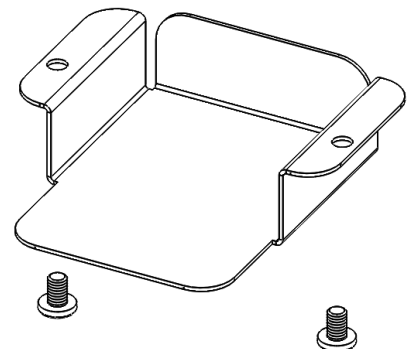
Mounting the Motor Unit, cont.

5. Bolt the fan motor shaft to the extension tube. If guy wires are to be used, then fasten the Guy Wire mounting brackets at this location.

6. Be careful of the wires in the motor shaft and extension tube.

7. Tighten the bolts to 30 ft-lbs [41 N-m] using torque and combination wrenches.
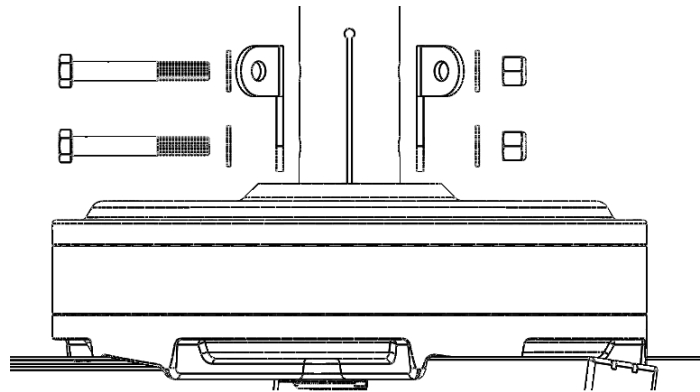
8. The Safety Cable is fed up through the Drop Extension between the mount and the Control Panel and out the open Rapid Industrial or UMH mount. Refer to the illustration on page 30.

9. Pass the provided 1/4"-20 Safety Cable Bolt through the spacer block shown below. Pass the 1/4"-20 Bolt through the loop of the safety cable, as shown. Secure the 1/4"-20 Bolt with the provided 1/4"-20 nut and washers in the Safety Cable Bolt Kit.
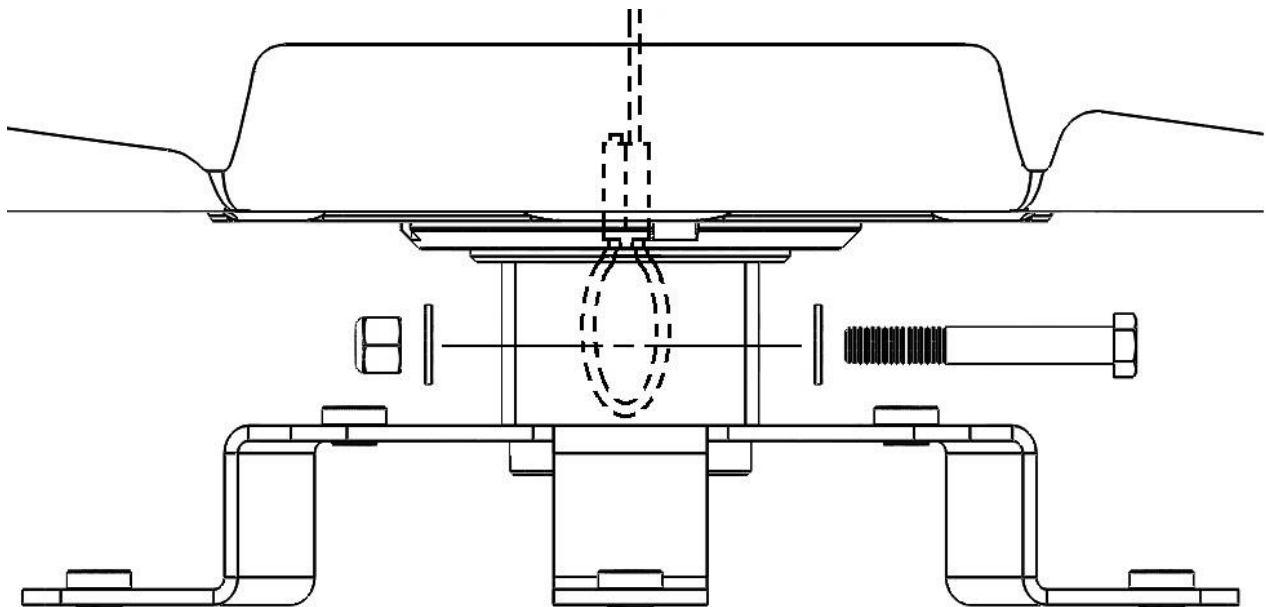
Motor Cable Connection

1. The motor cable from the Control Panel is passed through the retaining bracket and connected to the four-position terminal block.

MOTOR CABLE FROM CONTROL PANEL

MOTOR WIRES (PREWIRED)
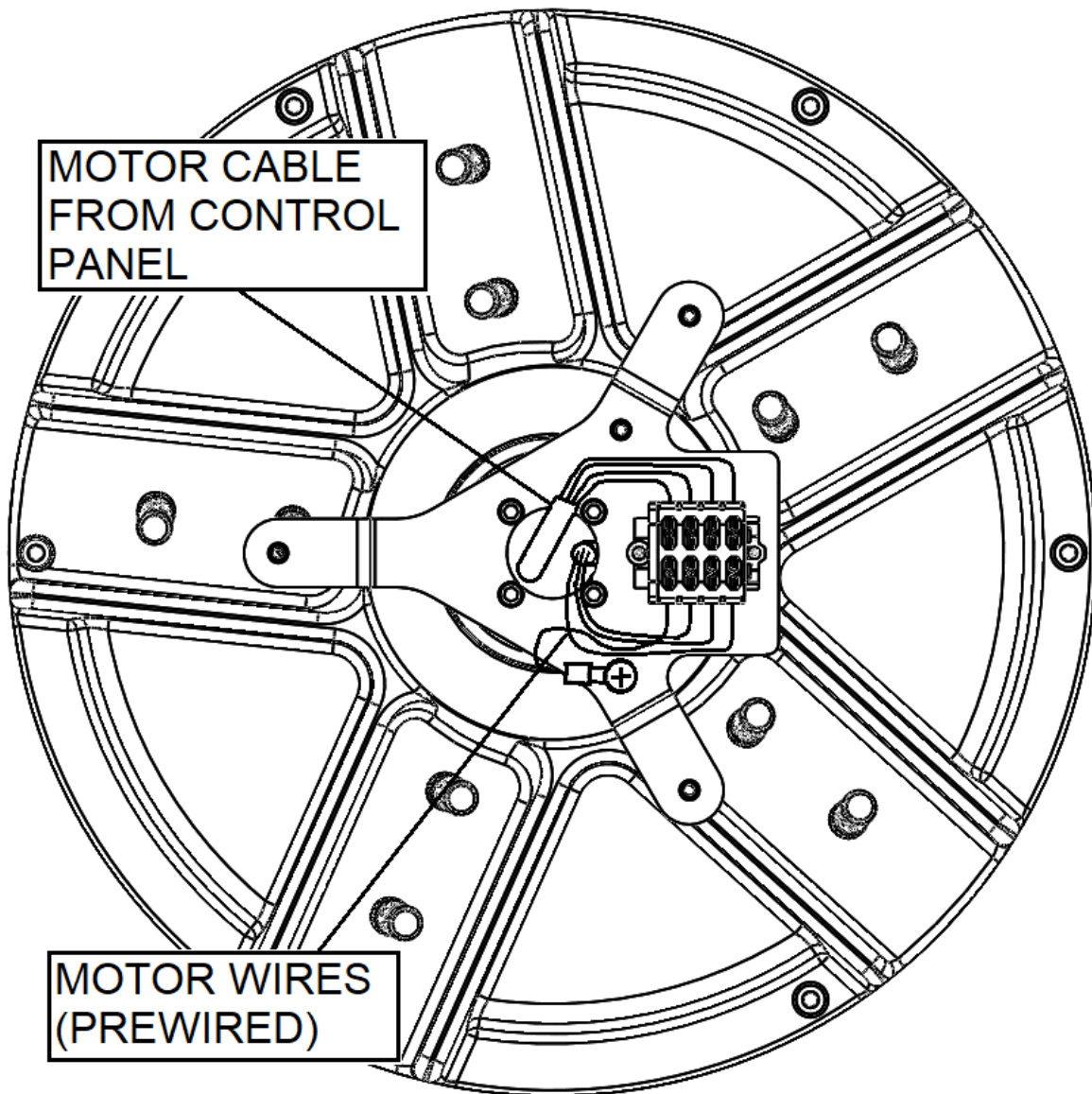
2. Wiring to the terminal block:
   Green wire chassis GND – motor control cable bare wire
   White wire – motor control cable black #1 wire
   Black wire – motor control cable black #2 wire
   Yellow wire – motor control cable black #3 wire

3. Replace the cover previously removed to access the terminal block. Do not yet replace the MacroAir bottom cover as you still need access to install the blades.
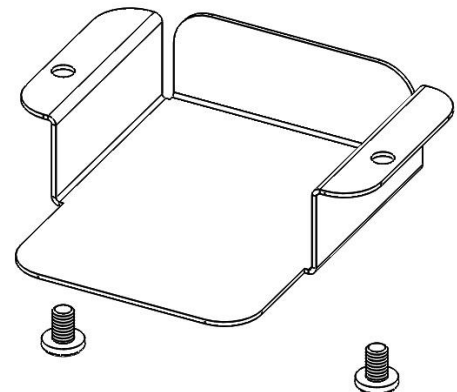
Safety Cable Installation

I-Beam

1. Wrap 1/8" diameter safety cable from the mount, around the I-beam multiple times.

2. Secure two (2) safety cable clamps around the wire. Pull the cable taut and tighten both nuts using 3/8" combination wrench.
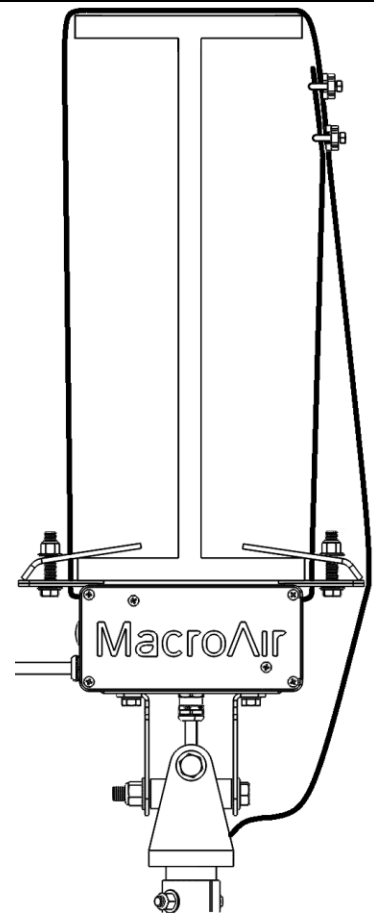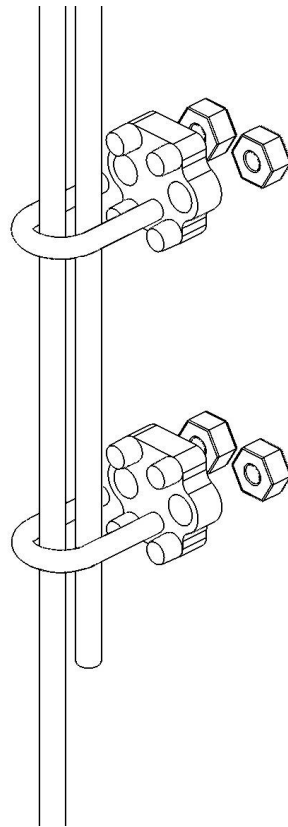
Glulam

1. Wrap 1/8" diameter safety cable from the mount, through the hole drilled in the 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.
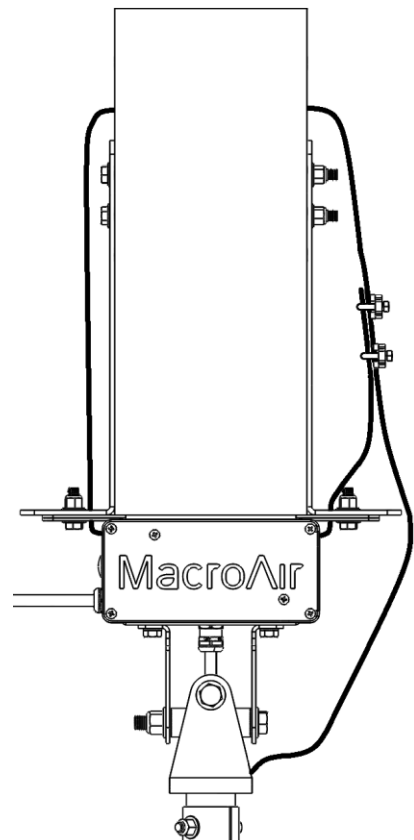
Guy Wire Installation on UMH

Cable Clamps

Quick Links

MacroAir

Guy Wire Mounting Bracket

45°

GUY WIRE

TURNBUCKLE

1. **Guy Wires are required on all UMH mounted fans.**
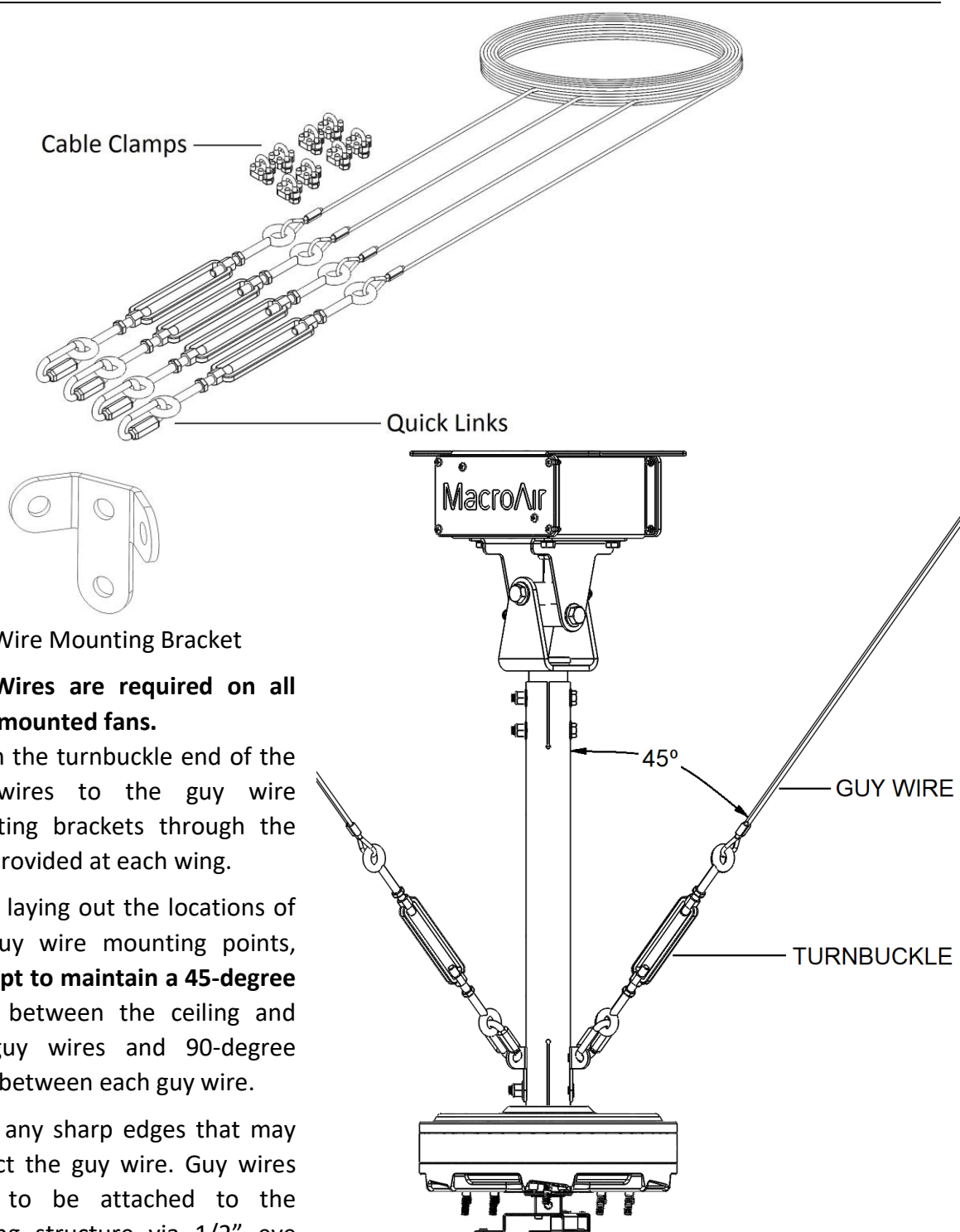   Attach the turnbuckle end of the guy wires to the guy wire mounting brackets through the hole provided at each wing.

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 and 90-degree angle between each guy wire.

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.**

Note: Guy Wires may also be used when fan is mounted with a Rapid Mount Industrial (RMI), reference Installation Manual 90-30091-00.

Guy Wire Tightening

4. Tighten down the nuts on each cable clamp with a 11mm combination wrench (or socket).
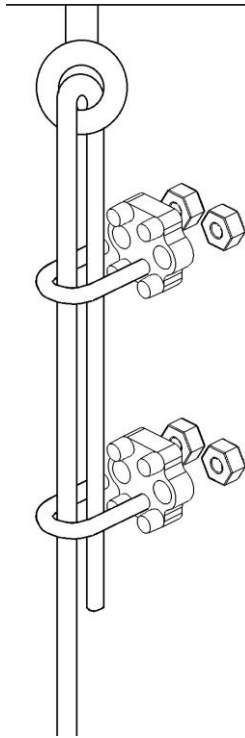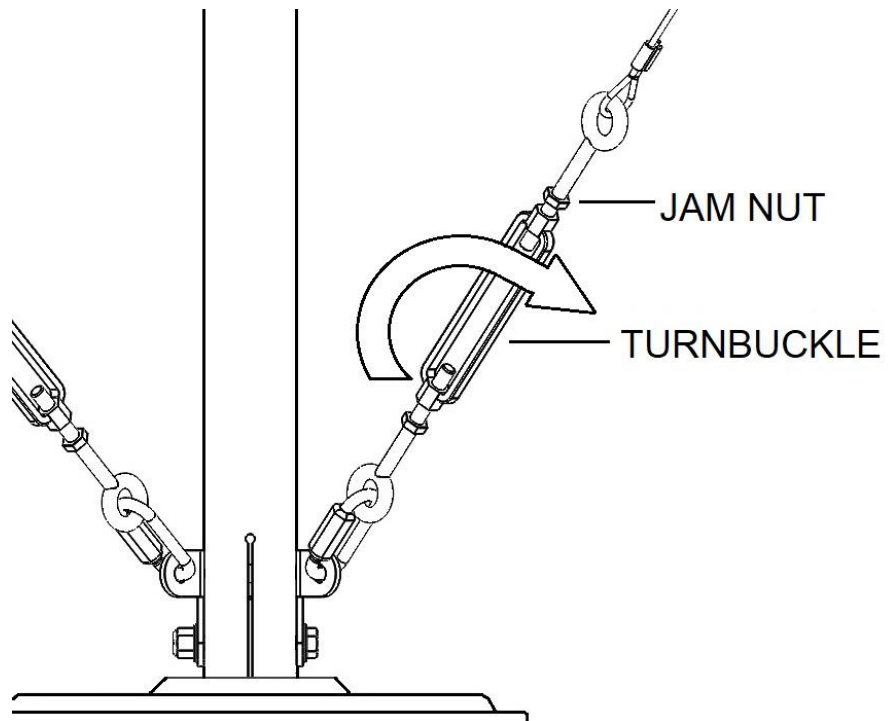
Fig. Note 4   Fig. Notes 5-7

5. With the aid of a level placed against the drop extension, 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

1. Insert the elastic cord through the top eyelet of each of the 4 turnbuckles.
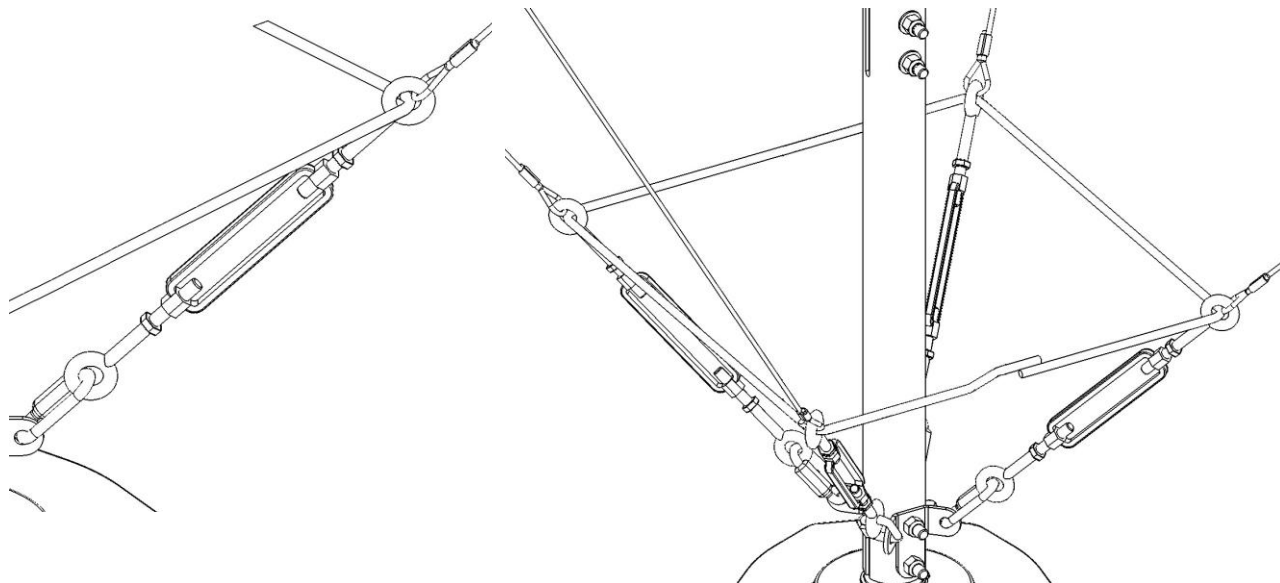
2. Pull one of the ends of the cord through one of the holes on the cable lock and then pull the end into the groove to lock it. Use pliers to properly secure the cord in the groove of the cable lock.
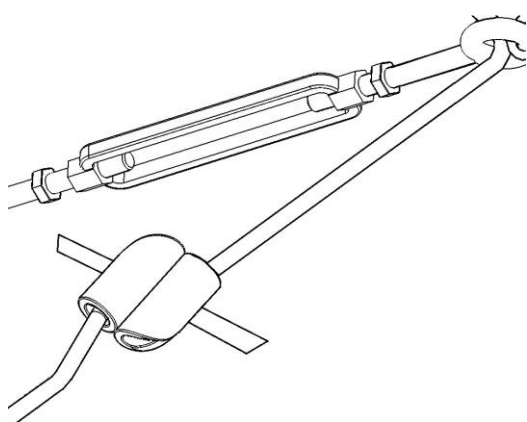
3. Repeat the previous instruction for the second end of the cord using the opposite hole and groove on the cable lock.

4. The safety cord should be pulled tight and fastened as shown.
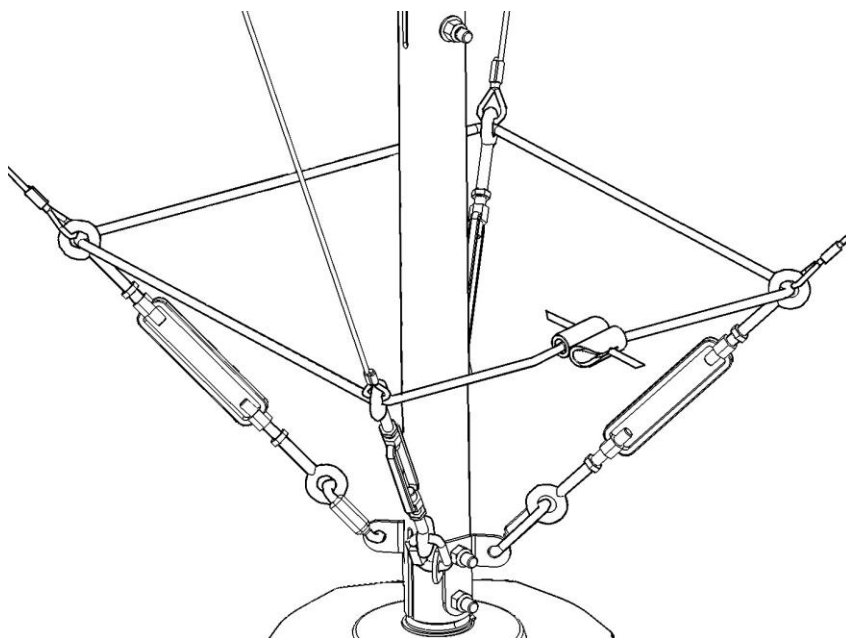
DO NOT EXCESSIVELY STRETCH THE ELASTIC CORD.

Blade/Strut Lubricant

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, starting at the tip of the strut, approximately 1"-1.5" long and spaced as indicated.
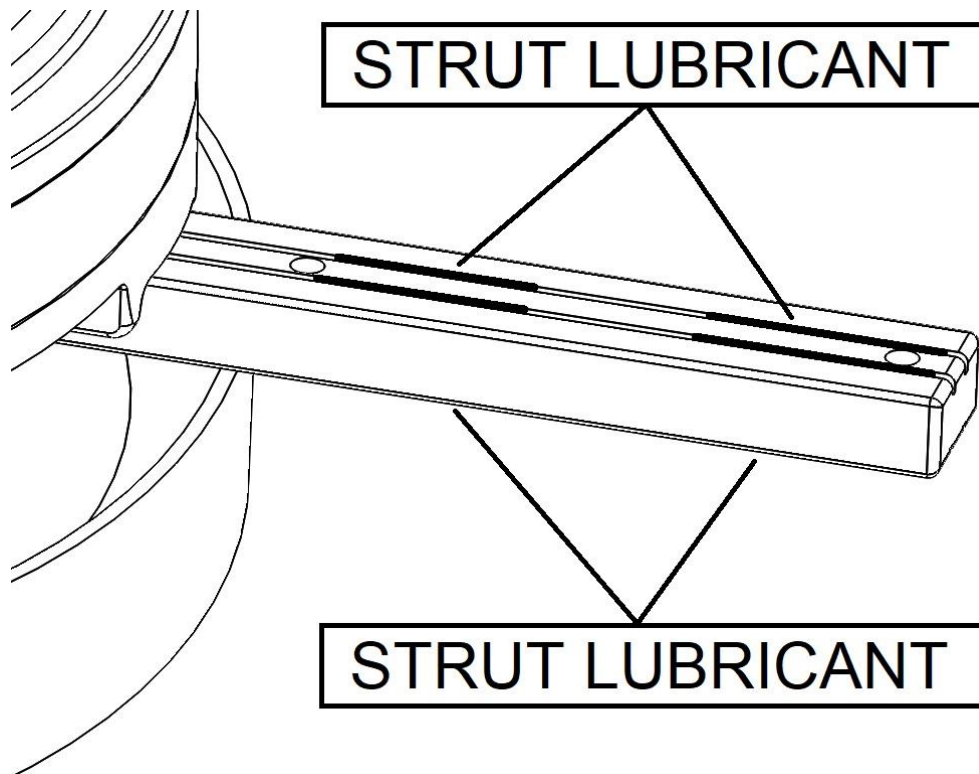
NOTE: The lubricant should reach the top of the groove.
It is not necessary to use the entire tube.

Blade Assembly

1. Prior to blade installation, see strut lubricant instructions on page 34. With Struts lubricated, slide fan blade into a blade strut (with the safety retainer links) until mounting holes line up. Insert two 5/16"-24 Hex Hd Bolts, Washers and Nylon Locknuts provided in Blade Bolt Kit.

SAFETY RETAINER LINK

STRUT

BLADE

BLADE HARDWARE
Tighten to
18Ft-lbs [24.4 N-m]
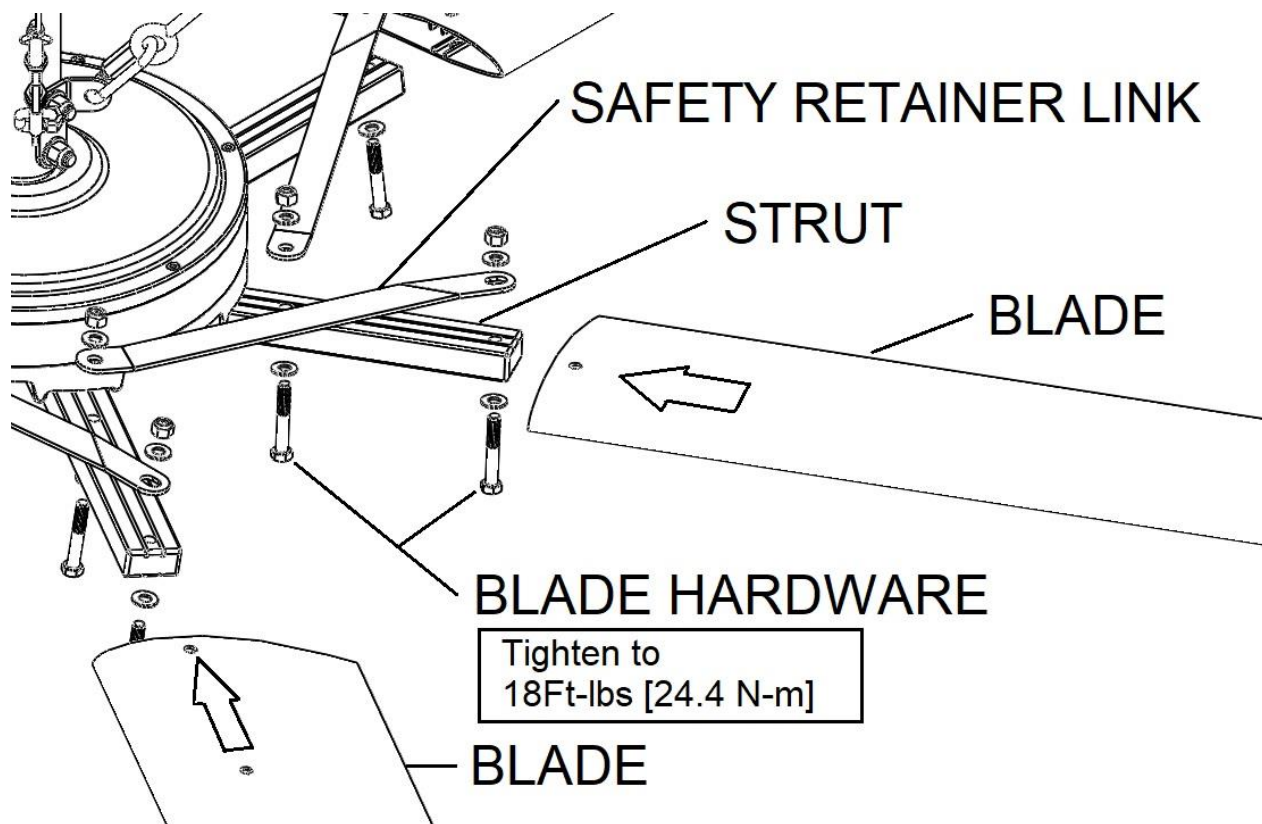
BLADE

2. Install each Blade and Safety Retainer Link in same manner.
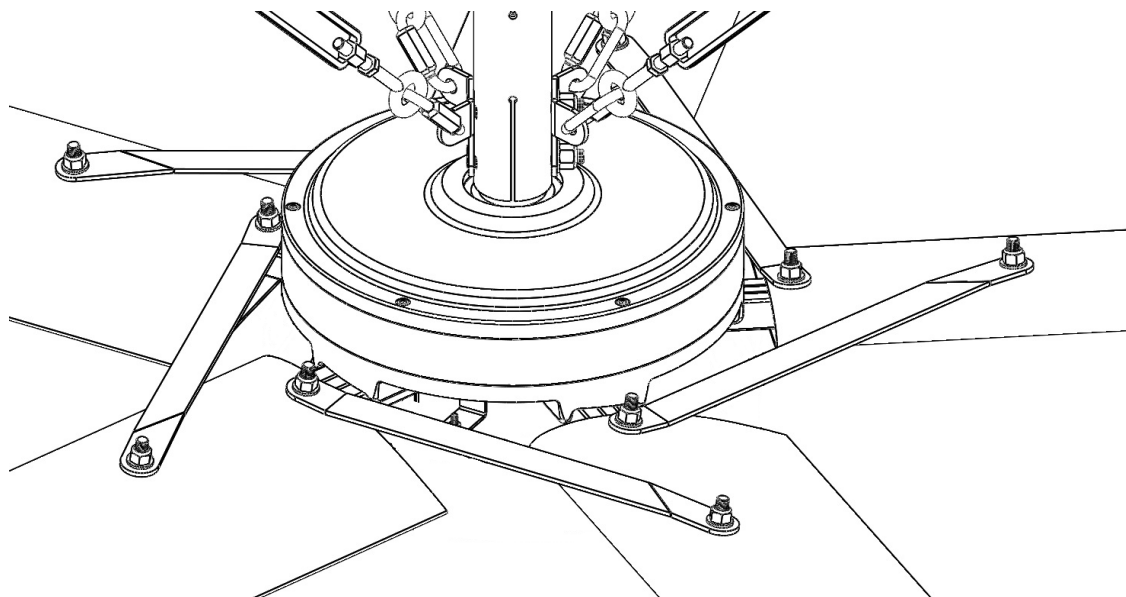
Assembly Conclusion

3. Once all the blades are in place, reinstall the MacroAir cover. See note 4 for torque requirements.
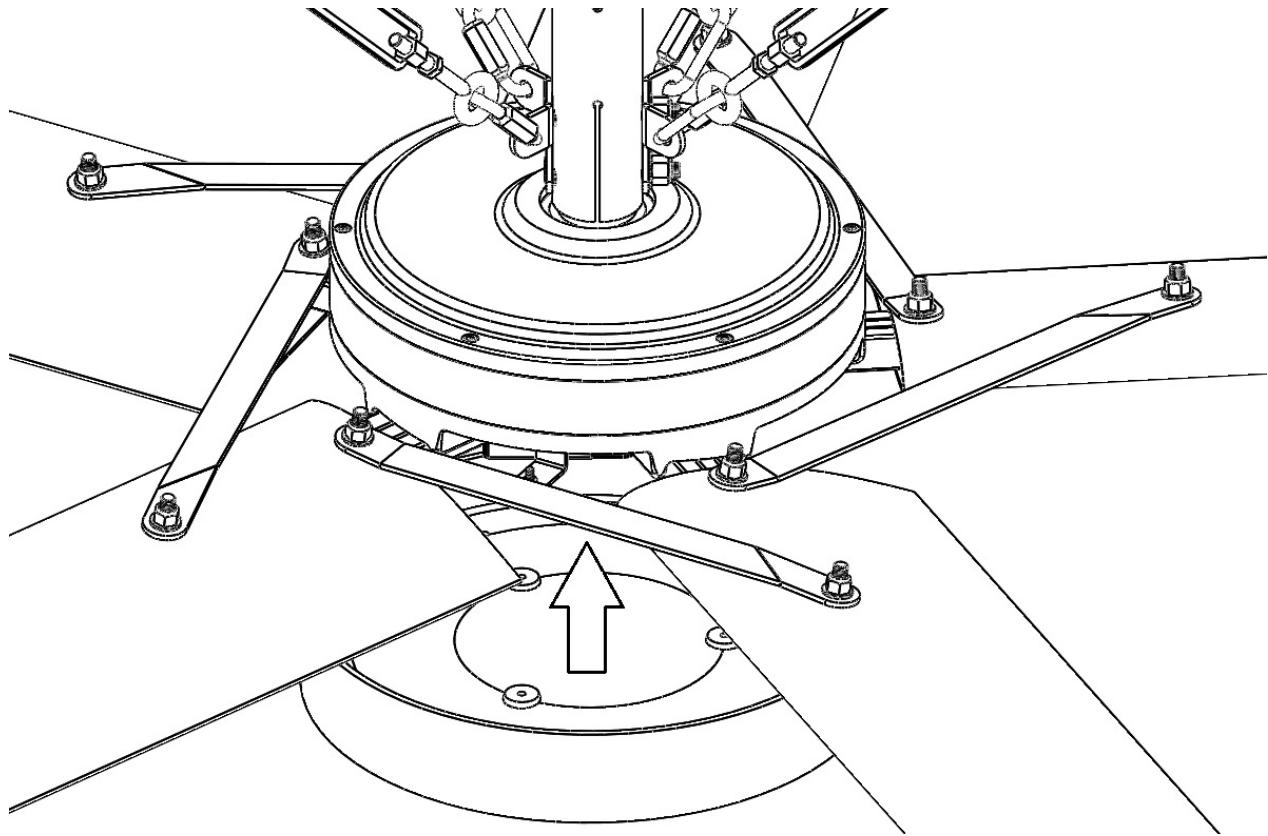
4. The three Screws to mount the cover may still be attached to the cover with plastic lock washers, if not, recover the three screws set aside with the cover at the time of disassembly (ref page 28, notes 1 & 2). Tighten the three screws to 5 in-lbs [.56 N-m] to secure cover in place.
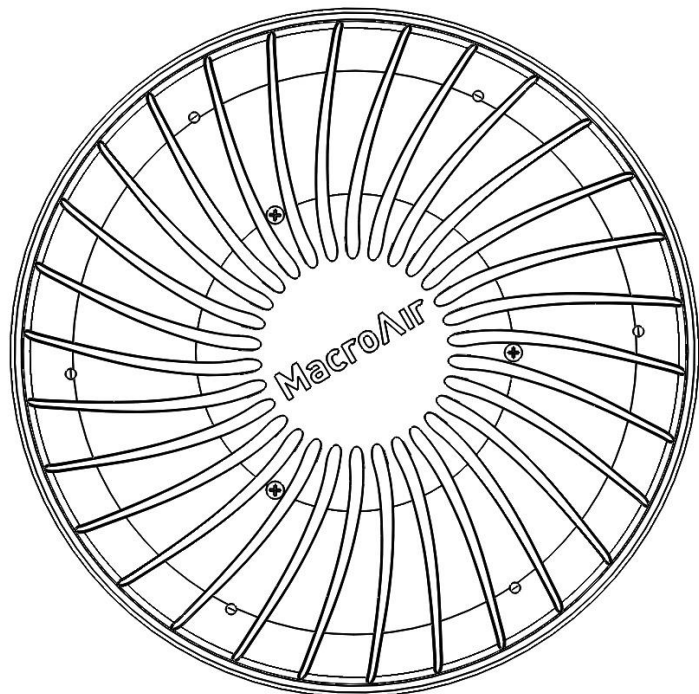
Electrical & Safety Cable Installation

⚠ **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.

Wiring the Fan

Control Panel Overview
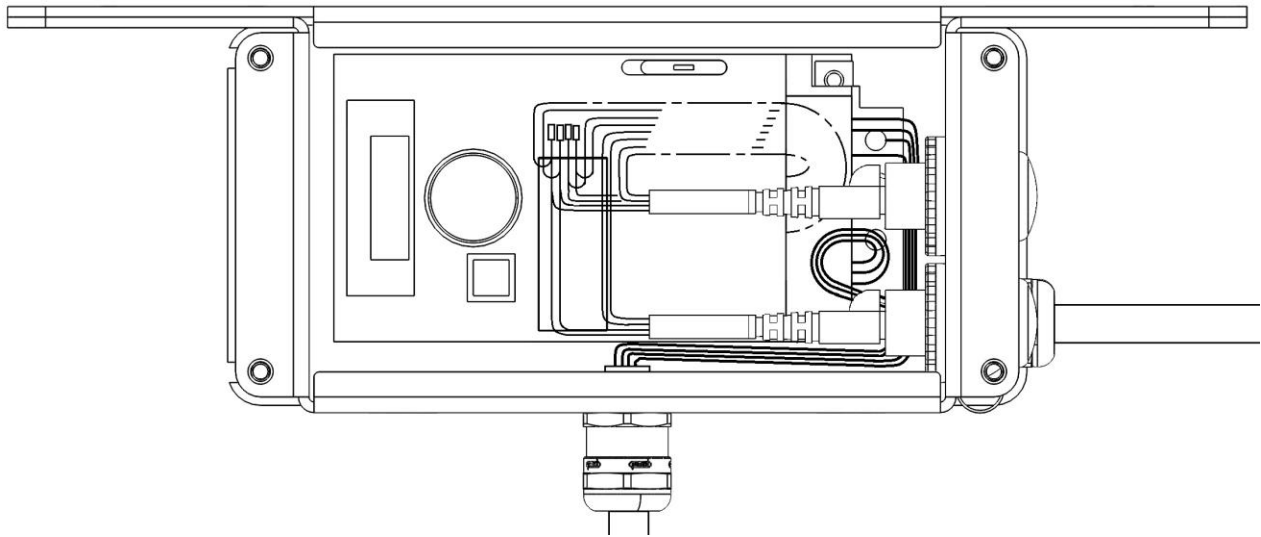
Control Panels come pre-wired, as illustrated above.

1. Make sure the control wiring is CAT5e shielded, stranded or greater.
2. The Motor Cable and Cable Gland does come pre-installed.
3. Connect Stranded, Shielded CAT5e to RJ45 labeled "in" or "controller" for single touchpad controller.
4. 25 feet of shielded power cable is provided exiting the control panel to be used to connect to power source.

Images are not to scale

Digital Control Panel Schematic (SINGLE PHASE)
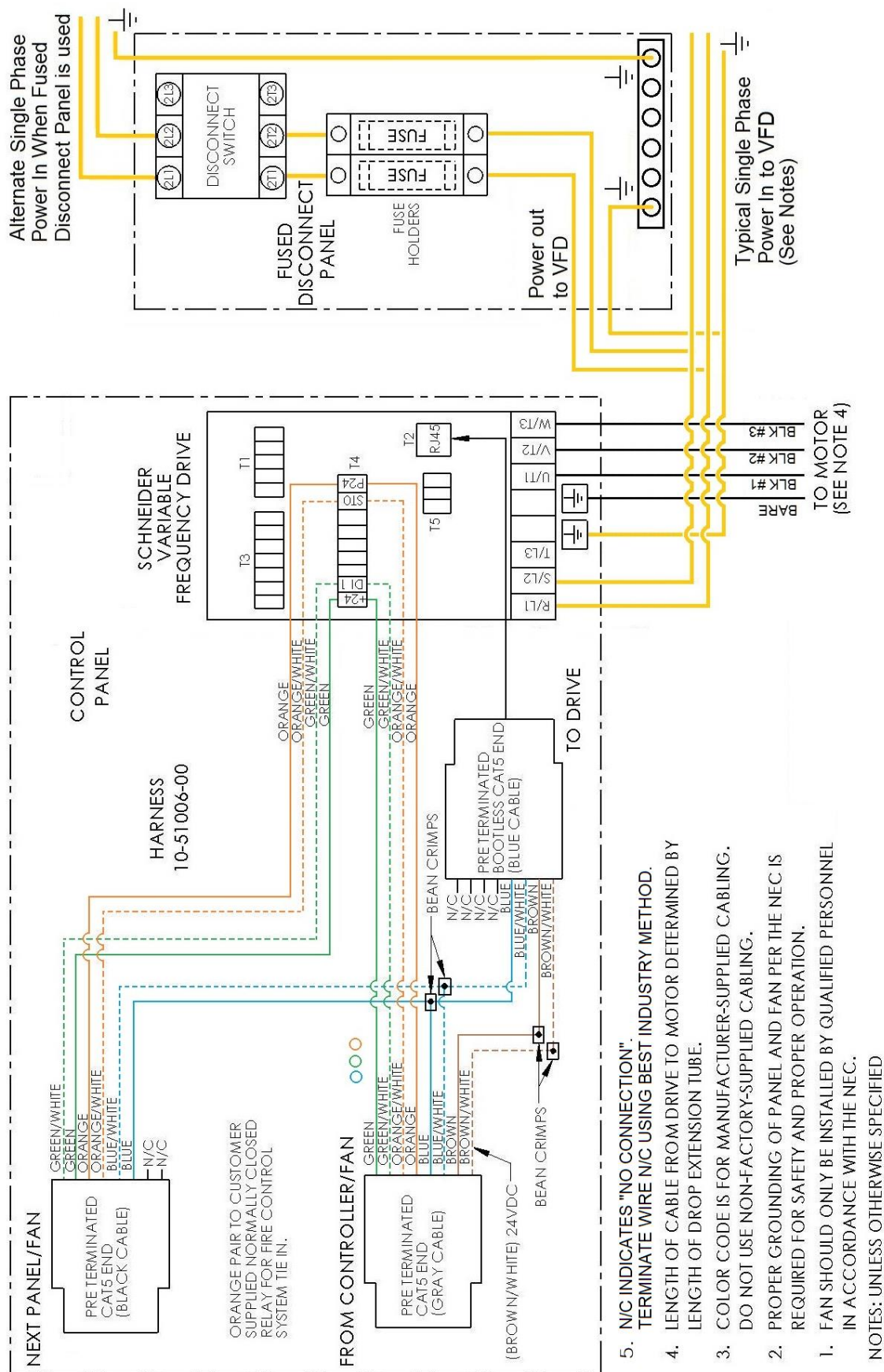
Digital Control Panel Schematic (THREE PHASE LINE IN)
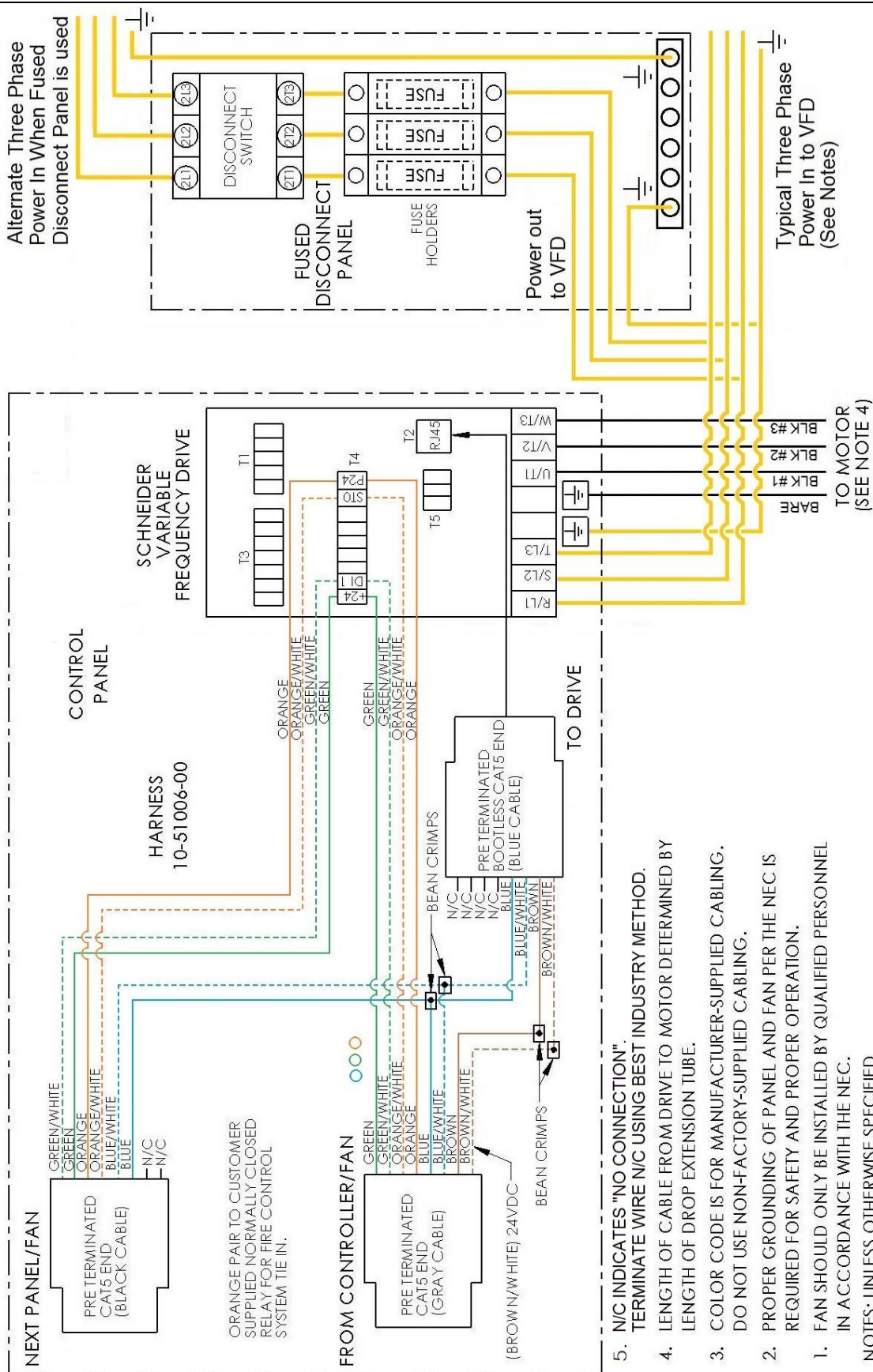
Touchpad Remote User Interface

Buttons:

A – Forward / Reverse: Select fan rotational direction.

B – Power Button: Turn the fan on or off (forward or reverse must be chosen to start the fan).

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 – Settings: Displays settings and information about the fan.
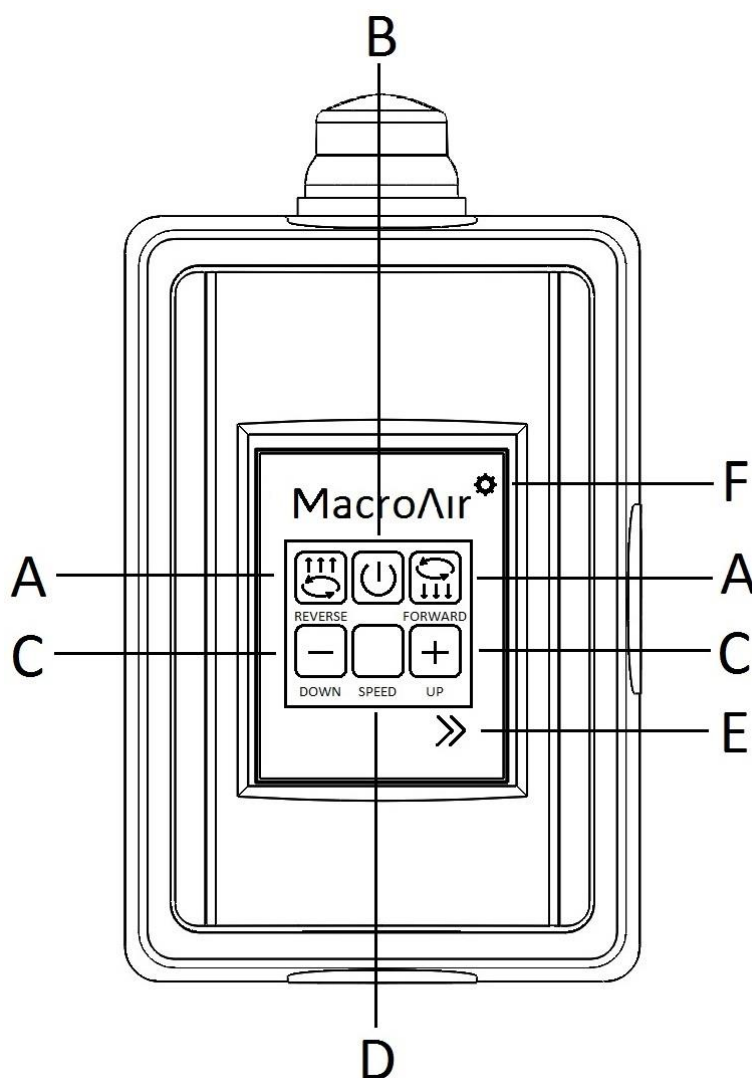
Images are not to scale

Touchpad Remote Installation

Wall Mount Screws
(4 Provided)

Bezel

Wall Mount
Enclosure

Touch Screen
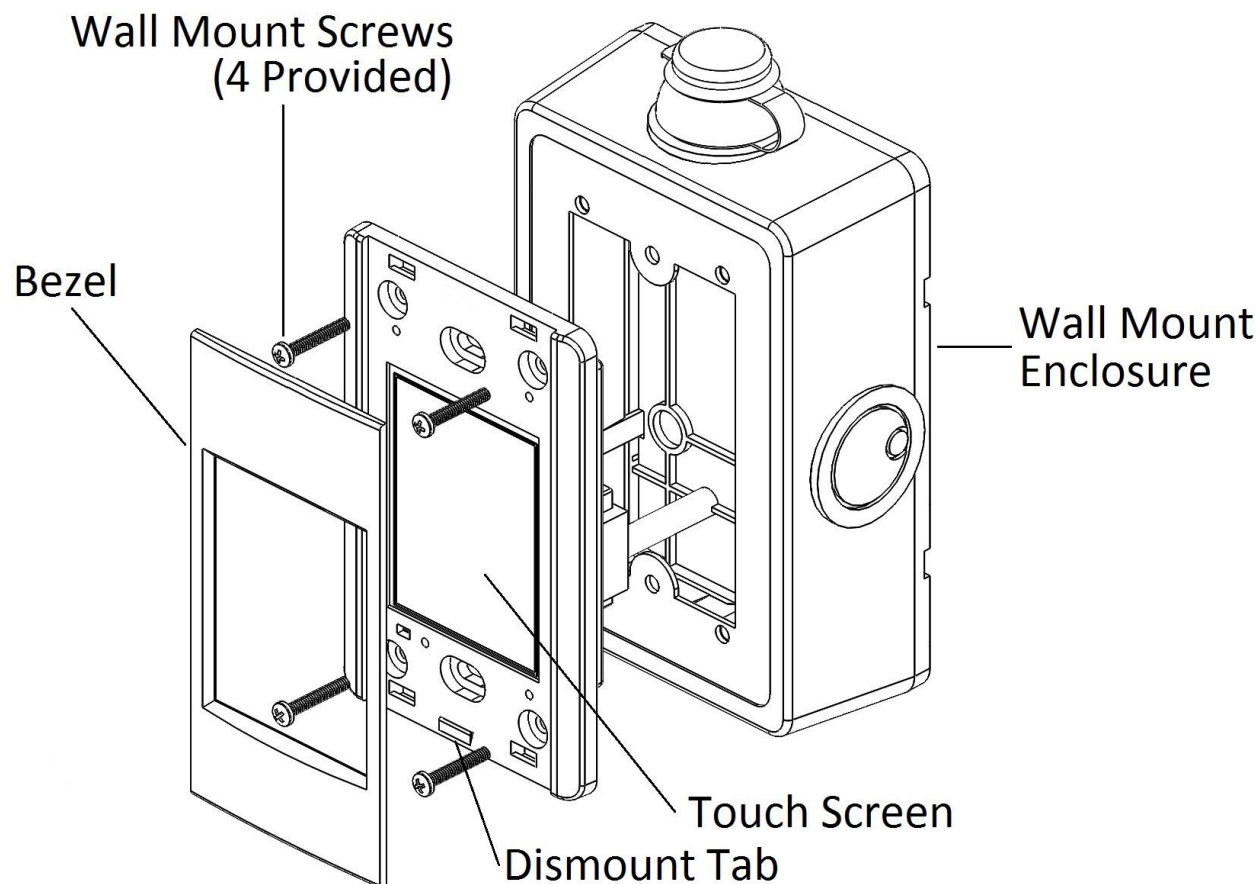
Dismount Tab

Wall Mounting (Provided)

1. Gently remove the front bezel from the touch screen using a small flat tipped screwdriver where the bezel notch meets the dismount tab located at the bottom of the touch screen.
2. Mount the base plate of the enclosure to the wall using the 4 provided wall anchors and screws.
3. Snap the front of the enclosure to the base plate.
4. Plug in the pre-wired Stranded, Shielded CAT5e cable from the screen into the RJ45 coupler inside the enclosure.
5. Secure the touch screen to the enclosure using the 4 provided screws.
6. Lock the provided bezel into place via the plastic tabs.
7. Plug the provided Stranded, Shielded CAT5e cable from the fan into the RJ45 on the outside of the enclosure.

Touchpad Remote Installation (cont.)

Single Gang Electrical Box (not provided)

Touch screen

Dismount Tab

Flush Mount Screws (2 Provided)

Bezel

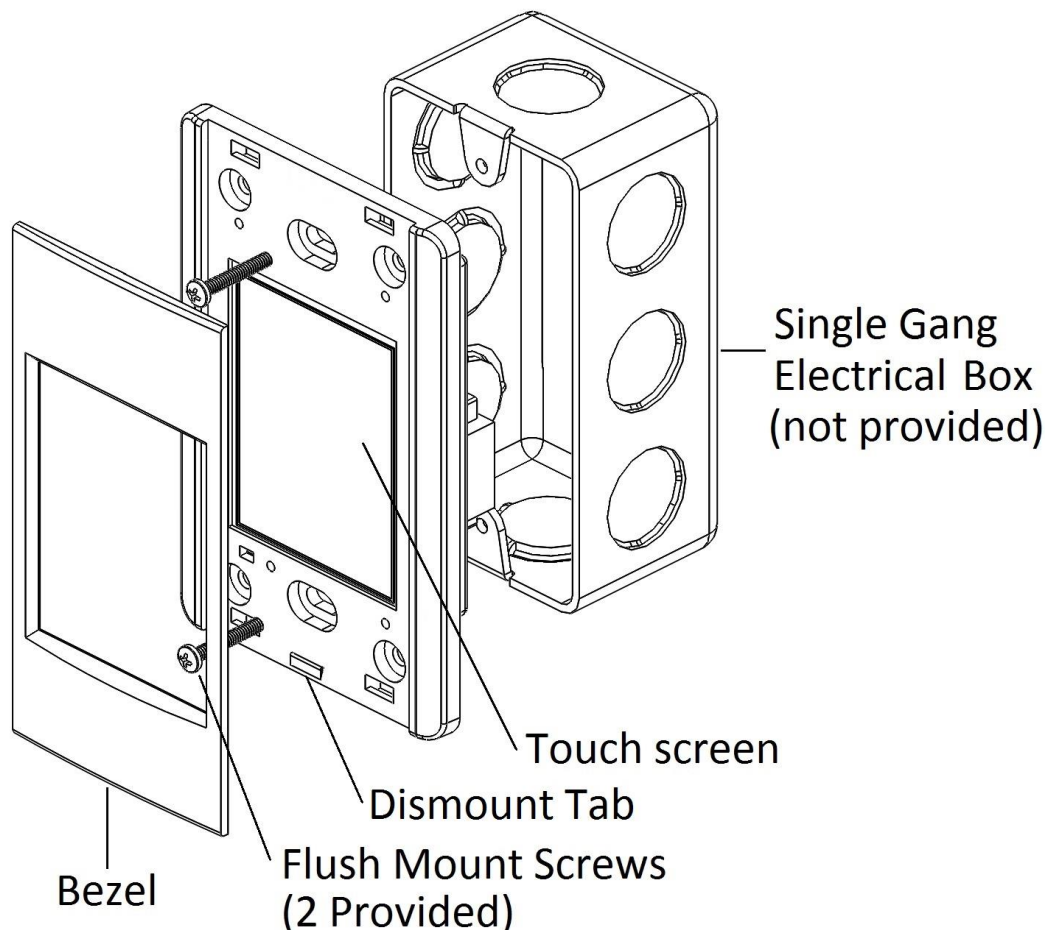**Flush Mounting (Not Provided)**

1. Gently remove the front bezel from the touch screen using a small flat tipped screwdriver where the bezel notch meets the dismount tab located at the bottom of the touch screen.
2. Install the single gang electrical box (not provided).
3. Run the provided Stranded, Shielded CAT5e cable from the fan into the single gang electrical box.
4. Plug the remote cable into the pre-wired Stranded, Shielded CAT5e cable from the screen using the provided RJ45 coupler.
5. Secure the touch screen to the enclosure using the 2 provided screws.
6. Lock the provided bezel into place via the plastic tabs.

Touchpad Remote LCD Display

2.8" LCD Display

4.7"

3"

Front View

1"

1.3"

Rear View

Data- Data+ GND VDC F.G.

0.3"

0.6"

Data- Data+ GND VDC F.G.
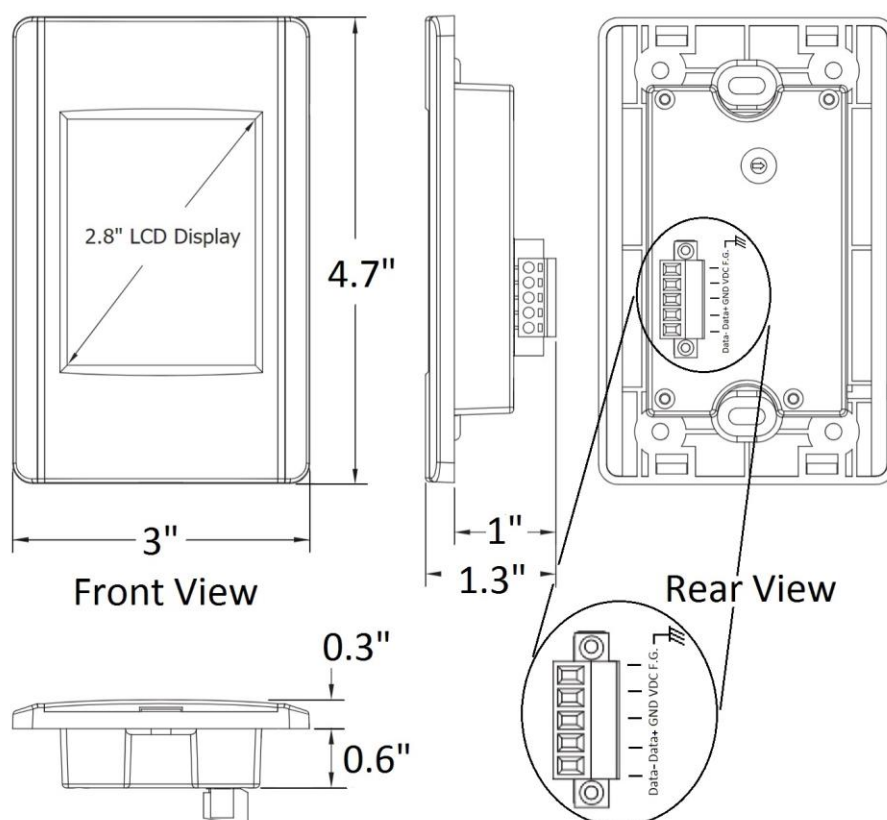
Touchpad Remote Enclosure

5.3"

3.6"

3.3"

1.7"

3.6"

Ø.177"

Front View

1.7"

Ø.177"

3.3"

3.4"

2.6"

Rear View
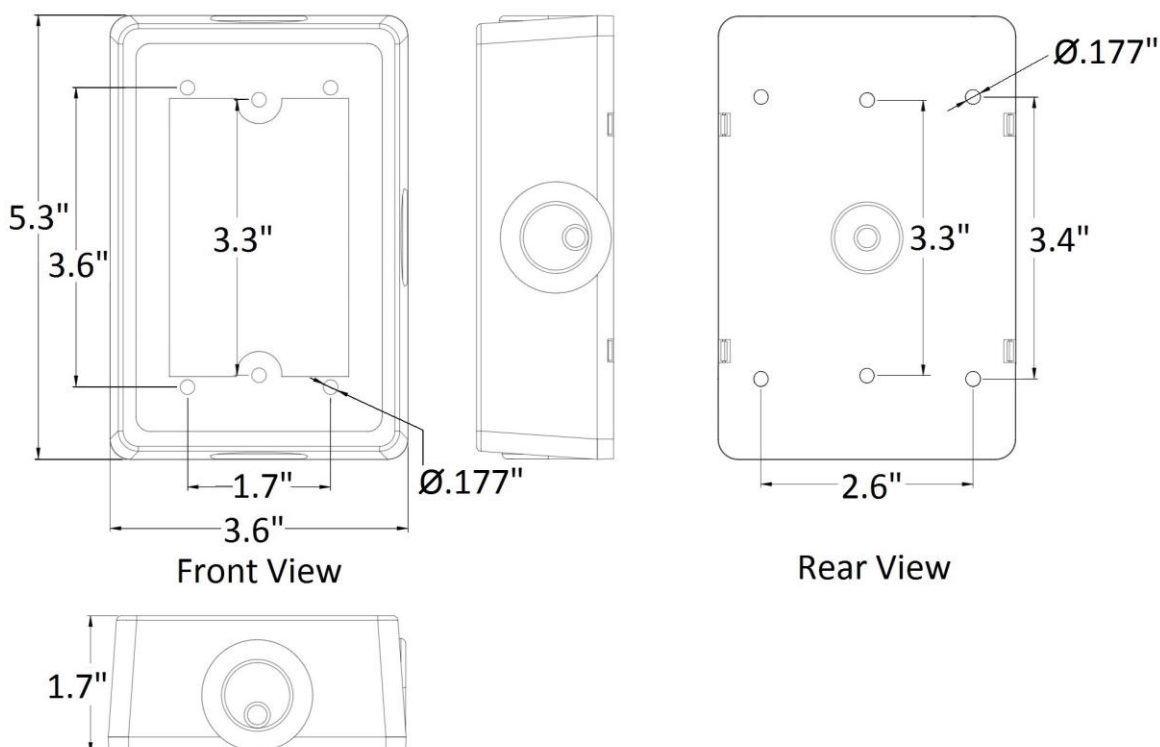
Touchpad Remote

1. Upon first power-up of the touchpad, the correct Fan Diameter will need to be selected.

2. After the Fan Diameter is selected, navigate to the next page using the arrow in the lower left to reach the "Setting Fan Diameter" page.

3. Once Setting Fan Diameter is done, press the lower left arrow to get to the Motor Type Screen. Then the lower left arrow again to get to the address screen. Change to the desired address and press the Reset button. If you do not need to change the address, press the arrow in the lower left until you are at the fan control screen.

4. If the fan stops operating unexpectedly, navigate to the fault code screen using the bottom right arrow and record any fault codes (if present). Click the reset button until the display reads '0' or none. 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. NOTE: Some faults can only be read from the VFD.

Home Screen   Fault Code Screen
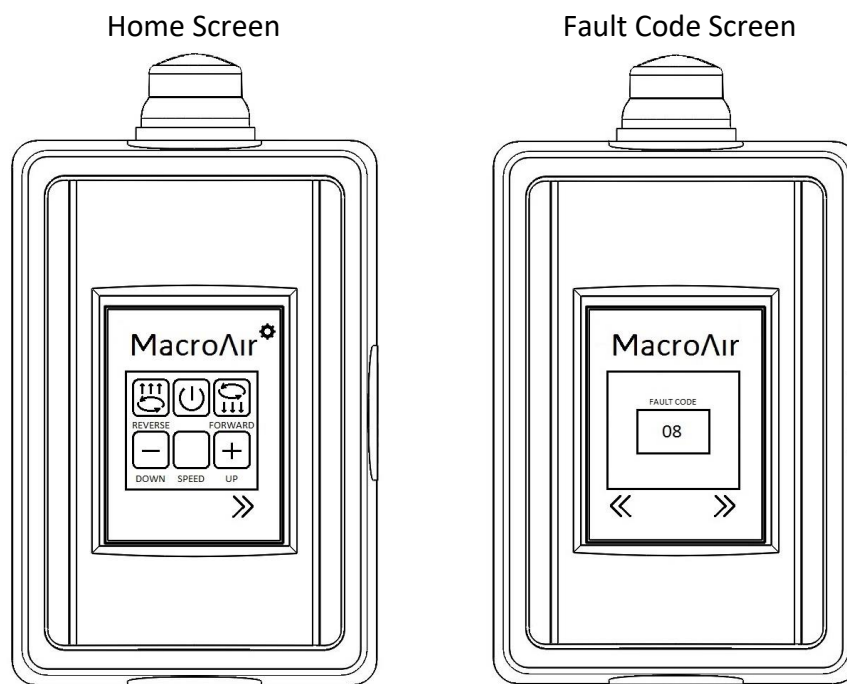
Images are not to scale

Network Controller 30

1. Press the Settings button in the upper right corner.

2. Once on the Settings page, Press the Admin Login button and enter your credentials. The default Username and password are both "admin".

3. Once you are successfully logged in under Admin, go back to the fan control screen.

4. Once on the Fan screen, press the Configure button.

5. Once on the Configure screen, input the correct fan diameter and number of blades.

6. Press "Done" to return to the Fan Control Screen.

Note: For clarification of these and other procedures refer to the Manual included with your MacroAir Controller 30.
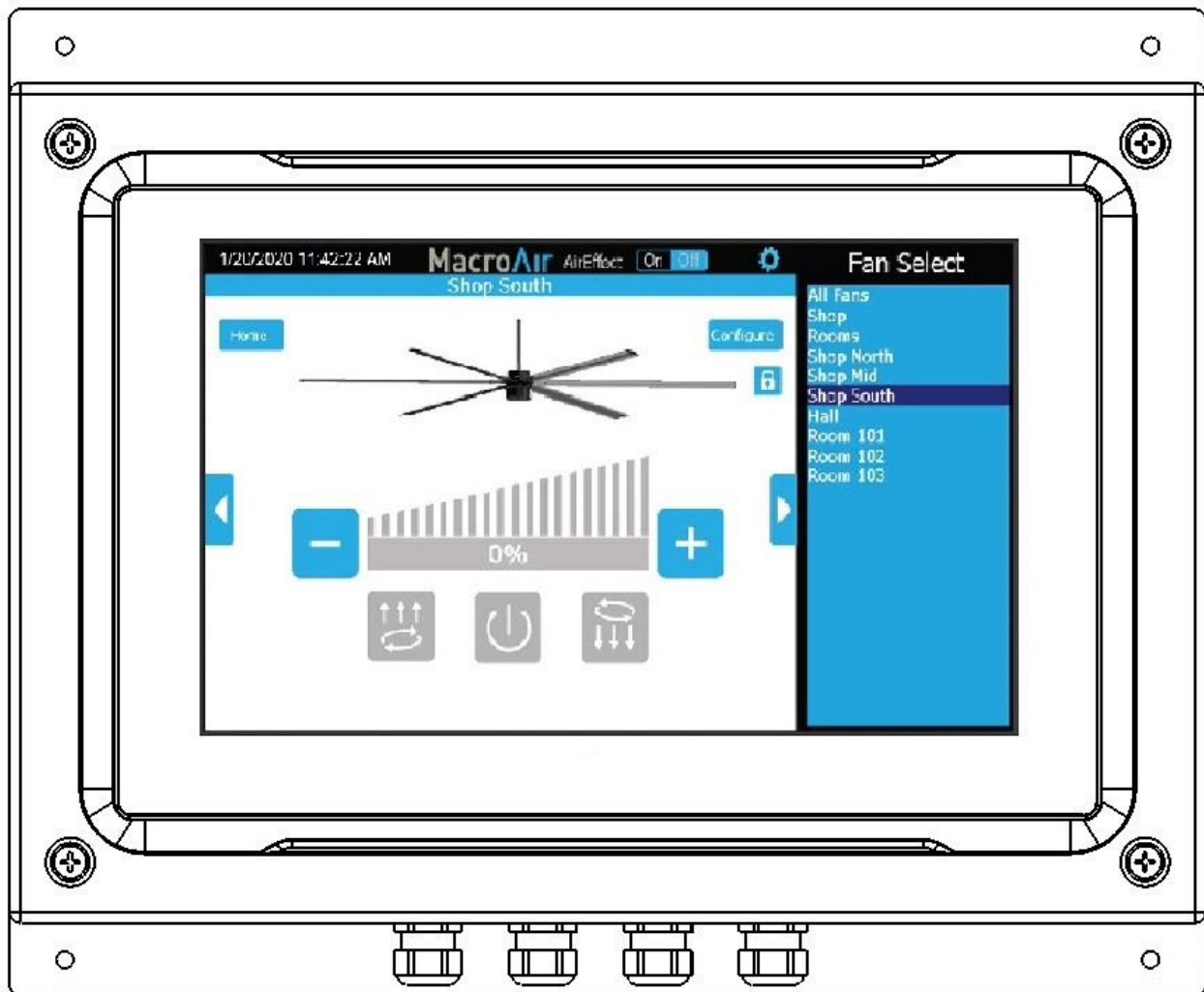
Images are not to scale

Mounting Bracket Hole Patterns

Standard Mounting Pattern
On Control Panel

Mounting Bracket Hole Patterns, cont.

I-Beam Bracket and Shim

Glulam Bracket

Maintenance

Guy Wire Check (if applicable): Checking a MacroAir fan's guy wires for tension and inspecting for frayed sections could miti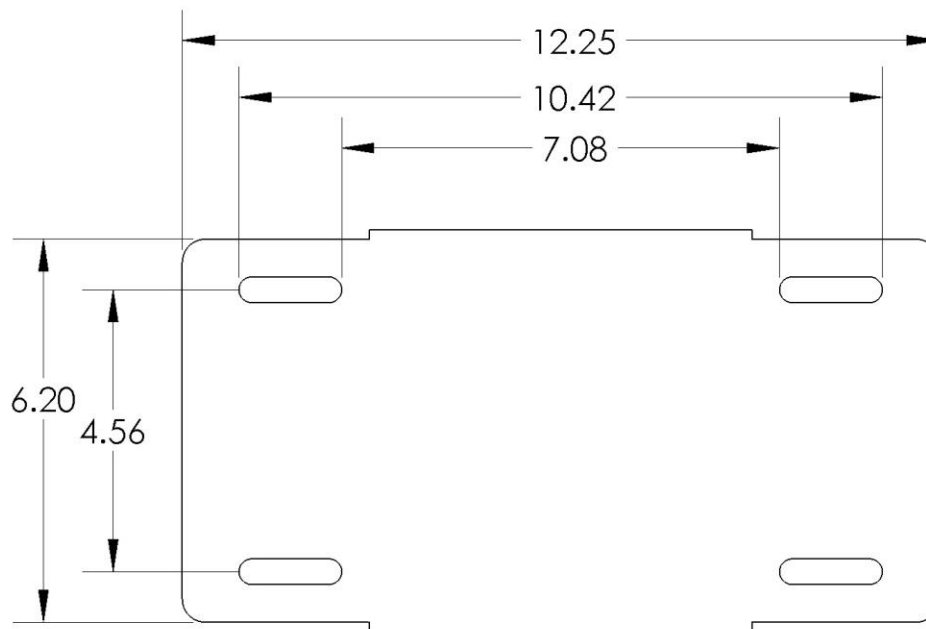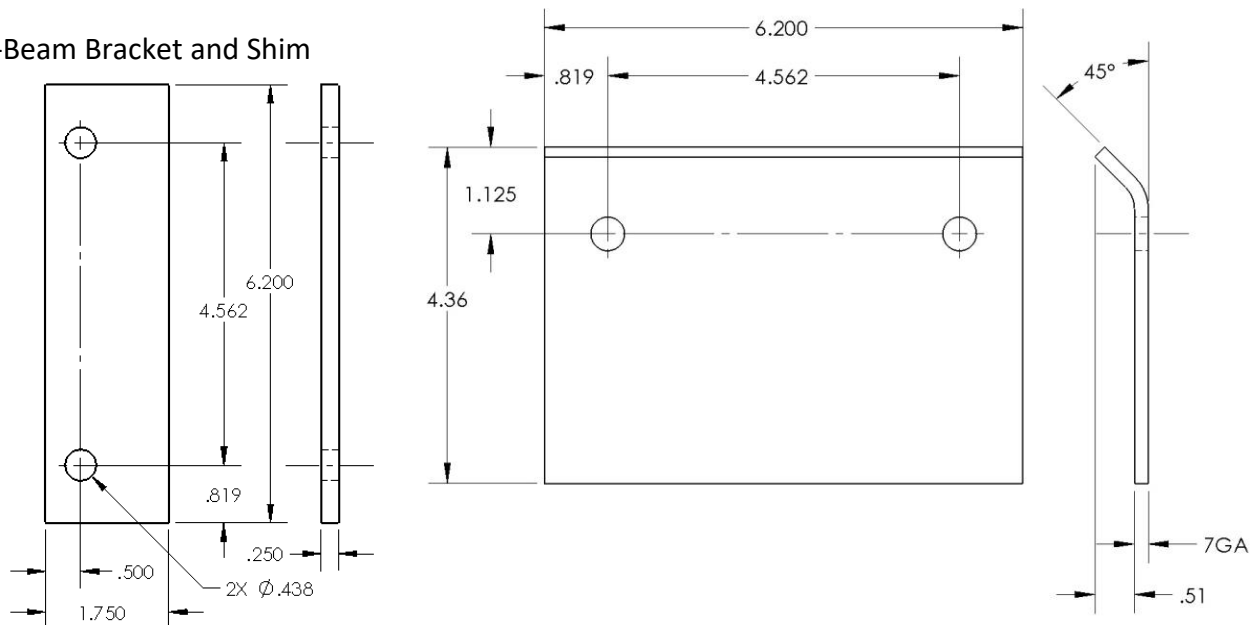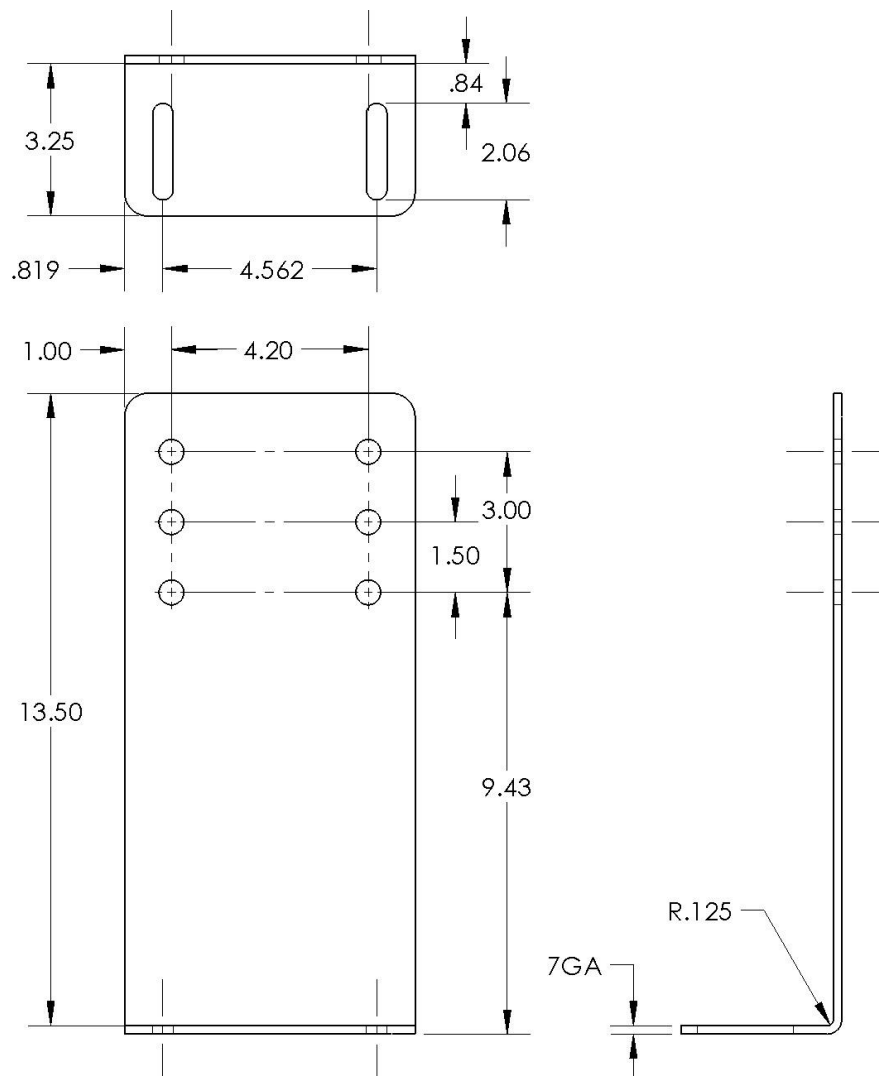gate a problem before it occurs. The guy wires should be under enough tension to prevent any movement in the motor unit or the extension tube. If the motor unit can be moved by pushing on it, the guy wires need to be tightened. Fan owners should confirm that the guy wires are not wrapped around any sharp 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.

Blade 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 blades. While this may not affect fan performance, we recommend fan owners keep blades clean by having a maintenance person or skilled trade professional – who has experience using a lift – wipe the fan blades 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 is 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 loosing 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

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 switch 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 spinning in reverse when forward is selected.	Confirm the motor is wired in the correct order per page #29.
The fan will rock and will not start.	Confirm that the correct fan diameter is set on the controller.
The fan is spinning too slow/fast.	
The fan is shutting off at high speed.	
The fan is operating noisily.	Confirm that there is nothing interfering with any moving parts. Confirm that the correct fan diameter is set on the controller.
The fan is making a "clicking" sound.	Confirm that the strut lubricant was properly applied per page #34.
The fan is wobbling.	Confirm that the fan is level, and the guy wires (if present) are properly installed and tightened. If the fan is installed on Unistrut, confirm with a structural engineer that the mounting is adequate for the fan weight and torque.

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

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 April 15, 2021.

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

Fan Type	Mechanical: Blades, Hub & Frame	Standard Electrical[1]: Motor, Electrical Controls, Remote	Labor
AVD5	15 Years	10 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.[2] 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 for full warranty information.

1 "Standard Electrical" means any common electrical component that is utilized across more than one fan line will assume the higher warranty period.
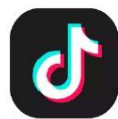2 "Operate properly" applies only to mechanical, electrical, and structural systems of the Product.

MA
Let's Stay Connected!

Social

Website
www.macroairfans.com

MacroAir
engineers of air™

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