



Installation Manual

AVD-370

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HVLS Fans by

MacroAir
engineers of air™

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Caution & 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.

READ AND SAVE THE ENTIRE MANUAL BEFORE OPERATING THE FAN. Ensure that all safety practices and instructions are followed during the installation, operation and servicing of the fan. Failure to apply these safety practices could result in death or serious injury. If you do not understand the instructions please call EnergyLogic for guidance (contact information can be found on page 69).

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

All fan controls and incoming power should only be installed by qualified technicians familiar with the requirements of the National Electric 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.

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

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

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.

Children should be supervised to ensure that they do not play with the appliance.

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH.

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

The user is responsible for compliance with all international and National Electrical Code requirements with respect to the grounding of all equipment.

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

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

Caution & Safety

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

a) Use this unit only in the manner intended by the manufacturer. If you have questions, contact the manufacturer.

b) Before servicing or cleaning the unit, switch power off at the service panel and lock the service disconnecting means to prevent power from being switched on accidentally. When the service disconnecting means cannot be locked, securely fasten a prominent warning device, such as a tag, to the service panel.

WARNING: If unusual oscillating movement is observed, immediately stop using the ceiling fan and contact the manufacturer, its service agent or suitably qualified persons.

WARNING: Make sure to power the fan off and lock it out using the IEC/CE approved disconnect when doing any cleaning and or maintenance to the equipment.

PRIOR TO THE INSTALLATION, ENSURE:

- That the mounting of the suspension system shall be performed by the manufacturer, its service agent or suitably qualified persons;
- That the fan is to be installed so that the blades are more than 2,3 m above the floor;
- The model or type reference of a luminaire that may be installed in a fan constructed for this purpose.

DAMAGED EQUIPMENT

Do not operate or install any fans or fan accessories that appear to be damaged. Failure to follow this instruction can result in death, serious injury, or equipment damage.

SERVICE:

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

Keep all body parts clear of moving part at all times. All electrical troubleshooting and repair must be done by a qualified technician and meet all applicable codes.

Ensure that the replacement of parts of the safety suspension system device shall be performed by the manufacturer, its service agent or suitably qualified persons.

Key Safety System Components

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

- Install the safety cable on **EVERY** fan. The safety cable, if installed per MacroAir specifications, will prevent the fan from falling in the unlikely event that the mounting system should fail. A MacroAir fan should never be run without a properly installed safety cable, which is supplied with every fan along with all required hardware. You must install a safety cable for the warranty to be in effect.
- Install guy wires on every fan, unless otherwise specified. Properly installing the guy wires is required for proper stabilization during normal operation for some fan and mounting types (Fixed Angle and Universal Mounts). In addition, guy wires keep the fan stable in case of earthquakes or in "outdoor" installations where high wind conditions may occur.

Caution & Safety

Mark the Floor to Alert Personnel

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

Weight Considerations

Ensure the fixing means for attachment to the ceiling such as hooks or other devices shall be fixed with a sufficient strength to withstand 4 times the weight of the ceiling fan. The maximum hanging weight for the Model 370 is 79 lbs [36 kg] including the weight of an additional drop length. If there is any uncertainty in the strength of the building structure, a professional structural engineer should perform a thorough evaluation of the building prior to purchasing the fans. MacroAir provides guidelines for mounting fans; however, it is the sole responsibility of the building owner and installer to ensure the safety of the mounting system, that the building structure is sound and that the installation complies with all federal, state, and local codes.

Torque

The maximum torque (twisting force) during normal operation that must be handled by the mounting system, including the building structure. For a Model 370, the maximum potential torque is 20 ft-lbs [27 N-m].

Check Federal, State, and Local Codes

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

Windy Conditions

Fans should not be operated when wind is present.

Fusing Chart

BRANCH CIRCUIT PROTECTION IS REQUIRED TO PROTECT THE ELECTRICAL COMPONENTS AND COMPLY WITH UL 507.

Use the table below to select the correct **fast acting fuse** size for your application. The optional fuse disconnect switch provided by MacroAir uses **class CC fast acting fuses**. Fuses must be purchased separately.

Max Amp Draw / Recommended Fuse

Voltage and Phase	6ft	8ft	10ft	12ft
110 VAC 1-Phase	1.5A / 5	5.9A / 7.5	3.8A / 5	2.0A / 5
120 VAC 1-Phase	1.4A / 5	5.4A / 7.5	3.5A / 5	1.8A / 5
208/240 VAC 1-Phase	0.8A / 5	3.1A / 5	2.0A / 5	1.0A / 5

Reference page 53 for installation.

Fan Placement & Clearance

Sprinkler Systems and Fan Placement

In any installation where fire sprinklers are in place, fans should not interfere with their correct operation. Fans should be located no less than 3 feet below a sprinkler, and placed central to each sprinkler quadrant. Our AirBrain motor controller can be connected to a fire suppression control system which will emergency-stop fans in case of fire. Prior to installing fans, review all codes applicable to sprinkler systems and fans to ensure code compliance (refer to NFPA 13). Please call EnergyLogic for guidance (contact information can be found on page 69). However, it is your sole responsibility to see that the installation is completed to code and that it is correct.

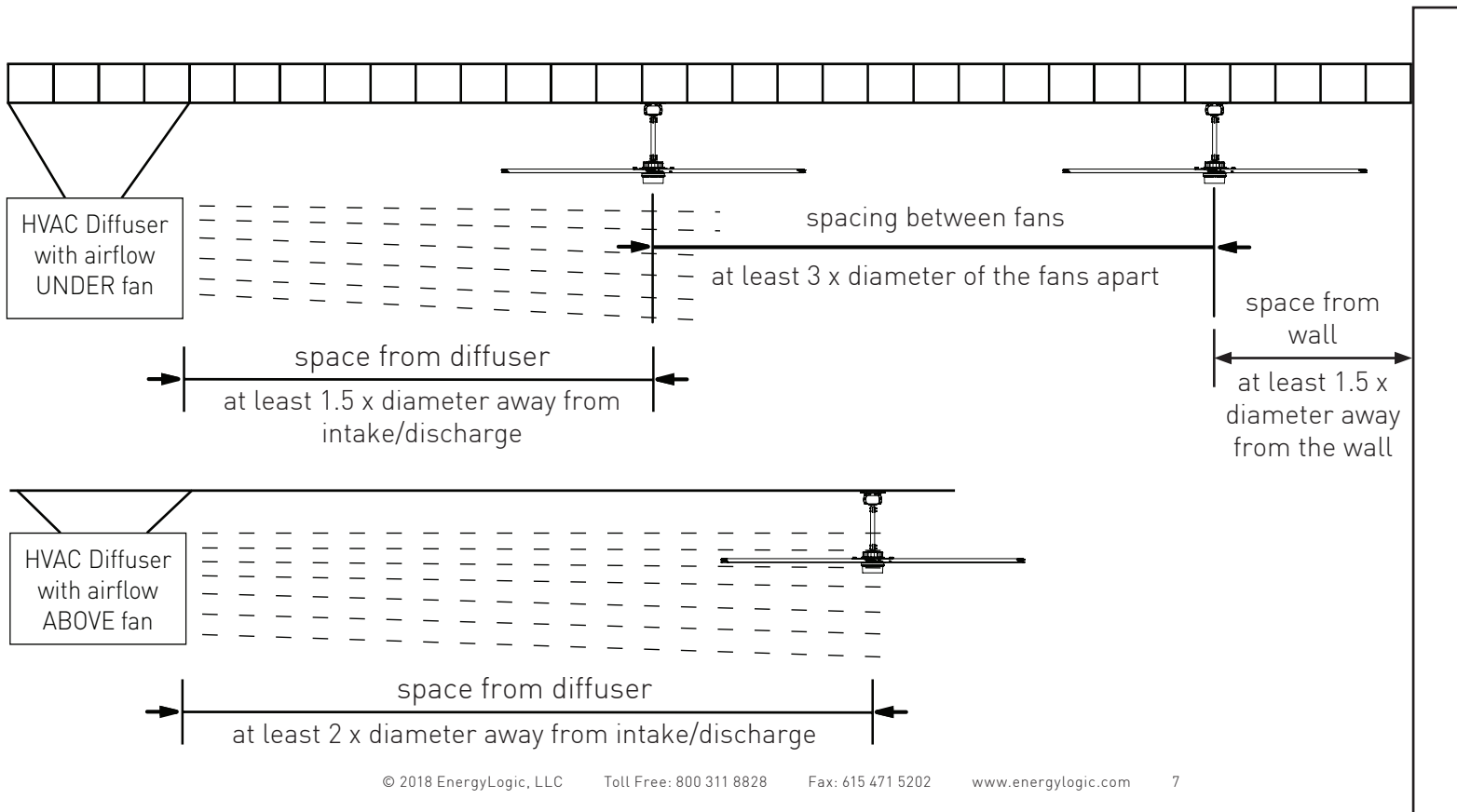
Other Information on Placement and Spacing

If possible, avoid mounting fans directly below lights or skylights to avoid any strobe effect caused by moving airfoils.

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 the airfoil tips are at least 3 feet away from any area where a person may be able to extend outward to reach them.

HVLS fans should not be located near to air supply outlets or exhausting inlets of other HVAC equipment. Supply air outlets can be configured to deliver air away from the HVLS fan or the fan location should be oriented such that the outlet is pointing away from the fan and outside the swept area of the fan. Exhaust fan inlets or other return air points creating a negative pressure should not be within 1.5 times the diameter of the fan. These system will diminish the capacity of the HVLS fan. Proper systems orientation will provide an enhancement to the Indoor Air Quality (IAQ) and occupant comfort. Refer to next page for illustration.

Fan Placement & Clearance



Fan Placement & Clearance

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

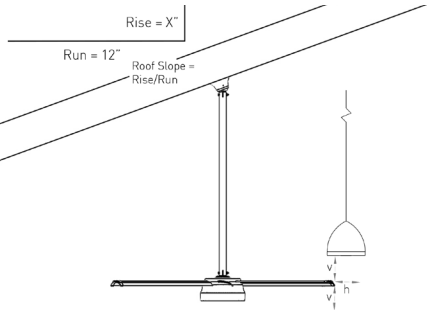
The minimum distance of a fan to a wall or similar obstruction should be no less than 1.5 times the diameter of the fan.

Maximum Angle for Mount (feet)

Slope (in)	0	2/12	4/12	6/12	8/12	10/12
Roof Angle	0	9.5°	18.4°	26.6°	33.7°	39.8°
Diameter	Recommended Total Drop (Mount to Airfoil) Length (ft)					
6 feet	2	2	2	3	4	4
8 feet	2	2	3	3	4	5
10 feet	2	2	3	4	5	6*
12 feet	2	2	3	5	6*	8*

*The Rapid Mount Commercial does not support this angle. Use Fixed Angle Mount for drop lengths over 5 feet.

The drop lengths above are minimum recommendations only / based solely on roof pitch and fan diameter. Other factors / such as allowing for proper airflow into the fan must be evaluated when determining drop length requirements. In addition / EnergyLogic strongly recommends that the fan airfoils must be a minimum of 10 feet (3.05 meters) above the floor. Contact EnergyLogic for assistance with fan placement and drop length selection (contact information can be found on page 69).



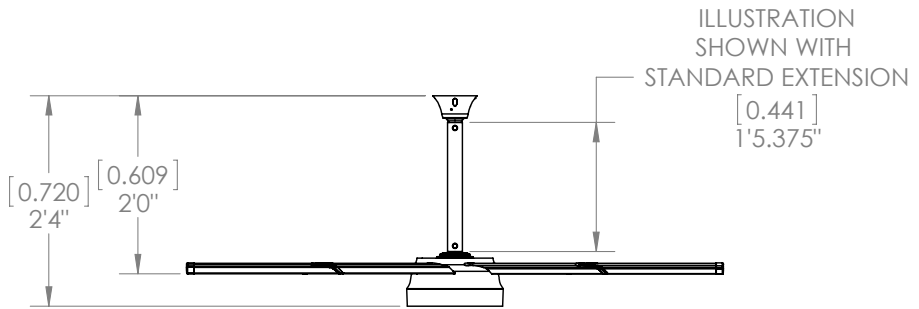
The table below shows the clearance needed from the fan to obstructions such as lighting / conduit / etc.

Minimum Clearance (Horizontal / Vertical inches):

Airfoil / Drop Length (ft)	1	2	3	4	5	6*	7*	8*	9*	10*
6 feet	7 / 7	7 / 7	7 / 7	8 / 8	9 / 8	8 / 7	9 / 8	10 / 8	12 / 9	14 / 9
8 feet	7 / 7	7 / 7	7 / 8	8 / 8	9 / 9	8 / 8	9 / 8	10 / 9	12 / 10	14 / 10
10 feet	7 / 7	7 / 8	7 / 8	8 / 9	9 / 10	8 / 9	9 / 9	10 / 10	12 / 11	14 / 11
12 feet	7 / 8	7 / 8	7 / 9	8 / 10	9 / 11	8 / 10	9 / 10	10 / 11	12 / 12	14 / 13

*Drop Lengths over 5 feet require the fixed angle mount

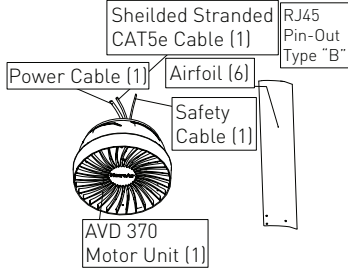
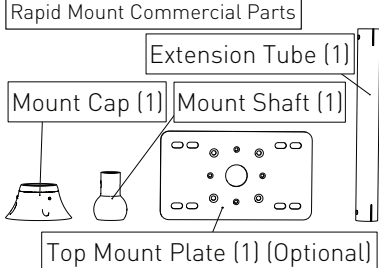
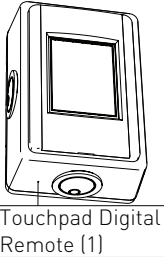
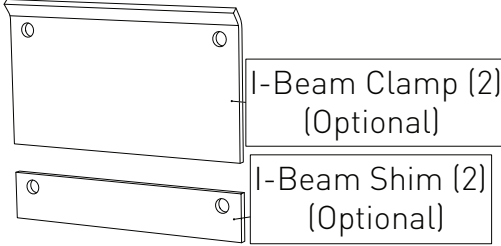
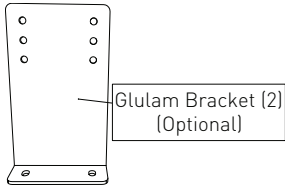
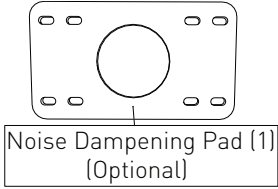

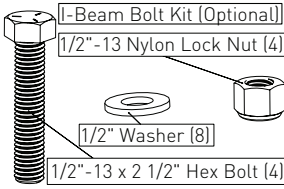
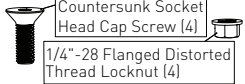
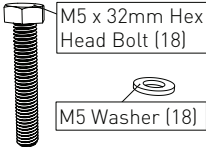
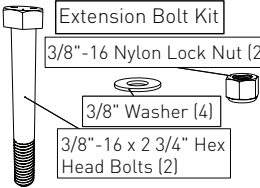
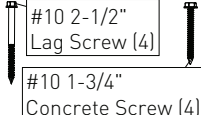
Fan Dimensions



The Model 370 has a standard airfoil to mounting point clearance of 2 feet [0.61 m] with the Rapid Mount Commercial. Refer to the Fan Clearance & Placement charts on pages 6-8 for required fan clearance and mounting conditions.

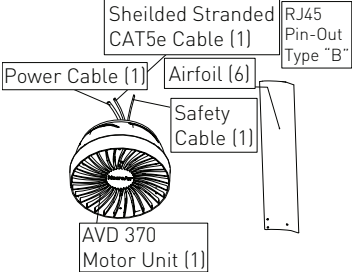
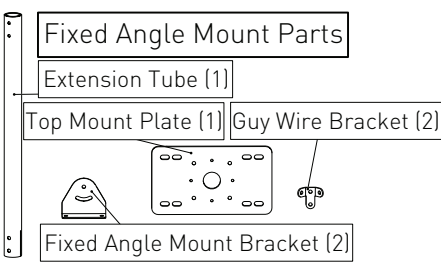
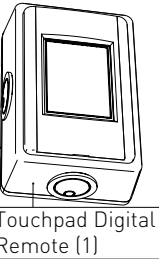
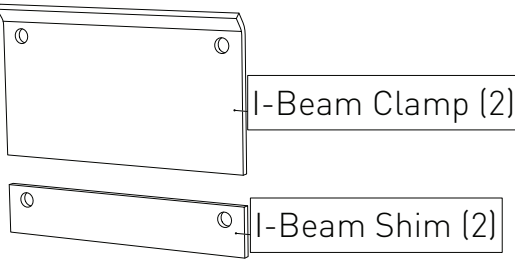

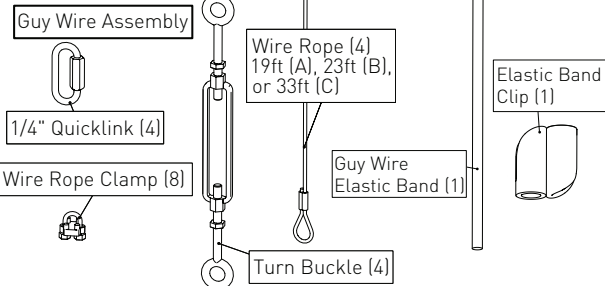
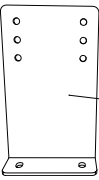
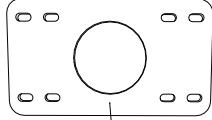
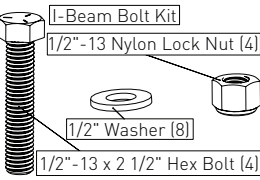
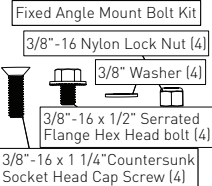
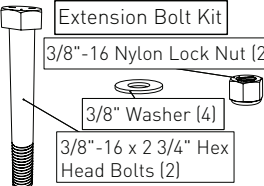
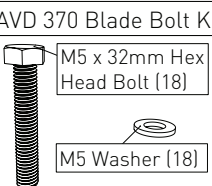
Components

[Rapid Mount Commercial]

 <p>Sheilded Stranded CAT5e Cable (1)</p> <p>Power Cable (1)</p> <p>Airfoil (6)</p> <p>Safety Cable (1)</p> <p>AVD 370 Motor Unit (1)</p> <p>RJ45 Pin-Out Type "B"</p>	 <p>Rapid Mount Commercial Parts</p> <p>Extension Tube (1)</p> <p>Mount Cap (1)</p> <p>Mount Shaft (1)</p> <p>Top Mount Plate (1) (Optional)</p>	
 <p>Touchpad Digital Remote (1)</p>	 <p>I-Beam Clamp (2) (Optional)</p> <p>I-Beam Shim (2) (Optional)</p>	
 <p>Glulam Bracket (2) (Optional)</p>	 <p>Noise Dampening Pad (1) (Optional)</p>	
 <p>Wire Rope Clamp (2)</p>	 <p>I-Beam Bolt Kit (Optional)</p> <p>1/2"-13 Nylon Lock Nut (4)</p> <p>1/2" Washer (8)</p> <p>1/2"-13 x 2 1/2" Hex Bolt (4)</p>	 <p>Rapid Mount Commercial Mounting Plate Bolt Kit (Optional)</p> <p>1/4"-28 x 3/4" Countersunk Socket Head Cap Screw (4)</p> <p>1/4"-28 Flanged Distorted Thread Locknut (4)</p>
 <p>AVD 370 Blade Bolt Kit</p> <p>M5 x 32mm Hex Head Bolt (18)</p> <p>M5 Washer (18)</p>	 <p>Extension Bolt Kit</p> <p>3/8"-16 Nylon Lock Nut (2)</p> <p>3/8" Washer (4)</p> <p>3/8"-16 x 2 3/4" Hex Head Bolts (2)</p>	 <p>Rapid Mount Commercial Mounting Screws</p> <p>#10 2-1/2" Lag Screw (4)</p> <p>#10 1-3/4" Concrete Screw (4)</p>

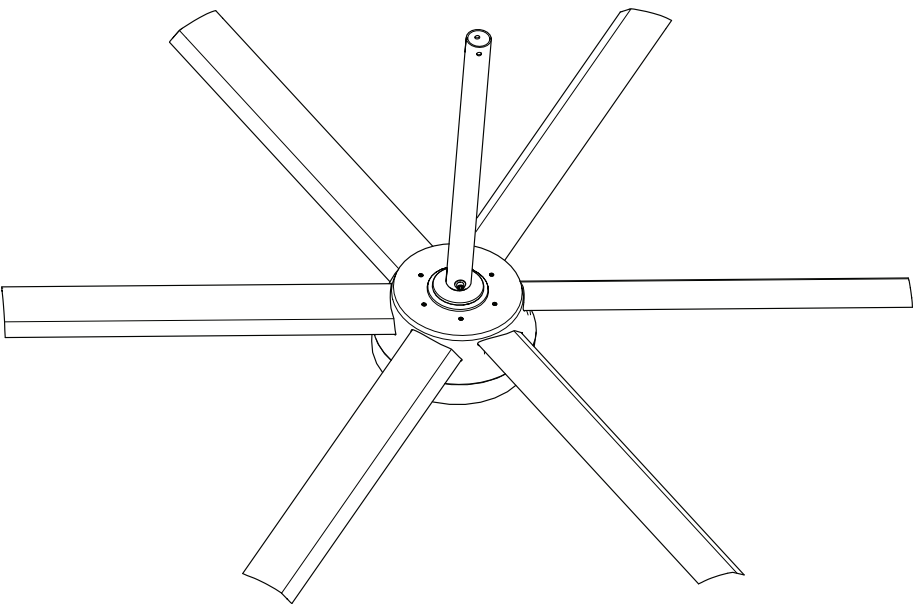
Make sure all parts listed above are included if you purchased the Rapid Mount Commercial. Read the entire manual before beginning the installation of the fan. Additional parts may be required, including, but not limited to, guy wire attachment hardware, extra cable, Unistrut, and bolts for Glulam mounting.

Components (Fixed Angle Mount)

 <p>Power Cable (1)</p> <p>Airfoil (6)</p> <p>Safety Cable (1)</p> <p>AVD 370 Motor Unit (1)</p> <p>Shielded Stranded CAT5e Cable (1)</p> <p>RJ45 Pin-Out Type "B"</p>	 <p>Fixed Angle Mount Parts</p> <p>Extension Tube (1)</p> <p>Top Mount Plate (1)</p> <p>Guy Wire Bracket (2)</p> <p>Fixed Angle Mount Bracket (2)</p>	
 <p>Touchpad Digital Remote (1)</p>	 <p>I-Beam Clamp (2)</p> <p>I-Beam Shim (2)</p>	
 <p>Wire Rope Clamp (2)</p>	 <p>Guy Wire Assembly</p> <p>1/4" Quicklink (4)</p> <p>Wire Rope Clamp (8)</p> <p>Wire Rope (4) 19ft (A), 23ft (B), or 33ft (C)</p> <p>Turn Buckle (4)</p> <p>Guy Wire Elastic Band (1)</p> <p>Elastic Band Clip (1)</p>	
 <p>Glulam Bracket (2) (Optional)</p>	 <p>Noise Dampening Pad (1) (Optional)</p>	 <p>I-Beam Bolt Kit</p> <p>1/2"-13 Nylon Lock Nut (4)</p> <p>1/2" Washer (8)</p> <p>1/2"-13 x 2 1/2" Hex Bolt (4)</p>
 <p>Fixed Angle Mount Bolt Kit</p> <p>3/8"-16 Nylon Lock Nut (4)</p> <p>3/8" Washer (4)</p> <p>3/8"-16 x 1/2" Serrated Flange Hex Head Bolt (4)</p> <p>3/8"-16 x 1 1/4" Countersunk Socket Head Cap Screw (4)</p>	 <p>Extension Bolt Kit</p> <p>3/8"-16 Nylon Lock Nut (2)</p> <p>3/8" Washer (4)</p> <p>3/8"-16 x 2 3/4" Hex Head Bolts (2)</p>	 <p>AVD 370 Blade Bolt Kit</p> <p>M5 x 32mm Hex Head Bolt (18)</p> <p>M5 Washer (18)</p>

Make sure all parts listed above are included if you purchased the Fixed Angle Mount. Read the entire manual before beginning the installation of the fan. Additional parts may be required, including, but not limited to, guy wire attachment hardware, extra cable, Unistrut, and bolts for Glulam mounting.

Fan Components and Tools



Tools Required:

For All Mounts:

- Torque Wrench
- Level
- Phillips Screwdriver
- 3/8" Wrench
- 9/16 Wrench
- 5/16" Socket
- 9/16" Socket

For Rapid Mount Commercial:

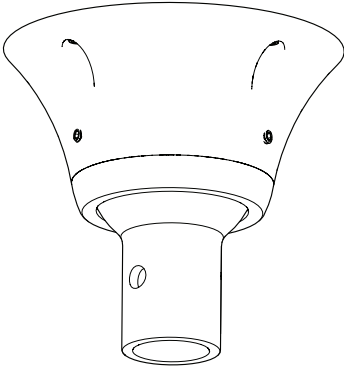
- Needle Nose Pliers
- Cordless Drill ----->For Glulam Mounting
- 1/4" Socket ----->For Direct Glulam Mounting
- 3/16" Hex Bit Socket ->For Unistrut Mounting
- 3/4" Wrench ----->For I-Beam & Glulam Brackets
- 3/4" Socket ----->For I-Beam & Glulam Brackets
- 1/8" Allen Wrench (Provided)
- 5/32" Allen Wrench (Provided)
-----> For I-Beam & Glulam Brackets

For Fixed Angle Mount:

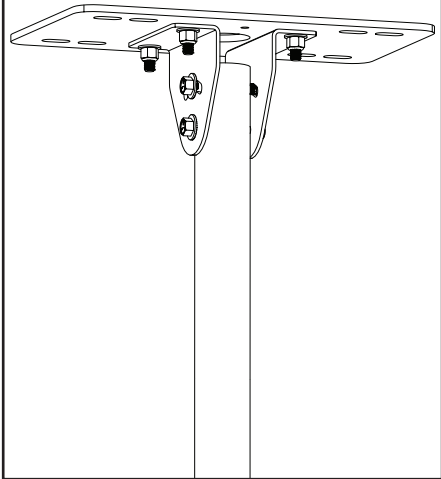
- Cordless Drill-----> For Glulam Mounting Only
- 1/2" Wrench
- 3/4" Wrench
- 3/4" Socket
- 7/32" Allen Wrench (Provided)

Mounts

Rapid Mount Commercial
Turn to page 14



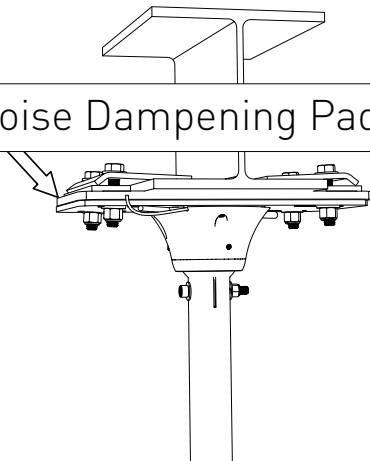
Fixed Angle Mount
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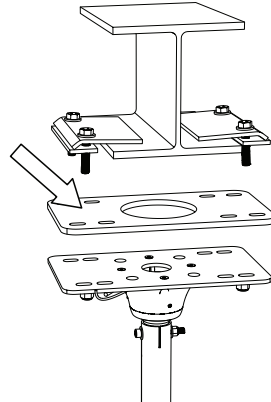
If using the Universal Mount, please refer to the AVD 550/780 manual for proper mounting instruction, which can be found at www.EnergyLogicfans.com/resources/

If you purchased the Noise/Vibration Dampening Pad (optional):

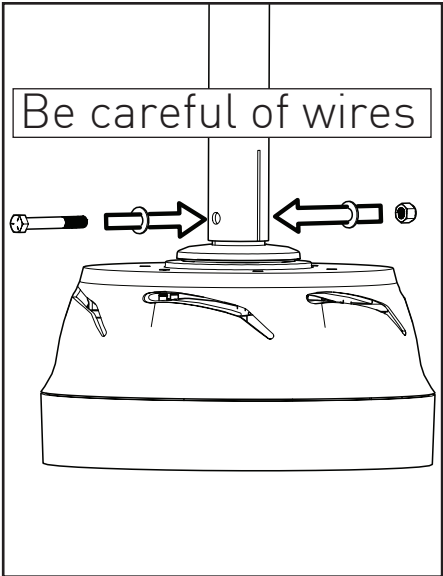
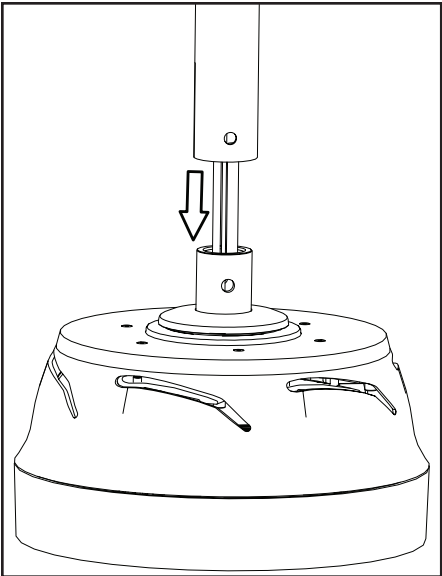
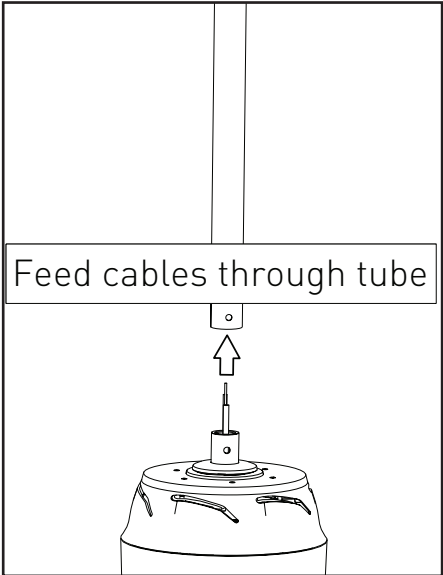
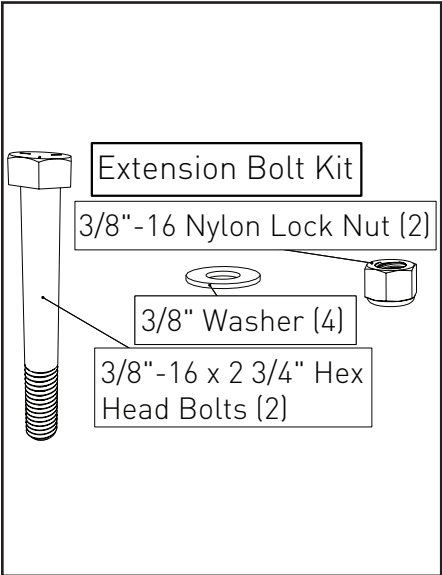
Noise Dampening Pad



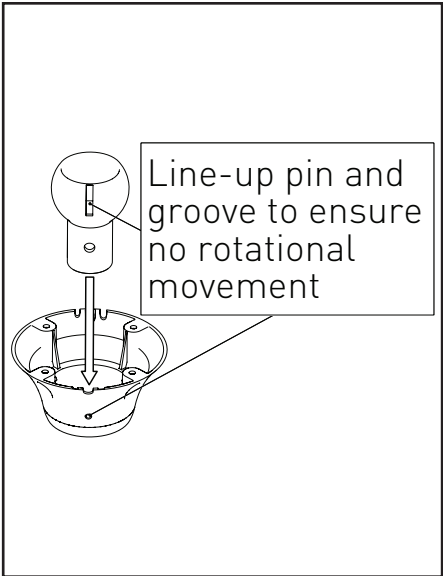
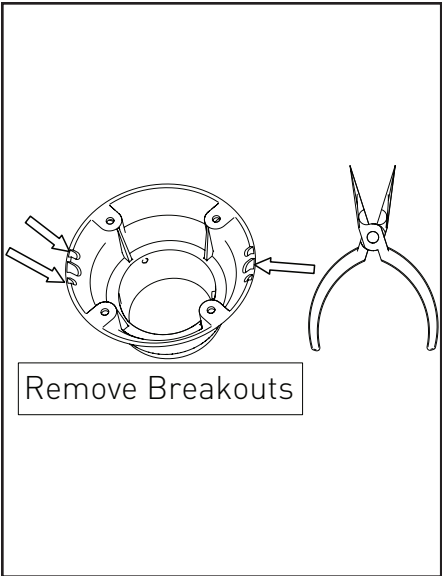
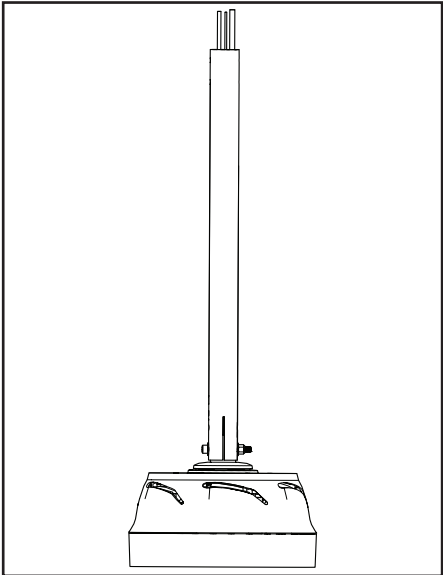
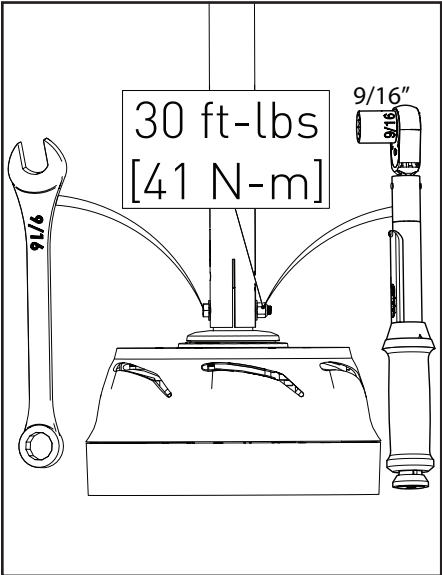
Place Noise Dampening Pad between mount and mounting surface for all mounts and mounting styles.



1.1 Rapid Mount Commercial Motor & Extension Tube

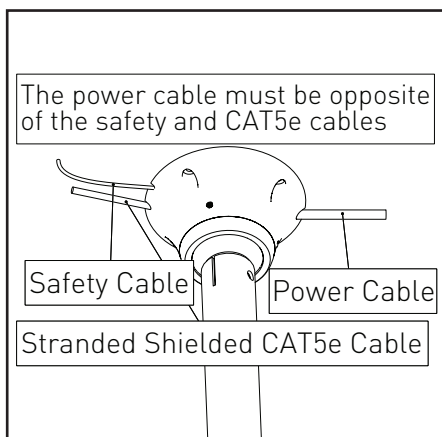
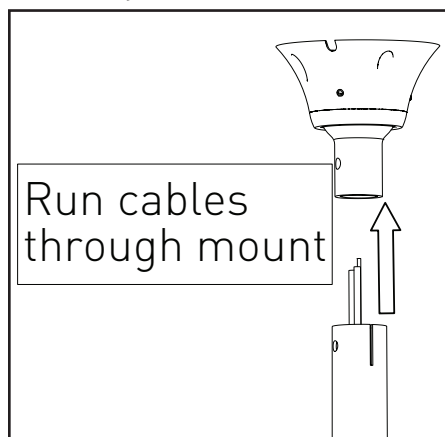


1.1 Rapid Mount Commercial Motor & Extension Tube



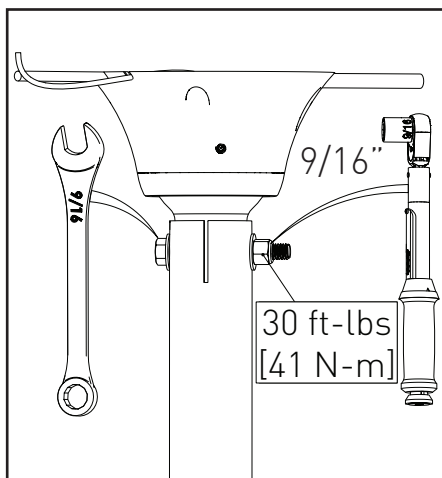
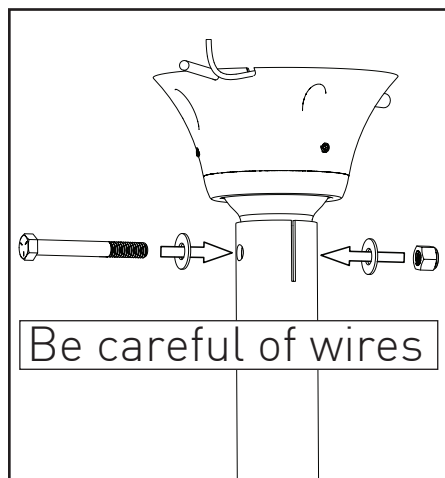
1.1 Rapid Mount Commercial Motor & Extension Tube

The communications cable **MUST** be routed at least 1 foot away from power cables, high voltage power wires, and fluorescent lighting. The only point where the power cable should be near the comm wire is when they are in the mount and extension tube.



NOTE: Power cable must be routed into the mount on the opposite side from safety cable and CAT5e cable.

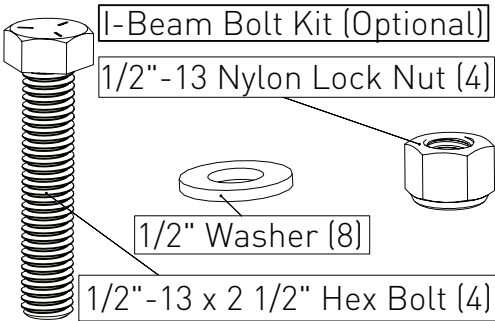
CAT5e Shielded must be used at a minimum. No unshielded comm cables.



The set screws in the mount will be tightened once the mount is securely fastened to the building.

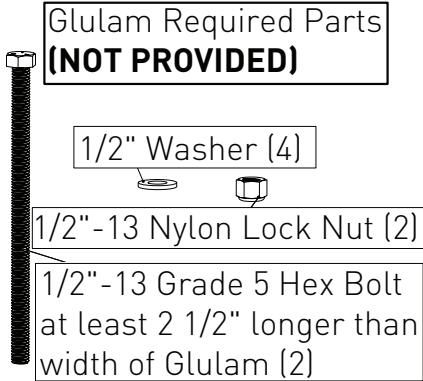
1.2 Rapid Mount Commercial Bolt Kits

The I-Beam Bolt Kit is included with both I-Beam and Glulam brackets. **Additional parts must be purchased if mounting to a Glulam (with the glulam bracket) or Unistrut.**



For mounting to steel trusses over 3 inches in width, use the I-Beam mounting method. For widths under 3 inches, use Unistrut span mounting.

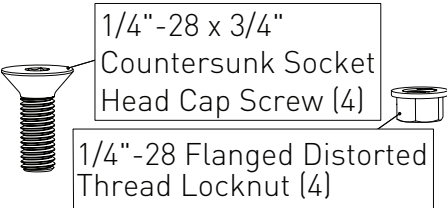
If you wish to mount to a different surface than these listed here, contact a structural engineer.



Direct Glulam mounting starts on page 18

Glulam Bracket mounting starts on page 21

Rapid Mount Commercial Mounting Plate Bolt Kit (Optional)




I-Beam mounting starts on page 25


Unistrut mounting starts on page 29

1.2.1 Rapid Mount Commercial Glulam (Direct Mounting)

Glulams and wood beams must be at least 6" wide to use this mounting method. For narrower beams, use Glulam Brackets (sold separately) or span across two or more beams using the Unistrut mounting method.

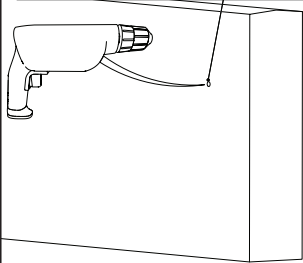
Rapid Mount Commerical Mounting Screws

#10 2-1/2" Lag Screw (4)

#10 1-3/4" Concrete Screw (4)

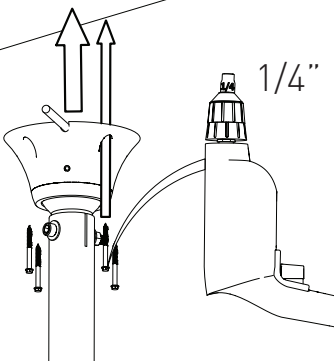
While concrete screws are provided, contacting a structural engineer is required for mounting to Concrete.

1/8" safety cable clearance



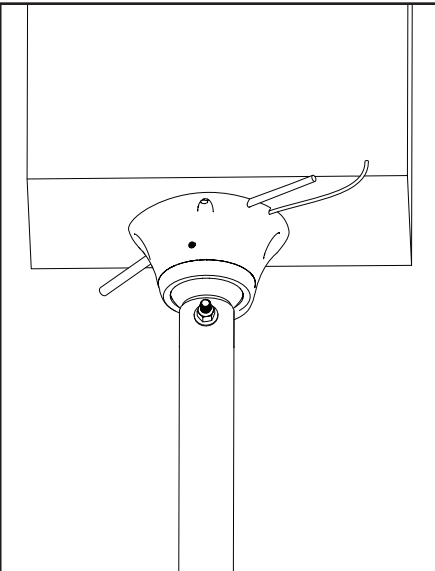
Glulam / Wood Beam

Position the mount so that the screws are as far away from the edge of the beam as possible



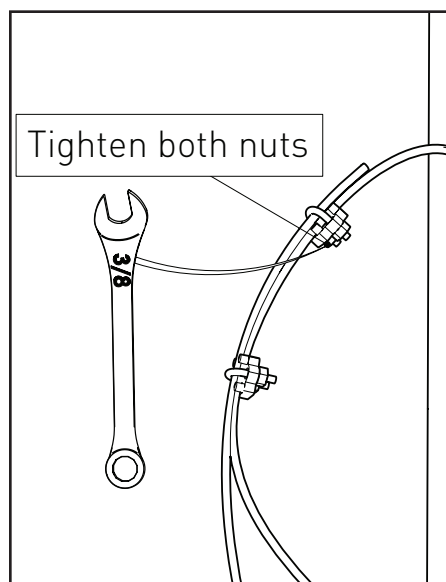
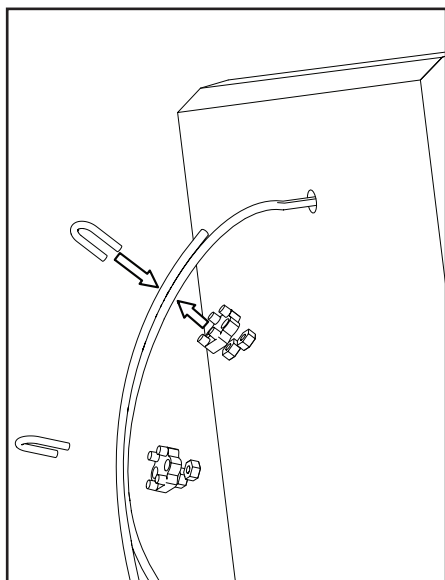
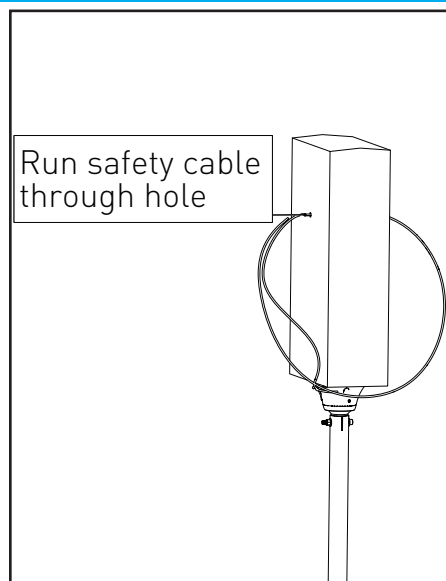
1/4"

Drill a pilot hole before installing screws

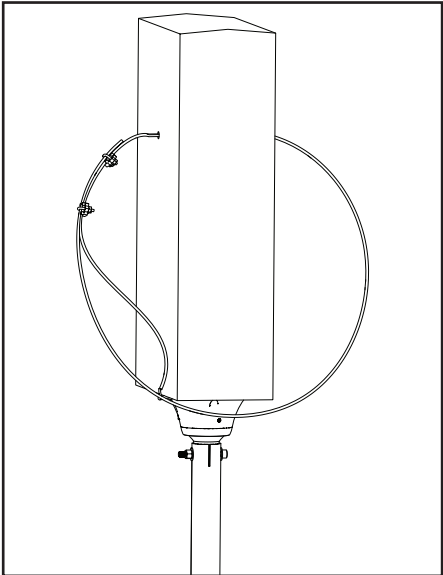
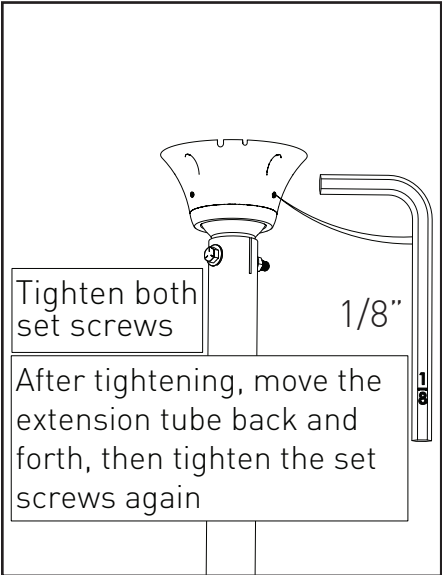


1.2.1 Rapid Mount Commercial Glulam (Direct Mounting)

WARNING: Do not put too much tension on the safety cable. There needs to be a small amount of slack present in the safety cable for proper functioning. Avoid sharp edges.



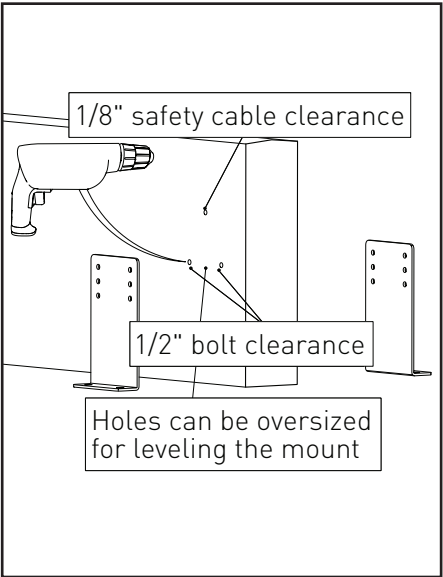
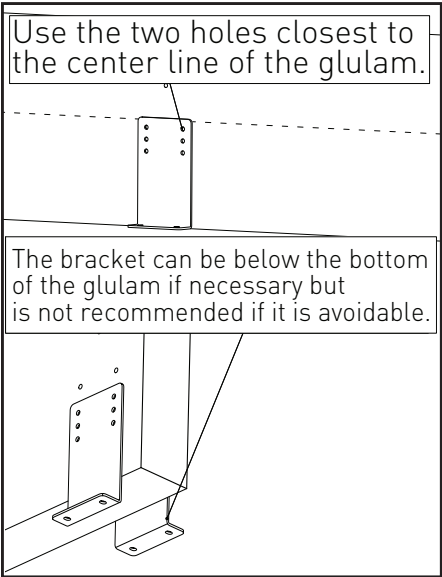
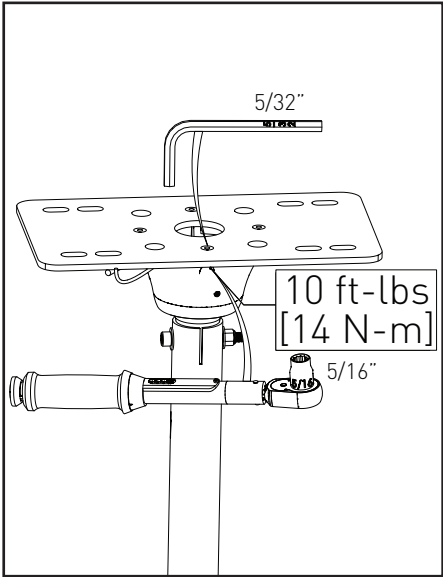
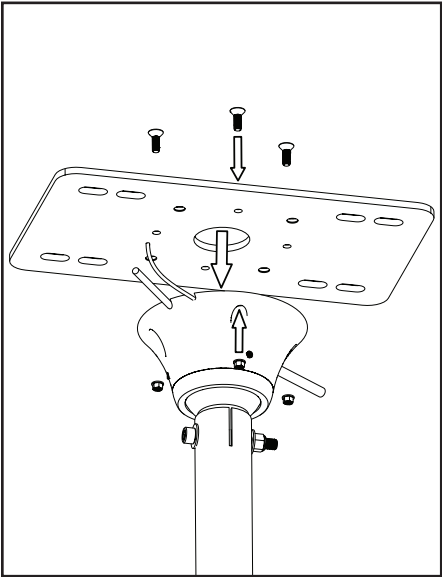
1.2.1 Rapid Mount Commercial Glulam (Direct Mounting)



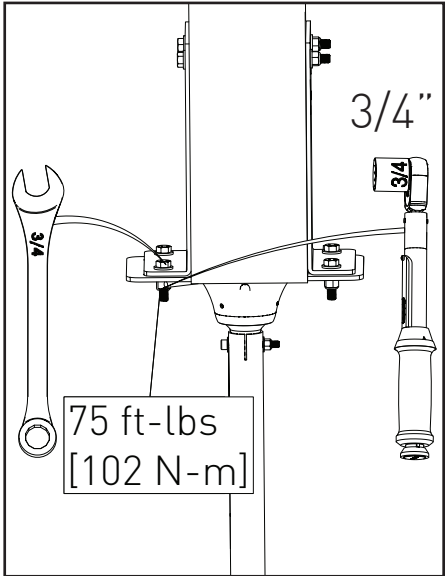
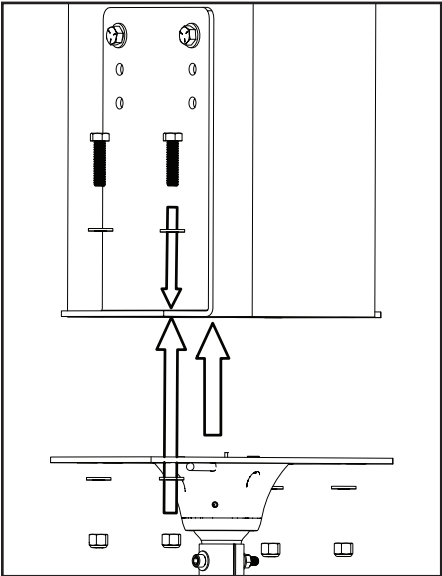
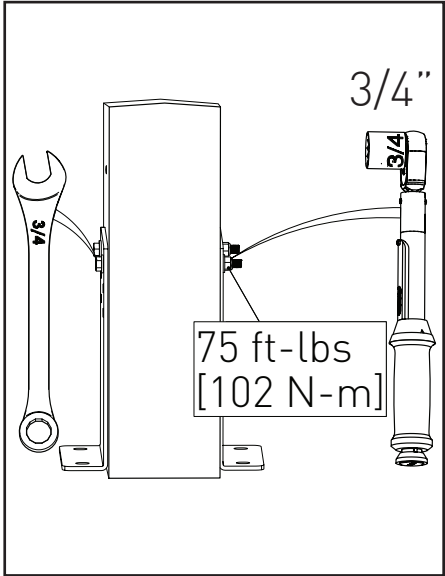
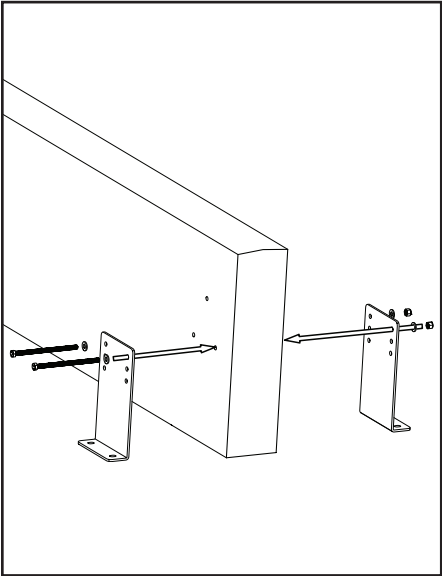
Complete safety cable installation and turn to page 50

1.2.2 Rapid Mount Commercial Glulam (with Glulam Brackets)

This method is recommended for Glulams or wood beams between 4-1/8" or wider. For narrower beams, span across two or more beams using the Unistrut mounting method.

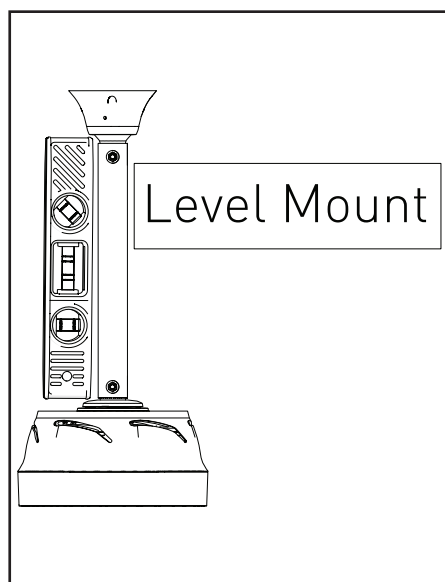
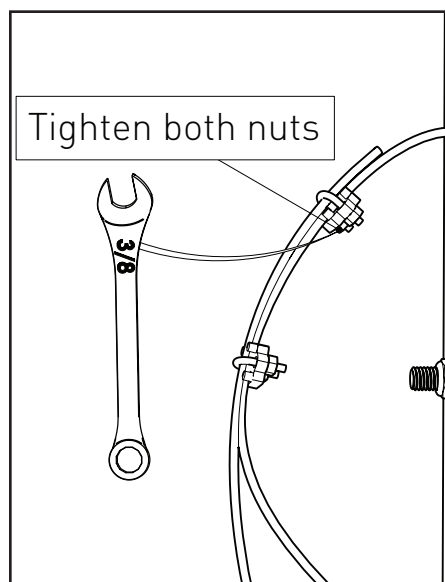
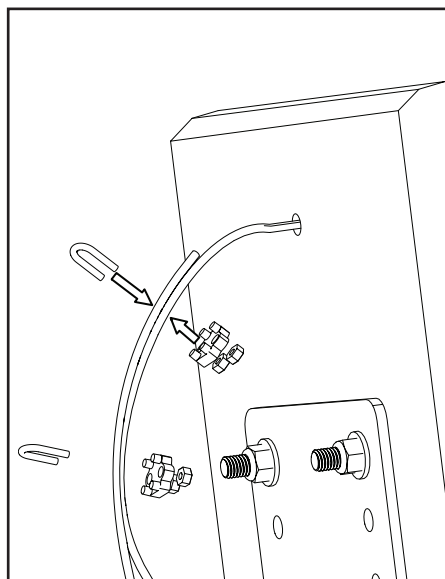
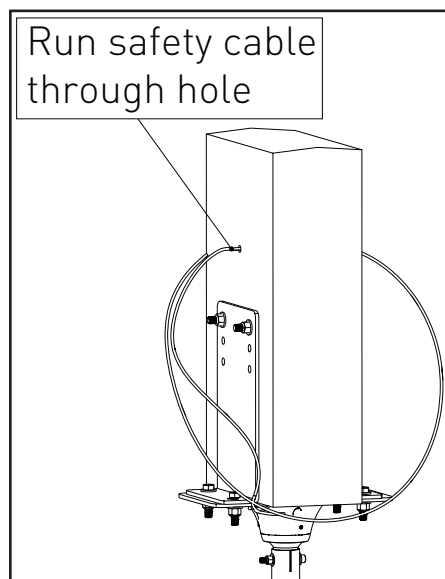


1.2.2 Rapid Mount Commercial Glulam (with Glulam Brackets)

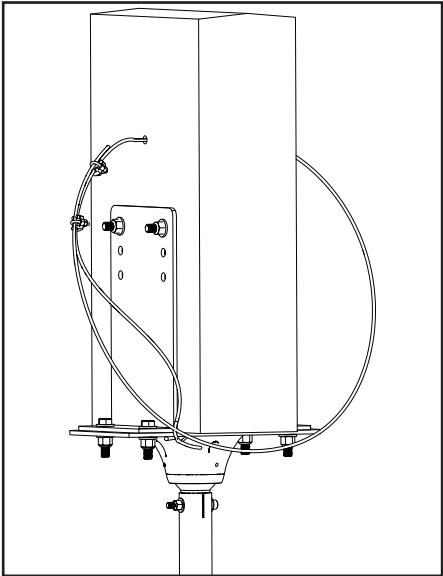
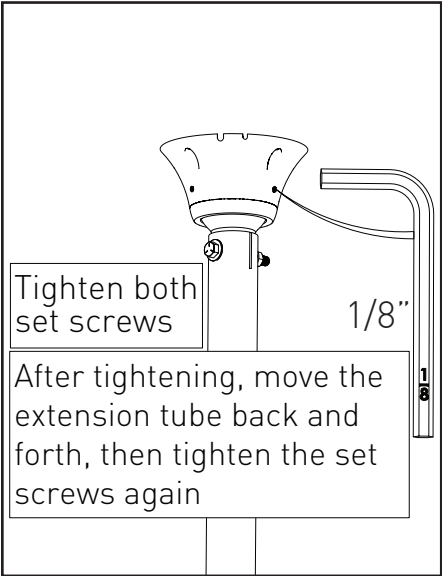


1.2.2 Rapid Mount Commercial Glulam (with Glulam Brackets)

WARNING: Do not put too much tension on the safety cable. There needs to be a small amount of slack present in the safety cable for proper functioning. Avoid sharp edges.



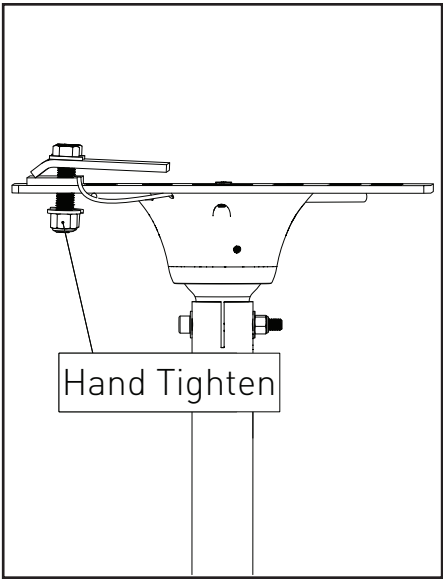
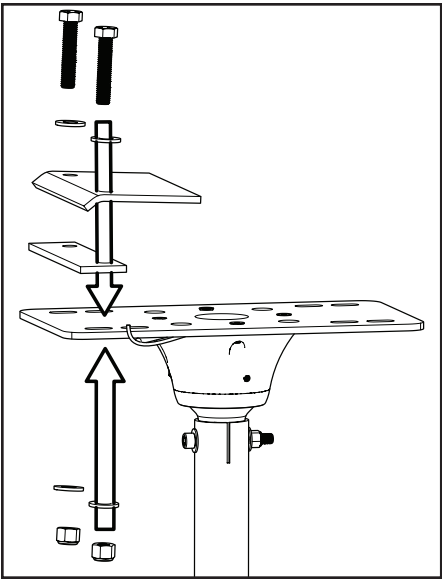
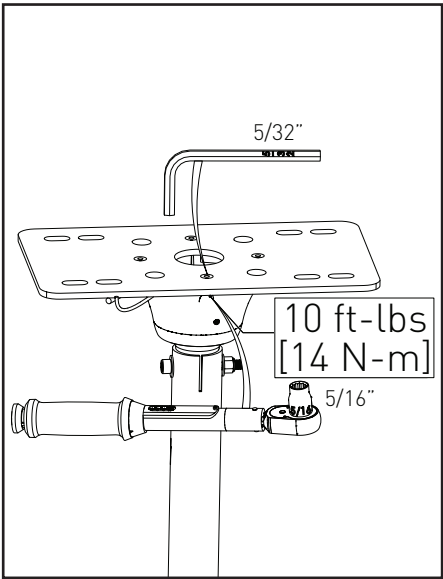
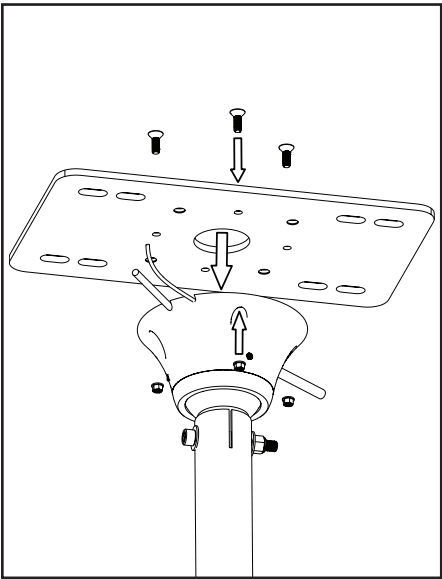
1.2.2 Rapid Mount Commercial Glulam (with Glulam Brackets)



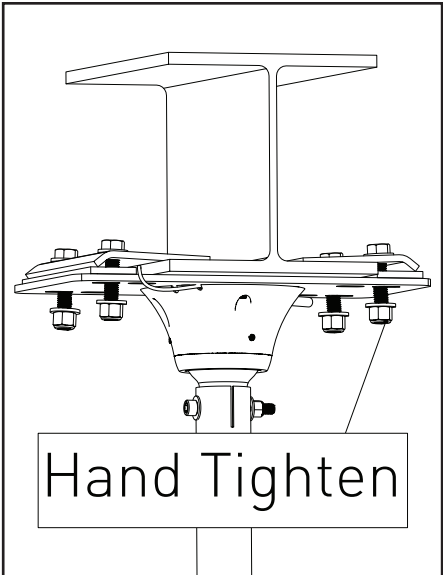
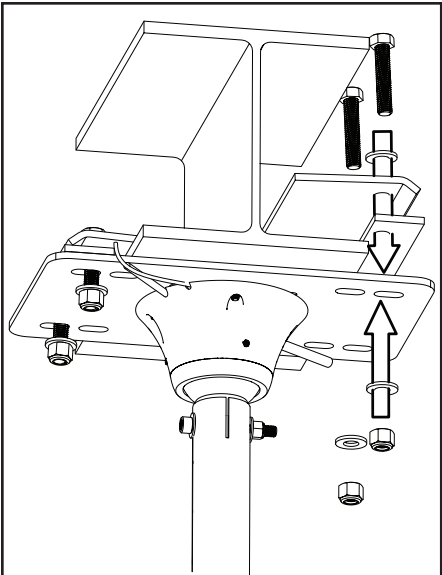
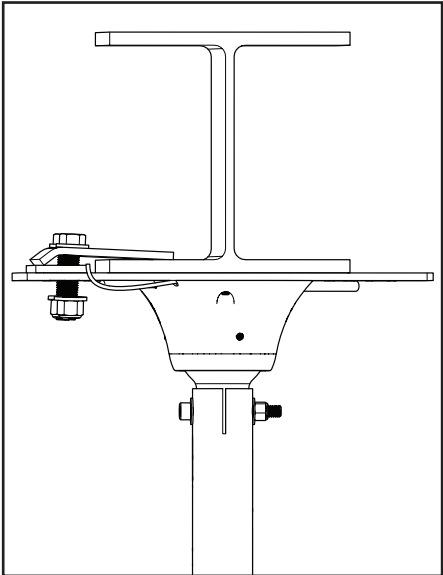
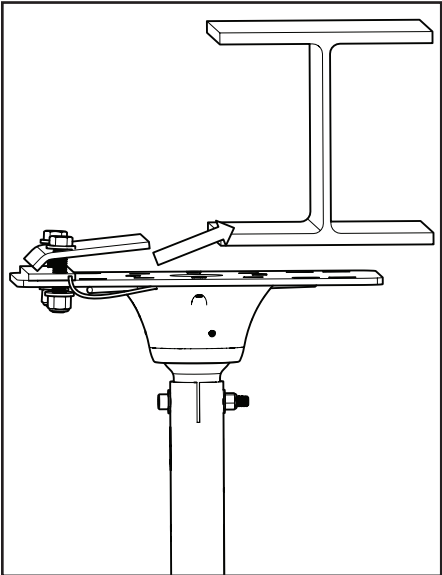
Complete safety cable installation and turn to page 50

1.2.3 Rapid Mount Commercial I-Beam

Use this method for steel trusses and I-beams over 3" in width.

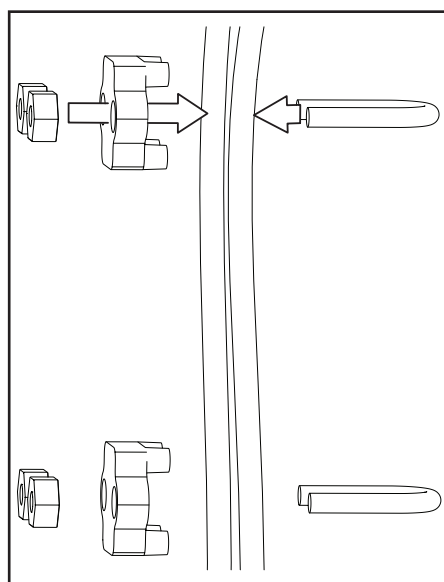
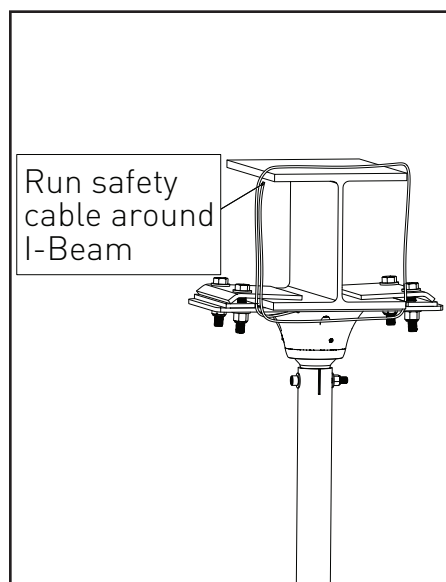
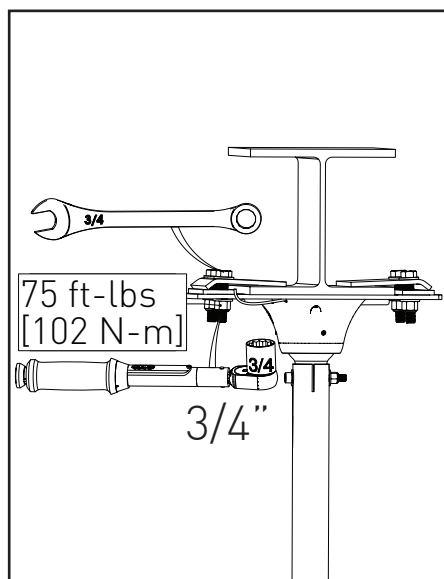
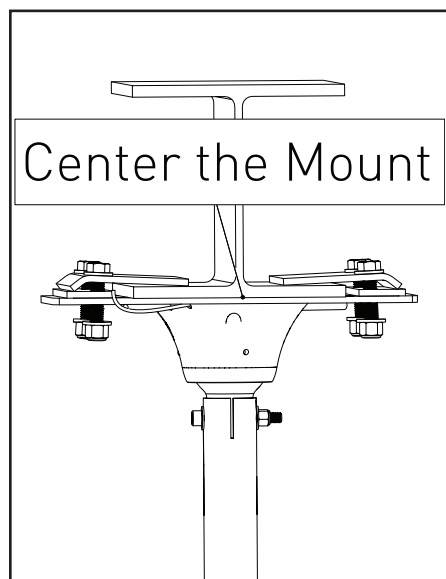


1.2.3 Rapid Mount Commercial I-Beam

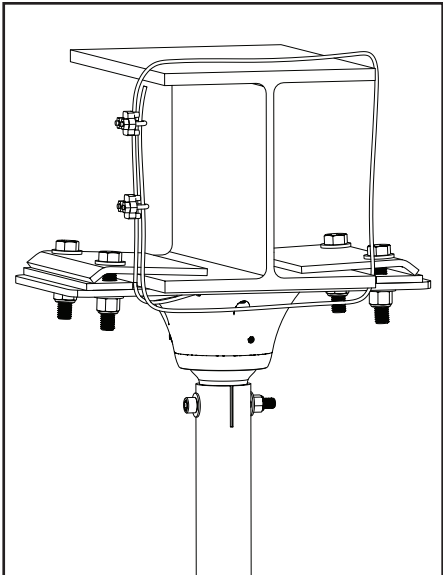
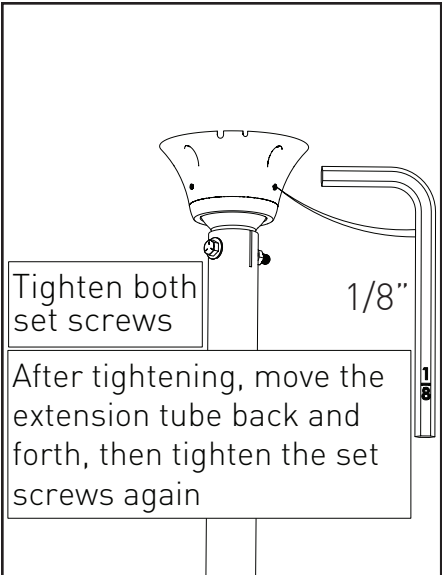
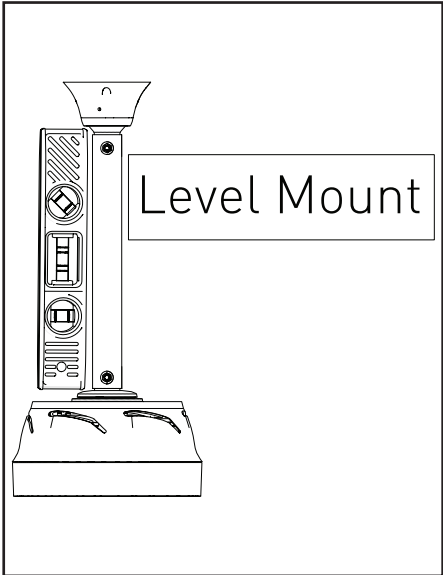
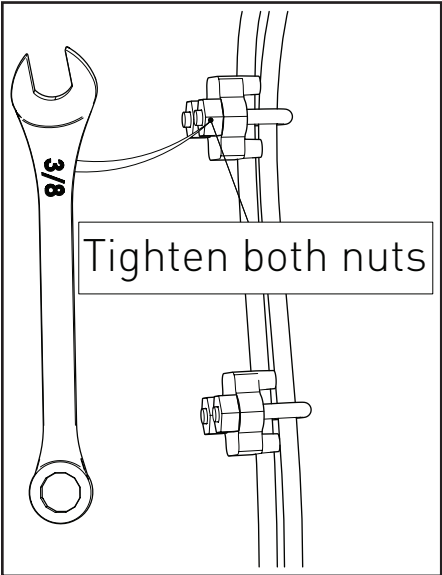


1.2.3 Rapid Mount Commercial I-Beam

WARNING: Do not put too much tension on the safety cable. There needs to be a small amount of slack present in the safety cable for proper functioning. Avoid sharp edges.



1.2.3 Rapid Mount Commercial I-Beam



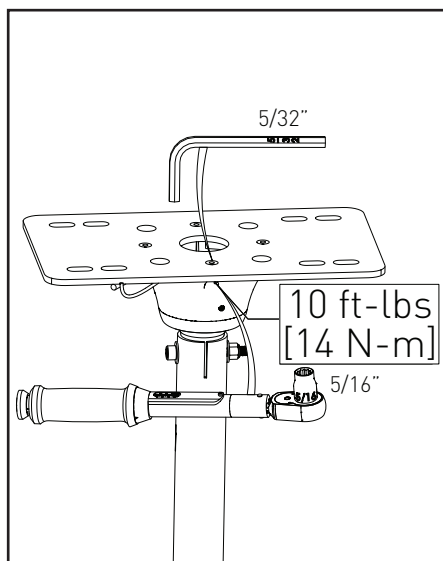
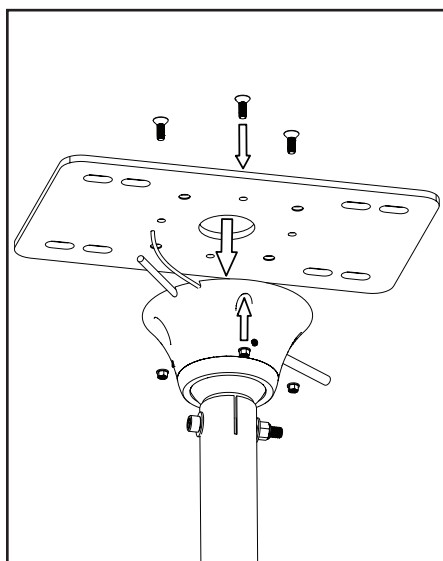
Complete safety cable installation and turn to page 50

1.2.4 Rapid Mount Commercial Unistrut

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).

If the spanning distance is greater than 8 feet, please consult a Structural Engineer. Please refer to page 4 for the maximum torque and weight values.

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.




1.2.4 Rapid Mount Commercial Unistrut

Unistrut Required Parts
(NOT PROVIDED)

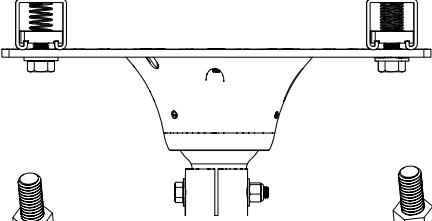
1/2"-13 x 1 1/2" Hex Bolt (4)

1/2" Washer (4)

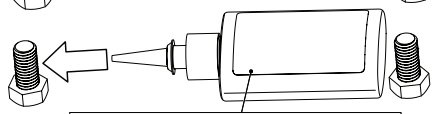
1/2"-13 Unistrut Spring Nut (4)



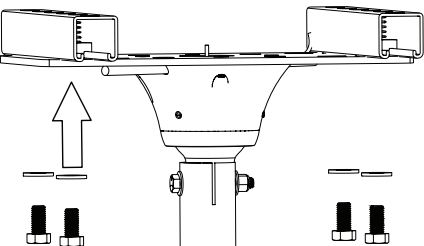
12-7/8"



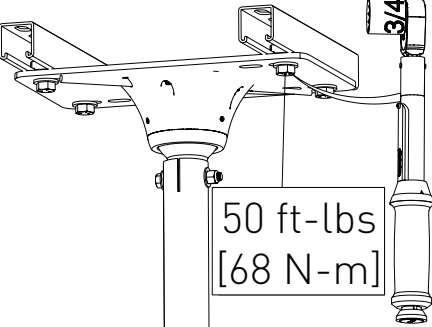
Loctite 243 recommended



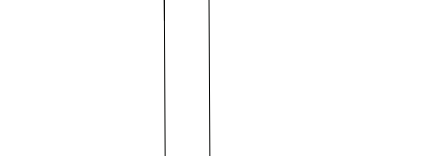
Minimum 1-5/8" Unistrut Unpierced Channels (P1000 or P1001B)



3/4"



50 ft-lbs
[68 N-m]

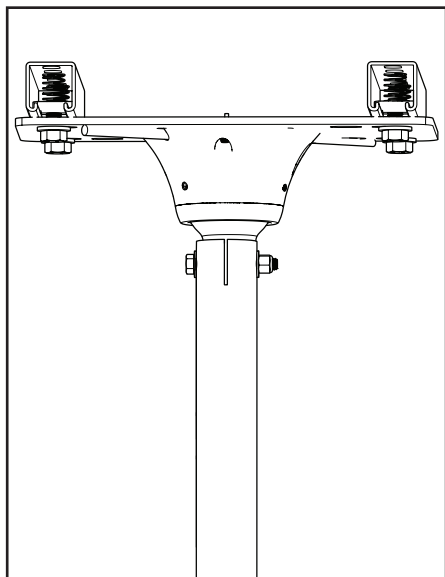
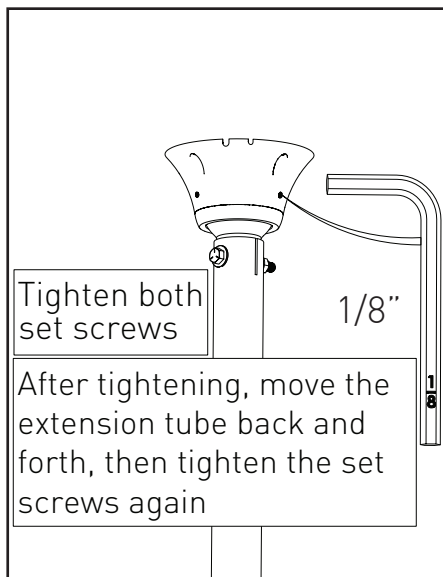
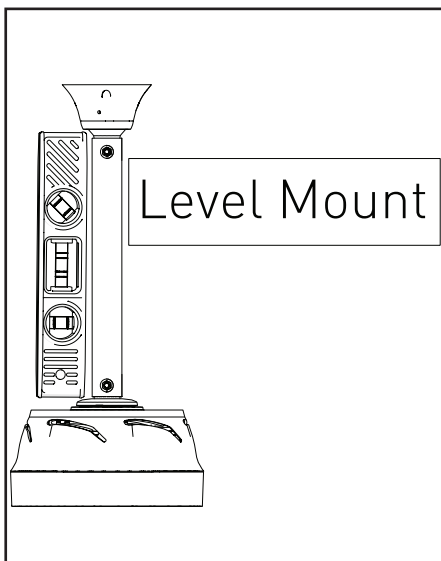


1.2.4 Rapid Mount Commercial Unistrut

WARNING: Do not put too much tension on the safety cable. There needs to be a small amount of slack present in the safety cable for proper functioning. Avoid sharp edges.

Now Attach safety cable

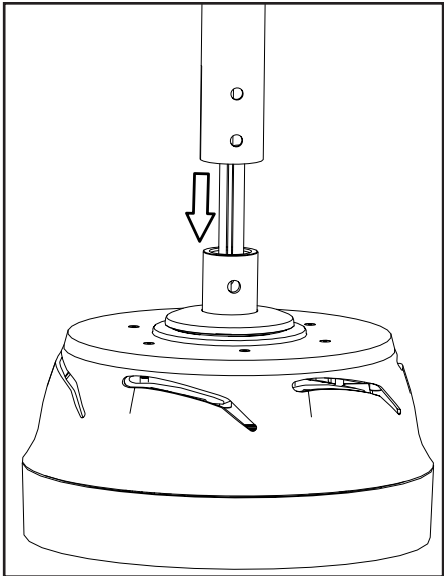
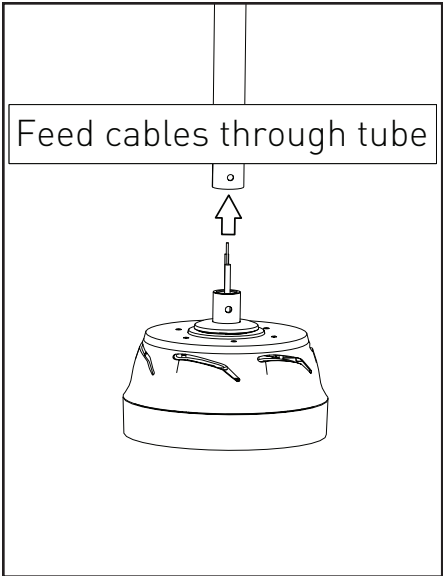
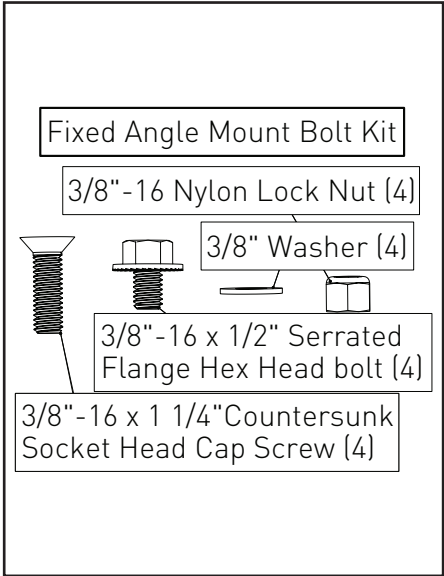
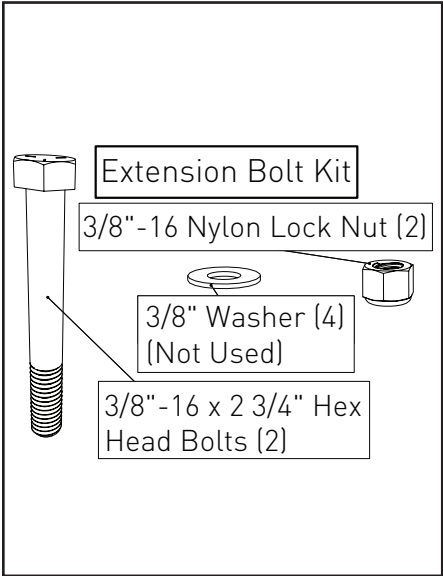
The safety cable must be securely attached to the building structure and **NOT the unistrut**. It can be attached to I-beams, steel trusses, or Glulams as shown in sections 1.2.1, 1.2.2 and 1.2.3. Avoid sharp edges. If you are unsure how to secure the safety cable properly, contact a structural engineer.



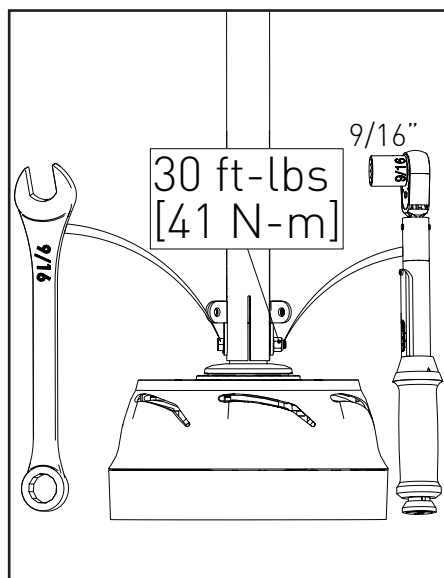
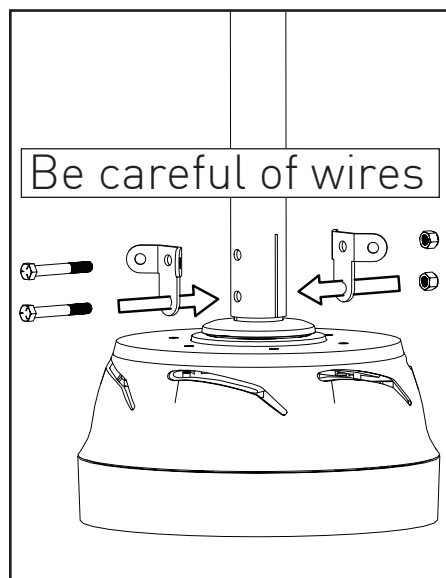
Complete safety cable installation and turn to page 50

2.1 Fixed Angle Mount

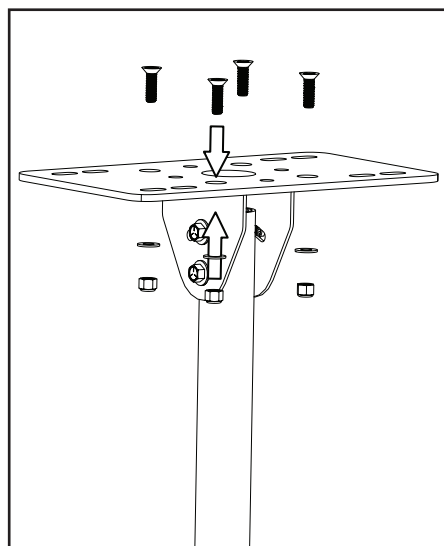
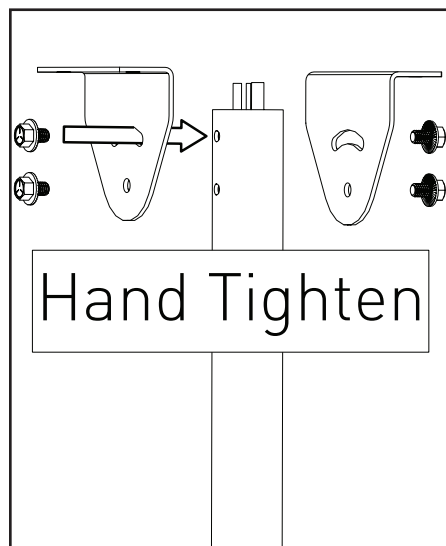
Motor & Extension Tube



2.1 Fixed Angle Mount Motor & Extension Tube

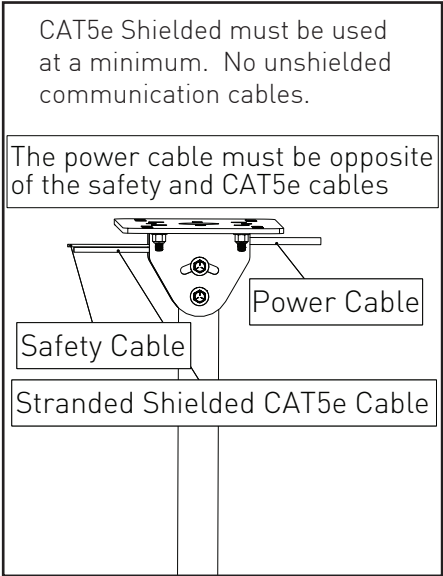
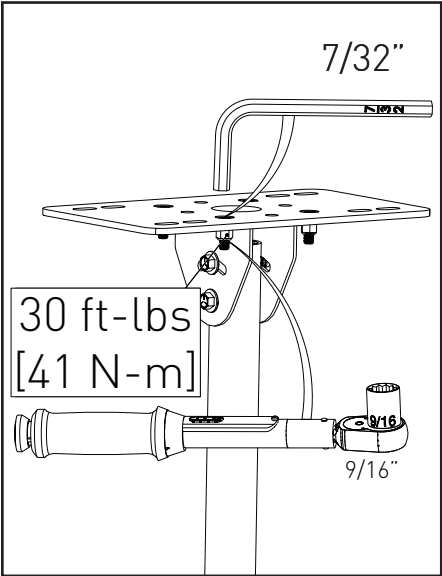


Must use Guy Wire Brackets when installing the Fixed Angle Mount.

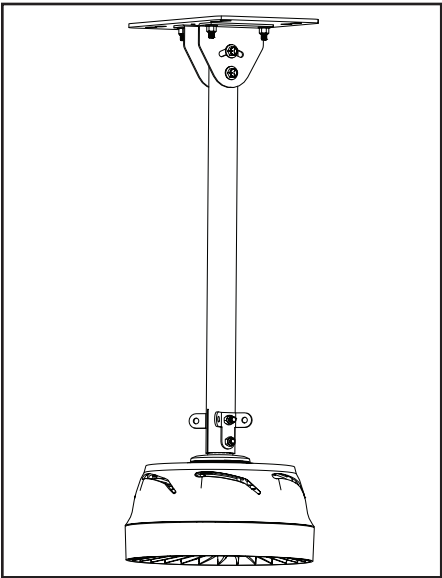


The bolts attaching the Fixed Angle Mount brackets to the extension tube (bottom left picture) will be torqued after securing the mount to the building (later on in this manual).

2.1 Fixed Angle Mount Motor & Extension Tube



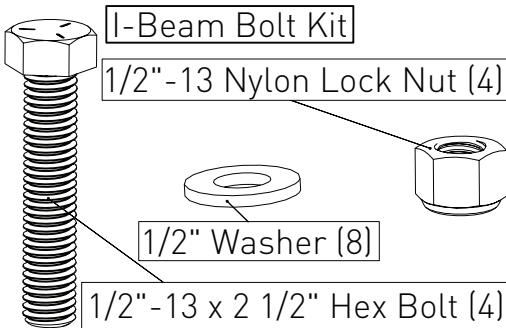
NOTE: Power cable must be routed into the mount on the opposite side from safety cable and CAT5e cable.



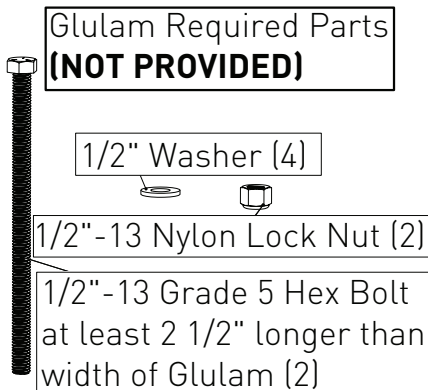
The communications cable **MUST** be routed at least 1 foot away from power cables, high voltage power wires, and fluorescent lighting. The only point where the power cable should be near the comm wire is when they are in the mount and extension tube.

2.2 Fixed Angle Mount Bolt Kits

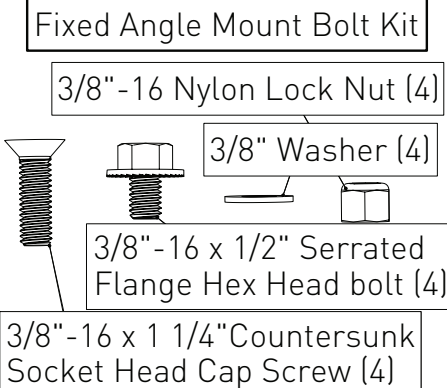
The I-Beam Bolt Kit is included with both I-Beam and Glulam brackets. **Additional parts must be purchased if mounting to a Glulam or Unistrut.**



For mounting to steel trusses over 3 inches in width, use the I-Beam mounting method. For widths under 3 inches, use Unistrut span mounting.



If you wish to mount to a different surface than these listed here, contact a structural engineer.



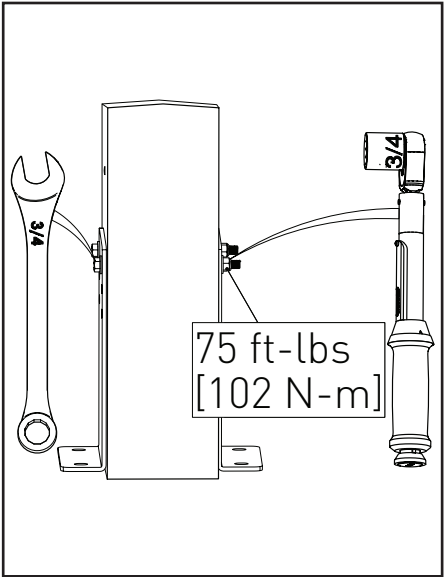
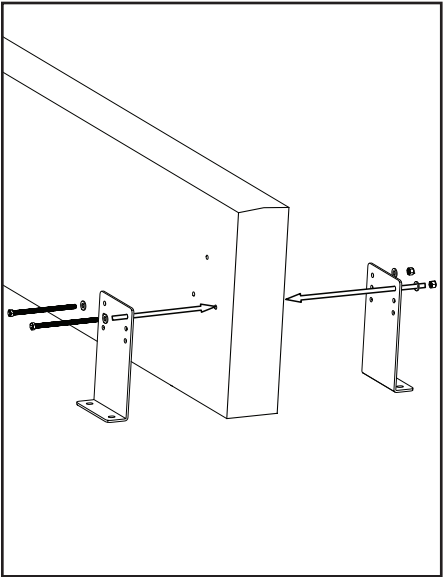
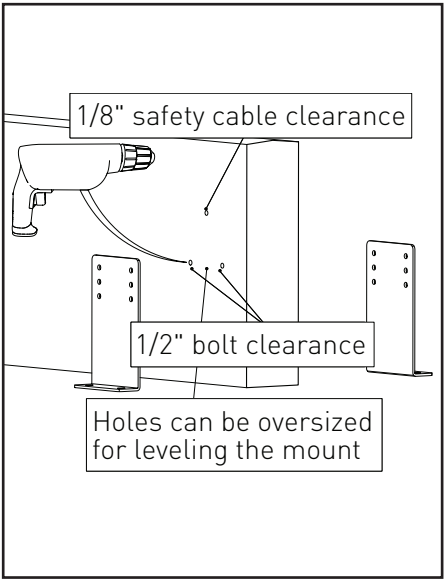
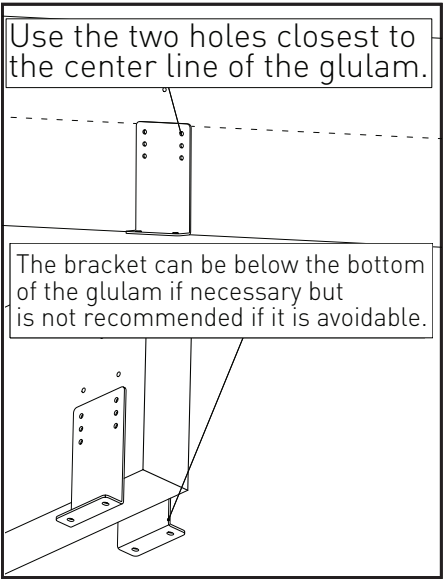
Glulam mounting starts on page 36

I-Beam mounting starts on page 39

Unistrut mounting starts on page 43

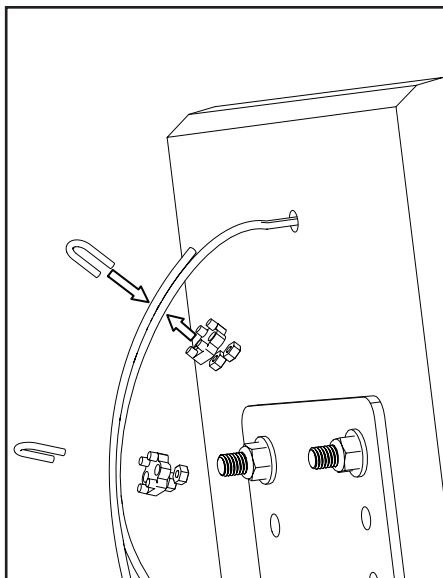
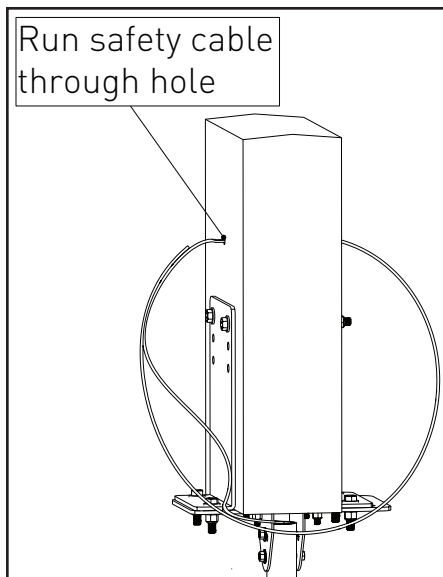
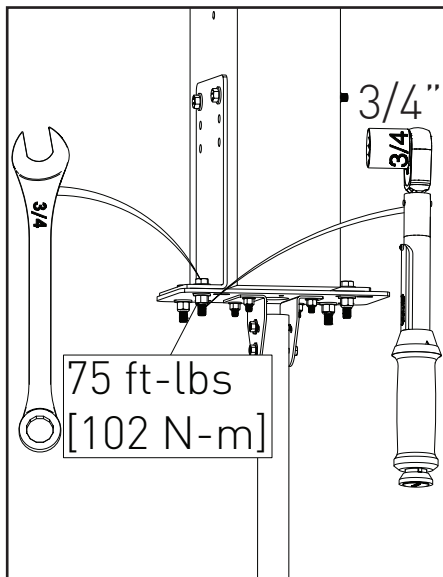
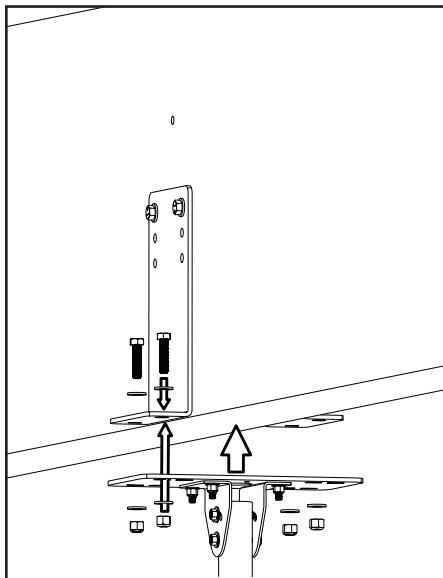
2.2.1 Fixed Angle Mount **Glulam**

This method is recommended for Glulams or wood beams between 4-1/8" or wider. For narrower beams, span across two or more beams using the Unistrut mounting method.

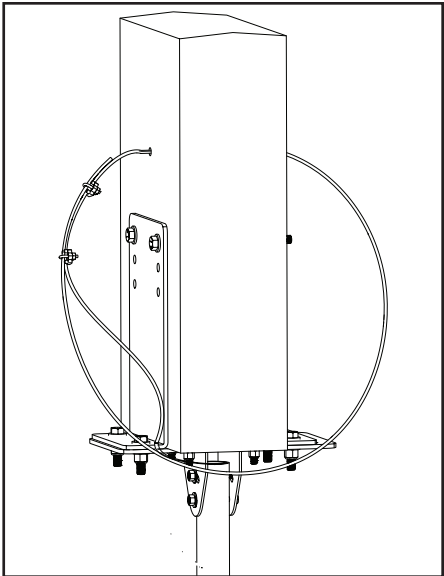
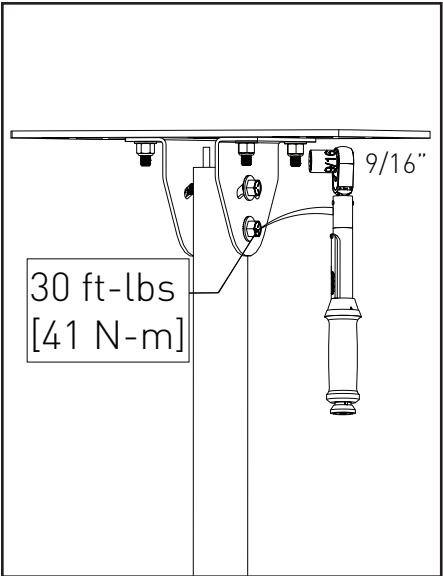
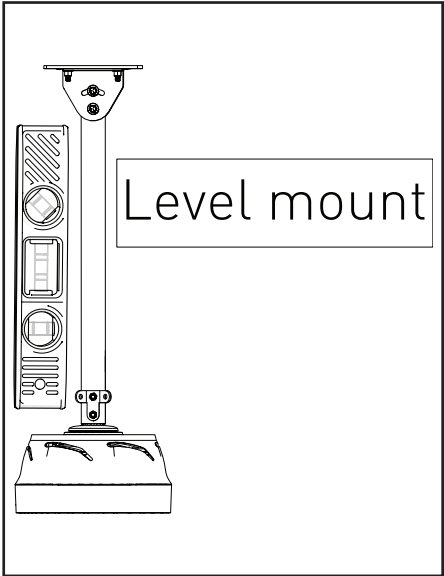
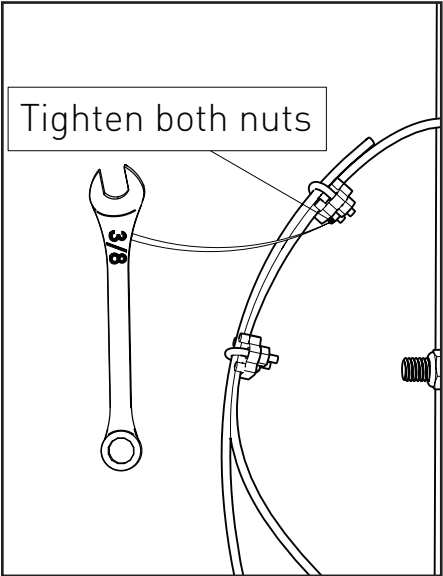


2.2.1 Fixed Angle Mount **Glulam**

WARNING: Do not put too much tension on the safety cable. There needs to be a small amount of slack present in the safety cable for proper functioning. Avoid sharp edges.



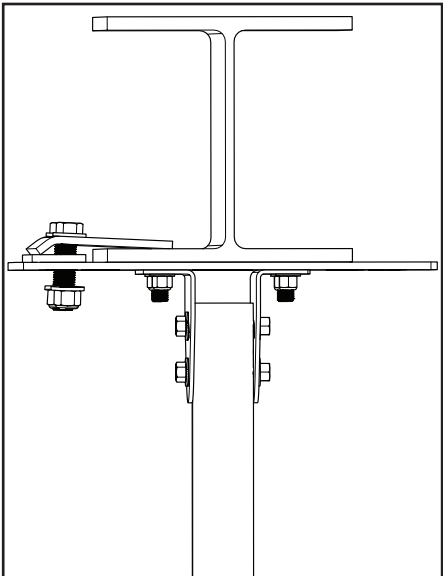
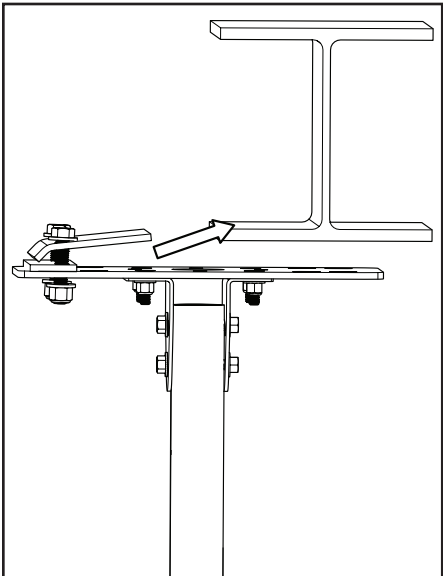
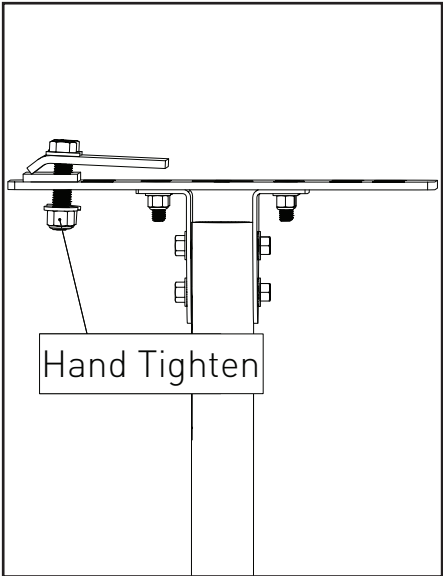
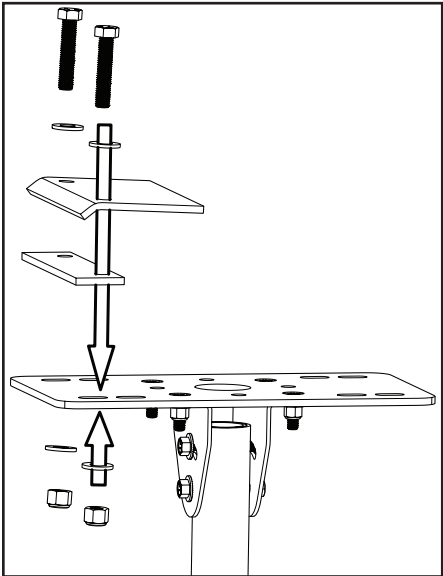
2.2.1 Fixed Angle Mount **Glulam**



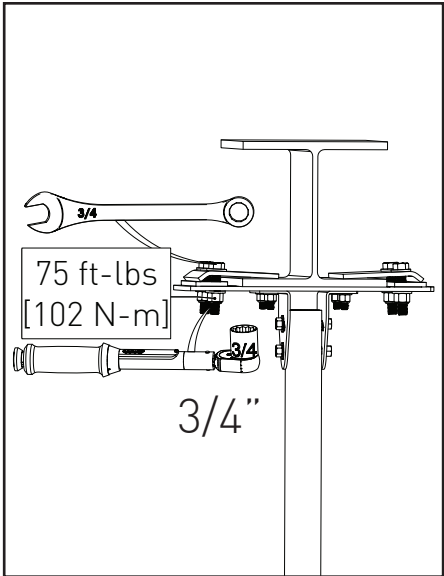
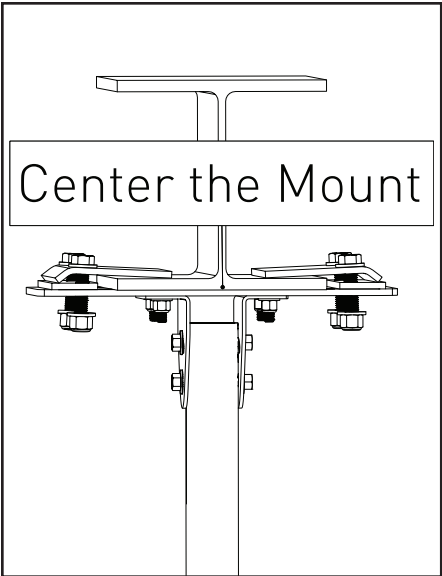
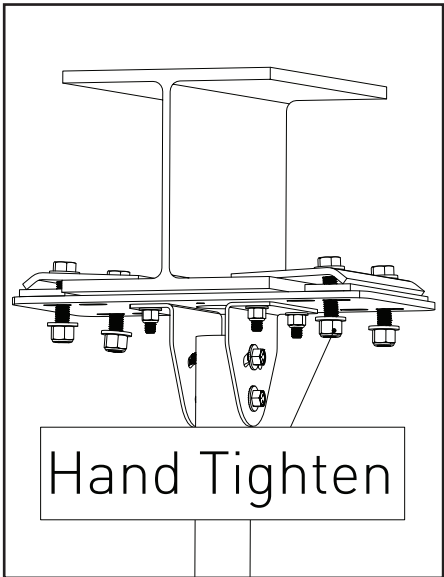
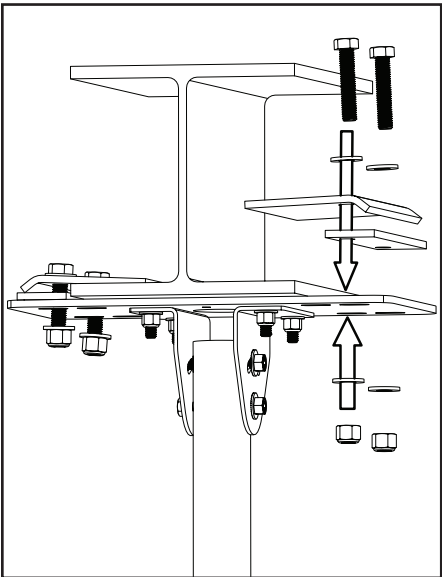
Complete safety cable installation and turn to page 46

2.2.2 Fixed Angle Mount I-Beam

Use this method for steel trusses and I-beams over 3" in width.

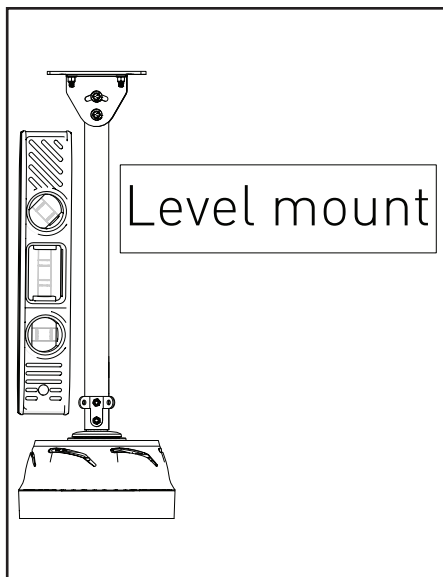
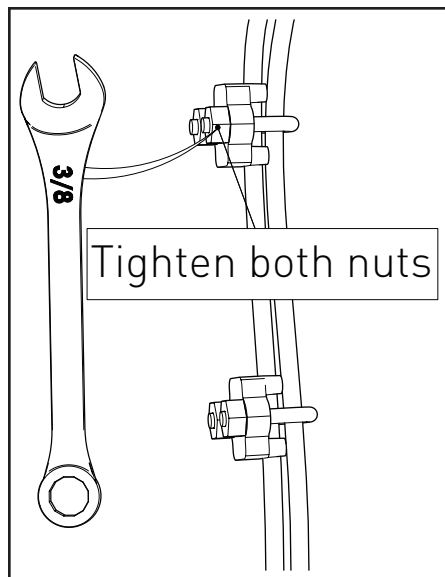
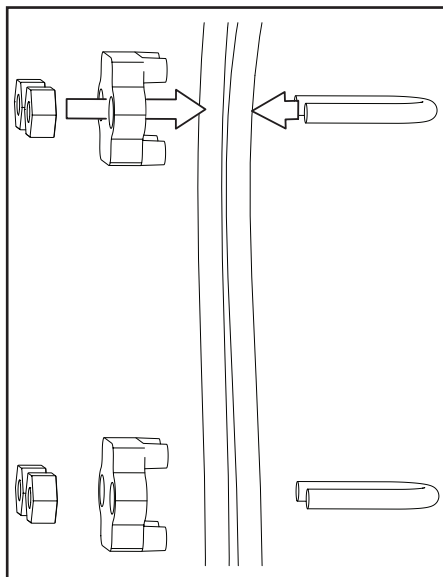
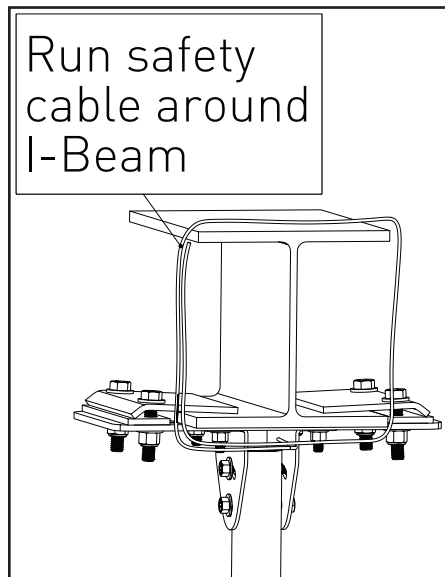


2.2.2 Fixed Angle Mount I-Beam

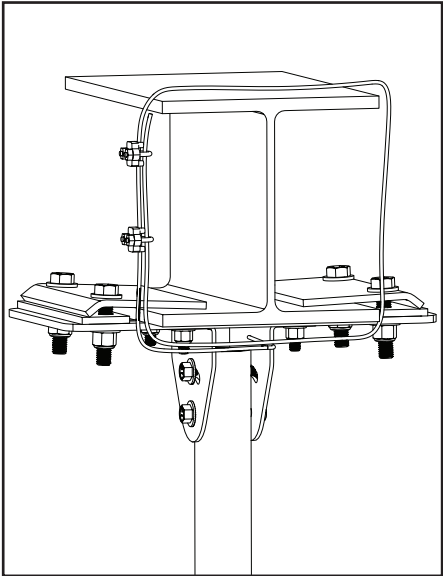
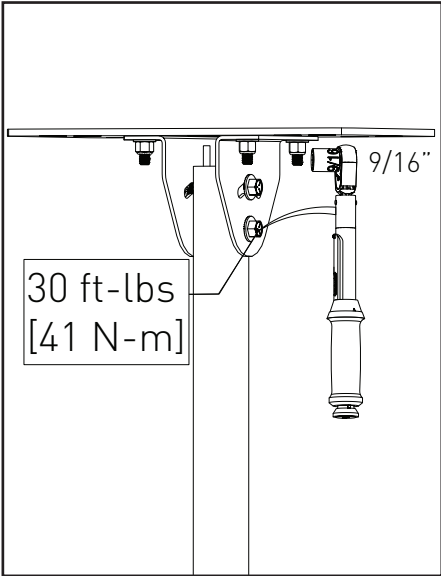


2.2.2 Fixed Angle Mount I-Beam

WARNING: Do not put too much tension on the safety cable. There needs to be a small amount of slack present in the safety cable for proper functioning. Avoid sharp edges.



2.2.2 Fixed Angle Mount I-Beam



Complete safety cable installation and turn to page 46

2.2.3 Fixed Angle Mount **Unistrut**

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).

If the spanning distance is greater than 8 feet, please consult a Structural Engineer. Please refer to page 4 for the maximum torque and weight values.

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.


2.2.3 Fixed Angle Mount **Unistrut**

Unistrut Required Parts
(NOT PROVIDED)

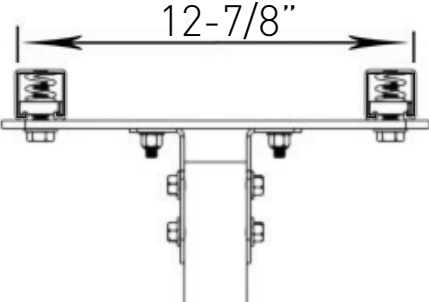
1/2"-13 x 1 1/2" Hex Bolt (4)

1/2" Washer (4)

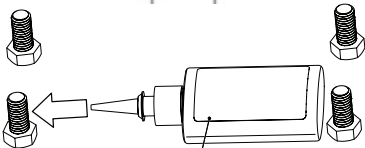
1/2"-13 Unistrut Spring Nut (4)



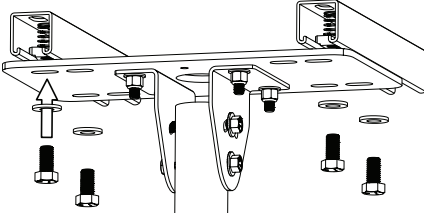
12-7/8"



Loctite 243 recommended

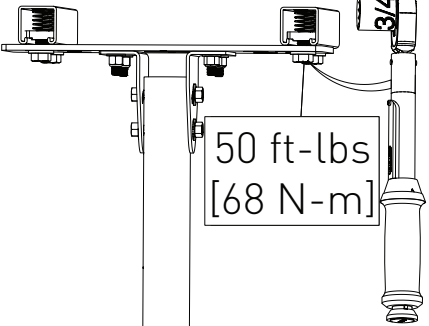


Minimum 1-5/8" Unistrut
Unpierced Channels (P1000
or P1001B)



3/4"

50 ft-lbs
[68 N-m]

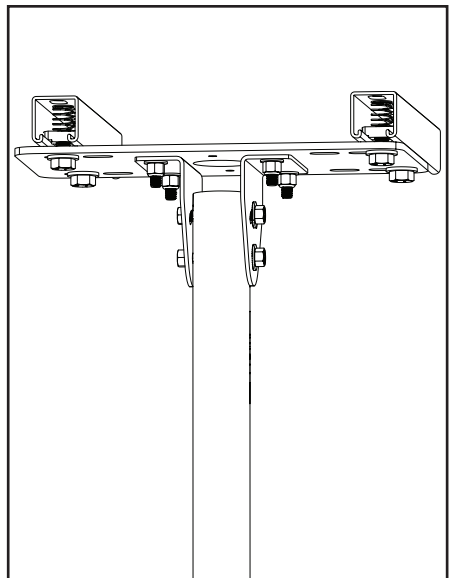
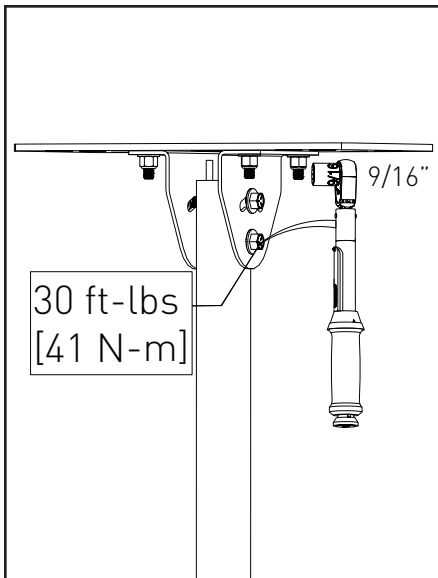
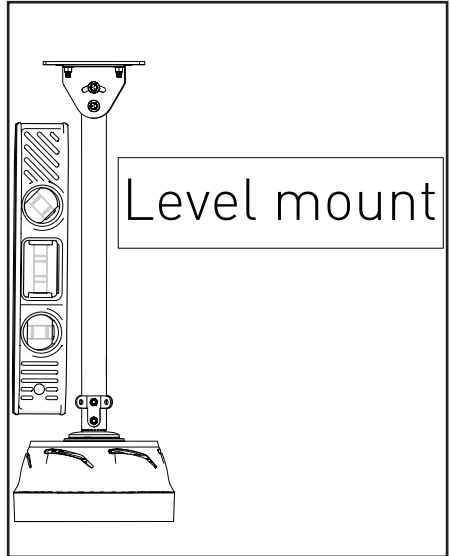


2.2.3 Fixed Angle Mount **Unistrut**

WARNING: Do not put too much tension on the safety cable. There needs to be a small amount of slack present in the safety cable for proper functioning. Avoid sharp edges.

Now Attach safety cable

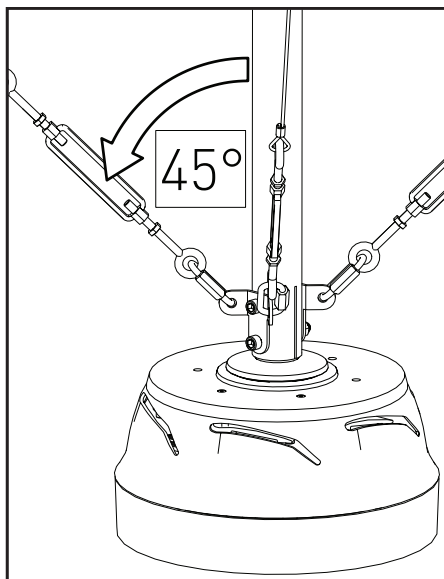
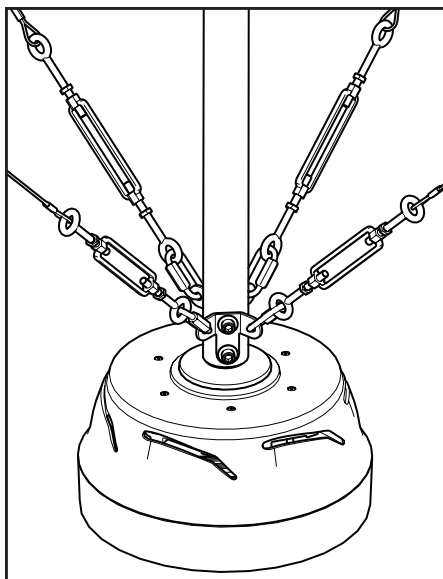
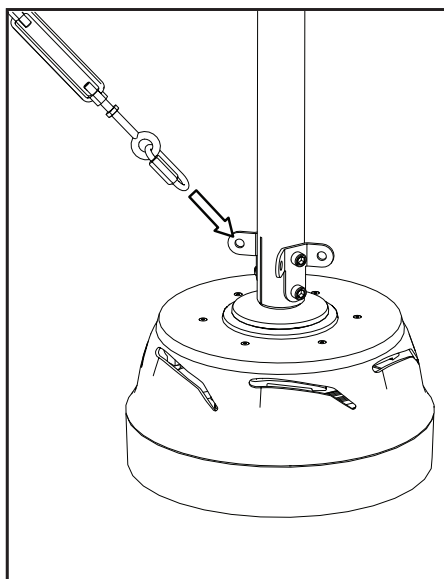
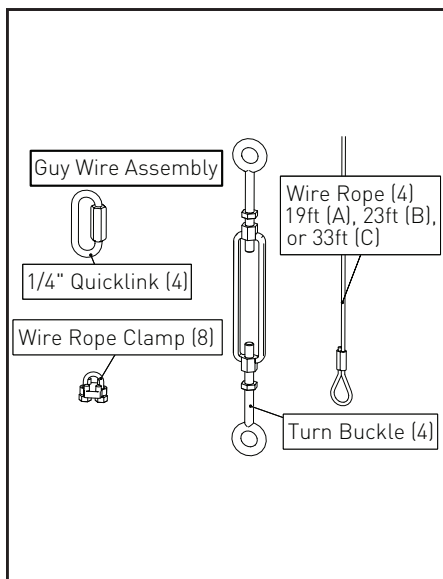
The safety cable must be securely attached to the building structure and **NOT the unistrut**. It can be attached to I-beams, steel trusses, or Glulams as shown in sections 1.2.1, 1.2.2 and 1.2.3. Avoid sharp edges. If you are unsure how to secure the safety cable properly, contact a structural engineer.



2.3 Guy Wire Installation (Fixed Angle Mount Only)

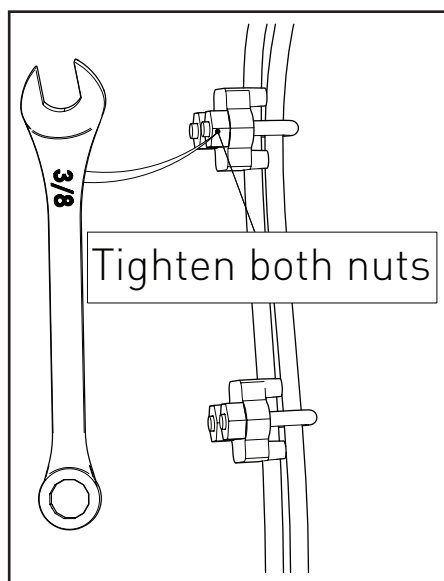
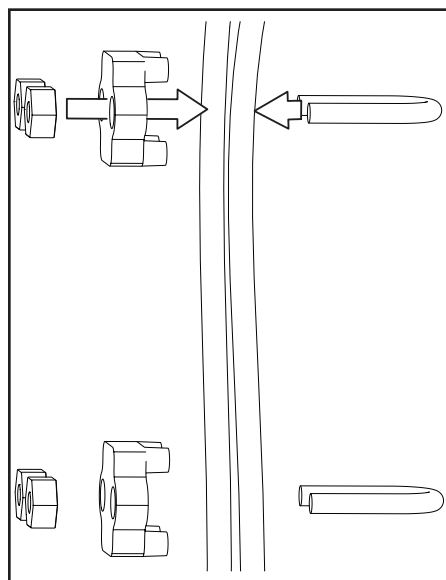
Required for the Fixed Angle Mount.

Not available for the Rapid Mount Commercial.

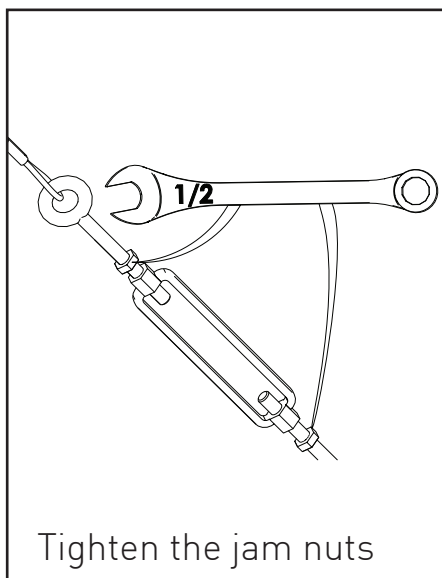
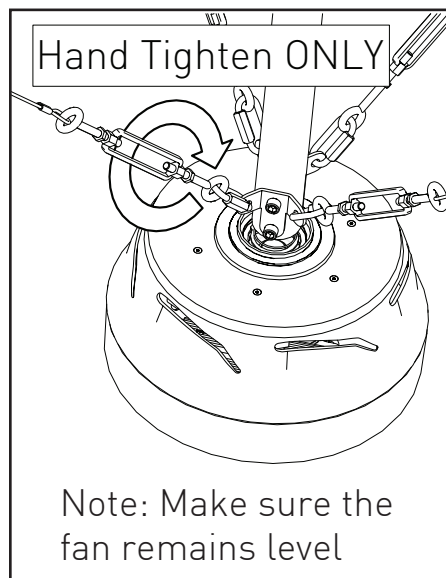


2.3 Guy Wire Installation (Fixed Angle Mount Only)

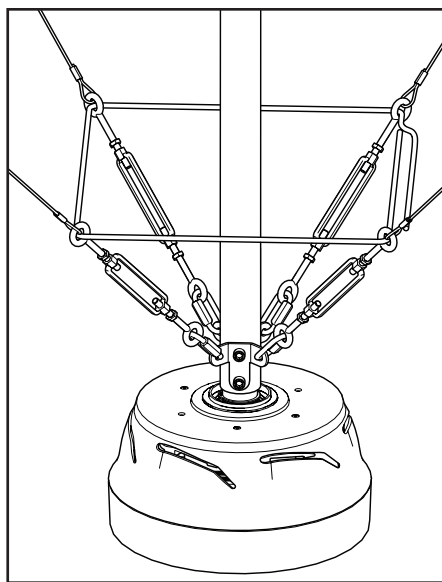
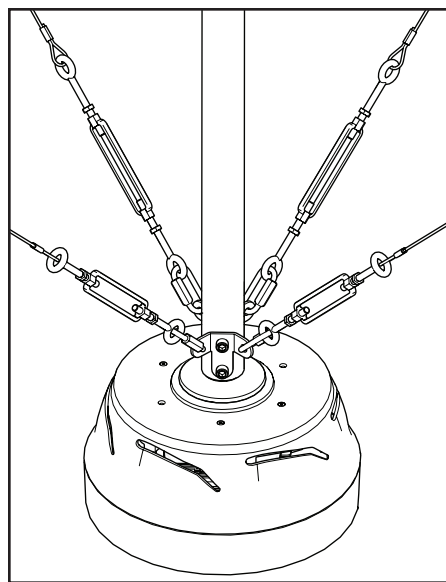
Note: Guy wires need to be securely mounted to the building. You can use generic beam clamps when mounting to I-Beam or steel truss. Lag I-Bolts can be used when mounting to wood Glulams. Do not wrap guy wires around the building structure. Avoid sharp edges.



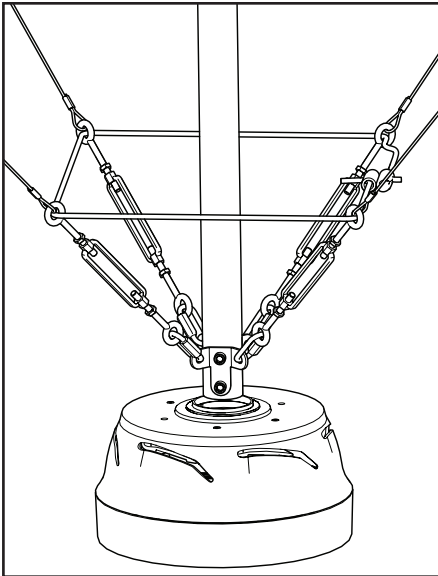
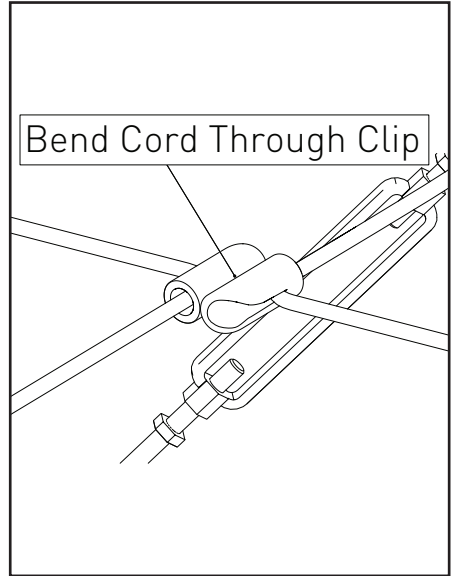
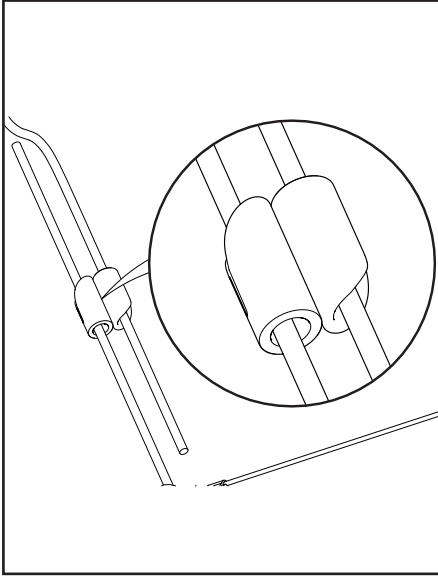
2.3 Guy Wire Installation (Fixed Angle Mount Only)



NOTE: Do not use tools to tighten the turnbuckles; only use tools to tighten the jam nuts. The guy wires **MUST** be taut so that there is no movement in the motor or extension tube.



2.3 Guy Wire Installation (Fixed Angle Mount Only)



Note: The cord is cut to a predetermined length for proper tension. DO **NOT** excessively stretch the cord.

Complete guy wire installation and turn to page 50

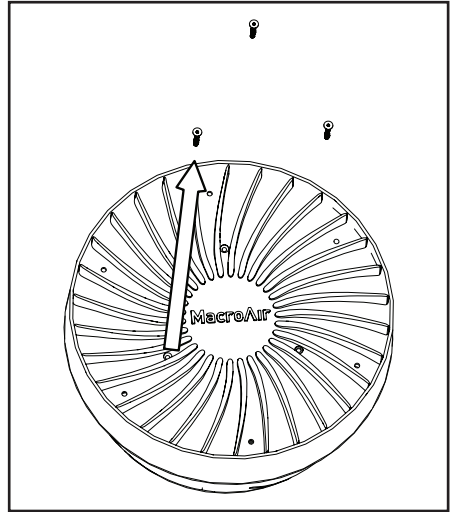
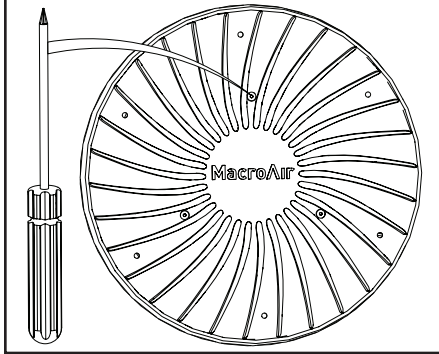
3. Airfoil Installation

Before Continuing:

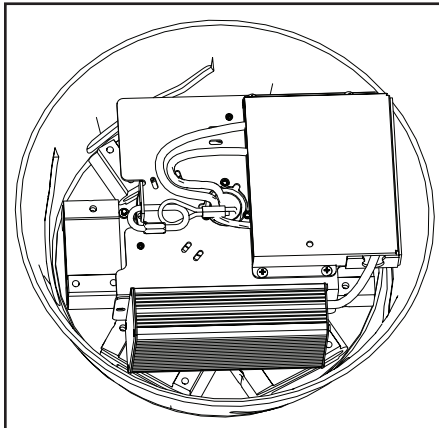
1. Run the power cable to the mounting location.
 2. Run the shielded CAT5e cable from the controller to the mount.
- Make sure the power cable is on the opposite side of the mounting surface and ran in the opposite direction (if possible) from the safety cable and the CAT5e cable.

Model 370

Low Voltage (Single Phase):
110-240VAC



Remove three (3) screws and the bottom cover. Be careful not damage the electrical components with the cover removed.



CAUTION: RISK OF ELECTRIC SHOCK. The bus capacitors discharge to a level below 50V DC in 1 minute.

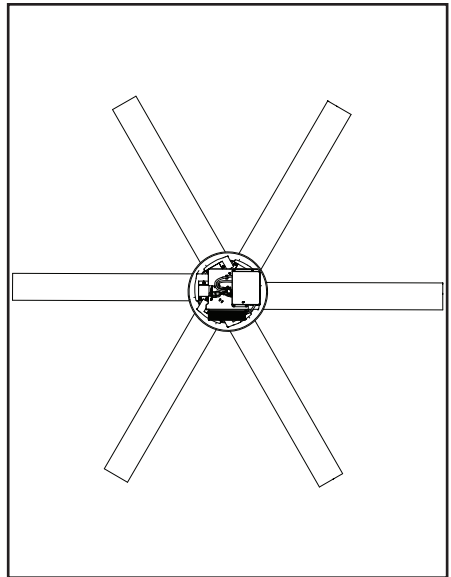
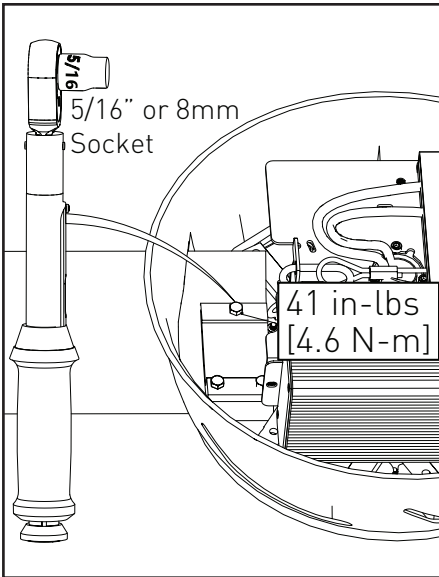
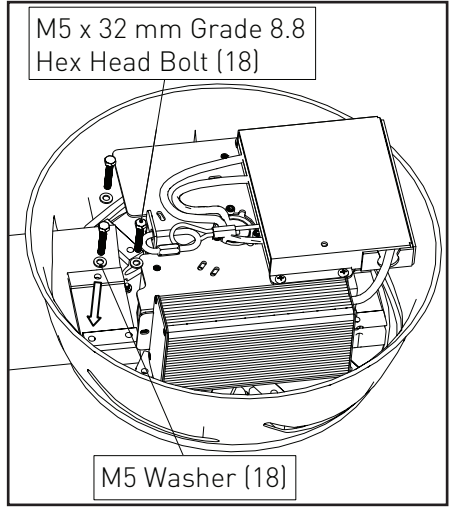
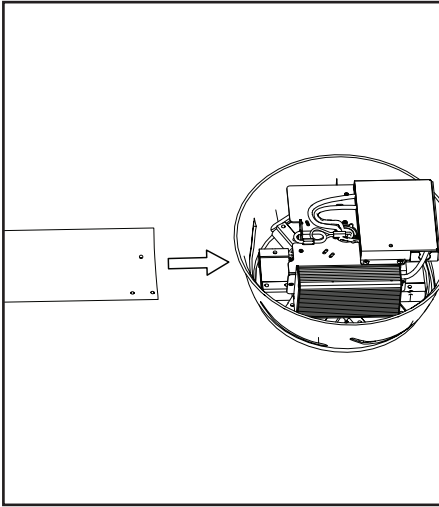


WHEN CYCLING INCOMING POWER, WAIT ONE (1) MINUTE BEFORE TURNING THE POWER BACK ON!

WARNING: DO NOT RUN FANS WITHOUT AIRFOILS. THE FANS ARE NOT CONFIGURED TO OPERATE WITHOUT AIRFOILS ATTACHED.

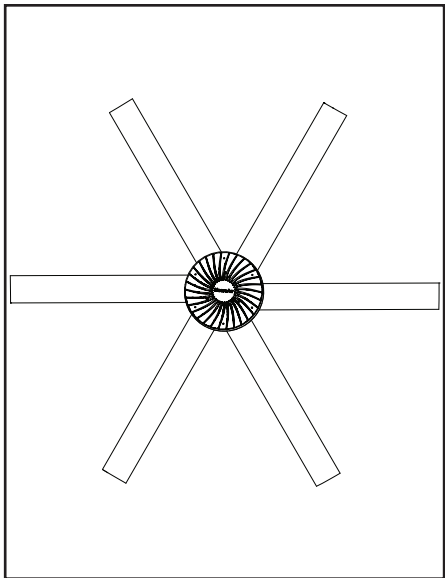
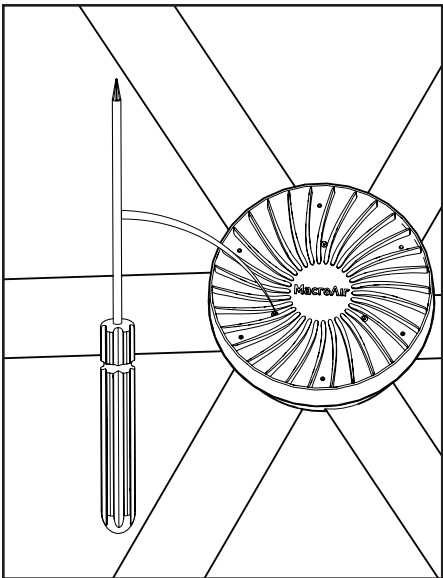
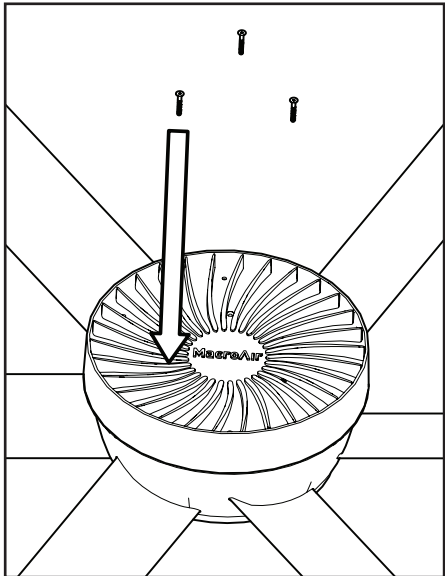
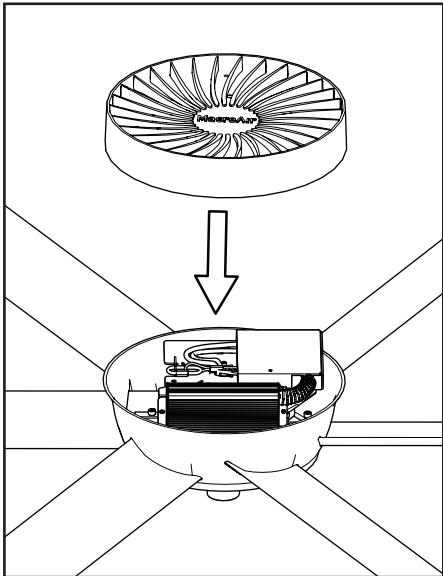
3. Airfoil Installation

WARNING: To reduce the risk of personal injury, do not bend the airfoils or airfoil struts when installing the airfoils, balancing the airfoils, or cleaning the fan. Do not insert foreign objects in between rotating fan airfoils.

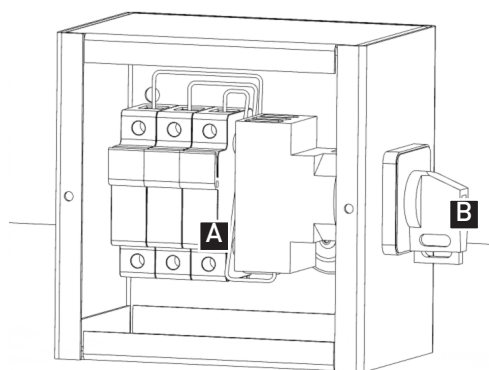


Repeat the steps above until all six blades and retaining links are in place.

3. Airfoil Installation



4.1 Fuse Disconnect Switch Installation (Recommended but Optional)



Service Disconnect (Required per **NEC, OSHA, IEC, CE** and **UL** compliance).

Not Included -
Optional Add-On

Components:

A - Fuse Block (Optional Add-On)

B - Disconnect Switch (Optional Add-On)

C - Class CC Fast Acting Fuses (Not Provided) - refer to the fuse chart on page 5

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

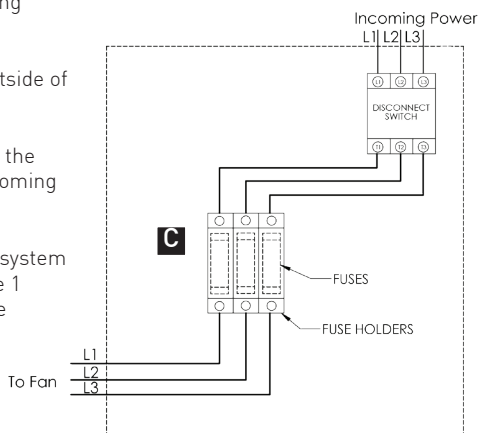
Means for disconnection with contact separation at least 3mm.

The fuse disconnect switch is an optional component offered by EnergyLogic. Reference page 5 for fuse size based upon the incoming power and fan diameter.

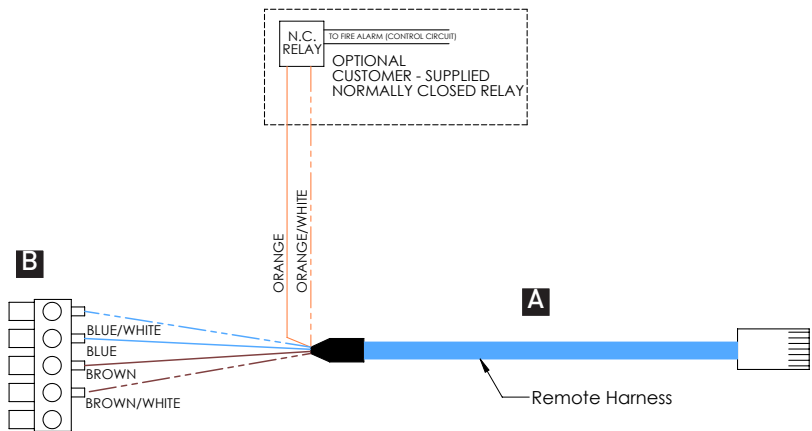
4.1.1: Mount the fuse disconnect switch outside of the swept area of the fan airfoils.

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

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



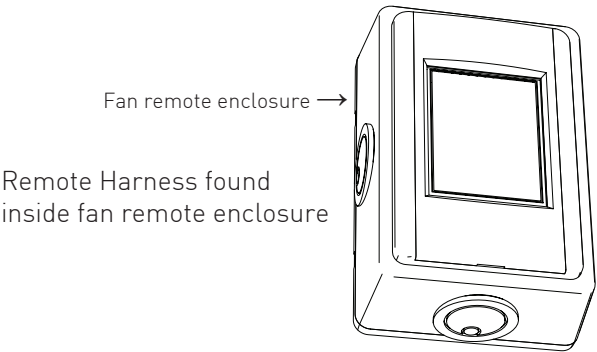
4.2 Emergency Disconnect Schematic



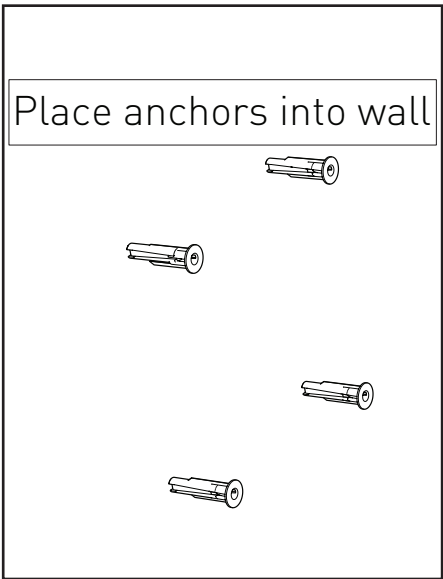
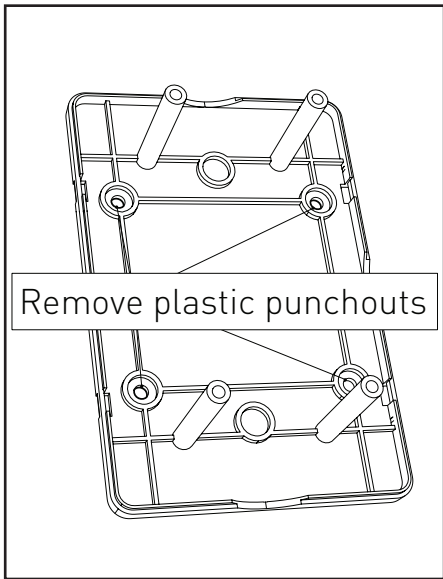
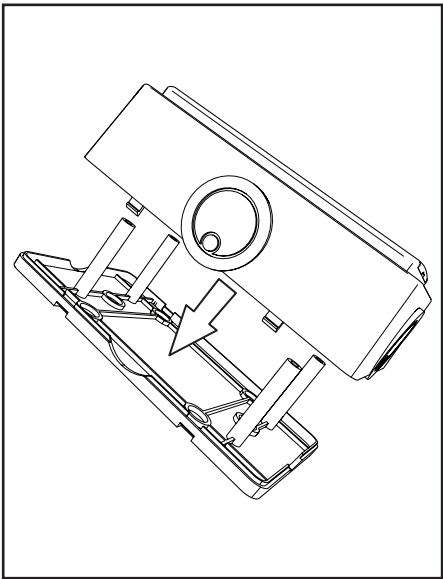
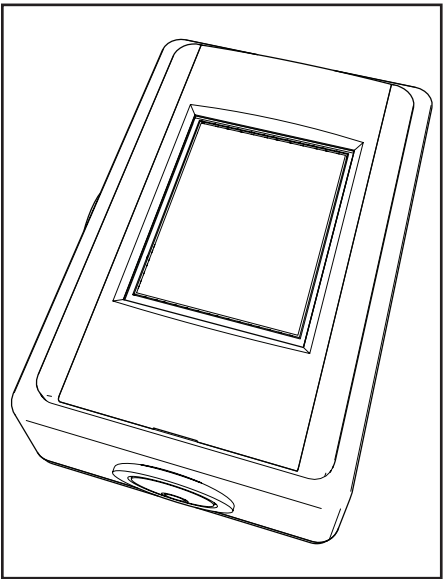
Components:

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

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

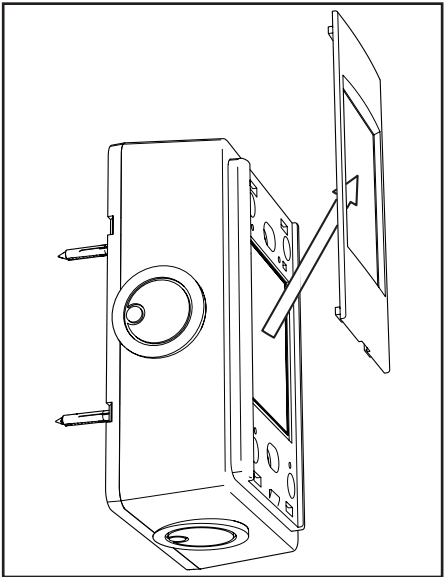
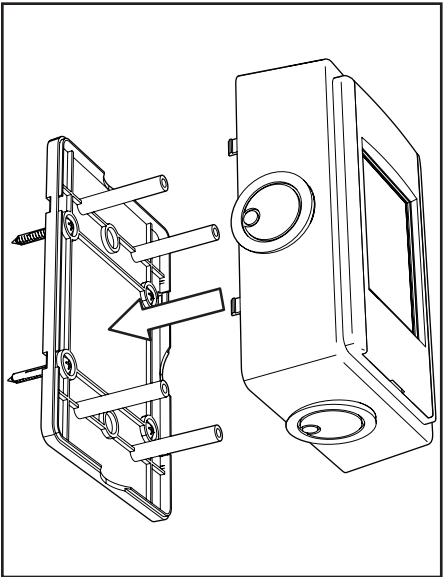
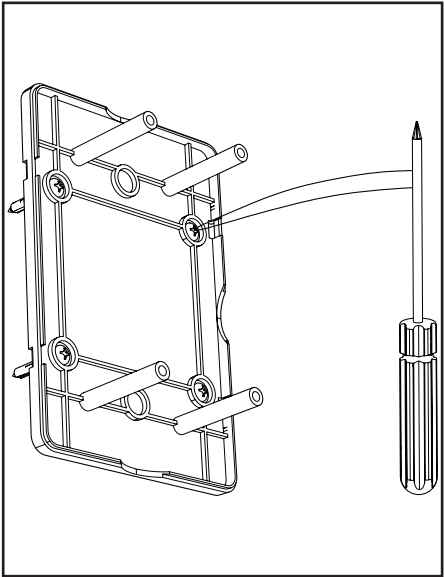
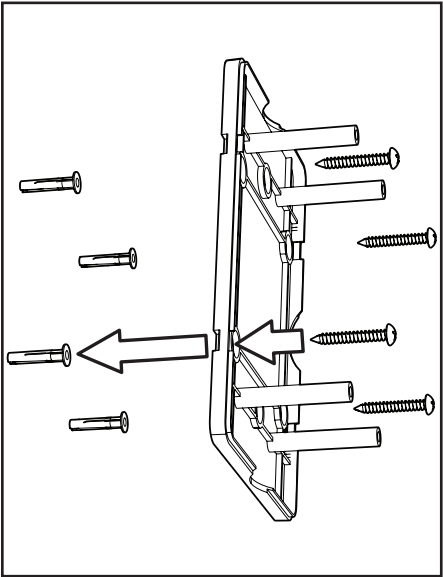


5.1 Touchpad Remote Mounting



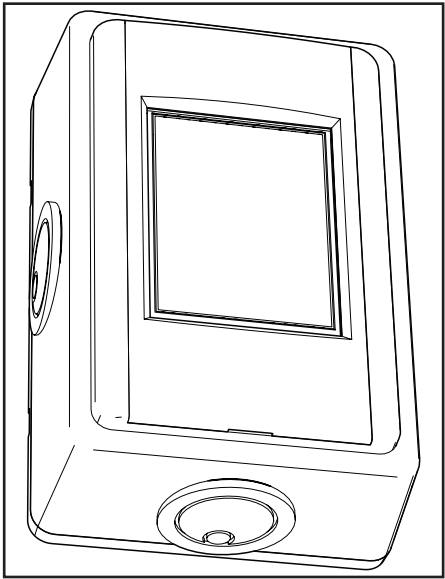
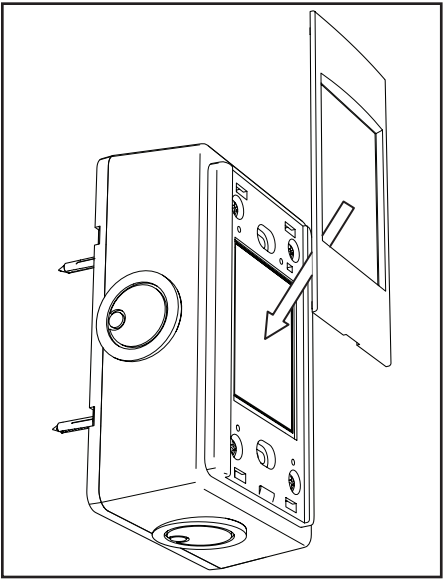
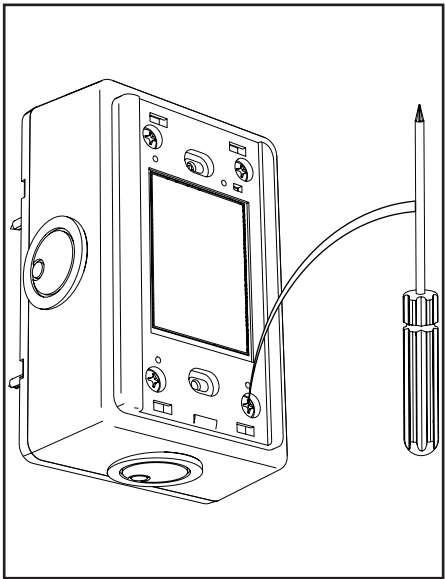
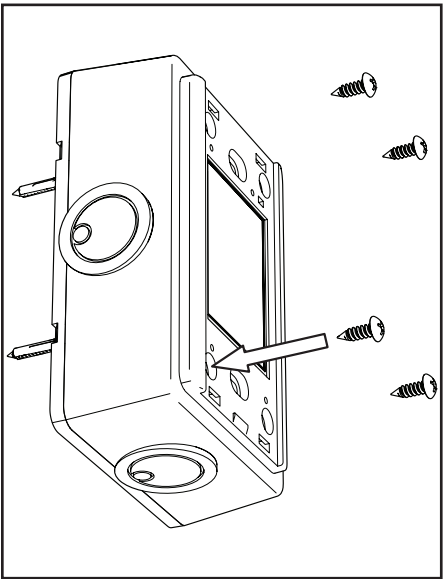
Flush Mounting is also available with a standard electrical box (not provided).

5.1 Touchpad Remote Mounting



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

5.1 Touchpad Remote Mounting



The provided shielded stranded CAT5e cable from the fan is plugged into the top of the enclosure.

5.2 Touchpad Remote Navigation

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



5.2 Touchpad Remote Operation

Screens:

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

Instructions:

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

6.2.2: If the fan stops operating unexpectedly, navigate to the fault code screen and record any fault codes (if present). Click the reset button until the display reads '0' 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 800-311-8828.

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



Maintenance Information

Guy Wire Check (if applicable): Checking a MacroAir fan's guy wires 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 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 eye bolts or eye lags. If they are not already installed with eye bolts or lags, we urge fan owners to install these in order to help keep the guy wires from fraying. If guy wires are installed with turnbuckles, jam nuts should periodically be checked to ensure tightness. If they are loose, the guy wire cables may need to be re-tensioned.

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

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

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

Maintenance Plan:

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

Year 1-10:

One inspection on lift per year.

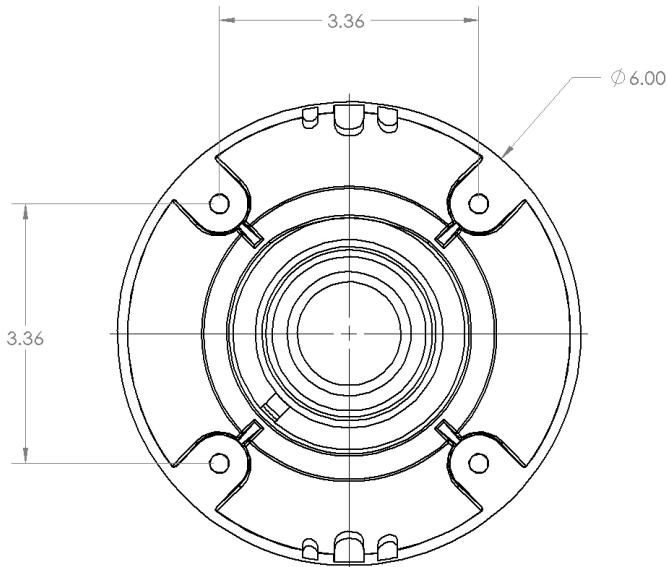
Year 11 and beyond:

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

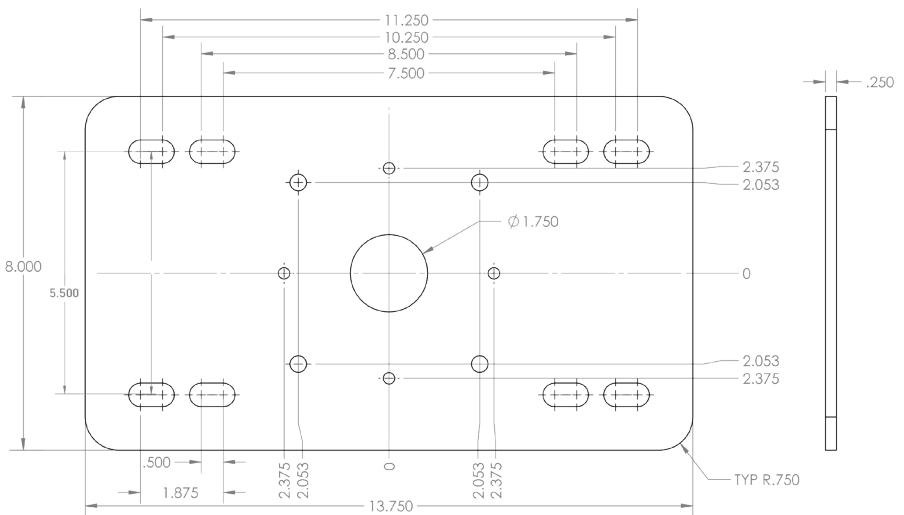
NOTE: If there are issues or concern discovered during an inspection, please contact the service and technical support department at EnergyLogic for help.

Mounting Plate Dimensions

Rapid Mount Commercial

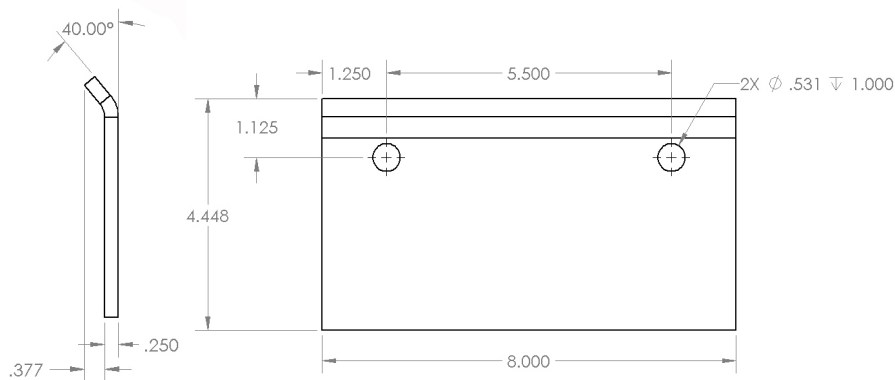


Fixed Angle Mount & Top Plate for the Rapid Mount Commercial

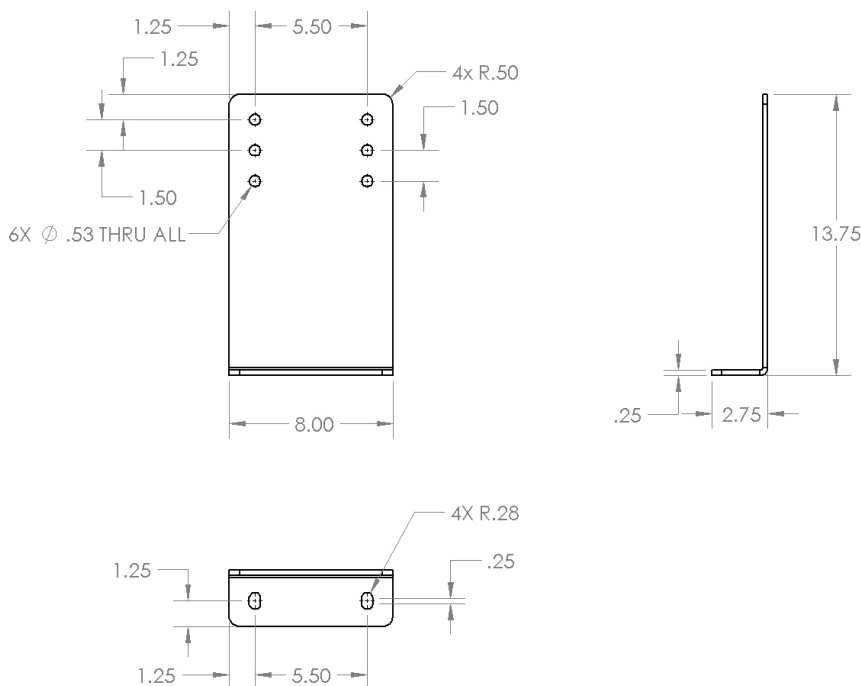


Mounting Bracket Dimensions

I-Beam Bracket

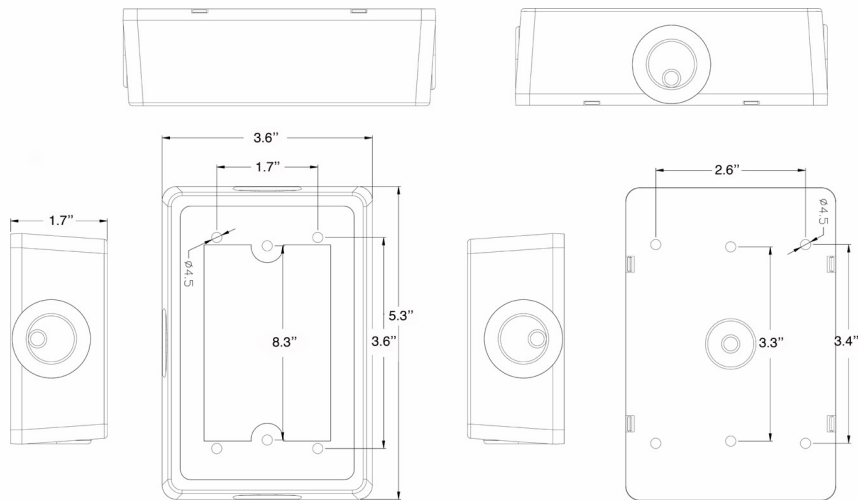


Glulam Bracket

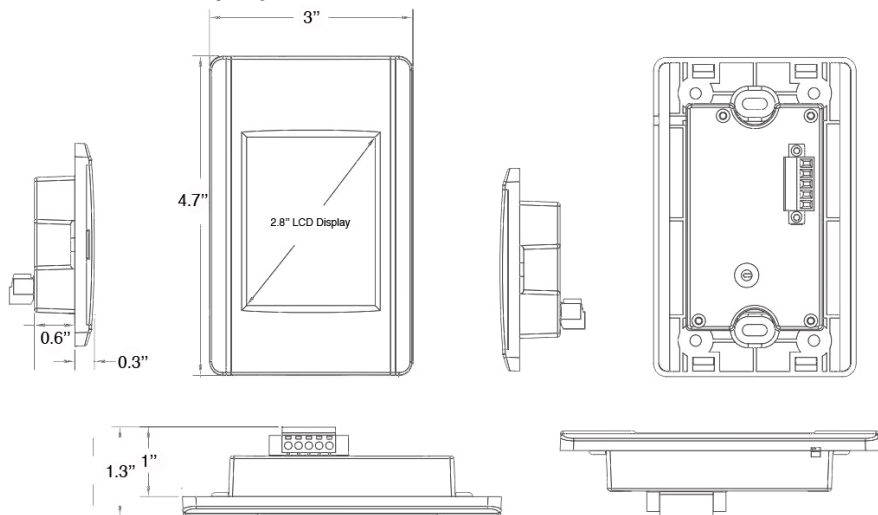


Touchpad Remote Dimensions

Remote Enclosure



Remote LCD Display



Troubleshooting

It is recommended to wire the fan and the touchpad remote prior to turning on the power to the fan. If the fan is not operable, but the touchpad remote is lighting up, cycle power to the fan.

If cycling the power did not resolve this issue, go to the fault code screen (reference page 59) and check to see if there is a code present.

Fault Code Causes and Possible Solutions

Code	Name	Code Type	Factory Setting	Description	Symptoms	Troubleshooting Tips
1000	Supply Voltage High Warning	Warning	425V DC	The controller monitors the bus voltage to verify it's below the threshold	Fan Slows Intermittent/ No Operation	1. Turn incoming power off for two minutes, turn back on 2. Confirm power is within fan's specifications 3. Check for spikes with power quality recorder 4. Confirm that motor wiring is correct
1001	Supply Voltage Low Warning	Warning	80V DC	The controller monitors the bus voltage to verify it's above the threshold	Fan Slow Intermittent/ No Operation	1. Turn incoming power off for two minutes, turn back on 2. Confirm incoming power is within fan's specifications 3. Ask if power has gone out recently or if there have been storms in the area 4. Confirm that motor wiring is correct
1002	Supply Voltage High Fault	Auto-Reset	450V DC	The controller monitors the bus voltage to verify it's below the threshold and will disable the fan if it is exceeded	Intermittent/ No Operation	1. Turn incoming power off for two minutes, turn back on 2. Confirm power is within fan's specifications 3. Check for spikes with power quality recorder 4. Confirm that motor wiring is correct
1003	Supply Voltage Low Fault	Halt	40V DC	The controller monitors the bus voltage to verify it's above the threshold and will disable the fan if it is exceeded	Intermittent/ No Operation	1. Turn incoming power off for two minutes, turn back on 2. Confirm power is within fan's specifications 3. Ask if power has gone out recently or if there have been storms in the area 4. Confirm that motor wiring is correct

Troubleshooting

Code	Name	Code Type	Factory Setting	Description	Symptoms	Troubleshooting Tips
1004	Phase Current A High Fault	Auto-Reset			Intermittent/ No Operation Vibration or Grinding Noises	<ol style="list-style-type: none"> 1. Turn incoming power off for two minutes, turn back on 2. Confirm power is within fan's specifications 3. Confirm motor leads are stripped (gen 2 370)
1005	Phase Current B High Fault	Auto-Reset				
1006	Phase Current C High Fault	Auto-Reset				
1007	Motor Temperature High Warning	Warning	100C	The controller multiplies the current torque command by 0.5 when the motor reaches 100C. There is no hysteresis on this value. It goes back to full speed when the temperature falls below the warning value.	Fan Slowing/ Stopping Intermittently	<ol style="list-style-type: none"> 1. Confirm that motor temperature is below 90C 2. Confirm that end caps are open and there is no blockage in the blades (AVD3) 3. Confirm that the quick link on the safety cable is not pulling the rubber boot closed (AVD3) 4. Confirm that the ambient temperature is below 50C 5. Start the fan earlier in the day before the ambient temperature rises
1008	Motor Temperature High Fault	Auto-Reset	110C		Fan Stopping Intermittently	<ol style="list-style-type: none"> 1. Confirm that motor temperature is below 110C 2. Confirm that end caps are open and there is no blockage in the blades (AVD3) 3. Confirm that the quick link on the safety cable is not pulling the rubber boot closed (AVD3) 4. Confirm that the ambient temperature is below 50C 5. Start the fan earlier in the day before the ambient temperature rises
1009	Heatsink Temperature High Warning	Warning	75C	The controller multiplies the current torque command by 0.5 when the heatsink reaches 75C. There is no hysteresis on this value. It goes back to full speed when the temperature falls below the warning value.	Fan Slowing/ Stopping Intermittently	<ol style="list-style-type: none"> 1. Confirm that heatsink temperature is below 90C 2. Confirm that end caps are open and there is no blockage in the blades (AVD3) 3. Confirm that the quick link on the safety cable is not pulling the rubber boot closed (AVD3) 4. Confirm that the ambient temperature is below 50C 5. Start the fan earlier in the day before the ambient temperature rises

Troubleshooting

Code	Name	Code Type	Factory Setting	Description	Symptoms	Troubleshooting Tips
1010	Heatsink Temperature High Fault	Auto-Reset	85C		Fan Stopping Intermittently	<ol style="list-style-type: none"> 1. Confirm that heatsink temperature is below 110C 2. Confirm that end caps are open and there is no blockage in the blades (AVD3) 3. Confirm that the quick link on the safety cable is not pulling the rubber boot closed (AVD3) 4. Confirm that the ambient temperature is below 50C 5. Start the fan earlier in the day before the ambient temperature rises
1011	Ambient Temperature High Warning	Warning	75C		Fan Slowing/ Stopping Intermittently	<ol style="list-style-type: none"> 1. Confirm that ambient temperature is below 50C 2. Start the fan earlier in the day before the ambient temperature rises
1012	Ambient Temperature High Fault	Auto-Reset	80C		Fan Stopping Intermittently	<ol style="list-style-type: none"> 1. Confirm that ambient temperature is below 50C 2. Start the fan earlier in the day before the ambient temperature rises
1013	Phase Current Following Error	Auto-Reset			Fan Stopping Intermittently Fan Not Starting Fan "Twitching" Fan Not Able To Run Above A Certain Percentage Fan Running Slowly/ Irregularly Grinding/ "Groaning" Sounds	<ol style="list-style-type: none"> 1. Turn incoming power off for two minutes, turn back on 2. Confirm power is within fan's specifications 3. Ensure that blade length is properly set 4. Confirm motor leads are stripped (gen 2 370)
1017	Keep-Alive Timeout	Auto-Reset	10s		Fan Randomly Stops Fan Will Not Start	<ol style="list-style-type: none"> 1. Confirm whether touchpad was unplugged or not 2. Confirm that CAT5 is under 100ft 3. Confirm that CAT5 is from factory and has not been modified 4. Confirm that CAT5 is shielded 5. Confirm that repeaters are properly installed on the network 6. Double check network splices 7. Plug touchpad directly into board

Troubleshooting

Code	Name	Code Type	Factory Setting	Description	Symptoms	Troubleshooting Tips
1018	Fire Disconnect	Auto-Reset			Fan Stops Fan Will Not Start	<ol style="list-style-type: none"> 1. Confirm whether touchpad was unplugged or not 2. A 1018 is most commonly seen if the touchpad is unplugged. In this case, pressing the reset button should clear the code and allow the fan to operate normally. 3. Confirm that orange pair is twisted together inside the screen enclosure 4. Confirm that the orange pair is being ran throughout the whole CAT5 line 5. Plug touchpad directly into the fan to see if the fault will clear
1019	Overspeed Fault (Blades Too Short)	Auto-Reset	-		Fan "Twitching" Fan Will Not Start Fan Stops Fan Faults Only At High Speed Fan Runs Irregularly	<ol style="list-style-type: none"> 1. Ensure that blade length is properly set 2. Ensure that blades are installed 3. Confirm incoming power is within fan's specifications
1020	Underspeed Fault (Blades Too Long)	Auto-Reset	-		Fan "Twitching" Fan Will Not Start Fan Stops Fan Faults Only At High Speed Fan Runs Irregularly	<ol style="list-style-type: none"> 1. Ensure that blade length is properly set 2. Ensure that blades are installed 3. Confirm incoming power is within fan's specifications
1025	Stalled Rotor	Auto-Reset			Fan Stops Fan Will Not Start	<ol style="list-style-type: none"> 1. Ensure that there are no obstacles in the way of the blades 2. Ensure that blades turn freely by hand
1026	EEPROM Read Error				Fan Will Not Start	Turn incoming power off for two minutes, turn back on
1027	EEPROM Read Write Error				Fan Will Not Start	Turn incoming power off for two minutes, turn back on

Troubleshooting

Code	Name	Code Type	Factory Setting	Description	Symptoms	Troubleshooting Tips
1028	Hall Error				Fan Will Not Start Fan Will Not Complete Blade Detect Fan "Twitches" Fan Runs Irregularly	Confirm that hall sensor is properly plugged into the drive
1029	Receive Frame Error / Noise On Comm Lines				Fan Stops Fan Will Not Start	1. Confirm whether touchpad was unplugged or not 2. Confirm that CAT5 is under 100ft 3. Confirm that CAT5 is from factory and has not been modified 4. Confirm that CAT5 is shielded 5. Confirm that repeaters are properly installed on the network 6. Double check network splices 7. Plug touchpad directly into board 8. Confirm firmware is 146 or above
COMM ERROR					Fan Stops Fan Will Not Start	1. Confirm whether touchpad was unplugged or not 2. Confirm that CAT5 is under 100ft 3. Confirm that CAT5 is from factory and has not been modified 4. Confirm that CAT5 is shielded 5. Confirm that repeaters are properly installed on the network 6. Double check network splices 7. Plug touchpad directly into board 8. Test for 5VDC on blue pair if screen lights up, test for 24VDC if screen does not light up

For all other fault codes, please call Technical Support at (800) 311-8828.

Warranty and Technical Support

To register the installed fans for the 50,000 hour warranty, go to macroairfans.com/register.

What does the 50,000 hour warranty cover?

This warranty covers any part or component of the AirVolution-D shipped by MacroAir that is found to contain a manufacturing defect. MacroAir will repair or replace such part, component, or the entire fan free of charge.

How Long Does the Coverage Last?

This warranty covers the entire AirVolution-D fan and all its component parts for 50,000 hours of running time.

Do I Need to Pay Shipping, Removal and Re-Installation Costs?

You do NOT need to pay shipping, removal and installation costs if your AirVolution-D needs to be repaired or replaced due to a manufacturing defect within three years of the original purchase, and you will be reimbursed for those costs, upon approval of such costs by MacroAir. After three years, this warranty is still in full effect for the remainder of the 50,000 hours, but it just does not cover your cost to ship the fan to MacroAir, or removal or re-installation of the fan.

What is NOT covered under this warranty?

This warranty will not cover repairs or replacements caused by installation, operation or storage of the fan that is outside the specifications and limitations contained in the AirVolution-D installation and operation instructions.

Technical Support

For installation assistance, application questions, technical sales support and any other inquiries, please contact EnergyLogic at (800) 311-8828.



*IT'S WHAT GOOD
FEELS LIKE™*

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EnergyLogic.com

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