



INSTALLATION GUIDE

HPF 500 & 700 SERIES

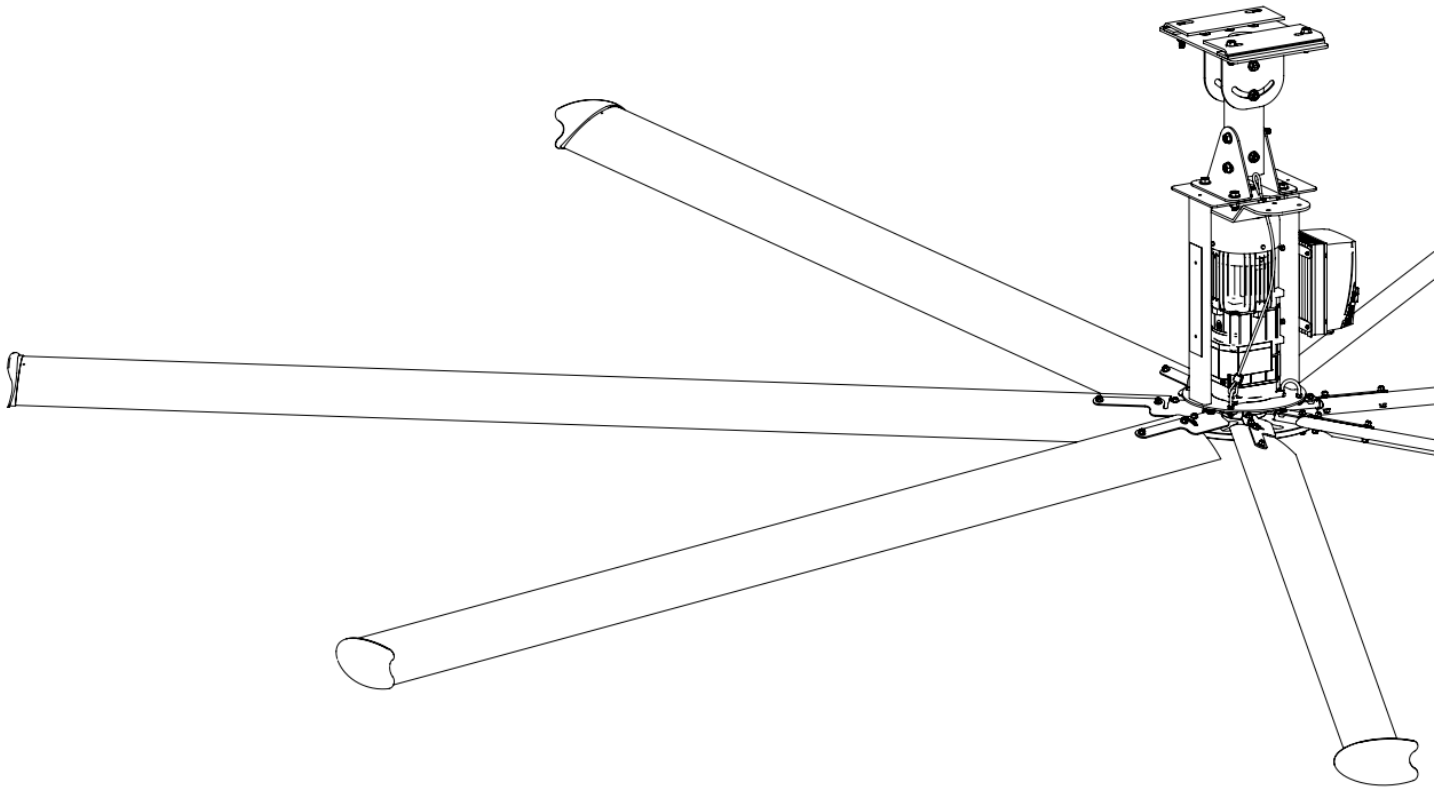


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Section 1:

Installation Checklist

- ☐ Have you read and understood this manual before starting installation? (check box if the answer is yes for all the questions on this page)

CAUTION: IF YOU DO NOT UNDERSTAND ANY PART OF THIS INSTALLATION GUIDE, DO NOT PROCEED WITH INSTALLATION OF THE FAN. INSTALLING THE FAN WITHOUT UNDERSTANDING AND FOLLOWING THESE GUIDELINES, COULD RESULT IN SERIOUS INJURY OR DEATH!

- ☐ Does your building allow you to safely install the fan?

CAUTION: IF THE FAN CANNOT BE MOUNTED BY ANY OF THE METHODS DESCRIBED WITHIN THIS GUIDE OR YOU ARE NOT SURE ABOUT THE STRENGTH OF THE MOUNTING STRUCTURE, YOU SHOULD CONSULT A STRUCTURAL ENGINEER!

- ☐ Will the fan blades be at least 10 ft. (3 m) above the floor?

CAUTION: IN ADDITION TO THE MINIMUM FLOOR CLEARANCE, THE FAN MUST MEET CLEARANCE GUIDELINES AS DESCRIBED IN SECTION 5, MOUNTING GUIDELINES!

- ☐ Have you verified that the required power supply for the fan you have purchased is available?
- ☐ Do you have the necessary “customer supplied” hardware required to install your fan(s) (Refer to Page 8)?
- ☐ Do you have the necessary equipment needed to lift the fan into place so that it can be safely installed?
- ☐ Do you have the necessary tools on hand to perform the installation?

IF ALL ABOVE BOXES ARE CHECKED, PROCEED TO SECTION 2.

Section 2:

Safety Precautions

PLEASE OBSERVE THE FOLLOWING PRECAUTIONS TO MINIMIZE THE RISK OF PERSONAL INJURY OR PROPERTY DAMAGE:**Electrical Installation:**

- Ensure that all fan power circuits are disconnected prior to beginning fan/controller installation
- All electrical work must be performed by qualified personnel and in accordance with applicable local and national wiring codes and standards.
- Incorrect assembly can cause electrical shock or damage to the fan motor or controller
- Before working on the VFD, ensure isolation of the mains supply at the VFD or fan controller disconnect. Wait at least three minutes for the VFD high voltage capacitor to discharge to safe voltage levels (a darkened display is NOT an indication of safe levels). Failure to do so may result in death or injury.
- Power must be supplied by means of a dedicated circuit breaker, properly fused disconnect, or other means of protection, following local and national electrical codes.

Mechanical Installation:

- To prevent accidental injury, do not allow personnel to stand beneath the fan during installation.
- The structure to which the fan is mounted must be sound and undamaged and capable of supporting the weight of the fan and its mounting. A structural engineer should be consulted if needed.
- The fan must be installed only using parts from High Performance Fan Co. unless specified otherwise in the manual.
- When cutting or drilling into a wall or mounting surface, proper eye protection is required
- Before cutting or drilling, check to be sure there are no hidden utilities.
- The fan assembly is heavy, and a mechanical lift or scissor lift is recommended for lifting the fan into position. Installation is safer and easier with two installers.
- Be sure all safety cables and any needed guy-wires are in place before operating the fan.

Maintenance:

- Before performing any maintenance on the fan, switch off power at the main service panel or breaker, lock-out/tag-out breaker to prevent power from being switched back on during maintenance.
- If removal or disconnection of any safety device is required during maintenance, the safety must be re-installed properly prior to fan operation.
- Recommended periodic maintenance in effect at the time of fan shipment should be followed, and written maintenance records should be kept.

Operation:

- Do not bend the airfoils when installing or performing maintenance on the fan. If an airfoil is bent, do not operate the fan.
- Do not impede the rotation of the airfoils. Inserting a foreign object between rotating airfoils may result in severe damage to the fan and possible injury.
- The fan must be used for its intended purpose only.
- If the fan begins oscillating, stop the fan immediately and contact High Performance Fan Co. or your local service provider for assistance
- Do not operate the fan if there is any visible damage to the fan or controller.
- The fan should only be operated by a responsible person who understands its operation and risks of improper use. Children should never operate the fan.
- Nameplates, cautions, warnings, and instructions should not be obscured from the view of operating or maintenance personnel.
- Modifications or alterations to a High Performance Fan Co. fan should only be made after receipt of written permission from High Performance Fan Co.

Disclaimers:

- Prior to installation, verification of the stability of the mounting structure is the sole responsibility of the user, and High Performance Fan Co. hereby expressly disclaims any liability arising therefrom or arising from the use of any materials or hardware not supplied by High Performance Fan Co.
- Product failure caused by improper installation or use will not be covered by the High Performance Fan Co. warranty.
- The above information and information within this manual is provided only as a guide for proper installation and use of a High Performance Fan Co. fan. High Performance Fan Co. accepts no responsibility for the compliance or non-compliance to local or national codes for the proper installation of the fan or its controls.

Section 3:

Power Supply Guide & Technical Specs

CAUTION: BEFORE OPENING THE BOX TO START YOUR FAN INSTALLATION, DEFINE THE MINIMUM INPUT POWER AND THE REQUIRED BREAKER FOR YOUR FAN(S) USING THE TECHNICAL SPECIFICATIONS TABLE BELOW!

500 & 700 SERIES TECHNICAL SPECIFICATIONS									
500 SERIES (5 BLADES)	FAN DIAMETER	10 Ft. (3 m)	12 Ft. (3.5 m)	14 Ft. (4.3 m)	16 Ft. (4.9 m)	18 Ft. (5.5 m)	20 Ft. (6.1 m)	24 Ft. (7.3 m)	
	WEIGHT	136 lb. (61.7 kg)	149 lb. (67.6 kg)	166 lb. (75.3 kg)	178 lb. (80.7 kg)	187 lb. (84.8 kg)	196 lb. (88.9 kg)	196 lb. (88.9 kg)	
	MAXIMUM SPEED	84 RPM	75 RPM	67 RPM	57 RPM	51 RPM		48 RPM	
	MOTOR HORSEPOWER	0.75 HP (.55 kW)		1.5 HP (1.1 kW)		2 HP (1.5 kW)			
	MAXIMUM CFM**	57,533	84,861	129,253	162,284	187,283	239,136	311,705	
	POWER CONSUMPTION**	752 Watts	770 Watts	1000 Watts	982 Watts	1,372 Watts	1,819 Watts	2,132 Watts	
	AIRFOIL CLEARANCES	3 Ft. (0.9 m) on sides 4 Ft. (1.2 m) below ceiling		3 Ft. (0.9 m) on sides 5 Ft. (1.5 m) below ceiling		3 Ft. (0.9 m) on sides 6 Ft. (1.8 m) below ceiling			
	COVERAGE AREA***	3 to 5 Times Diameter							
	INPUT POWER AND REQUIRED BREAKER	110-115 VAC, 50/60 Hz. 1 Ph, 15 A 200-240 VAC, 50/60 Hz. 1 Ph, 15 A 200-240 VAC, 50/60 Hz. 3 Ph, 15 A 400-480 VAC, 50/60 Hz. 3 Ph, 10 A			200-240 VAC, 50/60 Hz. 1 Ph, 15 A 200-240 VAC, 50/60 Hz. 3 Ph, 15 A 400-480 VAC, 50/60 Hz. 3 Ph, 10 A				
700 SERIES (7 BLADES)	FAN DIAMETER	10 Ft. (3 m)		12 Ft. (3.5 m)	14 Ft. (4.3 m)	16 Ft. (4.9 m)	18 Ft. (5.5 m)	20 Ft. (6.1 m)	
	WEIGHT	153 lb. (69.4 kg)		168 lb. (76.2 kg)	190 lb. (86.2 kg)	206 lb. (93.4 kg)	219 lb. (99.3 kg)	232 lb. (105.2 kg)	
	MAXIMUM SPEED	84 RPM		75 RPM	67 RPM	57 RPM	51 RPM		
	MOTOR HORSEPOWER	0.75 HP (.55 kW)			1.5 HP (1.1 kW)		2 HP (1.5 kW)		
	MAXIMUM CFM*	68,134		99,139	155,899	193,375	219,463	281,826	
	POWER CONSUMPTION*	790 Watts		951 Watts	1,508 Watts	1,475 Watts	1,797 Watts	2,340 Watts	
	AIRFOIL CLEARANCES	3 Ft. (0.9 m) on sides 4 Ft. (1.2 m) below ceiling		3 Ft. (0.9 m) on sides 5 Ft. (1.5 m) below ceiling		3 Ft. (0.9 m) on sides 6 Ft. (1.8 m) below ceiling			
	COVERAGE AREA**	3 to 5 Times Diameter							
	INPUT POWER AND REQUIRED BREAKER	110-115 VAC, 50/60 Hz. 1 Ph, 15 A 200-240 VAC, 50/60 Hz. 1 Ph, 15 A 200-240 VAC, 50/60 Hz. 3 Ph, 15 A 400-480 VAC, 50/60 Hz. 3 Ph, 10 A				200-240 VAC, 50/60 Hz. 1 Ph, 15 A 200-240 VAC, 50/60 Hz. 3 Ph, 15 A 400-480 VAC, 50/60 Hz. 3 Ph, 10 A			

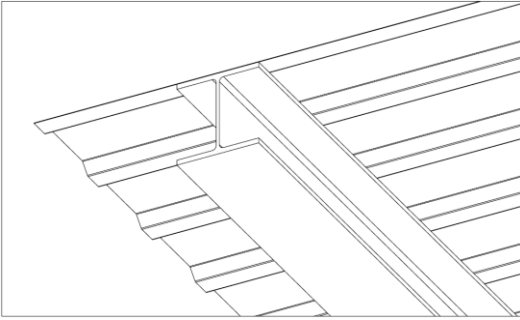
*524 Supplied with end caps only **Tested per AMCA 230-2015 test standard *** Dependent upon obstructions within the flow path

Fan wiring must satisfy requirements below:

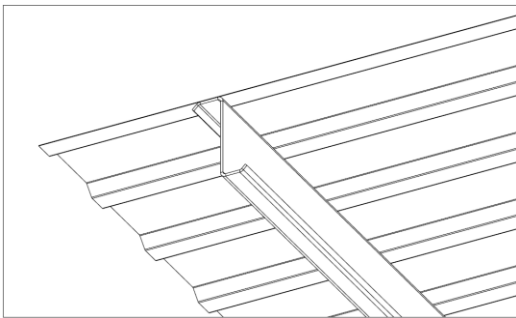
- 1- Wiring of fan(s) **must be performed by a qualified electrician.**
- 2- Each fan requires **dedicated circuit breaker.**
- 3- Install a **local/manual disconnect** if required by local/national codes.

Section 4:

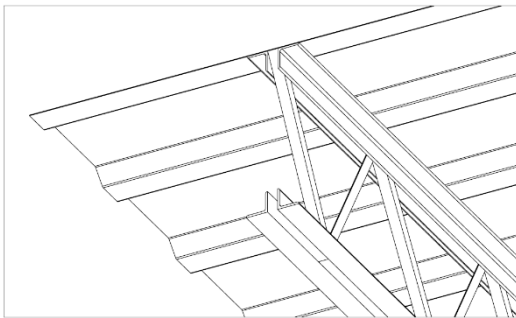
Mounting Guidelines

I-BEAM

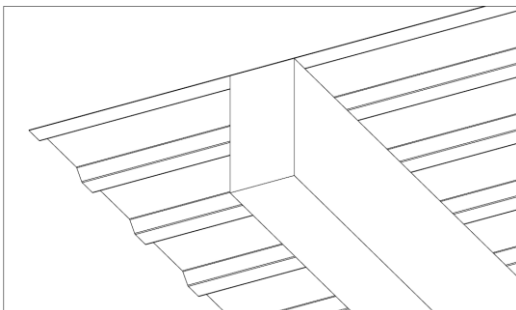
- **Do not Direct Mount Fan on I-Beam**
- **Do not mount fan on fabricated (welded) I-Beam**
- I-Beam must be rolled (not fabricated)
- I-Beam must be part of the existing structure
- Use spacers if I-Beam flange thickness exceeds 3/8"
- **Small I-Beam Mount Kit** for use with I-Beams up to 10" wide
- **Large I-Beam Mount Kit** for use with I-Beams up to 15" wide

Z-PURLIN

- **Customer to supply 3" (W) x 3" (H) x 1/4" (T) angle irons for Z-Purlin mounting**
- **Do not mount fan on single Z-Purlin**
- **Do not mount fan on Z-Purlin that is less than 14-gauge steel**
- **Do not mount fan on Z-Purlin that has an unsupported length greater than 30 FT.**
- The Z-Purlin Mount Kit is good for roof slopes of up to 5/12
- **Do not mount fan on Z-Purlin if purlin spacing is more than 5 FT.**

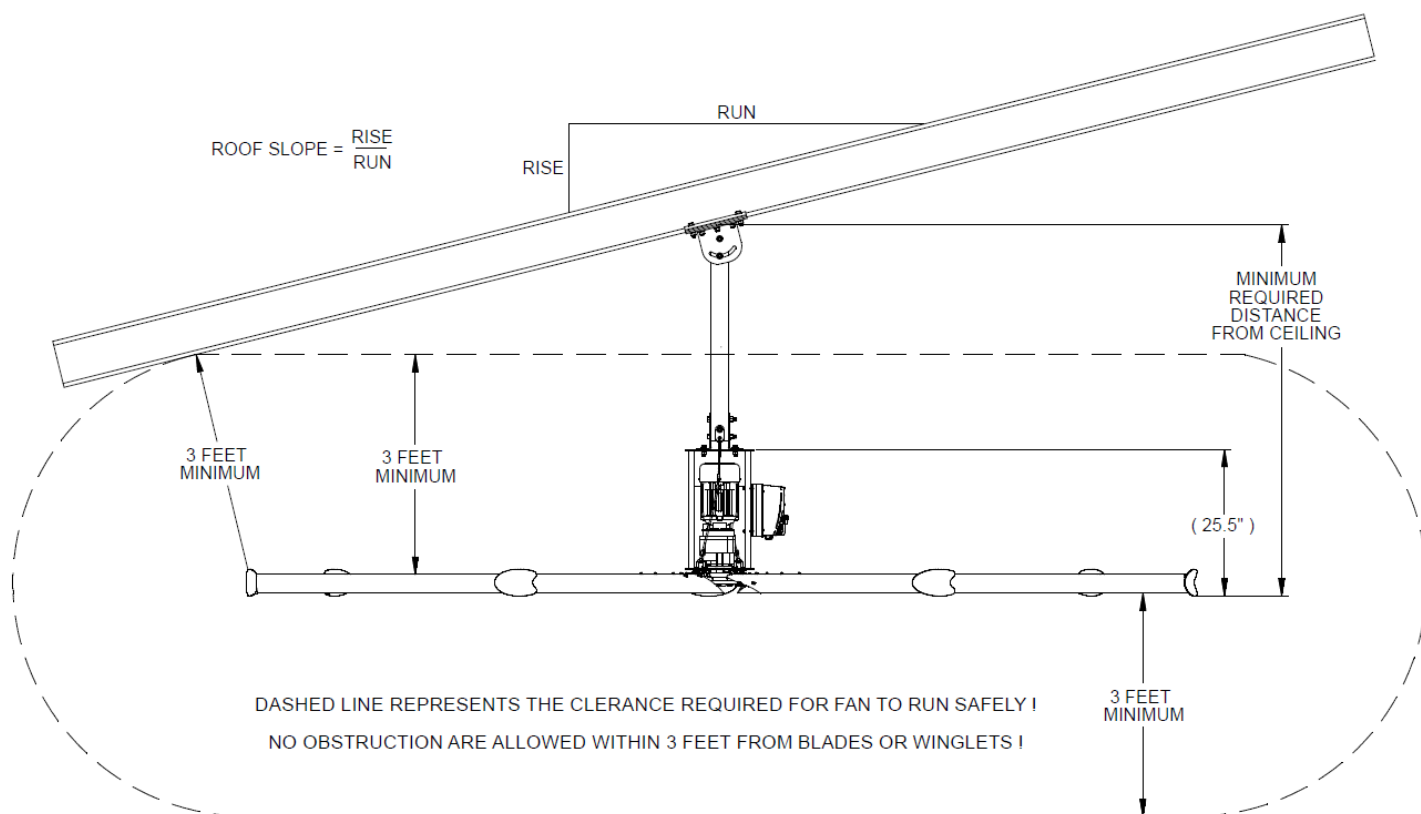
BAR JOIST

- **Customer to supply 3" (W) x 3" (H) x 1/4" (T) angle irons for Bar Joist mounting**
- **Do not mount fan on single Bar Joist**
- Span between Bar Joists should not exceed 12 FT.
- Angle iron must be fastened to Bar Joists on both ends
- **Do not use beam clips to secure angle irons**

SOLID BEAM

- **Customer to supply 1/2"-13 Grade 8 mounting hardware for installation of Solid Beam Kit**
- For Beam thicknesses up to 14 1/2", use **Small Solid Beam Mount Kit**
- For Beam thicknesses greater than 14 1/2" and up to 19 1/2" use **Large Solid Beam Mount Kit**

Clearance Guide for Flat or Sloped Roof Installation



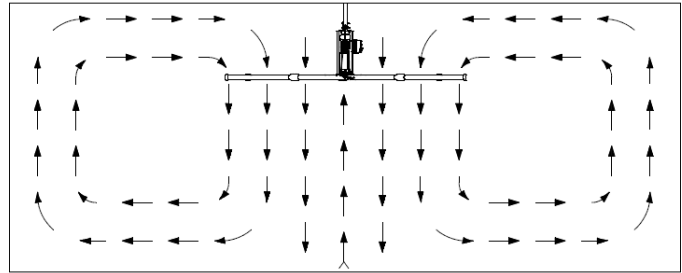
ROOF SLOPE	0	1 / 12	2 / 12	3 / 12	4 / 12
ROOF ANGLE (DEG.)	0	4°	9.5°	14°	18.5°
FAN DIA. (FT.)	MINIMUM REQUIRED DISTANCE FROM CEILING (FT.)				
8	4	4	4	4	4
10	4	4	4	4	4
12	5	5	5	5	5
14	5	5	5	5	5
16	6	6	6	6	6
18	6	6	6	6	6
20	6	6	6	6	6

Note: For angles above 18.5°, or if you need assistance with above table, please contact the manufacturer.

Explanation of Airflow Patterns

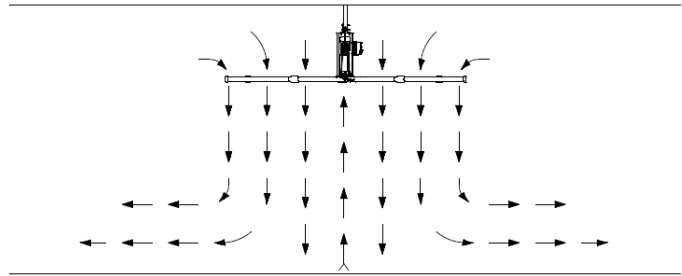
Enclosed Area Airflow:

The floor jet radiates outward, upon reaching the wall, the jet is deflected upwards. At the ceiling the flow is directed inward to the low-pressure area above the fan where it is then pulled down towards the floor. This pattern creates a convection-like air current that gathers momentum. Once this current is established, the fan entrains air from outside the current, increasing its cooling effects.



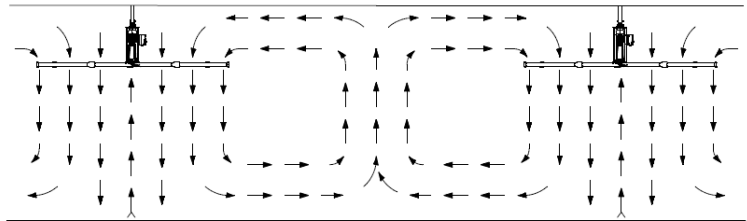
Open Area Airflow:

Airflow moves from the fan towards the floor. Once at the floor, it moves outward in all directions. The deflection of air across the floor is referred to as "floor jet".



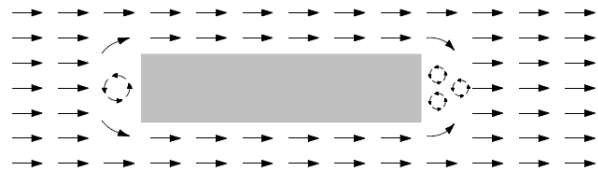
Multiple Fan Airflow:

When there are multiple fans properly spaced, the fan jets created by the fans meet to create a virtual wall, causing each fan to create the same airflow pattern as seen in the enclosed area airflow scenario. Typically, multiple fan installations further enhance the performance of each individual fan as they work together.



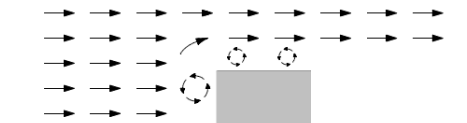
Airflow with Streamlined Obstructions:

Obstructions on the floor tend to block horizontal air movement. Thin or streamlined obstructions tend to be less intrusive. Air tends to move freely around such obstructions, losing little momentum, and leaving a very small area behind the obstruction that remains stagnant.



Airflow with Wide, Blunt Obstructions:

Wide, blunt, or flat-faced obstructions block air flow and cause the air to change direction. Behind these obstructions there is a stagnant area that is higher and wider than the obstructions themselves.

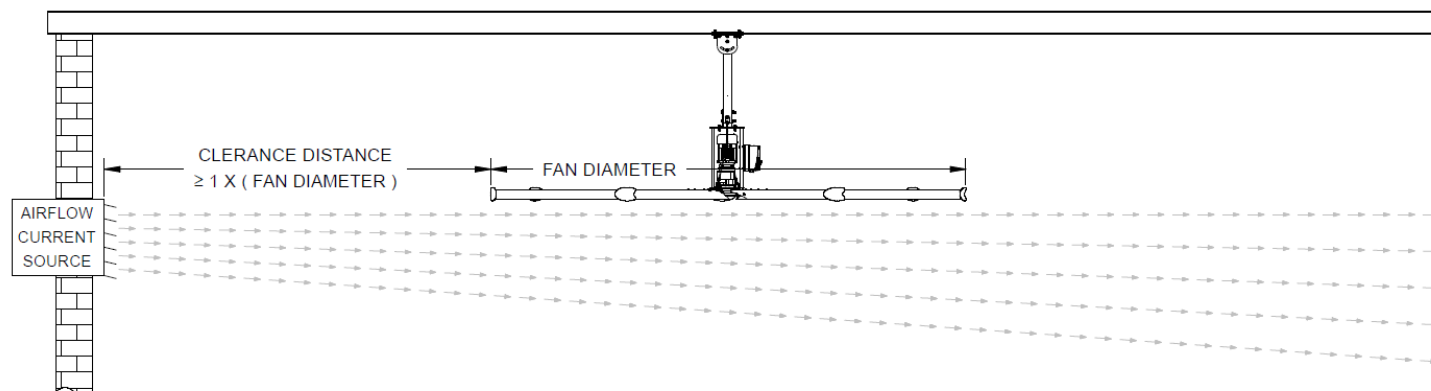


Airflow Currents Clearance Guide

For any equipment (such as HVAC, ventilators, etc....) and/or other building windows or vent openings that might generate airflow currents, follow the clearance guidelines below.

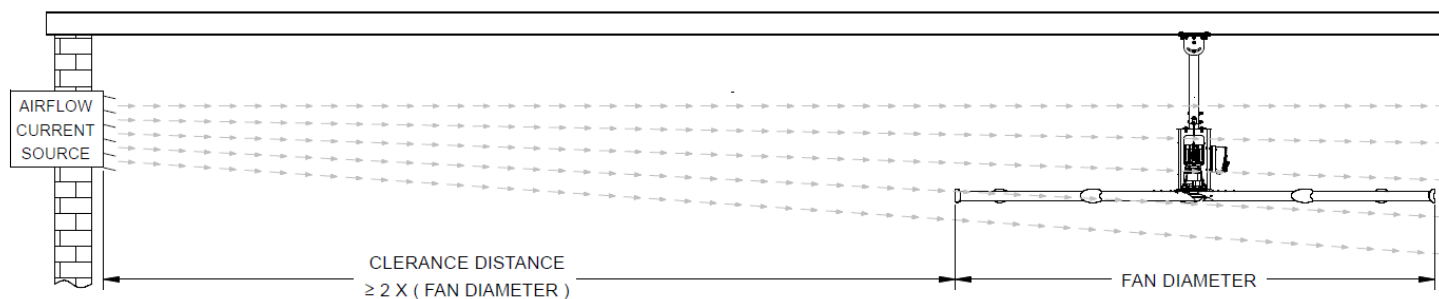
If the airflow current is below the fan (as shown below), the distance from the fan to the airflow current source must be greater than or equal to 1X the fan diameter.

For example: If the fan diameter is 20 ft. then the distance between the fan and the airflow current source must be greater than or equal to 20 ft.



If the airflow current source is above the fan (as shown below), the distance from the fan to the airflow current source must be greater than or equal to 2X the fan diameter.

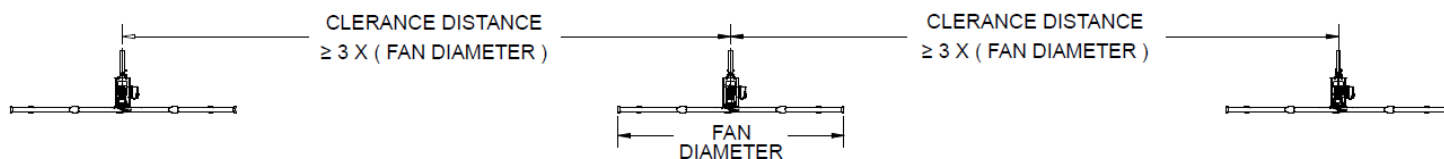
For example: If the fan diameter is 20 ft. then the distance between the fan and the airflow current source must be greater than or equal to 40 ft.



Clearance Guide for Multiple Fans

For multiple fan installation, the distance between the centerlines of the fans (as shown below) should be greater than or equal to 3X the fan diameter.

For example: If the fan diameter is 20 ft. then the distance between fans must be greater than or equal to 60 ft.



Section 5: Equipment, Personnel & Tools Requirements

Required Equipment & Personnel for Fan Installation

- Mechanical lift, such as a scissor lift, for lifting the fan assembly and personnel
- Two people (recommended)
- Qualified electrician for wiring the fan

Required Tools

- | | |
|---------------------------------------|----------------------------------|
| ▪ 1/2" & 3/4" Combination wrenches | ▪ Tape measure |
| ▪ 1/2" & 3/4" Sockets with ratchet | ▪ Level |
| ▪ Torque wrench capable of 40 FT-LB | ▪ Cable cutter |
| ▪ Phillips and flat head screwdrivers | ▪ Gloves & safety glasses |
| ▪ Wire strippers | ▪ 9/16" drill bit and hand drill |
| ▪ Utility knife | |

Section 6:**Unpacking Fan & Checking Parts**

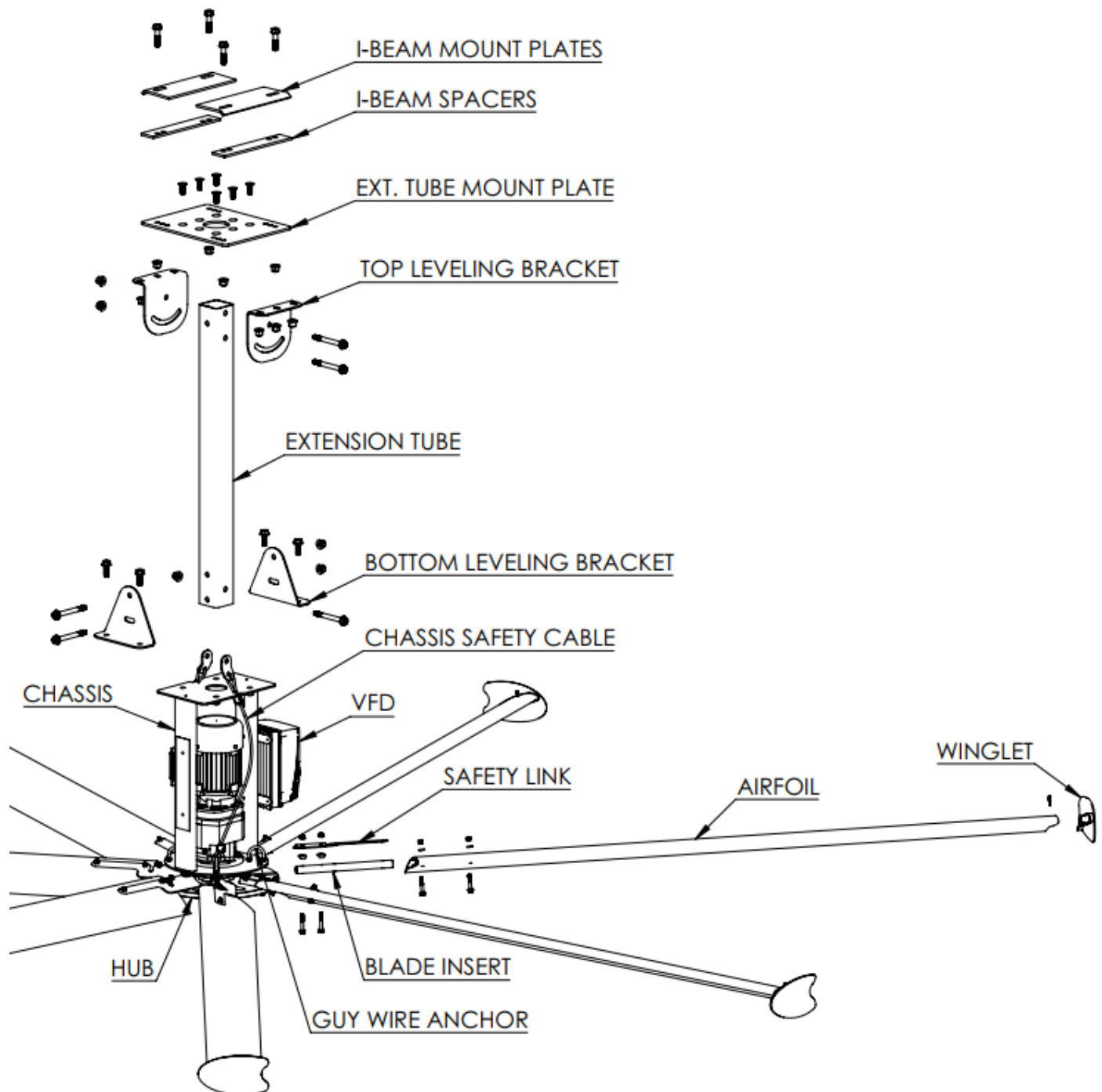
Each fan will arrive with two main parcels, the first parcel will be skid mounted and will contain the main chassis assembly, assembly hardware, mounting hardware, and the fan controls, the second parcel will contain the airfoils.

Carefully open each package and inspect the contents to ensure no damage occurred during transit.

If damage is visible contact High Performance Fan Co. immediately and please share photos of the damage with us via email at info@highperformancefan.com.

If all items have arrived in good condition you may proceed.

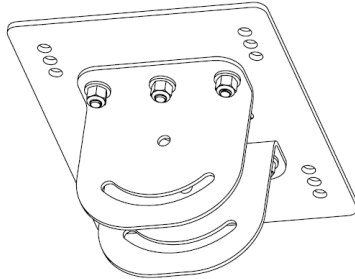
Fan Assembly Exploded View



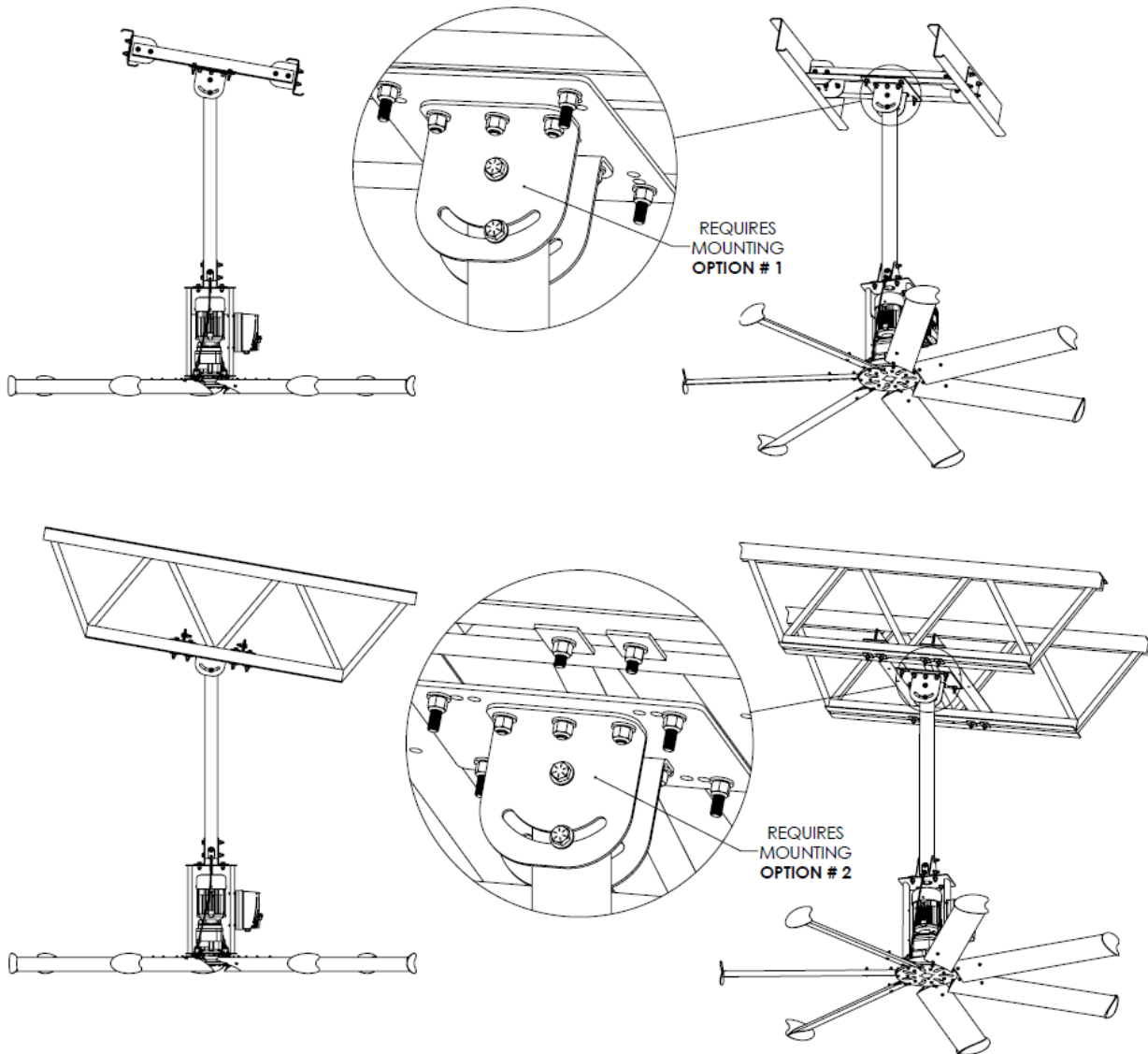
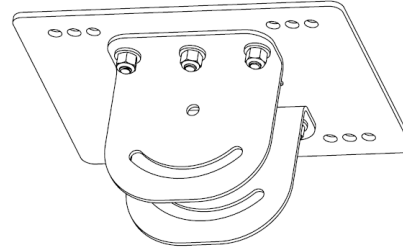
Section 8:**Extension Mount Top Bracket Orientation**

For sloped roof, first you need to figure out which Top Leveling Bracket option you need to assemble based on examples shown below:

TOP LEVELING BRACKET SUBASSEMBLY
MOUNTING **OPTION # 1**



TOP LEVELING BRACKET SUBASSEMBLY
MOUNTING **OPTION # 2**



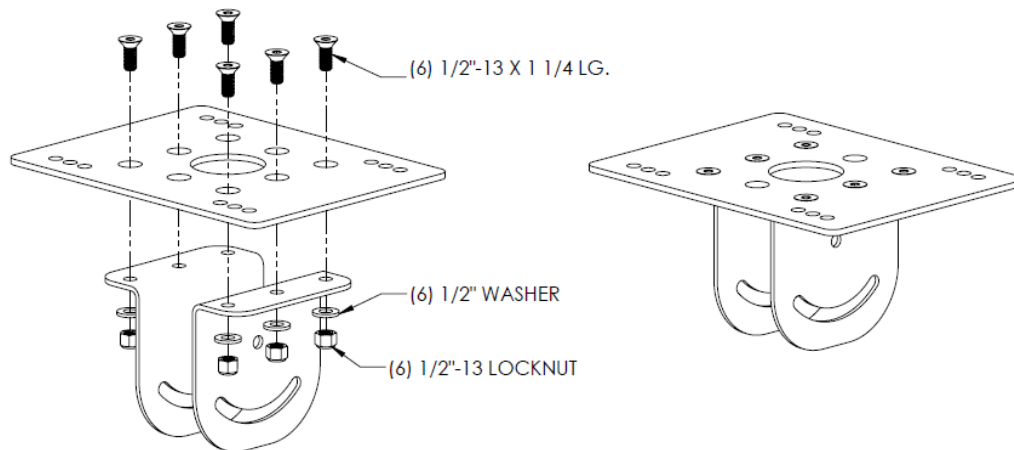
Section 9:

I-Beam Mounting Instruction

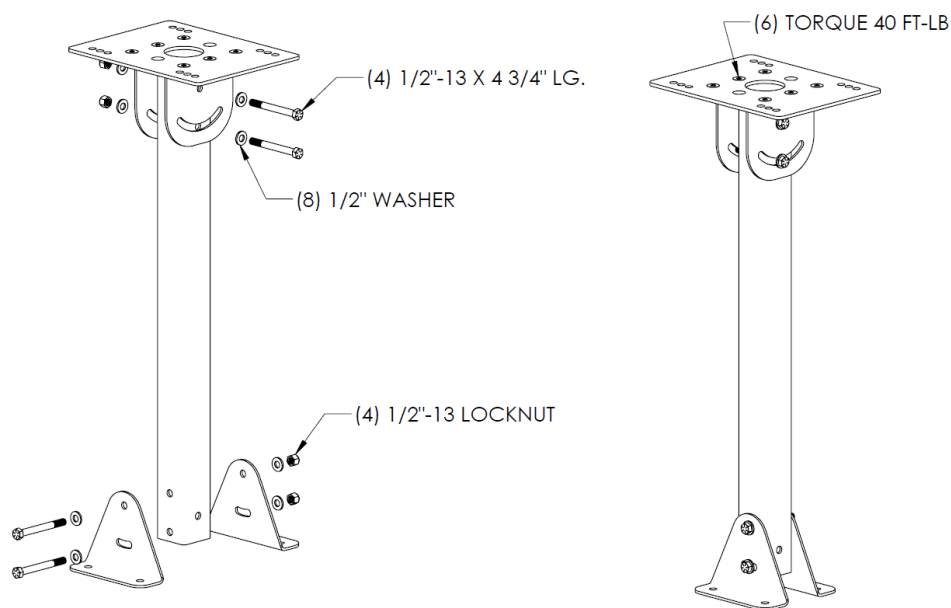
WARNINGS:

- **DO NOT** Direct Mount fan on I-Beams (Small or Large I-Beam Mount Kit must be used)!
- **DO NOT** mount fan on fabricated I-Beams (fabricated I-Beams are welded I-Beams)!
- **I-Beams must be rolled (not fabricated) and part of building structure!**
- **There are two different size I-Beam Mount Kits (Small or Large), the correct size mount kit should be selected at the time the fan is purchased.**

Step # 1 - Assemble Top Leveling Bracket subassembly as shown below, but do not fully tighten yet.

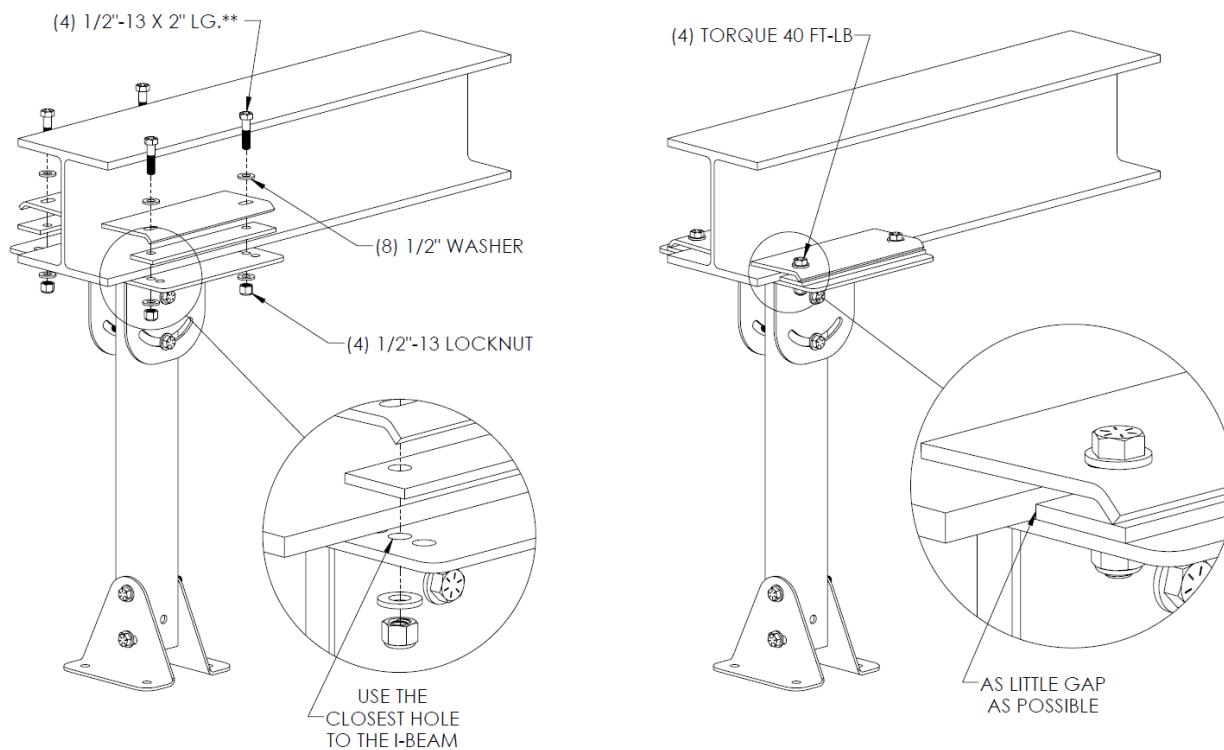


Step # 2 – Assemble Extension Tube and Bottom Leveling Brackets as shown below, but do not fully tighten yet as shown below on the left. Then, torque (6) flat head screws to 40 FT-LB as shown below on the right.



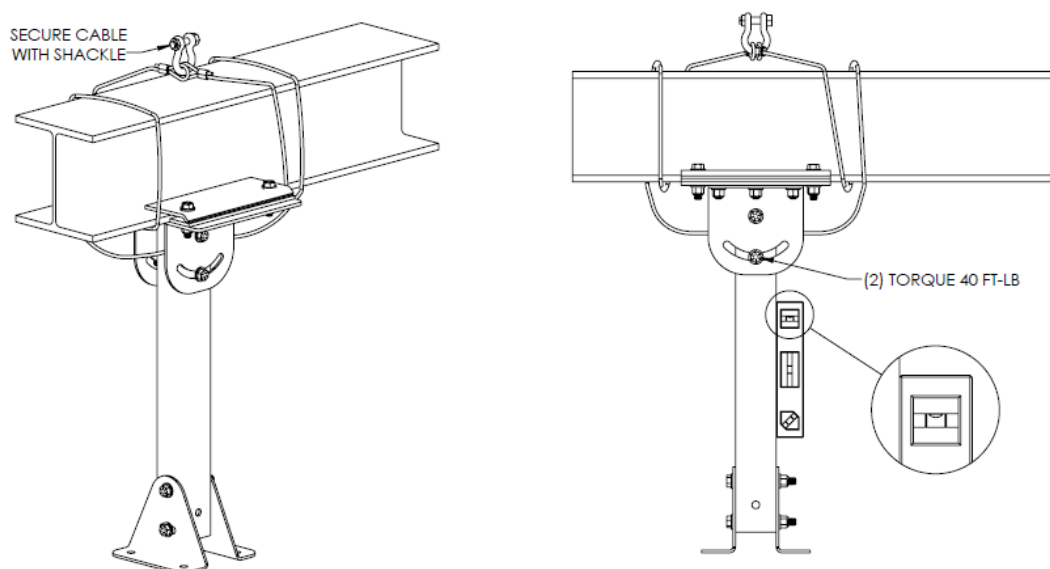
Step # 3 – Assemble Extension Tube assembly on I-Beam as shown below on the left. Then, torque (4) screws to 40 FT-LB as shown on the right.

NOTE: Use the closest holes on Extension Tube Mount Plate to mount on the I-Beam and make sure the Extension Tube Mount Plate is centered with the I-Beam!

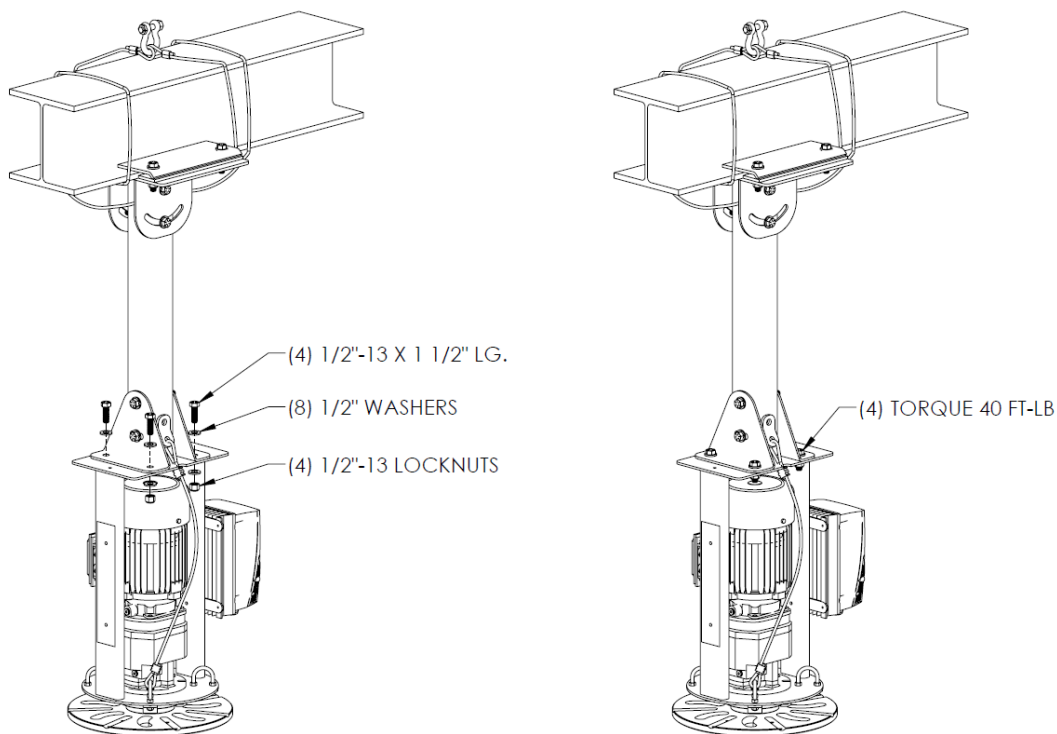


**** For the Large I-Beam Mount Kit there are (4) 1/2"-13 X 2 1/4" LG. screws (instead of (4) 1/2"-13 X 2" LG. screws)**

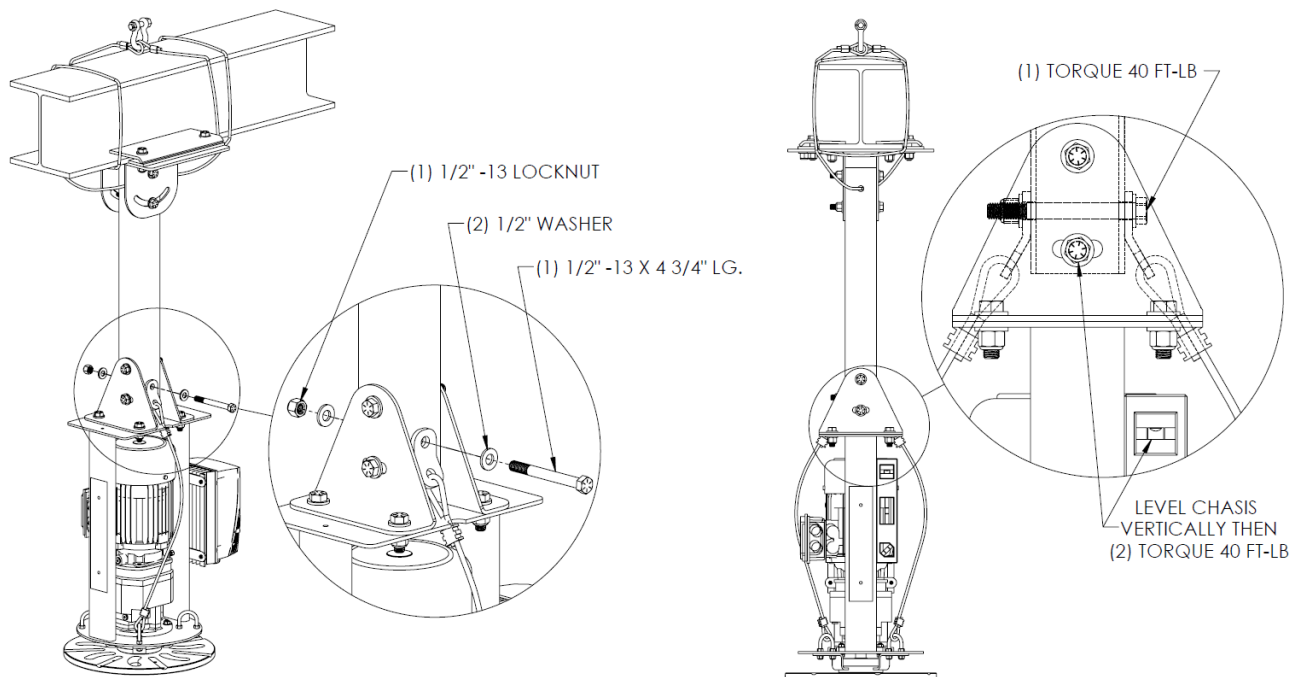
Step # 4 – Next, wrap the Extension Tube Safety Cable around the I-Beam as tight as possible leaving as little slack as possible, securing it with the supplied shackle as shown below on the left. Then, level Tube Extension vertically and torque (2) screws as shown below on the right.



Step # 5 – Assemble Chassis to brackets as shown below on the left. Then, torque (4) screws to 40 FT-LB as shown below on the right.



Step # 6 – Install Chassis Safety Cables on both sides of the Extension Tube as shown below on the left, then torque (1) screw to 40 FT-LB. Then, level Chassis vertically and torque (2) screws to 40 FT-LB as shown below on the right.



NOTE: The above step concludes mounting of the fan chassis for I-Beam mounting applications. Proceed to Section 13 to continue the installation.

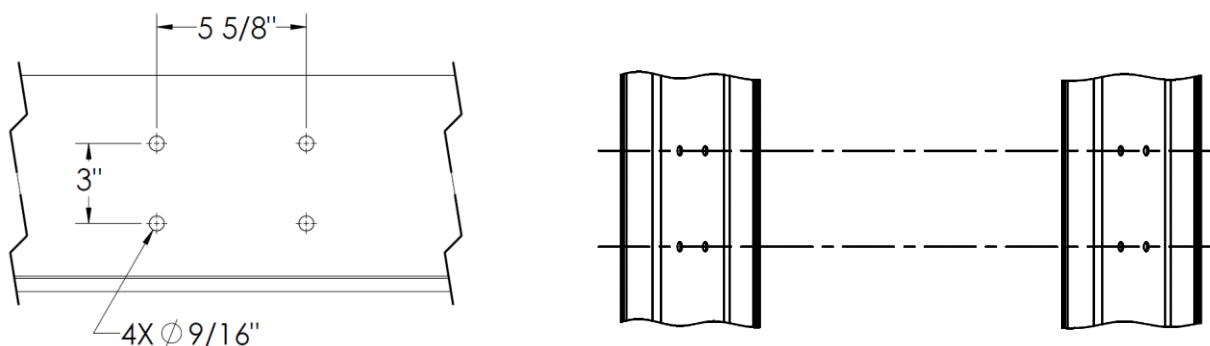
Section 10:

Z-Purlin Mounting Instruction

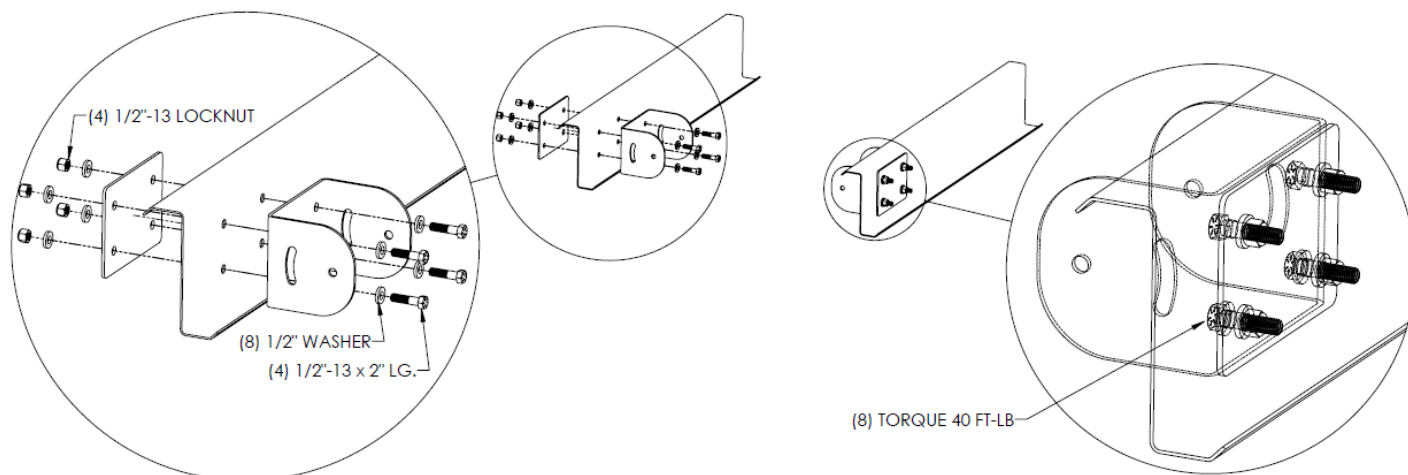
WARNINGS:

- **DO NOT** mount fan on a single Z-Purlin!
- **When mounting fan to Z-Purlins, an Extension Tube must be used!**
- **DO NOT** mount fan on Z-Purlins that are less than 14-gauge steel (.078" thick)!
- **DO NOT** mount fan on Z-Purlins if unsupported Z-Purlin length is greater than 30 FT!
- **DO NOT** mount fan using Z-Purlins if Z-Purlin spacing is greater than 5 FT!
- **The Z-Purlin mount kit is good for roof slopes up to 5/12!**
- **Customer to supply (2) Pieces of angle irons, 3" W x 3" H x 0.25" T (length to be determined based on span of Z-Purlins)**
- **If there is any doubt regarding the strength of the mounting structure, consult a structural engineer!**

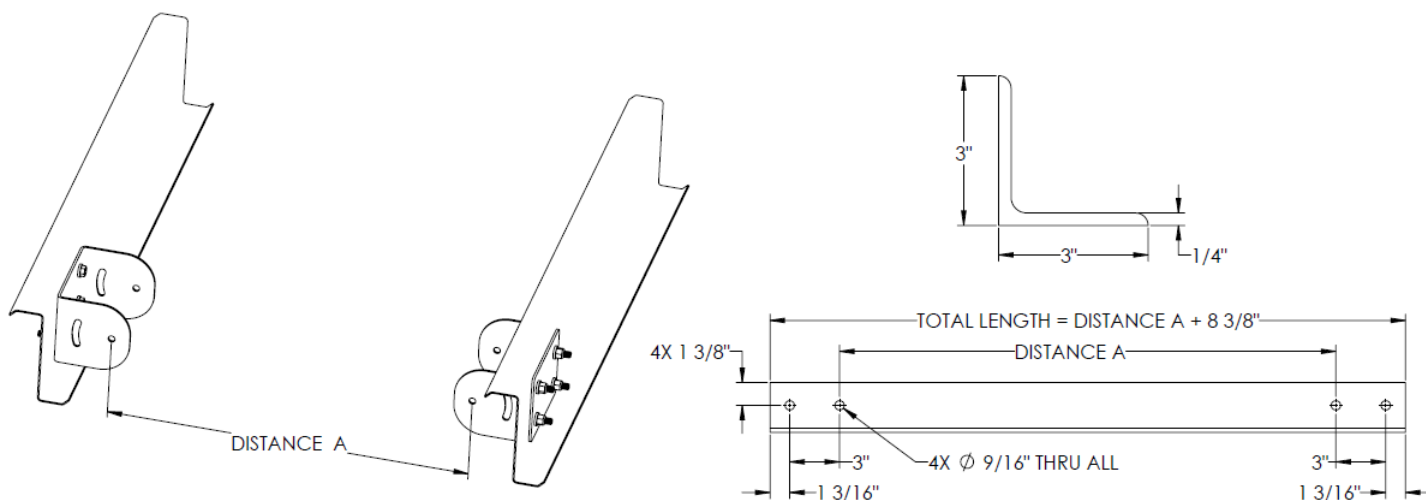
Step # 1 – Drill (4) holes in the center of the first Z-Purlin as shown below on the left (you could use the Z-Purlin support plate as a template to mark the holes). Then, locate and drill the same holes on the second Z-Purlin, making sure the second set of holes are aligned with the first set of holes as shown below on the right!



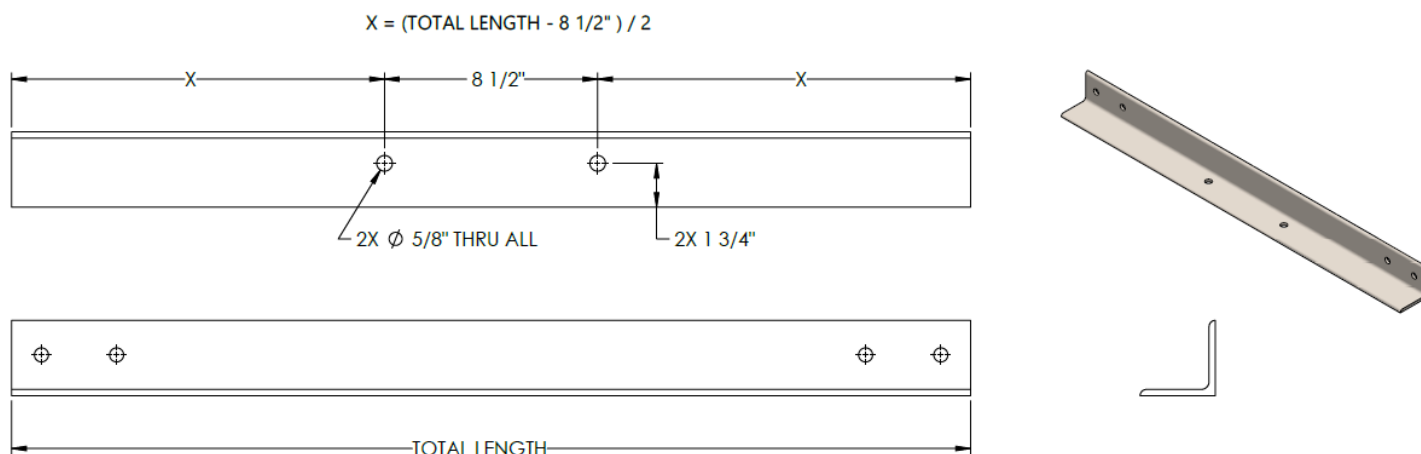
Step # 2 – Assemble both Z-Purlin Brackets, facing each other, as shown below, then torque (8) screws to 40 FT-LB.



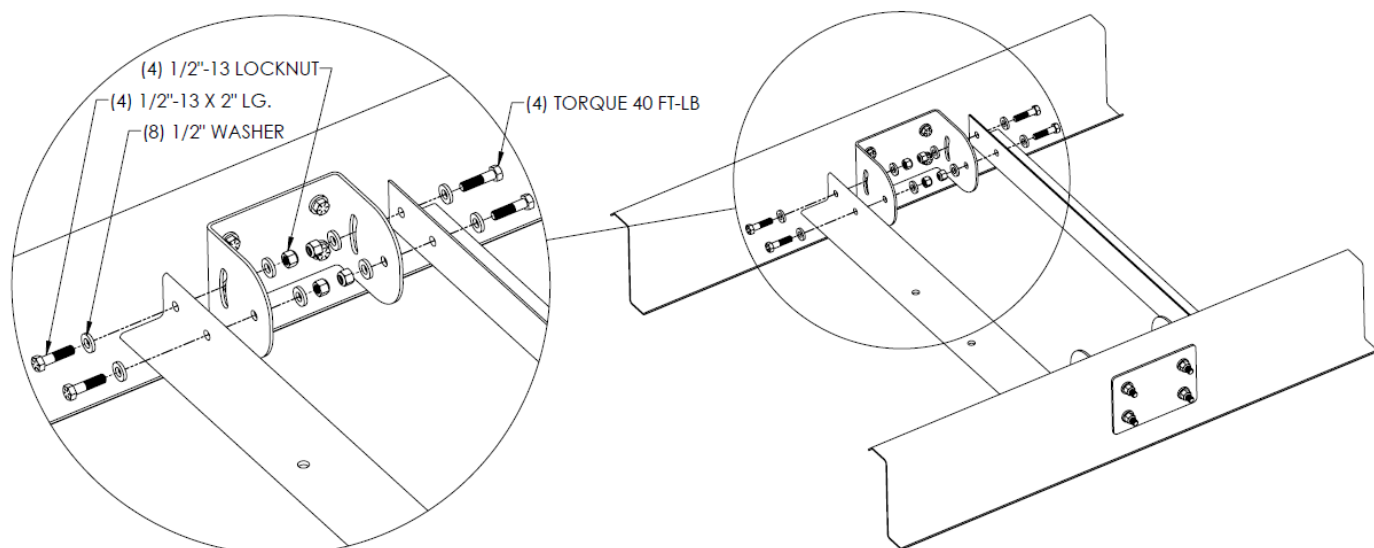
Step # 3 – Measure the span between the holes in the mounting brackets as shown below on the left, this measurement will be “Distance A” and will be used to determine the total length of the angle iron needed to mount the fan using the formula provided below on the right. With the (2) angle iron pieces cut to length (total length should not exceed 5 FT.), drill the holes as shown below on the right.



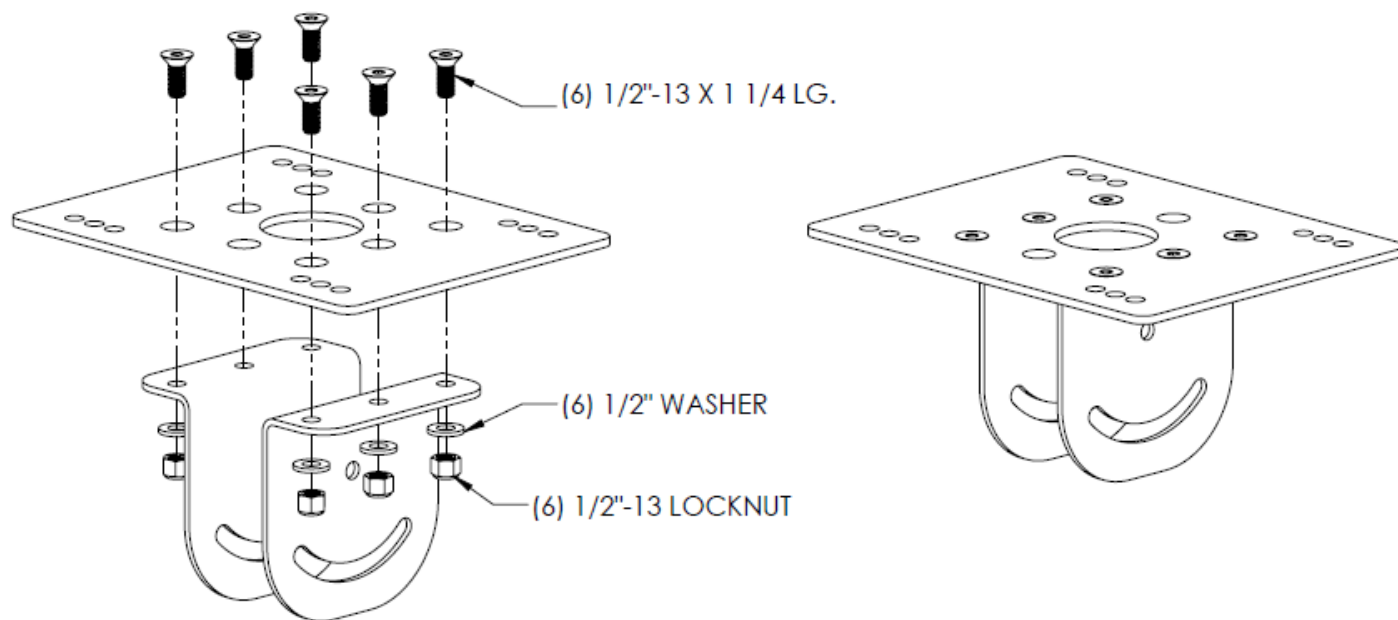
Step # 4 – Next, drill the holes for mounting the fan as shown below (qty. 2). Notice, the holes are centered as shown.



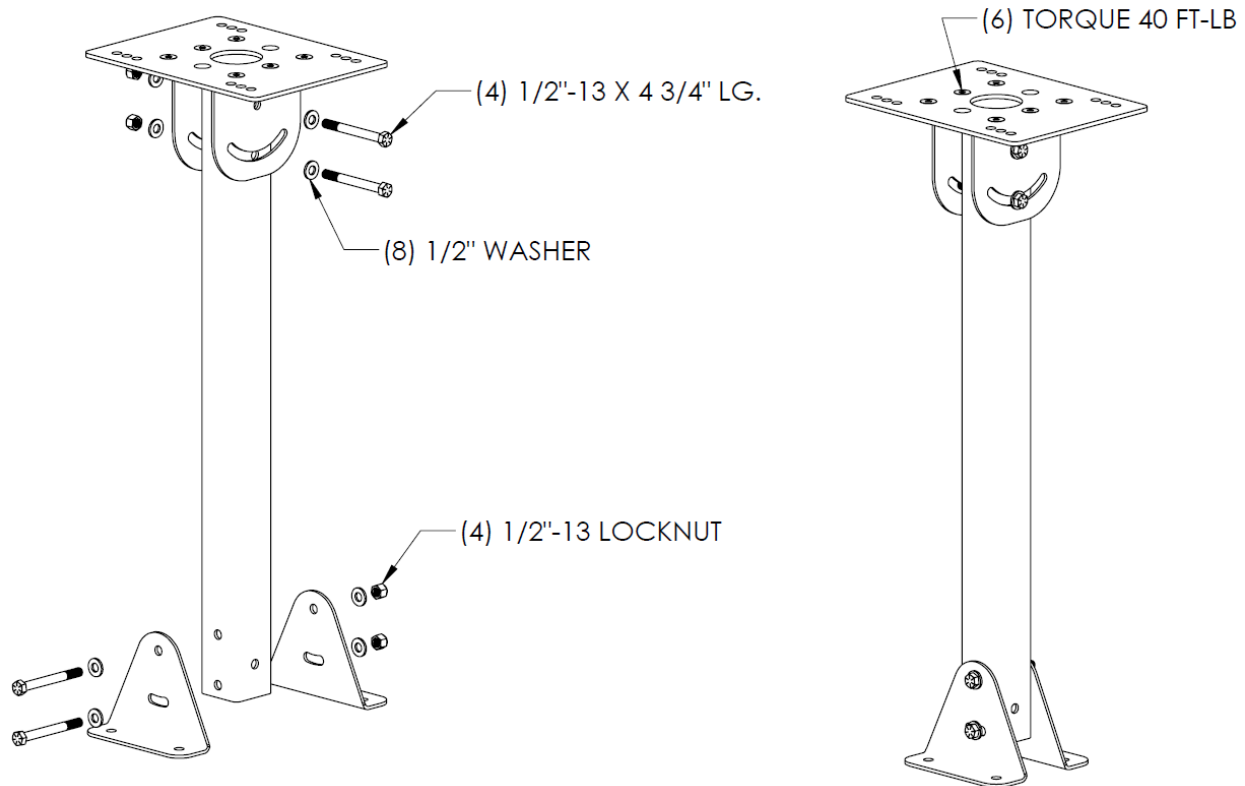
Step # 5 – Install angle irons as shown below on both sides, then torque (8) screws to 40 FT-LB.



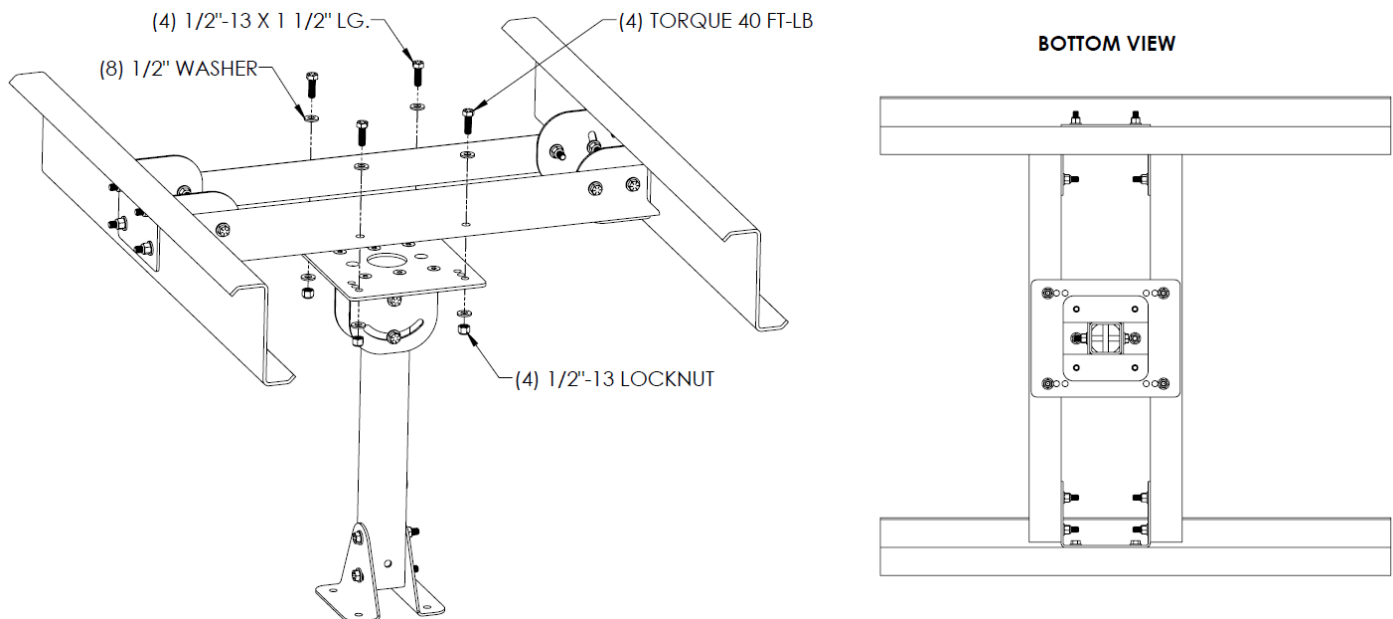
Step # 6 - Assemble Top Leveling Bracket subassembly as shown below but do not fully tighten yet.



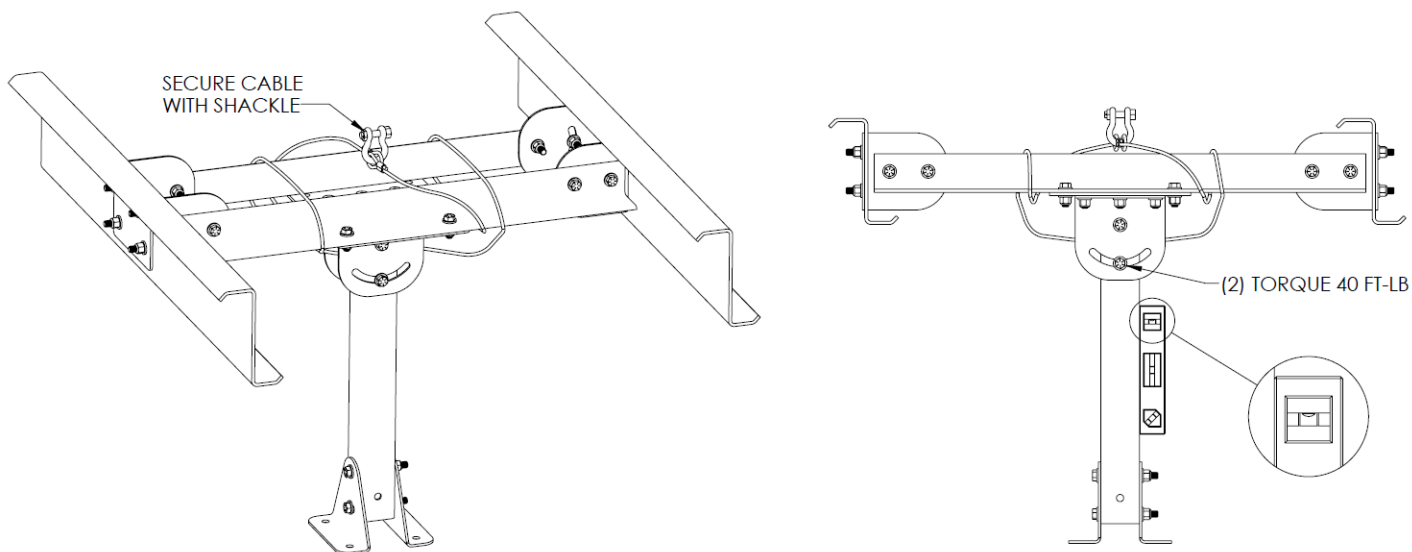
Step # 7 – Assemble Extension Tube and Bottom Leveling Brackets but do not fully tighten yet as shown below on the left. Then, torque (6) flat head screws to 40 FT-LB as shown below on the right.



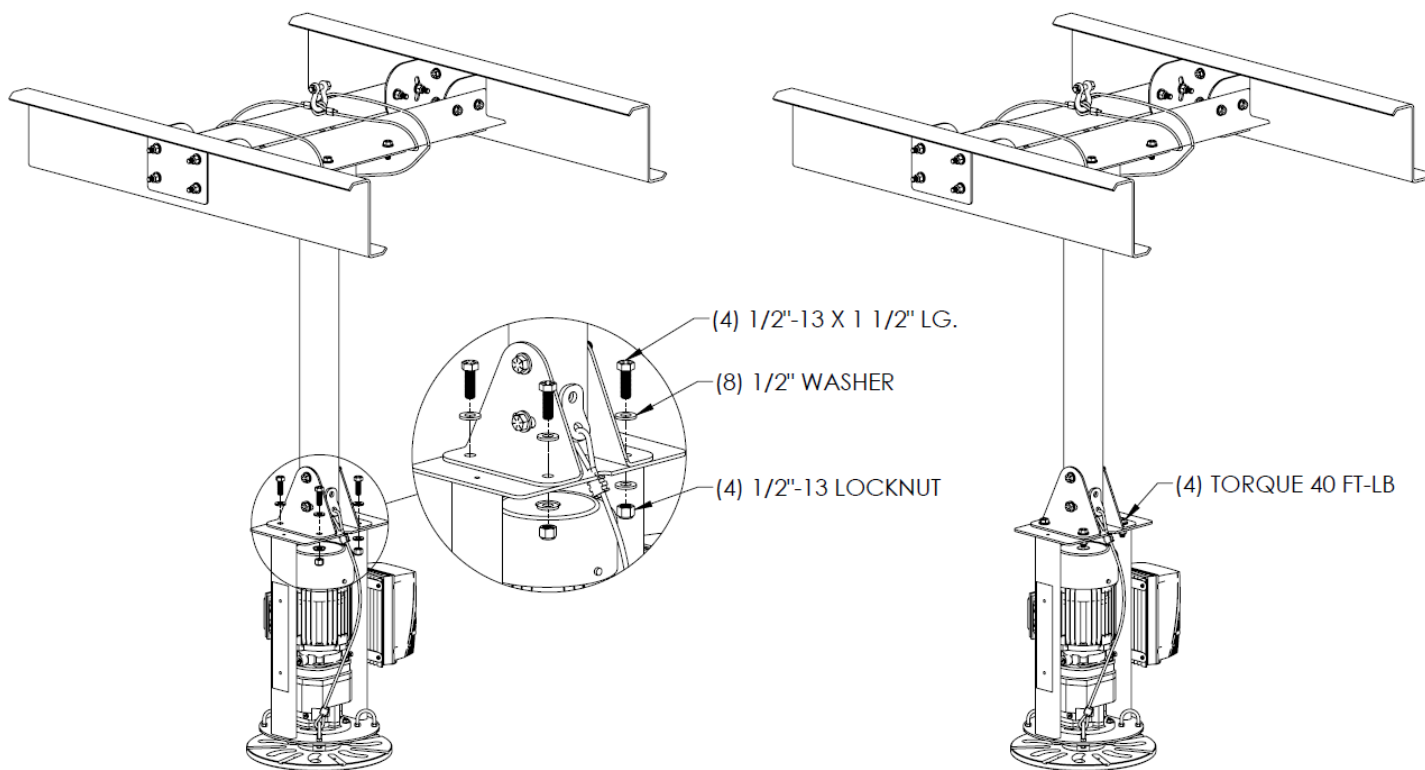
Step # 8 – Assemble Extension Tube assembly to angle irons mounts. Then, torque (4) screws to 40 FT-LB as shown below.



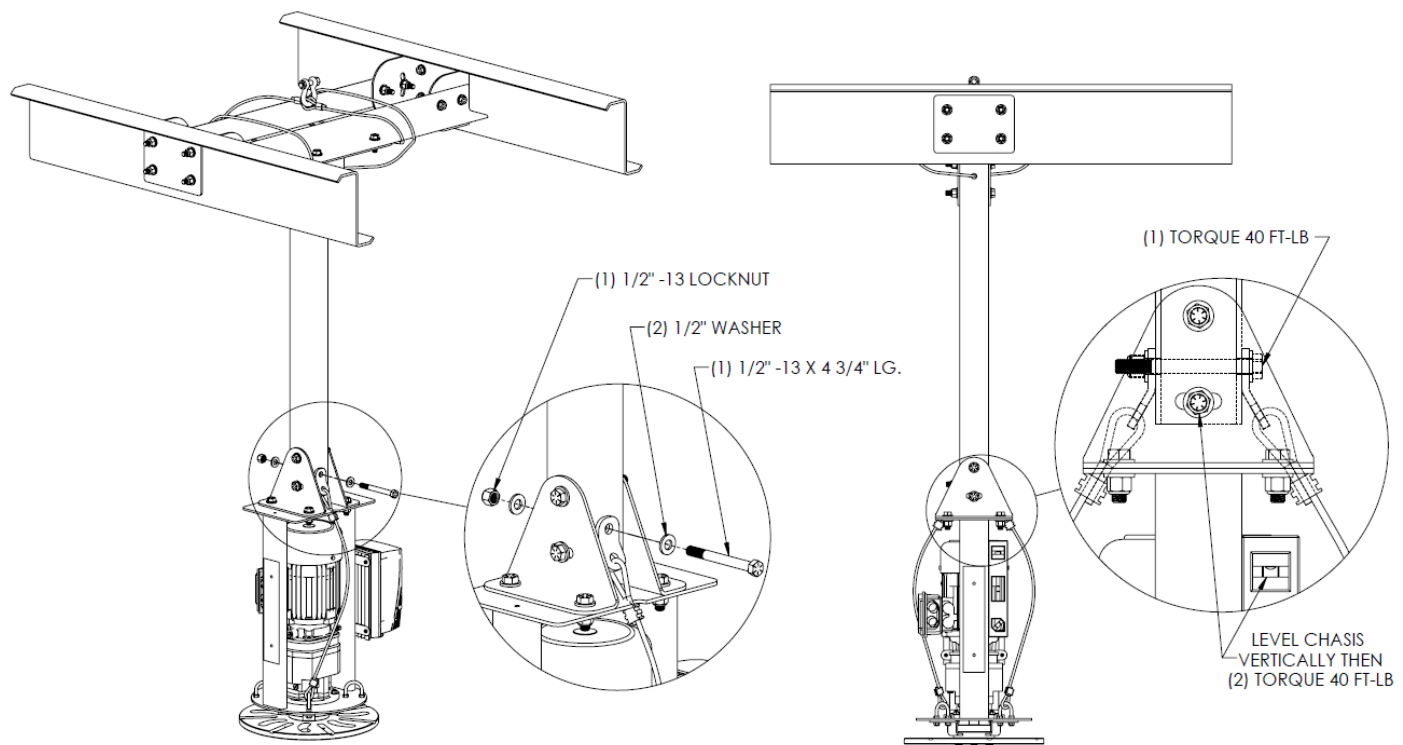
Step # 9 – Next, wrap the Extension Tube Safety Cable around the angle irons as tight as possible leaving as little slack as possible, securing it with the supplied shackle as shown below on the left. Then, level Tube Extension vertically and torque (2) screws as shown below on the right.



Step # 10 – Assemble Chassis to brackets as shown below on the left. Then, torque (4) screws to 40 FT-LB as shown below on the right.



Step # 11 – Install Chassis Safety Cables on both sides of the Extension Tube as shown below on the left, then torque (1) screw to 40 FT-LB. Then, level Chassis vertically and torque (2) screws to 40 FT-LB as shown below on the right.



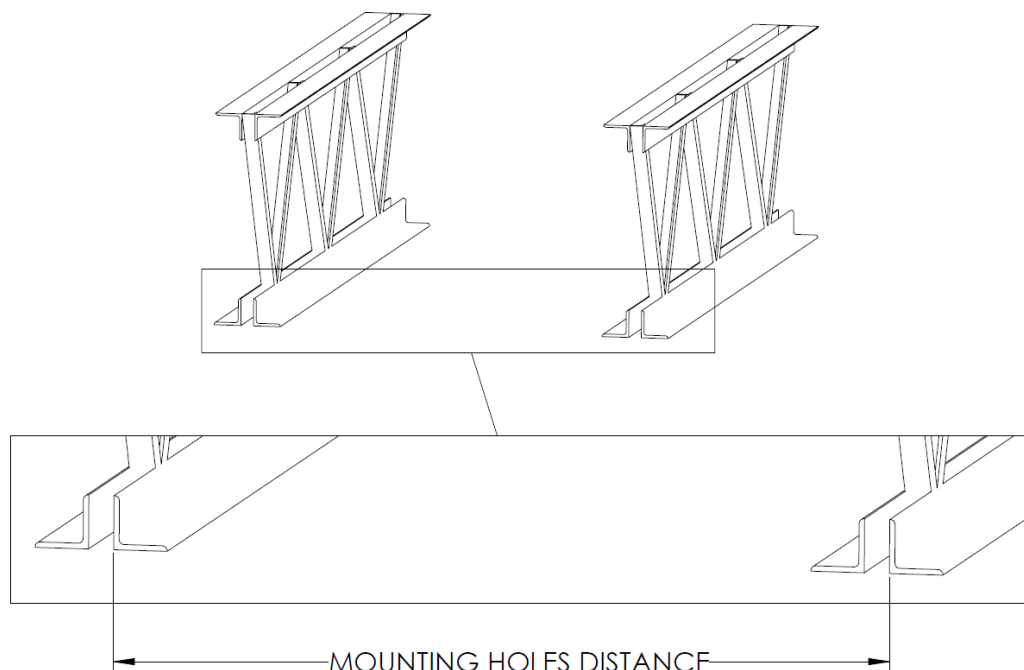
NOTE: The above step concludes mounting of the fan chassis for Z-Purlin mounting applications. Proceed to Section 13 to continue the installation.

Section 11: Bar-Joist Mounting Instruction (Direct or with Extension)

WARNINGS:

- Customer to supply either (2) or (4) pieces of angle iron (size and length to be determined below)!
- **DO NOT** mount fan on single Bar-Joist!
- Distance between Bar-Joists should not exceed 12 FT.!
- Angle iron must be fastened on roof structure on both ends!
- **DO NOT** use beam clips to secure angle irons to Bar-Joists!

Step # 1 – Measure Bar-Joist span to define Mounting Holes Distance as shown below.



Step # 2 – Based on Mounting Holes Distance, define the angle iron size (W X H X T) and quantity (2 or 4) needed by using the table below.

MOUNTING HOLES DISTANCE ¹	ANGLE IRON DIMENSIONS ² (W X H X T)	QUANTITY OF ANGLE IRON NEEDED
≤ 6 FT.	2 ½" X 2 ½" X ¼"	2
> 6 FT. UP TO 8 FT.	3" X 3" X ¼"	2
> 8 FT. UP TO 12 FT.	3" X 3" X ¼"	4 ³
>12 FT.	DO NOT USE ⁴	DO NOT USE ⁴

¹ – Based on measurement from Step # 1, determine your range on the table.

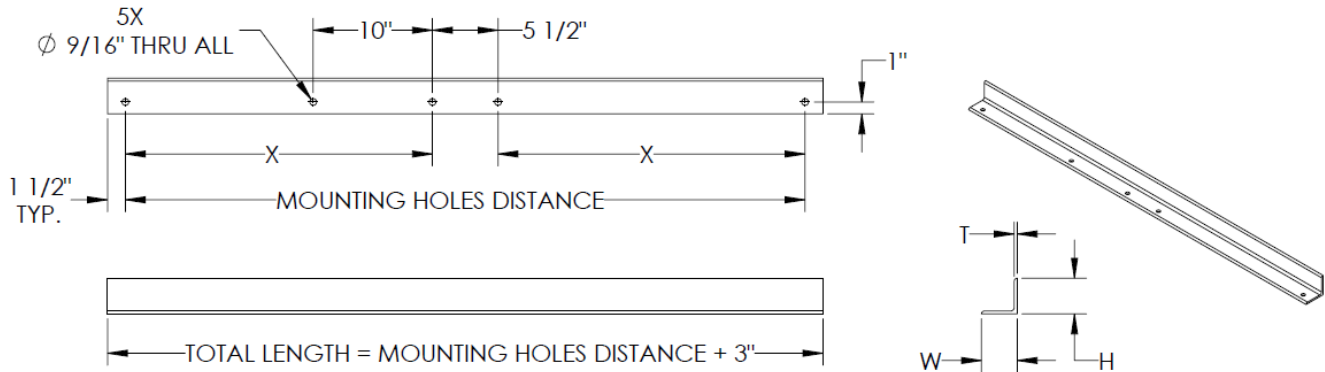
² - All angle iron dimensions must be greater than or equal to the corresponding size shown on the table

³ - Two pairs of Angle Iron are required

⁴ - If the Mounting Holes Distance is more than 12 FT. contact manufacturer or a structural engineer

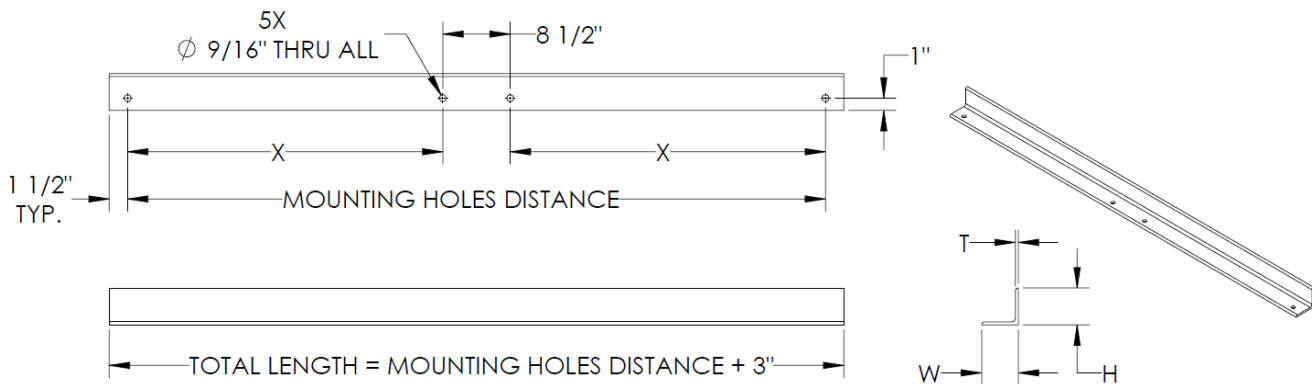
Step # 3 – Drill mounting holes as shown below according to **Angle Iron Quantity** and **Mount Type**.

a) For **Direct Mount** with **(2) Angle Irons (Mounting Holes Distance ≤ 8 FT.)**, drill holes as shown below



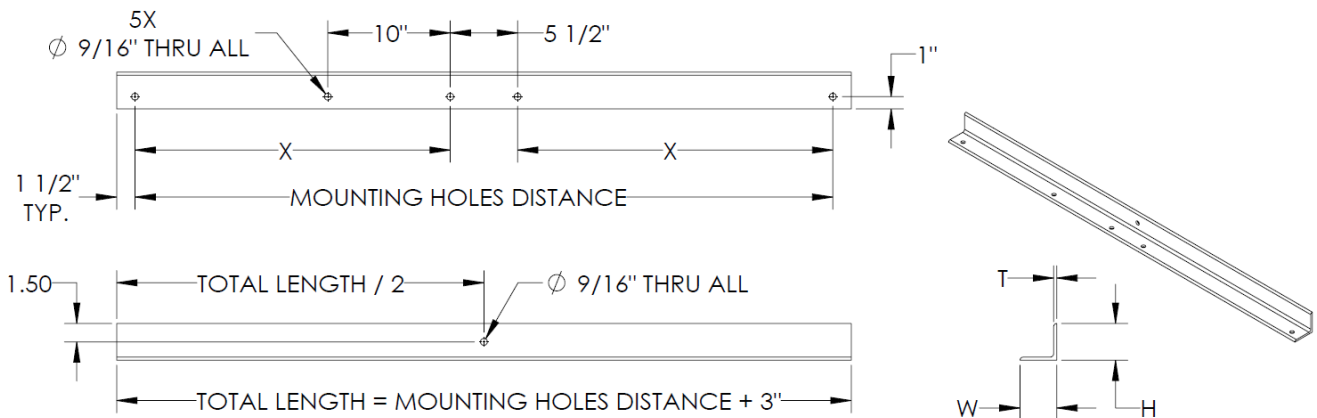
NOTE: Dimension $X = (\text{MOUNTING HOLES DISTANCE} - 5 \frac{1}{2}'') / 2$

b) For **Extension Tube Mount** with **(2) Angle Irons (Mounting Holes Distance ≤ 8 FT.)**, drill holes as shown below



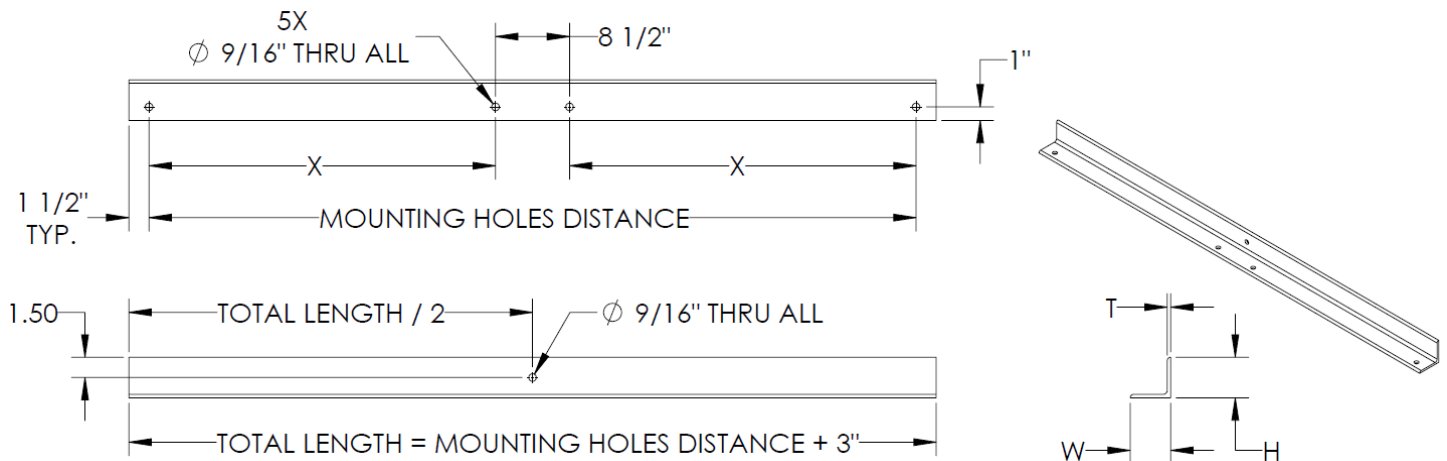
NOTE: Dimension $X = (\text{MOUNTING HOLES DISTANCE} - 8 \frac{1}{2}'') / 2$

c) For **Direct Mount** with **(4) Angle Irons (Mounting Holes Distance > 8 FT.)**, drill holes as shown below



NOTE: Dimension $X = (\text{MOUNTING HOLES DISTANCE} - 5 \frac{1}{2}'') / 2$

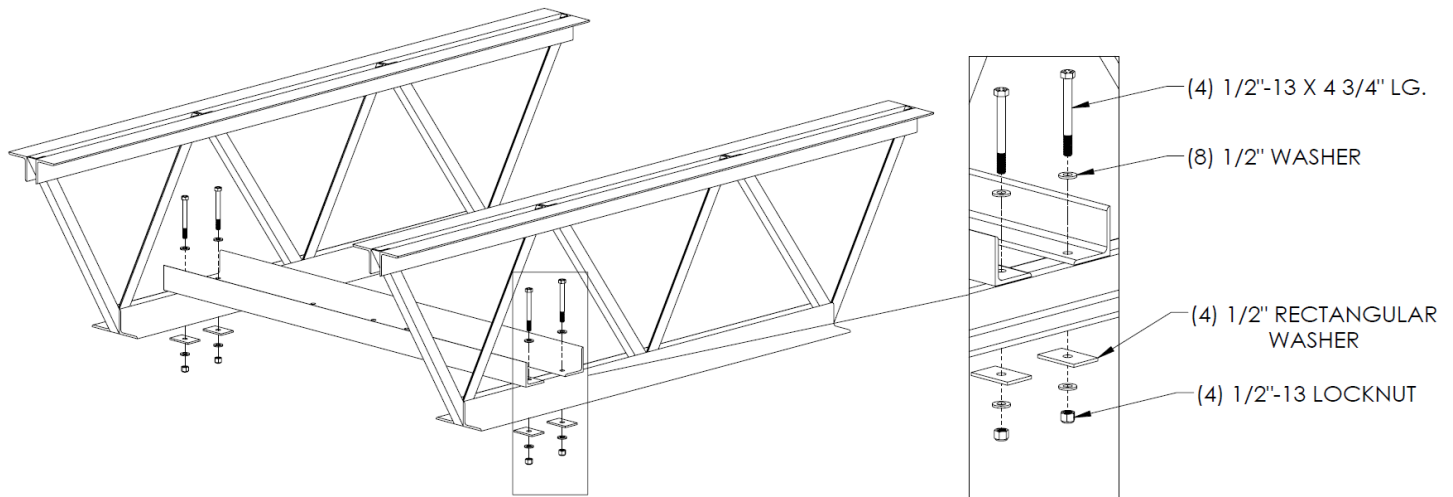
d) For **Extension Tube Mount with (4) Angle Irons (Mounting Holes Distance > 8 FT.)**, drill holes as shown below



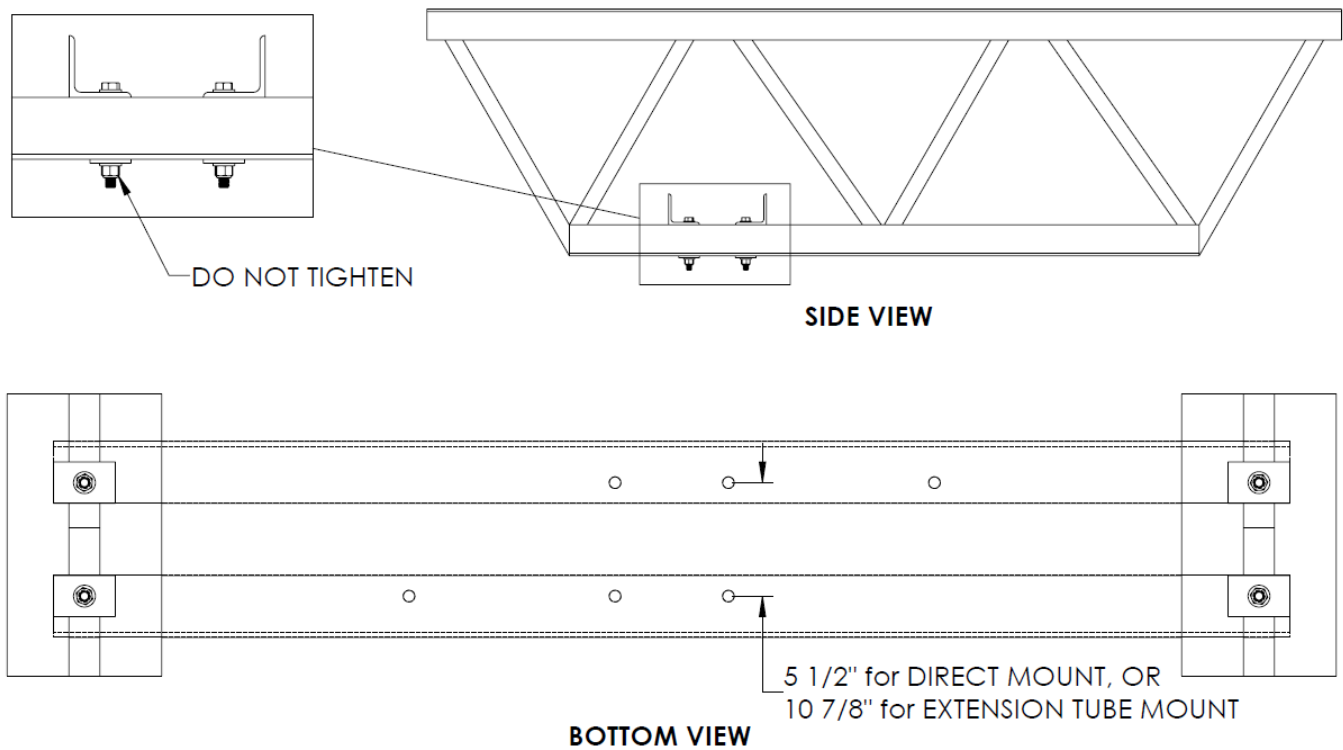
NOTE: Dimension X = (MOUNTING HOLES DISTANCE – 8 1/2") / 2

Step # 4 – For applications with (2) Angle Irons ($\leq$ 8 FT.) assemble as shown below but do not tighten yet. For applications with (4) Angle Irons (> 8 FT.) skip to Step # 6.

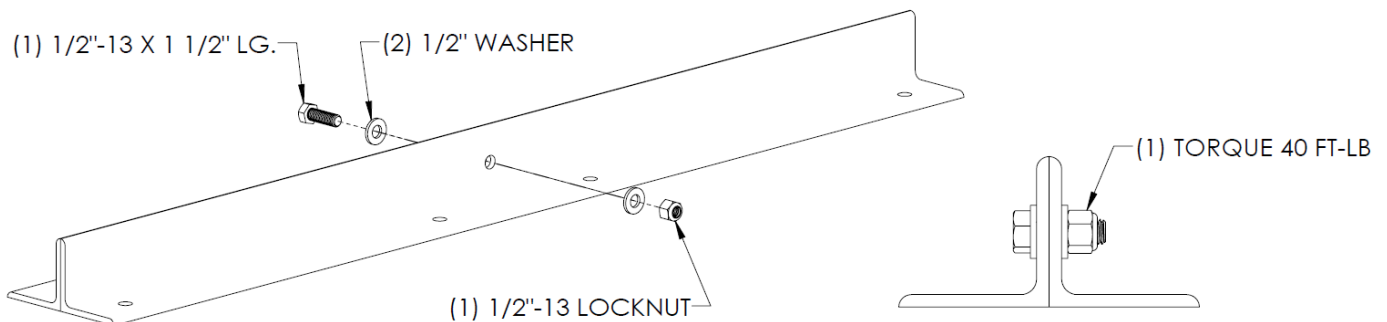
NOTE: Same procedure applies for Direct Mount or Extension Tube Mount with (2) Angle Irons!



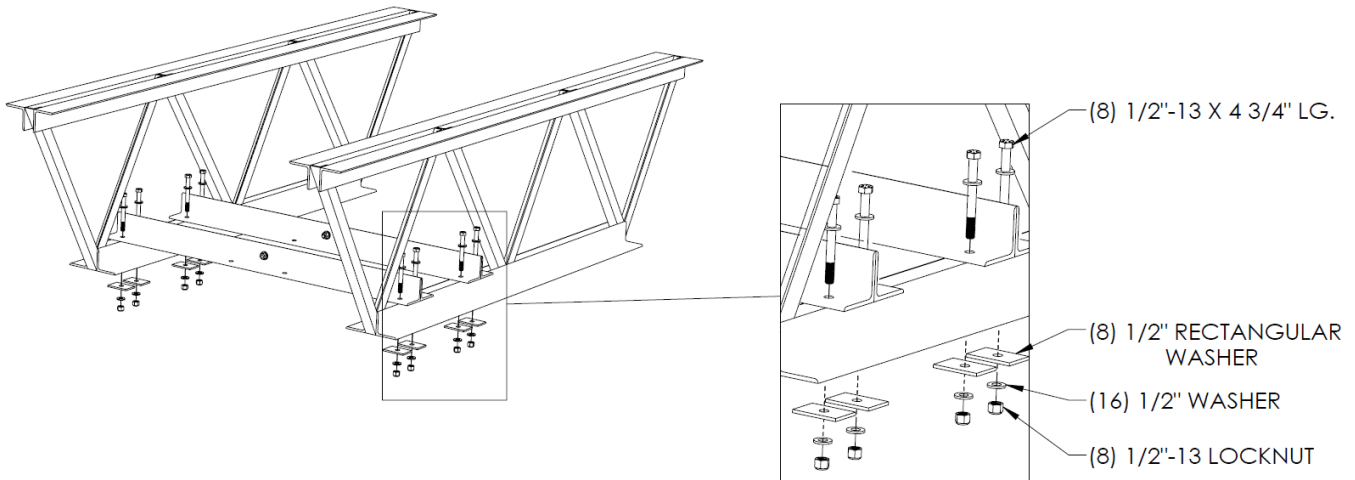
Step # 5 – Space Angle Irons so the mounting holes are 5 1/2" apart for Direct Mount, or 10 7/8" apart for Extension Tube Mount as shown below, but do not tighten yet.



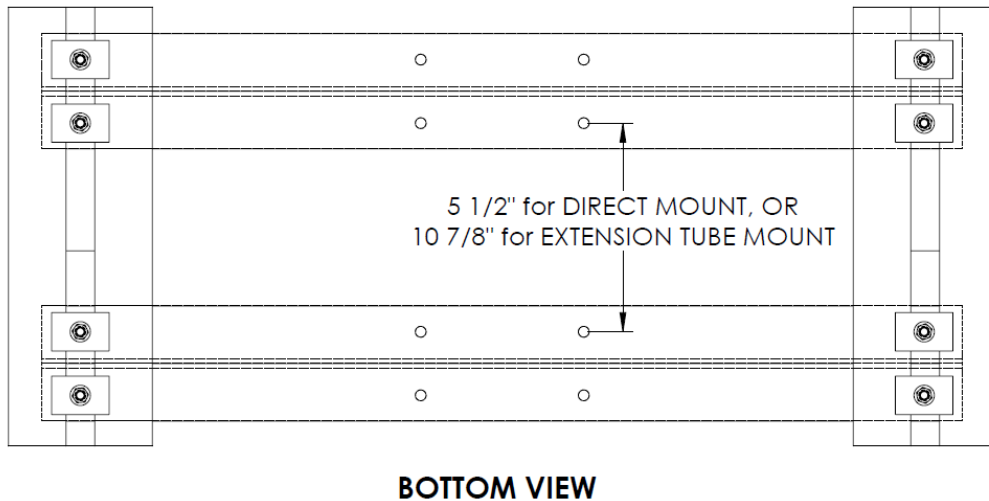
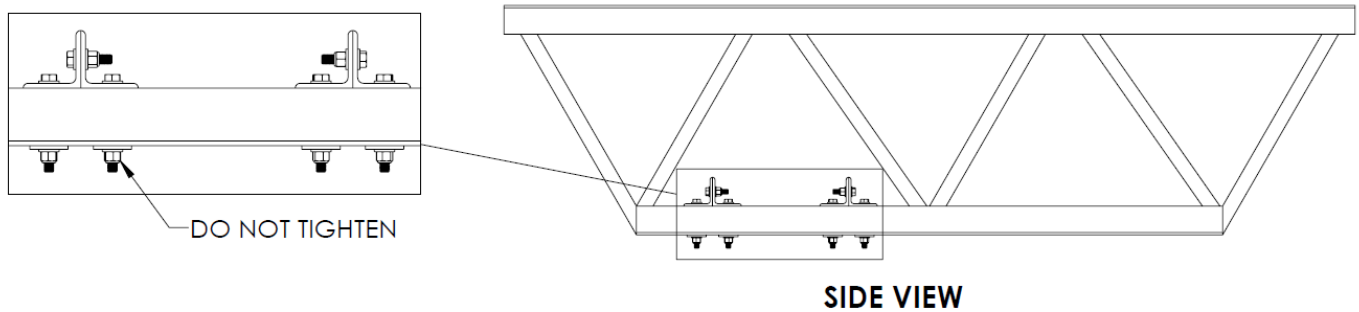
Step # 6 – For applications with (4) Angle Irons, first assemble them into two pairs as shown below and then torque total (2) screws to 40 FT-LB.



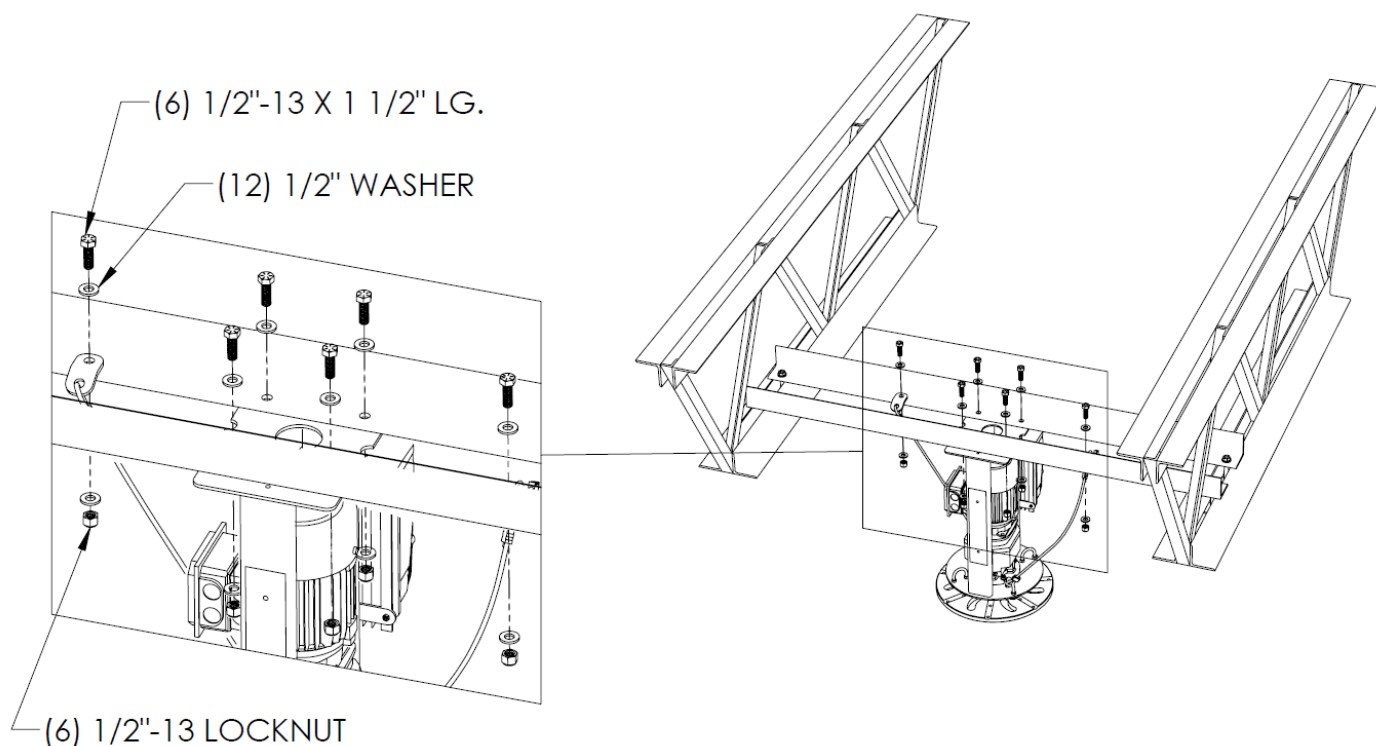
Step # 7 – Install two pairs of Angle Irons as shown below but do not tighten yet.



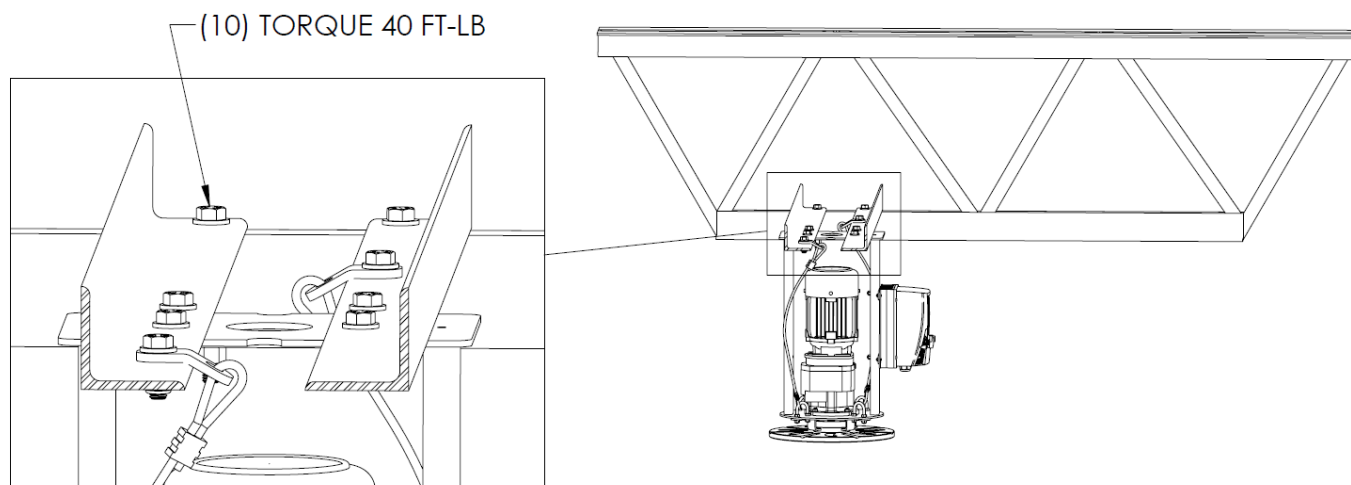
Step # 8 – Space Angle Irons so the mounting holes are $5 \frac{1}{2}$ " apart for Direct Mount, or $10 \frac{7}{8}$ " apart for Extension Tube Mount as shown below, but do not tighten yet.



Step # 9 – **For Direct Mount application**, assemble fan chassis and Safety Cables as shown below. **For Extension Tube Mount application**, skip to Step # 11.

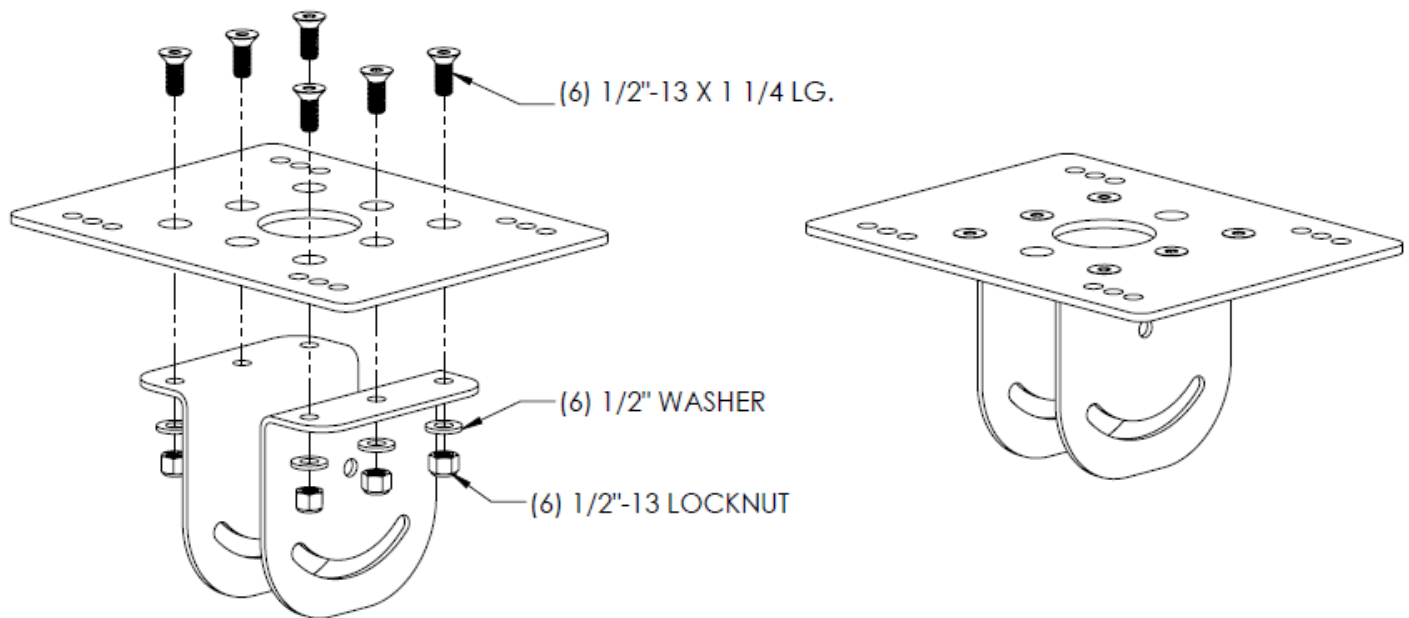


Step # 10 – Torque all (10) bolts (including the bolts for mounting Angle Irons on Bar-Joist) as shown below.

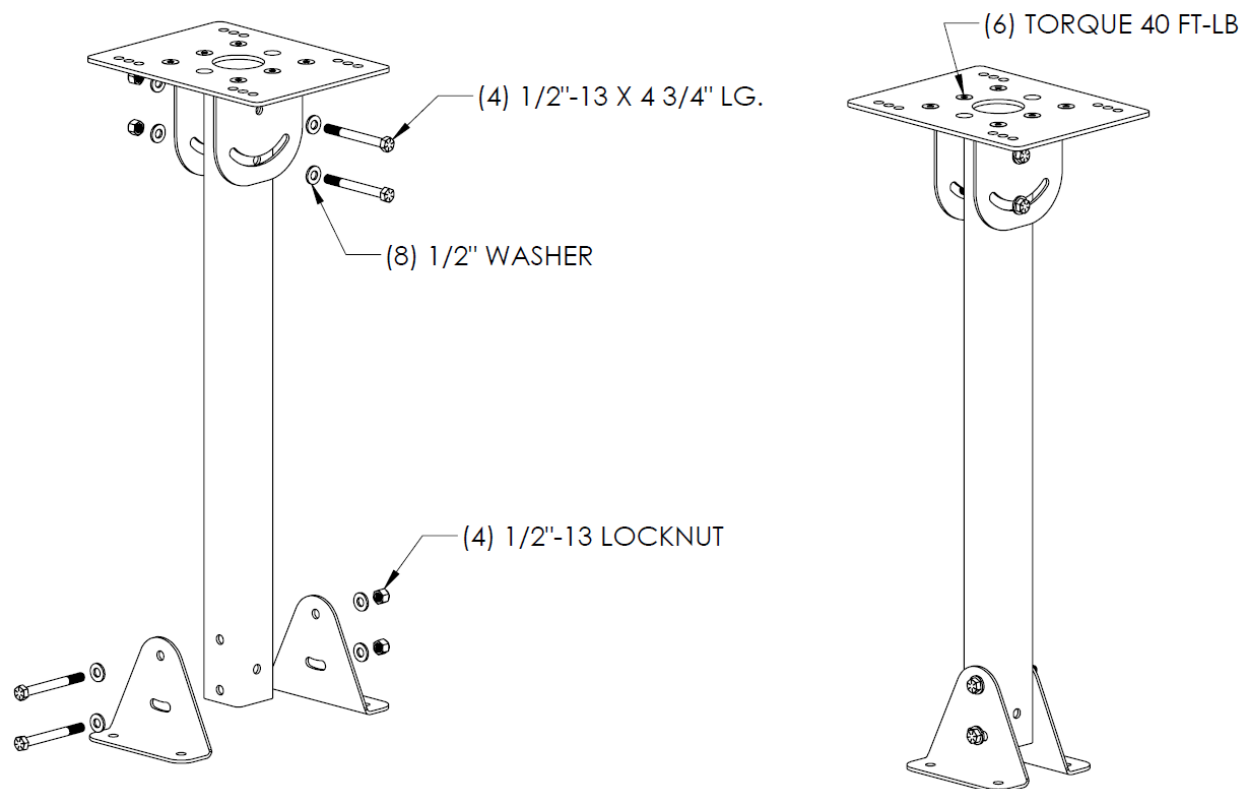


NOTE: The above step concludes mounting of the fan chassis for Bar-Joist mounting applications. Proceed to Section 13 to continue the installation.

Step # 11 - Assemble Top Leveling Bracket subassembly as shown below but do not fully tighten yet.

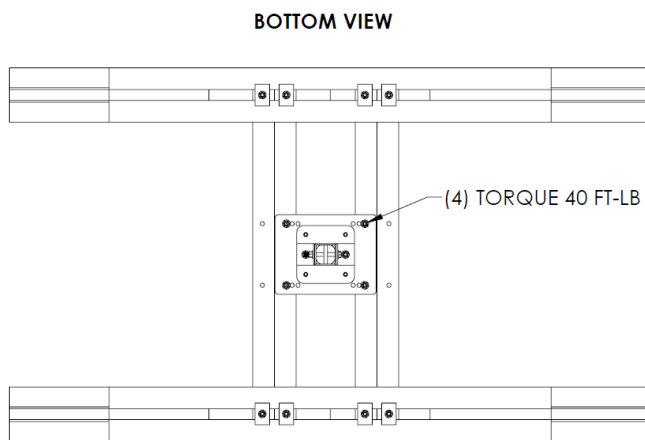
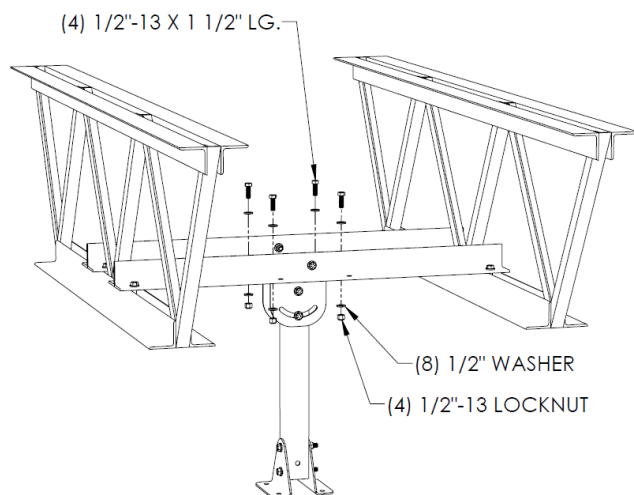


Step # 12 – Assemble Extension Tube and Bottom Leveling Brackets but do not fully tighten yet as shown below on the left. Then, torque (6) flat head screws to 40 FT-LB as shown below on the right.

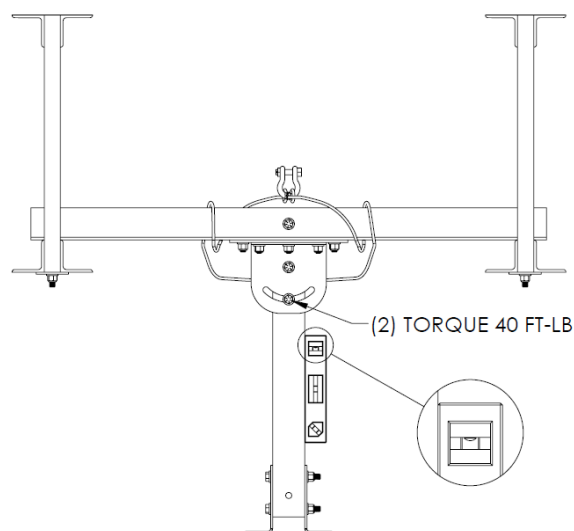
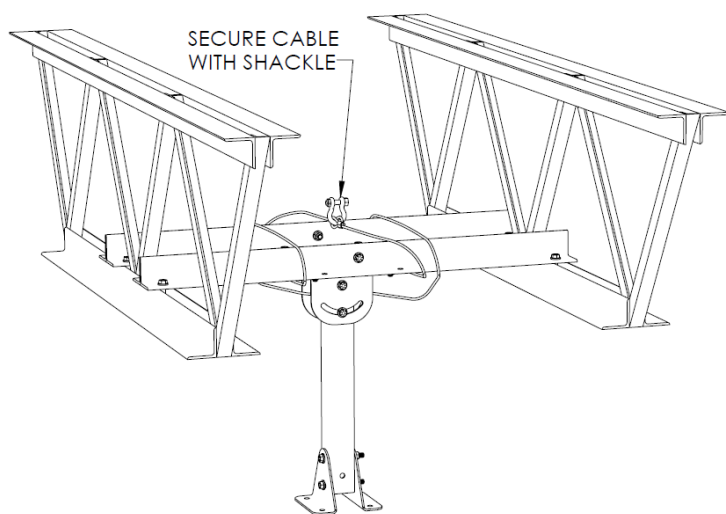


Step # 13 – Assemble Extension Tube assembly on angle irons, then, torque (4) screws to 40 FT-LB as shown below.

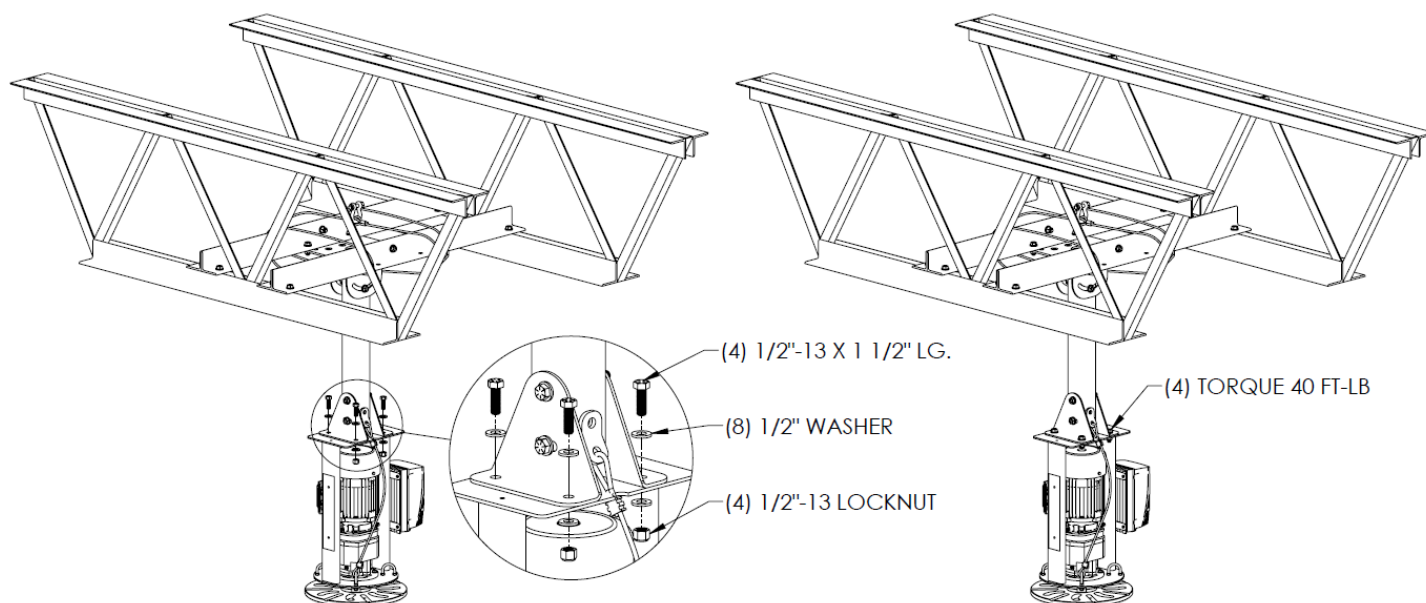
NOTE: The assembly procedure is the same for either (2) Angle Irons or (4) Angle Irons (shown below). Use the outermost holes possible on the Extension Tube Mount Plate when assembling the Extension Tube Assembly to the angle irons.



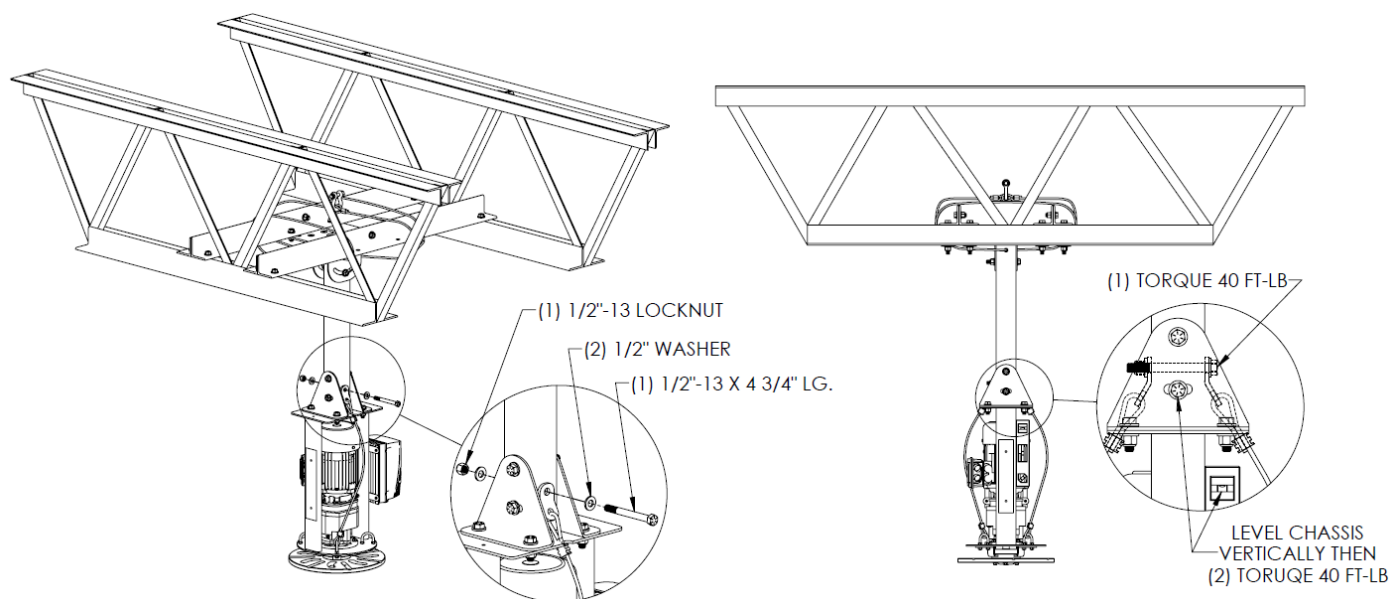
Step # 14 – Next, wrap the Extension Tube Safety Cable around the angle irons as tight as possible leaving as little slack as possible, securing it with the supplied shackle as shown below on the left. Then, level Tube Extension vertically and torque (2) screws as shown below on the right.



Step # 15 – Assemble Chassis to brackets as shown below on the left. Then, torque (4) screws to 40 FT-LB as shown below on the right.



Step # 16 – Install Chassis Safety Cables on both sides of the Extension Tube as shown below on the left, then torque (1) screw to 40 FT-LB. Then, level Chassis vertically and torque (2) screws to 40 FT-LB as shown below on the right.



NOTE: The above step concludes mounting of the fan chassis for Bar-Joist mounting applications. Proceed to Section 13 to continue the installation.

Section 12:

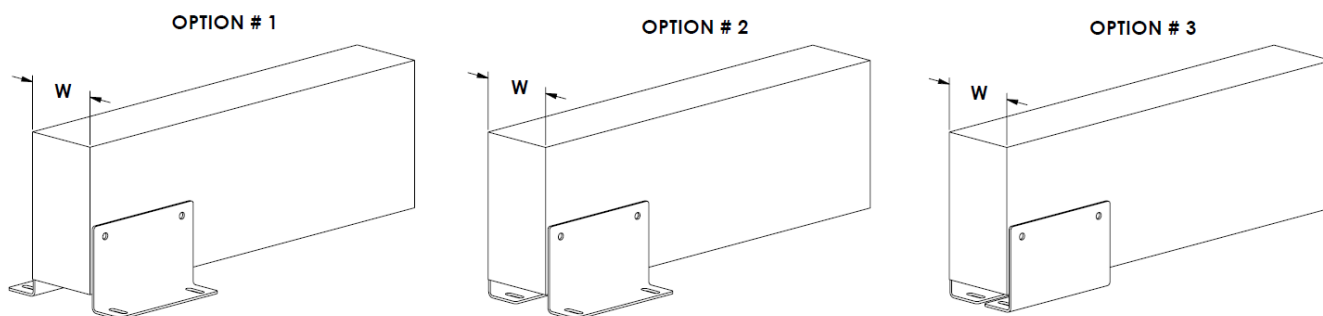
Solid Beam Mounting Instruction

WARNINGS:

- **DO NOT** Direct Mount fan on Solid Beams (Small or Large Solid Beam Mount Kit must be used)!
- Customer to supply 1/2"-13 Grade 8 mounting hardware required for Step # 2 below.
- There are two different size Solid Beam Mount Kits (Small or Large), the correct size mount kit should be selected at the time the fan is purchased.

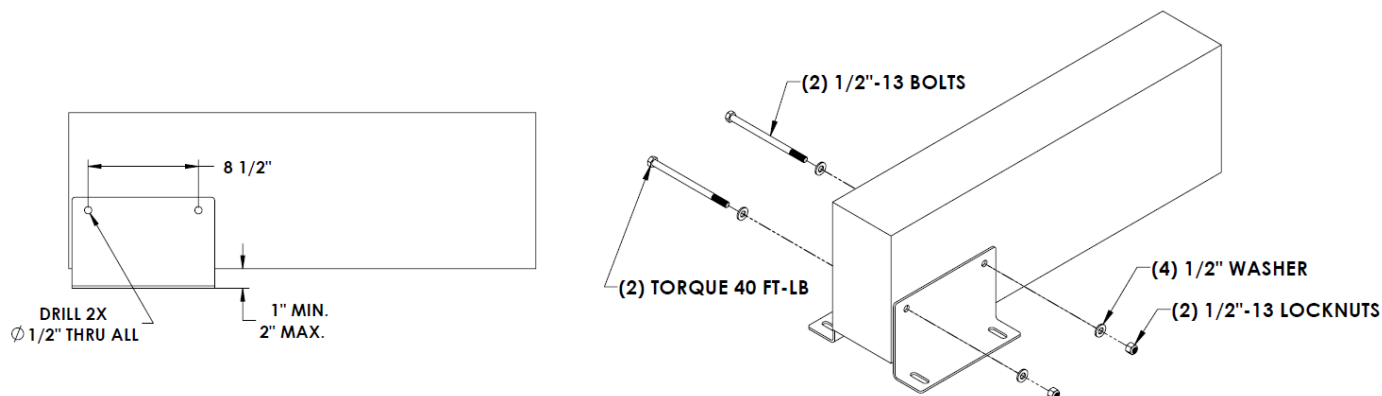
Step # 1 – The width of the Solid Beam “W” will determine the orientation in which the mounting brackets will be installed. After measuring the Solid Beam width, check the table below to identify which option is appropriate for your application.

Beam Width “W”	$\leq 8 \frac{1}{2}"$	$>8 \frac{1}{2}"$ TO $11 \frac{1}{2}"$	$>11 \frac{1}{2}"$ TO $14 \frac{1}{2}"$	$>14 \frac{1}{2}"$ TO $19 \frac{1}{2}"$
OPTION	# 1	# 2	# 3	# 3
Ext. Tube Mount Plate Size	SMALL	SMALL	SMALL	LARGE

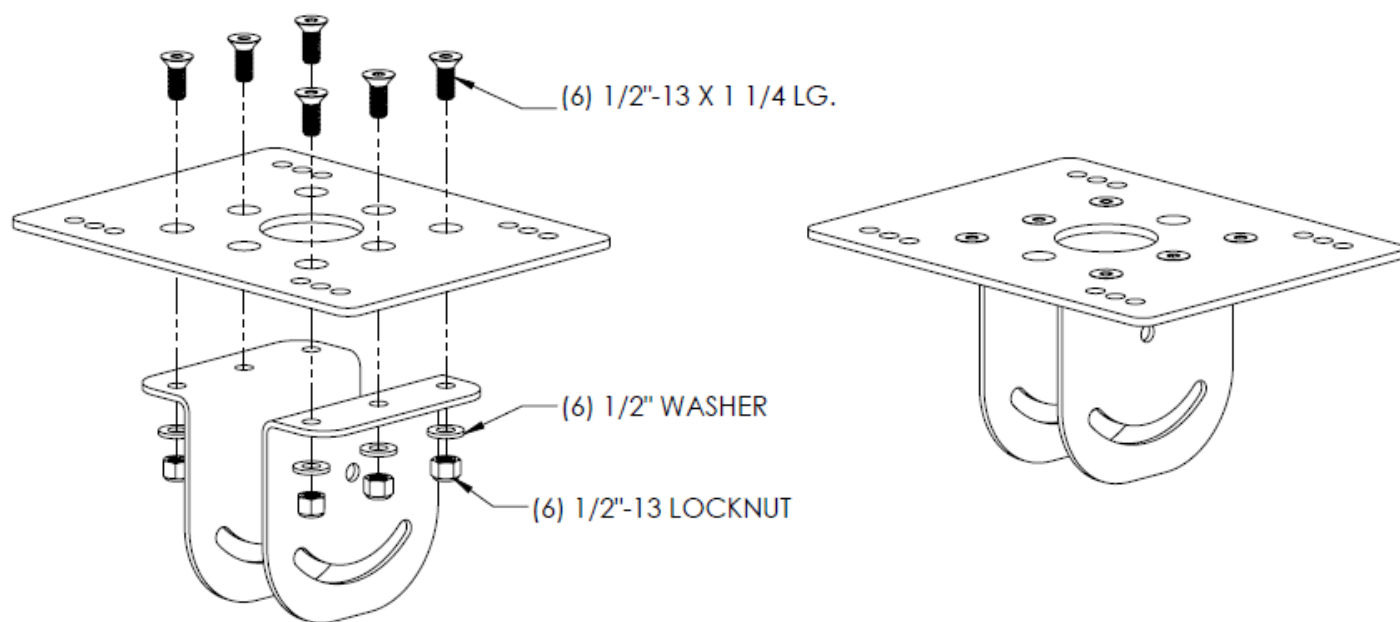


Step # 2 – Use one of the mounting brackets to mark the hole locations of where to drill on the beam as shown below on the left, then drill thru 2X. Next, install the brackets using Grade 8 hardware (supplied by customer) as shown in the example below on the right. Last, torque (2) screws to 40 FT-LB.

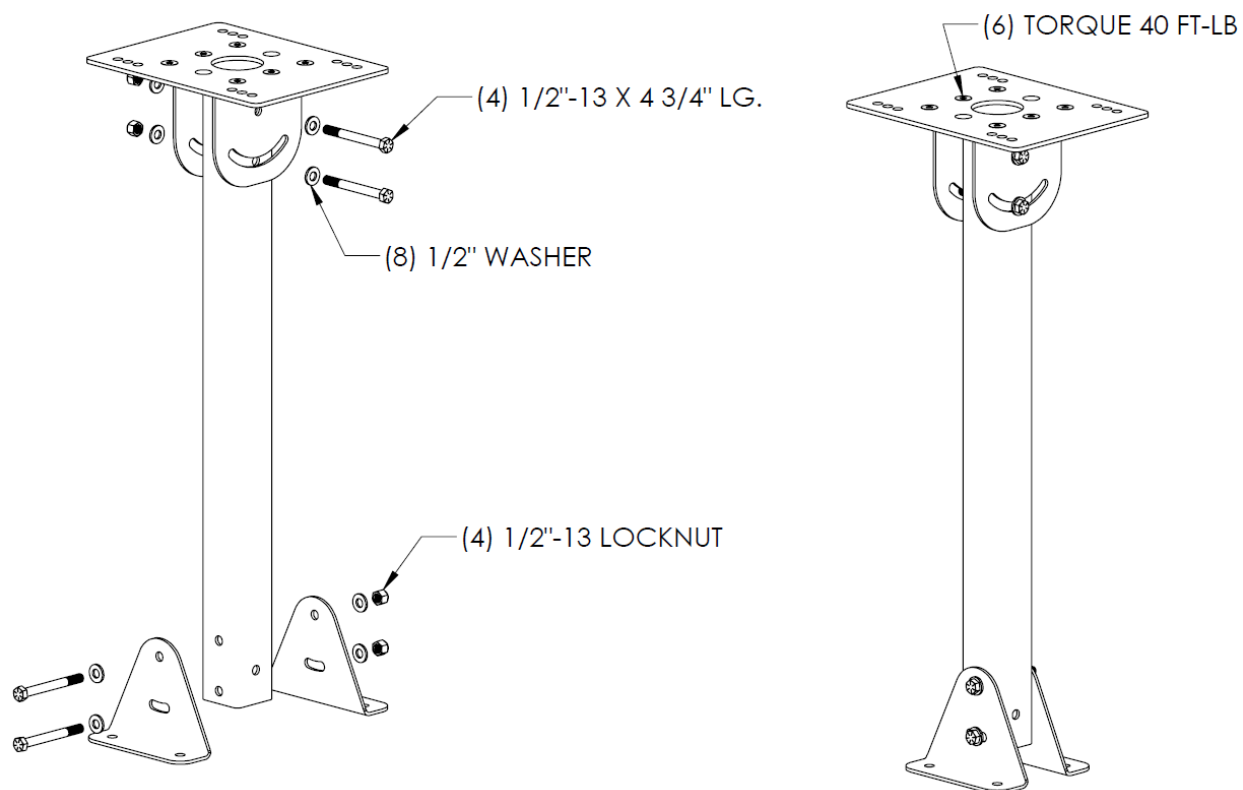
NOTE: The assembly procedure is the same for all 3 options, but the bracket orientation is different depending on “W”.



Step # 3 - Assemble Top Leveling Bracket subassembly as shown below but do not fully tighten yet.

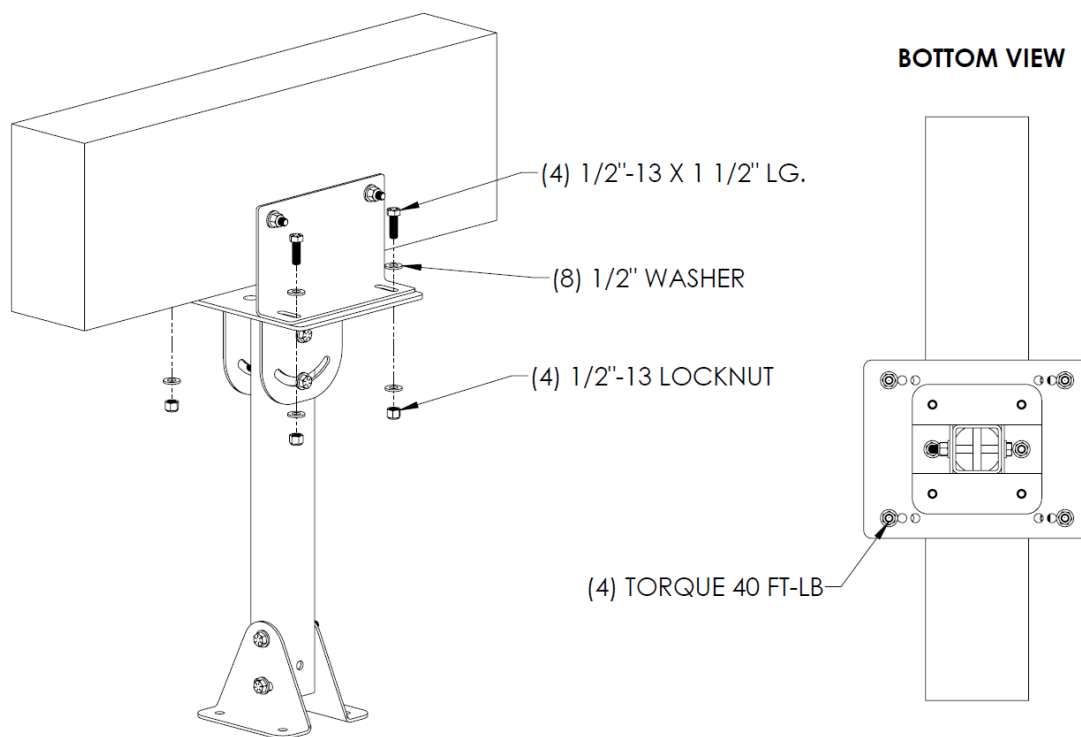


Step # 4 – Assemble Extension Tube and Bottom Leveling Brackets but do not fully tighten yet as shown below on the left. Then, torque (6) flat head screws to 40 FT-LB as shown below on the right.

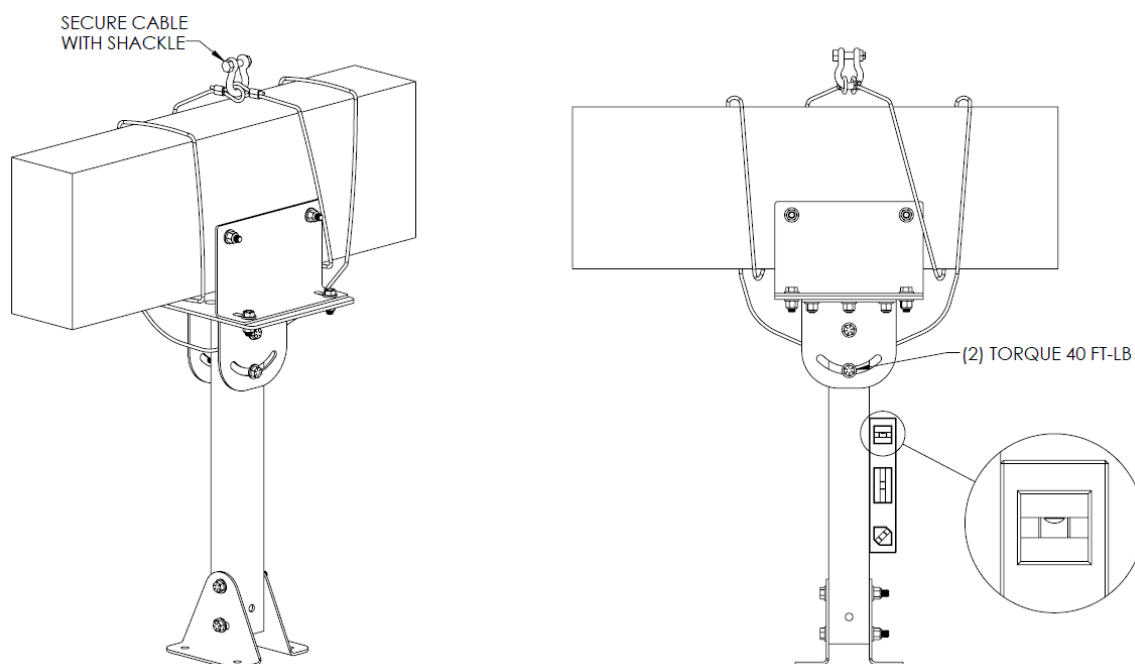


Step # 5 – Assemble Extension Tube assembly on Solid Beam Brackets, then, torque (4) screws to 40 FT-LB as shown below.

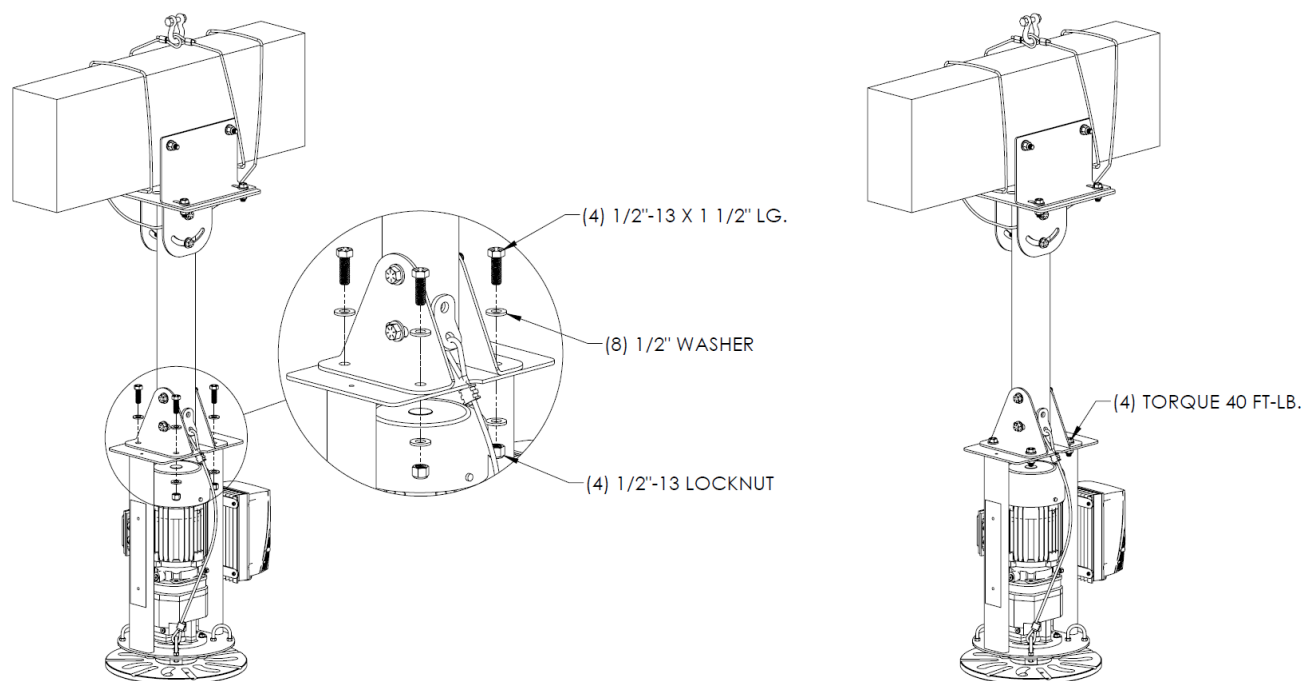
NOTE: Use the outermost holes possible on the Extension Tube Mount Plate when assembling the Extension Tube Assembly to the Solid Beam Mounting Brackets.



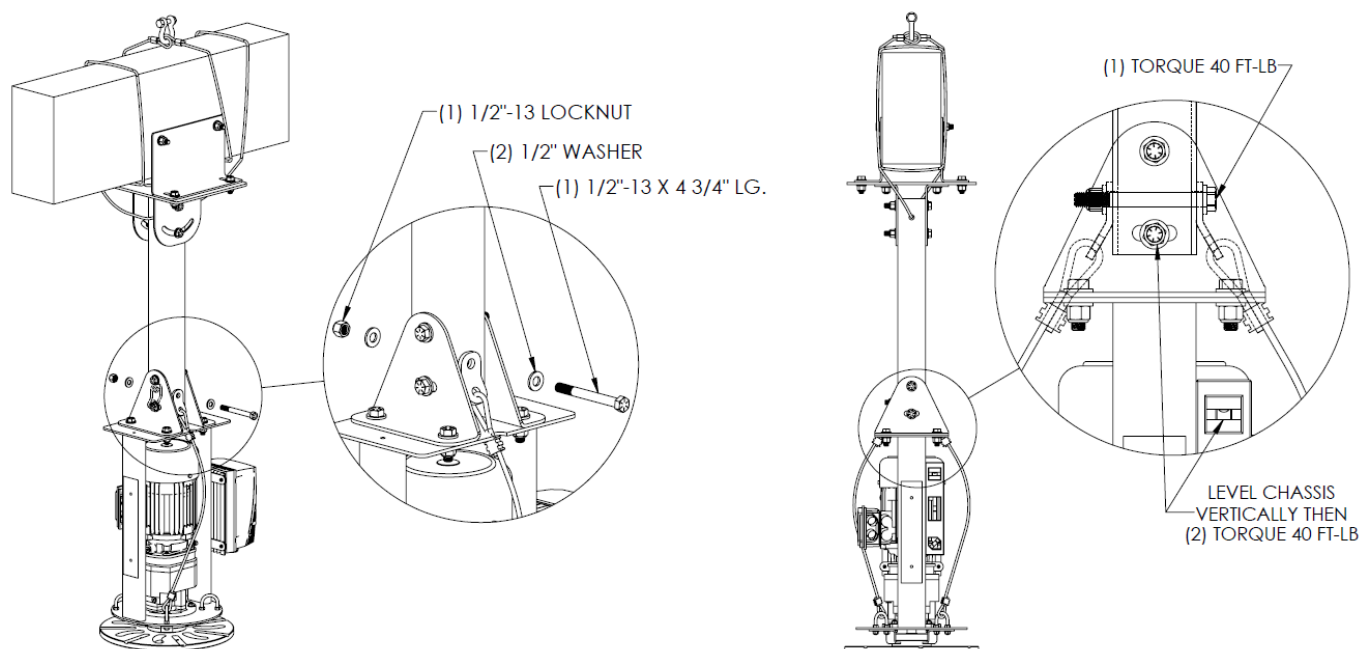
Step # 6 – Next, wrap the Extension Tube Safety Cable around the angle irons as tight as possible leaving as little slack as possible, securing it with the supplied shackle as shown below on the left. Then, level Tube Extension vertically and torque (2) screws as shown below on the right.



Step # 7 – Assemble Chassis as shown below on the left. Then, torque (4) screws to 40 FT-LB as shown below on the right.



Step # 8 – Assemble Chassis Safety Cables on both sides of the Extension Tube as shown below on the left, then torque (1) 40 FT-LB. Then, level motor chassis vertically and torque (2) screws to 40 FT-LB as shown below on the right.



NOTE: The above step concludes mounting of the fan chassis for Solid Beam mounting applications. Proceed to Section 13 to continue the installation.

Section 13:

Wiring and Testing of Fan and Controller

WARNINGS:

- Ensure that all fan power circuits are disconnected prior to beginning fan/controller installation
- All electrical work must be performed by qualified personnel and in accordance with applicable local and national wiring codes and standards.
- Incorrect assembly can cause electrical shock or damage to the fan motor or controller
- Before working on the VFD, ensure isolation of the mains supply at the VFD or fan controller disconnect. Wait at least three minutes for the VFD high voltage capacitor to discharge to safe voltage levels (a darkened display is NOT an indication of safe levels). Failure to do so may result in death or injury.
- Power must be supplied by means of a dedicated circuit breaker, properly fused disconnect, or other means of protection, following local and national electrical codes.

High Performance Fan Co. fans come with the motor and VFD pre-wired with VFD rated cable and the controls cable pre-wired (Cat5) as well to help make installation quick and easy.

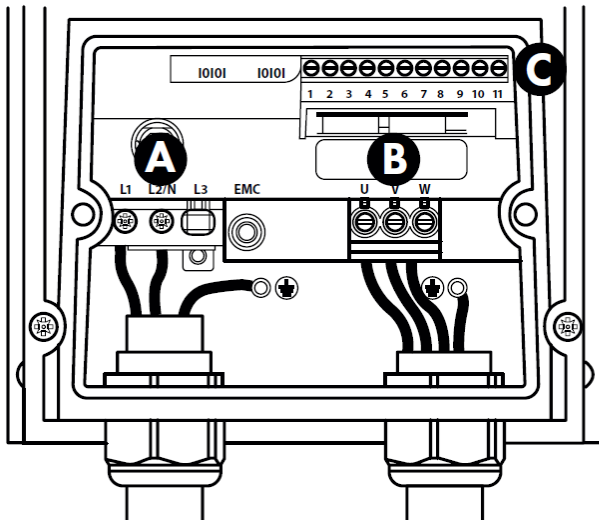
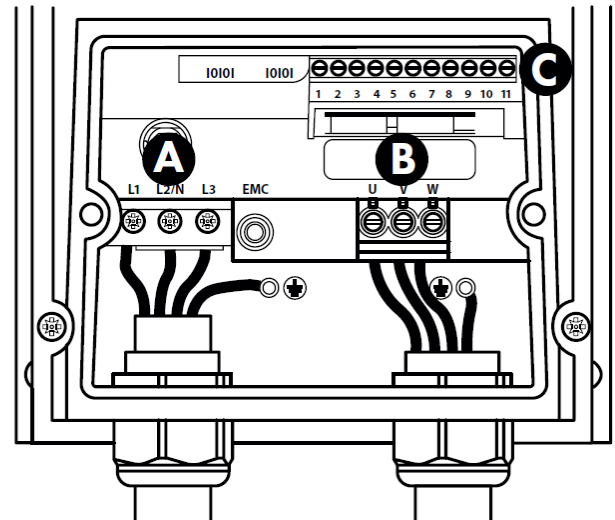
Step # 1 – **Activating the Gearbox Vent** - In preparation for operating the fan, the gearbox vent must be activated by removing the rubber plug. Simply pull the rubber plug from the vent and discard.



Sealed vent

Activated vent

Step # 2 – **Locating the VFD Power Connection Locations** – Remove VFD cover to access power connections (A).

Single phase supply**3 phase supply**

A – Incoming Power Connections

B – Motor Connections

C – Control Terminal Connections

Step # 3 – Making the Incoming Power Connection

- For 1 phase supply, the mains power cables should be connected to **L1 / L, L2 / N**
- For 3 phase supplies, the mains power cables should be connected to **L1, L2 and L3**. Phase sequence is not important.
- A fixed installation is required with a suitable disconnecting device installed between the VFD and AC Power Source. The disconnecting device should conform to the local/national safety code/regulations.
- The cables should be dimensioned according to any local codes or regulations.

Step # 4 – Fire Relay Wiring (OPTIONAL)

NATIONAL FIRE PROTECTION ASSOCIATION STANDARD

In accordance with NFPA 13 Standard from the National Fire Prevention Association as referenced in sections 12.1.4 and 11.1.7: High Volume Low Speed (HVLS) Fans: **The installation of HVLS fans in buildings equipped with sprinklers, including ESFR sprinklers, shall comply with the following:**

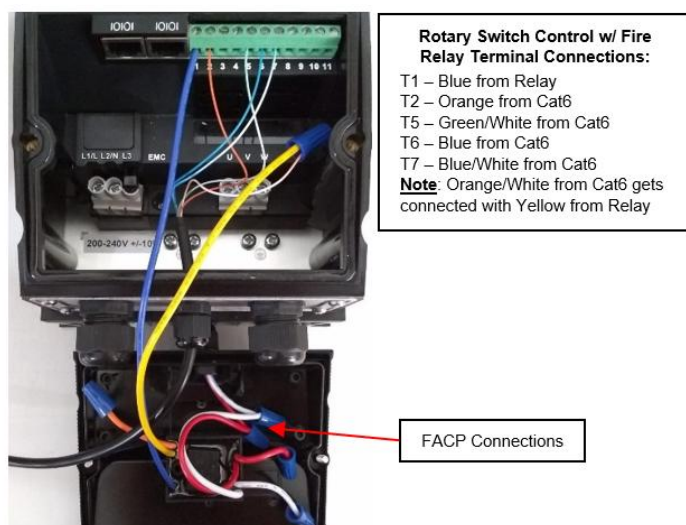
- The maximum fan diameter shall be 24 feet (7.3 m).
- The fan shall be approximately centered between four adjacent sprinklers.
- The vertical clearance from the fan to sprinkler deflector shall be a minimum of 3 feet (0.9 m).
- All fans shall be interlocked to shut down immediately upon receiving a water flow signal from the alarm system in accordance with the requirements of NFPA 72- National Fire Alarm and Signaling Code.

Per NFPA 13, all HVLS fans being installed within a building equipped with a sprinkler system **MUST** install a fire relay that integrates the fan with the sprinkler system so that when the sprinkler system is activated the fan shuts down.

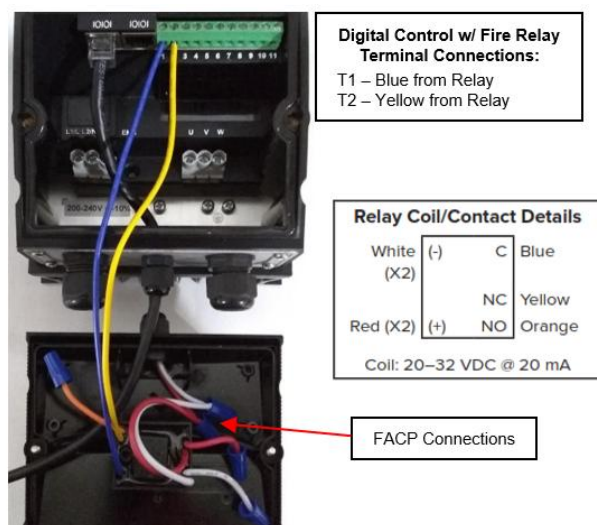
An open contact across VFD digital input terminals 1 and 2 will result in a fan shutdown. When supplied, the fire relay can be configured to be normally closed or normally open. For this fan installation, the relay will be configured to work in the normally closed state. When configured as normally closed, the relay must remain energized by the Fire Alarm Control Panel (FACP). This would be considered a fail open wiring arrangement. Two additional relay coil leads are available for additional monitoring where required.

When selected as an option during the initial purchase, the fire relay will come factory installed leaving only the two wire connections from the FACP to be made during fan installation.

Fire Relay Wiring with Rotary Switch Control



Fire Relay Wiring with Digital Control



Once the FACP connection has been made re-install the VFD cover.

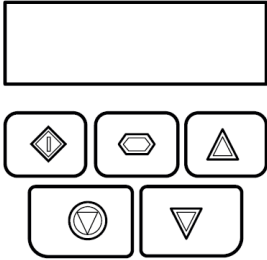
Step # 5 – Connecting the Remote Control

Two different remote control options are offered, a rotary switch, or a digital keypad. Both install directly on to a 4" x 4" electrical box (supplied by customer). Route the supplied Cat6 control cable from the fan to the remote control installation point, plug the Cat6 control cable into the supplied controller and secure the controller to the 4" x 4" electrical box. **After installation of the remote control is complete turn on power to the fan to verify function of the controller and rotation of the fan. The fan should rotate counter-clockwise when looking up at it from the floor. ONCE YOU HAVE COMPLETED THE FUNCTIONALITY TEST, DISCONNECT THE POWER FROM THE FAN TO CONTINUE THE FAN INSTALLATION.**



The **Rotary Switch** control allows for the fan to be turned on/off and provides users with infinite speed control.

The **Digital Keypad** is an advanced control which allows for complete control of the fan and configuration/monitoring of the VFD. The following is a brief explanation of the keypad buttons.

	NAVIGATE	Used to display real-time information, to access and exit parameter edit mode and to store parameter changes.	
	UP	Used to increase speed in real-time mode or to increase parameter values in parameter edit mode.	
	DOWN	Used to decrease speed in real-time mode or to decrease parameter values in parameter edit mode.	
	RESET / STOP	Used to reset a tripped drive. When in Keypad mode is used to Stop a running drive.	
	START	When in keypad mode, used to Start a stopped drive or to reverse the direction of rotation if bi-directional keypad mode is enabled.	

NOTE: For additional information on the VFD, and linking multiple fans to a single digital keypad, please refer to the VFD manual supplied with the fan.

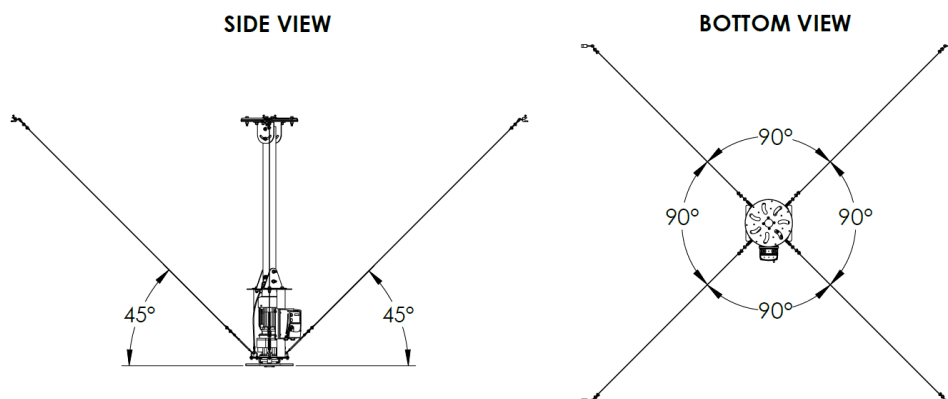
Section 14:

Guy Wires

CAUTION: GUY WIRES SHOULD BE CONSIDERED FOR ALL FANS WITH EXTENSION TUBES GREATER THAN 2 FT. TO PREVENT LATERAL MOVEMENT OF THE FAN. IN SOME CASES, FANS WITH EXTENSION TUBES THAT ARE LESS THAN 2 FT. MAY REQUIRE GUY WIRES IF THE FAN MOUNTING STRUCTURE IS NOT RIGID ENOUGH. REGARDLESS OF THE EXTENSION TUBE LENGTH, IF ANY OSCILLATION IS OBSERVED DURING FAN OPERATION GUY WIRES SHOULD BE INSTALLED IMMEDIATELY.

WARNING: IF A GUY WIRE KIT WAS NOT PURCHASED INITIALLY AND THE FAN HAS LATERAL MOVEMENT AFTER INSTALLATION, CONTACT HIGH PERFORMANCE FAN CO. IMMEDIATELY TO ORDER GUY WIRES FOR YOUR FAN INSTALLATION!

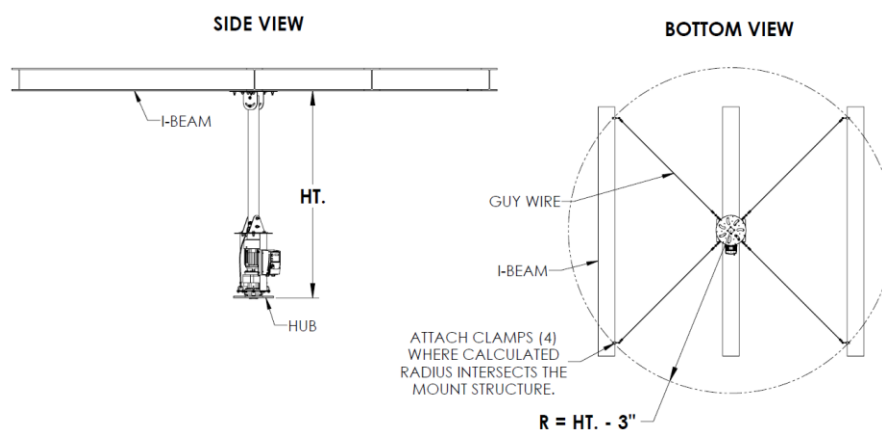
Step # 1 – First determine the mounting location of the Guy Wire Clamps on your mounting structure. The clamps should be spaced evenly and such that the Guy Wires end up at approximately a 45 degree slope to the fan (when looking at the fan from the side) and 90 degrees from one another (when looking the fan from the floor) as shown below.



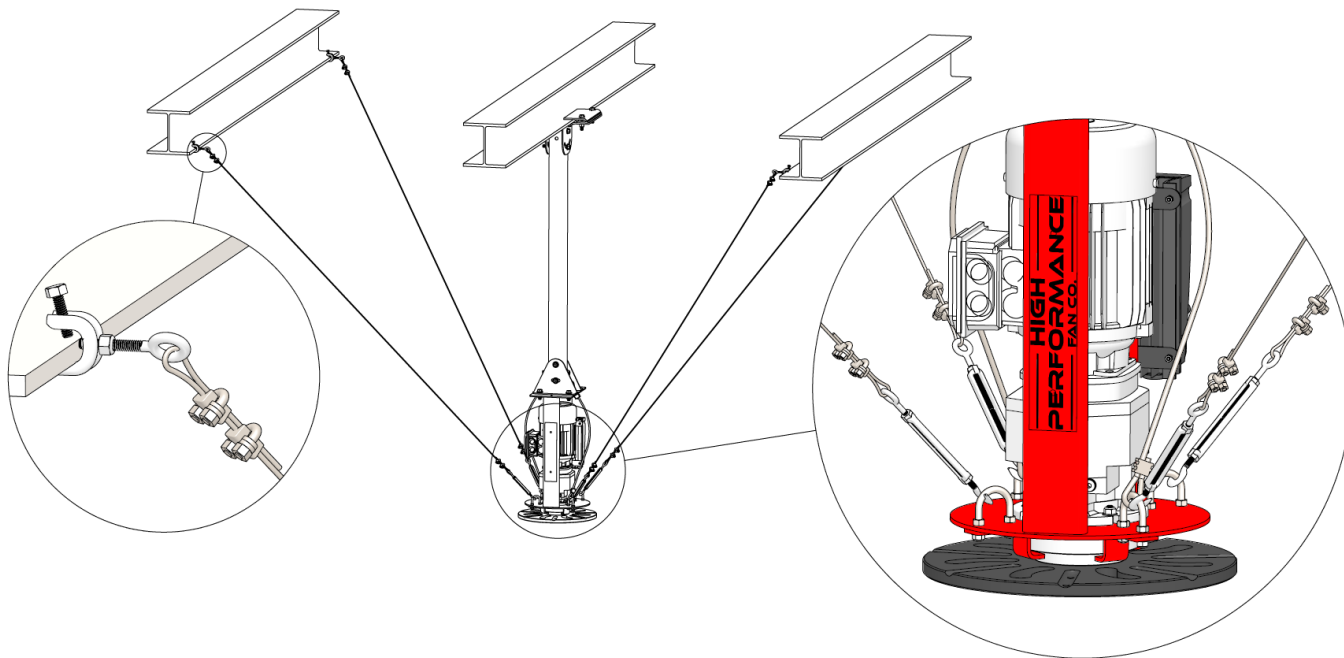
If the recommended angles are not possible, a slope deviation of up to 15 degrees is acceptable and a spacing deviation of up to 30 degrees is acceptable. If the required deviation(s) are beyond these limits, contact High Performance Fan Co. for additional guidance.

An easy way to determine the clamp locations is to measure from the bottom of the fan hub up to the mounting structure (dimension "HT.", see SIDE VIEW below). Once the height "HT." has been determined, apply formula $R = HT. - 3"$ to find the radius of the circle that determines the location where to mount the clamps as shown below on the BOTTOM VIEW.

NOTE: The example shown below is for I-Beam mounting structures, however the same procedure applies to other mounting structures as well.



Step # 2 – Attach clamps to mounting structure, then tighten the screw as shown below on the left. Then, add the Eye Bolt on the Clamp and secure by tightening the jam nut. Feed supplied cable/wire thru Eye Bolt then tighten the loop with Wire Clamps provided.

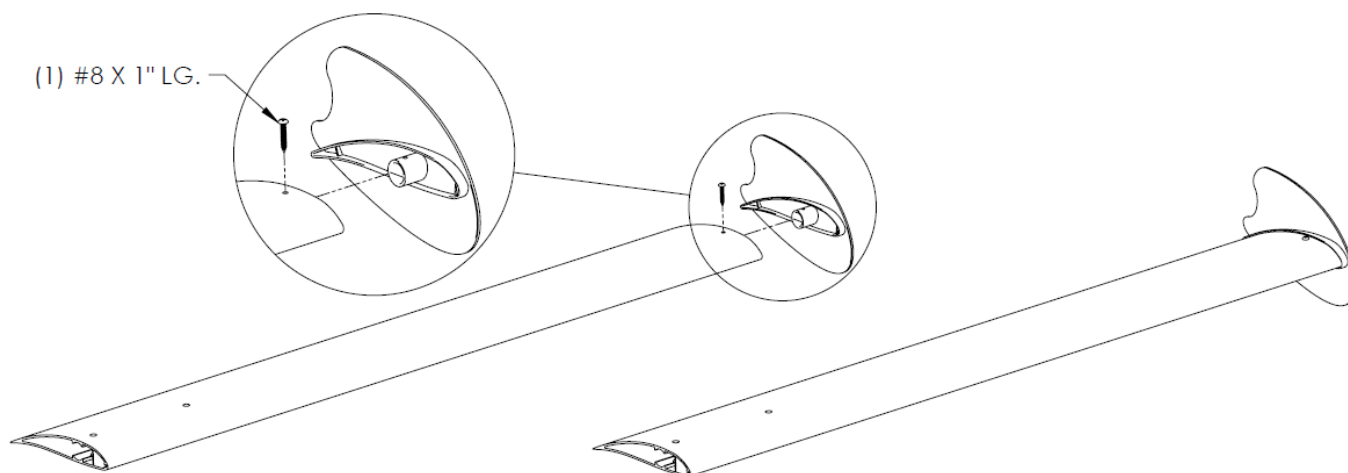


Next, pull the cable to the fan chassis and hook the Turnbuckle on the U-Bolts as shown above on the right, then feed the cable/wire thru eye bolt on the Turnbuckle and secure with Wire Clamps (2). Next, cut the extra cable then tighten the Turnbuckle as needed to remove any slack, being careful not to overtighten the turnbuckle. Overtightening of the turnbuckles may cause the fan to become unlevel. Repeat the same steps for the other (3) Guy Wires. With all guy wires installed, recheck the levelness of the fan and re-adjust the guy wires as needed to ensure the fan is level in all directions.

Section 15:

Winglets, Blade Inserts & Airfoils Installation

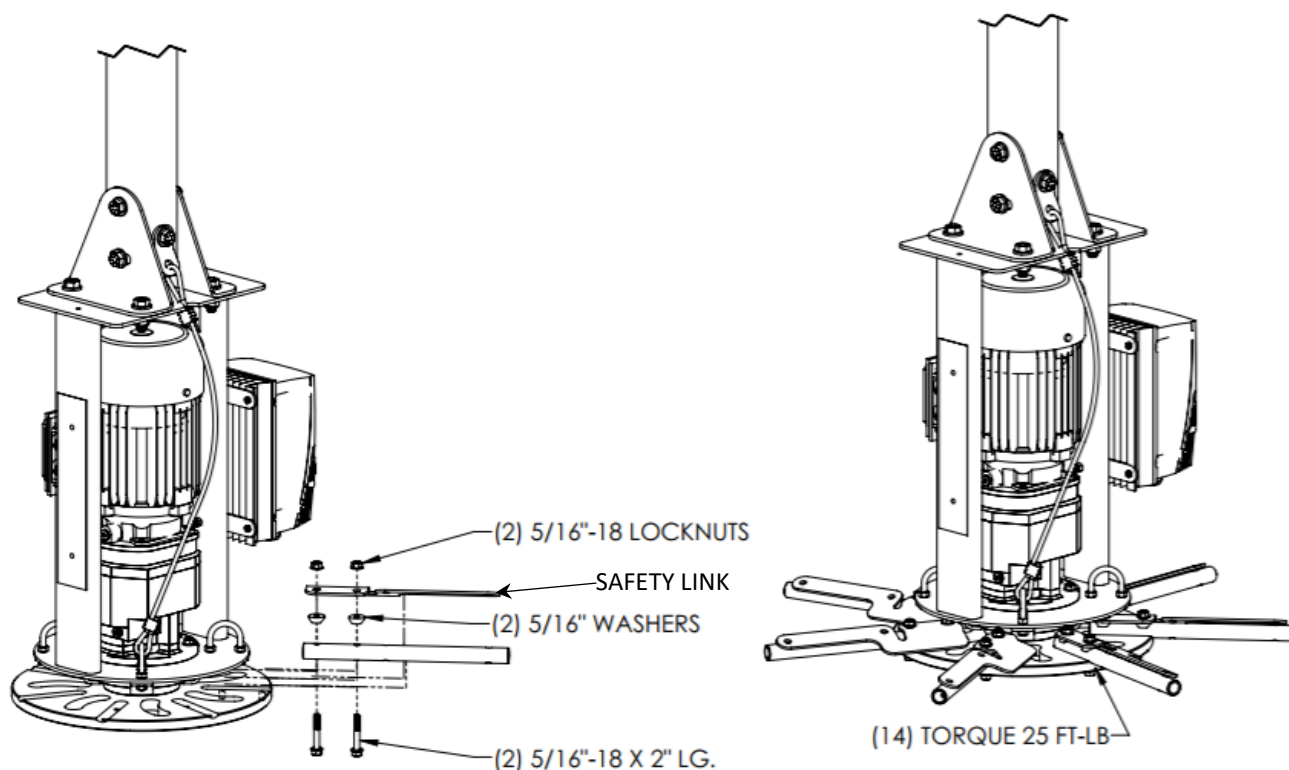
Step # 1 – Assemble Winglets on each blade as shown below using a Philips screwdriver.



Step # 2 – Assemble all Blade Inserts and Safety Links* as shown below on the left. Then, torque all screws to 25 FT-LB as shown below on the right.

***Fans smaller than 16 ft. in diameter do not require safety links.**

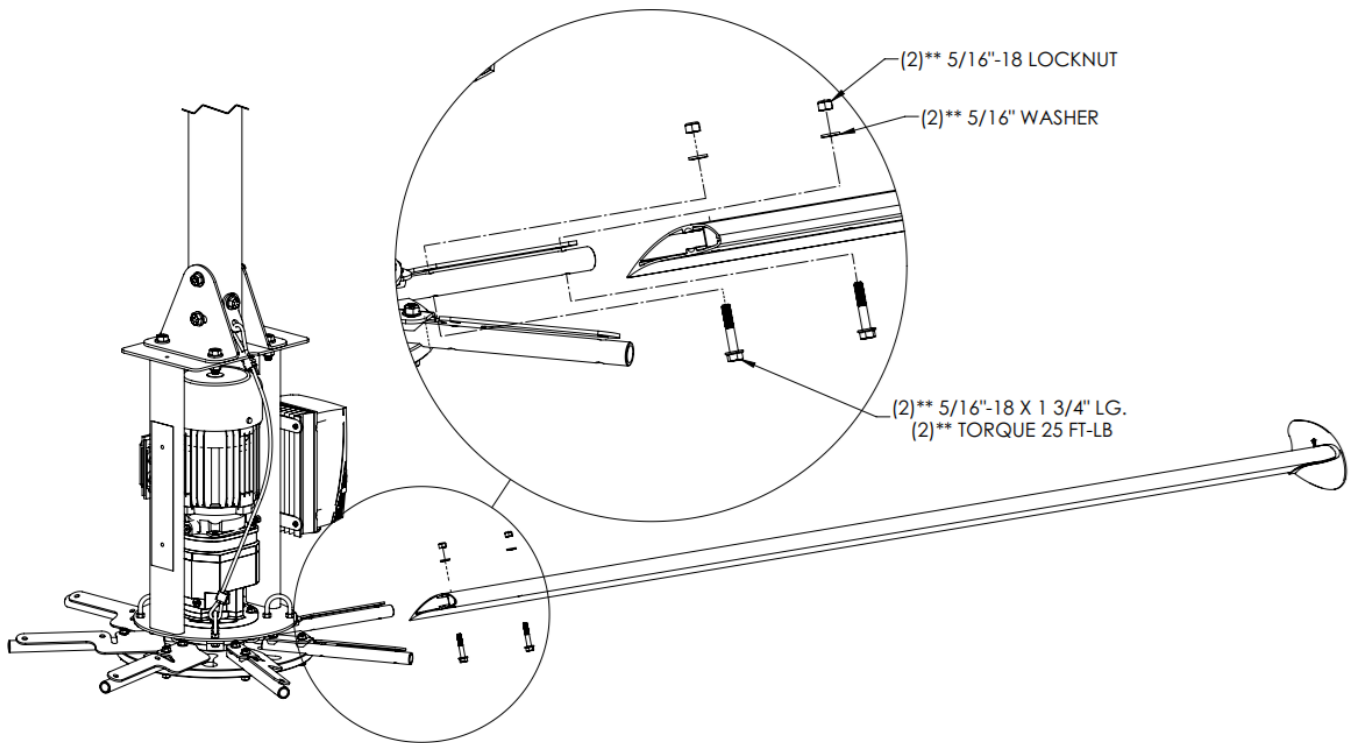
NOTE: HPF 500 series fans have (5) Blade Inserts (not shown below) and HPF 700 series have (7) Blade Inserts (as shown below), the assembly procedure is the same.



Step # 3 – Assemble the first fan blade as shown below, then torque (2) screws to 25 FT-LB. Repeat the same steps for the rest of the blades. The through-holes in the blades and the blade inserts are tight tolerance holes, some bolts may require turning for installation.

NOTE: HPF 500 series fans have (5) Blade Inserts (not shown below) and HPF 700 series fans have (7) Blade Inserts (as shown below), the assembly procedure is the same.

TIP: If the safety link is pinching the blade, not allowing the blade to slide onto the blade insert, loosen the nuts securing the blade insert to the hub slightly to allow the blade to slide completely onto the blade insert, install bolts to secure blade to blade insert, then torque all bolts to 25 FT-LB.



****Fans up to 14 ft. in diameter have (2) bolts, washers & locknuts per blade (as shown above), Fans larger than 14 ft. in diameter have (3) bolts, washer & locknuts per blade (not shown).**



FAILURE TO PROPERLY INSTALL AND TORQUE BOLTS IN STEPS 2 & 3 OF THIS SECTION COULD RESULT IN A CATOSTROPHIC FAILURE! DOUBLE-CHECK TORQUE ON EACH BOLT TO ENSURE PROPER INSTALLATION OF EACH BLADE INSERT AND BLADE BEFORE OPERATING YOUR NEW FAN(S)!

Section 16:

Maintenance

WARNINGS:

- Ensure that all fan power circuits are disconnected/locked out prior to beginning fan/controller maintenance
- All electrical work must be performed by qualified personnel and in accordance with applicable local and national wiring codes and standards.
- Before working on the VFD, ensure isolation of the mains supply at the VFD or fan controller disconnect. Wait at least three minutes for the VFD high voltage capacitor to discharge to safe voltage levels (a darkened display is NOT an indication of safe levels). Failure to do so may result in death or injury.

THE FOLLOWING IS A LIST OF ROUTINE MAINTENANCE CHECKS THAT SHOULD BE PERFORMED ANNUALLY:

- 1) Check and re-torque all structural mounting hardware to 40 FT-LB.
- 2) Check and re-torque blade insert and blade mounting hardware to 25 FT-LB.
- 3) Verify all safety cables are in place and properly secured.
- 4) Check guys wires for proper tension, adjust as needed.
- 5) Check the levelness of the fan, further adjust guy wires as needed to level fan.
- 6) Inspect the motor/gearbox for any visible oil leaks, if no leaks are found no further action is required, if a leak is found please contact High Performance Fan Co. for further instructions.
- 7) Remove VFD cover and check tightness of all electrical connections, re-install VFD cover after check is completed.
- 8) Using dry compressed air, blow out any debris that may have accumulated from the top of the motor.
- 9) Clean fan blades of any dust that may have accumulated.

High Performance Fan Co. Limited Warranty for 500 and 700 Series HVLS Fans

THIS LIMITED WARRANTY IS THE SOLE AND EXCLUSIVE WARRANTY OF HIGH PERFORMANCE FAN CO. WITH RESPECT TO HVLS FANS MANUFACTURED BY HIGH PERFORMANCE FAN CO. THIS WARRANTY CANNOT BE TRANSFERRED AND IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED.

Commencing on the date of shipment, and subject to the conditions and limitations below, the Warranty Period shall be as follows:

Mechanical Components (fan hub, frame, mounting brackets & hardware, airfoils, and winglets):	Lifetime
Powertrain Components (gearbox and motor):	8 Years
Electrical Components (variable frequency drive, and any standard controller or accessories):	3 Years
Labor:	N/A

During the Warranty Period, the High Performance Fan Co. Warranty covers any defects in design, material, or workmanship, which adversely affect the operation of the fan under conditions of normal use and maintenance, and will repair or replace, at its sole discretion, any defective components at no charge to the Warranty holder.

For factory installed products, during the first 18 months of the Warranty Period, High Performance Fan Co. will pay reasonable labor and equipment rental costs for repairing or replacing a defective fan or any defective components of the fan at the installation location.

In the event of any of the following conditions, the Warranty shall become void:

1. Improper fan installation, including but not limited to failure to be in compliance with national and local building and electrical codes, failure to follow the procedures in the supplied manual, and use of mounting hardware not provided by High Performance Fan Co.
2. Modification of any of the supplied electrical or mechanical components, including factory control settings.
3. Use of incorrect voltage.
4. Abuse, introduction of foreign objects, or use for anything other than its intended purpose.
5. Accidents or Acts of God.
6. Failure to perform maintenance as described in the supplied manual.

The High Performance Fan Co. does not accept responsibility or liability for the following:

1. Consequential damages sustained as a result of the conditions listed above.
2. Specific airflow production.
3. Noise from the fan drive or blades in normal operation

NOTES