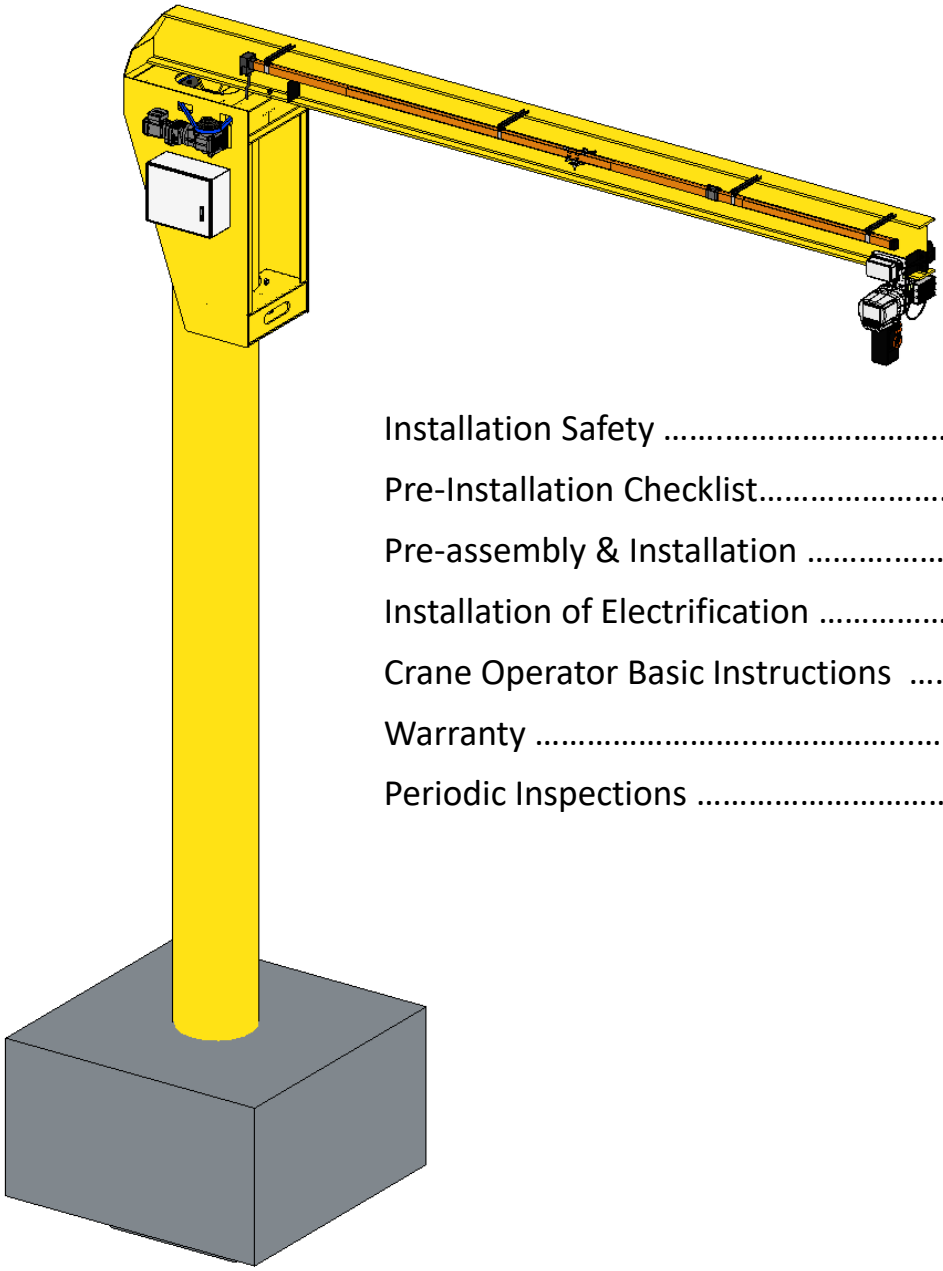
Installation, Operation, & Maintenance Manual



Date purchased_____

SN_____

Order Number_____

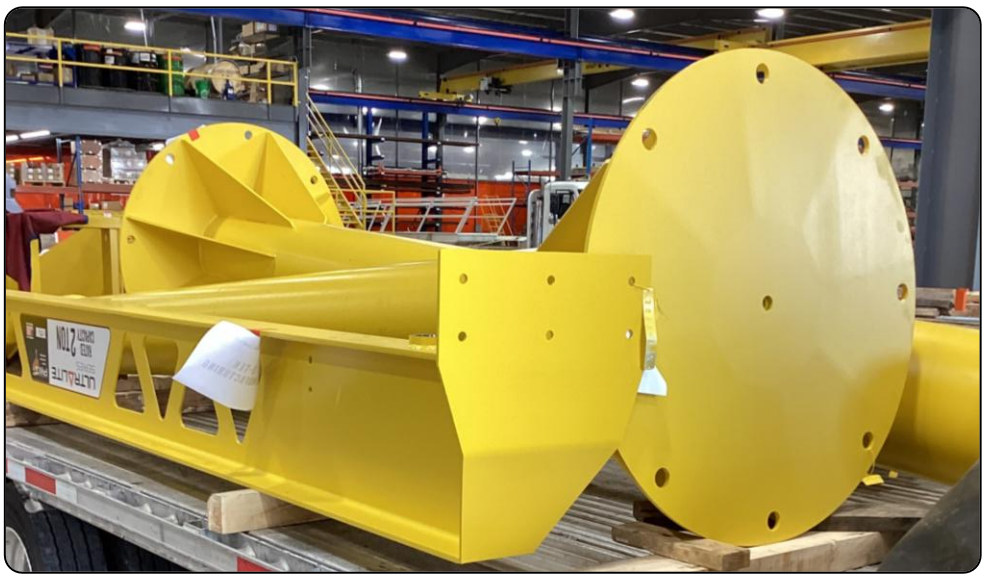
Before you begin. Read the instructions carefully, from beginning to end, and follow the proper sequence.

Thank you for purchasing a PWI crane! We have been building overhead cranes for years and our experience and knowledge should give you peace of mind. We too use overhead cranes in our manufacturing processes. From design & engineering, all the way to installation of our crane systems, our experience and passion for quality crane systems is shown in our products. We hope you find the installation ease and use of our PWI products to be among the best items you have purchased.

Thank you from the entire staff at PWI.

General Safety:

- ☐ Safety comes first when unloading and assembling your jib crane system. Many of the components are heavy and require lifting equipment to move and set them in place. Make sure the equipment you choose to support and lift each piece is capable of the task with extra capacity to do the job. Do not end up in a dangerous situation.
- ☐ Start with checking any lifting fixtures/tools for damage or wear that could lead to severe injury or death.
- ☐ This manual assumes that you have performed any foundation analysis ahead of placing your crane system in the proper location. Failure to provide the proper footing depth and width based on your column loads can result in failure of the floor structure supporting your crane.
- ☐ Please call PWI if you are unsure of the slab/foundation requirements for your jib crane.

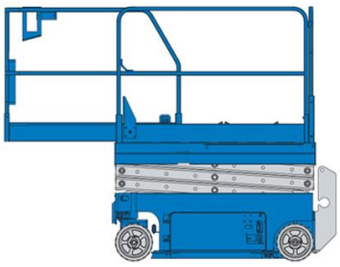


Pre-Installation Checklist:

- ☐ Check your shipment for the correct components and hardware. Your shipment should include shipping sheets that were checked off by our team
- ☐ Check your shipment for drawings for layout and installation of components
- ☐ Clear the area as much as possible of items that could be damaged or create hazards during the installation. When assembling near electrical panels be aware of any regulations regarding perimeters required around those objects
- ☐ Forklift or suitable lifting equipment
- ☐ Should you have any technical questions, or feel you have defective components or missing items, call us immediately. We will be glad to assist you.

Possible Tools Needed:

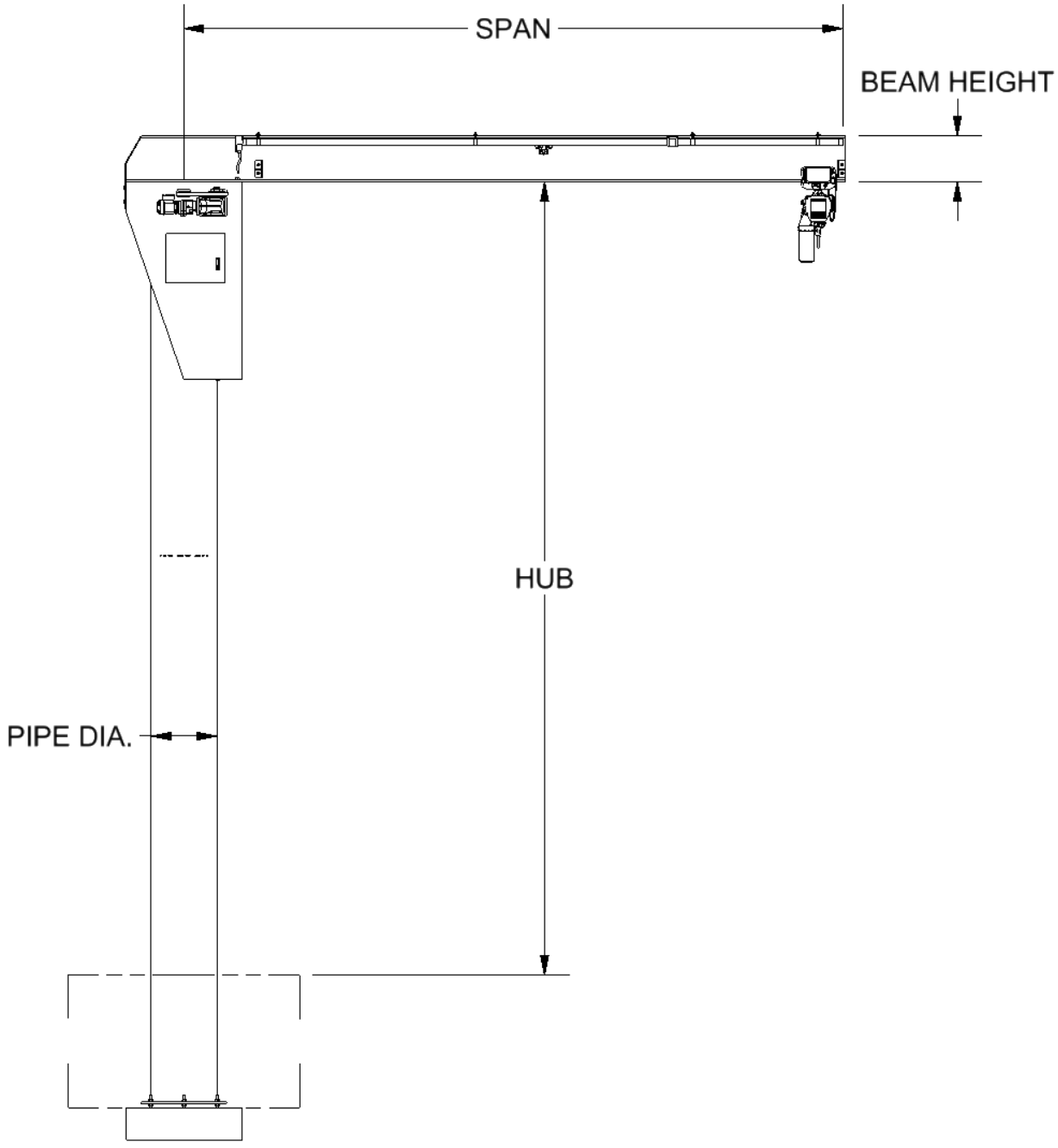
- ☐ Proper PPE
- ☐ Forklift/Lifting Equipment
- ☐ Ladder/Man Lift
- ☐ Nylon Lifting Sling
- ☐ Marker
- ☐ Tape Measure
- ☐ Chalk Line
- ☐ Level
- ☐ Hammer
- ☐ Torque Wrench
- ☐ Wrench Set
- ☐ Laser Level
- ☐ Paint Brush
- ☐ Hammer Drill
- ☐ Hammer Drill Bits



Product specifications and dimensions are approximate and for informational purposes only. Variations may occur due to design or manufacturing adjustments. For exact measurements, please confirm with our customer service before ordering. PWI reserves the right to modify specifications without notice.

Overview

Refer to fabrication drawings for specific dimensions.

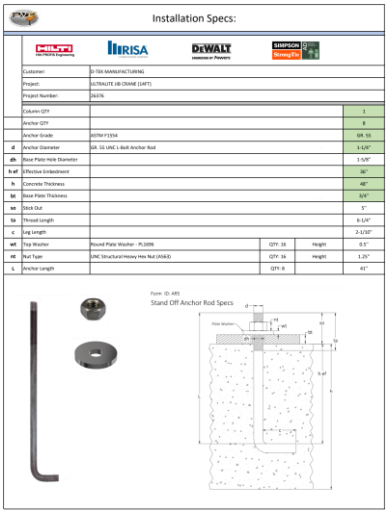


J Bolt Installation Prep

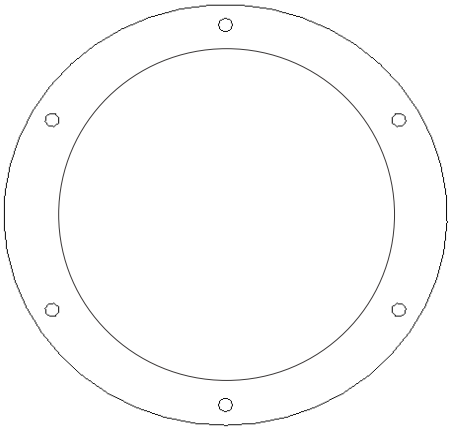
Before beginning the installation of the supplied J bolts, confirm the J Bolt Anchor Template aligns with hole pattern of the Jib Column.

Parts Needed for J Bolt Installation:

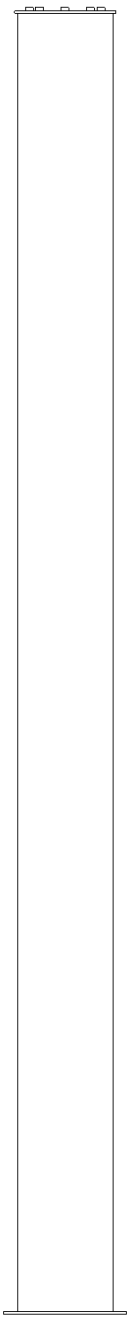
- ☐ J Bolt Installation Specs
- ☐ J Bolts
- ☐ Nuts
- ☐ Plate Washers
- ☐ Spacers



J Bolt Installation Specs

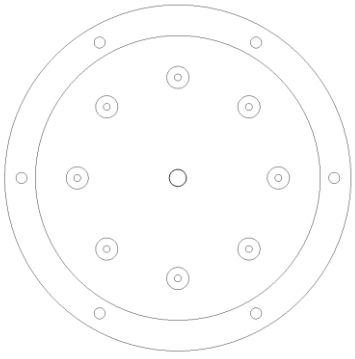


J Bolt Anchor Template

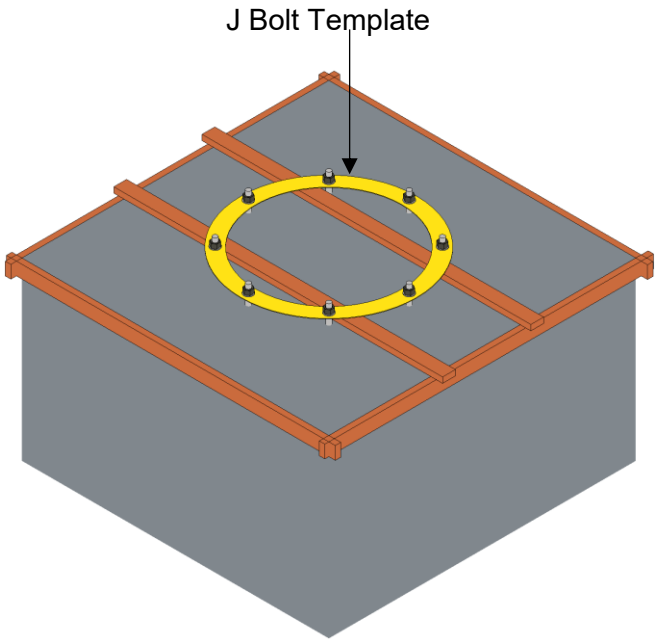


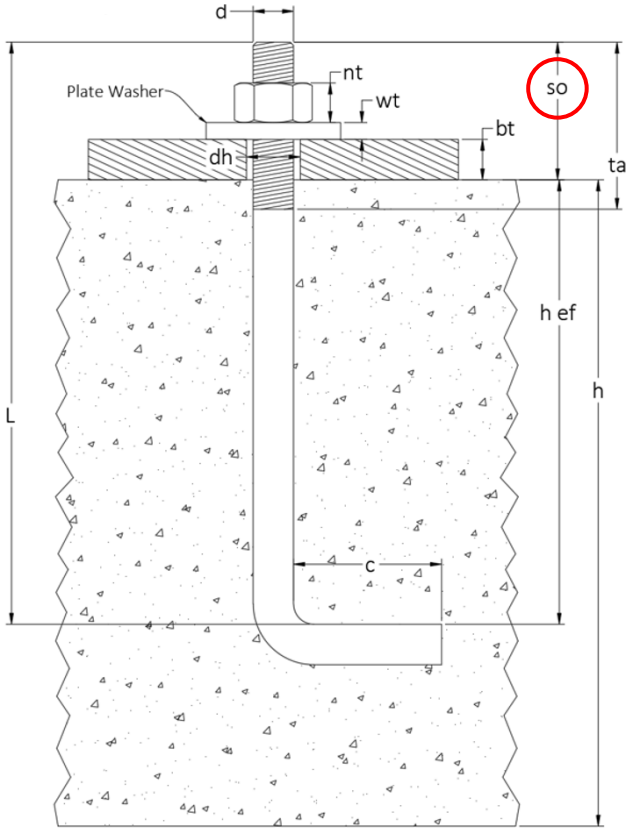
Jib Column

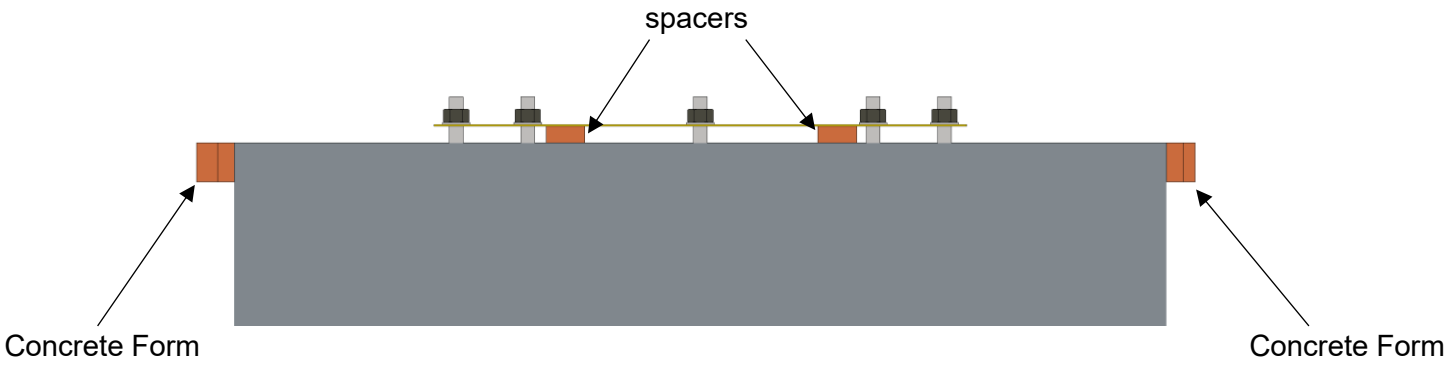
J Bolt



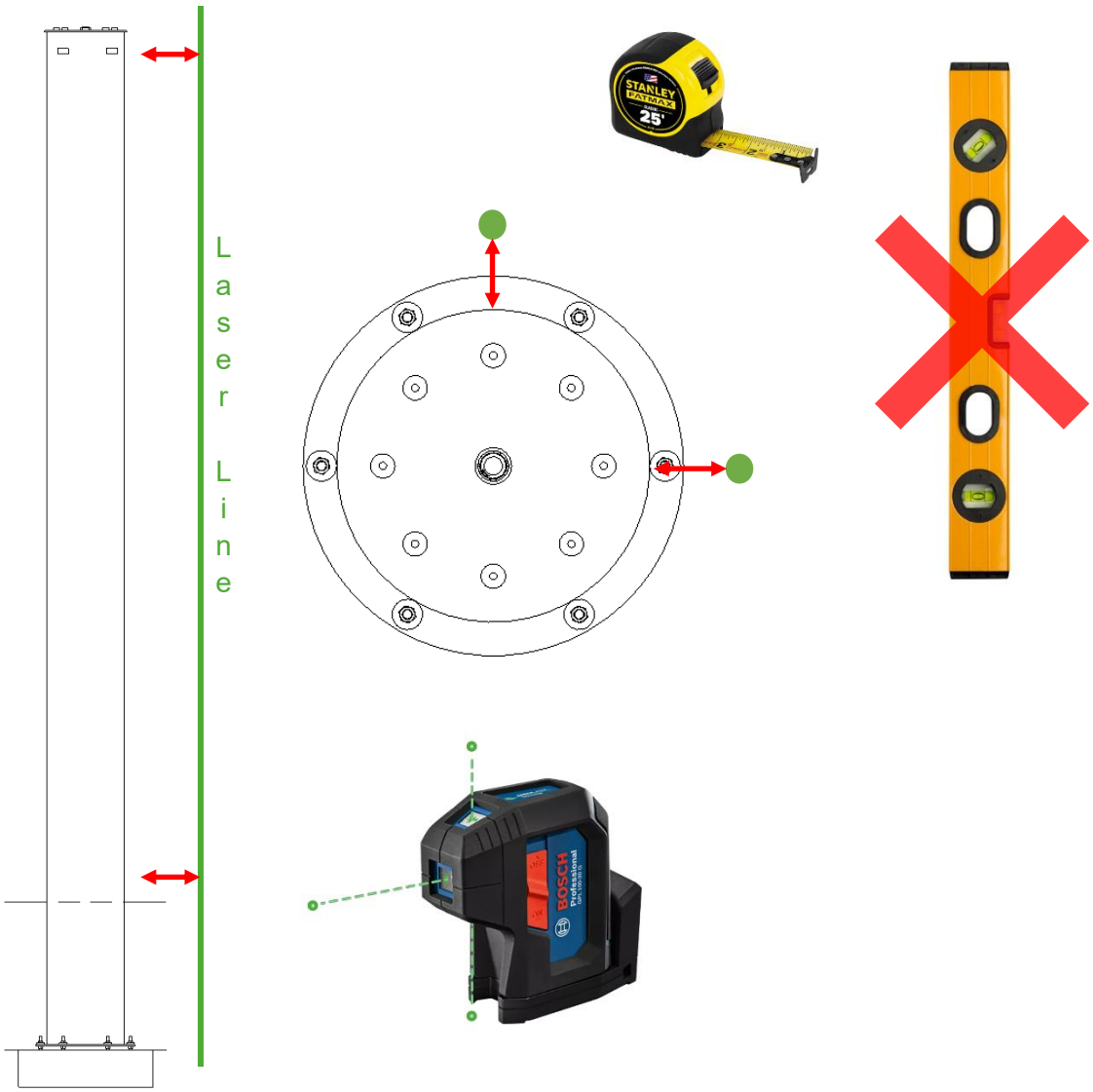
1. Pour concrete footer according to the supplied footer installation drawing.
2. Before the Concrete has set, lay wooden studs or equivalent spacers across the concrete form.
3. Loosely assemble the anchors with the column template and hardware.
4. Lower the anchor assembly into the wet concrete with the template suspended by the wooden studs.
5. Ensure appropriate amount of threads are above the surface of the concrete per dimension “SO” in the J Bolt Installation Specs.



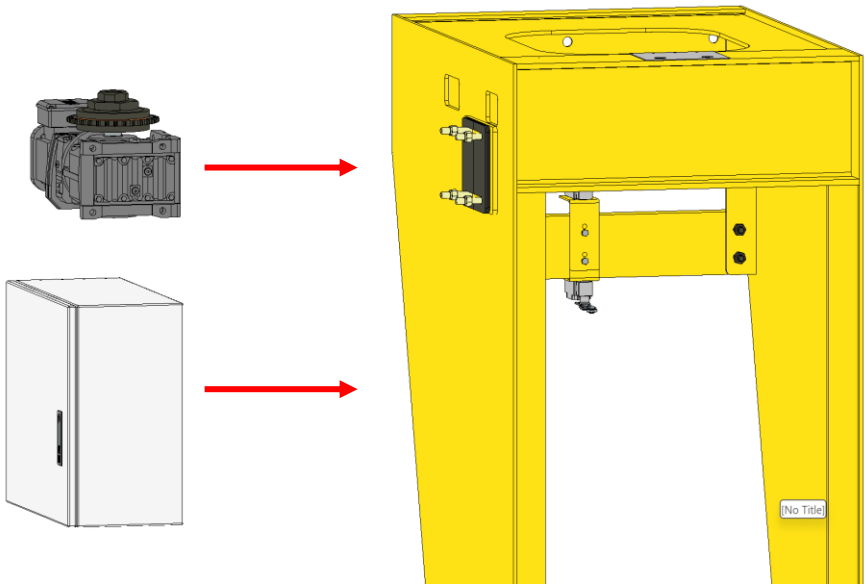




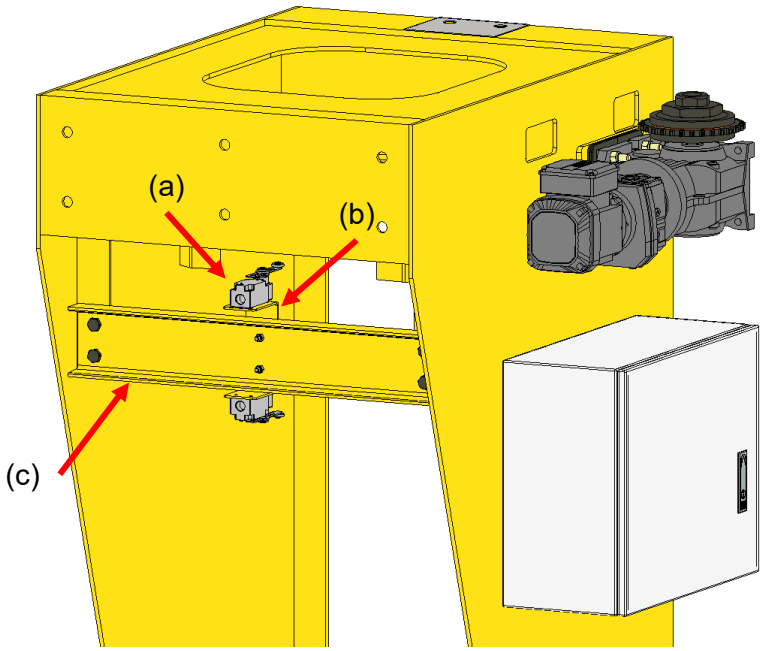
5. Once concrete has fully cured, remove hardware, template and wooden spacers.
6. Using proper rigging, lift and set Ultralite Jib Crane Column onto the anchors.
7. DO NOT use a level on the pipe column to ensure pipe column is plumb.
8. Set vertical laser parallel to jib pipe column.
9. Measure at the base of the jib pipe column to the laser line.
10. Measure the distance from plum laser line to top of jib pipe column.
11. Measure the distance 90 degrees from step 8.
12. Add shims under base plate as necessary to ensure pipe column is plumb.
13. Torque anchors in accordance with Torque Specifications (*Page 19*).
14. *If necessary, poor the second footer before continuing.



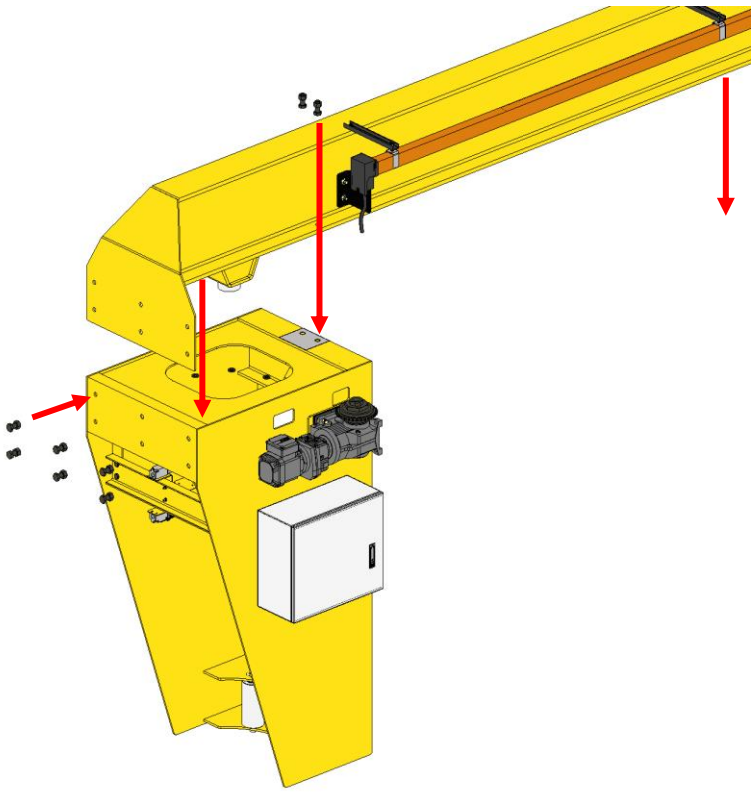
15. Mount the Electrical Panel and Motor onto the side of the Jib Box, using provided hardware.
    *Note: Do not torque the Motor mounting hardware as shimming will need to take place after the Chain as been installed to achieve proper tension



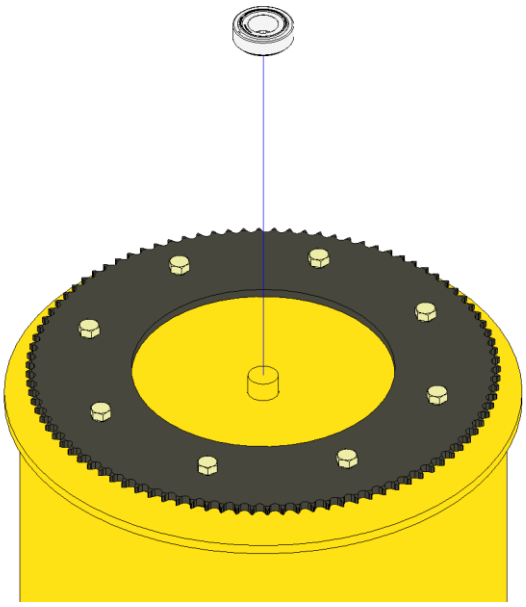
16. Mount the Limit switches (a) with the provided bracket (b), channel (c) and provided hardware.

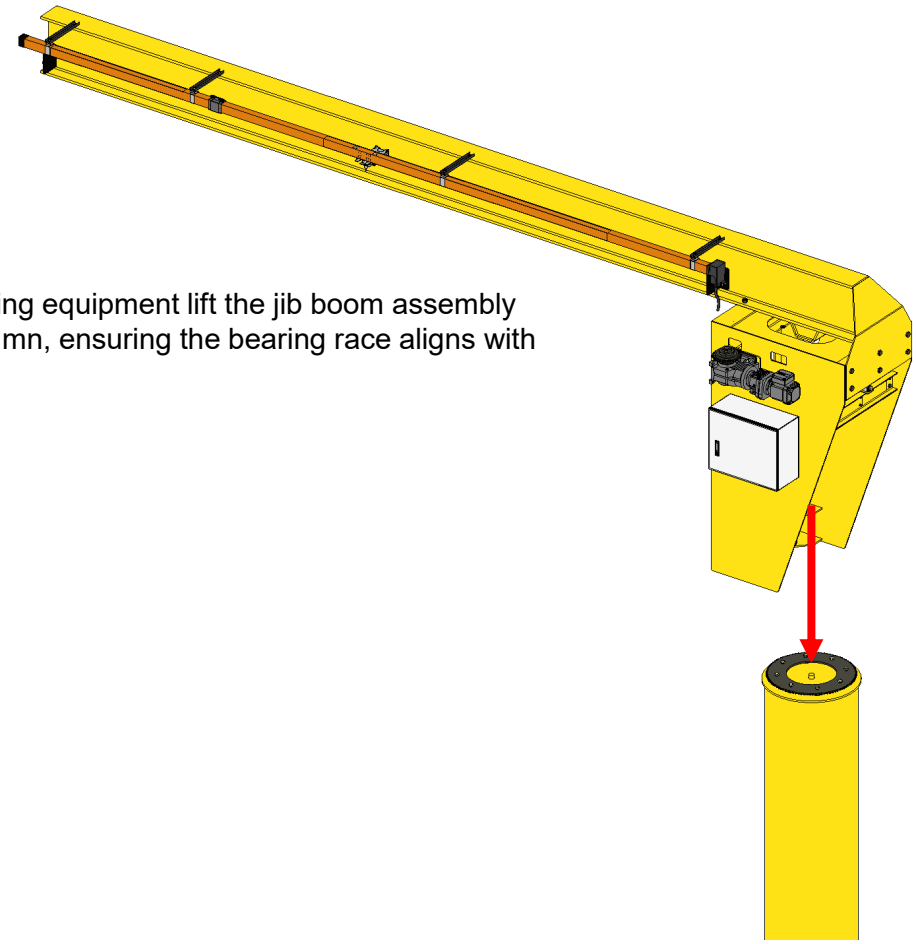


17. Using proper lifting equipment attach the jib crane boom onto the jib crane box with the provided hardware.



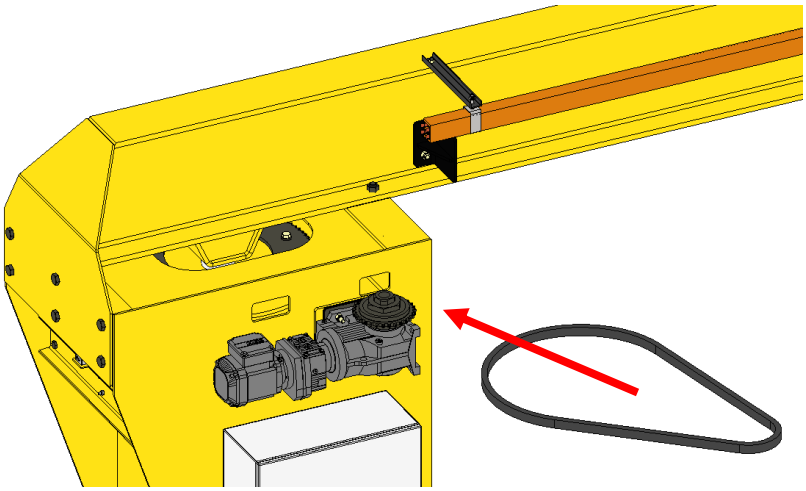
18. Ensure the bearing and gear plate are securely attached to the top of the jib column in during preparations for mounting the jib boom assembly.



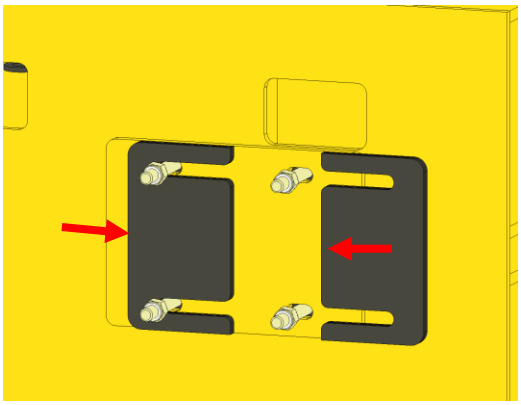


19. Using proper lifting and rigging equipment lift the jib boom assembly and set on top of the jib column, ensuring the bearing race aligns with the bearing cage.

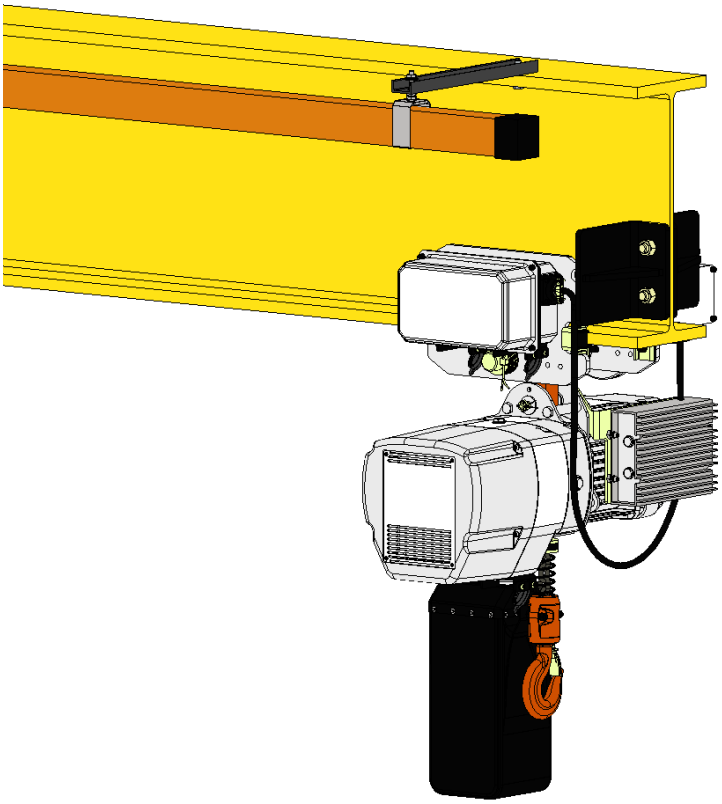
20. Remove a pin from the drive chain and feed it through the chain holes in the box and around the gear plate. Re-insert the pin into the Cain.



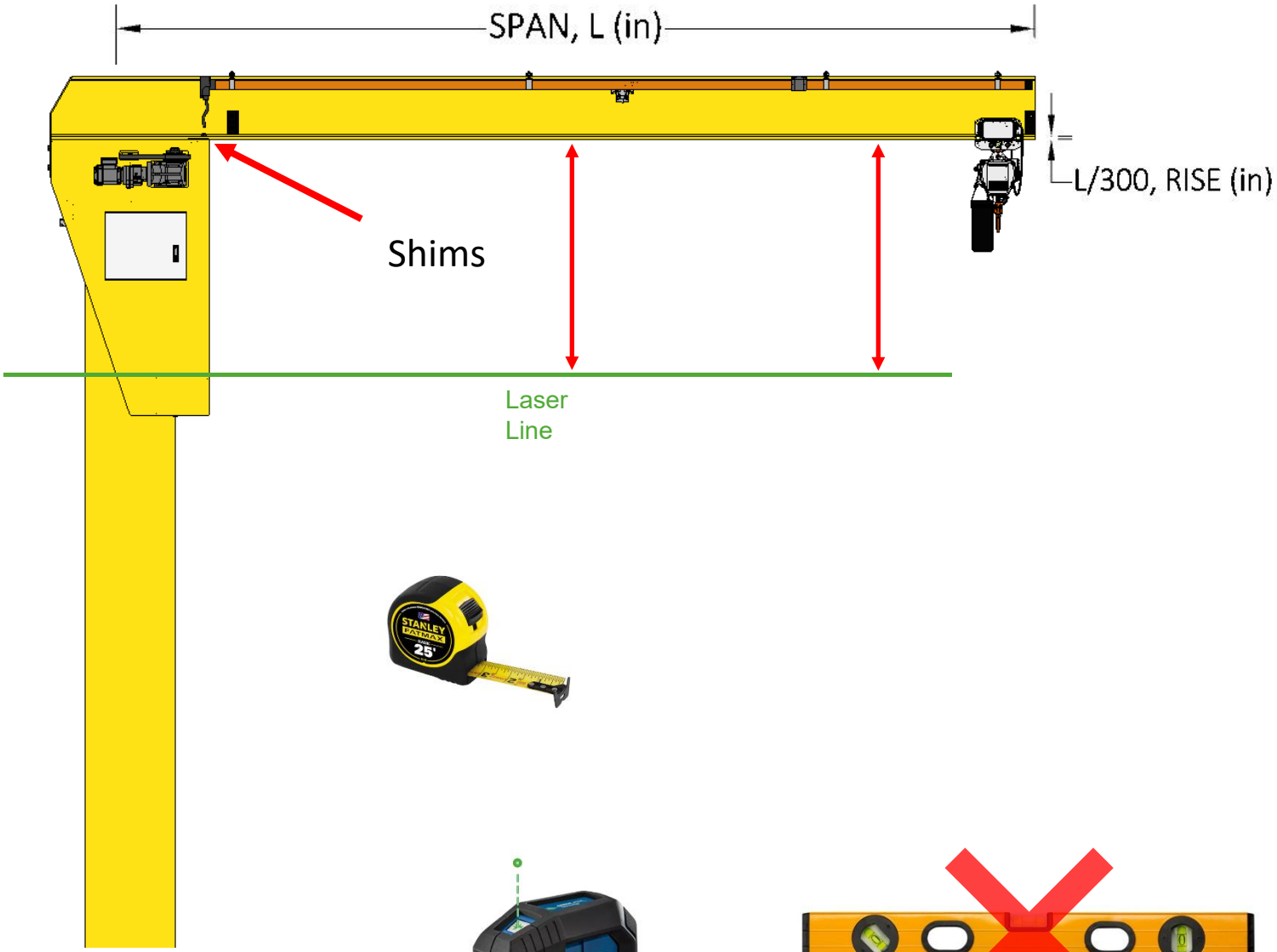
21. Loosen hardware on motor mount and insert needed ships to acquire necessary tension drive chain.
22. Torque mounting hardware.

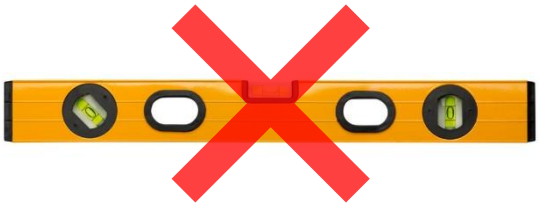


23. Mount hoist and trolley.
24. Install end stops with Hardware.

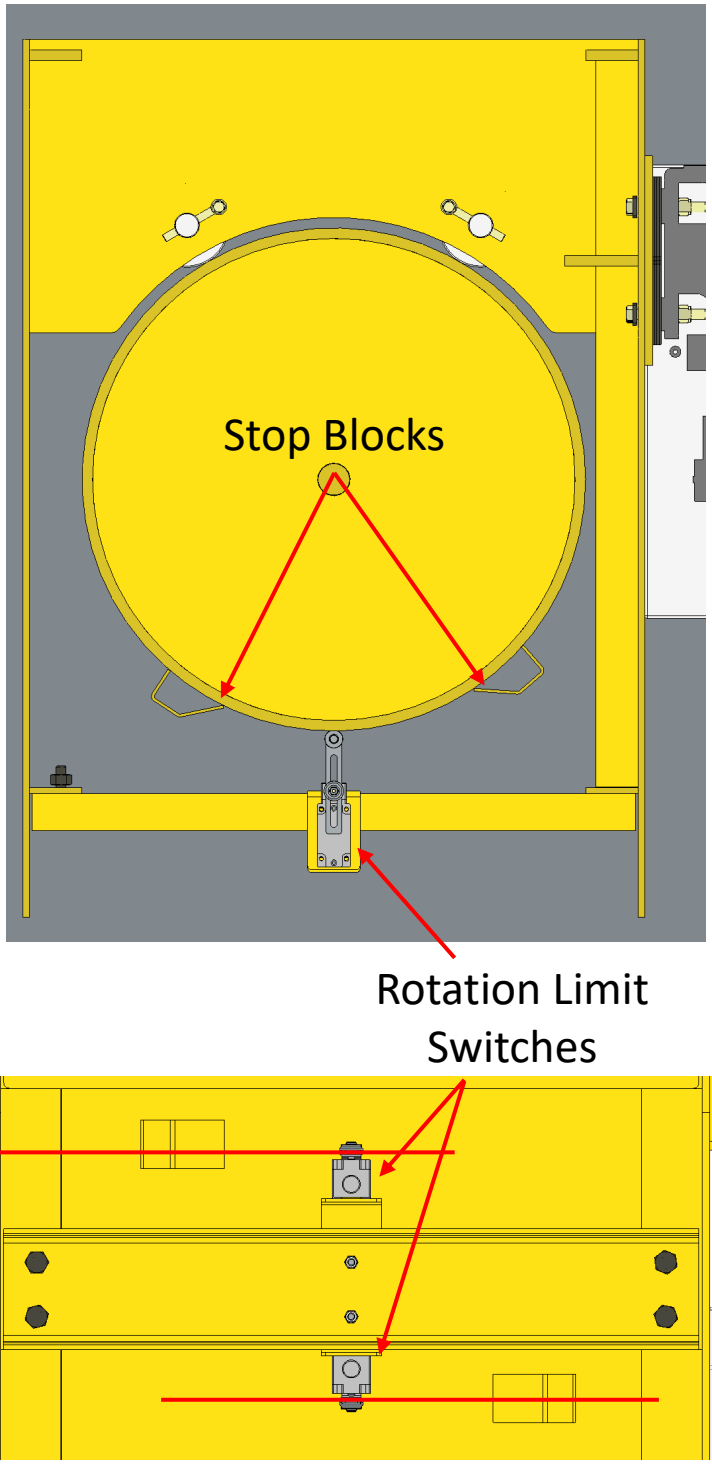


25. DO NOT use a level.
26. Set up horizontal laser to ensure jib boom is level.
27. Install shims between the front of the jib box and jib boom until the Boom has a slight rise of L/300”.



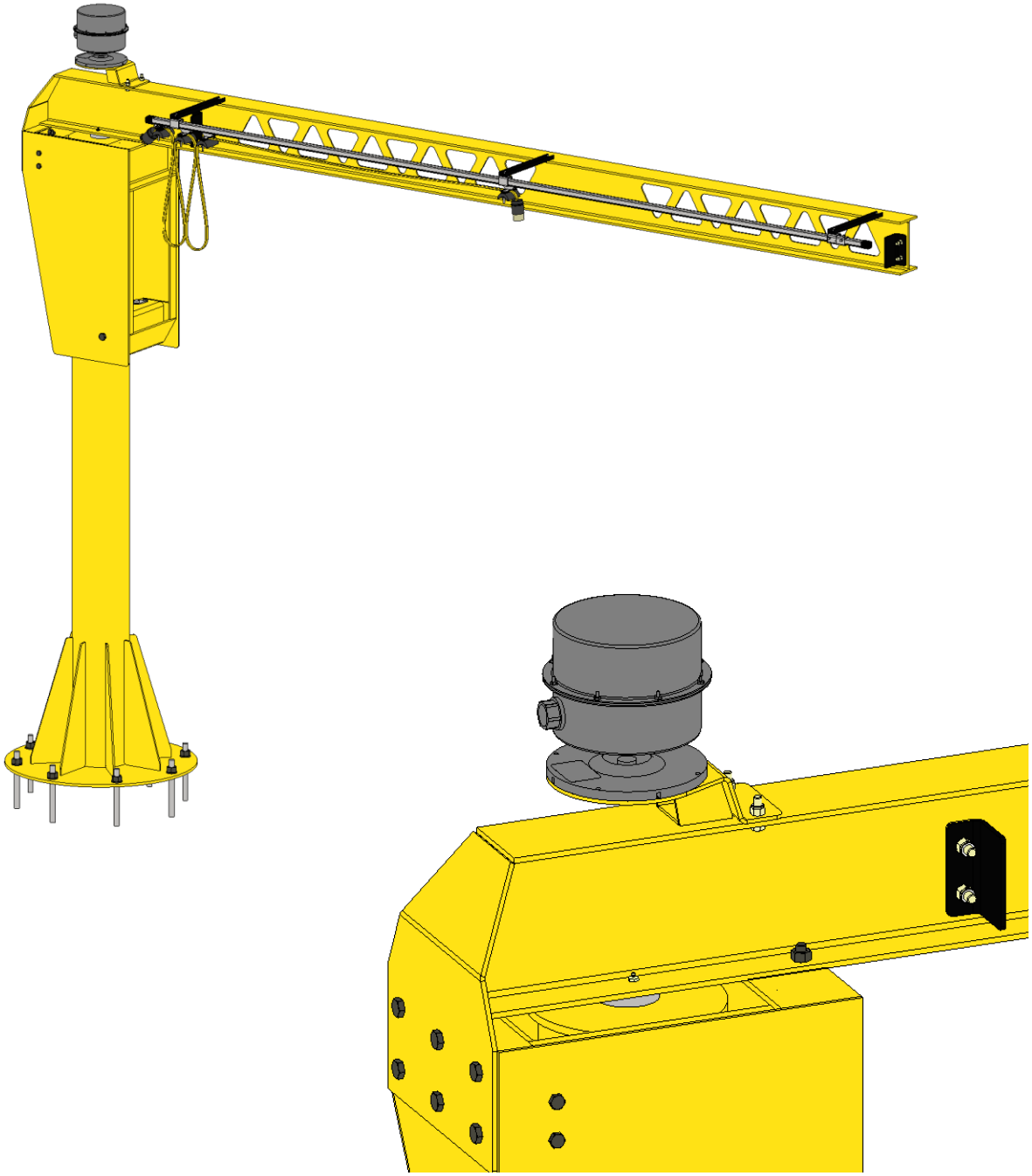


28. To limit the rotation of your Jib Crane, weld on the (2) Stop Blocks at your desired radial position and at the heights as the Rotation Limit Switches.

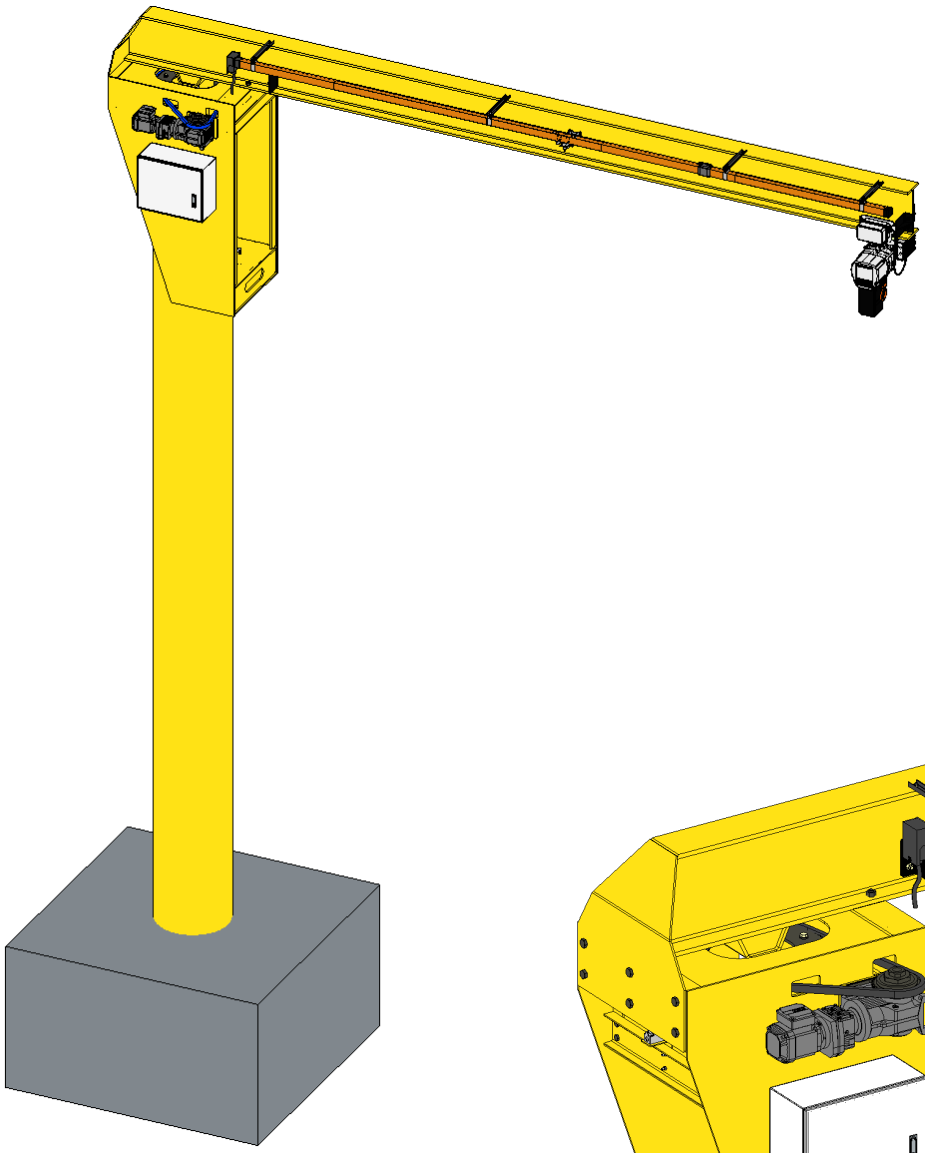


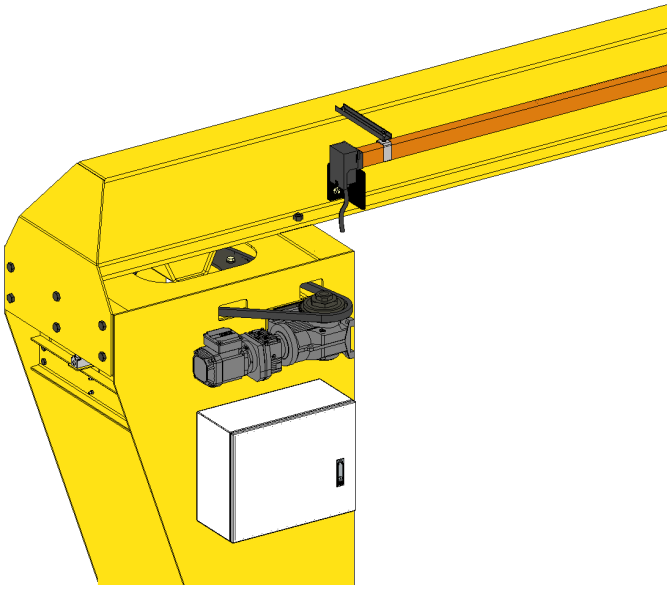
All dimensions are designed as examples and may not be the actual or desired dimesons or angles.

29. (If Included) install 360 collector with U-bolt and bracket.



29. Use touch up paint (provided) as needed.





Installing Electrification (Electrotrack)

NOTE: Electrotrack can be installed before or after jib boom is installed onto jib column.

1. **(Images 7.1A & 7.1C)** Install the electrification brackets into the existing holes along the beam Flange.

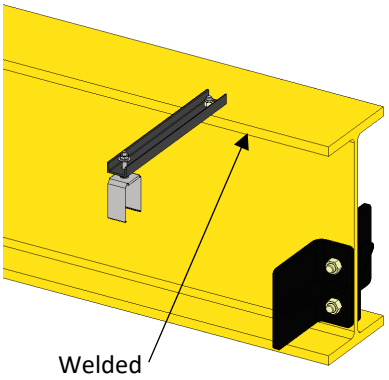


Image 7.1A *Brackets*

3. At the end of the system closest to building power supply install one full length Starke Electrotrack section to be used for “Incoming Power”. **(Image 7.3)**

4. Drill a ¼” hole in each copper conductor rail to connect incoming power. Just drill holes at this time for wires to connect to later. Then, insert the End Feature onto the end of the track. (**Image 7.4**)

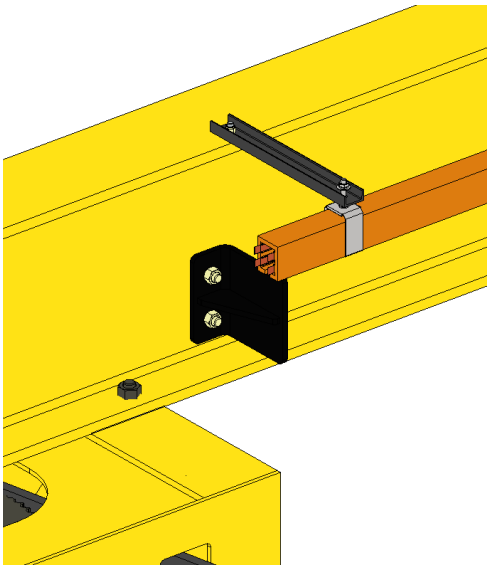


Image 7.3 *Install Track*

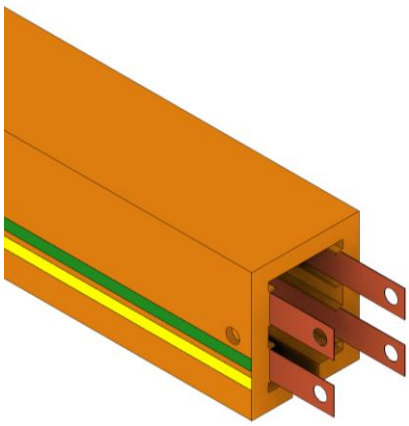


Image 7.4 *¼” Drill Holes*

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5. Leaving a 4-6” gap install the second section, making sure the grounding conductors are oriented the same way. Note: each orange track is marked with a yellow and green line. This line indicates where the ground conductor is located. **(Image 7.5)**

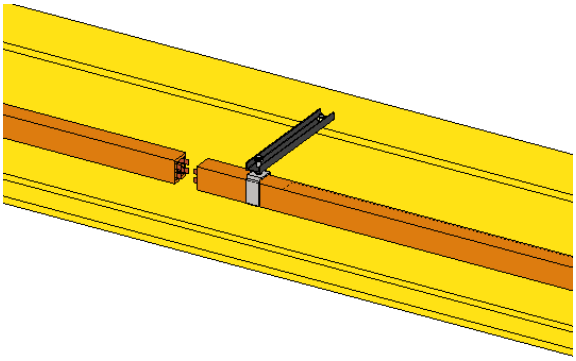

Image 7.5 *Second Section*

6. Press a conductor coupler onto the dimpled end of each of the 4 conductors as far as it will go. Note: coupler body goes to the outside of the conductor leaving a smooth transition on the inside face of each coupler. (**Image 7.6**)

7. Push the other conductors into the corresponding coupler. Once all 4 conductors are started, use a needle nose plier to work the conductors the rest of the way in. Conductor ends must be in tight contact. (**Image 7.7**)

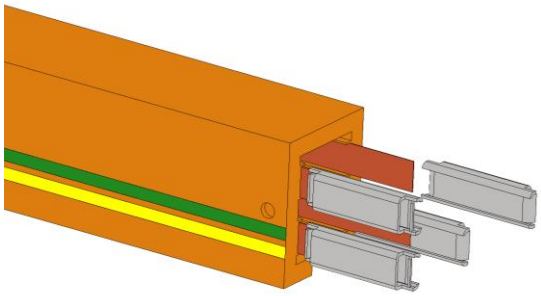

Image 7.6 *Conductor Couplers*

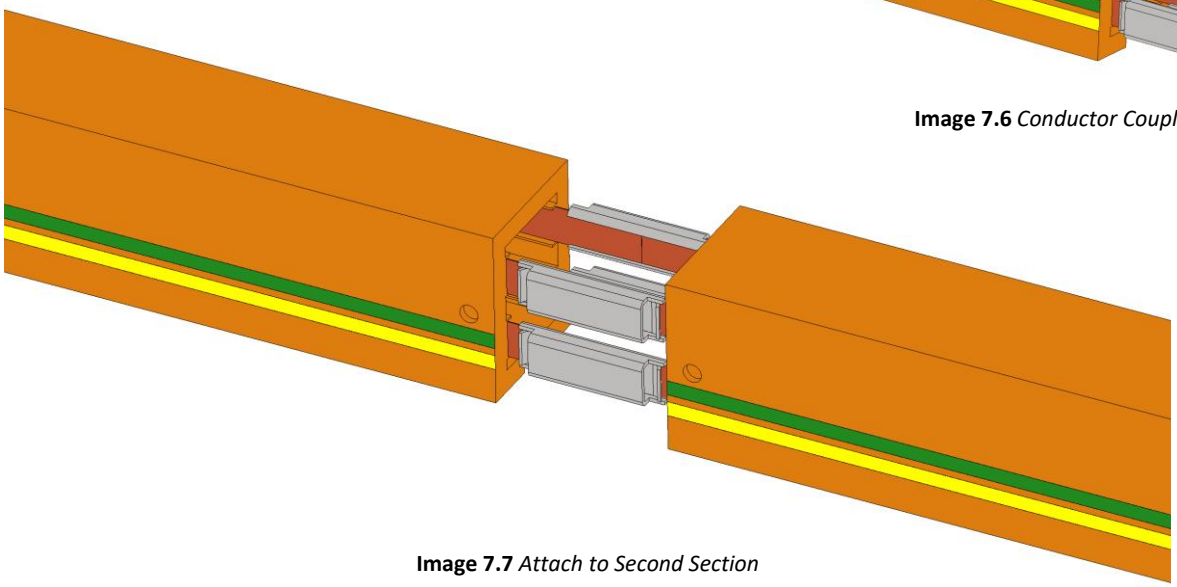

Image 7.7 *Attach to Second Section*

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8. Place 1 half of a splice cover **(Image 7.8A)** around the conductor couplers and tight to the casing on both sides. 2 pins on the cover should align with 2 holes in the casing **(Image 7.8B).** Clip the other half of the splice cover into place locking rails together. Insert provided hardware into Splice Cover Holes **(Image 7.8C).**

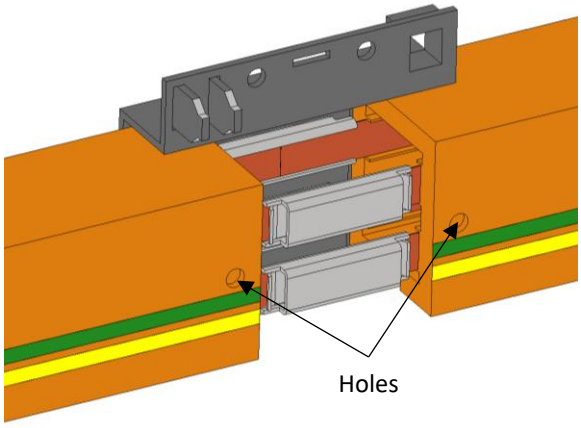

Image 7.8A *Attach Splice Cover*

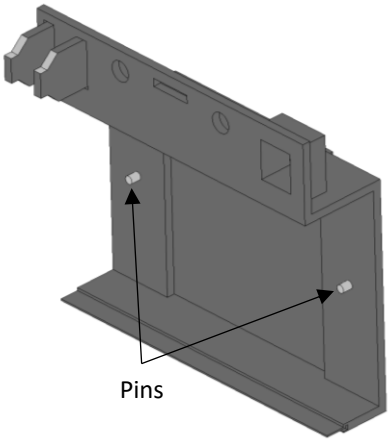

Image 7.8B *Opposite Splice Cover*

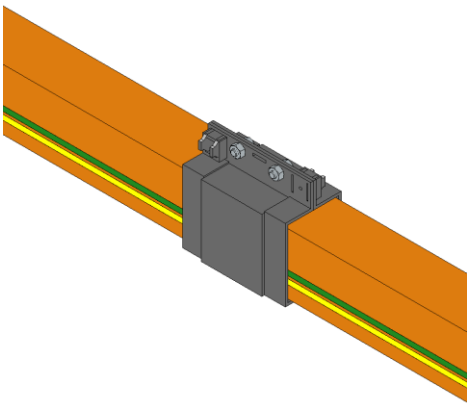

Image 7.8C *Locked Splice Cover*

9. Repeat **steps 7.5 - 7.8** as necessary until Electrotrack is complete. **(Image 7.9)**

10. Once the Electrotrack is complete, Place the power supply box on the “Incoming Power” end of the rail. (**Image 7.10**)

11. Insert a bolt through each conductor hole so that the bolt head is between the conductors **(Image 7.11)**

12. Place a terminal ring over the bolt on the outside of conductor followed with the locknut. **(Image 7.12)**

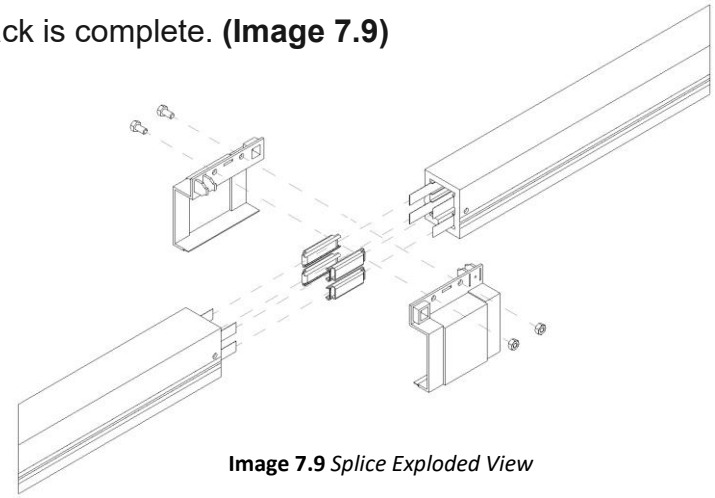

Image 7.9 *Splice Exploded View*

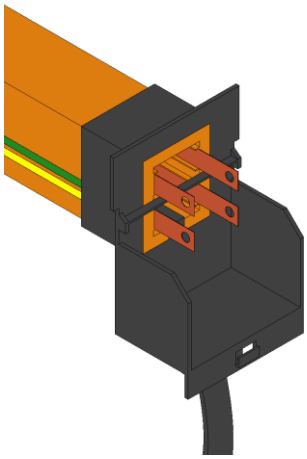

Image 7.10 *Power Supply Box*

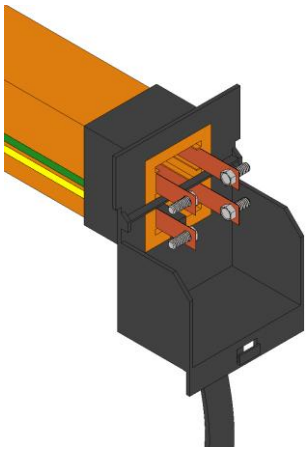

Image 7.11 *Bolts Inserted*

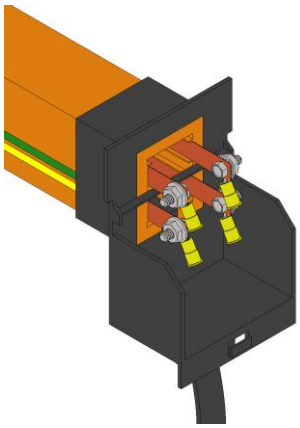

Image 7.12 *Terminal Ring and Locknut*

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13. With the power disconnected and verified with voltage tester connect supply wire to conductors. Starting with grounding terminal (green/yellow stripe) attach green wire then proceed clockwise with black, white, then red (red opposite to ground) **(Image 7.13)**

14. Tighten the cord grip and tighten the connection nuts and bolts. Double check your assembly, then slide the power supply box cover in place and install the power supply cover. **(Images 7.14A & 7.14B)**

15. At the other end of the Electrotrack, position the Collector Trolley ready to insert. Make sure the grounding brush (yellow wire w/green stripe) is aligned with the ground terminal of the Electrotrack. **(Image 7.15)**

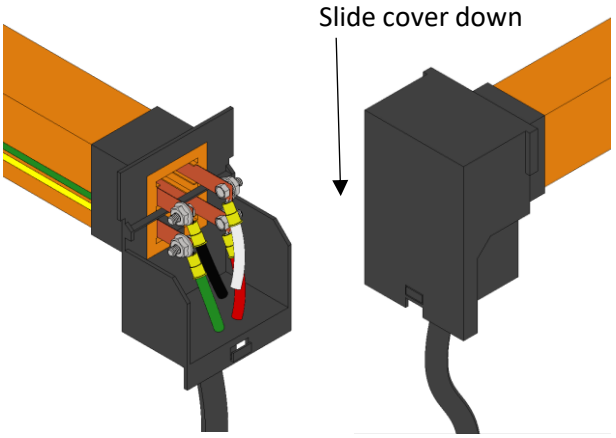

Image 7.13 *Attached Wires*

Image 7.14A *Supply Box Cover*

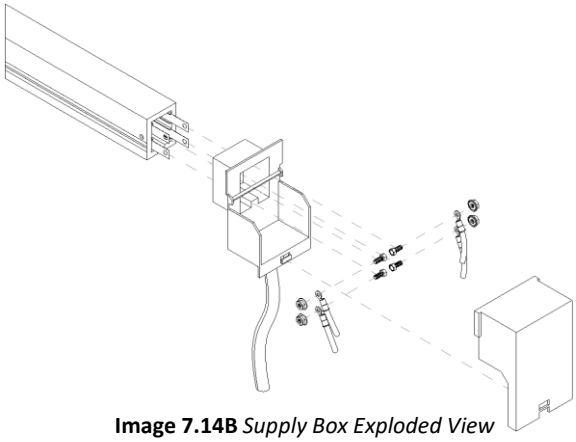

Image 7.14B *Supply Box Exploded View*

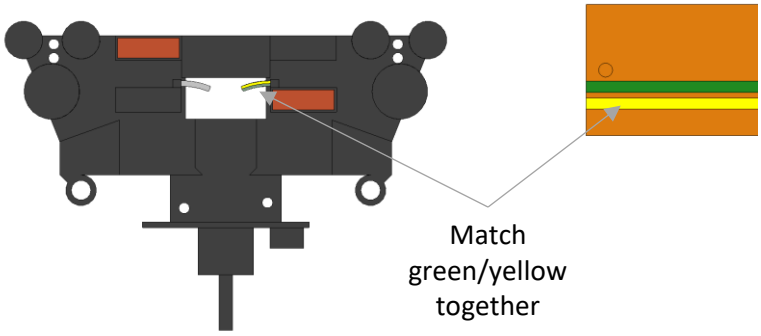

Image 7.15 *Positioning Collector Trolley*

16. Push the brushes in and slide the collector trolley into the Electrotrack. Depress the remaining brushes as you slide the trolley all the way in. **(Image 7.16)**

17. Repeat steps **7.15 – 7.16** as needed for each Collector Trolley.

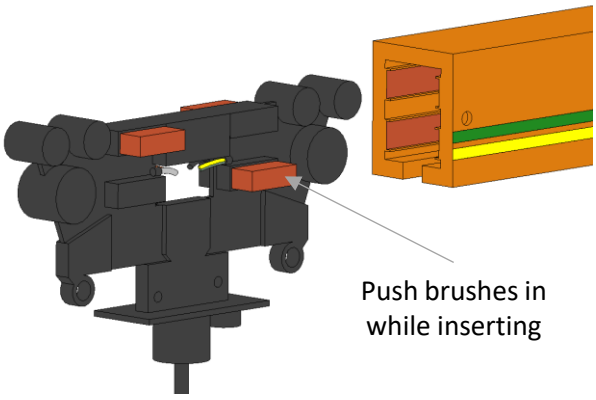

Image 7.16 *Inserting Collector Trolley*

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18. Once all Collector Trolley's are inserted, place an End Cap on the end of the Electrotrack. **(Image 7.18)**

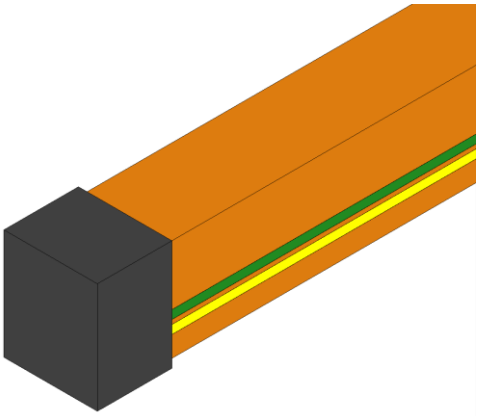
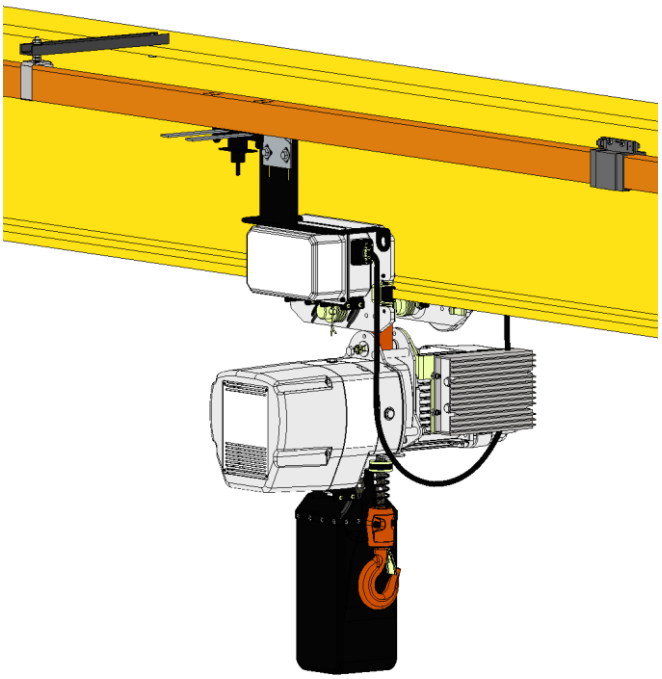


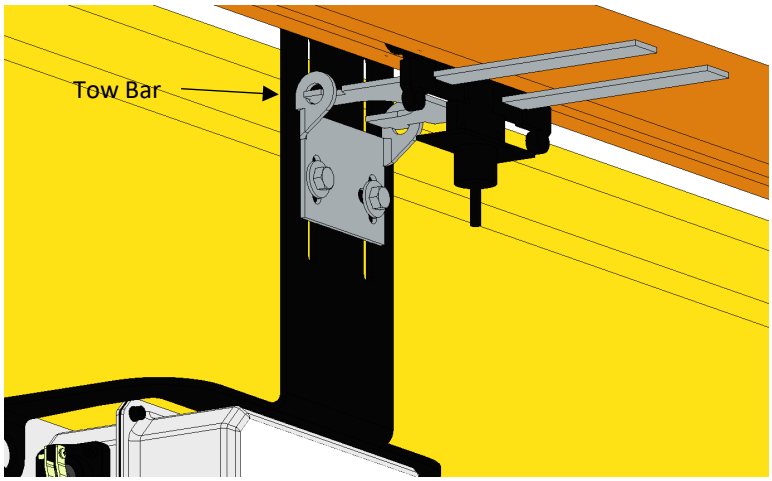
Image 7.18 *End Cap*

19. Align the Collector Trolley and the Tow Bar.



20. Once the Tow Bar, and Collector Trolley are lined up, attach the Tow Bar using the hardware provided

21. Repeat steps **7.19 – 7.20** as needed for all Collector Trolley's.



Owner's Manual

TORQUE SPECIFICATIONS

The torque specifications for ASTM A325 Structural Bolts are defined by Table 2. The torque specifications for SAE Grade 5 Bolts are defined by Table 3. The torque specifications for SAE Grade 8 Bolts are defined by Table 4. These include standard and reduced values depending on the finish type and lubrication type.

ASTM A325 STRUCTURAL BOLTS									
Bolt Diameter	TPI	Tightening Torque Range (ft-lbs)							
		Plain		Plain, Light Oil		Plain, Heavy Oil		Galvanized, Waxed	
		Min	Max	Min	Max	Min	Max	Min	Max
1/2	13	100	117	80	94	60	70	50	58
5/8	11	198	240	158	192	119	144	99	120
3/4	10	350	425	280	340	210	255	175	213
7/8	9	569	685	455	548	341	411	284	343
1	8	850	1,017	680	814	510	610	425	508
1 1/8	7	1,200	1,444	960	1155	720	866	600	722
1 1/4	7	1,687	2,042	1350	1634	1012	1225	844	1,021
1 3/8	6	2,223	2,681	1778	2145	1334	1609	1,111	1,341
1 1/2	6	2,950	3,575	2360	2860	1770	2145	1,475	1,788

Table 2

SAE Grade 5				
Bolt Diameter	TPI	Tightening Torque Range (ft-lbs)		
		Min	Mid	Max
		Lubricated	Zinc, Dry	Plain Dry
1/4	20	6	7	8
5/16	18	13	14	17
3/8	16	23	26	31
7/16	14	37	42	49
1/2	13	57	64	75
5/8	11	82	92	109
3/4	10	113	128	150
7/8	9	200	227	267
1	8	322	365	429

Table 3

SAE Grade 8				
Bolt Diameter	TPI	Tightening Torque Range (ft-lbs)		
		Min	Mid	Max
		Lubricated	Yellow Zinc, Dry	Plain, Dry
1/4	20	9	10	12
5/16	18	18	21	24
3/8	16	33	37	44
7/16	14	52	59	70
1/2	13	80	90	106
5/8	11	159	180	212
3/4	10	282	320	376
7/8	9	455	515	606
1	8	681	772	909

Table 4

CRANE OPERATOR INSTRUCTIONS

1. **General:** At PWI, safety is our top priority, especially when operating overhead cranes and jib cranes in work areas where personnel are present. Proper training and attention to detail are essential to prevent accidents and ensure safe operation. These guidelines are designed to supplement your existing safety protocols and OSHA regulations, not replace them. Reviewing this information will help operators better understand safe practices, protecting both employees and equipment on the job site. It is important to note that these guidelines serve as recommendations for crane operators. Employers are responsible for ensuring their teams are aware of and comply with all relevant federal, state, and local regulations and that operators are adequately trained.

2. **Operator Qualifications:** Safe crane operation demands skill, attentiveness, and a strong commitment to safety. All crane operators should meet the following criteria:

    A. Language Proficiency: The operator must understand the appropriate language and be able to read safety and instruction materials.
    B. Legal Age: Operators must meet the minimum legal age requirement for operating such equipment.
    C. Health and Fitness: Operators must have sufficient vision and hearing (corrected if necessary) and must not suffer from health conditions, such as heart issues, that could impair performance.
    D. Training and Knowledge: Operators must have read and understood all operating instructions, completed proper training, and demonstrated their knowledge through practical application.

3. **Operating the Jib Crane Boom:**
    A. Before using the boom, ensure the hook is positioned high enough to avoid obstructions.
    B. Align the jib boom directly over the load before attempting to lift.
    C. Operate the boom gradually, starting slowly and increasing speed smoothly. As the boom approaches the stopping point, reduce speed to ensure a controlled stop.

4. **Operating the Trolley:**
    A. Position the hoist directly over the load before lifting. Ensure all slack in the slings is taken up.
    B. Avoid starting to lift until the hoist is properly centered to prevent the load from swinging.
    C. Start trolley motion at a slow speed and decelerate gradually when nearing the destination.

5. **Hoist Operation:**
    A. Refer to the operating manual specific to your lifting equipment for detailed instructions. Always follow the manufacturer's recommendations and guidelines for safe operation.

6. **Know Your Crane:** Crane operators must be familiar with the key components of a crane and possess a thorough understanding of crane control functions and movements. Operators must know the location and correct operation of the main disconnecting means for all power to crane attachments.

7. **Responsibility:** Crane operators bear direct responsibility for the safe operation of the crane. If there is any doubt regarding **safety**, the operator must stop the crane and refuse to handle loads until either:
    A. Safety is ensured, or
    B. The operator is directed to proceed by a supervisor, who then assumes full responsibility for the safety of the lift.

8. **Riding Policy:** Never allow anyone to ride on the hook or a load.

9. **Inspection:** At the start of each shift, test crane movements and all attachments. If an issue is identified, report it immediately to a supervisor, and ensure corrective action is taken before operating.

10. **Operating:** A skilled crane operator ensures smooth and controlled crane operation. Adhere to the following guidelines for safe and efficient crane handling:
    A. Move the crane smoothly to avoid abrupt or jerky load movements. Remove slack from slings and hoisting ropes before lifting.
    B. Position the crane directly over the load before lifting to minimize swinging. Avoid swinging loads to reach areas not directly beneath the crane.
    C. Keep crane-hoisting ropes vertical. Cranes must not be used for side pulls.
    D. Ensure the area around the load is clear, and everyone is aware of the movement.
    E. Never exceed the rated load capacity of the crane, slings, or lifting devices.
    F. Confirm slings, chains, or lifting devices are fully seated in the hook saddle with the latch closed (if equipped).
    G. Verify the load and/or block is high enough to clear obstructions when moving the boom or trolley.
    H. Do not leave a suspended load unattended. When holding a load, keep the power on and stay at the controls with the load positioned as low as possible.
    I. Do not lift with loose sling hooks. Store unused hooks securely or switch to an appropriate sling.
    J. Remove all slings or cables from crane hooks when not in use to prevent snagging.
    K. Avoid carrying loads or blocks over personnel. Exercise additional caution with magnets or vacuum devices, as load failure can occur.
    L. Operator Procedure when they leave the crane:
        a. Raise hooks to an intermediate position.
        b. Park the crane at a designated location.
        c. Turn all controls off.
        d. Shut off the main switch.
        e. Visually inspect the area before leaving.

11. **Emergency Procedures:** In emergencies or during maintenance, display warning signs and lock the main switch in the “off” position. This applies regardless of who is performing the task.

12. **End Stops**: Contact end stops cautiously. Ensure the safety of people below and communicate clearly with other crane operators in the area.

13. **Safety Features:** All safety mechanisms and features provided by PWI are essential for crane operation. Do not disable or remove any safety features. Any such actions void all warranties.

GENERAL WARRANTY

This warranty will not apply to any product that has been repaired or altered outside of PWI manufacturing plant, or without specific instructions from PWI to make alterations. PWI will in no case, allow or offer reimbursement for outside sources to perform repairs or make alterations to product in reference. If the product has (in PWI's judgment), had alterations made which adversely affect its serviceability or was subject to misuse, negligence, accident, or operated contrary to instructions or common practice, warranty shall be considered void.

Defective items will be repaired or replaced and returned to PWI at the cost of the owner. If PWI, at its discretion, finds the warranty claims to be justifiable, PWI will compensate by means of replacing or repairing faulty products or components free of charge. The sole liability of PWI for warranty claims is limited to those here. In no event will PWI be liable for damages in excess of the original sale price of the defective product, or for any consequential damages, nor will PWI be liable for any special or other work done unless specifically agreed to in writing. This warranty does not include or apply to fire, natural disasters, or other Acts of God.

Should the warrantee destroy, intentionally or not, any part of the warrantied product, or any evidence concerning the origin of an alleged defect, or try to conceal evidence of causation, this warranty is cancelled, and warrantee will have no claim against PWI whatsoever.

This warranty does not cover coatings on any PWI products including paint, powder-coat, zinc, or galvanized coatings. Coating life can vary greatly based on the ambient environment your PWI product is installed in, which is simply out of the manufacturer's control. Touch-up painting or coating repair (after initial installation by PWI or customer) shall be the responsibility of the owner, unless specifically guaranteed in writing on project quotation.

Any interpretation of this warranty shall be done in common pleas court in Indianapolis under Indiana law.

ALL OTHER REPRESENTATIONS, EXPRESS OR IMPLIED, WARRANTY, OR LIABILITY RELATING TO THE CONDITION OR USE OF THE PRODUCT ARE SPECIFICALLY, DISAVOWED, AND IN NO EVENT SHALL PWI BE LIABLE TO BUYER, OR ANY THIRD PARTY, FOR ANY DIRECT OR INDIRECT CONSEQUENTIAL OR INCIDENTAL DAMAGES

LIMITED WARRANTY

STRUCTURAL: 3-Year (36 Month) Parts & Workmanship Warranty

Structural items include but are not limited to columns, headers, runways, and other stationary components of this PWI jib crane.

Unless otherwise specified, PWI guarantees that the structure or this product is free from material defects in design, materials, and workmanship under normal use, proper maintenance, and service. A corrosive or abrasive atmosphere is not to be considered a normal atmosphere.

This warranty is strictly limited to 36 months for single shift operation or 6,000 hours after installation, or 38 months after shipment, whichever is shorter. Within ten days after defect is found, warrantee must deliver a written notice to PWI. All requested warranty information must be received promptly by PWI in no more than 5 business days.

MECHANICAL: 1 Year (12 Month) Parts & Workmanship Warranty

Mechanical items include but are not limited to all types of Overhead Cranes, and other non-stationary PWI products that are designed for specific functional operation.

Unless otherwise specified, PWI guarantees that this mechanical product is free from material defects in design and workmanship under normal use, proper maintenance, and service.

This warranty is strictly limited to 12 months for single shift operation or 2,000 hours after installation, or 14 months after shipment, whichever is shorter. Within ten days after defect is found, warrantee must deliver a written notice to PWI. All requested warranty information must be received promptly by PWI in no more than 5 business days.

All standard non-engineered products including but not limited to hoists, trolleys, wheels, gearmotors, controls, and safety products, will fall under the default warranty of that specific manufacturer.

PERIODIC INSPECTION AND LUBRICATION RECOMMENDATIONS

The following is a checklist to be followed in performing periodic inspections and preventative maintenance on PWI Crane Systems. It is intended that this checklist be supplemented with any additional instruction sheets and maintenance manuals sent with each job.

The frequency of inspection and lubrication recommendations presented herein is based upon normal operating conditions of one complete handling cycle every 10 minutes throughout a 40-hour week. If the actual duty cycle of a particular unit is greater or less than this, the inspections and lubrications should be performed more frequently or less frequently in proportion.

Each industry has conditions peculiar to it, which may cause wear of certain parts. The tabulation given is only general and may be supplemented by an individual maintenance department program to meet its own particular requirements. Particular attention should be given to corrosive conditions, excessive vibrations, extreme ambient temperature variations, and rough handling conditions.

Questions regarding damaged, worn or cracked equipment components should be directed to the PWI Inside Sales Department at 574-646-2015.

The recommendations contained herein are to be supplemented by any vendor instructions, which are included in this manual.

Power should be off and locked when performing maintenance.

Please check the state and local code manuals in your area to ensure compliance

Parts: Your system is custom designed for your space. The drawings that you received are specific to your system. PWI has copies of your drawings in a file under the company name or the name of the purchaser. If you require replacement parts, please call or email PWI and we will be glad to assist you in getting what you need. parts@pwiworks.com

INSPECTION & MAINTENANCE CHECK LIST		
Item	**To Do**	**Frequency**
Foundation	Check for cracks in concrete	Every 6 months
Column Anchor	Check for loose hardware.	Every 3 months
Column	Check base plate welds and hardware.	Every 6 months
Top Bearing	Confirm bearing is lubricated and in place.	Every 3 months
Lower Roller Bearing	Confirm lower bearing	Every 3 months
Hoist	Check electrical wiring and chain wear.	Every Week
Trolley	Check wheels and pin.	Every Week
End Stop	Check to make sure bolt and rubber bumber are in place.	Every 3 months
360 deg Top Collector	Check mounting bolts and electrical connections.	Every 3 months
Electrification	Check for exposed or frayed wires.	Every 3 months
Decal/Warning Label	Check to make sure labels are in place and visible.	Every 3 months
* Check federal, state and local codes to ensure compliance.		

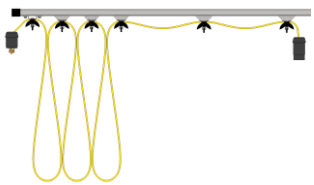
Notes

24. Installing Your Starke Festoon Kit

25. **Read these instructions first** and then unpackage all the parts of your festoon kit. Get familiar with the different parts and be looking for the festoon brackets and bolt-on festoon track hangers. Optional customer supplied festoon brackets can be bolted or welded onto your beam. (see picture below)

26. Installing things in the order listed will result in the fastest and easiest assembly.

Festoon System Trolley, Bracket, and Hanger



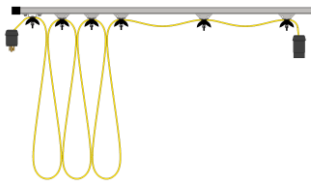
27. If the festoon brackets and festoon track are not pre-assembled use the track couplers (shown below) with hardware provided to assemble the track. Then bolt the festoon bracket through the hole on the top flange of the beam with C channel legs pointing up as shown in picture on previous page.

28. ⚠ **IMPORTANT NOTE**: If there is no hole on your beam or tube, you must drill holes as necessary.

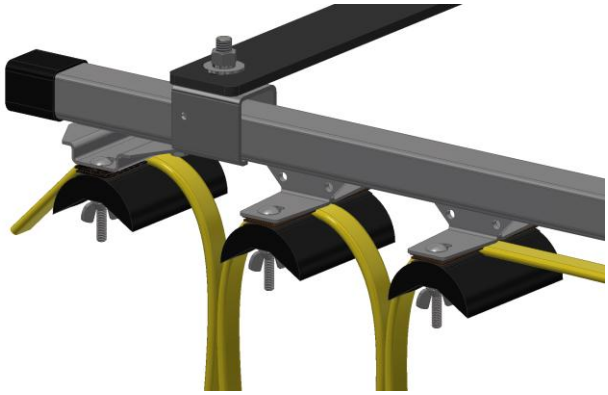
29. Spacing: If no holes exist on your beam or tube, (optionally) space the festoon brackets (maximum spacing 79”) evenly along the beam, leaving 10” overhang of festoon track at each end of the bridge beam. Measure in 10” from the end of your bridge and drill a hole 1-1/2” from the edge of the beam.
30. Now attach your festoon track to the festoon standard hangers first. Then bolt the festoon track and attached standard hangers through the hole in the festoon bracket. Make sure to slide your track coupler on before tightening your track in place.

31. ⚠ **IMPORTANT NOTE: There should be one track hanger with a bolt on the side of it. This hanger holds the track from sliding. Do not overtighten this side bolt. Tighten bolt enough that the track will not slide easily and then tighten the jam nut to hold in place.**

Track Coupler S100-TC

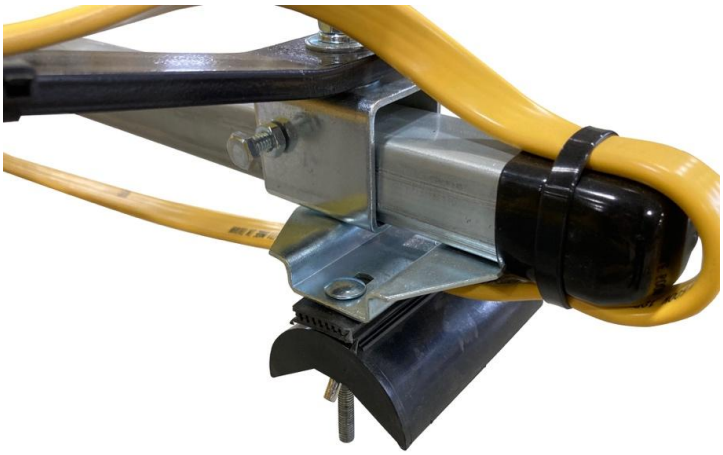


32. Hold each festoon trolley and loosen the 2 bolts that hold the plastic clamp plate on the festoon trolley. Then roll the festoon trolleys into the festoon track without the festoon wire installed.

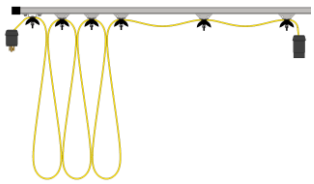


1.3.1 Festoon Trolley with Clamp

33. On the end of the beam nearest where your power supply for this festoon will be, install the single bolt anchor hanger S100-AH with the anchor bolt on the side of it. Then install the festoon trolley clamp style S100-CET with bolts to the track as shown below.



Anchor Bolt (S100-AH), Festoon Wire End Clamp (S100-CET), Track End Cap (S100-EC)



34. Install the festoon wire through festoon trolley plastic clamps (fig 1.3.1) leaving the plastic clamps loose at this time. Make sure to have enough festoon wire at the ends to make connections to your components. Tighten the festoon **clamp style** trolley mount bolts. Position the festoon trolleys every 60” along the festoon wire and tighten the plastic clamp plate nuts on each trolley. Be sure not to over tighten as this could damage the festoon wire.

35. ⚠ **IMPORTANT NOTE: For ease in measuring, festoon wire typically has 1 ft measurements printed on it.**