
SnapTrac Installation Manual



Installation, Operation, and Maintenance Schedule for SnapTrac



Thank you for choosing Kundel Industries' SnapTrac crane system, in meeting your material handling needs. Your system has been custom built to meet your needs and requirements. Spherical hanging points allow the system to hang plumb on an un-level surface along with dissipating any forces incurred during bridge travel. By reading and applying the information from this manual, you will obtain dependable performance from our products. Therefore, it is important that you follow this manual to properly install and operate your SnapTrac crane system. The owner and operator are responsible in determining the suitable product for a particular use. It is recommended that all applicable industry standards, and federal, state and local laws and regulations be checked concerning the installation, operations and maintenance of the SnapTrac crane system. Please read all operating instructions and warnings before operating this crane.

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1.0 Important information and warnings

1.1 Terms and conditions

KUNDEL INDUSTRIES, INC
ADDITIONAL TERMS AND CONDITIONS

ACCEPTANCE OF ORDERS: Prices quoted in proposals submitted by Kundel Industries, Inc. (the "Company") expire thirty (30) days after submittal. Upon written or verbal acceptance by the Purchaser, the Company will prepare an "Order Acknowledgement" form signed by an officer of the Company, and mail or fax the same to the Purchaser. The Company reserves the right to accept Orders on the basis of prices in effect at the time the Order is received. The Order Acknowledgement may not be varied, modified, changed, or supplemented in any way, unless the change is approved by the Company in writing. All contracts shall be construed in accordance with the laws of the State of Ohio.

PAYMENTS: Payments on account are due and payable in full thirty (30) days after the shipment date. Past due accounts shall bear interest at the rate of 1.5% per month until paid in full. If Purchaser fails to perform as required herein, then the Company may terminate this Agreement and be relieved of all obligations hereunder. The Company reserves the right to place customers with past due accounts on a C.O.D. basis for new orders. Purchaser agrees to reimburse the Company all of its attorneys' fees and expenses incurred in collecting outstanding account balances. All orders for non-credit approved customers must be prepaid.

CANCELLATIONS: Cancellation of Orders may be made only with the Company's consent in writing. In the event of cancellation, Purchaser shall be liable for all material, labor, engineering, manufacturing and administrative overhead incurred previously or thereafter by the Company. Minimum cancellation charge is \$350.00, which charge shall be paid in full within ten (10) days after receipt by the Company of notice of cancellation.

QUOTING POLICIES: All prices quoted are subject to change without notice after thirty (30) days.

EQUIPMENT: Non-standard equipment may require field adjustments. The Company is not responsible for any costs associated with any field adjustments. Standard equipment is made from pre-engineered components that are assembled and built in a consistent manner for different crane kits. Only the Company shall determine if a crane system is non-standard.

EQUIPMENT CHANGES: The Purchaser shall be responsible for 10% of the structural subtotal that appears on the Quotation plus additional material costs and engineering costs if changes are not submitted by Purchaser and accepted by Company within three (3) days of Company's receipt of the order.

DELIVERY: Unless otherwise specified, all shipments made by the Company are F.O.B. the Company's factory, and the Company does not make any guarantee as to delivery at destination; all shipping dates are approximate only. Delivery dates are estimated from the date of Purchaser's order, with complete drawings, specifications, designs and other information required by the Company. Any shipment information given verbally to Purchaser during process of said order is only approximate and shall not be used to govern actions by Company in any manner whatsoever. The Company shall not be liable for delay in or failure to make delivery due to causes beyond its reasonable control, such as strikes, fires, epidemics, acts of God, war, riot, unavoidable delays such as back orders from suppliers and the like or for any reason beyond Company's control. The Company is not responsible for costs incurred by the Purchaser for incomplete or inaccurate shipments from the Company. Any and all whole and/or partial shipments are the sole responsibility of the Purchaser.

DEMURRAGE: If the Purchaser requests a delay in delivery and the Company agrees to such a delay, Purchaser is subject to any demurrage and storage charges involved. Purchaser agrees that payment of these charges does not relieve Purchaser from fulfillment of any other obligations by Purchaser specified by the contract. Purchaser is subject to any demurrage and storage charges involved, which shall be paid within ten (10) days of the invoice date.

DAMAGED GOODS POLICY: The following is the adopted practice for damaged goods.

- a) In order to receive any compensation for receipt of damaged goods whether due to shipping or a factory defect, Purchaser must sign the Bill of Lading as usual, but also must note on it that the equipment was received damaged. If, in the case that the equipment is damaged in shipping, Purchaser must pay Purchaser's shipping bill prior to compensation and for the insurance estimator to investigate any claim.
- b) Purchaser should contact the freight carrier immediately and have an estimator come out to inspect the load. This is Purchaser's responsibility since Company's product is shipped F.O.B. Company's factory.
- c) Next, Purchaser can place Purchaser's new order with the Company for the replacement components required. Purchaser will then receive an invoice on the new equipment purchased. Purchaser must then pay the new invoice amount in full.
- d) The Company is not responsible for any costs incurred by the Purchaser resulting from damage to goods due to shipping and transportation.
- e) If goods are damaged during shipping, the Bill of Laden must be signed and labeled "Damaged Goods" as stated above in this Paragraph, subparagraph (a). Any damages must be reported to the Company in writing within ten (10) days of the date of delivery. The Company shall then have a reasonable opportunity to remedy or repair said defects. Purchaser shall return all parts and components claimed to be defective to the Company. If such parts and components are not returned to the Company within 30 days after a claim is made, then Purchaser will be charged for the costs of the replacement parts and components. Purchaser is responsible for any expedited shipping costs, if expedited shipping is requested by Purchaser.
- f) No service, repairs, parts or back charges from Purchaser to the Company will be accepted unless the following protocol is strictly followed: Details of the occurrence must be documented along with clear photos, signed, dated and faxed over to the Company for review. The Company, at that time, will inform Purchaser what work is authorized to be performed and the time allocated to rectify the situation if deemed necessary by the Company. The Company reserves the right to deny any and all charges from the Purchaser and/or firm(s) representing the Purchaser if such charges are determined by the Company to be unreasonable or not necessary. A requisition or work order will be given by the Company before any work is performed by the Purchaser or any other firm(s) representing the Purchaser on the equipment purchased.

ERECTION: Unless otherwise stated by the Company in writing, the equipment shall be installed and erected at the sole expense of the Purchaser. If the Company agrees to provide supervisory service, it is agreed that such services are advisory in nature and the Company will be held harmless from claims of any person or entity of any nature whatsoever. The supervisory person(s) will be paid an hourly rate per person per eight (8) hour day with time and one-half for Saturday work and time and one-half for all hours in excess of an eight (8) hour day and triple time for Sunday or holiday work. Purchaser will also be billed for all expenses incurred from the time the person leaves the Company facility until return, such as transportation, meals and lodging. All such charges will be paid by the Purchaser to the Company within thirty (30) days after the invoice date.

CREDIT: All orders are subject to credit approval. The Company may refuse shipment or cancel unfilled orders if the Purchaser is delinquent in any payment or the status of the account warrants it or if the Company deems itself to be insecure.

TAXES: The amount of any Federal, State or Municipal taxes applicable to the equipment covered by this order, shall be the responsibility of the Purchaser.

RESPONSIBILITY: No responsibility will be assumed by the Company for any changes or alterations made by the Purchaser nor for work done or expenses incurred by the Purchaser in connection with repairs or replacements, except as authorized in writing by an officer of the Company, namely the President, Vice-President and/or Head of Operations of the division responsible for such order.

WARRANTY: The Company warrants that new equipment will be free from defects in materials and workmanship for a period of one year from date of shipment and used or "refurbished" equipment will be free from defects in material and workmanship for a period of six months from the date of shipment, unless otherwise stated in writing. This warranty is made in lieu of all other warranties, express or implied, oral or written. The use of any sample or model during negotiations prior to the formation of any contract serves merely to indicate the type of goods tendered to the Purchaser. **THE COMPANY HEREBY DISCLAIMS ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PURPOSE.** This warranty shall extend only to the original Purchaser and not to any party which may acquire the equipment from the Purchaser, by any means whatsoever. This warranty is further limited to the following defects:

- a) Parts that were incorrectly machined by the Company.
- b) Parts that were manufactured with discrepant material which caused premature wear or breakage.
- c) Parts that were incorrectly assembled by the Company.
- d) Equipment that was not furnished in accordance with the written sales order received from the Purchaser.

THIS WARRANTY BECOMES NULL AND VOID UNDER THE FOLLOWING CONDITIONS:

- a) Equipment overload or abuse.
- b) Equipment alteration and/or use of non-Company replacement parts by Purchaser or its agent.
- c) Use of any equipment in any manner or for any purpose not considered normal intended use.

Further, Company accepts no liability whatsoever for special or consequential damages caused to Purchaser or others.

WARNING: The Company's material handling equipment is intended for industrial and other material handling applications. It is expected that the equipment is properly used and maintained by the Purchaser in accordance with all design specifications and/or limitations, and all applicable federal, state and local statutes, laws, orders, rules and regulations. The equipment is not to be used as a source of transportation or entertainment.

SECURITY INTEREST: The Company retains a security interest in all equipment and goods sold pursuant to this Agreement until payment in full is received by the Company. Purchaser hereby authorizes the Company to file financing statements to evidence the security interest reserved by the Company hereunder. If the Purchaser fails to pay its account in full when due, then the Company may obtain immediate possession of the equipment and goods by all legal means. The Company also has the right to terminate outstanding contracts in the event of a default by the Purchaser.

GOVERNING LAW: This Agreement shall be construed and interpreted in accordance with the laws of the State of Ohio and the parties hereby consent to the exclusive jurisdiction and venue for the determination of any dispute arising hereunder or to Purchaser's account to be in the Mahoning County Court of Common Pleas in Youngstown, Ohio, or the Federal District Court for the Northern District of Ohio, Eastern Division.

1.2 o.s.h.a. standards

A complete copy of OSHA's standard and regulations are available for you to read at the U.S. Department of Labor (www.osha.gov). Recently, OSHA has joined forces with CMAA, HMI and MMA Alliance focuses on providing crane system owners and operators, like you with information, guidance, and access to training resources that will help you protect your employees' health and safety. Their goal is to focus on reducing and preventing exposure to workplace hazards associated with amputations and ergonomics. These goals include Outreach and communication, and Promoting the national dialogue on workplace safety and health:

A full library of publications and resources are available on the Material Handling Industry of America's web site www.mhia.org. Here you will find helpful guide to building and promoting safety for your shop. Some of these items consist of; Fundamental of Overhead Crane Safety Training Program, Overhead Crane Inspection and Maintenance Checklist, etc.

2.1 Runway

RAIL ASSEMBLY

First take the spacers and install the u-nuts provided by clipping them onto the spacer with the threads facing in the down position (refer to figure 3.3.1).

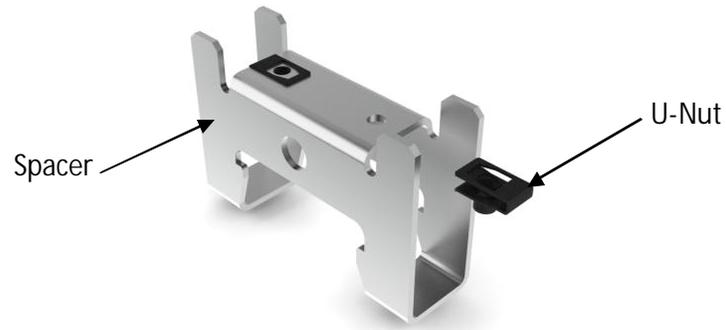


Figure. 3.3.1

To assemble the rail sections place one rail section on its side with the flat side down. Take the spacers and place them into the rail section. Now place the other rail section on top of the spacers. Take the top clamps and place them on top of the rail section at each location of the spacers. Insert the 5/16" x 2" hex bolts through the holes in the top clamp, threading them into the u-nuts clipped on the spacers (refer to figure 3.3.2).

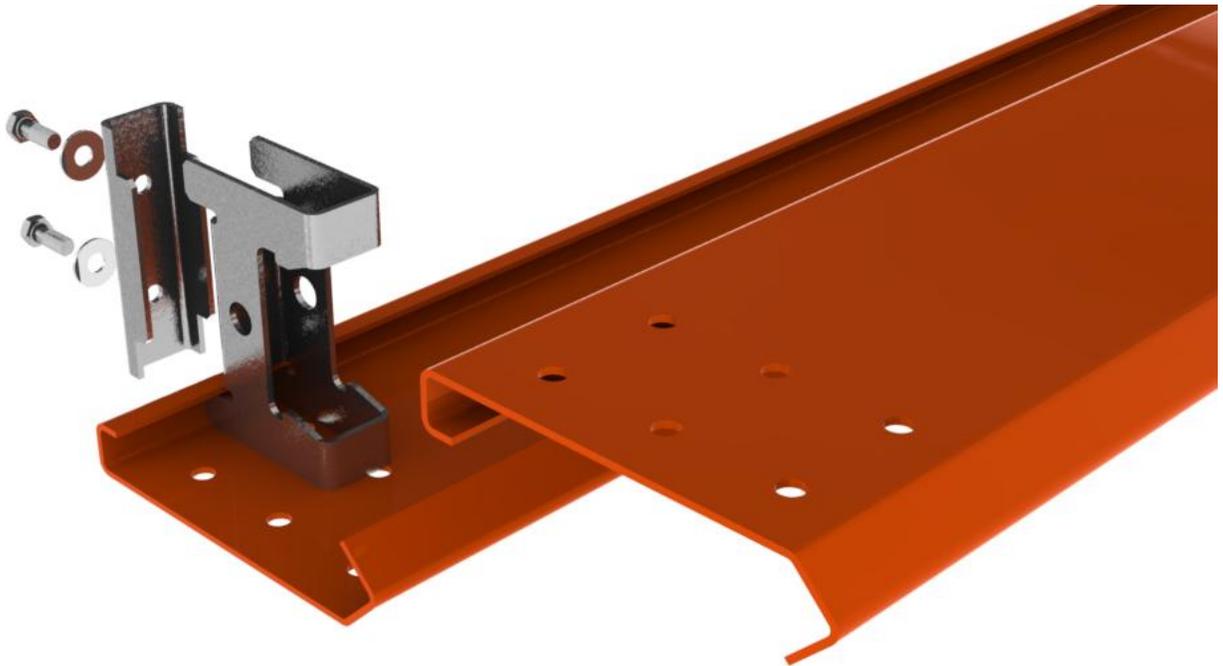
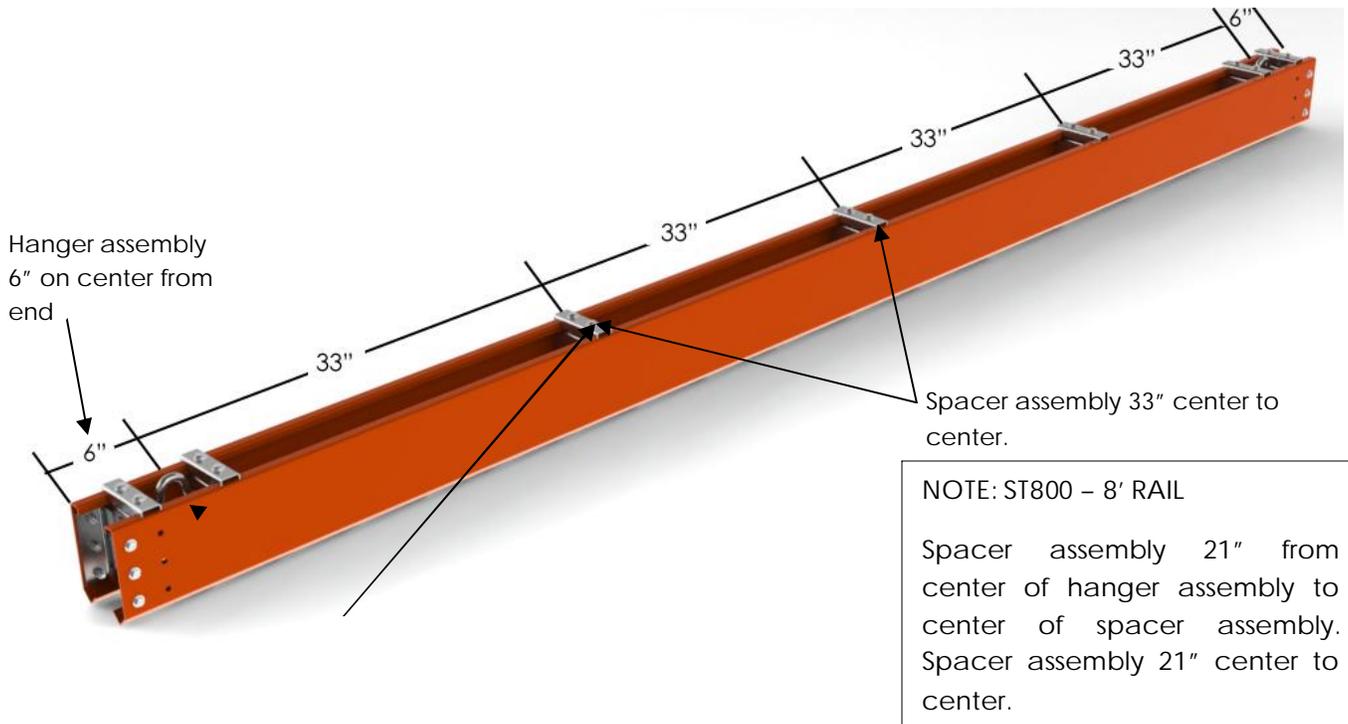


Figure. 3.3.2

SPACER PLACEMENT

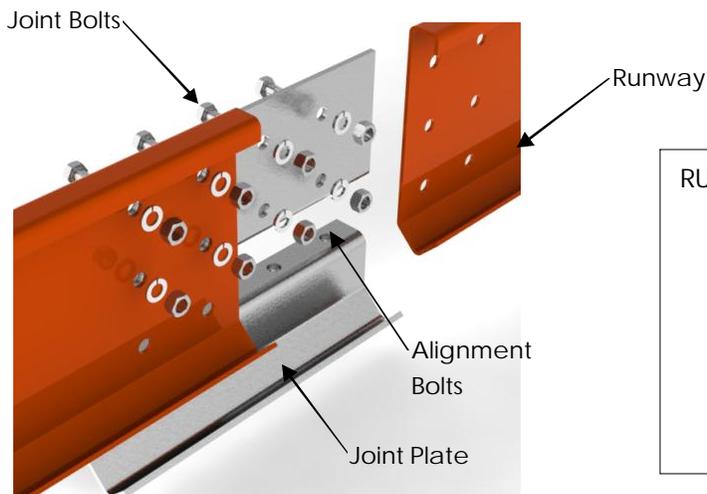


Picture shown: one 12' SnapTrac rail section with spacer assemblies installed.

In order to achieve the allowable load rating on SnapTrac, all spacers must be placed according to the manufacturer's specifications. Failure to do so can result in bodily injury, damage to the equipment, and will void the manufacturer's warranty. Kundel Industries is not responsible for any misuse, neglect, or supporting structure. 12' X 12' SnapTrac kits require 3 single kits. All components come complete.

JOINT ASSEMBLY

To joint two rail sections in-line a joint plate assembly will be needed this will help align the tracks and provide structural support thru the section. Align two rail sections end to end. Install the top part of the joint plate first and hand snug the fasteners provided. Next install the lower section of the joint plate and install the clamping fasteners. These clamping fasteners are used to draw up the lower plate aligning the two bottoms of the rails providing a smooth trolley transition. Finally tighten the fasteners on the top part of the joint plate. Note: Once the assembly is completely and correctly installed apply a thread locking agent to all threaded connections in this kit to prevent loosening over time.



(refer to figure 3.3.3).

RULES FOR RAIL JOINT HANGERS

1. Maximum distance hangers are to be placed from joint or end of rail section is 24".
2. Maximum centerline distance between hangers is 144".
3. Rule #2 is not to supersede Rule #1.

Figure 3.3.3

SPACER ASSEMBLY

The u-nuts provided need to be installed on the spacer. To do this insert the u-nut with the threaded end facing down and the open end facing in. It should lock into place. Once this is done the spacer can be installed into the rail section. Position the spacer in the rail section and attach the top clamp with the bolts and locks provided. Slide the spacer into manufacturer's location and lock down with a thread locking agent (refer to figure 3.3.4).

HANGER SUB-ASSEMBLY

Once the hanger is placed in the proper location the spacer assemblies can be secured using the bolts and u-nuts provided. A thread locking agent should also be used once set. The shaft retaining clip should be installed at this time. This clip ensures proper spacer placement. Make sure when leveling the system not to over tighten the spherical nut on the eyebolt. This is used to allow the system to pendulate (refer to figure 3.3.4).

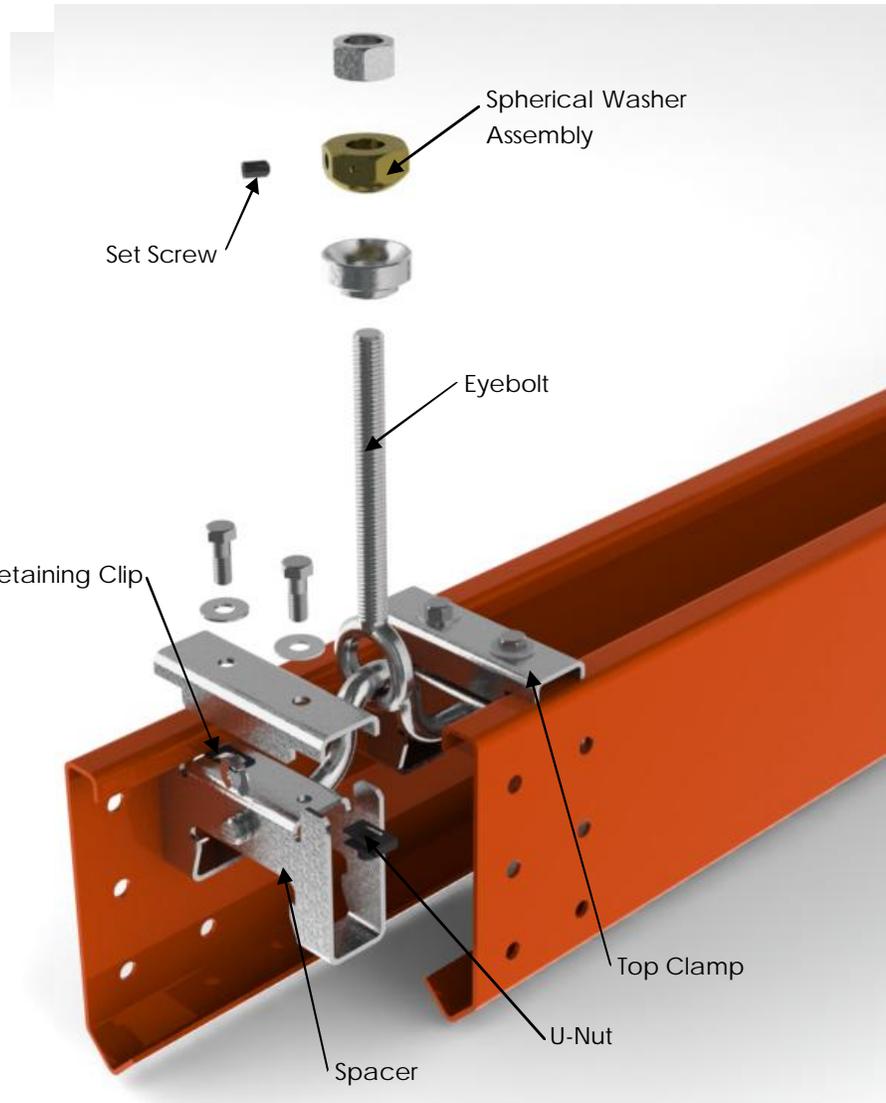


Figure 3.3.4

IMPORTANT: When installing the spacer assemblies make sure to have all arrows facing the same direction. This is necessary when conductor bar is used.

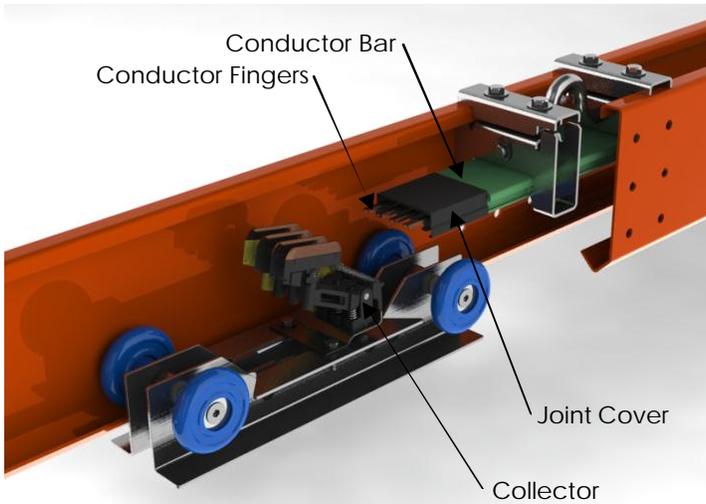


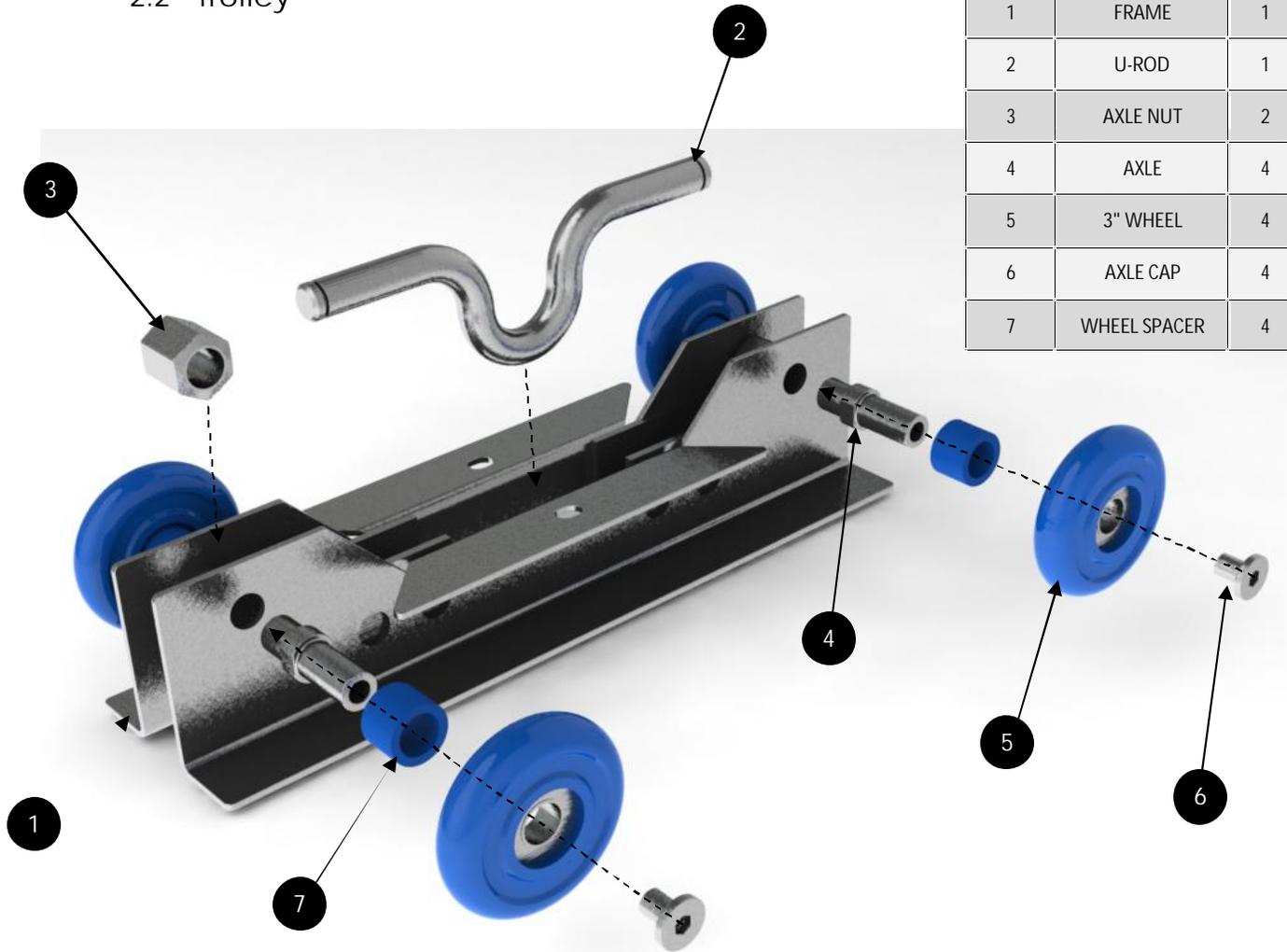
Figure 3.3.5

CONDUCTOR BAR INSTALLATION (OPTIONAL)

When installing the conductor bar align the sections of bar with the conductor fingers provided. The barb on the top of the finger should be face up. Then install the joint cover. Once this is done the sections may be slid together. **IMPORTANT:** Make sure when installing the conductor bar that the yellow stripes on the bottom match up from section to section. This should also align with the yellow conductor arm on the collector. The yellow is the ground! The color code for the conductor bar is RED, WHITE, BLACK, and GREEN. Green being the ground. The washer located on the bottom of the endtruck/trolley is for the harness to pass thru thus protecting it from damage. The conductor bar is setup for 3 phase, but it can also be used in single phase applications (refer to figure 3.3.5).

2.2 Trolley

MARK	DESCRIPTION	QTY
1	FRAME	1
2	U-ROD	1
3	AXLE NUT	2
4	AXLE	4
5	3" WHEEL	4
6	AXLE CAP	4
7	WHEEL SPACER	4



SNAPTRAC TROLLEY
 PART#: STTB
 GROSS WEIGHT: 10 LBS.

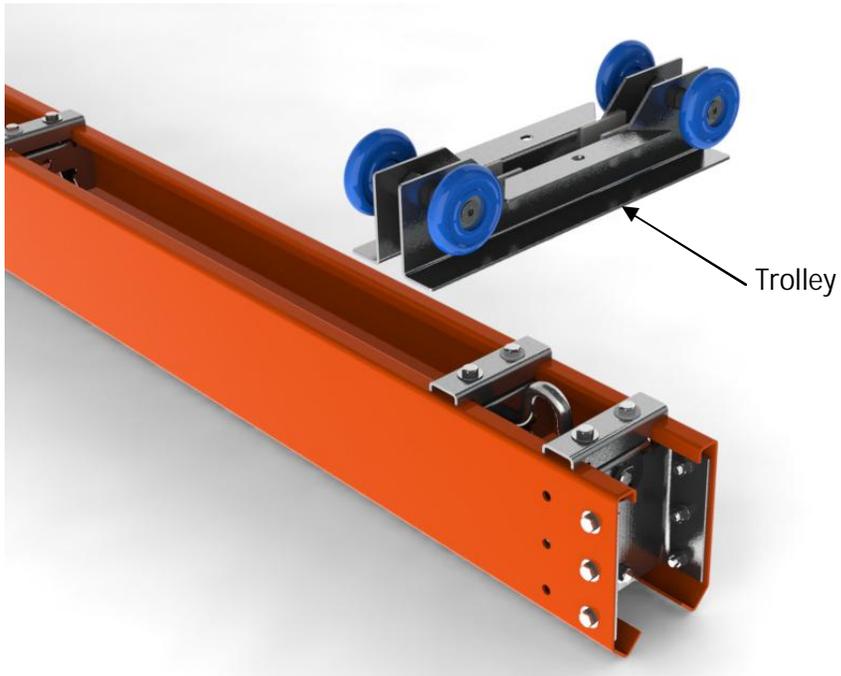
ASSEMBLY INSTRUCTIONS:

1. Insert #3 into frame body opening.
2. Thread #4 into #3 making sure to use a thread locking agent to secure. A crescent wrench should be used to secure #3 during this process.
3. Slide #7 onto #4
4. Slide #5 onto #4
5. Thread #6 into #4 making sure to use a thread locking agent to secure. An allen wrench should be used during this process.
6. Place #2 into the saddle of #1, located at the bottom.

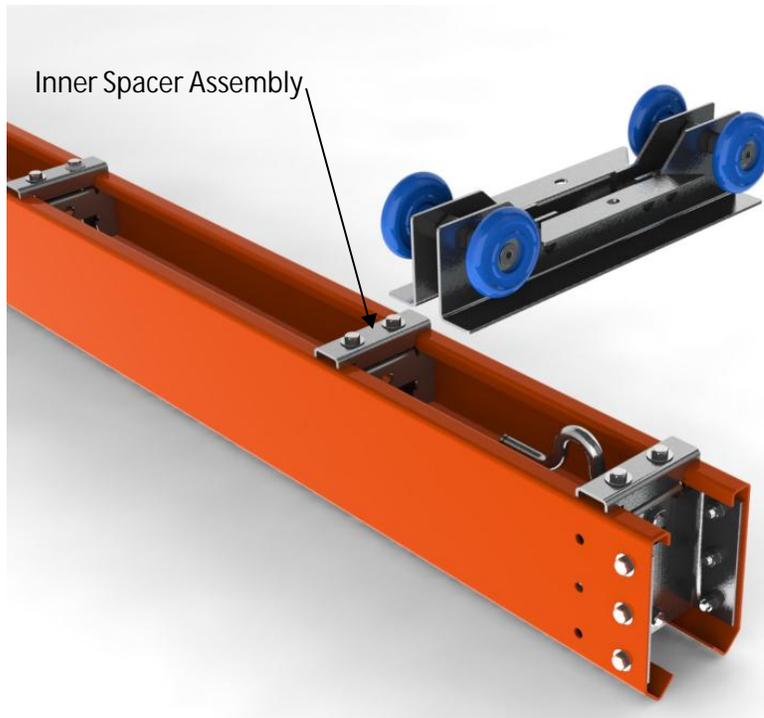


TROLLEY CONNECTION

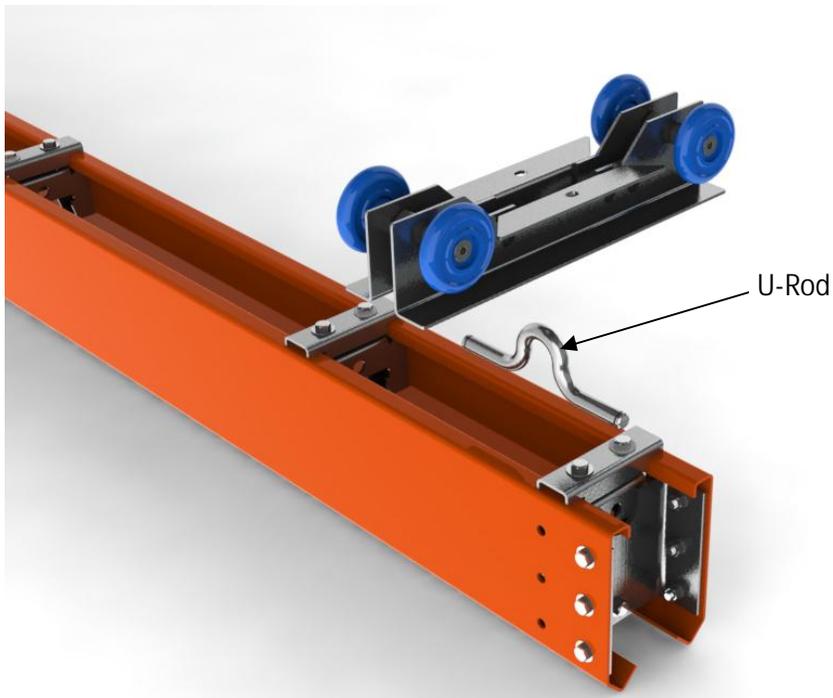
Attaching the trolley to the bridge (prior to bridge installation)



STEP 1: Loosen the bolts to the inner spacer assembly



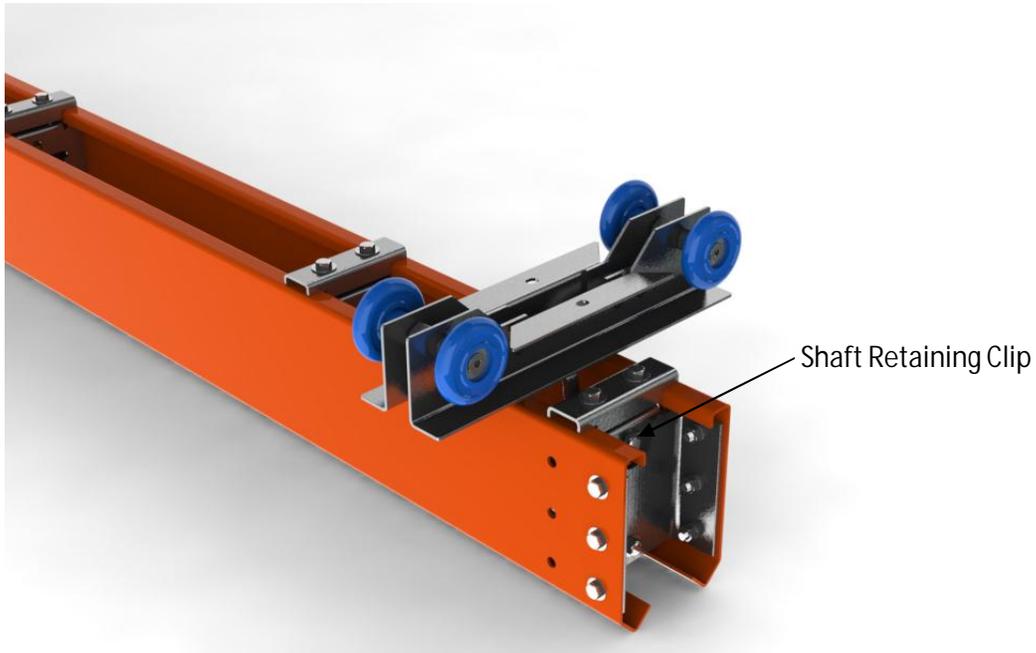
STEP 2: Slide inner spacer assembly far enough away to allow the u-rod to be removed.



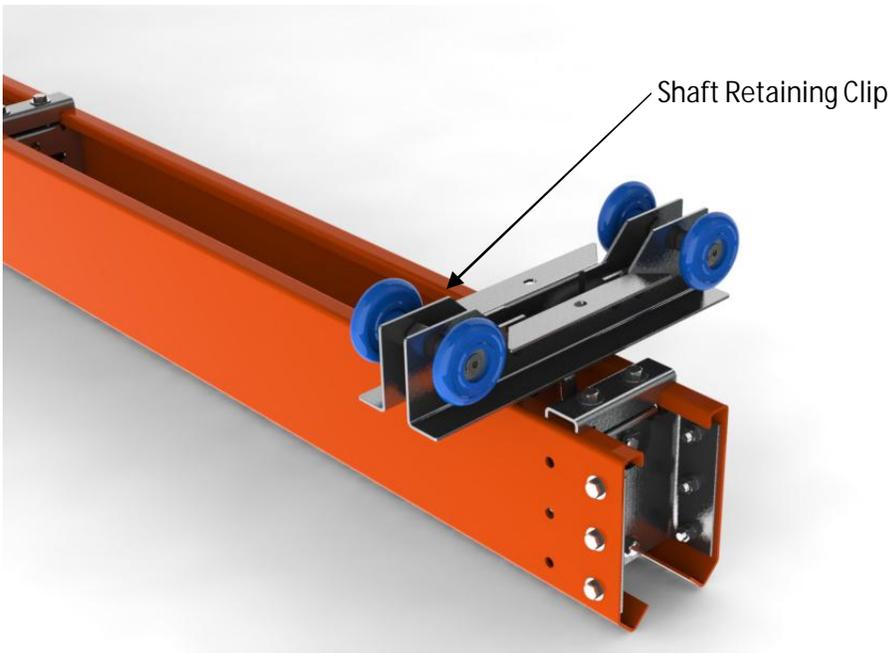
STEP 3: Remove the u-rod from the spacer assembly.



STEP 4: Slide the u-rod into place with the u-rod provided with the trolley. The rods should hang perpendicular to one another.

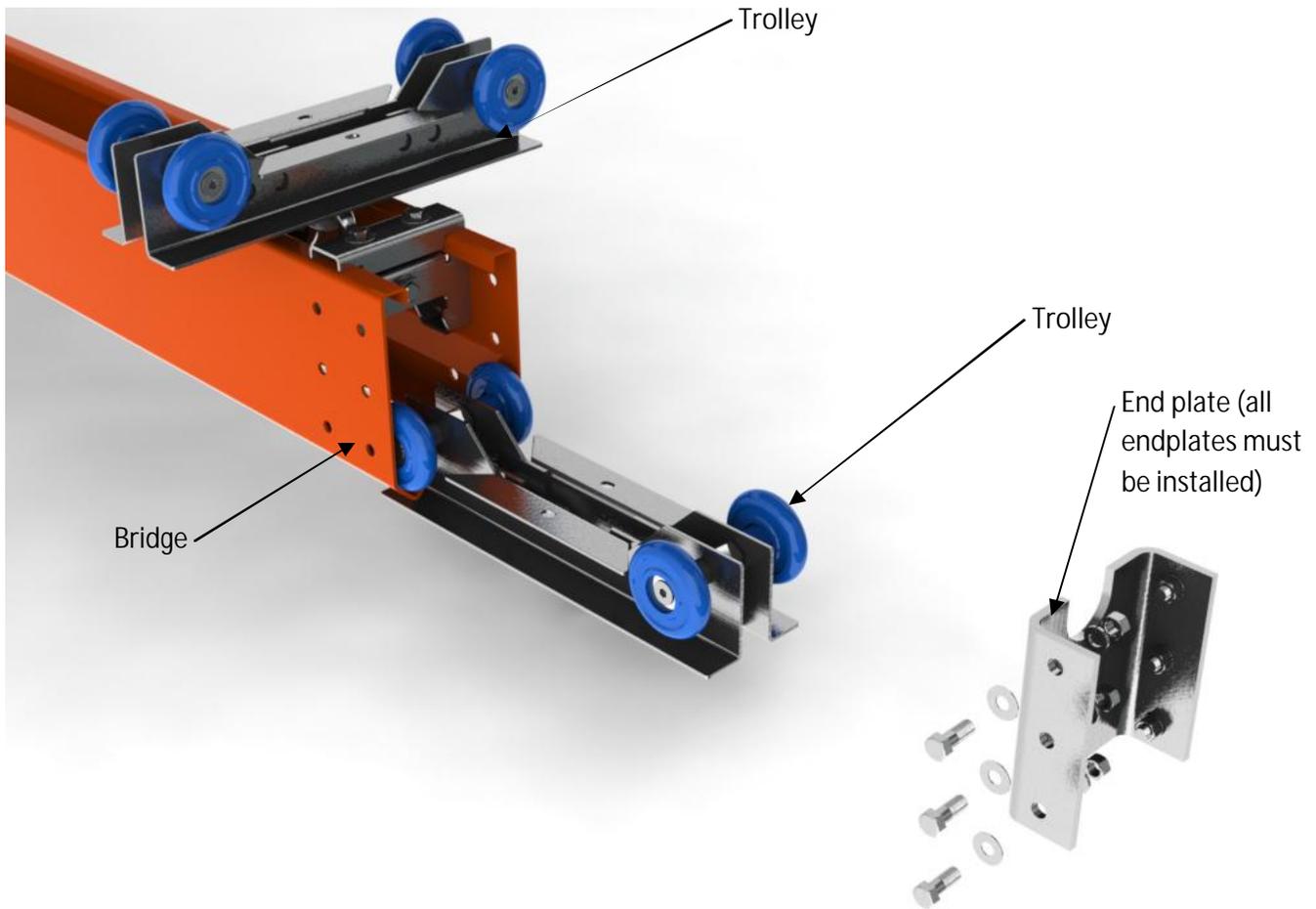


STEP 5: Place one end of the lower u-rod back into the outer spacer assembly and install the shaft retaining clip.



STEP 6: Slide the inner spacer assembly back into location allowing the lower u-rod to pass through and install the shaft retaining clip.

TROLLEY INSTALLATION



IMPORTANT (OPTIONAL): When inserting a trolley with an electrical collector make sure to line up the yellow conductor arm of the electrical collector with the yellow conductor stripe on the conductor bar. Failure to do so can result in bodily injury and equipment damage (refer to Figure 3.4.1).

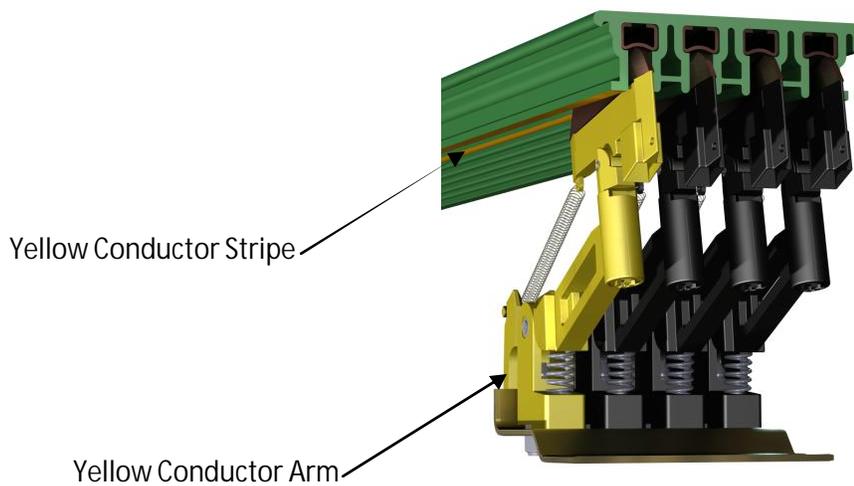
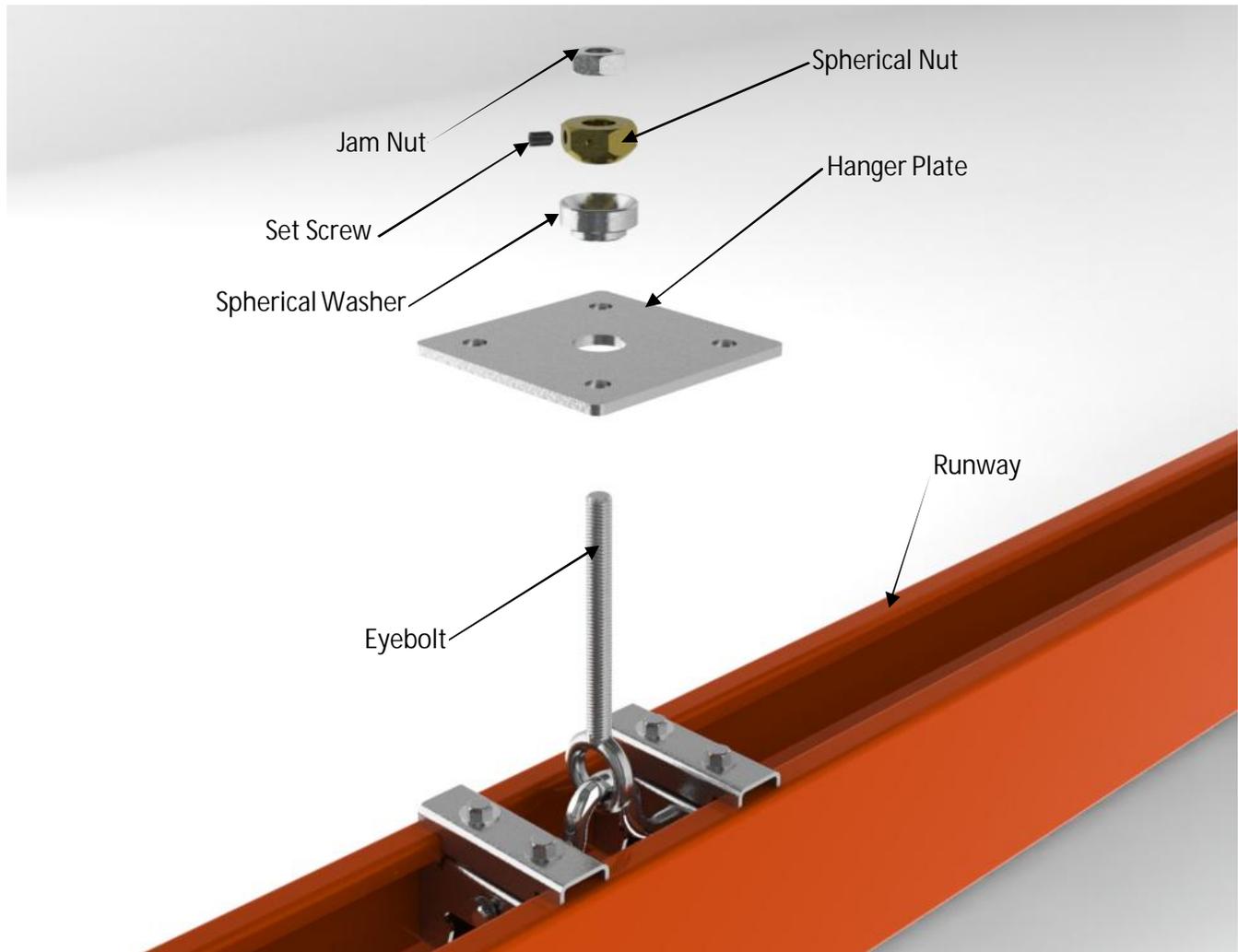


Figure 3.4.1

2.3 Hangers

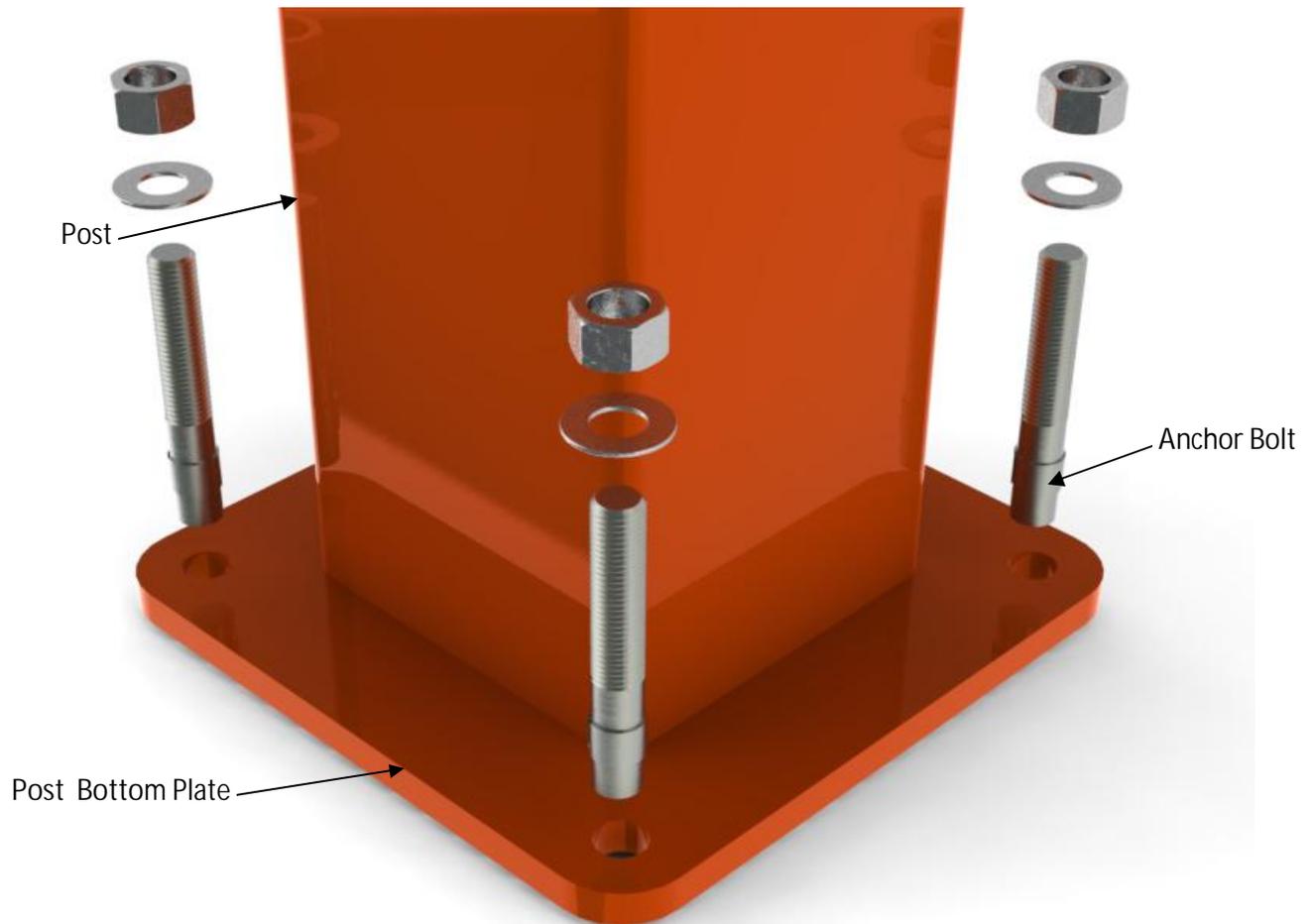
HANGER ASSEMBLY INSTRUCTIONS



To hang the kit make sure that the spacer assembly and the hanger sub-assembly have already been pre-installed to the manufacturer's recommended locations. With the hanger plate installed lift the rail into the location holding the eyebolt in the upright position. Slide the eyebolt through the hanger plate. Plate the spherical washer over the eyebolt and insert it in the hole provided in the hanger plate. Thread the spherical nut onto the eyebolt making sure not to over-tighten since it is used for leveling purposes also. Repeat the process for all hanging points. Once the system is level, apply a thread locking agent to the 5/16 set screws; thread and tighten the set screw into the 3/4" spherical nuts. Take the 3/4" jam nut and apply a thread locking agent to the threads. Thread it onto the eyebolt. Once the jam nut bottoms out on the spherical nut, jam the jam nut and the spherical nut together using wrenches. The torque requirement for this is 300 ft./lbs. An additional safety precaution is provided by drilling a hole through the spherical nut. A hole is provided for this procedure. Once the hole is drilled, a properly sized cotter pin can be inserted and folded over.

IMPORTANT: The hanger plate is provided to attach to an additional structure. This plate is guaranteed for a specific load rating and can only be used in conjunction with the manufacturer's recommendations. The perimeter holes are provided for 1/2" SAE Grade 5 HHCS.

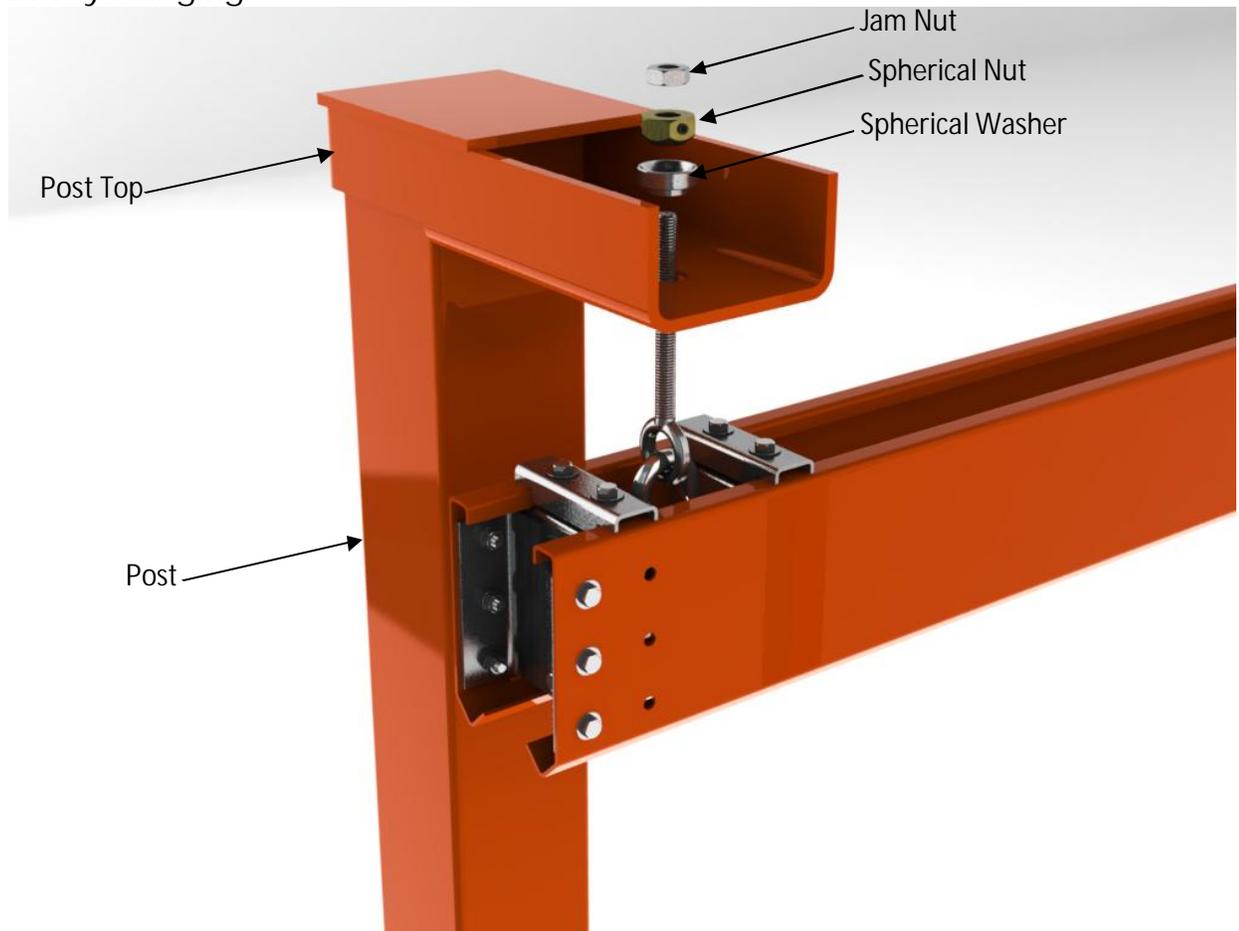
2.4 Post Bolting



The posts are designed to be bolted down to a 4" reinforced concrete slab. In order to secure the upright support posts to the concrete floor you will need to purchase (4) 5/8" x 4" wedge anchor bolts or equivalent per post. Place posts in the upright position according to your layout required. Then drill holes in the concrete using the post bottom plate as your guide. Place your anchors thru the post bottom plate and into the drilled holes in the concrete floor. Thread the nuts provided onto the anchors but do not tighten them until the post is properly leveled, some minor shimming might be required under the post bottom plate depending on the floor. Finally once the posts are all leveled and plum you can finish tightening the anchor bolts and follow the manufacturer's recommendations.

NOTE: The hanger plates that comes in the box labeled STPB are NOT required when the SnapTrac is supported from SnapTrac support posts.

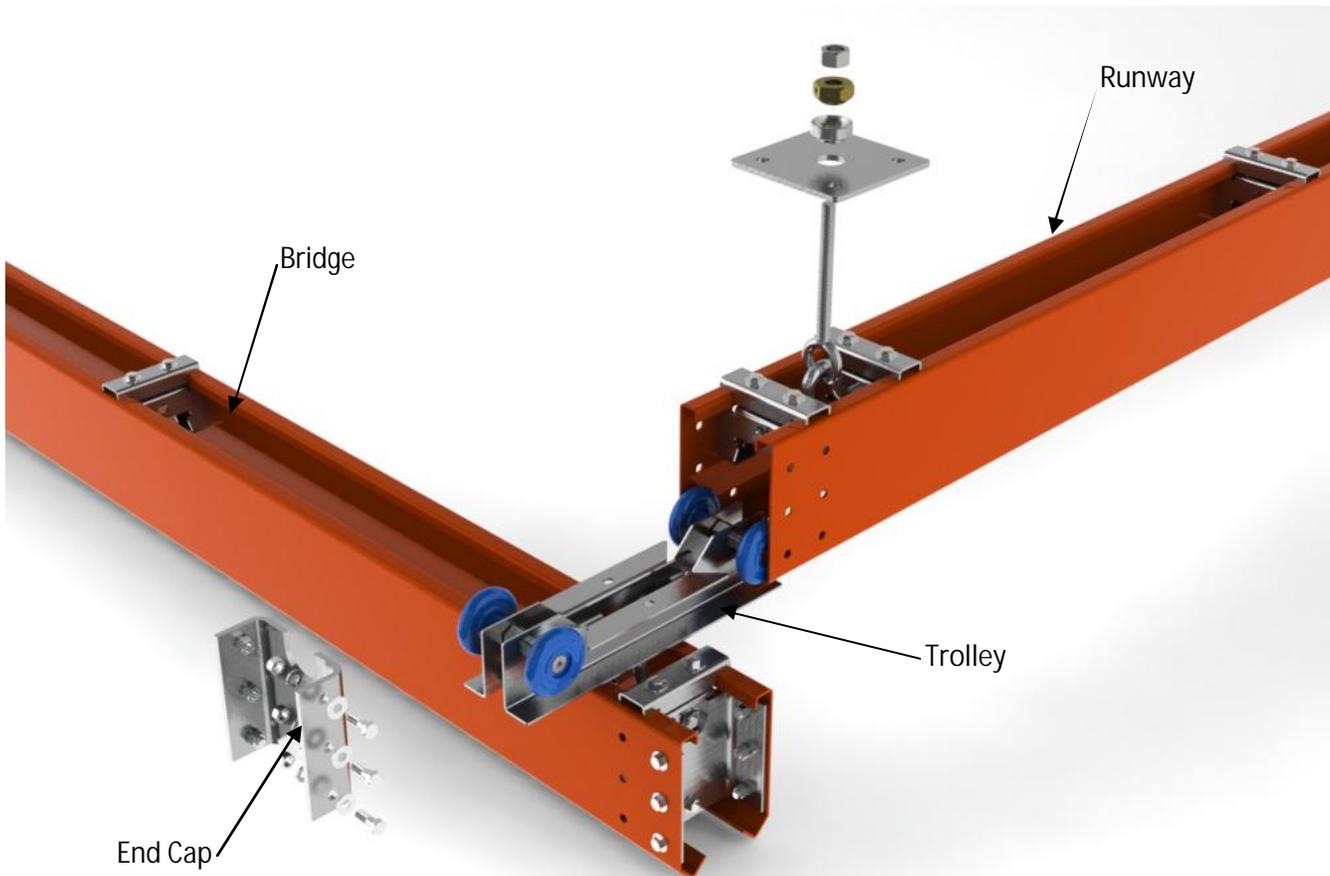
2.5 Runway Hanging



Once the posts are secured or hangers have been installed from the ceiling you can begin to install the runways. Each runway section once lifted into place can be secured to the support post with the use of the spherical washer, spherical nut, set screw and jam nut provided. First place the spherical washer in the hole located in the top portion of the support post. Next, raise each rail section sliding the eye bolt thru the hole in the support post and thread the spherical nut onto the eye bolt. Once all eye bolts have been installed tighten or loosen the spherical nuts to level the runways along the length and across to the adjacent runway. You can use a transit or laser to accomplish this process. Then once the runways are level apply a thread locking agent to the 5/16 set screws; thread and tighten the set screw into the $\frac{3}{4}$ " spherical nuts. Take the $\frac{3}{4}$ " jam nut and apply a thread locking agent to the threads and thread it onto the eye bolt. Once the jam nut bottoms out on the spherical nut, jam the jam nut and the spherical nut together using wrenches. The torque requirement for this is 300 ft./Lbs. An additional safety precaution is provided by drilling a hole through the spherical nut. A hole is provided for this procedure. Once the hole is drilled a properly sized cotter pin can be inserted and folded over.

IMPORTANT: Do not tighten the eyebolts until they bottom out. The runways need to pendulate to allow the bridge(s) to move properly.

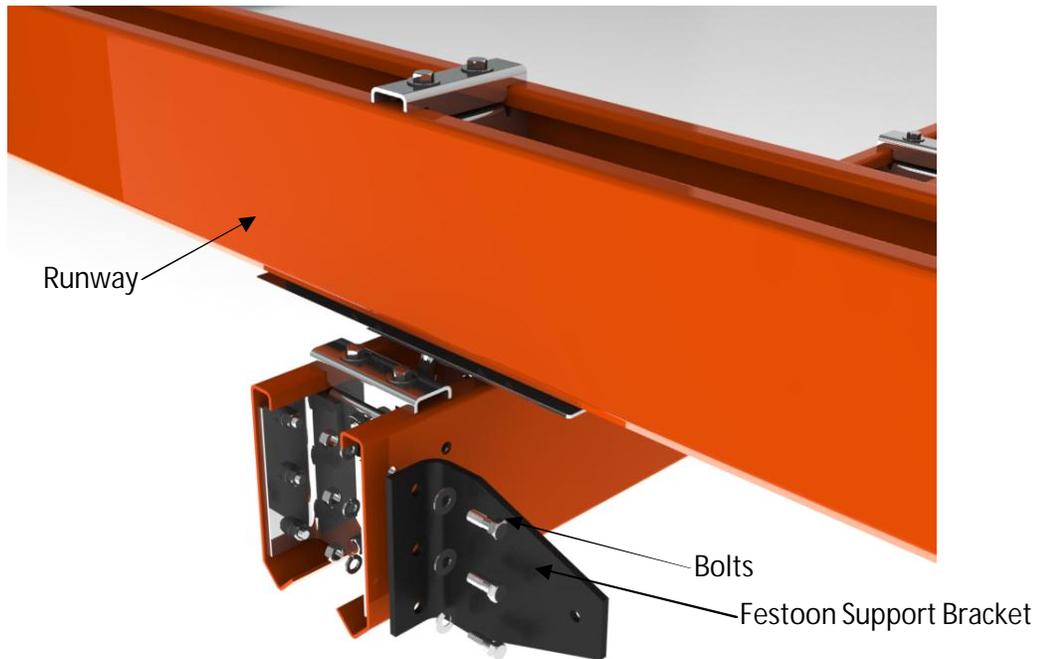
2.6 Bridge Installation Instructions



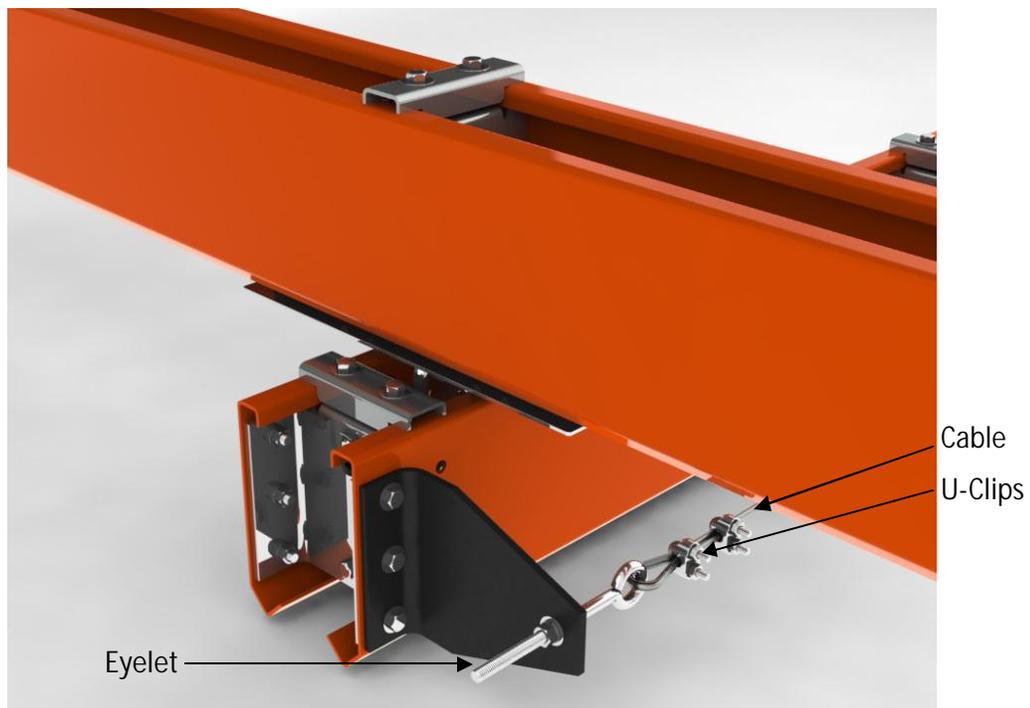
Prior to installing the bridge onto the runways, the trolleys should be already attached to the bridge. The trolley should be installed into the bridge and the end cap bolted into location (also refer to “trolley installation”). Remove the end caps to the runways and lift the bridge into location. Next, slide the trolleys into the runway (also refer to “conductor bar installation”). Then bolt the end caps into location. The trolleys are pre-installed on the bridge because there will be no clearance to install the bridge on the trolleys after.

The u-rod to u-rod connection on the bridge to runway allows the bridge to skew and swing freely. This allows smooth operation of the system which prevents the bridge from binding on the runway. This is a feature that is built into the design and is a proven method of use in industrial lines of lifting equipment.

2.7 Bridge Festoon Instructions (OPTIONAL)



Attach the bridge festoon support bracket by removing three securing bolts from one side of the stop at the end of the bridge. Re-install the bolts through the festoon support bracket and the end stop.



Using the eyelets provided, place the rings through the eyelets. Now slide cable around the ring and through the eyelet. Secure the cable with the u-clips and nuts provided. The festooning eyelets are now ready to be secured to the festoon support brackets. Draw the cable tight by tightening the eyelets through the festoon support brackets. Jam the extra nut back on to the support structure.

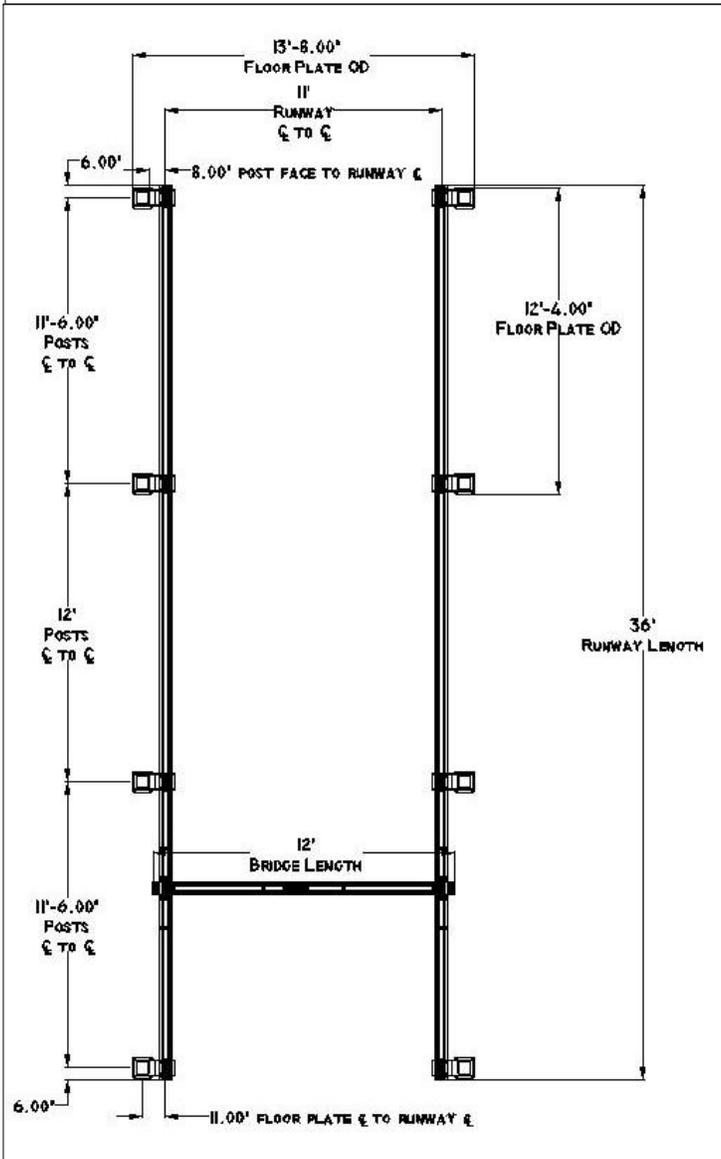
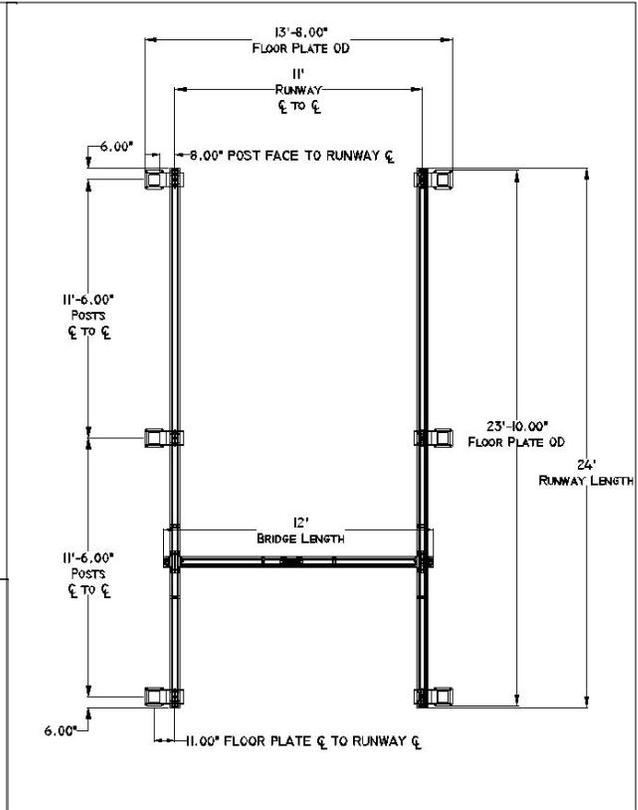
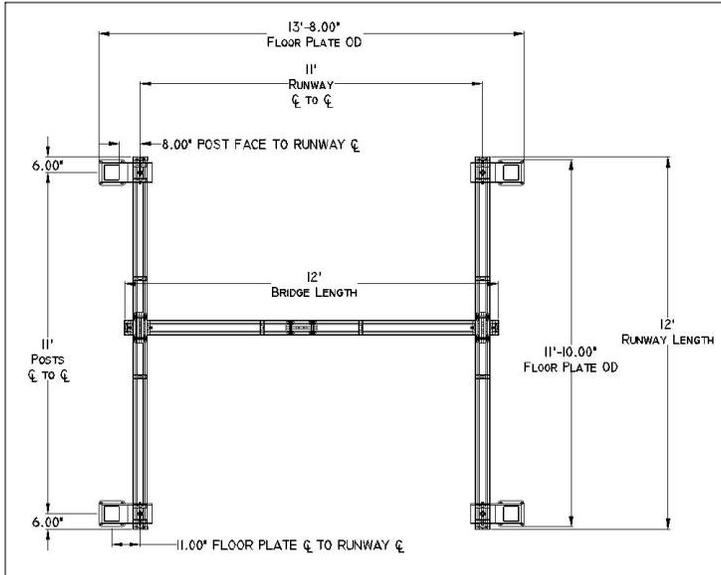
2.8 Runway Festoon Instructions (OPTIONAL)



When installing the runway festoon support brackets, two 7/16" diameter holes need to be drilled into the post tops, one at each end of the system where the festoon is to be run. The end of the angle should be in line with the cap on top of the post or approximately 8-1/2" in from the end. Secure the angle with the bolts provided.

Using the eyelets provided place the rings through the eyelets. Now slide the cable around the ring and through the eyelet. Secure the cable with the u-clips and nuts provided. The festooning eyelets are now ready to be secured to the festoon support brackets. Draw the cable tight by tightening the eyelets through the festoon support brackets. Jam the extra nut back on to the support structure.

2.9 KIT SIZES (12X12, 12X24, 12X36)



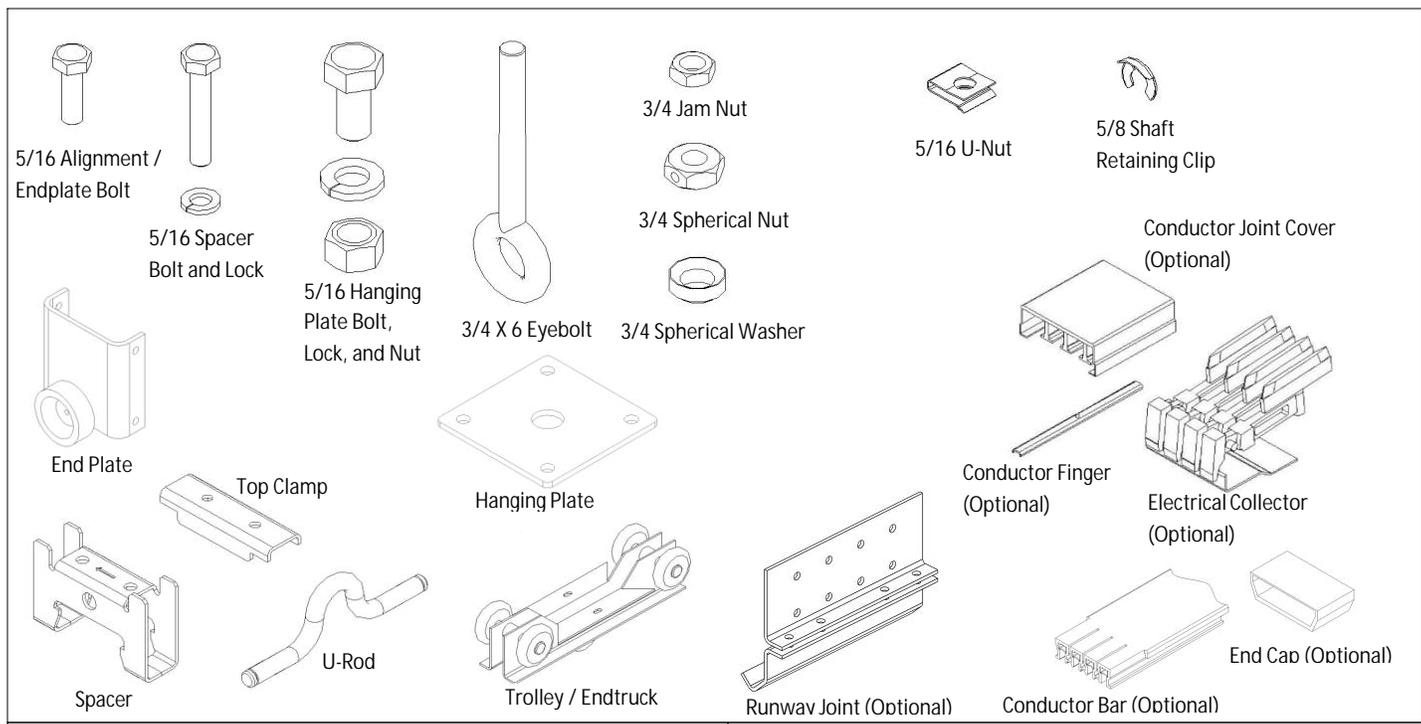
To receive your Free SnapTrac T-Shirt, all you have to do is e-mail Kundel Industries a picture of your very own SnapTrac system installed in your garage, shop, or work place.



Once we have received your picture we will rush your own SnapTrac T-Shirt at no cost. Kundel's e-mail address is sales@snaptrac.com. Be sure to include your name, mailing address, and the name of the company your SnapTrac system is in if you are a business.

Thanks and Enjoy!

Kundel Industries, Inc.



STANDARD 12' SINGLE RAIL KIT COMPONENT LIST:

- | | |
|------------------------------|--------------------------|
| 7 – Spacers | 12 – 3/8-18 Hex Nuts Gr8 |
| 7 – Top Clamps | 12 – 3/8 Lock Washers |
| 14 – 5/16-18 U-Nuts | 12 – 3/8 USS Flat Washer |
| 14 – 5/16-18 X 2 HHCS Gr5 | 2 – 1/4-20 X 1 HHCS Gr5 |
| 14 – 5/16 Lock Washers | 2 – 1/4-20 Hex Nuts Gr8 |
| 2 – 5/8 U-Rods | 2 – 1/4 Lock Washers |
| 4 – 5/8 Retaining Clip | 2 – 1/4 USS Flat Washers |
| 2 – 3/4-16 X 6 Eyebolts | 2 – Rubber Bumpers |
| 2 – 3/4-16 Spherical Washers | 4 – Hanger Plates |
| 2 – 3/4-16 Spherical Nuts | 8 – 1/2-13 X HHCS Gr5 |
| 2 – 3/4-16 Hex Jam Nuts | 8 – 1/2-13 Hex Nuts Gr8 |
| 2 – End Plates | 8 – 1/2 Lock Washers |
| 12 – 3/8-18 X 1 HHCS Gr5 | 8 – 1/2 USS Flat Washer |

(OPTIONAL) SINGLE ELECTRICAL KIT:

- 1 – 140" Conductor Bar
- 1 – Tapped Connection
- 2 – End Caps w/ Screws
- 1 – Collector
- 1 – Harness Set

(OPTIONAL) SINGLE JOINT KIT:

- 2 – Top Joint Halves
- 2 – Bottom Joint Halves
- 8 – 3/8 X 1-1/2 HHCS Gr5
- 16 – 3/8 X 1 HHCS Gr5
- 24 – 3/8 Hex Nuts Gr8
- 24 – 3/8 Lock Washers
- 24 – 3/8 USS Flat Washers

TORQUE REQUIREMENTS FOR HEX BOLTS: 1/4 = 8 ft./lbs.; 5/16 = 17 ft./lbs.; 1/2 = 75 ft./lbs.; 3/4 = 300 ft./lbs.



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