NIKO Rail
ENCLOSED TRACK CRANE SYSTEMS BY HANDLING SYSTEMS INTERNATIONAL, INC.

OWNER'S MANUAL

Freestanding Workstation Crane

Model 700

This equipment should not be installed, operated or maintained by any person who has not read and understood all the contents of this manual. Failure to read and comply with the contents of this manual can result in serious bodily injury or death, and/or property damage.

TABLE OF CONTENTS

TERMS AND SUMMARY

This manual provides important information for personnel involved with the installation, operation and maintenance of this product. Although you may be familiar with this or similar equipment, it is strongly recommended that you read this manual before installing, operating or maintaining the product.

Danger, Warning, Caution and Notice - Throughout this manual there are steps and procedures that can present hazardous situations. The following signal words are used to identify the degree or level of hazard seriousness.

DANGER indicates an imminently hazardous situation which, if not avoided, ***will*** result in ***death or serious injury***, and property damage.

WARNING indicates an imminently hazardous situation which, if not avoided, ***could*** result in ***death or serious injury***, and property damage.

CAUTION indicates a potentially hazardous situation which, if not avoided, ***may*** result ***minor or moderate injury*** or property damage.

NOTICE is used to notify people of installation, operation, or maintenance information which is important but not directly hazard-related.

General Installation, Operation, and Maintenance Information

These general instructions cover typical installation, operation, and maintenance procedures for the equipment described in this manual.
They are **not intended to address every possible application, contingency, or custom configuration**. For systems incorporating this equipment, it is the responsibility of the **system supplier and end user** to ensure compliance with:

- All relevant **industry standards**
- Applicable **federal, state, and local codes/regulations**

Applicability of Instructions

This manual contains guidance and parts information covering a variety of crane types and configurations.
As a result, **not all instructions or parts lists apply to every model or system**.
Disregard any section that does not pertain to your specific crane type or setup.

Record Keeping

To ensure accurate service, reference, and parts ordering:
Record your crane's Model Number and Serial Number (refer to the Crane Drawing and Section 9 of this manual) on the front cover of this manual.

This will help avoid referencing the wrong documentation during installation, maintenance, inspection, or repair.

Replacement Parts

Use **only HSI-authorized replacement parts** for the repair and maintenance of this equipment. Substituting unauthorized components may result in performance issues, safety hazards, or voided warranties.

⚠️ Critical Usage and Safety Limitations

- The equipment described in this manual is **not designed for, and must never be used for**, lifting, supporting, or transporting people, or for **lifting or supporting loads over people**.
- This equipment **should not be used in conjunction with other devices** unless all necessary and applicable safety mechanisms are installed by a qualified:
    - System Designer
    - System Manufacturer
    - Crane Manufacturer
    - Installer
    - End User
- **Modifications to upgrade, rerate, or alter this equipment** are only permitted when authorized by the **original equipment manufacturer**.
- Cranes used in **hot molten material applications** may require additional components or protective devices. Refer to **ASTM E2349**, *"Standard Practice for Safety Requirements in Metal Casting Operations: Sand Preparation, Molding, and Core Making; Melting and Pouring; and Cleaning and Finishing."*

🔧 Installation and Engineering Guidelines

- Only **trained and competent personnel** should perform inspections or repairs.
- Only qualified erection crews **familiar with standard fabrication practices** should assemble HSI cranes.

  HSI is **not responsible for workmanship** performed during crane installation.

- A **qualified structural engineer** must evaluate the supporting structure to ensure it can handle all applicable loads, including:

    - Anchor bolt forces
    - Overturning moments
    - Axial loads
- The **crane structure must not be used as an electrical ground**. A separate, dedicated ground wire is required.
- **Overloading and improper use** can result in severe injury or death.

🔨 Welding and Electrical Compliance

- All welds must conform to **AWS D14.1**, *"Specification for Welding of Industrial and Mill Cranes and Other Material Handling Equipment."*
- Electrical components are built in accordance with HSI's interpretation of **ANSI/NFPA 70**, *"National Electrical Code."*
- Final responsibility for ensuring **code-compliant installation and wiring** lies with the:
    - System Designer
    - Manufacturer
    - Installer
    - End User

WARNING: Failure to read and comply with the limitations outlined above may result in **serious injury, death, or property damage.**

⚡ Electrical Hazard Warning – Motorized Jib Cranes

HAZARDOUS VOLTAGES are present in the **control box**, other **electrical components**, and the **interconnecting wiring** used in motorized jib cranes.

⚠️ LOCKOUT/TAGOUT REQUIRED

Before performing **any** mechanical or electrical maintenance:

1. **De-energize** (disconnect) the **main power switch** supplying electricity to the crane.
2. **Lock and tag** the main switch in the **OFF** (de-energized) position to prevent accidental re-energization.
3. Follow procedures in **ANSI Z244.1**, *"Personnel Protection – Lockout/Tagout of Energy Sources."*

📋 Owner/User Responsibilities

- The **owner/user is responsible** for the **installation, inspection, testing, maintenance, and operation** of the crane in full compliance with applicable safety standards, including:
    - **OSHA 1910.179** – *Overhead and Gantry Cranes*
    - **ANSI B30.11** – *Monorails and Underhung Cranes*
    - Any other **applicable federal, state, or local codes**

📘 Required Reading for Personnel

All personnel involved in the following activities must read and understand this manual and all relevant standards:

- Installation
- Inspection
- Testing
- Maintenance
- Operation

Do **not** proceed with these tasks unless all information is fully understood. If clarification is needed, contact **Handling Systems International (HSI)** or your crane distributor.

🛠️ Inspection & Records

- Establish a **regular inspection schedule** in accordance with OSHA 1910.179, ANSI B30.11, and other applicable standards.
- Maintain **detailed inspection records** for safety and compliance verification.

📐 Reference Figures and Dimensions

- Diagrams and figures in this manual are **for reference only**.
- For dimensions specific to your application, refer to the **Foundation Drawing** and **Jib Crane Drawing** supplied with your crane.

> This crane may be part of a lifting system including a hoist and trolley. It is the responsibility of the owner of such a lifting system to ensure that the lifting system be equipped with warning labels in accordance with applicable industry standards.

STEP 1 – PRE-ASSEMBLY

TIP: The packing list is enclosed in a plastic sleeve attached to the hardware box. The General Arrangement Drawing is included within this installation manual.

NOTE: Anchor bolt sizing guidelines are provided in this manual. (Anchor bolts are supplied by others and not included with HSI equipment.)

1.1 Verify all items on the packing list to ensure the correct quantity and type of components have been received.

1.2 The following tools and materials (provided by others) are commonly required for crane assembly:

- Mallet
- Chalk line
- Hand tools
- Shop broom
- Steel shims
- Large square
- Heavy-duty drill
- Torque wrench (capable of reaching 95 ft.-lbs.)
- Tape measure
- Ladders or personnel lifts
- Leveling devices (laser level, transit, water level, etc.)
- Lifting equipment suitable for runways, bridges, and header beams
- Anchor bolts (by others – see Section 1.3 for specifications)

1.3 Anchor Bolt Guidelines:

Anchor bolts should meet the following criteria:

- Minimum diameter: **3/4"**
- Minimum grade: **Grade 5** or better
- Embedment depth: **At least 4"** into concrete; not to exceed **3/4 of total slab depth**.
- Concrete slab: **Minimum 6" thick reinforced concrete**
- At least **two full threads** must extend above the nut when installed

Foundation Notes:

- HSI's Nikorail Free Standing Workstation Bridge Cranes are designed assuming a soil bearing pressure of **2,500 lbs/sq ft**.
- Concrete should meet or exceed **3,000 psi compressive strength**.
- For site-specific anchor loads and foundation requirements, please consult HSI Engineering.

Recommended Anchor Type:

- Use of **chemical (epoxy) anchor bolts** is recommended for optimal performance and reliability.

STEP 2 – COLUMN WELDMENT INSTALLATION

IMPORTANT: Ensure the column cap plate (top of column) is properly oriented in the direction of the header weldment before proceeding.

2.1 Mark the precise column weldment locations on the floor prior to installation. Refer to the included **General Arrangement Drawing** for all recommended dimensions and column spacing.

2.2 Place the first column weldment in position. Ensure the **cap plate is oriented correctly** (see Diagram 2A for reference).

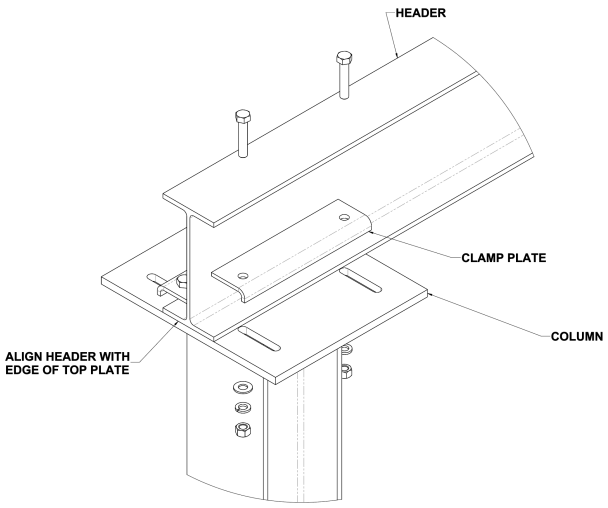


Diagram 2A

2.3 While holding the column weldment in place, use the **pre-drilled base plate holes** as a template to drill into the concrete floor. Use the drill bit size recommended by the anchor bolt manufacturer. Clean the area thoroughly, removing all concrete dust with a vacuum or brush.

2.4 Install **anchor bolts and associated hardware** (supplied by others) per the manufacturer's instructions and specifications.

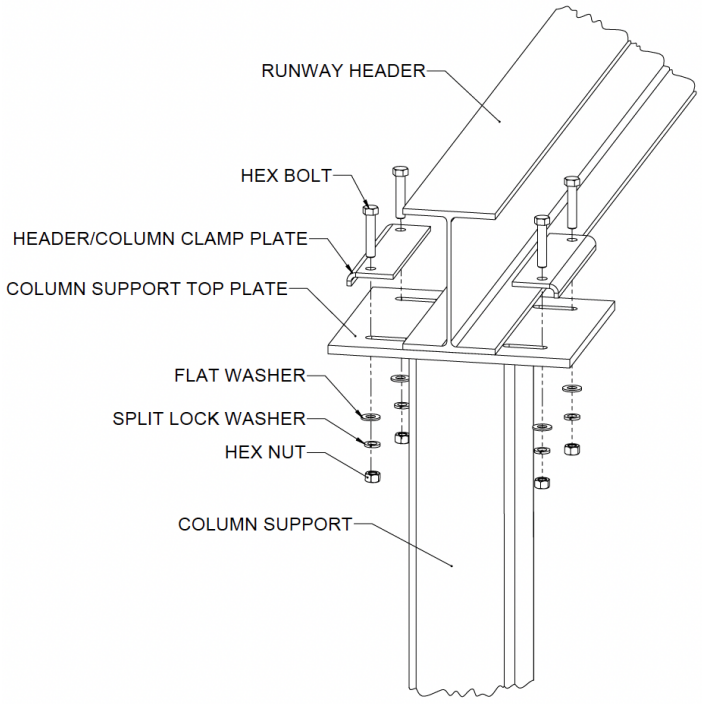
2.5 Verify the column weldment is plumb. If not, **loosen anchor nuts** and use **steel shims or grout** (not supplied) beneath the column base until properly aligned. Once plumb, **tighten all anchor nuts securely**.

2.6 Repeat steps **2.2 through 2.5** for all remaining column weldments.

NOTE: When space permits, column and support assemblies can be fully bolted together on the floor and then lifted into place for floor anchoring.

STEP 3 – HEADER WELDMENT INSTALLATION

3.1 Carefully lift and position the header weldment onto two previously installed column weldments. Refer to the **General Arrangement Drawing** for proper header placement and dimensions.
Using the **supplied clamp plates and hardware**, secure the header to the columns. See the following diagrams for the proper bolt patterns:



Note: On galvanized systems, standard hardware is **not galvanized**. Use **cold galvanizing spray** (provided) on any exposed or unplated hardware to ensure corrosion resistance.

3.2 Tighten all hardware to **95 ft.-lbs. of torque per nut**.
WARNING: Ensure that a **minimum of two full threads** are visible beyond each end of the threaded rod after installation.

3.3 Repeat Steps 3.1 and 3.2 for all remaining header weldments.

CAUTION: Torque values listed are standard for typical HSI installations. If another torque value is specified elsewhere in the manual or on drawings, **always follow the specified value over the default**.

STEP 4 – RUNWAY TO HEADER WELDMENT CONNECTIONS

4.1 Suspend the runway section from the installed support structure. Reference the **General Arrangement Drawing** for correct runway positioning and spacing.

4.2 Using the provided **runway hanger angles, hanger rods, and hardware**, secure the runway section to the header weldment (see diagram 4A).

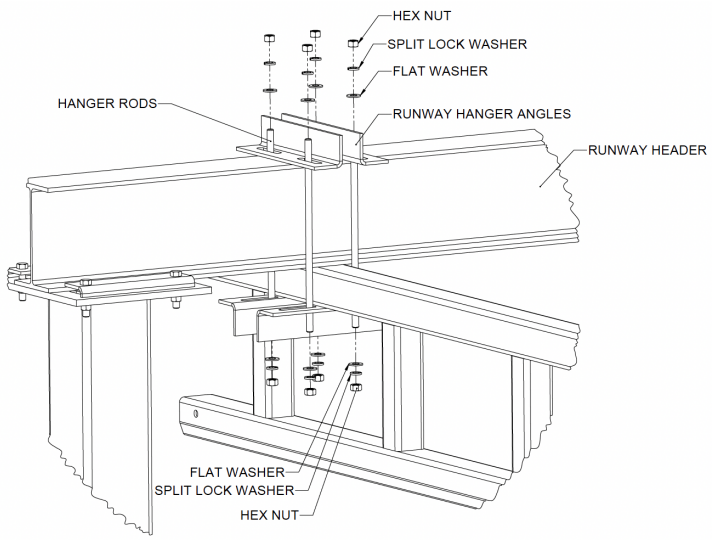


Diagram 4A

MAKE SURE PROPER WARNING LABELS ARE AFFIXED ON BOTH SIDES AND BOTH ENDS OF THE RUNWAY RAIL. IF NOT PRESENT, CONTACT THE MANUFACTURER.

Note: For galvanized systems, the hardware is not galvanized. Apply the provided **cold galvanizing spray** to all uncoated components to prevent corrosion.

WARNING: When using hanger retaining bolts, ensure the **½" threaded rod is centered** through the splice hole in the runway's top tube. Failure to do so can result in runway detachment.

4.3 Verify that the runway is level (**±1/32"**) and **parallel** to the opposite runway.

WARNING: Do not deviate from the **bridge span** (centerline-to-centerline distance between runways) per the drawing which was signed during the ordering process.

4.4 Tighten hanger hardware to fully compress the lockwasher.
Do **not exceed 50 ft-lbs of torque**.
Ensure that **a minimum of two full threads** are visible beyond each end of the threaded rod.

4.5.1 If there are **no additional runways**, skip to Step 4.13.
4.5.2 If more runways are to be installed, proceed to Step 4.6.

IMPORTANT: When installing additional runway sections, they must be **spliced together** according to HSI standards.
WARNING: Maximum spacing from the **header centerline to a splice joint** is typically **48”** and must not be exceeded.

WHEN INSTALLING RUNWAYS IT IS RECOMMENDED THAT THE PRE-WELDED TRACK JOINTS, FOR EACH RUNWAY, BE MISALIGNED FROM ONE ANOTHER AS MUCH AS POSSIBLE. NOT ALLOWING THE BRIDGE TO INTERSECT BOTH WELDED TRACK JOINTS AT THE SAME TIME ENSURES A SMOOTHER TRAVEL.

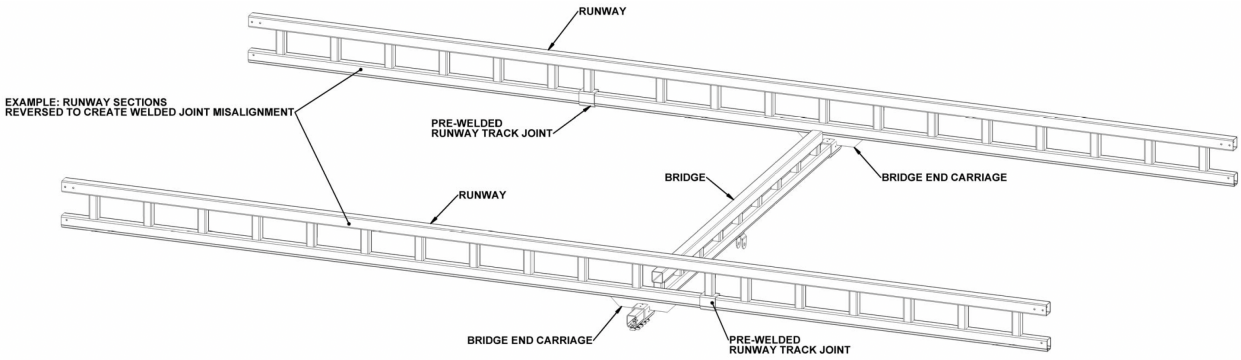


Diagram 4B

Splice Joint Installation

4.6 Attach splice hardware to all joints. Slide the splice joint over the **track portion** of the installed runway.

4.7 Lift the next runway section into position and **align it with the previously installed section**. Ensure the **gap between the load-carrying flanges does not exceed 1/16” (1.5 mm)**. Center the lower splice joint over both ends of the track (see diagram 4C on next page).

4.8 Place a **runway splice plate** on each side of the truss tube and loosely install bolts (hand tighten only—see diagram 4C on next page).

NOTE: Do not torque truss splice bolts until after the track is connected to the header weldment and properly aligned (see Steps 4.9–4.11).

4.9 Ensure that the track running surfaces at the splice are aligned within **1/32” (1 mm)** in both height and horizontal alignment.

4.10 Attach the runway to the header weldment by repeating **Steps 4.2 through 4.4**.

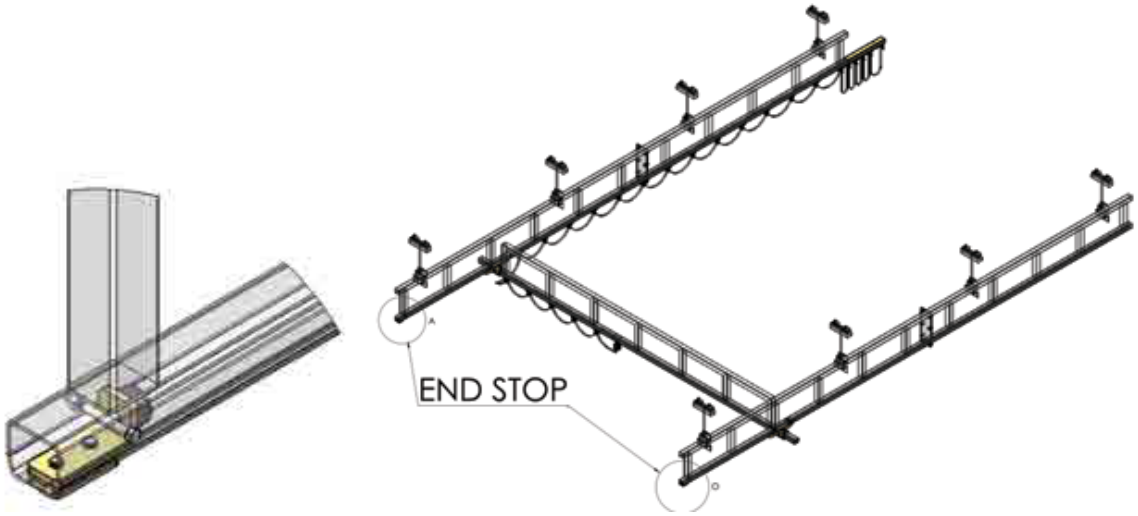
4.11 Use the **top bolts on the splice joint** to press the track down flush with the lower splice flanges and eliminate any vertical misalignment.
Use the **side bolts** to correct lateral misalignment so that the track ends are flush both horizontally and vertically.
Once aligned, tighten the **jam nuts** to secure the adjustment (see diagram 4E).

WARNING: Do not overtighten splice bolts—doing so can distort the track and cause trolley binding.

4.12 Tighten the truss splice plate bolts to **full compression of the lockwasher**, but do **not exceed 40 ft-lbs** of torque.

4.13 Repeat Steps **4.6 through 4.12** for all additional runway sections.

4.14 Install the **end stops** (see diagram 4F) on the runway end opposite the festooning.
Leave the festooning side **open** for future bridge installation.



RUNWAY SPLICE PLATE CONNECTION

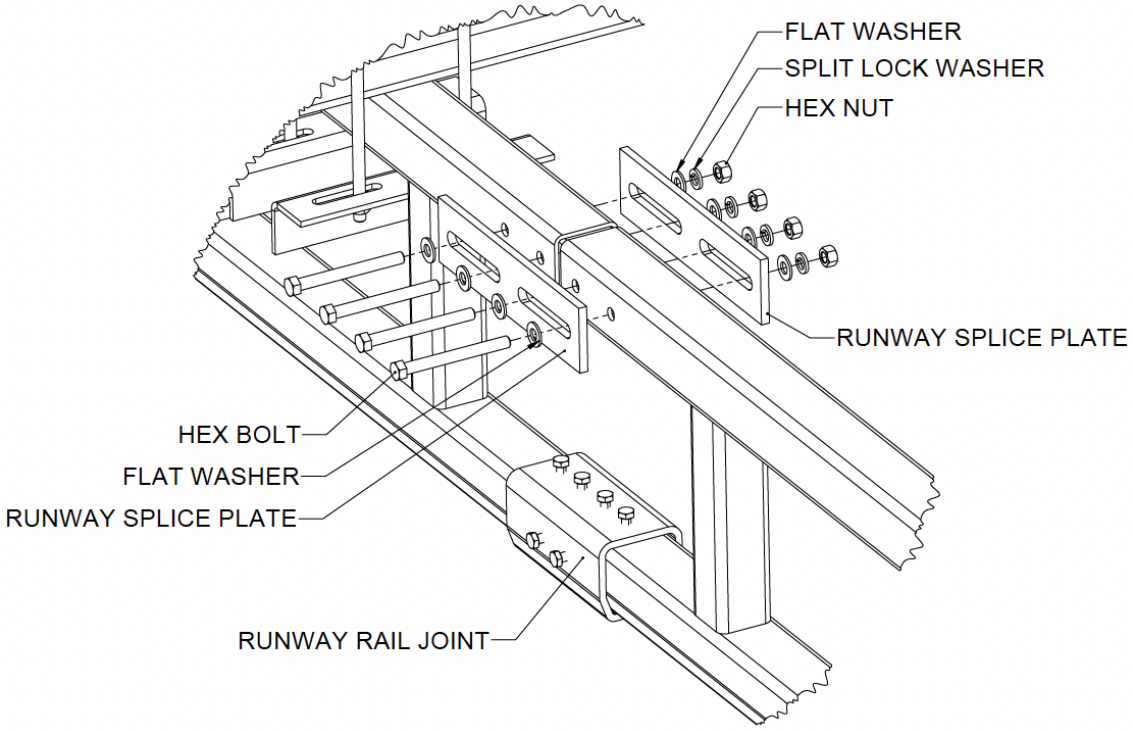
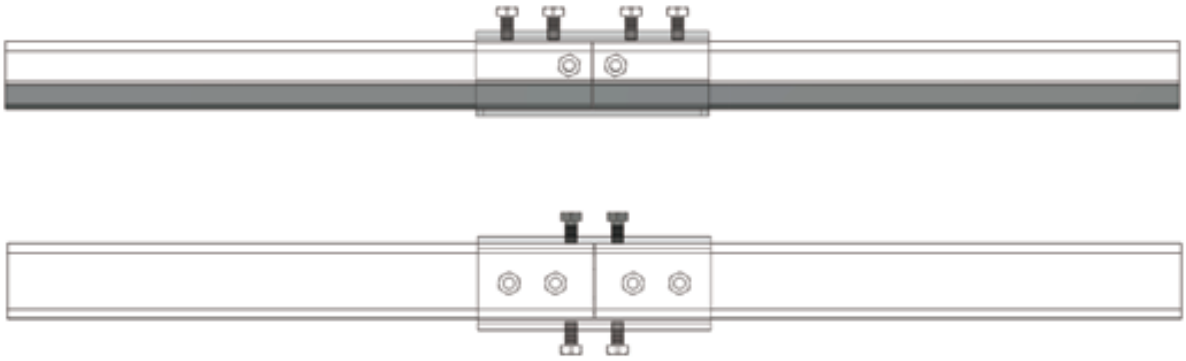


Diagram 4C

WARNING: Alignment of the two parts both to horizontal and vertical level is necessary to avoid any problem to trolleys rolling inside the tracks. The gap between the two parts of track must be as small as possible.



Proper tightening of bolts will help the track edges to return to the original dimensions if they've changed (e.g. due to cutting process). This means that installer must tighten the bolts until the two edges return to the initial dimensions and stop there. PLEASE NOTE! Over-tightening may cause deformities.

Pay particular attention when supports are used around a splice joint. The joint is for connection only and does not support any load. The use of supporting brackets either

attached directly to the top of joint or alternatively the joint can be supported either side by additional support brackets. These supports must not be omitted.

STEP 5 – BRIDGE AND END TRUCK INSTALLATION

IMPORTANT:
End truck designs may vary slightly depending on the application. Please follow the installation instructions that best match your specific configuration.

IMPORTANT:
Only **one** end truck is clamped to the bridge—the other remains **free-floating** to allow for adjustment due to potential runway misalignment.

- The **clamped end truck must be installed on the festooning side** of the bridge.
- Refer to **Step 8 (page 14)** for proper festooning orientation.

5.1 Ensure **end stops** have been installed at the runway end **opposite the festooning side**, keeping the festooning end open to allow for bridge installation. **DO NOT INSTALL END STOP ON FESTOONING SIDE.**

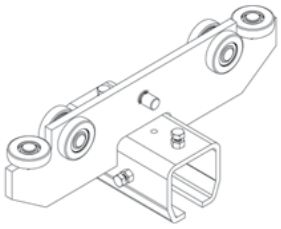
5.2 Before placing the bridge into the runway, **clean the inside of the track flanges** using a clean, dry cloth. Do not use cleaning solutions—this is to remove grit, debris, or metal shavings that may have accumulated during shipping or handling.

Standard End Trucks (Steel Bridges)

5.3 Slide the **clamping end truck** onto the **festooning end** of the bridge. Refer to the **General Arrangement Drawing** for the correct position.

- The **end truck sleeve** should be located **1” ± 1/4”** from the first vertical bridge member.
- Secure the truck using the provided hardware (**see diagram 5A**).

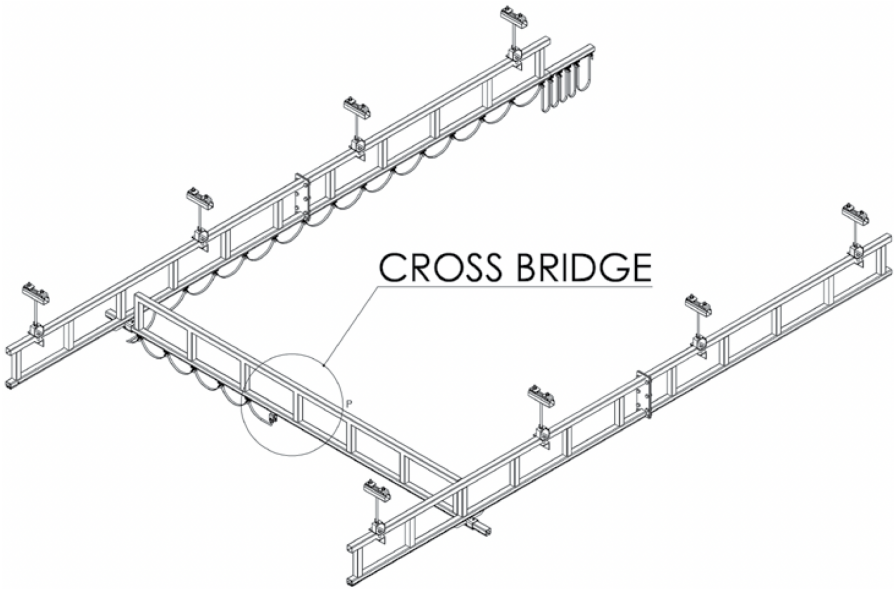
Note: The festooning end of the bridge typically has a mounting hole located further from the edge than the hole on the opposite end—this helps identify the correct orientation.



STANDARD END TRUCK

5.4 Slide the **non-clamping end truck** onto the opposite end of the bridge, positioning it **1" ± 1/4"** from the first vertical member per the General Arrangement Drawing.

5.5 Proceed to **Step 5.40 on page 10**.



IMPORTANT! Because the bolts of one end carriage maintain the connection with the cross bridge, they must be <u>checked frequently</u> during operation as well as during maintenance to ensure safety.

IMPORTANT REPEATED:

- Only the **festoon-side** end truck is clamped to the bridge.
- The **non-clamping** truck allows for alignment flexibility.
- **Extended end trucks must be fully assembled before installing onto the bridge.**

Extended End Trucks

5.6 Locate and identify the following components:

- Extended end truck tubes
- Support weldment
- Wheel plates
- Required hardware

5.7 Slide an **extended tube** halfway into each side of the **support weldment**.
Insert a **support bolt** into each weldment hole (**see diagram 5F**).

5.8 Install **nylock nuts** on the support bolts and tighten snugly against the support weldment.

⚠ **WARNING:** Do not overtighten. Overtightening can damage the end trucks.
Nylock nuts are **single-use only**—if disassembled, replace with new.

5.9 Place a **wheel plate** between the end truck tubes.
Insert a **5/8" bolt** through one tube, then through the wheel plate, and out the opposite tube (**see diagram 5G**).

5.10 Install and snugly tighten a **nylock nut** on the bolt. Ensure the **wheel plate pivots freely**.

⚠ **WARNING:** Do not overtighten. Replace nylock nut if reused.

5.11 Repeat the previous two steps for any remaining wheel plates.

5.12 Repeat the full extended truck assembly process (**Steps 5.6 through 5.11**) for all remaining extended end trucks.

5.13 Once assembled, slide the **clamping end truck** onto the **festooning end** of the bridge.
Position the sleeve **1" ± 1/4"** from the first vertical member and secure (**see diagram 5H**).

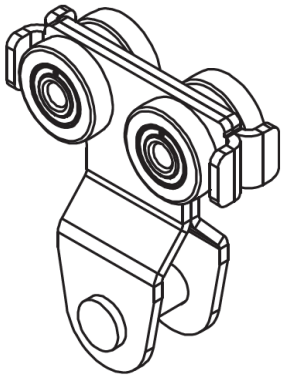
Reminder: The festooning end typically has a hole further from the end than the opposite side.

5.14 Install the **non-clamping end truck** on the opposite end of the bridge and position per the General Arrangement Drawing (**1" ± 1/4"** from the first vertical).

5.15 Proceed to **Step 5.40 on page 10**.

STEP 6 – HOIST TROLLEY INSTALLATION

6.1 For Standard Hoist Trolleys (250 lb – 2,000 lb)



STANDARD TROLLEY (250 LBS. – 2000 LBS.)

Preparation

- **6.1.1** Clean the inside track flanges with a **clean, dry cloth only**. Do not use cleaning solutions. Remove any dirt, debris, or residue from shipping or handling.
- **6.1.2** Confirm the **end stop is installed** at the end of the bridge **opposite the festooning**.

Hoist Attachment

- **6.1.3** Attach the hoist to the trolley by **snapping the suspension hook** over the trolley saddle clevis pin.
- **6.1.4** If the hoist has a larger suspension hook or alternative attachment device, remove the trolley saddle clevis pin and install the hoist or adapter (provided by others).
  Reinsert the clevis pin, add washers, and **secure with a cotter pin** (see Diagrams 6A–6C).
- **6.1.5 Fully bend both legs of the cotter pin** (Diagram 6D).

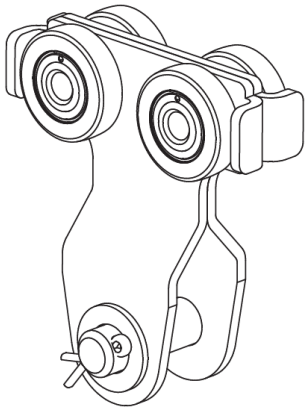


Diagram 6D

⚠ **WARNING:** Replace any cotter pins that appear cracked or fatigued.

Tow Arm Considerations

- **6.1.6** If your system **does not use a tow arm**, skip to Step 6.12.
- **6.1.7** If using a tow arm, proceed to Step 6.1.8.

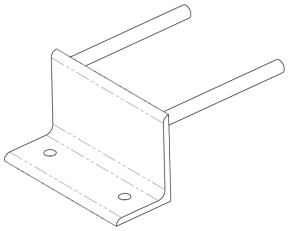
Note: Festoon trolleys do not require tow arms.

Tow Arm Installation

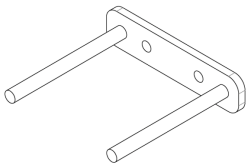
- **6.1.8** Install the tow arm weldment on the **festooning end** of the hoist trolley (see Diagram 6E).
- **6.1.9** After trolley installation, loosen the nuts on the U-bolt.
  Insert cable or air hose between the U-bolt legs and festoon clamp plate.
  Tighten nuts evenly to **secure the hose/cable snugly** without over-compressing.

Final Steps

- **6.1.10** Roll the hoist trolley into the open end of the bridge track.
- **6.1.11** Install the **end stop** on the **festooning end** of the bridge (see Diagram 4E, page 5).

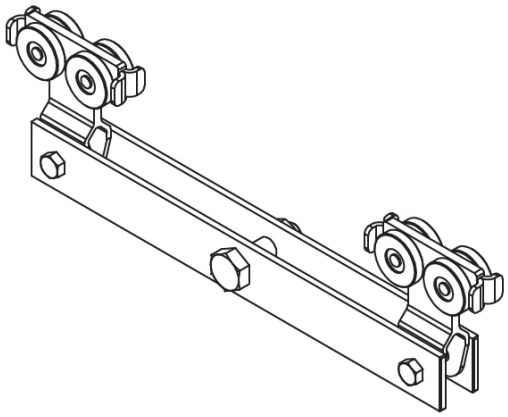


RUNWAY TOW ARM



BRIDGE TOW ARM

6.2 For Load-bar Hoist Trolley – 4,000 lbs. (Steel)



LOAD-BAR TROLLEY (4000 LBS.)

Preparation

- **6.2.1** Clean the inside track flanges with a **dry, clean cloth**. Do not use any liquid cleaners.
- **6.2.2** Confirm the **end stop is installed** at the bridge end **opposite the festooning**.

Hoist Attachment

- **6.2.3** Bend both legs of all cotter pins fully (see Diagram 6F).

  ⚠ **WARNING:** Replace any cotter pins that show cracks or fatigue.

- **6.2.4** Attach the hoist to the trolley by hooking it over the **center clevis bolt** of the loadbar.

  ⚠ **WARNING:** Hoist must only hang from the **center clevis bolt**.

- **6.2.5** If the suspension hook is too large or if a different connection device is used, remove the clevis bolt and install the new hardware (by others).
  Reinsert the clevis bolt, install a **nylock nut**, and tighten securely (see Diagram 6G).

  ⚠ **WARNING:** Do not over-tighten the nylock nut.
  Nylock nuts are **single-use only** and must be replaced if removed.

Final Steps

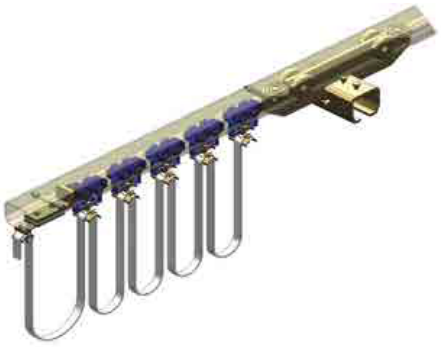
- **6.2.6** Roll the assembled hoist trolley into the open track end.
- **6.2.7** Install the end stop at the **festooning end** of the bridge (Diagram 4E, page 5).

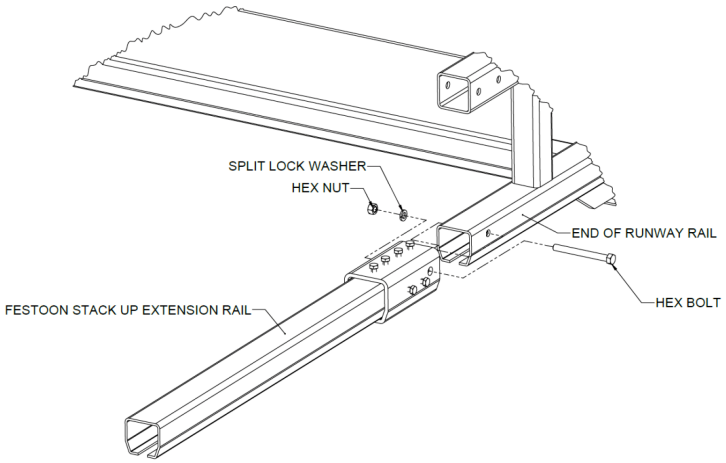
STEP 7 – FESTOON STACK INSTALLATION

7.1 Remove the end stop located at the festooning end of the runway.
7.2 Carefully slide the festoon stack section onto the open end of the runway.
7.3 Reinstall the end stop to secure the festoon stack in place.
7.4 Use the leveling screws on top of the festoon stack section to align it properly with the runway.
7.5 Slide the festoon stack section onto the open end of the runway in preparation for welding.

7.6 Use the leveling screws located at the top of the festoon stack section to properly align it with the runway.

7.8 Reinstall the end stop (Hex Bolt) (previously removed in Step 7.1) at the end of the festoon stack section, as shown in Diagram 7B.





STEP 8 – FESTOONING INSTALLATION

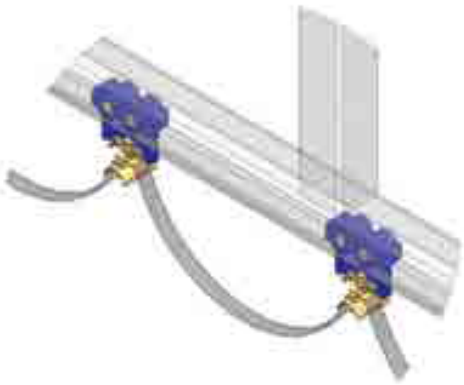
Helpful Tips – Festoon Components and Spacing Guidelines

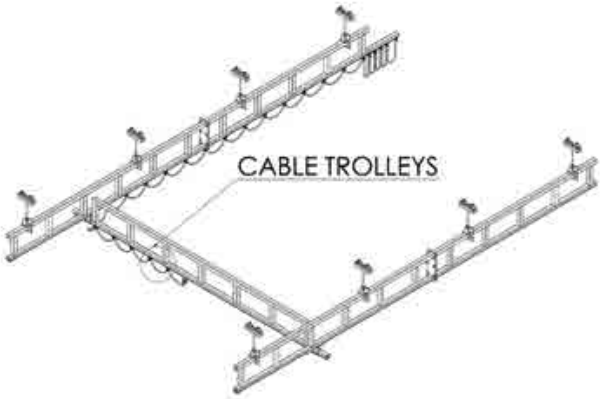
- **Carrier Spacing Requirements:**
  Sufficient festoon carriers—trolleys—are provided to support the festooning system as follows:
  - Every **6 feet** along the **runway**
  - Every **3 feet** along the **bridge**
  - For **vacuum hose festooning**, carriers should be spaced **every 6 feet**

Festoon Trolleys

8.8 Roll festoon trolleys into the open end of the bridge aligned with the festooning side of the runway.
8.9 Space festoon trolleys every 3'-0" along the bridge.

Note: For vacuum hose festooning, space trolleys every 6'-0".





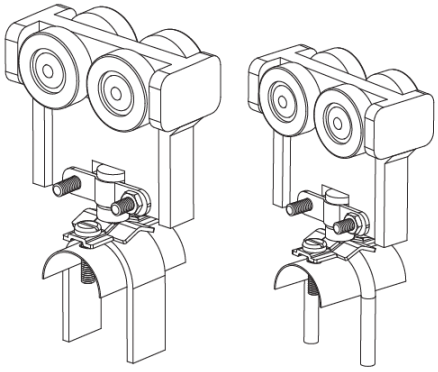
8.9 Slide the festoon clamp or vacuum hose clamp into position at the festooning end of the bridge and tighten the clamp bolt securely
8.10 Install the end stop (molded bumper with thru-bolt) at the open end of the bridge
8.11 Roll festoon trolleys into the runway track on the festooning side. Space the trolleys **every 6'-0"** between the bridge and the festoon stack section.

Note: For 250 or 500 Series Track, the end stop must be removed before installing festoon trolleys.

8.12 Slide the festoon clamp or vacuum hose clamp into the festooning end of the runway and tighten the clamp bolt.

8.14 **Installing Festoon Cable or Hose:**

- **Festoon Trolleys** can accept 4-conductor electrical cable (flat or round, #12 or #14 AWG) or air hose with a **maximum outside diameter of 7/8”**.



⚠ **WARNING:** *Do not use the crane structure as an electrical ground.*
A dedicated ground wire is required for safe operation. For example, a 3-phase power system must include **three conductors plus one separate ground wire**.

Note: To minimize hose twisting, **air swivels should be installed at both ends** of the hose.

Electric Cable / Air Hose Installation with Festoon Trolleys

1. Loosen the nuts and clamp plate on the festoon trolley just enough to allow the electric cable or air hose to pass between the U-bolt legs and the clamp plate.
2. Position the cable or hose in place, then tighten the nuts to secure it. The clamp plate should press snugly against the cable or hose to hold it firmly.

Caution: Do not overtighten the nuts, as this may damage the cable or hose.
Note: Ensure the U-bolt does not make contact with the trolley body, as this may interfere with trolley movement.

IMPORTANT – Cable / Air Hose Installation Guidelines

To ensure proper festoon operation, it is critical to eliminate as much twist as possible from the cable or hose before installation. Follow these steps to prepare the cable or hose correctly:

1. **Lay Out the Cable or Hose:**
   Uncoil the entire cable or hose and lay it flat on the floor to allow any natural twist to relax.
2. **Mark Clamp Locations:**
   Mark the location for the first end clamp. Then continue marking at **6 to 7-foot intervals** for each trolley and the opposite end clamp.

   Tip: If any twist remains, increase the spacing between marks to help relieve tension.

3. **Recoil with Aligned Marks:**
   Recoil the cable or hose neatly, making sure all marks align on the top side of the coil.
4. **Prepare for Installation:**
   Place the coiled cable or hose on the floor with all marks still aligned. Attach the trolleys or end clamps at each marked location.
5. **Install Carefully:**
   While keeping the coil intact, lift and guide the entire length into place, inserting the trolleys into the track without disturbing the alignment of the coil.

Recommendation: To further reduce twist during use, **air swivels should be installed at both ends** of the cable or hose.

Vacuum Hose Installation with Vacuum Hose Trolleys

1. Wrap the supplied strap (by others) around the vacuum hose and fasten the Velcro ends securely. The hose should fit snugly within the strap.
2. Attach the vacuum hose hook (with hose already secured) to the vacuum hose trolley.

3. **Note:** The strap accommodates vacuum hoses with outside diameters ranging from **1-1/2" to 2-3/4"**.
   Tip: If the Velcro strap does not hold the vacuum hose securely, briefly engage the vacuum system to stiffen the hose, then readjust and tighten the strap for a secure fit.

STEP 9 – BRIDGE AND RUNWAY TAGLINE INSTALLATION

For Steel Track Bridges and Runways

9.1 Slide the tagline brackets onto each end of the bridge and/or runway. Secure them in place by tightening the clamp hardware.

Note: The end stop hardware must be temporarily removed to install the tagline brackets. Be sure to **reinstall the end stop hardware immediately after** the bracket installation is complete.

9.2 Install eyebolts into the tagline brackets. Attach a turnbuckle to one of the eyebolts.

- Loop the cable through the opposite eyebolt or the turnbuckle and bend back **4-3/4"** of cable over a thimble.
- Install the first cable clamp **1" from the dead end** and tighten the U-bolt to **15 ft-lbs of torque**.
- Place the second clamp as close to the thimble as possible and tighten it to **15 ft-lbs of torque**.

9.3 Before securing the other end of the cable, **install any S-hooks, wire rope trolleys, or coiled air hose** that will run along the tagline.
9.4 Secure the opposite end of the cable following the same procedure as outlined in Step 9.2.

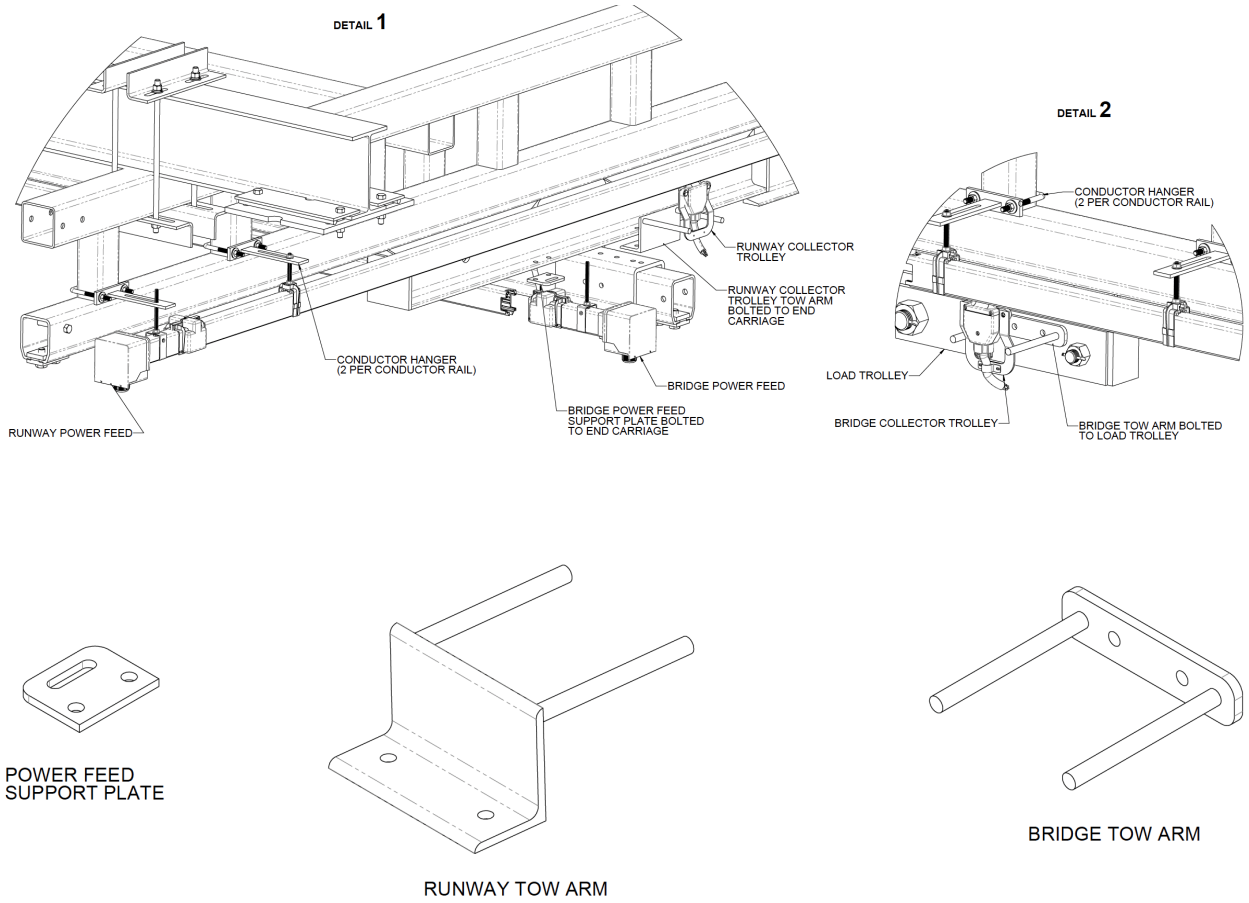
STEP 10 – CONDUCTOR BAR INSTALLATION

General Information

Handling Systems International offers support for a variety of conductor bar systems. Your specific system may include one of the following:

- **Gasori**
- **Vahle**

Please refer to your packing slip and system documentation to confirm which conductor bar system has been provided with your crane.



Runway Conductor Bar Installation Guidelines

- Begin by referencing the **"A" and "B" dimensions** specified on your **Runway 4-Bar Drawing** and the system's **General Arrangement Drawing**.

1. These dimensions are critical for achieving proper alignment between the **conductor bar hangers** and **tow arm assemblies**, ensuring the **collector tow chains remain parallel to the bridge and runway**, both horizontally and vertically.
2. Failure to adhere to these dimensions may result in **interference or misalignment issues** during installation.

- Confirm that the **4-bar hanger brackets** do not interfere with any structural components, such as:
    - Ceiling-mounted runway hangers
    - Runway verticals
    - Splice joints
    - Support headers or connecting hardware
- **Collector shoe tow chains** should be trimmed to the appropriate length on-site during installation to match your system's layout.

- Ensure **channel nuts are fully seated inside the conductor channel**. Channel nuts must **never protrude beyond the outer edge** of the channel.
- Depending on your crane's configuration (truss depth and end truck design), the **conductor mounts may be installed either above or below the top tube**.

General – Bridge Installation

- **Conductor bar bridge brackets** will vary depending on the **type and size of the bridge** as well as the **conductor bar manufacturer**. Refer to your **Order Materials List** to identify the correct bracket part number for each crane.
- **Trolley tow arm brackets** are specific to the bridge's type, size, conductor orientation, and manufacturer. Reference the **Bridge and Runway 4-Bar Drawings** included with your **General Arrangement Drawing** to determine the correct components.
- Use the following hardware to mount the conductor bar hanger to the 4-hole L-bracket:
    - (2) ½"-13 x 3.5" long hex head cap screws (HHCS)
    - (2) ½" flat washers
    - (2) ½" lock washers
    - (2) ½"-13 hex nuts

  Exception: For the **4000 lb. strongback bridge design**, use **(2) ½"-13 x 5.0" long HHCS** instead of 3.5"

- For bridge designs with **two rectangular vertical tubes at each end** (common in some 2000 lb. and 4000 lb. bridges), mount the conductor bar hangers **only to the outermost verticals**.
- A **maximum 0.4375" gap** is allowable to align the outer slots of the conductor bar hangers with the slotted bridge hanger positions farthest from the bridge center.

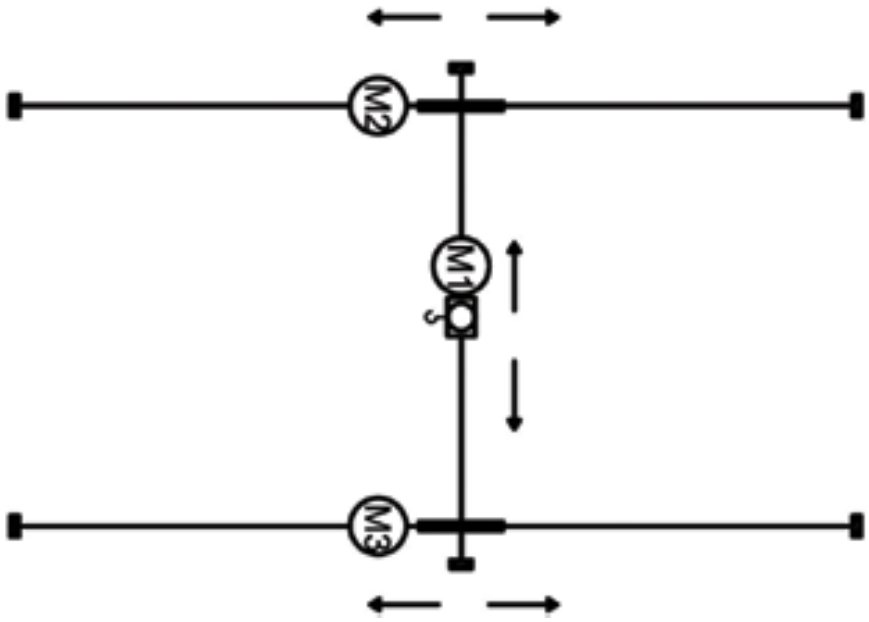
  Ensure that **channel nuts are fully seated inside the channel** and do **not protrude beyond the outer edge**.

- Due to the presence of **fillet welds (approximately 0.25" high)** on the vertical tubes, there will be a **0.25" gap** between the hanger mounting bracket and the spine of the track.
    - Hanger assemblies should be positioned as **close to the steel track spine as possible**, while allowing for clearance over the welds

STEP 11 – INSTALLATION OF POWER-DRIVEN TROLLEY/BRIDGE

11.1 Applicable for both bridge and long travel applications using type .H110 trolleys.

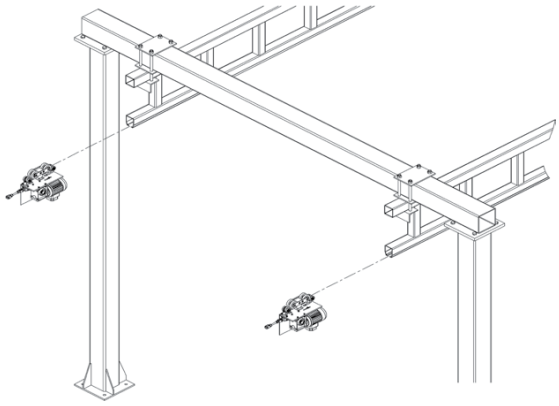
11.1.1 Combinations: M1 (bridge only), M2+M3 (long travel only), M1+M2+M3 (both):



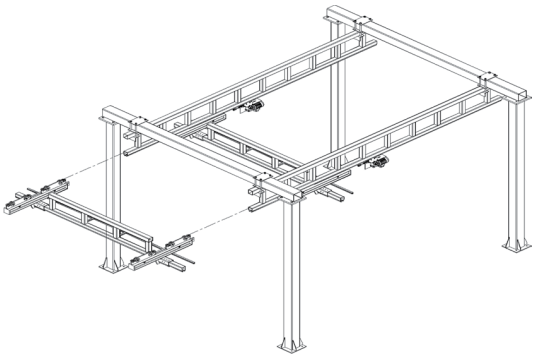
11.2 Remove any loads and uninstall track end stop.

11.3 Install cross bridge and end carriages using lifting equipment.

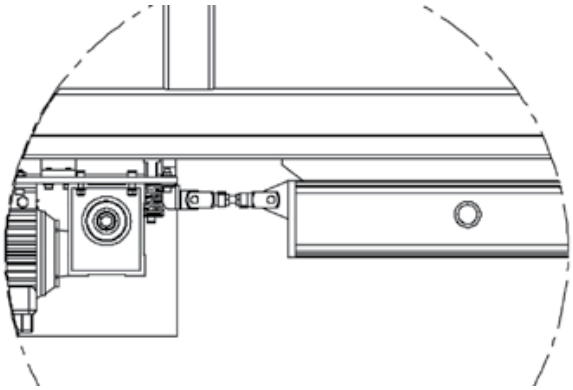
11.4 Insert power-driven trolleys into the long travel track with clamps near end carriages.



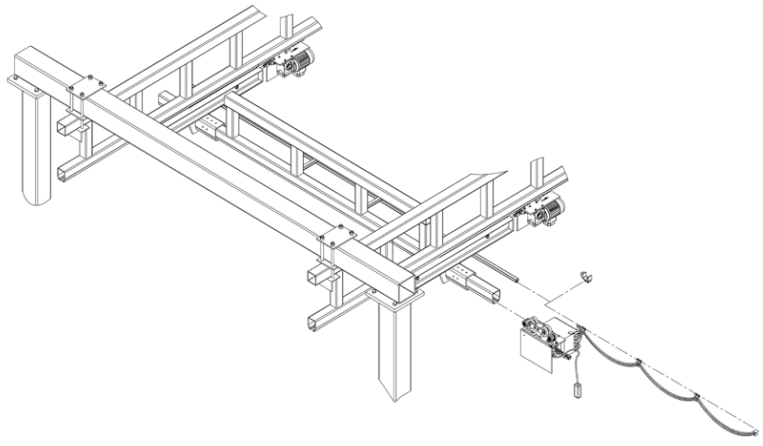
11.5 Reinstall the bridge assembly, ensuring alignment for connection.



11.6 Connect trolley and end carriage, then reinstall end stops.



11.7 Remove end stop and bridge trolley to pass in power trolley and cable trolleys, then reconnect.



11.8 Install the control power box (if not already done). Connect cables as per manufacturer.

11.9 Pass power supply cable through cable trolley clamps.

11.10 Connect to control box and main power. Enclosed 4-pole conductor system is an alternative.

11.11 Adjustment: Use two screws under trolley springs to balance free movement and minimal slippage.

STEP 12 – FINAL STEPS

12.1 Confirm that **all end stops are securely installed**.
12.2 Inspect all bolted connections. Ensure that **all bolts are properly tightened** and **lock washers are fully compressed**.
12.3 If needed, **touch up any scuffed or exposed areas** using the touch-up paint provided with your system.
12.4 Keep all documentation—including the **Packing List, Installation Manual, General Arrangement Drawing, and any included inserts—organized and stored in a safe location** for future reference.

OPTIONAL – SWAY BRACING GUIDELINES

While the support assemblies are designed to meet **AISC (American Institute of Steel Construction) standards**, additional **sway bracing may be added** if reduced lateral or longitudinal movement is desired. Sway bracing is **not included** with the system and is optional based on your application needs.

The installer or end user is responsible for evaluating the site and determining bracing requirements. Bracing can be added using one or more of the following methods:

A) Bracing to Building Columns (Most Common Method)

- Provide braces from building columns to both the **lateral (side-to-side)** and **longitudinal (front-to-back)** axes of the crane support structure.
- Bracing just **2 to 3 corners** of the system typically provides sufficient rigidity.

B) Bracing to Overhead Ceiling Structure

- Install braces from the crane structure up to the **ceiling above**, securing both lateral and longitudinal directions.
- This method is effective **when the ceiling is less than 10 feet above** the crane. If the ceiling height exceeds 10 feet, additional bracing points may be needed at the discretion of the installer.

C) Cross Bracing Within the System

- If bracing to building columns or the ceiling is not feasible, **cross bracing** can be added internally:
    - On the **sides** of the system to reduce longitudinal sway.
    - Across **open ends** to limit lateral motion (not shown)
    - On the **top** of the system, ensuring it does not interfere with **bridge travel**

Note: The use of sway bracing is entirely **optional** and not required by Handling Systems International. No standard specification is provided for bracing methods or quantity. Final decisions on bracing type, location, and quantity should be made by the **installer or end user**, with consideration given to the **integrity of the building structure** being used for attachment.

11 Year Warranty

NIKO Rail
ENCLOSED TRACK CRANE SYSTEMS BY HANDLING SYSTEMS INTERNATIONAL, INC.

What Products Are Covered?

- *Manual Workstation Enclosed Track Cranes*
- *Manual Enclosed Track Jib Cranes*
- *Defects in material and workmanship*
- *Wear parts (trolley and end truck wheels only)*

NIKOrail by Handling Systems International, Inc. (known as NIKOrail) warrants manual push-pull Enclosed Track Workstation Crane and Jib Crane products it manufactures against defects in material or workmanship for a period of eleven years from date of receipt by purchaser or customer. This warranty is inclusive of NIKOrail crane trolley and end truck wheels. This warranty does not cover failure or defect caused by operation in excess of recommended rated capacities, misuses, negligence or accident, and alteration or repair of any kind not authorized by NIKOrail. NIKOrail systems shall not be modified after manufacture without written authorization of NIKOrail. Any field modifications made without written authorization of NIKOrail shall void all NIKOrail's warranty obligation. NIKOrail agrees to furnish the same or substantially similar replacement part (new or repaired) free of charge, providing the buyer gives immediate written notice of alleged defects, and if requested by NIKOrail, returns the defective parts to the factory, for NIKOrail's inspection and examination. Purchaser or end user shall be solely responsible for all freight and transportation costs incurred in connection with any warranty work provided by NIKOrail hereunder. NIKOrail will not be liable for any loss, injury or damage to persons or property, nor for damages of any kind resulting from failure or defective operation of any materials or equipment fur-nished hereunder. NIKOrail shall not be liable under any circumstances for any incidental, special and/or consequential damages whatsoever, whether or not foreseeable, including but not limited to damages for lost profits and all such incidental, special and/or consequential damages are hereby also specifically disclaimed. This warranty applies only to NIKOrail equipment or materials which, after our inspection, are determined to be defective either in material supplied or workmanship performed by NIKOrail. Where equipment is furnished by NIKOrail but not of its manufacture, NIKOrail's liability is limited to such adjustment as the actual manufacturer makes to NIKOrail. NIKOrail will not be liable for the cost of repairs, alterations, or replacements or any expense connected therewith made or incurred by the purchaser or his agents or employees, except upon written authority from NIKOrail. This warranty is personal to purchaser only and applies only to equipment which purchaser has properly operated and maintained in accordance with NIKOrail's written instructions. NIKOrail assumes no liability for any consequential damages suffered through the use of loss of use of its equipment. This constitutes NIKOrail's sole warranty with respect to the equipment and material manufactured by itself. NiKOrail makes no other warranty of any kind whatsoever, expressed or implied, and all implied warranties of merchantability and fitness for a particular purpose which exceed the aforementioned obligation are hereby disclaimed by NIKOrail.

Notes

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