

# Installation and Maintenance Manual for SPANCO<sup>®</sup> Ceiling Mounted Workstation Bridge Cranes



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This equipment, used as a crane, is NOT, in any way, designed for lifting, supporting, or transporting humans. Failure to follow specified load limitations can result in serious bodily injury or death.

Applications involving vacuums, magnets, or other high impact lifters are considered severe usage (continuous service) and require special design considerations. Please contact factory for special design pricing.









#### **DESIGN FACTORS**

Nameplate bridge capacity represents the rated load on the hoist hook. The load rating of a hoist shall not exceed the bridge rating. SPANCO's design includes an allowance of 15% of nameplate capacity for dead weight of the trolley and hoist. An additional 25% of nameplate capacity is also included for impact.

#### SEISMIC DESIGN RATING

All SPANCO workstation bridge cranes meet design requirements for installation and use in seismic zone 4, of the uniform building code, the worst earthquake prone areas in North America.

#### SERVICE FACTOR

All SPANCO workstation cranes are designed for frequent usage (heavy service) as defined:

- System or equipment is used where operational time is up to 100% of the work period and lifted load is at 50% or below rated capacity.
- System or equipment is used where operational time is less than 50% of work period and lifted load is greater than 50% of rated capacity.
- Applications involving vacuums, magnets, or other high impact lifters are considered severe usage and require special design considerations. Please contact factory for special design pricing.
- Consult factory for usage other than moderate and all instances of high cycle rates or high impact applications such as high speed air or electric hoists, vacuum lifters, or magnets.



**Runway Alignment Tolerance** 

Because SPANCO Enclosed Track System provides a very high ease of movement, SPANCO recommends bridge and runway slope of no more than 1/4" in 20'-0" to prevent drift of bridge on trolley. Diagrams courtesy of Monorail Manufacturers Association MH27.1 and MH 27.2

#### PREPARATION

1. Before starting the installation, check the material list to be sure you have received all parts. Systems that mount directly to overhead supports with support flush mount brackets do not require lateral sway bracing.



All systems with drop rod hangers <u>must be laterally and longitudinally braced</u>. <u>Lateral sway bracing is furnished by others</u>.

#### **RUNWAY INSTALLATION**

2. Ceiling mounted workstation design may vary from system to system. The positioning of support brackets or hangers likewise may vary with building structural arrangement as well as with track profile.

Establish where the crane is to be installed. Bolt the proper mounting support brackets or hangers to the ceiling beam(s). See Figs. 1a-1c below. Raise the runway track section and attach it to the brackets or hangers with the appropriate fasteners. Runways should extend between 4 1/2" and 12" beyond the last support at either end for plain track runways, up to 48" for trussed runways. Festoon storage may extend beyond the last support.



#### **SPLICE INSTALLATION**

3. If your system has more than one section length of runway track, each additional section is installed in the same manner as the first, with the addition of a splice joint assembly.

Plain Track: Splice joints should be within 12" of a support bracket or hanger as shown in Fig. 2a.

Reinforced Runway: Splice joints should be within 48" of a support bracket or hanger.

The track splice joint is made from a sleeve with a total of eight set screws threaded into the top and both sides. Slide the sleeve over the end of the first runway track, then butt the second runway track against the first. Center the sleeve over the joint. The two center top set screws should be tightened slightly to push the tracks against the base of the sleeve so that the two bottom surfaces of the track are even. Adjust the side set screws so that the track slots are aligned and there is a smooth transition from one track to the other, see Fig. 2b. Tighten all top set screws then side set screws for correct track alignment.



4. Trussed runway splice joints also include two splice plates and four, 1/2" bolts with nuts and lock washers. Install the splice plates to connect the ends of the truss tubes with the four through bolts provided. Torque through bolts to 50 FT. lbs., see Fig. 3.

NOTE: When end stop hole in runway or track align with sleeve set screw, move sleeve approximately 1/4 of an inch to either side of the end stop hole.



#### **BRIDGE END TRUCK INSTALLATION**

5. Insert the bridge track into the sleeves of the end trucks. Locate the center of the end trucks approximately 12" from each end of the bridge. One end truck is secured to the bridge track with set screws, furnished with the sleeve. The other end truck is allowed to slide freely on the bridge track in order to accomodate any slight misalignment between the parallel runway tracks, see Fig. 5. Install the bridge crane by inserting both end trucks into one end of the runway tracks. Adjust and tighten the bridge end truck set screws to provide a minimum clearance of 2" between the ends of the bridge and any side obstructions. Adjust support brackets or hangers to provide a minimum clearance of 3" between the top of the bridge and any overhead obstructions.



FIXED END TRUCK WITH SET SCREWS

#### **RUNWAY END STOP INSTALLATION**

6. Secure end stop assemblies, end stop bolts, and lock nuts at both ends of both runway tracks, except for the end of the festoon storage area, where applicable, see Figs. 6a and 6b.

#### FESTOON TRACK EXTENSION INSTALLATION

7. Install festoon trolleys and cable in runway. Use the following trolley spacing:

Place festoon track extension on end of runway that is closest to the power junction box. Align the festoon track extension <u>prior</u> to tightening any bolts. Adjust bolts in the side of the festoon track extension to insure alignment of bottom flanges of track. Clamp festoon track extension firmly into a <u>level</u>, straight position prior to tightening the top of the extension. Check to ensure that all surfaces of the track ends and the festoon track extension are in contact.

Tighten top bolt to:

400 Series12	FTIbs.
500-900 Series17	FTIbs.

400 Series Track

Install special 1/4" through bolt in top of festoon track extension. See Fig. 6a. Place lock nut on through bolt and tighten. Do not place end stop at this location. Using end stop supplied with the system, install in the end of the festoon track extension.



#### 500-900 Series Track

Install through bolt through side of festoon track extension. See Fig. 6b. Place flat washer and lock nut on through bolt and tighten. Do not place end stop or end stop bumper supplied with system at this location.

Use end stop supplied with the system. Install according to installation instructions in the end of the festoon track extension.

#### **NOTE:** ALL end stop bolts must have the rubber bumper to ensure that festoon trolleys remain the track.

Ensure that all end stop warning labels are in place.

Install festoon end clamp to secure festoon cable at the end of the festoon track extension.

Ensure the trolleys slide across the runway and festoon track extension joint smoothly. Make necessary adjustments if required.

Ensure all trolleys stack properly in festoon track extension area, clear through bolts, and contact the end top.

#### **Runway Festoon Installation**



#### **RUNWAY FESTOON INSTALLATION**

 Install festoon trolleys into the storage area of runway track if system includes festooning. Secure end stop bolts and rubber bumpers. Locate and secure festoon end clamps as shown in Fig. 7. Install the festoon cable on the festoon trolleys at equal spacing, approximately 6'-7" apart, for approximately 36" loops.





#### HOIST TROLLEY AND BRIDGE FESTOON INSTALLATION

9. Install hoist trolley and festoon trolleys on bridge track, if applicable, as shown in Fig. 8. Secure end stop bolts and rubber bumpers, also shown in Fig. 8.



To prevent personal injury or death DO NOT operate crane without end stop through bolts securely in place.

Once installation is completed, the bridge and runways should be leveled. Install the lateral and longitudinal sway bracing, furnished by others, as required. The total system should then be checked for tightness of all nuts and bolts.



(Fig. 8) Hoist Trolley and Bridge Festoon Detail

#### **HOIST INSTALLATION**

10. Attach hoist supplied by others to hoist trolley. Use washers on hoist mounting pin to center hoist inside hoist trolley. Reinstall washer on outside of hoist trolley (both sides) before installing or reinstalling cotter pins to secure hoist mounting pin. Replace cotter pin(s) if worn or broken. Bend cotter pin around mounting pin, see Fig. 9.



Do not operate hoist or crane if cotter pins are not in place and properly bent over on both sides of hoist trolley. Check regularly that the cotter pins are in place and securing the hoist on the hoist trolley.

NOTE: Some trolley load pins only have one cotter pin.



(Fig. 9)

#### SERVICE CONNECTIONS

11. Where applicable, follow the supplemental circuit diagrams to make service connections, such as electrical power. Make sure services are not energized while making any connections and that they match the specified supply on the circuit diagram.

#### WARNING, SAFETY, OR CAPACITY LABELS

12. If at any time these labels are lost, stolen, removed or become illegible, contact SPANCO at (800) 869-2080 for free replacements. Please order by part number on the label or by the facsimiles in this manual.

SWAY BRACING REQUIREMENTS (SUPPLIED BY OTHERS)

- Sway bracing is <u>required</u> for all systems with hanger rods.
- Bracing is <u>required</u> at all corners of systems in both directions. (laterally and longitudinally).
- Intermediate bracing is <u>required</u> on one side of runways at each hanger closest to runway splices.
- Sway bracing shall be used to reduce lateral stresses on hanger rods and help prevent system hardware from loosening and fatigue due to cycle loading.
- SPANCO is not responsible for design of supporting structures or attachments of system hangers and/or bracing to supporting structures. All supporting structures shall be designed by a qualified person using all applicable local, state, and national code requirements.
- Support structures shall be designed per requirements of "American Institute of Steel Construction" (AISC) specifications for design, fabrication, and erection of structural steel for buildings. Specific attention shall be given to requirements for impact and deflection to maintain the integrity of the complete building/crane system. All responsibility for the final design shall rest with the qualified person and NOT SPANCO.

• All bracing shown in this drawing is to be used as a guide only and shall be considered as the minimum required for any SPANCO ceiling mounted system. Minimum pipe size shall be 1" ø sch. 40 for systems with hanger rods up to 6'-0" long. Systems with rods longer than 6'-0" shall be considered to require special attention.

• Other bracing materials and designs may be acceptable provided they are designed by a qualified person.

#### ACCEPTANCE TEST

After the SPANCO enclosed track crane or monorail system has been installed, OSHA requires an acceptance test before operating and also after any modifications. This acceptance test should be performed by an authorized dealer or installer.

#### **IMPORTANT MAINTENANCE INFORMATION**

At the end of the first month after a new installation, an inspection of the system should be performed. All nuts, bolts, and screws should be checked for tightness. All end stops, cotter pins, and hoist trolleys should be checked for abnormal wear or breakage. Check all track splices for alignment and that end trucks and festoon trolleys travel smoothly through the joints. Also, check that all festoon cables and/or hoses are securely clamped to the festoon trolleys and end clamps. Adjust as necessary.

Thereafter, a complete inspection of all fasteners and connections should be performed annually or every 2000 hours, whichever comes first. It is important to note that every system application and use will be different, therefore some conditions of use should require more frequent inspection. Examples of such conditions might be two or three shift operations, or any high, repetitive, fast movement of the crane.

It is expected that every time an operator uses a SPANCO crane or monorail system, they visually inspect the system before using it and note any unusual or abnormal operation of the system while using it. Meticulous, careful operation of the system will help minimize system maintenance.

ITEM	<u>CHECK</u>
Nuts, Bolts, Screws	Tightness
End Stops, Cotter Pins, End Trucks, Hoist Trolley(s), Track, and Supports	Abnormal wear or breakage
Track Splices	Alignment and smooth travel through joints
Festoon Cable/Hoses	Clamped securely, abnormal wear or breakage

### **APPENDIX**

- AP-1 C-480 Assembly Instructions
- AP-2 Standard Truss Hanger, 400-700
- AP-3 Standard Plain Track Hanger
- AP-4 Standard Truss Hanger, 900
- AP-5 Flush Truss Cross Mount
- AP-6 Optional Clamp for Sloped Ceilings
- AP-7 Optional Flush Plain Track Parallel Mount
- AP-8 Optional Flush Plain Track Cross Mount
- AP-9 Optional Clamp for Large Ceiling Beams
- AP-10 Rotating Plain Track Flush Mount



- 1. (1) C-480-BASE
- 2. (2) C-480-CLAMP
- 3. (2) C-480-NUT
- 4. (2) C-480-FLATWASHER
- 5. (2) C-480-LOCKWASHER
- 6. (2) C-480-BOLT





TORQUE SPECIFICATIONS

1/2" - 78 FT-LBS 5/8" - 154 FT-LBS 3/4" - 257 FT-LBS





## **CEILING MOUNT TRUSS HANGER**

STANDARD HANGER ARRANGEMENT FOR ALL 400 THROUGH 700 TRUSSES



- 1. (1) BEAM CLAMP, "C-480"
- 2. (1) TREADED ROD
- 3. (2) LOCK WASHER
- 4. (4) HEX NUT
- 5. (1) HANGER TRUSS BRACKET, "HTB"
- 6. (1) L-ANGLE (2 HOLES)
- 7. (2) BOLT, HEX HEAD
- 8. (2) LOCK WASHER
- 9. (2) NUT, HEX





AP-2

## **CEILING MOUNT PLAIN TRACK HANGER**

STANDARD HANGER ARRANGEMENT FOR ALL STD 400 THROUGH 900 SYSTEMS



- 1. (1) PLAIN TRACK HANGER BRACKET, "HB"
- 2. (1) THREADED ROD
- 3. (2) LOCK WASHER
- 4. (4) NUT, HEX
- 5. (1) BEAM CLAMP, "C-480"
- 6. (1) HEX BOLT



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## **900 SERIES CEILING MOUNT TRUSS HANGER**

STANDARD ARRANGEMENT FOR ALL 900 TRUSSES





- 1. (2) BEAM CLAMP, "C-480"
- 2. (2) HANGER TRUSS BRACKET, "HTB-W"
- 3. (2) L-ANGLE, "HTB-1"
- 4. (1) ROD, THREAD 3/4-10UNC
- 5. (2) 3/4" LOCK WASHER
- 6. (4) NUT, HEX 3/4"-10NC
- 7. (4) HEX BOLT 5/8"-11NC X 5 1/2"
- 8. (8) 5/8" LOCK WASHER
- 9. (8) 5/8" -11UNC HEX NUT
- 10. (4) 5/8" -11UNC X 2 1/2" HEX HEAD BOLT
- 11. (2) BAR, 900 SERIES HANGER CONNECTOR, "HTBB"





# FLUSH MOUNT TRUSS CROSS MOUNT



## **SLOPED HANGER**

### **ASSEMBLY INSTRUCTIONS:**





- 1. (Ref) Existing Building Structure
- 2. (1) Beam Clamp Channel
- 3. (2) Beam Clamp Clip
- 4. (Ref) Hanger Rod (5/8" or 3/4")
- 5. (2) 5/8"-11 NC X 4 1/2", GR 5
- 6. (2 Ref) 5/8"-11 NC Hex Nuts
- 7. (2) 5/8" Flat Washer
- 8. (2) 5/8" Lockwasher
- 9. (1) Spherical Washer (5/8" or 3/4")
- 10. (1) Lock Nut (5/8" or 3/4")
- 11. (2) Bevel Washer





- 1. Nuts must be torqued to prevent rod from turning out.
- 2. Clips must be positioned such that they seat fully in cutout, with the bolt as close as possible to the edge of the beam flange.
- 3. Position clips such that they are an equal number of cutouts from the center.
- 4. Tighten nut 6 to pull clamp channel tightly against beam.

## **OPTIONAL FLUSH MOUNT** 400-900 SERIES <u>Flush</u> Mount <u>Plain</u> track <u>parallel</u> Mount





- 1. SUPPORT BEAM
- 2. (2) LINDAPTER
- 3. (2) HEX BOLT
- 4. (2) HEX NUT
- 5. (2) LOCK WASHER
- 6. (2) CLIPPED WASHER\* (OPTIONAL)
- 7. (2) PACKING\* (OPTIONAL)
- 8. (1) HANGER BRACKET
- \* OPTIONAL CLIP WASHER OR OPTIONAL Packing May be required to accomodate Thicker Flanges - These are not Always Needed.

TORQUE ALL FASTENERS 5/8" - 108 FT-LBS 3/4" - 210 FT-LBS



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## **OPTIONAL FLUSH MOUNT**

400-900 SERIES <u>Flush</u> mount <u>Plain</u> track <u>cross</u> mount





- 1. SUPPORT BEAM
- 2. (4) LINDAPTER
- 3. (4) HEX BOLT
- 4. (4) HEX NUT
- 5. (4) LOCK WASHER
- 6. (4) CLIPPED WASHER\* (OPTIONAL)
- 7. (1) HANGER BRACKET
- 8. (1) TRACK HANGER BOLT
- \* OPTIONAL CLIP WASHER OR OPTIONAL PACKING May be required to accomodate thicker Flanges - These are not always needed.

**TORQUE ALL FASTENERS** 

5/8" - 108 FT-LBS 3/4" - 210 FT-LBS



## **OPTIONAL CEILING MOUNT TRUSS HANGER C-482**

USED TO HANG DROP RODS ON BEAMS LARGER THAN 8" WIDE AND 7/16" THICK AND UP TO 10" WIDE AND 5/8" THICK

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4. (4) HEX NUT

9. (2) NUT, HEX

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## CEILING MOUNT ROTATING PLAIN TRACK Flush mount hanger







- 1. (1) PLAIN TRACK HANGER BRACKET, "HB"
- 2. (1) HANGER HEX BOLT
- 3. (1) LOCK WASHER
- 4. (1) NUT, HEX
- 5. (1) BEAM CLAMP, "C-480"
- 6. (1) HEX BOLT

NOTES: <u>Torque specifications</u> 5/8" - 154 FT-LBS 3/4" - 210 FT-LBS





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## Spanco.com

### **TEN-YEAR SPANCO WARRANTY**

#### Products covered under the Ten-Year Warranty:

- Manual Steel Freestanding, Ceiling Mounted Workstation Bridge Cranes, and Monorails
- Manual Aluminum (Alu-Track®) Workstation Bridge Cranes and Monorails
- Manual Jib Cranes (I-Beam, Articulating, and Workstation Jib Cranes)
- Manual Gantry Cranes and Tripods

#### What the Ten-Year Warranty covers:

- Defects in Equipment material and workmanship
- Wearable parts (end truck and hoist trolley wheels only)

Spanco, Inc. warrants its manual workstation bridge crane products, jib crane products, and gantry crane products to be free from defects in material and workmanship for a period of ten (10) years or 20,000 hours, commencing on the date of shipment to the first retail purchaser. This warranty extends to non-wearable parts only, with the exception of the wheels supplied on manually operated workstation end trucks and hoist trolleys. This warranty does not cover defective equipment or system failure caused by misuse, negligence, improper installation or maintenance, or equipment that has been used in excess of its rated capacity or beyond its service factors. It does not apply to equipment that has been altered without Spanco's written authorization.

Written notice of any claimed system defect must be given to Spanco within thirty days of discovery. Spanco's obligation under this warranty is limited to the replacement or repair of Spanco's products at the factory or separate location approved by Spanco. The purchaser is responsible for all freight and transportation costs relating to equipment repair or replacement. **Other than the abovementioned warranty, Spanco will not honor any other warranties**—whether express, implied, or statutory—and disclaims any warranties of merchantability or fitness for a particular purpose. Spanco is not liable—under any circumstances—for any indirect, incidental, or consequential damages including but not limited to lost profits, increased operating costs, or loss of production.

This warranty does not extend to components or accessories not manufactured by Spanco. The purchaser's remedy for such components and accessories will be determined by the terms and conditions of any the warranty provided by the manufacturer of such components and accessories.

**NOTE:** All motorized Spanco products come with a One-Year Warranty on drive components.