

## Workstation Jib Crane

This guide can be used to prepare a bid specification for the incorporation of a Workstation Jib Crane into a competitive bid project or application.

**\*Each product specification is organized in three standard sections:**

### **SECTION 1 - GENERAL:**

Includes product scope, references, performance requirements, applicable documents, quality assurances, product warranty information, and project conditions and handling practices.

### **SECTION 2 - PRODUCTS:**

Includes a description of materials, products, and accessories to be incorporated into the project.

### **SECTION 3 – EXECUTION:**

Includes provisions for product preparation, installation, field quality control, demonstrating and training, and protection.

**\*The specifier may need to edit this product specification to reflect the options and applications for a specific project. Notes to assist the specifier in editing this product specification are indicated in brackets. All notes and brackets should be deleted on the final draft.**

### **SECTION 1 – GENERAL**

#### **1.1 SCOPE**

- A. Product:** Spanco Workstation Jib Cranes can be freestanding or wall mounted. [Freestanding Workstation Jib Crane with standalone mast and a rotating boom requires foundation support and covers a circular work area around the mast.] [Wall-Mounted Workstation Jib Crane with horizontal boom cantilevered from vertical column covers a semi-circular area.]
- B. General Design Standards:** Spanco Cranes are designed in conformance with the following applicable standards:
  1. **Jib Cranes:** AISC Steel Construction Manual, OSHA 1910.179, ANSI B30.17, CMAA 74, and MH27.2.
- C. Standard Equipment Specifications:** List other specifications related to the product and application including options, accessories, and customizations [Mounting, Hoists, Electrical].
  1. **Working Span:** [Working span is determined by the amount of actual working area needed. The working distance, or hook distance, is approximately one-half the trolley length from the end of the beam and is the same distance from the head assembly or vertical support member of the jib.]
  2. **Area of Rotation:** [Freestanding Workstation Jib Cranes offer 360-degree rotation. Wall-Mounted Jib Cranes offer 180-degree rotation.]
  3. **Capacity:** [The maximum weight of the application should not exceed the design weight. Load weights should be predetermined to avoid buying unnecessary capacity.]

4. Height: [Under-boom height is considered the distance from the floor to the underside of the boom. The size of the hoist and the lifting distance should also be considered. The overall height is measured at the highest point on the crane after installation.]
5. Construction: Fabricated using ASTM A36 steel sections with finished ends and surfaces.

## 1.2 **REFERENCES**

[List references referred to in this product specification. List by number and full title and delete non-applicable references.]

- A. **American Institute of Steel Construction (AISC):** Manual of Steel Construction, Part 5, Specification for Structural Joints Using ASTM A325 or ASTM A490 Bolts
- B. **American National Standards Institute (ANSI):** ANSI B30.17 – Monorails and Underhung Cranes
- C. **American Society for Testing and Materials (ASTM) A36:** Carbon Structural Steel
- D. **American Society for Testing and Materials (ASTM) A325:** Structural Bolts, Steel, Heat Treated, 120/150 ksi Minimum Tensile Strength
- E. **American Society for Testing and Materials (ASTM) A490:** Structural Bolts, Alloy Steel, Heat Treated, 150 ksi Minimum Tensile Strength
- F. **American Society for Testing and Materials (ASTM) B221:** Aluminum-Alloy Extruded Bar, Rod, Wire, Shape, and Tube
- G. **American Welding Society (AWS) D1.1:** Structural Welding Code
- H. **American Welding Society (AWS):** Certified Shop
- I. **Occupational Safety and Health Administration (OSHA) – Specification 1910.179:** Overhead and Gantry Cranes
- J. **CMAA Specification 74:** Traveling Bridge Cranes
- K. **MMA Specification MH27.2:** Enclosed Track Underhung Cranes and Monorail Systems

## 1.3 **PERFORMANCE REQUIREMENTS**

- A. **Coverage:** Freestanding Workstation Jib Crane shall provide coverage of a circular area of size indicated on drawings and consist of:
  1. Freestanding mast that requires foundation support.
  2. Top pivot pin and bottom trunnion rollers.
  3. Rotating boom provides 360-degree rotation; boom will not drift when at rest.
- B. **Coverage:** Wall-Mounted Workstation Jib Crane shall provide coverage of a semi-circular area of size indicated on drawings and consist of:
  1. Wall-mounted vertical columns.
  2. Horizontal boom cantilevered from column for 180-degree rotation.
- C. **Modular, Pre-Engineered Design:** Crane system shall be designed for minimum effort manual rotation.
  1. Crane shall be designed, fabricated, and installed in accordance with ANSI B30.17 and OSHA 1910.179.
- D. **Deflection Guidelines:** Wall-Mounted Workstation Jib Crane (501 Series) models are designed with maximum deflection of approximately L/225. Freestanding Workstation Jib Crane (500 Series) models are designed with maximum deflection of approximately L/150.
- E. **Crane Operating Temperature:** 5 to 200 degrees F (-15 to 93 C)
- F. **Structural Design:** The crane's structural design is based on live load capacity plus 15 percent for hoist and trolley weight and 25 percent for impact. Contact Spanco, Inc. for assistance specifying cranes that will require seismic and other additional loads or cranes that will operate in high humidity or corrosive environments.

**Crane shall be designed to withstand:**

1. Crane and hoist dead load.
2. Live load capacity equal to net rated hook load.
3. Inertia forces from crane and load movement.

**1.4 DOCUMENTS****A. Submittal Procedures**

1. Product data is included for crane and all accessories. Product data provides capacities, performance, standard operations, and applied forces to foundation.
2. Shop drawings, which outline crane configuration, dimensions, construction, and installation details.
3. Manufacturer's Warranty
4. Manufacturer's Installation Instructions
5. Manufacturer's Operation and Maintenance Manual

**1.5 QUALITY ASSURANCE**

- A. Standard cranes shall be designed, fabricated, and installed in accordance with our interpretation of ANSI B30.17, MH27.2, CMAA 74 and OSHA 1910.179. Spanco, Inc assures the safety and quality of all systems when installed and maintained according to their Installation and Maintenance Manual.
- B. **Manufacturer's Qualifications:** An ISO 9001:2015 registered company with more than 40 years of experience successfully designing and manufacturing cranes and material handling solutions for numerous industries
- C. **Installer's Qualification:** A company that is acceptable to the crane manufacturer and with five years of experience assembling and installing cranes for multiple applications. Installer should be able to:
  1. Perform welding using certified welders in accordance with AWS D1.1.
  2. Bolt connections in accordance with torque tightening procedures specified in AISC Manual, Part 5.
  3. Clearly label crane with maximum rated capacity with label visible from floor level and loading position.
  4. Perform OSHA Load Test Certification.

**1.6 WARRANTY**

- A. **Manufacturer's Warranty:** Included on manufacturer's standard form and outlines the manufacturer's agreement to repair or replace assemblies and components that fail in materials and/or execution within warranty period from date of substantial completion.
  1. Warranty covers defects in equipment material and workmanship of manual systems and equipment for ten (10) years or 20 thousand (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.
  2. Warranty covers two (2) years for paint and finishes for non-aluminum components.
  3. Warranty covers one (1) year for motorized systems and equipment.

**1.7 CONDITIONS/DELIVERY, STORAGE, AND HANDLING****A. Project Conditions**

1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimal results.
2. Do not install products under environmental conditions outside manufacturer's absolute limits.

#### **B. Delivery, Storage, and Handling**

1. Store products in manufacturer's packaging until ready for installation.
2. Store and dispose of solvent-based materials in accordance with requirements of local authorities.

### **SECTION 2 – PRODUCT**

#### **2.1 ACCEPTABLE MANUFACTURERS**

##### **A. Spanco, Inc.**

Locations: Morgantown, PA and Las Vegas, NV; 800-869-2080; [www.spanco.com](http://www.spanco.com)

#### **2.2 WORKSTATION JIB CRANE**

[Spanco Workstation Jib Cranes are available with capacities up to one thousand (1,000) pounds and standard spans of 16 feet.]

**A. Models:** The following are Workstation Jib Cranes manufactured by Spanco, Inc. [Specifier may need to choose an acceptable model based on the list below.]

1. **Model No. 500 (Freestanding Workstation Jib)** as manufactured by Spanco, Inc.
  - a. Freestanding base-plate mounted manually operated workstation jib crane with stationary mast and rotating boom. Equipped with pivot pin, trunnion roller assembly, enclosed track, hoist trolley, and other accessories.
  - b. Construction: Fabricated from ASTM A36 steel sections with finished ends and surfaces.
2. **Model No. 501 (Wall-Mounted Workstation Jib)** as manufactured by Spanco, Inc.
  - a. Wall-mounted manually operated rotating workstation jib crane with horizontal cantilevered boom permanently jointed to vertical column and provided with pivot mounting assemblies, enclosed track, hoist trolley, and other accessories.
  - b. Construction: Fabricated from ASTM A36 steel sections with finished ends and surfaces.

**B. Construction:** Fabricated from ASTM A36 steel sections with finished ends and surfaces.

**C. Design Factors:** Spanco Jib Cranes are designed with a factor of 15 percent of the rated capacity for hoist and trolley weight and 25 percent of the rated capacity for impact. 50 percent impact factor used for vacuum or magnet applications. The pipe mast is designed to give maximum strength and minimum deflection to resist bending, buckling, and crushing, as well as wear by the trunnion roller assembly. The bearings are designed for a 5,000-hour B-10 design lift. This design provides a margin to allow for variations in material properties, operating conditions, and design assumptions. No crane should ever be loaded beyond its rated capacity.

**D. Service Factor:** All Spanco Workstation Jib Cranes are designed for moderate usage (Class C Moderate Service) as defined by CMAA 74.2:

1. System or equipment is used where lifted loads average 50 percent of the rated capacity with five to ten lifts per hour, averaging 15 feet, not over 50 percent of the lifts at rated capacity.
2. Applications involving vacuums, magnets, and other high-impact lifters may be considered severe usage and require special design considerations. Please contact Spanco, Inc. for special design pricing.

3. Consult Spanco, Inc. 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.

**E. Support Structure:** Spanco Workstation Jib Cranes can be base-plate mounted to an existing floor or poured foundation, or they can be mounted to an existing wall or column with structurally adequate support.

1. Base-plate mount: Square or hexagonal base plate secured by anchor bolts. Minimum six-inch reinforced concrete floor required; portable bases are available. (Foundation may be required; check with engineer for adequacy.)
2. Wall mount: Wall or column mounted to structurally adequate support.

## 2.3 **SYSTEM OPTIONS**

\*The following options are available for Spanco Workstation Jib Cranes. [Select required options from the following, or contact Spanco, Inc. if other types of accessories are required.]

### **A. Installation Capabilities**

1. Model 500: Base-plate mounted.
2. Model 501: Wall or Column mounted (cantilevered).

### **B. Air Swivels**

1. Top Entry Air Swivel
  - a. Air swivel installed on top flange of boom to convey compressed air from overhead source to air-powered hoist on boom.
  - b. Swivel is fitted with pivot arm connected to source hose and allows continuous rotation.

### **C. Air**

1. Compressed air for air-powered hoists can be supplied with top entry air swivel.

### **D. Collectors**

1. Electrical power can be provided for motorized cranes and hoists with top entry collector.
  - a. Top entry collector: Electrical collector installed on top flange of boom to conduct electrical power from overhead electrical source to motor operator on head assembly and electrically operated hoist on boom. Collector is fitted with pivot arm connected to source conduit and allows continuous rotation.

### **E. Rotation Stops**

1. Limit boom rotation.
2. Steel plate stops are welded to top plate.

### **F. Counterweight Base:** Portable base for enclosed track jib cranes. Available in three weights.

### **G. Vacuum Lift Platforms:** Used to mount manufacturer's vacuum pumps on jib mast.

### **H. Vacuum Hose Trolley:** Fits minimum one-inch diameter hose.

### **I. Cabe/Air Festoon Trolleys:** Carry flat electrical cable or round air hose, and include four wheels for easy rolling. A pivoting clevis provides swiveling action for the air hose.

### **J. Festoon Flat Cable:** 4 Conductor

### **K. Festoon Air Hose:** Round hose (3/8 inch in diameter) used to supply lifting device and festoon along boom.

### **L. Telescoping Boom Sections**

### **M. Anchor Bolts**

## 2.4 **SYSTEM COMPONENTS**

### **A. Model 500: Freestanding Workstation Jib Crane**

- 1. Mast**
  - a. Stationary steel pipe perpendicular to boom.

- b. Equip mast with top plate and base plate.
- 2. Top Plate**
  - a. Circular steel plate with pivot pin to receive boom.
- 3. Bottom Plate**
  - a. Square or hexagonal steel base plate welded to mast for anchoring crane to foundation.
- 4. Boom**
  - a. Open truss construction fabricated from rectangular steel tubes and enclosed steel track.
  - b. L-shape configuration with horizontal boom and vertical mast to hold trunnion rollers.
  - c. Trolley track enclosed, cold formed steel box track; track serves as bottom cord of horizontal boom and permits trolleys and festoon carriers to ride on lower inside flanges.
  - d. Trunnion roller assembly designed to rotate around mast and transmit moment load from boom to mast. Assembly bolted to steel attachment angle welded to bottom leg of boom and consists of two rollers held in steel brackets with bolts.
  - e. Pivot assembly attached to extended top cord of boom and fits over mast pivot pin.
- 5. Hoist Trolley**
  - a. Rigid-body trolley designed to move inside enclosed track and carry hoist and load.
  - b. Constructed from a two-piece stamped steel body with two wheels on each side and tapered clevis positioning hoist hook at center of trolley so load weight is distributed evenly to trolley wheels.
  - c. Four removable, self-centering wheels with sealed lifetime lubricated bearings and tapered two degrees to match track profile.
  - d. Drop lugs limit trolley from dropping in event of wheel, axle, or load bar failure.
- 6. End Stops**
  - a. Molded composite, resilient bumper installed in track at boom end to prevent hoist trolley and festoon carriers from rolling out of track.

**B. Model 501: Wall-Mounted Workstation Jib Crane:**

- 1. Trolley Track**
  - a. Enclosed cold formed box track that serves as bottom cord of horizontal boom and permits trolley and festoon carrier to move on lower inside flanges.
- 2. Top and Bottom Pivot Mounting Assemblies**
  - a. Designed to anchor boom/mast to support structure, allow boom and mast rotation, and resist drift. Assembly includes steel bracket, bearings, and cotter pins.
- 3. Hoist Trolley**
  - a. Rigid-body trolley designed to ride inside enclosed track and carry hoist and load.
  - b. Constructed from two-piece stamped steel body with two wheels on each side and tapered clevis positioning hoist hook at center of trolley to evenly distribute weight to trolley wheels.
  - c. Includes four removable, self-centering wheels with sealed lifetime lubricated bearings and tapered two degrees to match track profile.
  - d. Drop lugs provided on both sides of trolley to limit dropping in the event of wheel, axles, or load bar failure.
- 4. End Stops**
  - a. Molded composite bumper installed in track at boom end to prevent hoist trolley and festoon carriers from rolling out of track.

## 2.5 SHOP FINISHING

### A. Standard Paint Colors:

1. All freestanding and wall-mounted workstation jib cranes are painted with Spanco Yellow Industrial Enamel.
2. Ford® Tractor Blue and Spanco Standard Gray Industrial Enamel available at no additional cost.
3. Systems can be painted any custom color for an additional cost.

**B. Surface Preparation and Painting Procedures:**

1. Spanco adheres to the standards of the Society for Protective Coatings (SSPC) for all product surface preparation.
2. Spanco Crane components are deburred and descaled using power tools equipped with sanding discs and wire wheels prior to painting.
3. Components are washed with high-pressure/high-temperature biodegradable degreaser solution.
4. All components are coated with quick drying, semi-gloss enamel, applied to a minimum dry-film thickness of two to three mils.
5. A finishing coat is applied with a hot airless electrostatic spray paint system.
6. Painted components are cured at air temperature.

## SECTION 3 – EXECUTION

### 3.1 PREPARATION

**A. DO NOT** start installation until support structures are properly prepared.

**B. Inventory:**

1. Check materials to ensure all parts are present.

**C. Motorized Power Rotation:**

1. Check electrical supply, conduit, wiring, disconnect switch, and other electrical components.

**D. Foundation**

1. Model 500: Base-plate mounted to six-inch reinforced concrete floor or special foundation. Ensure accurate anchor bolt patterns are provided for foundation design. **Spanco recommends 3,000-PSI concrete foundation, reinforcement, and anchor bolts. Customer responsible for adequacy of floor or foundation.**
2. Model 501: Wall or column mounted to structurally adequate support. Verify accurate crane applied forces and anchor bolt patterns are provided for structural design.

### 3.2 INSTALLATION

[**NOTE:** The following installation information is provided only as a reference tool. For complete installation and maintenance instructions, refer to manual 103-0012 (Model 500) or manual 103-0024 (Model 501).]

**A.** Units and accessories must be installed in accordance with manufacturer's instructions and shop drawings.

**B.** Do not modify crane components without manufacturer's approval.

**C.** Clearances for moving crane components:

1. Minimum vertical clearance: Three inches (76 mm) from any overhead obstruction.
2. Minimum horizontal clearance: Two inches (51 mm) from any lateral obstruction.

**D. Model 500: Freestanding Workstation Jib Crane**

**1. Mast**

- a. Refer to installation manual to find dimensions for a specific model jib crane.
- b. Install one set of leveling nuts on the anchor bolts with the top surface approximately one inch above the foundation. Place the mast assembly over the anchor bolts resting

on leveling nuts. Install the second set of nuts with plate washers and flat washers. Clamp the plumb fixture to mast cap plate and/or pivot pin.

- c. Select a position on the fixture arm to hang a plumb line. Measure 60 inches down from the top of the mast and use this point to check the two-inch dimension for mast plumb.
- d. Position fixture arm directly over one anchor bolt, and measure from the plumb line to the edge of the mast. If this measurement is not two inches, adjust the leveling nut directly below. Turn leveling nut up if greater than two inches or down if less than two inches.
- e. Rotate the fixture arm 180 degrees and recheck mast for plumb. Adjust the leveling nuts until you have the same distance on each side of the mast. Repeat this operation at each anchor bolt.
- f. When mast is plumb, tighten the locking nuts. Do not grout until installation of boom is complete.
- g. When installation of crane is complete and the operation is checked, float grouting compound under base plate and recheck tightness of locking nuts.

**2. Boom**

- a. Do not install the boom until the mast is installed properly and plumbed.
- b. Place the bearing cone over the mast pivot pin.
- c. Assemble the trunnion roller assembly and attach to mast assembly.
- d. Lower the boom assembly over the mast pivot pin and onto the bearing.
- e. Place the washer over the mast pivot pin and insert the cotter pin.
- f. Check the boom for level and adjust trunnion roller assembly to ensure that boom is level in all positions. Roller must be adjusted to apply pressure to mast.
- g. To compensate for anticipated deflection, it may be necessary to adjust boom with the tip raised a distance equal to half the expected deflection.

Each jib is designed for an approximate maximum deflection: **Boom Length (inches)  $\div 150 =$  Deflection (inches)**

**3. Hoist Trolley and End Stop**

- a. Place end clamp, festoon trolley, and hoist trolley on boom track.
- b. Secure end stop bolts and rubber bumper.
- c. Install festoon cable on festoon trolleys at equal spacing as required.

**4. Hoist**

- a. Attach hoist to trolley.
- b. Use washer on outside of hoist trolley (both sides) before installing cotter pins to secure hoist-mounting pin. Replace cotter pin(s) if worn or broken.
- c. Bend cotter pin around mounting pin.
- d. Recheck for plumb and level. Adjust as needed.
- e. If the jib crane requires grout at the base plate, it can be grouted at this time.

**E. Model 501: Wall-Mounted Workstation Jib Crane**

1. Refer to installation manual to locate the dimensions of the specific jib crane to be installed.
2. Verify that the top and bottom bearing assembly is assembled correctly. Lift the crane into position using an overhead crane or other means. Place bottom wall bracket against supporting column in its proper location with a C-clamp or other supporting method. Drill the first lower hole and put the first bolt through. Level the lower bracket and then drill the second lower hole. Put the second bolt through and partially tighten bolts. Do not fully tighten bolts in case shims are needed later.
3. Allow crane to rest on lower bracket while still supporting the rest of the crane.
4. Level the crane vertically. Press downward on top of upper pin to ensure the upper bearing assembly is down as far as possible. Level the upper bracket and drill two bracket

holes into support structure. Install and tighten two upper bolts. Do not fully tighten bolts in case shims are needed later.

5. Attach the hoist, supplied by others, to the hoist trolley. Use washers on hoist mounting pin to center hoist inside hoist trolley. Replace cotter pins if worn or broken.
6. Position the unloaded hoist and trolley at the extreme tip of boom. Install boom on a slight incline to compensate for anticipated deflection.
7. If lower washers (shims) are required to level the boom, leave upper bolts tightened, support crane, and install bottom washers (shims) before retightening bottom bolts. If upper washers (shims) are required to level the boom, leave lower bolts tightened, support crane, and install upper washers (shims). Retighten upper bolts. Be sure all four bolts are properly tightened.
8. Ensure both upper and lower bearing assemblies will pass the first inspection. Test jib by rotating back and forth to ensure there is no unusual rubbing or binding that could compromise the crane, bushings, or pin life. The crane should rotate freely.
9. Connect hoist to its source of power (air or electric).

### 3.3 **FIELD QUALITY CONTROL**

\*Perform field quality control testing as recommended by manufacturer.

#### **A. Inspection**

1. Verify all bolts are tightened to torque values specified in manual and lock washers are fully compressed.
2. Before the unit is placed into service, it is important to review and follow procedures outlined in chapters 11 and 12 of ANSI B30.17 regarding inspection, testing, and maintenance.

#### **B. Field Test**

1. Ensure crane operates properly (movement is smooth and consistent).
2. Verify motorized operation and controls function properly.
3. Make adjustments as needed and correct inadequacies.

#### **C. Acceptance Test**

1. After the system has been installed, OSHA requires an acceptance test before operating and after any modifications. An authorized dealer or installer should perform acceptance tests.

#### **D. Maintenance**

1. To keep a jib crane in good operating order, engineers recommend establishing a schedule of inspection and lubrication. All parts should be inspected, all loose parts adjusted, and worn parts replaced at once.
2. During the first month after a new installation, a weekly inspection 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.
3. After the first month, a complete inspection of all fasteners and connections should be performed monthly. Heavier conditions of use will require more frequent inspections.
4. Operators should conduct a visual inspection of the system before each use.
5. All bearings are pre-lubricated at the factory. Bearings require lubrication based on crane usage. Spanco recommends that the bearings be lubricated at least once a year. Lubrication should be performed with lithium soap-based grease (NLGI No. 1 or No. 2).
6. Recommended lubrication schedule varies based on crane use and application. A crane that operates daily for multiple hours should be lubricated weekly. Operating a crane at "standard duty" requires lubrication once every two weeks. Operating a crane on "standby classification" requires lubrication once every six months. The interval of lubrication depends on the application.

#### **E. Clean Surfaces**

1. Touch up scratches and blemishes with matching paint from manufacturer.
2. Keep surfaces clean and clear of build-up and residue.

**F. Protect Crane**

1. Protect installed products until completion of project.
2. Touch up, repair, or replace damaged products before substantial completion.

**G. Quality Standards**

1. Spanco, Inc. is an ISO 9001:2015 Registered Corporation.
2. Spanco Cranes are manufactured to standards ensuring safety, reliability, and the highest quality.
3. Spanco products are manufactured in the United States of America at facilities located in Morgantown, Pennsylvania, and Las Vegas, Nevada.
4. Spanco certifies that all goods are in full compliance with the Buy American Clause of the American Recovery and Reinvestment Act (ARRA) of May 2009.