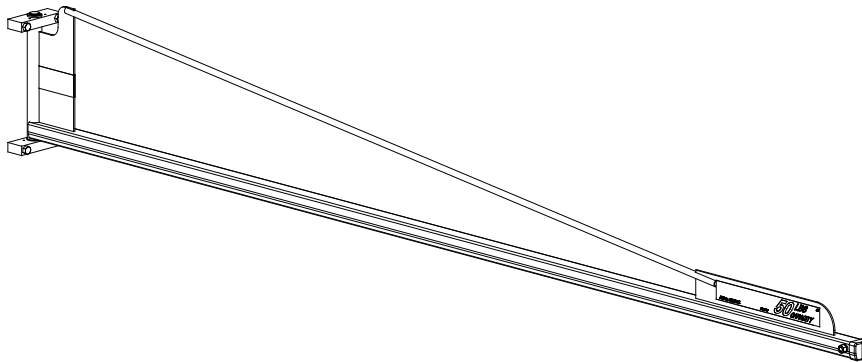
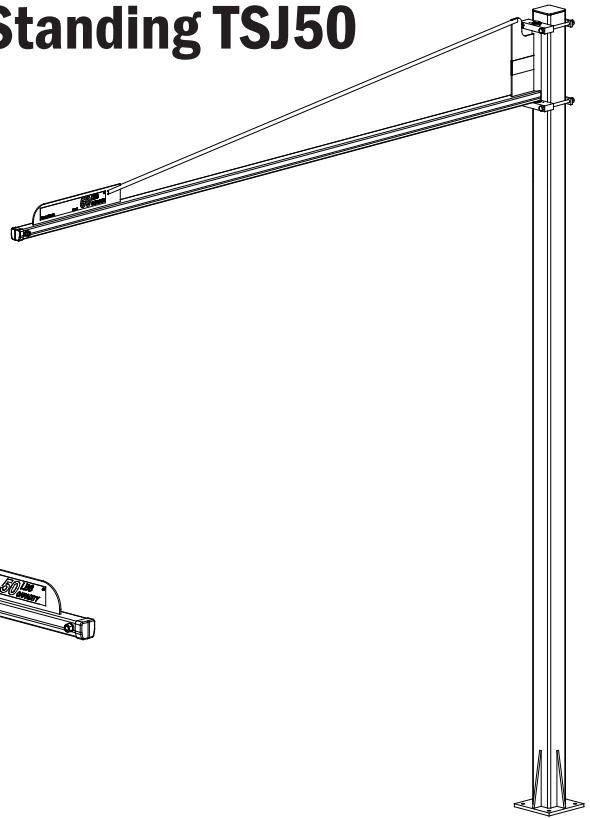


Installation, Operation, & Maintenance Manual

Free Standing TSJ50



Wall Mounted TSJ50

**IMPORTANT!
DO NOT DESTROY**

TSJ50 Tool Solutions Jib

Gorbel® Customer Order No. / Serial No. _____

Gorbel® Dealer _____

Date _____
Month Year

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Questions? Concerns? Comments? Please contact:

Distributed by Tri-State Equipment Company Inc.

Email: sales@tsoverheadcrane.com

Web: www.tsoverheadcrane.com

PH: 314-869-7200 | FAX: 314-869-7226

INTRODUCTION

Thank you for choosing a Gorbel® Tool Solutions Jib to solve your material handling needs. The innovative design and heavy duty construction of a Gorbel® Tool Solutions Jib will provide a superior quality product that will offer years of long term value. A Gorbel® Tool Solutions Jib will provide many years of dependable service by following the installation and maintenance procedures described herein.

Dimensions contained in this installation manual are for reference only and may differ for your particular application. Please refer to the enclosed General Arrangement Drawing for actual dimensions.

Normal safety precautions: These include, but are not limited to:

- Checking for obstructions in jib rotation
- Checking that all bolts are tight and have lock washers
- Making sure that festooning cannot be snagged or pinched

For additional safety precautions see page 8.

WARNING

Only qualified personnel familiar with standard fabrication practices should be employed to assemble these cranes because of the necessity of properly interpreting these instructions. Gorbel is not responsible for the quality of workmanship employed in the installation of a crane according to these instructions. Contact Gorbel, Inc., at 600 Fishers Run, P.O. Box 593, Fishers, New York 14453-0593, 1-800-821-0086, for additional information if necessary.

WARNING

Equipment described herein is not designed for, and should not be used for lifting, supporting or transporting humans. Failure to comply with any one of the limitations noted herein can result in serious bodily injury and/or property damage. Check Federal, State and Local regulations for any additional requirements.

WARNING

Consult a qualified structural engineer to determine if your support structure is adequate to support the loads generated by thrust and pull (wall/column mounted), or anchor bolt force, overturning moment, or axial load (free standing) of your crane.

WARNING

Crane cannot be utilized as a ground: A separate ground wire is required. For example, systems with 3 phase power require 3 conductors plus one ground wire.

WARNING

Reference American Institute of Steel Construction (AISC) Manual of Steel Construction, Specifications and Codes, Specification for Structural Joints using ASTM A325 or A490 Bolts for proper procedures to follow when using any torque tightening method.

WARNING

Do not field modify crane in any way. Any modifications without the written consent of Gorbel, Inc., will void warranty.

INSTALLATION

STEP 1 - PRE-ASSEMBLY

- 1.1 Packing list can be found in plastic pocket inside hardware box: General Arrangement Drawing can be found inserted in this installation manual.
- 1.2 Read entire manual **before** installing the Tool Solutions Jib.
- 1.3 Check packing list to ensure no parts have been lost prior to initiating assembly of jib.
- 1.4 Tools and materials (by others) typically needed to assemble jib:
 - Torque wrench
 - Ladders/man lifts
 - Hand tools
 - Heavy duty drill
 - 3/4" wrench/socket
 - Steel shims
 - Leveling tools (plumb bob, level)
 - TSJ-FS anchor bolts (by others, Grade 5 or better), refer to page 4 for specifications
 - TSJ-WM mounting bolts (by others, Ø 1/2" Grade 5 or better)
 - Grout (Non-Shrink Precision Grout)

WARNING

Consult a qualified structural engineer to determine that your support structure is adequate to support the loads generated by thrust and pull (wall mounted) or anchor bolt force, overturning moment, or axial load (free standing) of your Tool Solutions Jib.

- 1.5 Identify crane type:
Wall/Column Mounted Tool Solutions Jib (diagram 1A): Refer to **chart 1A** to determine thrust and pull, then proceed to **Step 3a**, page 6.

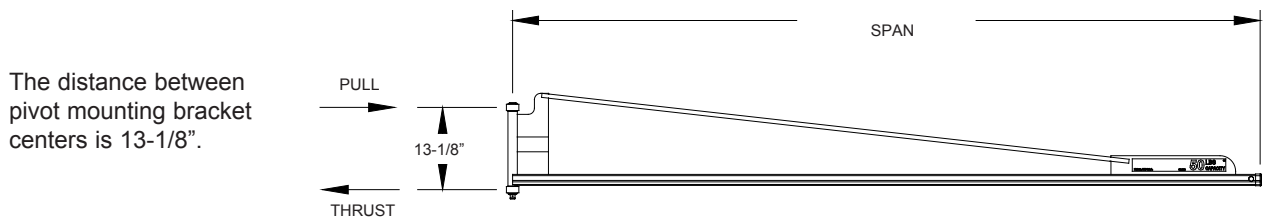


Diagram 1A. Wall/Column Mounted Tool Solutions Jib.

Note: Loads are based on a 15% hoist weight allowance and a 25% impact factor allowance.

Live Load (lbs.)	Span (ft.)	Model Number	Thrust & Pull Per Bolt (lbs)
50#	4	TSJ50-WM-50-4	164
	6	TSJ50-WM-50-6	268
	8	TSJ50-WM-50-8	380
	10	TSJ50-WM-50-10	500

Chart 1A. Chart for determining thrust and pull of Wall Mounted Tool Solutions Jib.

STEP 1 - PRE-ASSEMBLY (CONTINUED)

Free Standing Tool Solutions Jib (*diagram 1B*)

Refer to **chart 1B** to determine anchor bolt load. Refer to **diagram 2B** on page 4 to determine footer width and depth, then proceed to **Step 2**.

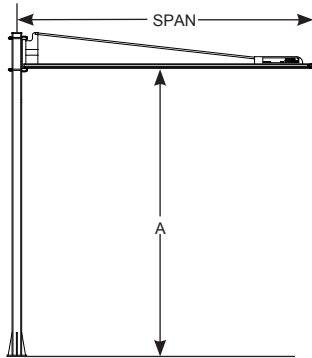


Diagram 1B. Free Standing Tool Solutions Jib.

Capacity	A	Span	Model Number	Anchor Bolt Load
50#	8'	4'	TSJ50-FS-50-10-4	289#
		6'	TSJ50-FS-50-10-6	466#
		8'	TSJ50-FS-50-10-8	656#
		10'	TSJ50-FS-50-10-10	859#
	10'	4'	TSJ50-FS-50-12-4	284#
		6'	TSJ50-FS-50-12-6	461#
		8'	TSJ50-FS-50-12-8	651#
		10'	TSJ50-FS-50-12-10	854#

Chart 1B. Chart for determining anchor bolt load of Free Standing Tool Solutions Jib.

Note: Loads are based on a 15% hoist weight allowance and a 25% impact factory allowance.

WARNING

Consult a qualified structural engineer if you deviate from the recommended dimensions provided in this manual. Gorbel, Inc. is not responsible for any deviation from these foundation recommendations.

STEP 2 - FREE STANDING TOOL SOLUTIONS JIB MAST INSTALLATION

STOP!

Do not proceed if your support structure does not meet the loading requirements determined in **Step 1.5**.

2.1 INSTALLING ANCHOR BOLTS

A) Site Requirements:

- A minimum 6" thick reinforced concrete floor is required (see **diagram 2B**).
- Foundation requirements are based on soil pressure of 2500# per square foot. Concrete pressure recommended for jib crane foundation is 3000# per square inch of compressive force, with no cracks or seams in a 48" square area around center of mast.
- Chemical (epoxy) anchor bolts are recommended because of their ability to withstand the vibrating loads caused by the rapid raising or lowering of the load.
- Anchor bolts (by others) for base plates must:
 - be 1/2" in diameter.
 - be embedded at least 4" into floor, not to exceed 3/4 of floor depth (see **diagram 2A**).
 - have minimum of two threads above nut after installation

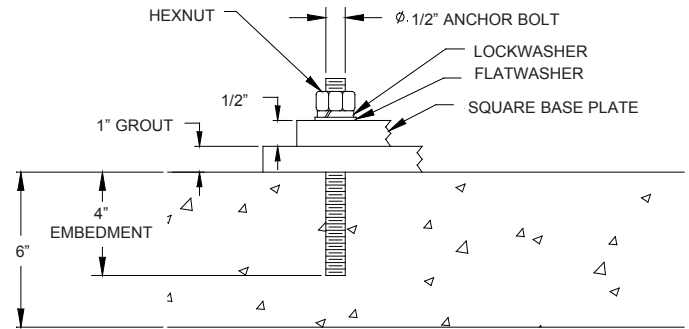


Diagram 2A. Typical square base plate anchor bolt embedment.

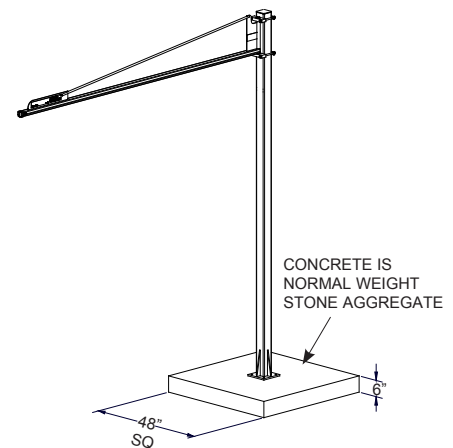


Diagram 2B. Foundation Requirements.

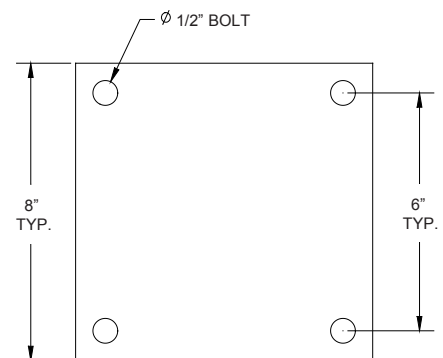


Diagram 2C. Square base plate pattern.

- #### B) Drill holes in concrete floor using pre-drilled holes in base plate or **diagram 2C** as a guide (use drill bit size recommended by anchor bolt manufacturer).
- #### C) Install anchor bolts (Grade 5 or better) and hardware (by others) according to manufacturer's installation directions and requirements.

STEP 2 - FREE STANDING TOOL SOLUTIONS JIB MAST INSTALLATION (CONT.)

2.2 INSTALLING AND PLUMBING MAST

- A) Mast must be plumb to prevent boom from drifting.
- B) Cover entire base plate area with one inch of non-shrink precision grout.
- C) Set mast into place and make sure that the base plate is completely seated in the grout.
- D) Plumb mast using level on two faces (***shown at right***).
- E) Once mast is plumb ***and grout has cured***, fully tighten anchor bolt hardware.
- F) Verify mast is still plumb.

Note: If Gorbels is the supplier of the anchor bolts, tighten to full compression of the lock washer.

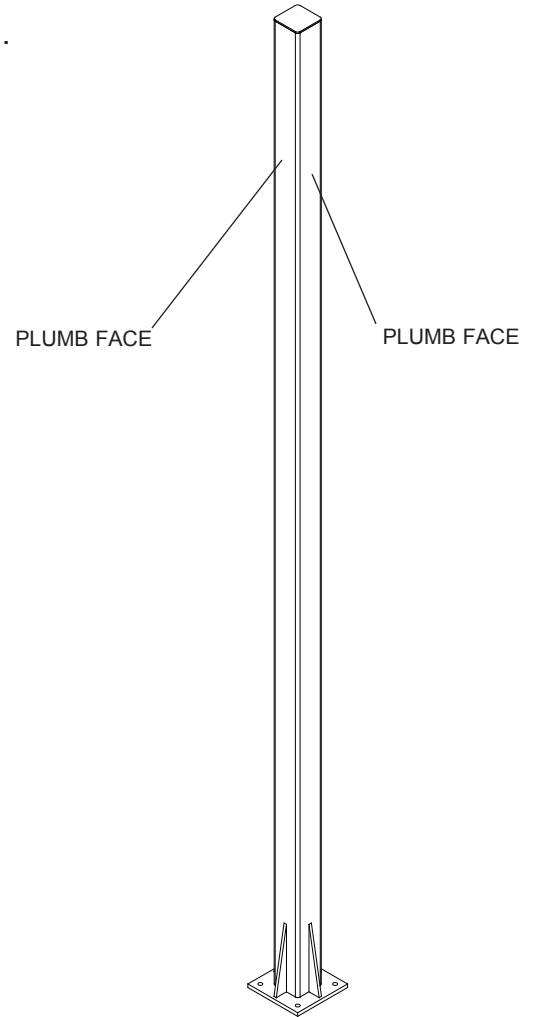


Diagram 2D. Plumbing Mast.

TORQUE CHART	
Bolt Diameter	Torque
1/2"	50 ft.-lb.

Chart 2A. Torque Chart.

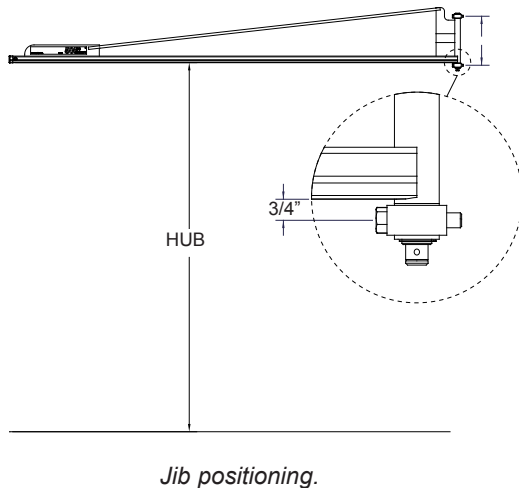
STEP 3a - TOOL SOLUTIONS JIB BOOM INSTALLATION (WALL/COLUMN MOUNTED)

STOP!

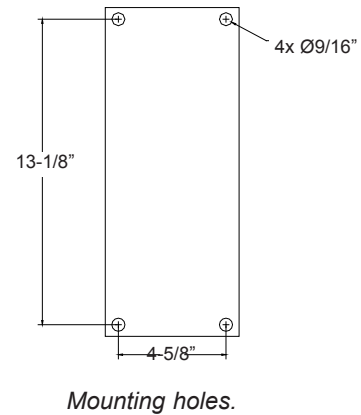
Do not proceed if your support structure does not meet the loading requirements determined in **Step 1.5**.

Step 3a pertains to the wall or column mounted jib only. For freestanding jibs, proceed to Step 3b.

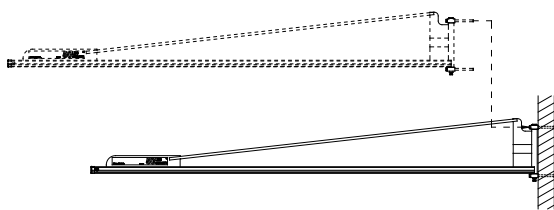
3a.1 Determine position of **upper** and **lower** pivot mounting assemblies on support structure.



3a.2 Drill bolt holes and bolt **lower** pivot mounting assembly to support structure.



3a.3 Lift boom assembly up and bolt lower and upper bearing mounts to support structure using $\text{Ø}1/2$ " bolts Grade 5 or better.



3a.4 Check that pivot shaft of crane is plumb.

3a.5 Once shaft is plumb and bearing mounts are shimmed, tighten all mounting bolts to manufacturer's specification.

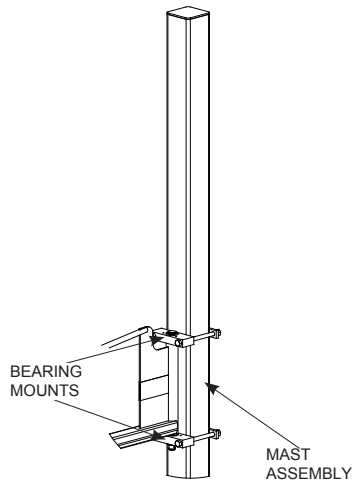
3a.6 Carefully swing boom through entire travel to ensure boom is clear of obstructions and does not drift.

3a.7 Proceed to **Step 4** on page 7.

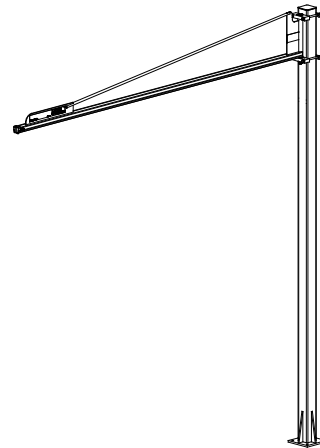
STEP 3b - TOOL SOLUTIONS JIB BOOM INSTALLATION (FREE STANDING)

Step 3b pertains to the freestanding jib only. For wall or column mounted jibs, go back to Step 3a.

- 3b.1** Lift boom assembly up about 4' off the ground and bolt lower and upper bearing mounts to jib mast using $\text{Ø}1/2 \times 7.5$ " bolts and clamp plate.



- 3b.2** Slide boom assembly up along mast weldment for desired vertical position.



- 3b.3** Check that pivot shaft of crane is plumb.
- 3b.4** Once shaft is plumb and bearing mounts are shimmed, tighten all mounting bolts to manufacturer's specification.
- 3b.5** Carefully swing boom through entire travel to ensure boom is clear of obstructions and does not drift.
- 3b.6** Proceed to Step 4.

STEP 4 - FINAL STEPS

- 4.1** Do not throw away this manual: maintenance schedule is on back cover.
- 4.2** Check to make sure all bolts are tight and lock washers are compressed.
- 4.3** If necessary, touch up crane with paint provided.
- 4.4** Keep Packing List, Installation Manual, General Arrangement Drawing, and any other inserts filed together in a safe place.

CRANE OPERATOR INSTRUCTIONS

Overhead cranes and jib cranes generally handle materials over working areas where there are personnel. Therefore, it is important for the crane operator to be instructed in the use of the crane and to understand the severe consequences of careless operation. It is not intended that these suggestions take precedence over existing plant safety rules and regulations or OSHA regulations. However, a thorough study of the following information should provide a better understanding of safe operation and afford a greater margin of safety for people and machinery on the plant floor. It must be recognized that these are suggestions for the crane operator's use. It is the responsibility of the owner to make personnel aware of all federal, state and local rules and codes, and to make certain operators are properly trained.

Qualifications

Crane operation, to be safe and efficient, requires skill: the exercise of extreme care and good judgment, alertness and concentration, and rigid adherence to proven safety rules and practices as outlined in applicable and current ANSI and OSHA safety standards. In general practice, no person should be permitted to operate a crane:

- Who cannot speak the appropriate language or read and understand the printed instructions.
- Who is not of legal age to operate this type of equipment.
- Whose hearing or eyesight is impaired (unless suitably corrected with good depth perception).
- Who may be suffering from heart or other ailments which might interfere with the operator's safe performance.
- Unless the operator has carefully read and studied this operation manual.
- Unless the operator has been properly instructed.
- Unless the operator has demonstrated his instructions through practical operation.
- Unless the operator is familiar with hitching equipment and safe hitching equipment practices.

Inspection

Test the crane movement and any attachments on the crane at the beginning of each shift. Whenever the operator finds anything wrong or apparently wrong, the problem should be reported immediately to the proper supervisor and appropriate corrective action taken.

Operating Suggestions

One measure of a good crane operator is the smoothness of the crane operation. The good crane operator should know and follow these proven suggestions for safe, efficient crane handling.

1. In case of emergency or during inspection, repairing, cleaning or lubrication, a warning sign or signal should be displayed and the main switch should be locked in the "off" position. This should be done whether the work is being done by the crane operator or by others.
2. Contact with rotation stops or trolley end stops shall be made with extreme caution. The operator should do so with particular care for the safety of persons below the crane, and only after making certain that any persons on the other cranes are aware of what is being done.
3. ANY SAFETY FEATURES AND MECHANISMS BUILT-IN OR OTHERWISE PROVIDED WITH THE CRANE BY GORBEL ARE REQUIRED FOR THE SAFE OPERATION OF THE CRANE. DO NOT, UNDER ANY CIRCUMSTANCES, REMOVE OR OTHERWISE IMPAIR OR DISABLE THE PROPER FUNCTIONING OF ANY CRANE SAFETY MECHANISMS OR FEATURES BUILT-IN OR OTHERWISE PROVIDED BY GORBEL FOR SAFE OPERATION OF THE CRANE. ANY REMOVAL, IMPAIRMENT OR DISABLING OF ANY SUCH SAFETY MECHANISMS OR FEATURES OR OTHER USE OR OPERATION OF THE CRANE WITHOUT THE COMPLETE AND PROPER FUNCTIONING OF ANY SUCH SAFETY MECHANISMS OR FEATURES AUTOMATICALLY AND IMMEDIATELY VOIDS ANY AND ALL EXPRESS AND IMPLIED WARRANTIES OF ANY KIND OR NATURE.

General

There is no one single factor that is more important for minimizing the possibility of personal injury to the operator and those working in the area, or damage to property, equipment, or material than being familiar with the equipment and using Safe Operating Practices.

Jibs are designed for lifting and transporting of material only. Under no circumstances, either during initial installation or in any other use, should the jib be used for lifting or transporting personnel.

No operator should be permitted to use the equipment that is not familiar with its operation, is not physically or mentally fit, or has not been schooled in safe operating practices. The misuse of jibs can lead to certain hazards which cannot be protected against by mechanical means; hazards which can only be avoided by the exercise of intelligence, care, and common sense.

Safe Operating Practices also involve a program of periodic inspection and preventative maintenance (covered in a separate section). Part of the operator's training should be an awareness of potential malfunctions/hazards requiring adjustments or repairs, and bringing these to the attention of supervision for corrective action.

Supervision and management also have an important role to play in any safety program by ensuring that a maintenance schedule is adhered to, and that the equipment provided for the operators is suitable for the job intended without violation of one or more of the rules covering safe operating practices and good common sense.

The Safe Operating Practices shown are taken in part from the following publications:

- American National Standard Institute (ANSI)
- Safety Standards for Cranes, Derricks, Hoists
- ANSI B30.2 - Overhead and Gantry Cranes
- ANSI B30.16 - Overhead Hoists

LIMITED WARRANTY

It is agreed that the equipment purchased hereunder is subject to the following LIMITED warranty and no other. Gorbel Incorporated ("Gorbel") warrants the manual push-pull Work Station Cranes, Jib Crane, and Gantry Crane products to be free from defects in material or workmanship for a period of ten years or 20,000 hours use from date of shipment. Gorbel warrants the Motorized Work Station Cranes and Jib Crane products to be free from defects in material or workmanship for a period of two years or 4,000 hours use from the date of shipment. Gorbel warrants the G-Force® and Easy Arm™ products to be free from defects in material or workmanship for a period of one year or 2,000 hours use from the date of shipment. This warranty does not cover Gantry Crane wheels. This warranty shall not cover failure or defective operation caused by operation in excess of recommended capacities, misuses, negligence or accident, and alteration or repair not authorized by Gorbel. No system shall be field modified after manufacture without the written authorization of Gorbel, Inc. Any field modification made to the system without the written authorization of Gorbel, Inc. shall void Gorbel's warranty obligation. OTHER THAN AS SET FORTH HEREIN, NO OTHER EXPRESS WARRANTIES, AND NO IMPLIED WARRANTIES, ORAL OR WRITTEN, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE MADE BY GORBEL WITH RESPECT TO ITS PRODUCTS AND ALL SUCH WARRANTIES ARE HEREBY SPECIFICALLY DISCLAIMED. GORBEL 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. Gorbel's obligation and Purchaser's or end user's sole remedy under this warranty is limited to the replacement or repair of Gorbel's products at the factory, or at the discretion of Gorbel, at a location designated by Gorbel. Purchaser or end user shall be solely responsible for all freight and transportation costs incurred in connection with any warranty work provided by Gorbel hereunder. Gorbel 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 furnished hereunder. Components and accessories not manufactured by Gorbel are not included in this warranty. Purchaser's or end user's remedy for components and accessories not manufactured by Gorbel is limited to and determined by the terms and conditions of the warranty provided by the respective manufacturers of such components and accessories.

A) DISCLAIMER OF IMPLIED WARRANTY OF MERCHANTABILITY

Gorbel and Purchaser agree that the implied warranty of merchantability is excluded from this transaction and shall not apply to the goods involved in this transaction.

B) DISCLAIMER OF IMPLIED WARRANTY OF FITNESS FOR PARTICULAR PURPOSE

Gorbel and Purchaser agree that the implied warranty of fitness for particular purpose is excluded from this transaction and shall not apply to the goods involved in this transaction.

C) DISCLAIMER OF EXPRESS WARRANTY

Gorbel's agents, or dealer's agents, or distributor's agents may have made oral statements about the machinery and equipment described in this transaction. Such statements do not constitute warranties, and Purchaser agrees not to rely on such statements. Purchaser also agrees that such statements are not part of this transaction.

D) DISCLAIMER OF SPECIAL, INCIDENTAL AND CONSEQUENTIAL DAMAGES

Gorbel and Purchaser agree that any claim made by Purchaser which is inconsistent with Gorbel's obligations and the warranty remedies provided with Gorbel's products, and in particular, special, incidental and consequential damages, are expressly excluded.

E) DEALER OR DISTRIBUTOR NOT AN AGENT

Gorbel and Purchaser agree that Purchaser has been put on notice that dealer or distributor is not Gorbel's agent in any respect for any reason. Gorbel and Purchaser also agree that Purchaser has been put on notice that dealer or distributor is not authorized to incur any obligations or to make any representations or warranties on Gorbel's behalf other than those specifically set forth in Gorbel's warranty provided in connection with its product.

F) MERGER

This warranty agreement constitutes a final and complete written expression of all the terms and conditions of this warranty and is a complete and exclusive statement of those terms.

G) PAINTING

Every crane (excluding components) receives a quality paint job before leaving the factory. Unfortunately, no paint will protect against the abuses received during the transportation process via common carrier. We have included at least one (1) twelve ounce spray can for touchup with each crane ordered (unless special paint was specified). If additional paint is required, contact a Gorbel® Customer Service Representative at 1-800-821-0086 or 1-585-924-6262.

Title and Ownership:

Title to the machinery and equipment described in the foregoing proposal shall remain with Gorbel and shall not pass to the Purchaser until the full amount hereof agreed to be paid has been fully paid in cash.

Claims and Damages:

Unless expressly stated in writing, goods and equipment shall be at Purchaser's risk on and after Seller's delivery in good shipping order to the Carrier. Gorbel shall in no event be held responsible for materials furnished or work performed by any person other than it or its authorized representative or agent.

Cancellations:

If it becomes necessary for the purchaser to cancel this order wholly or in part, he shall at once so advise Gorbel in writing. Upon receipt of such written notice all work will stop immediately. If the order entails only stock items, a flat restocking charge of 15% of the purchase price will become due and payable by Purchaser to Gorbel. Items purchased specifically for the canceled order shall be charged for in accordance with the cancellation charges of our supplier plus 15% for handling in our factory. The cost of material and/or labor expended in general fabrication for the order shall be charged for on the basis of total costs to Gorbel up to the time of cancellation plus 15%.

Returns:

No equipment, materials or parts may be returned to Gorbel without express permission in writing to do so.

Extra Charge Delay: If Purchaser delays or interrupts progress of Seller's performance, or causes changes to be made, Purchaser agrees to reimburse Gorbel for expense, if any, incident to such delay.

Changes and Alterations:

Gorbel reserves the right to make changes in the details of construction of the equipment, as in its judgment, will be in the interest of the Purchaser; will make any changes in or additions to the equipment which may be agreed upon in writing by the Purchaser; and Gorbel is not obligated to make such changes in products previously sold any customer.

Third Party Action:

Should Gorbel have to resort to third party action to collect any amount due after thirty (30) days from date of invoice, the Purchaser agrees to pay collection costs, reasonable attorney's fees, court costs and legal interest.

OSHA Responsibilities:

Gorbel agrees to fully cooperate with Purchaser in the design, manufacture or procurement of safety features or devices that comply with OSHA regulations. In the event additional equipment or labor shall be furnished by Gorbel, it will be at prices and standard rates then in effect, or as may be mutually agreed upon at the time of the additional installation.

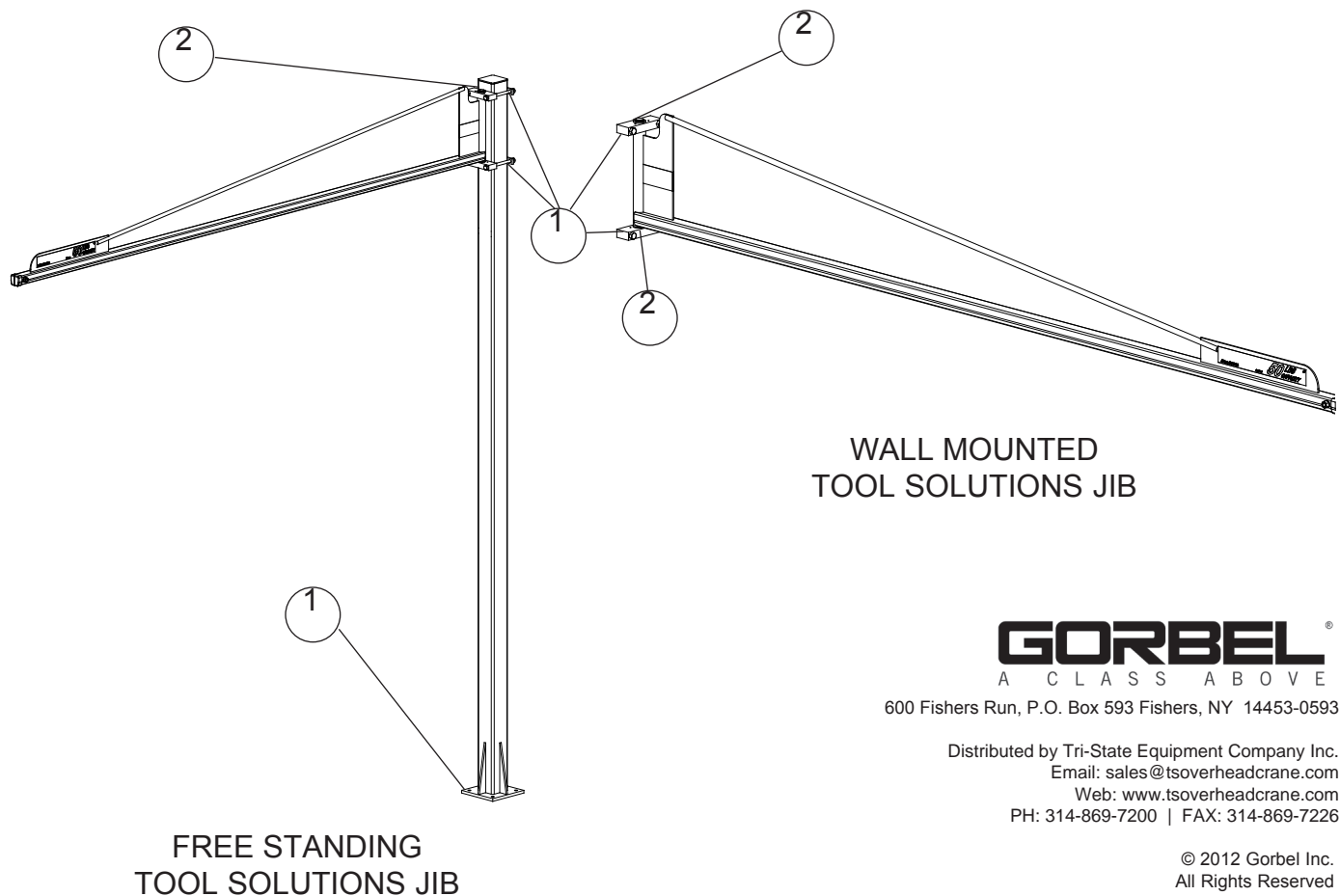
Equal Employment Opportunity:

Gorbel agrees to take affirmative action to ensure equal employment opportunity for all job applicants and employees without regard to race, color, age, religion, sex, national origin, handicap, veteran, or marital status. Gorbel agrees to maintain non-segregated work facilities and comply with rules and regulations of the Secretary of Labor or as otherwise provided by law or Executive Order.

INSPECTION AND MAINTENANCE SCHEDULE

GORBEL® TOOL SOLUTIONS JIB INSPECTION AND MAINTENANCE SCHEDULE			
ITEM	COMPONENT	MAINTENANCE	FREQUENCY*
1	Mounting Bolts and Anchor Bolts	Check that lock washers are compressed and nuts tightened to manufacturer's specifications.	Every 500 hours or 3 months
2	Pivot Pins	Check that retaining rings are properly installed so that boom cannot dislodge.	Every 2000 hours or yearly
3	Accessory Items	Conduct a general inspection of all accessory items.	Every 1000 hours or 6 months
4	Gorbel® Crane	Conduct a visual inspection of the crane overall.	Every 1000 hours or 6 months

*Federal, state and local codes may require inspection and maintenance checks more often. Please check the federal, state and local code manuals in your area.



GORBEL®
A CLASS ABOVE

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