INSTALLATION, OPERATION, & MAINTENANCE MANUAL

Motorized Wall Bracket Jib Crane

Gorbel® Customer Order No. / Serial No. ____________________

Gorbel® Dealer ____________________

Date ____________________
  Month          Year
# TABLE OF CONTENTS

Introduction ........................................................................................................... 1

Instructions

Step 1 - Pre-assembly ............................................................................................. 2-4
Step 2 - Drive Installation ........................................................................................... 5
   Clutch ........................................................................................................... 6
Step 3 - Boom Installation ....................................................................................... 7-8
Step 4 - Electrification Installation .............................................................................. 9
Step 5 - Endstop/Tagline Installation ....................................................................... 10
Step 6 - ACM ....................................................................................................... 11-12
Step 7 - Limit Switch ........................................................................................... 12-13
Step 8 - Accessories ................................................................................................ 13
Step 9 - Final Steps .................................................................................................. 13

Shut Down Instructions ................................................................................... 14

Safety Warnings and Precautions .................................................................... 14

Trouble Shooting ................................................................................................. 15

Crane Operator Instructions ............................................................................ 16

General Suggestions ........................................................................................... 16

Limited Warranty ................................................................................................. 17

Maintenance Schedule ........................................................................................ 18

Lubrications Schedule ........................................................................................ 18

Spare Parts List ................................................................................................... Refer to Packing List or Consult Customer Service

Questions? Concerns? Comments? Please call (800) 821-0086 (U.S. and Canada) or (585) 924-6262 (Outside U.S.)
INTRODUCTION

Thank you for choosing a Gorbel® Motorized Wall Bracket jib crane to solve your material handling needs. The innovative design and heavy-duty construction of a Gorbel® motorized jib crane will provide a superior quality product that will offer years of long term value. All Gorbel® cranes are pre-engineered for powered hoist operation. The hoist weight allowance is 15% of the crane capacity (for example, a crane rated for 1000 pounds allows for a 1000-pound live load plus 150 pounds for the weight of the hoist). There is also an allowance of 25% of the crane capacity for impact caused by hoist use. Gorbel® motorized jib cranes 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.

Normal safety precautions: These include, but are not limited to:
• Checking for obstructions in crane rotation
• Checking that all bolts are tight and have lockwashers
• Making sure that endstops are in place
• Making sure that festooning cannot be snagged or pinched

For additional safety precautions see page 16.

WARNING
Only competent erection 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 any 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 State and Local regulations for additional requirements.

WARNING
Consult a qualified structural engineer to determine if your support structure is adequate to support the thrust and pull forces 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 (9th edition), Part 5, Specification for Structural Joints using ASTM A325 or A490 Bolts (section 8.d.2) 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 Read entire manual before beginning installation of crane.

1.2 Check packing list to ensure no parts have been lost prior to initializing assembly of crane.

1.3 Tools and materials (by others) often needed to assemble crane are as follows:
   - Torque wrench
   - Steel shims
   - Leveling tools and plumb bob
   - Mounting hardware (by others, grade 5 bolts or better)
   - Hand tools
   - Ladders / Man Lifts
   - Lifting device to lift heavy booms

1.4 Determine:
   - Thrust and pull (diagram 1A below, chart 1A on page 3, and the General Arrangement drawing)

   WARNING
   Consult a qualified structural engineer to determine if your support structure is adequate to support the loads generated by the thrust and pull of your crane.

   - Bracket centers (chart 1A, page 3).
   - Bolt pattern and dimensions for fittings (diagrams 1B and 1C and chart 1B, page 4).
   - Bolt pattern for mounting plates (Mounting Detail drawing).

Diagram 1A. Thrust and pull definition.
### Chart 1A.

#### STEP 1 - PRE-ASSEMBLY (CONTINUED)

<table>
<thead>
<tr>
<th>Capacity (tons)</th>
<th>Span</th>
<th>Bracket Type</th>
<th>Bracket Centers</th>
<th>D</th>
<th>Beam Depth</th>
<th>C = Cap Channel Length</th>
<th>Tie Rod Diameter &amp; Thread</th>
<th>Tie Rod Length</th>
<th>S/W - Beam Length</th>
<th>Thrust &amp; Pull (lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8'</td>
<td>1/2</td>
<td>WB-G1</td>
<td>7' - 0&quot;</td>
<td>2' - 3&quot;</td>
<td>W8c8</td>
<td>18' - 3&quot;</td>
<td>1&quot; - 8UNC</td>
<td>5' - 10 1/4&quot;</td>
<td>7' - 7 3/8&quot;</td>
<td>3709</td>
</tr>
<tr>
<td>10'</td>
<td></td>
<td></td>
<td></td>
<td>2' - 6&quot;</td>
<td>W8c8</td>
<td>20' - 6&quot;</td>
<td></td>
<td>7' - 7 1/4&quot;</td>
<td>9' - 7 3/8&quot;</td>
<td>4408</td>
</tr>
<tr>
<td>12'</td>
<td></td>
<td></td>
<td></td>
<td>2' - 8&quot;</td>
<td>W8c8</td>
<td>23' - 6&quot;</td>
<td></td>
<td>9' - 6&quot;</td>
<td>11' - 7 3/8&quot;</td>
<td>4521</td>
</tr>
<tr>
<td>14'</td>
<td></td>
<td></td>
<td></td>
<td>2' - 9&quot;</td>
<td>W8c8</td>
<td>26' - 0&quot;</td>
<td></td>
<td>11' - 4 3/4&quot;</td>
<td>13' - 7 3/8&quot;</td>
<td>4522</td>
</tr>
<tr>
<td>16'</td>
<td></td>
<td></td>
<td></td>
<td>2' - 10&quot;</td>
<td>W8c8</td>
<td>29' - 6&quot;</td>
<td></td>
<td>13' - 7 1/2&quot;</td>
<td>15' - 7 3/8&quot;</td>
<td>4344</td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
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<td>W8c8</td>
<td>32' - 6&quot;</td>
<td></td>
<td>15' - 8&quot;</td>
<td>17' - 7 3/8&quot;</td>
<td>4750</td>
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<tr>
<td>20'</td>
<td></td>
<td></td>
<td></td>
<td>2' - 13&quot;</td>
<td>W8c8</td>
<td>35' - 6&quot;</td>
<td></td>
<td>17' - 5 1/2&quot;</td>
<td>19' - 7 3/8&quot;</td>
<td>4989</td>
</tr>
<tr>
<td>22'</td>
<td></td>
<td></td>
<td></td>
<td>2' - 14&quot;</td>
<td>W8c8</td>
<td>38' - 0&quot;</td>
<td></td>
<td>19' - 6 1/4&quot;</td>
<td>21' - 7 3/8&quot;</td>
<td>5220</td>
</tr>
<tr>
<td>24'</td>
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<td></td>
<td></td>
<td>2' - 16&quot;</td>
<td>W8c8</td>
<td>41' - 6&quot;</td>
<td></td>
<td>21' - 4&quot;</td>
<td>23' - 7 3/8&quot;</td>
<td>5429</td>
</tr>
<tr>
<td>26'</td>
<td></td>
<td></td>
<td></td>
<td>2' - 18&quot;</td>
<td>W8c8</td>
<td>44' - 0&quot;</td>
<td></td>
<td>23' - 4 1/2&quot;</td>
<td>25' - 7 3/8&quot;</td>
<td>5932</td>
</tr>
<tr>
<td>28'</td>
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<td></td>
<td></td>
<td>2' - 20&quot;</td>
<td>W8c8</td>
<td>47' - 6&quot;</td>
<td></td>
<td>25' - 1 1/4&quot;</td>
<td>27' - 7 3/8&quot;</td>
<td>5796</td>
</tr>
<tr>
<td>30'</td>
<td></td>
<td></td>
<td></td>
<td>2' - 22&quot;</td>
<td>W8c8</td>
<td>50' - 0&quot;</td>
<td></td>
<td>26' - 10&quot;</td>
<td>29' - 7 3/8&quot;</td>
<td>5988</td>
</tr>
</tbody>
</table>

**Note:** The table continues with similar entries for capacities 1 and 2, and so on, with corresponding measurements and calculations for each column. The table is designed to provide detailed specifications for pre-assembly in a pre-set format. Each entry includes measured dimensions and calculated values for specific parts of the assembly process. The entries are organized in a structured format to facilitate easy reference and completion of the pre-assembly tasks.
STEP 1 - PRE-ASSEMBLY (CONTINUED)

C = Cap Channel Length

TC (trolley coverage (distance between endstops))

\[ TC = \text{Span} - (E + 2\ 1/2") \]

Diagram 1B.

<table>
<thead>
<tr>
<th></th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>J (Hole Dia.)</th>
<th>J (Bolt Dia.)</th>
<th>K (Hole Dia.)</th>
<th>K (Bolt Dia.)</th>
<th>BT (Brkt. Thk.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WB-G1</td>
<td>14 1/8&quot;</td>
<td>4 1/4&quot;</td>
<td>3 1/2&quot;</td>
<td>11/16&quot;</td>
<td>5/8&quot;</td>
<td>9/16&quot;</td>
<td>1/2&quot;</td>
<td>1/2&quot;</td>
</tr>
<tr>
<td>WB-G5</td>
<td>15 3/8&quot;</td>
<td>6 3/4&quot;</td>
<td>7&quot;</td>
<td>1 5/16&quot;</td>
<td>1 1/4&quot;</td>
<td>13/16&quot;</td>
<td>3/4&quot;</td>
<td>1&quot;</td>
</tr>
</tbody>
</table>

Chart 1B.

Diagram 1C.
2.1 Drive assembly is bolted to main mounting plate and shipped together by Gorbel. Spacer plates (where required) are shipped loose. Refer to Steps 3.1 and 3.2.

2.2 The clutch is pre-tightened by Gorbel. If any additional clutch adjustment is required, refer to the friction clutch instructions on page 6. *If the clutch is not tightened properly, the lever arm may slip and the crane may not rotate properly.*

2.3 Located the desired drive mounting location on support structure. Ensure that mounting surface of support structure is plumb between area of where upper and lower pivot assemblies will be mounted. Level drive mounting plate and locate and drill holes.

2.4 Bolt drive plate to support structure ([diagram 2A](#)). Hardware by others (should be grade 5 or better).

2.5 Torque bolts (refer to [chart 3A](#), page 7, for proper torque rating).

Diagram 2A.

_TIP:_ Use caution to support the drive components during assembly and adjustment.
STEP 2 - DRIVE INSTALLATION (CLUTCH)

**TIP:** The friction clutch is shipped **pretightened** by Gorbel. If the clutch begins to slip during initial use, **within the rated capacity of the crane**, allow the clutch to slip several times then retighten the clutch per the instructions below. The purpose for allowing the clutch to slip several times is to establish a uniform surface on the friction linings.

**FRICION CLUTCH**
During normal operation, adjustment to compensate for friction lining wear may be necessary. The frequency of these adjustments will be dependent on the frequency of overloads occurring.

The clutch torque adjustment method is dependent on the clutch type which is determined by whether the crane is used indoors (without a wind load) or outdoors (with a wind load).

**CLUTCH TORQUE ADJUSTMENT - CRANES USED INDOORS**
Loosen the locking screw on the adjusting nut. Using the hook wrench provided, turn the adjusting nut counterclockwise until the drive sprocket can turn freely in the clutch. The clutch can now be retightened to the proper torque setting. Turn the adjusting nut clockwise until it is hand tight. Using the hook wrench provided, tighten the adjusting nut an additional two full revolutions. After the adjustment is made, tighten the locking screw to ensure that the adjusting nut doesn’t loosen. The proper torque setting is achieved when the drive sprocket will not slip under normal operating conditions (**diagram 2C**).

![Diagram 2C. Indoor Clutch Torque Adjustment.](image)

**CLUTCH TORQUE ADJUSTMENT - CRANES USED OUTDOORS**
Back off the disc spring set screws. Turn the adjusting nut clockwise until the disc spring stacks touch the control element. Retighten all disc spring set screws until they are flush with the adjusting nut. The proper torque setting is achieved when the drive sprocket will not slip under normal operating conditions (**diagram 2D**).

![Diagram 2D. Outdoor Clutch Torque Adjustment.](image)
STEP 3 - BOOM INSTALLATION

TIP: Upper and lower formed channels are identical.

Do not proceed if your support structure does not meet the loading requirements identified in Step 1.4.

3.1 Determine position of upper formed channel bracket on support structure. Drill bolt holes (see General Arrangement Drawing) and bolt to support structure. Install appropriate spacer plate if required.

3.2 Determine position of lower formed channel on drive mounting plate by measuring distance between bracket centers (chart 1A, page 3); clamp bracket (and spacer plate if required) to drive mounting plate. Align brackets with center of reducer shaft (diagram 2A, page 5). Plumb bob should be centered on pivot holes (diagram 3A). Shim (by others) as required.

3.3 Bolt lower bracket and spacer to drive mounting plate. Tighten all mounting bolts (by others; bolts should be grade 5 or better) to manufacturer’s specifications.

3.4 Bolt lower pivot assembly to I-beam web (diagram 3B) using hardware provided. Torque nuts (chart 3A).

3.5 Bolt end of beam bracket to I-beam flange (diagram 3C) using hardware provided. Torque nuts (chart 3A). Bolt formed clevis to end of beam bracket. Tighten nylock nut, but do not torque. Be sure formed clevis pivots freely.

Note: Tie rod is right hand thread at each end.

3.6 Bolt tie rod end of beam formed clevis (diagram 3C) using hardware provided. Torque nuts (chart 3A).

3.7 Bolt formed clevis to opposite end of tie rod (diagram 3D) using hardware provided. Torque nuts (chart 3A). Bolt formed clevis to upper pivot assembly. Tighten nylock nut, but do not torque. Be sure formed clevis pivots freely. For 2, 3, and 5 ton bracket types, install retaining pin and cotter pins (diagrams 3D and 3E).

WARNING

Be sure that the ends of the cotter pins are bent as shown in diagram 3E. If cotter pin is cracked or fatigued it must be replaced.
STEP 3 - BOOM INSTALLATION (CONTINUED)

TIP: Be sure bronze thrust washers are in place when attaching upper and lower pivots to upper and lower formed channels.

3.8 Lift boom assembly into place. Position rotation block into center of opening in lever arm. Support boom assembly at all times until Step 3.11 is complete.

3.9 Attach lower pivot assembly to lower formed channel using hardware provided (diagram 3F). Be sure that the thrust washer is in position. Tighten nut on pivot bolt until lockwasher is compressed.

3.10 Attach upper pivot assembly to upper formed channel using hardware provided (diagram 3G). Be sure that the thrust washer is in position. Tighten nut on pivot bolt until lockwasher is compressed.

WARNING
Confirm both upper and lower wall channel pivot bolts have not been overtightened causing binding or pinching of the pivots.

3.11 Level boom to a point of L/900 of span above level (for example, the end of the boom on a 10 ft. span would be .133" higher than the pivot end). Level by reducing distance between clevis assemblies along tie rod. Once boom is level, be sure to tighten nuts on tie rod to the proper torque (refer to chart 3A, page 7, for proper torque rating).

3.12 Carefully swing boom through entire travel to ensure boom is clear of obstructions, rotates freely, and does not drift.

If boom does not rotate freely, slightly loosen the nuts on the pivot bolts until it does.

If boom drifts, check to make sure boom is properly leveled, pivots are plumb, and that the support structure is adequate.

Diagram 3G. Attaching upper pivot assembly to upper formed channel.

Diagram 3H. Attaching wall bracket jib to formed channels.

Diagram 3F. Attaching lower pivot assembly to lower formed channel.
STEP 4 - ELECTRIFICATION INSTALLATION

**WARNING**

Only qualified personnel that are familiar with following local electrical codes and procedures are permitted to install these motorized cranes. Gorbel is not responsible for the quality of workmanship employed in the installation of motorized crane assemblies.

4.1 When ordered with a motorized crane, an electrical control enclosure will be included (shipped loose).

4.2 Enclosure to be mounted on a rigid structure away from all moving components including hoist / hook. Typically it will be mounted on same wall / structure that crane is located on. This allows for easy access and also the option to wire pendant directly from enclosure.

4.3 Level enclosure and mount to structure (hardware by others). For hole pattern, reference detail **C-C** on *General Arrangement Drawing*.

4.4 If not already connected, wire limit switches into junction box on motor (refer to Step 7).

4.5 Connect power cable from motor to opening on top of enclosure. Interconnection and terminations by others.

4.6 Customer responsible to provide incoming power to match required voltage of motor.

4.7 Reference drawings **E** and **E-1** for pendant and enclosure schematics.

![Diagram 4A.](image-url)
**STEP 5 - ENDSTOP/TAGLINE INSTALLATION**

**WARNING**
Either endstops or tagline assembly must be installed. (Tagline brackets double as endstops.)

5.1 Endstop
A) Bolt endstop to end of boom closest to pivot (diagram 5A).

B) Roll hoist trolley (by others) into place.

C) Immediately bolt remaining endstops into place at front of boom (diagram 5A).

D) Torque nuts (refer to chart 3A, page 7, for proper torque rating).

5.2 Tagline Assembly
A) Bolt tagline bracket and endstop angle to end of boom closest to pivot (diagram 5B).

B) Roll hoist trolley (by others) into place.

C) Immediately bolt remaining tagline bracket and endstop into place at front of boom (diagram 5B). Torque nuts (refer to chart 3A, page 7, for proper torque rating).

D) Bolt eyebolts to tagline brackets. Be sure the eyes of the eyebolts are oriented toward each other.

E) Run wire rope between eyebolts and clamp to form a loop at each end.

F) Tighten eyebolts so wire rope is taught.

G) Add “S” hooks to wire rope and squeeze closed the top of the “S” hook.

H) Space “S” hooks evenly along wire rope and place round power cable/air hose through bottom loop of the “S” hooks.

I) Squeeze bottom of “S” hooks to grip cable or hose, or tape into place.
STEP 6 - ACM

JIB DRIVE CONTROLLER
The drive controller for the jib drive is pre-programmed at Gorbel for single speed, two speed, or three speed operation. For trouble shooting and general information, a brief summary of how the drive controller is designed to be used is included below. No additional programming is required. All options utilize an adjustable speed controller.

<table>
<thead>
<tr>
<th>Parameter #</th>
<th>Name - SCL/SLM Drive</th>
<th>Name - SCF Drive</th>
<th>New Value - (Setting)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Line Voltage</td>
<td>Line Voltage</td>
<td>High or Low (see manual) - (01)</td>
</tr>
<tr>
<td>4</td>
<td>Stop Method</td>
<td>Stop Method</td>
<td>Ramp to Stop - (03)</td>
</tr>
<tr>
<td>5</td>
<td>Standard Speed Source</td>
<td>Standard Speed Source</td>
<td>Preset Speed - (02)</td>
</tr>
<tr>
<td>10</td>
<td>TB-13A Function Select</td>
<td>TB-13A Function Select</td>
<td>Run Reverse - (06)</td>
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<tr>
<td>11</td>
<td>TB-13B Function Select</td>
<td>TB-13B Function Select</td>
<td>Preset Speed - (04)</td>
</tr>
<tr>
<td>12</td>
<td>TB-13C Function Select</td>
<td>TB-13C Function Select</td>
<td>Preset Speed - (04)</td>
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<tr>
<td>17</td>
<td>Rotation</td>
<td>Rotation</td>
<td>Forward and Reverse - (02)</td>
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<tr>
<td>19</td>
<td>Acceleration</td>
<td>Acceleration</td>
<td>4 Seconds</td>
</tr>
<tr>
<td>20</td>
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<td>31</td>
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<td>Preset Speed 2</td>
<td>Preset Speed 2</td>
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<td>36</td>
<td>Preset Speed 3</td>
<td>Preset Speed 3</td>
<td>As Required (0-60 Hz)</td>
</tr>
</tbody>
</table>

TIP: The two or three speed options listed above consist of two or three pre-set speeds, they are not infinitely variable during use.

DRIVE CONTROLLER PROGRAMMING
Gorbel pre-programs a number of parameters in the drive controller prior to shipment. The remaining parameters are left at the factory default settings. All parameters are stored on the EPM module. These parameters are as follows:

WARNING
The drive controller drive must only see its own internal voltage and not be connected to an external voltage source. Allowing 24 or 120 control voltage to go through the drive will PERMANENTLY DAMAGE the internal controls!

SINGLE SPEED OPTION
This option utilizes the drive ratio of the reducer and the ratio of the drive to lever arm to produce the standard jib rotation speed. These ratios are determined by the crane parameters (span, capacity, indoor, outdoor, etc.) The drive controller is then programmed for the motor to operate at normal speed (60 Hz).

TWO SPEED OPTION
This option varies the motor speed to determine the desired jib drive speeds. The motor controller is then programmed for the motor to operate at two different percentages of full speed based on the desired speeds specified by the customer at the time the order is placed.

THREE SPEED OPTION
This option is similar to the two speed option listed above. The motor controller is programmed for the motor to operate at three different percentages of full speed based on the desired speeds specified by the customer at the time the order is placed.
STEP 6 - ACM (CONTINUED)

Preset speeds 2 & 3 are used only if required for two or three speed drives.

Parameter 50 contains the fault history of the last eight (8) faults with the most recent first. Pressing the "Mode" button three times will access this parameter.

**Deceleration time:** The deceleration time is factory set at 4 seconds. This can be adjusted to a shorter time period with the following warning. If the deceleration time is set to too short a time period, the drive controller will shut down and show an alarm. This is the result of the jib crane having too much inertia for the reducer and motor to stop in such a short time. If this occurs, increase the deceleration time.

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**WARNING**

Do not remove or install the EPM module while power is applied to the drive controller. After removing power from the drive controller, wait three (3) minutes before removing the EPM module for the capacitors to discharge.

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STEP 7 - LIMIT SWITCH INSTALLATION

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**WARNING**

Be sure that the power is disconnected prior to working on the limit switch.

The limit switches are designed to shut off the power to the rotation drive motor in a clockwise or counterclockwise direction and are not intended to serve as a spotting function.

The limit switches are mounted aside the drive reducer. The hub sprocket of the limit switch is connected to the limit switch sprocket on the drive motor shaft by a link chain (**diagram 7A**).

**Switch Adjustment**

After the jib has been erected, the switch set-up is as follows.

7.1 Rotate the crane to its counterclockwise limit of travel (as viewed from above).

7.2 Loosen the allen screws and remove the limit switch cover. Make sure the power is disconnected prior to working on the limit switch.

7.3 Using the allen wrench inside the limit switch casing, loosen the allen screw locking the upper cam.

7.4 Rotate the cam so that the limit switch is actuated. An audible click should be heard.

7.5 Tighten the allen screw in order to lock the cam into place.

7.6 Rotate the crane to its clockwise limit of travel (as viewed from above).

7.7 Repeat steps 7.3 through 7.5 for the lower cam.

7.8 Make any adjustments for over travel, go to Step 7.10, on page 13.

7.9 Replace the limit switch cover.

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**Diagram 7A. Limit Switch Assembly.**
STEP 7 - LIMIT SWITCH INSTALLATION (CONTINUED)

Over Travel Adjustment Instructions:
All cranes will experience some over travel, after power to the drive is shut off, due to inertia of the load acquired during rotation. The amount of over travel is dependent on the application and the size of the jib crane. In order to accurately compensate for over travel, it is necessary to test the rotation performance of the jib under full load and determine the actual over travel. Ensure that any possible over travel will not cause the crane to collide with surrounding objects.

7.10 With the hoist at the end of the boom, lift a capacity load up one half the distance from the floor to the hoist.

7.11 Push the “ON” button to power controls.

7.12 Start rotating the jib crane in the direction of the desired limit. It is important to give the jib crane enough starting distance to accelerate to full speed.

7.13 When the crane reaches the desired rotation limit position, the limit switch lever arm will contact the cam high point and the power to the drive motor will be shut off. Allow the jib crane to come to a full stop.

7.14 Measure the angular distance between the centerline of the roller on the limit switch lever arm and the high point of the cam.

7.15 Loosen the cam hardware and rotate the cam the angular distance measured in step 7.14. Make sure the cam is rotated in the correct direction. The point is to trip the switch before the actual limit is achieved to compensate for any over travel.

7.16 Retighten the cam hardware.

7.17 Repeat for limit in opposite direction.

STEP 8 - ACCESSORIES (OPTIONAL)

Additional Accessories (Consult Gorbel® Representative)
- Flat Wire Conductor Cable
- Wire Rope Trolleys for Flat or Round Cable
- Flat Wire Cord Grip Connectors
- Fusible Disconnect Switch

STEP 9 - FINAL STEPS

TIP: Do not throw away this manual: maintenance schedule is on the back cover.

9.1 Check to make sure all bolts are tight, nuts are properly torqued and lockwashers are compressed.

9.2 Grease all fittings (use Lubriplate #630-AA or equivalent).

9.3 If necessary, touch up crane with paint provided.

9.4 Keep packing list, Installation Manual and any other inserts filed together in a safe place.
SHUT-DOWN INSTRUCTIONS

Whenever the operator leaves the crane this procedure should be followed:

1. Raise all hooks to an intermediate position.
2. Spot the crane at an approved designated location.
3. Secure the beam in the shut-down position or storage area. If the crane is an outdoor application and it has a tie down loop, secure tightly especially in high wind areas.
4. Check the crane, hoist and hook storage positions to be sure there is no interference with other pieces of equipment that may be operating in the area.
5. Place all controls in the “OFF” position.
6. Open the main switch to the “OFF” position.
7. Make a visual check before leaving the crane.

SAFETY WARNINGS AND PRECAUTIONS

Safety is very important when operating a jib crane. There are many safety warnings and precautions the operator should be aware of. These include, but are not limited to, the following:

• The jib can only be used to pick up a **MAXIMUM** of its **RATED CAPACITY**.
• The load will swing when lifted.
• Make sure the power is “OFF” prior to doing any electrical work or checking wires and connections.
• When loading, pick load directly up. Crane should not be used to pick up a load diagonally or out of the range of the span.
• Watch for wet spots: oil, water, etc. where the operator may slip.
• Check that all bolts are tight and have lockwashers.
• Make sure endstops are in place, are fully engaging the trolley and the endstop hardware is tight.
• Make sure that festooning cannot be snagged or pinched.
• Check for obstructions in crane travel.
• The operator should have full concentration on the crane and its surroundings at all times.

**WARNING**

Any changes in ease of movement or unusual noises must be immediately corrected.

**WARNING**

This product can expose you to chemicals, including acrylonitrile, which are known to the State of California to cause cancer. For more information go to:

www.P65Warnings.ca.gov
# TROUBLE SHOOTING GUIDE

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>Probable Cause</th>
<th>Check &amp; Remedy</th>
</tr>
</thead>
</table>
| Jib crane does not respond to the control station. | 1. No power to control panel.  
2. Mainline contactor is not activating with “ON” button or staying on.  
3. Open control circuits on pendant.  
4. No power to drive motor.  
5. Clutch slipping. | 1. Check incoming power and fusing. Repair or replace fuse.  
2. Open control circuit (repair). Control transformer fusing (replace).  
3. Check all termination points in pendant and terminal strip and verify continuity. Repair as required.  
4. Check all motor leads. Check for correct voltage at drive motor. Check drive controller for any overloads or errors. (Refer to drive controller manual.) Check drive controller EPM chip is fully seated in controls.  
5. Check to see if output shaft of reducer is turning, if so tighten clutch per instructions (see page 6).  
6. Call factory and ask for Customer Service if all checks are completed. |
| Jib rotates in one direction only. | 1. Limit Switches.  
2. Open control circuit.  
3. Clutch slippage. | 1. Check switch circuit and confirm switch is not stuck in closed position.  
2. Check all termination points in pendant and terminal strip and verify continuity. Repair as required.  
3. Check to see if output shaft of reducer is turning, if so tighten clutch per instructions (see page 6).  
4. Call factory and ask for Customer Service if all checks are completed. |

If you are experiencing any other problems in the start-up or operation of your Gorbel® crane please call **1-585-924-6262** and ask for Customer Service.
CRANE OPERATOR INSTRUCTIONS

Refer to the lifting (hoist) equipment's operating instructions.

Handling the Hoist Motion

Start the trolley motion slowly and reduce the trolley speed gradually. Before a load is handled, the hoist should be positioned directly over the load that is to be handled. When the slack is taken out of the slings, if the hoist is not directly desired to stop the jib, reduce the boom speed.

Handling the Trolley Motion

The boom should be brought into position so that it is directly over the load. Start the jib boom slowly and bring it up to speed gradually. Approaching the place where it is desired to stop the jib, reduce the boom speed.

Handling the Jib Boom Motion

• Unless the operator is familiar with hitching equipment and safe hitching equipment practices.
• Unless the operator has demonstrated his instructions through practical operation.
• 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.

GENERAL SUGGESTIONS

Know Your Crane

Cranes operators should be familiar with the principal parts of a crane and have a thorough knowledge of crane control functions and movements. The crane operator should be required to know the location and proper operation of the main conductor disconnecting means for all power to the attachments on the crane.

Responsibility

Each crane operator should be held directly responsible for the safe operation of the crane. Whenever there is any doubt as to SAFETY, the crane operator should stop the crane and refuse to handle loads until: (1) safety has been assured or (2) the operator has been ordered to proceed by the supervisor, who then assumes all responsibility for the SAFETY of the lift.

Do not permit ANYONE to ride on the hook or a load.

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. The crane should be moved smoothly and gradually to avoid abrupt, jerky movements of the load. Slack must be removed from the sling and hoisting ropes before the load is lifted.
2. Center the crane over the load before starting the hoist to avoid swinging the load as the lift is started. Loads should not be swung by the crane to reach areas not under the crane.
3. Crane-hoisting ropes should be kept vertical. Cranes shall not be used for side pulls.
4. Be sure everyone in the immediate area is clear of the load and aware that a load is being moved.
5. Do not make lifts beyond the rated load capacity of the crane, sling chains, rope slings, etc.
6. Make certain that before moving the load, load slings, load chains, or other lifting devices are fully seated in the saddle of the hook with hook latch closed (if equipped with hook latch).
7. Check to be sure that the load and/or bottom block is lifted high enough to clear all obstructions when moving boom or trolley.
8. At no time should a load be left suspended from the crane unless the operator has the push button with the power on, and under this condition keep the load as close as possible to the floor to minimize the possibility of an injury if the load should drop. When the crane is holding a load, the crane operator should remain at the push button.
9. Do not lift loads with slug hooks hanging loose. If all slug hooks are not needed, they should be properly stored, or use a different slug.
10. All slings or cables should be removed from the crane hooks when not in use (dangling cables or hooks hung in sling rings can inadvertently snag other objects when the crane is moving).
11. Operators shall not carry loads and/or empty bottom blocks over personnel. Particular additional caution should be practiced when using magnet or vacuum devices. Loads, or parts of loads, held magnetically could drop. Failure to power magnets or vacuum devices can result in dropping the load. Extra precaution should be exercised when handling molten metal in the proximity of personnel.
12. Whenever the operator leaves the crane the following procedure should be followed:
   • Raise all hooks to an intermediate position.
   • Spot the crane at an approved designated location.
   • Place all controls in the “off” position.
   • Open the main switch to the “off” position.
   • Make visual check before leaving the crane.
13. 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.
14. 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.
15. 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.
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 of 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 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 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.

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 herein 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 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.
# MAINTENANCE SCHEDULE

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>LUBRICANT</th>
<th>FREQUENCY*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lubrication</strong></td>
<td>See Lubrication Schedule below</td>
<td></td>
</tr>
<tr>
<td><strong>Adjustments</strong></td>
<td>Check:</td>
<td>After lifting the first few loads</td>
</tr>
<tr>
<td></td>
<td>• Endstops are in place and are fully engaging the trolley</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Level of boom</td>
<td>500 hours or 3 months</td>
</tr>
<tr>
<td></td>
<td>• Electrification system (be sure the power is OFF when checking wires &amp; connections)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• All hardware is in place and tight. (Refer to chart 3A, page 7, for proper torque rating.)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Check:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Level of boom</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Electrification system (be sure the power is OFF when checking wires &amp; connections)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Endstop or Tagline Assemblies. Make sure lockwashers are compressed and nuts are tightened to torque specifications (refer to chart 3A, page 7, for proper torque rating)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Mounting Bolts. Make sure lockwashers are compressed and nuts are tightened to manufacturer’s specifications.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Tighten all hardware. (Refer to chart 3A, page 7, for proper torque rating.)</td>
<td></td>
</tr>
<tr>
<td><strong>Inspection</strong></td>
<td>Check:</td>
<td>1000 hours or 6 months</td>
</tr>
<tr>
<td></td>
<td>• Upper Pivot Assembly. Make sure that lockwashers are compressed and nylock nut is tight. Check for wear on thrust washer.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Lower Pivot Assembly. Make sure that lockwashers are compressed. Check for wear on thrust washer. Check that nuts on bolts through i-beam web are tightened to torque specifications (refer to chart 3A, page 7, for proper torque rating).</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• End of Beam Bracket. Check that lockwashers are compressed. Check that nuts on bolts through i-beam flange are tightened to torque specifications (refer to chart 3A, page 7, for proper torque rating).</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Accessory Items. Conduct a general inspection.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Gorbel® Crane. Conduct a visual inspection of entire crane.</td>
<td></td>
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</tbody>
</table>

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

# LUBRICATION SCHEDULE

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>LUBRICANT</th>
<th>FREQUENCY*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pivot Assemblies (Upper and Lower)</td>
<td>Hi-pressure bearing grease Lubriplate #630-AA Multi-purpose grease</td>
<td>Every 1000 hours or 6 months</td>
</tr>
<tr>
<td>Limit Switch Chain</td>
<td>Kendall SR-12X open gear dipper stick &amp; wire rope lubricant</td>
<td>Monthly</td>
</tr>
<tr>
<td>Worm Gear Reducer</td>
<td>AGMA Standard #8 compound</td>
<td>1st Lube: After 250 hours of operation</td>
</tr>
<tr>
<td></td>
<td>Different manufacturers:</td>
<td>Regularly: 500 hours or 3 months</td>
</tr>
<tr>
<td></td>
<td>• City Service Co. CITGO Oil #680-7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Chevron - NL Gear Comp. #680</td>
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<tr>
<td></td>
<td>• Sun Oil Corp. - SUNEP #1150</td>
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<tr>
<td></td>
<td>• Texaco Inc. - Honor Cyl. Oil #680</td>
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<tr>
<td></td>
<td>• Gulf Oil Corp. - Transgear #EP680</td>
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<tr>
<td></td>
<td>• Shell Oil Corp. - Omala #680</td>
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<tr>
<td></td>
<td>• Friske Brothers Refining - CP Gear Oil #8</td>
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<tr>
<td></td>
<td>• Keystone Division - #K-600</td>
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<tr>
<td></td>
<td>• Mobil Oil Corp. - Mobil #600W Super</td>
<td></td>
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<tr>
<td></td>
<td>• American Lube Inc. - AGMA #8</td>
<td></td>
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</tbody>
</table>

Above is the suggested schedule. Be sure to always use high grade lubricants. For hoist and trolley maintenance, consult manufacturer’s maintenance instructions and lubrication schedule.

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

# WARNING

Any changes in rolling effort, rotation effort or unusual noises must be immediately identified and corrected.