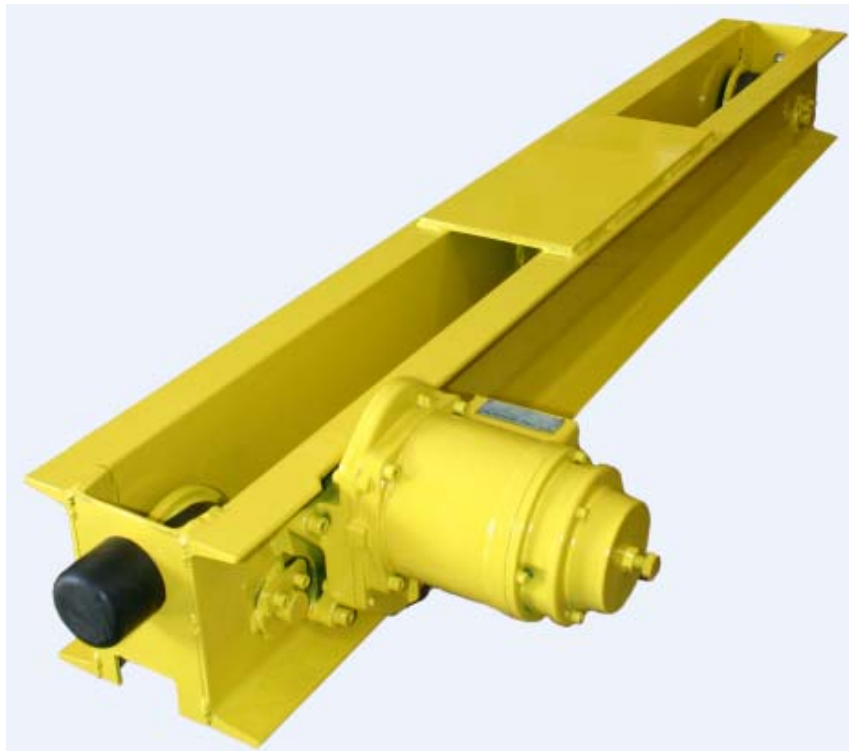




OPERATING, MAINTENACE & PARTS MANUAL

END TRUCKS

TOP RUNNING & UNDER HUNG



ACI Hoist & Crane
689 7th Terrace
Dania, FL 33004
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FOREWORD

This manual contains important information to help you install, operate, maintain and service your new top running single or double girder Crane Bridge. We recommend that you study its contents thoroughly before putting the crane bridge into use. With proper installation, application of correct operating procedures, and practicing the recommended maintenance suggested on this manual, you will be assured of the maximum service from your crane bridge.

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1.0: GENERAL DESCRIPTION

Top Running

1.1: General Information

These top running crane bridges are designed to operate on parallel crane runway. Motor and control are designed for: 230V, 460V, or 575V, 3 phases, and a 60 hertz power supply. The bridge is equipped with single, two or variable speed motors are controlled from a pendant push button station. The push button may be located on the bridge or the hoist trolley unit. Top running single girder crane bridges described herein are built in capacities from 1 through 15 ton, spans through 60'-0". Double girder crane bridges described are built in capacities from 1 through 25 tons, spans through 60'-0".

1.2: Basic Construction

The basic construction of single and double girder top running bridges consists of American Standard or Wide Flange beam girders, which are rigidly connected to the top and side of each end truck. Each truck has a driver wheels and a trailer wheels which run on the runway rails. The wheels are mounted on fixed axles and rotate on anti-friction bearings.

These bridges are driven by a motor and gear case attached to each truck. The motor drives a single wheel at each end truck through the gear case then through a drive pinion and geared wheel arrangement.

Under Hung

1.3: General Information

These under running crane bridges are designed to operate on parallel American Standard or Wide Flange crane runaway beams. Motors and controls are designed for 230V, 460V, or 575V, 3 phases, 60 hertz power supply. The bridge is equipped with single, two or variable speed motors controlled from a pendant push button station. The push button may be located on the bridge or hoist trolley unit.

1.4: Basic Construction

The basic construction of single girder under running bridges consists of American Standard or Wide Flange beam girders rigidly connected to the bottom and side of each end truck. Each truck driver has driver wheels and trailer wheels, which run on the runway beams. The wheels are mounted on fixed axles and rotate on anti-friction bearings.

These bridges are driven by a motor and gear case attached to each end truck. The motor drives a single wheel at each end truck through the gear case then through a drive pinion and geared wheel arrangement.

2.0: IMPORTANT INFORMATION & WARNINGS

2.1: Terms & Summary

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

Danger, Warning, Caution and Notice

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



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



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



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



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

2.2 Warning Tags & Labels

The End Truck covered by this owner's manual may be used as a part of a lifting system such as a crane. It is the responsibility of the supplier and the owner of such a lifting system to provide for and ensure that the lifting system be equipped with warning labels in accordance with applicable industry standards.



These general instructions deal with the normal installation, operation, and maintenance situations encountered with the equipment described herein. The instructions should not be interpreted to anticipate every possible contingency or to anticipate every possible contingency or to anticipate the final system, crane, or configuration that uses this equipment.

This manual includes instructions and parts information for a variety of end trucks types. Therefore, all instructions, and parts information may not apply to any one type or size of specific end truck. Disregard those portions of the instructions that do not apply.

Record your end truck's Model Type and Serial Number on the front cover of this manual for identification and future reference to avoid referring to the wrong manual for information or instructions on installation, operations, inspection, maintenance, or parts.

WARNING

Equipment described herein is not designed for and **MUST NOT** be used for lifting, supporting, or transporting people or for lifting or supporting loads over people.

Equipment described herein should not be used in conjunction with other equipment unless necessary and/or required safety devices applicable to the system, crane, or application are installed by the system designer, system manufacturer, crane manufacturer, installer, or user.

Modifications to upgrade, re-rate, or otherwise alter this equipment shall be authorized only by the original equipment manufacturer.

If a below-the-hook lifting device or sling is used with a hoist, refer to ANSI/ASME B30.9, Safety Standard for Slings or ANSI/ASME B30.20, Safety Standard for Below-the-Hook Lifting Devices.

Hoists and cranes, used to handle hot molten material may require additional equipment or devices. Refer to ANSI Z241.2, the Safety Requirements for Melting & Pouring of Metals in the Metal casting Industry.

Failure to read and comply with any one of the limitations noted herein can result in serious bodily injury or death, and/or property damage.

WARNING

Before performing ANY maintenance on the equipment, de-energize the electrical supply to the equipment, and lock and tag the supply device in the de-energized position. Refer to ANSI Z244.1- Personnel Protection-Lockout/Tag out of Energy Sources.

HAZARDOUS ELECTRICAL POWER IS PRESENT IN THE END TRUCK MOTOR, THE SUPPLY OF ELECTRICAL POWER TO THE END TRUCK MOTOR, AND IN THE CONNECTIONS BETWEEN COMPONENTS.

****Only trained and competent personnel should inspect and repair this equipment.**

NOTICE

It is the responsibility of the owner/user to install, inspect, test, maintain, and operate the equipment covered by this manual in accordance with ANSI/ASME B30 volume(s) and OSHA Regulations.

It is the responsibility of the owner/user to have all personnel that will install, inspect, test, maintain, and operate the equipment covered by this manual read the contents of this manual and applicable portion of ANSI/ASME B30 volume(s) and OSHA Regulations.

If the owner/user of the equipment covered by this manual requires additional information, or if any information in the manual is not clear, contact ACI Hoist & Crane. Do not install, inspect, test, maintain, or operate this equipment unless this information is fully understood.

A regular schedule of the equipment in accordance with the requirements of ANSI/ASME B30 volume(s) should be established and records maintained.

3.0: INSTALLATION

Installation MUST be performed by a qualified person in accordance with ACI Hoist & Crane. Severe injury, death and/or property damage can result if the end trucks are not correctly installed. For service in this area, please contact:

ACI Hoist & Crane
689 S.W. 7th Terrace
Dania, FL 33004
Phone: 954-367-6116
Fax: 954-272-0334
Toll Free: 1-866-424-6478

3.1: General Information

3.1.1. Top Running End Truck

Runway beams on which these cranes will operate must be sufficiently strong enough to support Crane Bridge, hoisting equipment and rated load. Runway rails must be level and parallel with $\pm 1/8"$. Rail joints must be smooth and held firmly in alignment either by bolted splice bars or by welding. Rails should be securely fastened to the runway beam.

3.1.2. Under Hung End Truck

Runway beams on which these cranes will operate must be sufficient strong enough to support crane bridge, hoisting equipment and rated load. Runway beams must be in accordance with CMAA 74-latest edition and lower flange track wheel surface must be free of distortion or imperfections that may cause a malfunction or damage to the crane wheels.

The maximum gap between mating ends of runway beam sections must not exceed 1/16".

3.2: Top Running End Truck

3.2.1. Installing Crane Bridge

The installation of the crane on the runway shall be performed only by a qualified crane installer.

For information regarding attaching, lifting, and moving the loads during installation, refers to ANSI B30.2-latest edition, ANSI B30.17-latest edition, and other applicable codes.



Before installing the crane on the runway, lock the runway conductor and disconnect the switch in the open (off) position.

Prior to the start of any crane erection the building should be measured for spans of rails and clearances. These measurements should be checked against the corresponding crane measurements to insure correctness of "fit". After assurances that the crane fits the building, determine orientation of crane position with respect to the runway.

These types of cranes are usually lifted into position on the runway rails in one piece. Total weight of this crane should be checked against lifting equipment selected for erection of this crane.

Immediately after the crane is placed on the runway rails check the wheel flange clearances to the rail. Clearance between the side of rail head and inside flange of wheel should be between $3/4"$ and 1-1/8"

depending on the wheel and rail combination and whether or not the truck is centered on the rail. Total wheel float will not be less than the $\frac{3}{4}$ " recommended by CMAA Specifications #70 and #74.

Note: It is suggested that the trolley and hoist be installed on the crane bridge at this time so that all wiring connections can be completed.

3.2.2. Connecting Bridge to Electrical Service

CAUTION

Verify that the crane is furnished for the same voltage, frequency and phase as the runway power supply. Crane voltage is shown on nameplate on bridge panel. Do not operate crane until "Pre-Operation Checks" below are made.

3.2.3. Runway Conductors

Motorized crane bridges and crane bridges equipped with a motorized trolley or hoist require runway conductors. Install conductors according to manufacturer's instructions and in accordance with National, State and Local codes.

WARNING

Before attempting any electrical connections the main power switch feeding the runway conductors must be LOCKED IN THE OPEN (OFF) POSITION.

3.2.4. Main Collectors

Install, adjust and align collectors with runway conductors. Connect collectors to appropriate crane wiring.

3.2.5. Cross Conductors

In most cases, the cross conductors will be installed on your crane as received; however, if the conductors have been separately shipped, be certain that the instructions covering installation of these conductors are carefully followed. Connect all wiring on the crane (main collectors to bridge panel, bridge panel to cross conductors, bridge panel to bridge motor).

3.2.6. Trolley Collectors

Electrically operated hoist and/or trolley require trolley collectors. Install collectors as shown in instructions furnished with the hoist and trolley. Connect wiring as shown on the appropriate crane wiring diagram.

3.2.7. Pre-Operation Checks

After the crane has been installed on the runway and the crane and hoist/trolley unit connected to electrical service, the following pre-operation checks should be made before operation:

1. Check the main collector system for proper adjustment to maintain proper contact with conductor. Check along runway for possible interference if power is cable reel or festooned cable.
2. Check the cross conductors and collectors for adjustment and proper tracking.
3. Check the gear at wheels and the oil level of the gear case. If lubricant is required see Lubrication Schedule under Maintenance & Handling. Make sure that the vent is installed in the gear case and is at the highest possible level.
4. Inspect the crane to make certain that all bolted connections and attachments are properly tightened and that all electrical connections are secure.
5. Read the brake literature and check the brake adjustment and electrical connections.

6. The hoist/trolley unit should be checked thoroughly. Check to make sure that the trolley wheels have the proper clearance to the beam (girder) flange for freedom of operation. Make certain the trolley stops have been installed and that they are correctly located.
7. For a single girder crane the trolley wheels and the flange surface of the crane beam girder on which the trolley wheels roll should be free of paint to provide the proper electrical ground. If the environment in which the crane will operate is such as to impair the contact between the trolley wheel and the crane girder, an extra cross conductor and trolley collector should be provided for grounding purposes.
Note: This also applies for a trolley wheel and crane rail and to the bridge wheel and the runway rail.

3.3: Under Hung End Truck

3.3.1. *Installing Crane Bridge*

The installation of the crane on the runway shall be performed only by a qualified crane installer.

For information regarding attaching, lifting, and moving the loads during installation, refers to ANSI B30.2-latest edition, ANSI B30.17-latest edition, and other applicable codes.



When working in or near exposed energized electrical equipment, it may present the danger of electrical shock.

TO AVOID INJURY:

Disconnect power and lockout/tag out disconnecting means before installing crane or runway.

Prior to the start of any crane erection the building should be measured for spans of rails and clearances. These measurements should be checked against the corresponding crane measurements to insure correctness of "fit". After assurances that the crane fits the building, determine orientation of crane position with respect to the runway.

These types of cranes are usually lifted into position on the runway rails in one piece. Total weight of this crane should be checked against lifting equipment selected for erection of this crane.

Immediately after the crane is placed on the runway rails check the wheel flange clearances to the rail. Clearance between the side of rail head and inside flange of wheel should be between $\frac{3}{4}$ " and 1-1/8" depending on the wheel and rail combination and whether or not the truck is centered on the rail.

1. **Open End Runway:** If one end of the crane runway is open and no interference is encountered the crane bridge can be placed on the end of the runway. First recheck the distance between the wheels. The distance between the inside faces of the wheel flanges should be the width of the bottom of the runway beam plus $\frac{1}{4}$ ".
2. **Removable Runway Section:** In some installations a removable section runway may be available. If so remove runway section, install crane bridge and reinstall the runway section.
3. **Truck Side Removal:** If the methods previously described are not possible, one half of each truck must be removed. The trucks should already have been adjusted for the proper runway width. Disassemble the outside half of one truck and the inside half of the other truck. Retain all bolts; lock washers, cross shaft and other parts that need to be removed. Lift the crane bridge with the truck halves attached into place and carefully work onto the runway. Reassemble the truck halves with the proper bolts, lock washers, and cross shaft parts. Tighten the spacer block connections; tighten snug tight, and then make 1/3 more turn.

WARNING

End trucks not properly equipped with supplied safety drop lugs and high strength bolts can result in loss of crane bridge with resultant injury and damage

TO AVOID INJURY OR DAMAGE:

Be certain that prior to crane use the safety lugs are firmly bolted on place using the supplied high strength bolts.

Note: It is suggested that the trolley and hoist be installed on the crane bridge at this time so that all wiring connections can be completed.

3.3.2. *Connecting Bridge to Electrical Service*

WARNING

Improper power supply can damage electrical components

TO AVOID DAMAGE:

Power supply must be the same voltage, frequency and phase as runway power supply. Crane voltage is shown on the nameplate on the bridge panel.

Do not operate crane until “Pre-Operation Checks” below are made.

3.3.3. *Runway Conductors*

Motorized crane bridges and crane bridges equipped with a motorized trolley or a hoist require runway conductors. Install the conductors according to the manufacturer’s instructions and in accordance with National, State and Local codes.

WARNING

Working in or near exposed electrical equipment may present danger of electric shock.

TO AVOID INJURY:

Before attempting any electrical connections, the main power switch feeding the runway must be LOCKED IN THE OPEN (OFF) POSITION.

Install, adjust and align collectors with runway conductors. Connect collectors to appropriate crane wiring.

3.3.4. *Cross Conductors*

In most cases, the cross conductors will be installed on your crane as received; however, if the conductors have been separately shipped, be certain that the instructions covering installation of these conductors are carefully followed. Connect all wiring on the crane (main collectors to bridge panel, bridge panel to cross conductors, bridge panel to bridge motor).

3.3.5. Trolley Collectors

Electrically operated hoist and/or trolley require trolley collectors. Install the collectors. Connect wiring as shown on the appropriate crane wiring diagram.

3.3.6. Pre-Operation Checks

After the crane has been installed on the runway and the crane and hoist/trolley unit connected to electrical service, the following pre-operation checks should be made before operation:

1. Check the main collector system for proper adjustment to maintain proper contact with conductor. Check along runway for possible interference if power is cable reel or festooned cable.
1. Check cross conductors and collectors for adjustment and proper tracking.
2. Check gear at wheels and the oil level of the gear case. If lubricant is required see Lubrication Schedule under Maintenance & Handling. Make sure that the vent is installed in the gear case and is at the highest possible level.
3. Inspect crane to make certain that all bolted connections and attachments are properly tightened and that all electrical connections are secure.
4. Read the brake literature and check brake adjustment and electrical connections.
5. The hoist/trolley unit should be checked thoroughly. Check to make sure that the trolley wheels have the proper clearance to the beam (girder) flange for freedom of operation. Make certain trolley stops have been installed and that they are correctly located.



The omission or incorrect location of trolley stops can result in loss of hoist with resultant injury and damage.

TO AVOID INJURY AND DAMAGE:

Install end stops per Trolley Stop Table on the Bridge Assembly Drawings to prevent the hoist trolley from running off the end of the beam.

6. All trolley and bridge wheels as well as the flange surfaces of the bridge and runway beams on which the wheels roll must be free of paint to provide the proper electrical ground. If the environment in which the crane will operate is such as to impair the contact between the trolley wheel and the crane girder, an extra cross conductor and trolley collector should be provided for grounding purposes.

3.4: Outdoor Installation

For crane system installations that are outdoors, the end trucks should be protected from the weather when not in use.

In order to prevent internal corrosion from occurring, the end trucks may require lubrication more often than once or twice per year.

4.0: OPERATIONS & INSPECTIONS INFORMATION

4.1: Operation Information

Safe and efficient crane operation requires skill, extreme care and good judgment, alertness, concentration, knowledge of and rigid adherence to proven safety rules and practices. No person should be permitted to operate a crane or hoist:

1. Who does not possess the above characteristics.
2. Who is not qualified or has handicaps that could adversely affect such operation.
3. Who has not been properly instructed.
4. Who has not been informed and does not have a thorough knowledge of all applicable safe operating practices, including those in this manual as well as rigging equipment and practices.

Note: See applicable National, State and Local Safety Codes and regulations for additional requirements relating to Safe Operating Practices, including ANSI B30.2 or ANSI B30.17-latest edition.

Prior to placing the crane into service, OSHA requires that the user perform and record certain tests including proof loading of crane.

4.2: Operating Precautions

Operating rules listed below are an earnest effort to encourage SAFETY and are not intended to take precedence over individual plant safety rules and regulations or rules set forth by various applicable codes.

A good operator operates his crane as smoothly as possible and knows and follows the suggested rules below for safe, efficient, crane handling.



WARNING

These cranes bridges are not designed nor intended to be used for support or transport of people or for transporting loads over people. Supporting or transporting loads over people can result in injury.

TO AVOID INJURY:

DO NOT USE these crane bridges for support or transport of people or for transporting loads over people.

Safe operation of an overhead hoist is the operator's responsibility. Listed below are some basic rules that can make an operator aware of dangerous practices to avoid and precautions to take for his own safety and the safety of others. Observance of these rules in addition to frequent examinations and periodic inspection of the equipment may save injury to personnel and damage to the equipment.

DO NOT load bridge beyond rated capacity.

DO NOT subject bridge to side loads. Always center the trolley over load when hoisting.

DO NOT stand and DO NOT cause or allow others to stand or get under any load the bridge is supporting.

DO keep clear, and make sure others keep clear of any load the bridge is supporting.



DO NOT attempt to operate crane bridge before completing tests and adjustments.

DO NOT run bridge into the end stops, other bridge, or any obstruction on beam. Improper and careless operation can result in a hazardous condition for operator and load.

ALWAYS be sure load is clear of obstruction before traversing load.

If crane bridge is mounted on an open-end runway rail, then end stops must be installed to prevent crane bridge from running off the end of the runway rail resulting in injury to the operator and others and damages to the load and other property. **End stops for the trolley MUST be installed.**

Refer to the hoist and trolley instruction manuals for safety warnings on hoists and trolleys.



 WARNING 
<p>Injury to personnel or damage to equipment may result if all installation and operation checks are not done in accordance with instruction.</p>
<hr/> <p>TOP AVOID INJURY OR DAMAGE: Make sure all INSTALLATION & OPERATION CHECKS have been made.</p>

4.3: Operating Controls

4.3.1: Learning the controls:

After making certain the crane is completely and properly installed, with the crane connected to the electrical service and all the pre-operation checks made, the operator should learn the controls.

On cranes having any or all motions electrically operated, the operator should locate the runway disconnect and make sure this switch is locked open (POWER OFF). The operator should now operate the various push buttons to get the “feel” and determine that they do not bind or stick in any position. The operator should become familiar with push button location for their respective motions as well as “start” and “stop” buttons (normally the top two buttons), which operate the crane main line contactor. The main line contactor will shut off power to all motions.

 WARNING 
<p>If any push button binds or sticks in any position. Do not turn the power on. Determine the cause of the malfunction and correct it before operating the crane.</p>

4.3.2: Operating the Controls (NO LOAD)

Having inspected and tried the control, the crane is now ready to try the crane under power.

STEP 1 - Close the crane runway disconnect switch.

STEP 2 – Close (POWER ON) the crane disconnect switch mounted on the crane. The crane main disconnect switch is located in the bridge panel and is operable from the front of the panel without opening the panel. The switch is operated by rotating the handle. The “OFF” and “ON” positions of the switch are marked on the switch assembly. The bridge control panel also contains a 3-pole mainline contactor. This contactor is connected in the electrical system on the load side of the crane main disconnect switch, so that all the crane power flows through this contactor. The mainline contactor is opened and closed (turned off and on) by means of the stop-start buttons on the pendant push button station. These stop-start circuits, as well as other control circuits, operate at

115 volts. This 115 volt control circuit voltage is obtained from a transformer mounted in the bridge control panel.

STEP 3 - Press the start push button which will close the mainline contactor, applying power to all control devices. The crane is now ready for further testing.

When the bridge on this crane is powered by variable speed drives the slow speed is used for starting and for positioning. The fast speed is used for general bridge movement between two points. There is one button for each direction labeled bridge "FWD" and "REV". Depressing either button slightly will cause the bridge to operate at slow speed. Further depression of the button will cause the bridge to run at fast speed.



Abrupt change of bridge direction while in motion may cause adverse operating characteristics or damage to bridge and drive components.

TO AVOID DAMAGES:

Always allow the crane to come to a complete stop before changing directions.

STEP 4 - Momentarily depress bridge "FWD" button. Check to be certain both motors run in the same direction. Momentarily depress "REV" button. Motors running in the opposite direction will cause vibration and skewing of the bridge.

STEP 5 - To check that electrical connections have been properly made, operate bridge cautiously on runway. Watch for any obstructions or interferences between crane and building parts. Depress "FWD" button slightly - bridge will travel along runway without vibration or skewing when both motors are running at the same speed. If skewing is evident, stop bridge and recheck motor electrical connections.

STEP 6 - Operate the bridge from one end of the runway to the other checking for obstructions or interferences. Proceed with CAUTION and be prepared to stop short of any obstructions. If bridge power is interrupted during runway travel, check main collectors for proper contact with runway conductors.



Lock main runway disconnect switch in open position before attempting to adjust main collectors or conductors.

STEP 7 - After making certain that all building and structural clearances are adequate, practice going "FWD" and "REV" with push button depressed only slightly (slow speed). Note the stopping distance of the bridge at slow speed without load. Now depress "FWD" or "REV" further, causing the crane to run at faster speed. Again note the distance the crane requires stopping after releasing the push button.

After becoming familiar with these motions, the operator can now depress the hoist "Up" button. Depress the "Down" button. Practice moving the hook up and down.



If, when depressing the hoist "Up" button, the hook should lower- STOP AT ONCE- Do not attempt to operate again. Report this condition to the proper supervisor for correction.

The hook may be lowered until TWO FULL WRAPS of cable remain on the drum. Note the position of the hook and NEVER LOWER THE HOOK BELOW THIS POSITION. Some hoists may have a lower limit switch which will stop the hoist when this position is reached.

Depress the hoist "UP" button and slowly return the hook to near its high position. Continue to raise the hook by slow inching. CAREFULLY OBSERVE the relationship of the hook block and the bottom of the hoist frame. The hoist upper limit switch, when working properly, should cause the hoist up motion to stop and / or reverse direction.



WARNING

Do not contact or strike the hoist frame with the hook block. If the hoist motion is not interrupted by the limit switch, stop the hoist by removing your finger from the button and/or depressing the STOP button. Do not attempt further operation until the limit switch is operable.

Note: Jogging is used excessively by some operators for making "inching" crane movements. AVOID EXCESSIVE USE OF JOGGING SINCE IT MAY CAUSE PREMATURE BURNING OF CONTACTOR CONTACT TIPS AND MOTOR OVERHEATING.



WARNING

THIS EQUIPMENT IS NOT DESIGNED OR SUITABLE AS A POWER SOURCE FOR LIFTING OR LOWERING PERSONS.

4.3.3: Operating the Controls (with LOAD)

Make certain the hook is high enough to clear any obstruction below. Move the bridge to a position directly over the load and operate in the following sequence:

STEP 1 - Spot the trolley and hoist over the load. If control is suspended from the bridge, hand signals may be required from ONE authorized floor man at the load. Be certain the load to be lifted is properly rigged and does not exceed the rated capacity of the hoist, trolley or bridge.

STEP 2 - Slowly raise the hook until the slack has been taken out of the slings. When the floor man signals and the operator is satisfied the load is secure in the sling, lift the load slowly until clear. Now, hoisting speed can be increased and maintained until the load is clear of all obstructions or the floor man gives the signal to stop.

STEP 3 - Starting slowly and increase speed as distance permits moving the bridge toward the point where the load is to be lowered. Decelerate by holding the push button in the first step. Final spotting is accomplished by releasing the button to allow the bridge brake to stop the crane. The stopping distance will be greater than with no load on the hook.

STEP 4 - Learn to judge the stopping distance of the bridge and trolley, both with light and full loads. This will enable you to "spot" loads with the minimum amount of jogging.

Note: Refer to hoist and trolley manuals for complete operating instructions for the hoist and trolley.

4.3.4: Responsibility for Safe Operation

Each crane operator should be held directly responsible for the safe operation of his crane. The crane operator should STOP the crane and refuse to handle loads when:

1. There is any doubt as to SAFETY.
2. Any unusual vibrations or sounds are noticed before or when starting the lift or traverse motions.
3. There are arguments or disagreements with the floor man or hitchers.
4. The operator feels ill or is not alert.

4.4: Inspection

4.4.1: General

The crane should be inspected at the beginning of each shift. All functional mechanisms should be in good working order. Check limit switches, brakes, electrical equipment and other SAFETY devices. Check crane operation without load. Any unusual sounds, vibrations, anything wrong or apparently wrong should be reported to the operator's supervisor immediately. Inspect hoist and trolley as recommended in the manufacturer's manual.

4.4.2: Service & Frequency Information

Service Information

- Normal Service – Service which involves operating at less than a certain percentage of rated load and less than an unspecified frequency. Refer to the ANSI/ASME 30 volume for the specific definition of your application.
- Heavy Service – Service which involves operation within the rated load limit which exceeds normal service.
- Severe Service – Service which involves normal to heavy service with abnormal operating conditions.

Frequent/Daily Inspections

Frequent/Daily inspections are visual examinations by the operator or other designated personnel with interval per the following criteria.

- Normal Service – Monthly
- Heavy Service – Weekly to Monthly
- Severe Service – Daily to Weekly
- Special or Infrequent Service – As recommended by a qualified person before and after each occurrence.

Periodic Inspections

Periodic inspections MUST be performed by a 'Certified Crane Technician'. For an inspection appointment, please contact: Material Handling Systems, Inc. at 954-921-1171.

Visual inspection will be performed by a qualified person who will make records of apparent external conditions to provide the basis for a continuing evaluation.

A qualified person shall determine whether conditions found during inspection constitute a hazard and whether maintenance of the equipment is required.

- Normal Service – Yearly
- Heavy Service – Semi-Annually
- Severe Service – Quarterly
- Special or Infrequent Service – As recommended by a qualified person before and after each occurrence.

Written, dated and signed inspection reports should be maintained on all critical items; such as safety devices, brakes, hooks, ropes, chains, etc. All worn, damaged or malfunctioning parts should be repaired

or replaced to maintain a SAFE operating crane. Warning labels affixed to the crane, hoist or trolley should be kept clean and visible at all times. Warning labels should be replaced if loose or illegible.

4.4.3: Inspection Tables

Frequency Inspection: Inspection should be made on a frequent basis in accordance with Table 1 “Frequent Inspection”. Included in these frequent inspections are observations made during operation for any defects or damage that might appear between periodic inspections. Evaluation and resolution of the results of frequent inspections shall be made a designated person such that the crane is maintained in safe working condition.

Table 1 Frequent Inspection
All functional operating mechanisms for proper operation, proper adjustment, and unusual sounds.
End truck braking system for proper operation.
Hoist(s) in accordance with ANSI/ASME B30.16
Upper limit devices in accordance with ANSI/ASME B30.16
Hook(s) and hook latches in accordance with ANSI/ASME B30.10

Periodic Inspection: Inspection should be made on periodic basis in accordance with Table 2 “Periodic Inspections”. Evaluations and the result of the result of periodic inspection shall be made by a certified person such that the crane is maintained in safe working condition. For inspection where load suspension parts of the hoists are disassembled, a load test per ANSI/ASME B30.16 must be performed on the hoist after it is re-assembled and prior to its return to service.

Table 2 Periodic Inspection
Requirement of frequent inspection.
Deformed, cracked or corroded.
Loose or missing bolts, nuts, pins or rivets
Worn, cracked, or distorted parts such as pins, bearings, shafts, gears, rollers, locking and clamping devices, bumpers, and stops.
Excessive wear of brake system parts.
Deterioration of electrical components such as controllers, switches, contacts, push button.
Proper function of motion limit devices that interrupt power or cause a warning top be activated.
Function, instruction and warning labels for legibility and replacement.

4.5: Inspection Report & Criteria

4.5.1: General Information

This section covers the inspection of specific items. In accordance with ANSI/ASME B30 volumes listed under the General heading on the previous pages, these inspections are not intended to involve disassembly of the crane. Rather, disassembly for further inspection would be required if frequent or periodic inspection results so indicate. Such disassembly and further inspection should only be performed by a certified person trained in the disassembly and re-assembly of the crane.

4.5.2: Inspections Methods & Criteria

Inspections Methods & Criteria				
Crane Component	Item	Method	Criteria	Action
Crane Electric Parts	1. Power Supply (for cable power supply system)			
	Guide (messenger) wire tension	Check visually	The wire must be sufficiently tight to minimize sag	Tighten
	Cable hanger installation and mobility	Check visually	The cable must be hung from cable hangers at even intervals. The cable must be hung from the cable hangers so that it does not twist	Replace hangers
	Cable length	Check visually	The cable must be 10% longer than the crane's maximum travel distance	Replace cable with a longer one
	2. Ground Protection	Verify non-current carrying parts are grounded	Non-current carrying parts must be grounded and must not exceed 100Ω resistance to ground. Travel surfaces must be kept clean and free of insulating materials such as paint, oil or grease.	Ground parts to conform to applicable standards and regulations. Remove any insulating materials.
	3. Insulation	Use insulation resistance meter to check wiring integrity	Insulation resistance must be 0.5 MΩ or more	Replace wires/cables that have defective insulation
Travel Rail/Runway	4. Travel Rail/Runway			
	Looseness in fasteners	Check tightness or torque	Fasteners must be sufficiently tight	Tighten
	Oil, grease or paint on traveling surfaces	Check visually	The traveling surfaces must be free of oil, grease or paint	Clean
	Rail/Runway Dimensions	Measure	Dimensions to be in accordance with CMAA criteria	Repair
Girder (bridge beam)	Bridge Beam	Check visually and measure	The beam must not be deformed or damaged	Repair or replace parts
	Welded parts	Check visually and use NDT if necessary	Welds to be in accordance with CMAA criteria	Repair
	Bridge beam	Check visually and measure	The travel surface must not be worn excessively	Replace
	Looseness in fasteners	Check tightness or torque	Fasteners must be sufficiently tight	Tighten
	Deflection	Measure under a rated load at mid-span	Deflection must be within 1/600 or less of the span	Repair or replace, or lower the rated capacity

Inspections Methods & Criteria (cont.)				
Crane Component	Item	Method	Criteria	Action
End Truck	Track wheel (Under hung end trucks)	Measure	Diameter must not be less than "when worn" value in Section 10.4. Also, for geared and motorized end trucks, the diameter of the drive wheels on the left end truck must not be different from the diameter of the wheels on the right end truck by more than the value listed in Section 10.4. Flange dimensions (for geared and motorized end trucks only) must not be less than "when worn" in Section 10.4.	Replace
	Track wheel (Top Running end trucks)	Measure	Diameter must not be less than "when worn" value in Section 10.4. Also, for geared and motorized end trucks, the diameter of the drive wheels on the left end truck must not be different from the diameter of the wheels on the right end truck by more than the value listed in Section 10.4.	Replace
End Truck	Track wheel gear teeth (geared and motorized end trucks only)	Check visually	Teeth should not be cracked, damaged, or excessively worn	Replace
	Missing or incorrectly positioned snap rings	Check visually	No snap rings, must be missing or out of position	Replace or re-install
	Lubrication	Check visually	The track wheel teeth and teeth of the pinion L must be sufficiently lubricated	Grease
	Bolts/fasteners	Check tightness or torque	Bolts and fasteners must be sufficiently tight	Tighten
Gear Motor	Bolts/fasteners	Check tightness or torque	Bolts should be sufficiently tight	Tighten
	Outer appearance	Check visually	No Cracks or other damages should be detected	Replace parts
	Damage to bearings	Try turning by hand	Bearings should turn smoothly	Replace parts
	Braking	Start and stop the crane	The crane must come to a smooth stop within 10% of its traveling speed when the brakes are applied	Adjust the left and right motor brakes. Refer to "Maintenance and Handling" section. Replace parts
	Lubrication	Overhaul and check visually. Refer to "Maintenance and Handling".	Parts must be sufficiently lubricated. Lubricated parts must not be overly dirty or contaminated with foreign matter.	Grease or degrease. Replace or clean parts.

5.0 MAINTENANCE & HANDLING

5.1: General Information

Maintenance services required on top running cranes are, for the most part, simple periodic inspections and adjustments. Procedures for lubrication, routing adjustments and replacement of parts, if required are described in the following sections.

Components of the End Truck that require maintenance are as follows:

For Motorized End Trucks:

- Reduction Gearing in the Gear Motor
- Brake Assembly in the Gear Motor
- End Truck Drive Gears

For Geared End Trucks:

- End Truck Drive Gears

For Manual End Trucks:

- No items require maintenance

5.2: Lubrication

Lubricants to be used for the maintenance of your end truck are listed in the table below:

LUBRICANTS					
Location	Manufacturer & Type	Amount			
Reduction Gear	Shell/Albania Grease 2	kW	0.25	0.4	0.75 & 1.5
		Grams (ounces)	50 (1.8)	60 (2.1)	150 (5.3)
Brake disk spline sliding parts of armature	Sumitomo Kogyou/Morispeed Grease No. 2	Light Coast			

5.2.1: Detailed Lubrication Requirements

- Wheel bearings are permanently lubricated and require no additional lubricant.
- Drive wheel gears are to be lubricated with an open type gear grease which is heavy, plastic, extreme pressure and tacky; such as MOBIL 375 NC or equal.
- The gear case lubricant should be changed every year or 1000 hours of service for normal usage. The lubricant should be changed more frequently if the service is more severe. Use one quart of lubricant number 2, Shell Draina EP 2 or Esso Beacon EP 2. This oil is good for temperatures between -4° F to 248° F.
- It is recommended that the areas of the cross shaft covered by bearings and couplings be coated by FEL-PRO C5-A, or equal, anti-seize lubricant.

Before crane operation the vent plug must be in the proper location in the gear case. The vent plug replaces the pipe plug in the highest location on the top of the gear case. A separate piece of literature in the literature package covers maintenance of the brake.

5.2.2: Oil Types

Lubricant Oil Types – Oil Grease No. 2 – Shell Draina EP 2 or Esso Beacon EP 2.

MODEL #	LK-S-0.25A LK-S-0.4A	LK-H-0.4A LK-R-0.75A	LK-0.4A LK-0.75A	LK-HR- 0.75A	LK-1.1A	LK-1.5A LK-2.2A	LK-3.75 LK-5.5A LK-7.5A
QTY	0.08 Liters	0.32 Liters	0.1 Liters	0.42 Liters	0.8 Liters	1.0 Liters	2.4 Liters

*For normal service, replace gear-box oil after 1,000 operational hours or 12 months.

5.3: Wheel Removal

5.3.1: Instructions

To remove the wheels follow the steps below:

1. Remove any load from hook and move trolley to the opposite end of the bridge.



WARNING

Injury to personnel and/or damage to equipment can occur when truck wheel is removed if proper instructions are not followed.

TO AVOID INJURY OR DAMAGE:

Make sure that the truck is adequately supported so that it cannot drop when the wheel is removed.

2. Remove two bolts and lock washer and remove the drop lug.
3. Remove the load from the wheel. This can be accomplished by jacking a very small distance.
4. Remove the hairpin clip and spacer washer from the axle.
5. The wheel axle is held in position by a jam nut on the adjusting bolt. Removal of these bolts allows removal of the axle.
6. Pull the axle away from the truck. Prevent the wheel from falling. Completely remove the axle from the truck and store in a safe place.
7. The wheel is now free. Roll the wheel along the crane runway, maintaining a secure hold so that the wheel does not fall from the runway.
8. An internal snap ring separates the bearings. It is recommended that bearings and wheels be replaced as a unit.
9. Replace the wheels in reverse order of disassembly.

5.4: Gear Motor

5.4.1: Description

Gear motors of all types and sizes including single / multiphase, universal, induction and synchronous types. An AC gear motor consists of a series of three windings in the stator section with a simple rotating section and an integral gearbox or gear head. The changing field caused by 50 or 60 Hertz AC line voltage causes the rotor to rotate about the axis of the motor. AC motors are the most common and simple type of motor manufactured.

- **GEAR MOTOR – REDUCTION GEARS:** The reduction gearing in the gear motor should be cleaned and lubricated at least once per year for normal usage. Clean and lubricate the reduction gear assembly more frequently for heavier usage or severe conditions.

- **GEAR MOTOR – BRAKE:** The brake in the gear motor should be cleaned, parts lubricated and adjusted at least once per year for normal usage. Clean and lubricate the reduction gear assembly more frequently for heavier usage or severe conditions. **DO NOT** disassemble the motor itself.
- **BRAKE ADJUSTMENT:** With this gear motor, brake torque can be adjusted within the range of 0 to 50% against the motor rated torque, with the adjusting bolt. Re-adjust the brake torque when the braking surface of the disk is worn and the braking force decreases.
- **BUMPERS:** A crane shall have bumpers or an automatic means of stopping per OSHA 1910.179.

5.5: Electrical

5.5.1: Motors

The bridge motors are either single or dual speed. It is recommended that if any work is required, the motor should be returned to the crane builder.

For hoist and trolley motors, consult the hoist and trolley manual.

5.5.2: Brake

Consult the manual with the brake for friction disc replacement and brake adjustment.

5.5.3: Bridge Control Panel

All connections should be checked frequently for tightness.

5.5.4: Hoist & Trolley

For the panel, brakes, limit switches etc., consult the hoist and trolley manual for maintenance and spare parts information.

5.7: Brake Adjustment

With this gear motor, brake torque can be adjusted with the range of 0 to 50% against the motor rated torque, with the adjusting bolt. Readjust the brake torque when the braking surface of the disk is worn and the braking force decreases.

ADJUSTING THE BRAKE: TECHNICAL TABLE OF BRAKE TORQUE						
Model #	LK-S-0.25A LK-S-0.4A	LK-0.4A LK-0.75A LK-R-0.75A	LK-H-0.4A LK-R-0.75A	LK-1.1A LK-1.5A	LK-2.2A LK-3.7A	LK-5.5A LK-7.5A
Max. Torque (lb.-ft.)	1.25 LB.-FT.	6.64 LB.-FT.	6.64 LB.-FT.	8.85 LB.-FT.	23.60 LB.-FT.	25.08 LB.-FT.
Adjusting Torque (lb.-ft.)	0.13 LB.-FT.	0.44 LB.-FT.	0.44 LB.-FT.	0.44 LB.-FT.	1.84 LB.-FT.	1.84 LB.-FT.

Check the brake spring and adjustment bolt, before adjusting the brake torque.

5.8: Storage

Whenever end trucks are to be placed into storage, place extra grease onto all exposed unpainted areas such as wheels, gears, collars, and splines. Make certain that no debris, dirt or moisture is allowed to accumulate on the end truck during preparations for storage.

The storage location should be clean and dry.

5.9: Report Sheets

INSPECTION SCHEDULE AND MAINTENANCE REPORT											
CRANE SERIAL NO. (MFGRS) _____					CUSTOMER CRANE IDENTITY NO. _____						
CAPACITY _____					LOCATION IN PLANT _____						
TYPE _____					THIS INSPECTION IS MONTHLY <input type="checkbox"/> ANNUAL <input type="checkbox"/>						
VOLTAGE _____					SEMI-ANNUAL <input type="checkbox"/>						
					INSPECTED BY _____ DATE _____						
COMPONENT, UNIT OR PART and location		*Recommended Inspection Interval			CONDITION (Check column best indicating condition when part or unit is inspected. Use note column to the right if condition is not listed below.)						CORRECTIVE ACTION NOTES
		MONTHLY	SEMI-ANNUAL	ANNUAL	GOOD	ADJUSTMENT REQUIRED	REPAIR REQUIRED (Loose Parts or Wires)	REPLACEMENT REQUIRED (Worn or Damaged)	LUBRICATION REQ. (Low Oil or Grease Rust or Corrosion)	CLEANING OR PAINTING REQUIRED	
LOCATION	COMPONENT, UNIT OR PART										
BRIDGE	Motor	<input type="radio"/>									
	Gears & Bearings	<input type="radio"/>									
	Wheels		<input type="radio"/>								
	Trucks			<input type="radio"/>							
	Girders & Connections			<input type="radio"/>							
	Footwalk & Handrail			<input type="radio"/>							
HOIST	Motor	<input type="radio"/>									
	Motor Brake	<input type="radio"/>									
	Mechanical Load Brake	<input type="radio"/>									
	Overload Clutch	<input type="radio"/>									
	Couplings	<input type="radio"/>									
	Gears, Shafts & Bearings	<input type="radio"/>									
	Upper Block	<input type="radio"/>									
	Lower Block	<input type="radio"/>									
	Hook & Throat Opening	<input checked="" type="radio"/>		<input checked="" type="radio"/>						Record Hook Throat Opening	
	Hoist Rope	<input checked="" type="radio"/>									
	Rope Drum		<input type="radio"/>								
	Guards		<input type="radio"/>								
	Limit Switch	<input type="radio"/>									
CONTROL PANELS AND PUSHBUTTON	Bridge Panel	<input type="radio"/>									
	Trolley Panel	<input type="radio"/>									
	Hoist Panel	<input type="radio"/>									
	Pushbutton		<input type="radio"/>								
	Wiring		<input type="radio"/>								
TROLLEY	Motor	<input type="radio"/>									
	Brake (When so Equip.)	<input type="radio"/>									
	Couplings	<input type="radio"/>									
	Gears, Shafts & Bearings	<input type="radio"/>									
	Frame			<input type="radio"/>							
	Wheels		<input type="radio"/>								
	Bumpers		<input type="radio"/>								
	Guards		<input type="radio"/>								
	Conductors	<input type="radio"/>									
Collectors	<input type="radio"/>										
RUNWAYS	Monorail Joints		<input type="radio"/>								
	Monorail		<input type="radio"/>								
	Main Conductors	<input type="radio"/>									
	Main Collectors	<input type="radio"/>									
MISC.	General Condition		<input type="radio"/>								
	Load Attach. Chains	<input checked="" type="radio"/>									
	Rope Slings & Connect.	<input checked="" type="radio"/>									
	Change Gearcase Lub.			<input type="radio"/>							
	Grounding Faults		<input type="radio"/>								

* See text for DAILY & WEEKLY REQUIREMENTS

○ INSPECTION INTERVAL

● SIGNED & DATED REPORT REQUIRED - OSHA

X MAGNETIC PARTICLE OR EQUIVALENT EXAMINATION REQUIRED.

Typical Inspection Schedule and Maintenance Report form.
 User must adjust inspection interval and components to suit his individual conditions and usage.

6.0: TROUBLESHOOTING

The first step to be taken before a troubleshooting procedure is started is to communicate with all personnel that the equipment is being removed from operation and to secure any/all lockout/tag out procedures. Failure to strictly follow this warning may lead to the injury or death of personnel.


WARNING


HAZARDOUS VOLTAGES ARE PRESENT IN THE MOTORIZED END TRUCK AND IN CONNECTIONS BETWEEN COMPONENTS

Before performing ANY maintenance on the equipment, de-energize the electrical supply to the equipment, and lock and tag the supply device in the de-energized position. Refer to ANSI Z244.1.

Only trained and competent personnel should inspect and repair this equipment.

6.1: Guide

Troubleshooting Guide		
Trouble	Cause	Remedy
The crane does not move smoothly.	The end truck is not set at a right angle to the bridge beam or the left and right end trucks are not parallel to one another.	Set the end trucks at a right angle to the bridge beam, and parallel with one another
	Track wheels are unevenly worn	Replace the wheels
	Brake force is unbalanced between the left and right brakes	Adjust brakes
Bumpers on the left and right end truck do not contact the end stops at the same time.	The crane is not square. May be due to bolts coupling the end truck to the bridge beam are loose.	Adjust so that contact is made at the same time, and tighten bolts
	One motor is not driving	Check motor
	One brake is dragging	Check to verify that both brakes are releasing
	End stops are set improperly	Reset the end stops
The motor fails to turn and makes a humming sound	The brake is not releasing	Check the brakes and wiring to the brakes
	Electronic soft start's torque volume is adjusted too low	Increase torque volume
	The electronic soft start is damaged	Repair or replace the soft start
	The relay is damaged	Verify that the motor is receiving all 3 phases
The motor gets extremely hot	The motor is running in a single phase condition	Repair wiring to restore 3-phase operation
	Power supply voltage has dropped.	Ensure power supply is at proper voltage.
	The brake circuit is disconnected.	Repair wiring to restore brake circuit.
	The rectifier is damaged	Replace the rectifier

Troubleshooting Guide (cont.)		
Trouble	Cause	Remedy
The crane does not move smoothly	Track wheels are unevenly worn	Replace the wheels
	Brake force is unbalanced between the left and right brakes	Adjust runways
	A gap has formed between the guide rollers and the runway rail. May be due to wear in the guide roller	Replace the guide rollers
Electrical shock	The crane is not properly grounded	Ground parts
	The travel surface on the bridge beam or runway is coated with oil, grease, paint or corrosion	Remove foreign material from travel surface or add ground conductor for hoist power
	Water or foreign matter has penetrated the electric parts	Dry parts and remove any foreign matter
The crane accelerates too slowly	The electronic soft start's torque volume is adjusted too low	Increase torque volume
	The electronic soft start's timer is adjusted too low	Increase the timer setting
The crane accelerates too rapidly	The electronic soft start's timer is adjusted too high	Decrease the timer setting
Stopping distance is too long	Brake torque is too low	Adjust the brake torque to a higher setting
	Brake parts are worn	Replace parts
Stopping distance is too short	Brake torque is too high	Adjust the brake torque to a lower setting

7.0: REPLACEMENT PARTS GUIDE

The following parts lists and illustrations cover standard model cranes. Typical units are used as the basis for the exploded parts illustrations; therefore, certain variations may occur from the parts information given. For this reason always provide the name plate information located on the end trucks. Provide the model number, serial number, motor horsepower, voltage, phase and frequency when ordering replacement parts. For motors, gear cases and electrical components, give complete nameplate data. The factory recommends complete replacement of the motor or gear case.



WARNING

NON-FACTORY AUTHORIZATIONS OR MODIFICATIONS OF EQUIPMENT AND USE OF NON-FACTORY REPAIR PARTS CAN LEAD TO DANGEROUS OPERATION AND INJURY

TO AVOID INJURY:

**Do not alter or modify equipment without factory authorization.
Use only factory provided replacement parts.**

7.1: Ordering Parts

When ordering Parts, please provide the End Truck's model number located on the End Truck's nameplate.

7.2: Recommended Spare Parts

Certain parts of your crane will, in time, require replacement under normal wear conditions. Your end trucks are designed for long life with very little maintenance. We do not recommend that you stock any spare parts. We keep all normal replacement parts in our inventory and we have found that in the many years of service the spare parts you would inventory would sit there over an extended amount of time and may go bad.

This parts and instruction manual contains information required to install and maintain your crane. To insure prompt service, each repair parts order should be placed with Material Handling Systems, and must contain the following information:

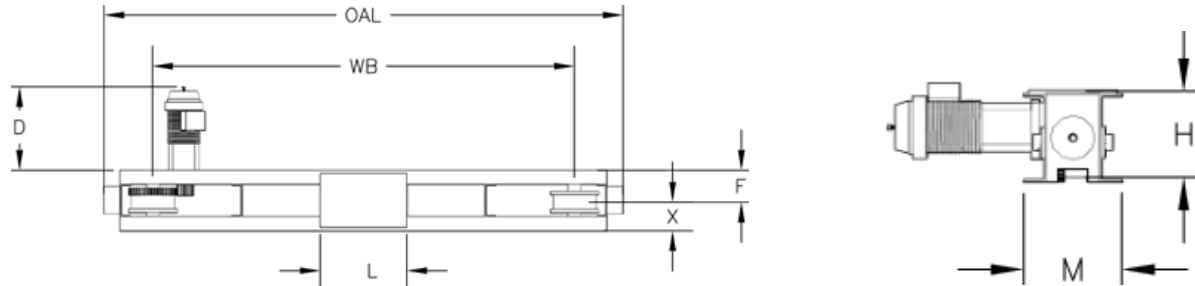
Please give all information listed below in items 1 through 4. This will enable your distributor to fill your order promptly.

- Give complete data from Hoist/Crane nameplate, including Hoist/Crane serial number, model number, voltage, frequency, and hertz.
- Give part numbers, description and quantity of parts required.
- Give correct shipping destination.

For ordering motor repair parts, give all data on the Hoist/Crane and motor nameplates.

7.3: Top Running End Trucks

7.3.1: ETTM- Top Running Motorized End Truck: Dimensions



Cap (tons)	Model	Wheel Ø (in)	Max Span (ft)	Wheel Base (WB) (ft)	Overall length (OAL) (in)	Height (H) (in)	Width (W) (in)	Width (OW) (in)
3	ETTM060070-032	5	32	4	61	8.4	9.7	4.6
	ETTM060140-032							
	ETTM060070-040							
	ETTM060140-040							
	ETTM060070-048							
	ETTM060140-048							
	ETTM060070-060							
ETTM060140-060								
5	ETTM100070-032	6	32	4	62	8.4	9.7	4.6
	ETTM100140-032							
	ETTM100070-040							
	ETTM100140-040							
	ETTM100070-048							
	ETTM100140-048							
	ETTM100070-060							
ETTM100140-060								
10	ETTM200070-032	8	32	4	65	10.4	11.2	5.3
	ETTM200140-032							
	ETTM200070-040							
	ETTM200140-040							
	ETTM200070-048							
	ETTM200140-048							
	ETTM200070-060							
ETTM200140-060								
15	ETTM300070-032	10	32	4	65	12.4	11.9	5.6
	ETTM300140-032							
	ETTM300070-040							
	ETTM300140-040							
	ETTM300070-048							
	ETTM300140-048							
	ETTM300070-060							
ETTM300140-060								

*Other capacities, wheel sizes and spans are available upon request.

ETTM-Top Running Motorized End Truck - Specifications

Cap (tons)	Model	Wheel Ø (in)	Max Speed travel (ft/min)	Drive (Hp)	Recommended Rail size (ASCE #)
3	ETTM060070-032	5	70	2 X 1½	25
	ETTM060140-032		140	2 X 1	
	ETTM060070-040		70	2 X 1½	
	ETTM060140-040		140	2 X 1	
	ETTM060070-048		70	2 X 1½	
	ETTM060140-048		140	2 X 1	
	ETTM060070-060		70	2 X 1½	
	ETTM060140-060		140	2 X 1	
5	ETTM100070-032	6	70	2 X 1½	25
	ETTM100140-032		140	2 X 1	
	ETTM100070-040		70	2 X 1½	
	ETTM100140-040		140	2 X 1	
	ETTM100070-048		70	2 X 1½	
	ETTM100140-048		140	2 X 1	
	ETTM100070-060		70	2 X 1½	
	ETTM100140-060		140	2 X 1	
10	ETTM200070-032	8	70	2 X 1	40
	ETTM200140-032		140	2 X 1½	
	ETTM200070-040		70	2 X 1	
	ETTM200140-040		140	2 X 1½	
	ETTM200070-048		70	2 X 1	
	ETTM200140-048		140	2 X 1½	
	ETTM200070-060		70	2 X 1	
	ETTM200140-060		140	2 X 1½	
15	ETTM300070-032	10	70	2 X 1½	60
	ETTM300140-032		140	2 X 5	
	ETTM300070-040		70	2 X 1½	
	ETTM300140-040		140	2 X 5	
	ETTM300070-048		70	2 X 1½	
	ETTM300140-048		140	2 X 5	
	ETTM300070-060		70	2 X 1½	
	ETTM300140-060		140	2 X 5	

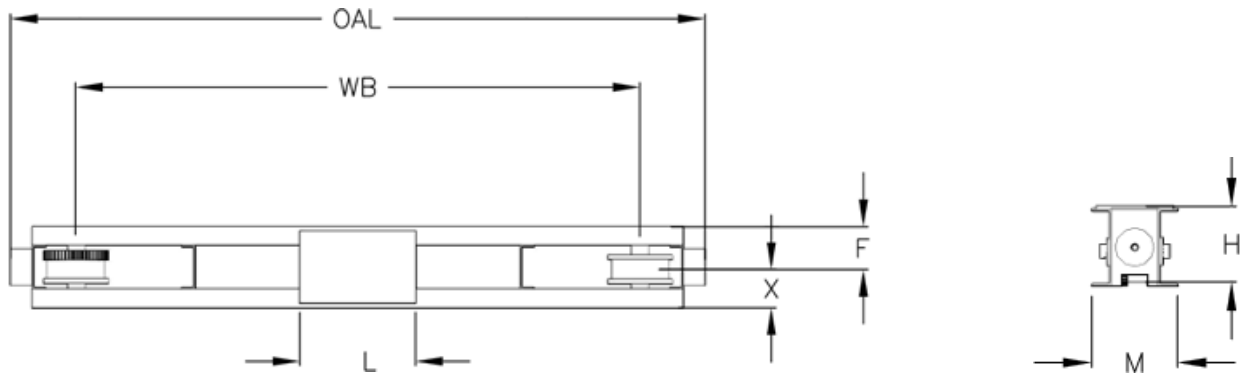
*The weight does not include the control box.

*All of our end trucks are delivered in primer coat. For epoxy blue or yellow color please contact the factory.

* We do not recommend single speed motor above 90 fpm.

* General specifications and dimensions might vary depending on your specific needs.

7.3.2: ETTP-Top Running Push End Truck - Dimensions and Specifications

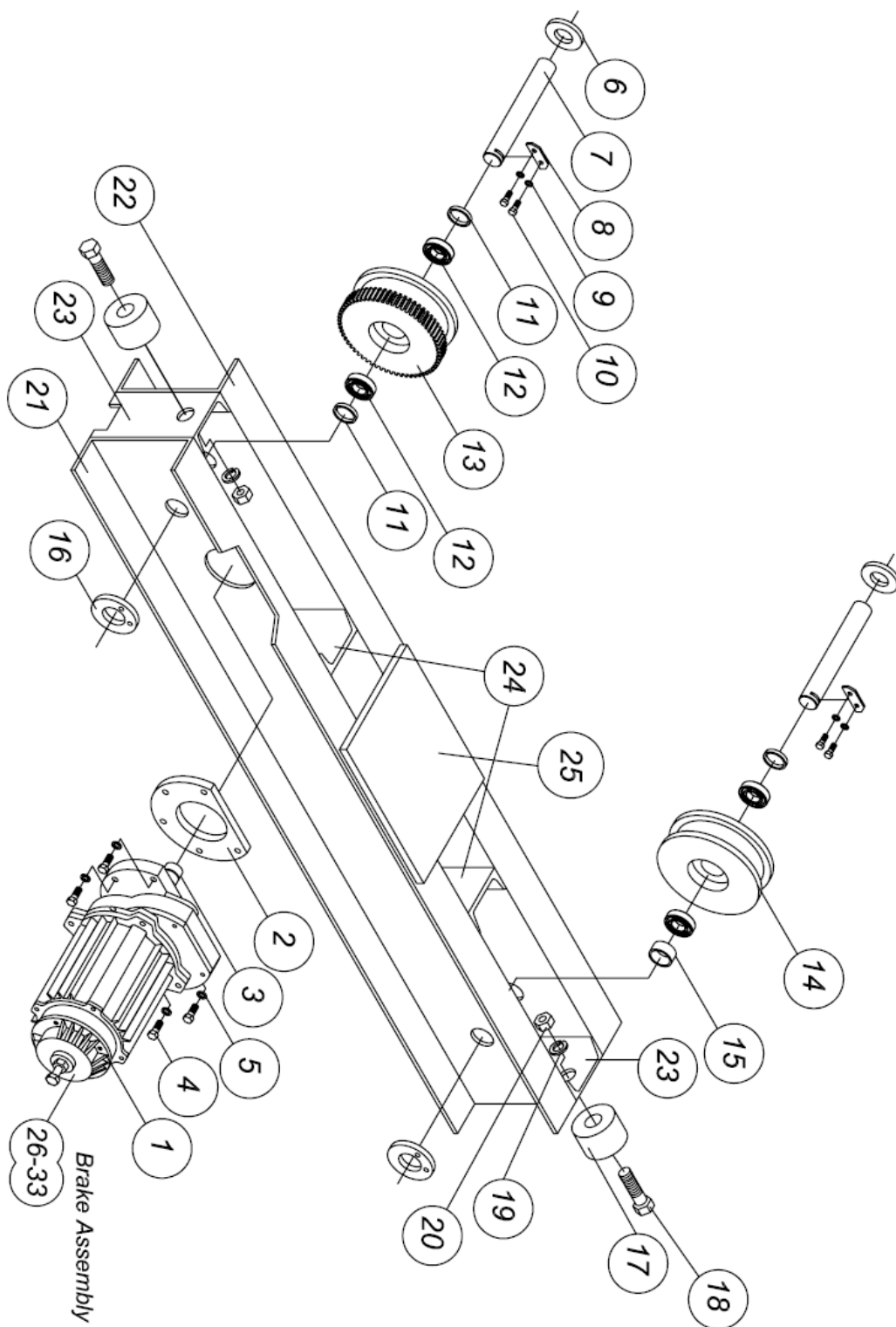


Cap. (tons)	Model	Wheel Ø (in)	Max Span (ft)	Wheel Base (WB) (ft)	Overall length (OAL) (in)	Height (H) (in)	Width (W) (in)	Width (OW) (in)	Recommended Rail size (ASCE #)
3	ETTP060-032	5	32	4	61	8.4	9.7	4.6	25
	ETTP060-040		40	5	74				
	ETTP060-048		48	6	86				
	ETTP060-060		60	7.5	104				
5	ETTP100-032	6	32	4	5.1	8.4	9.7	4.6	25
	ETTP100-040		40	5	6.1				
	ETTP100-048		48	6	7.1				
	ETTP100-060		60	7.5	8.6				

*Other capacities, wheel sizes and spans are available upon request.

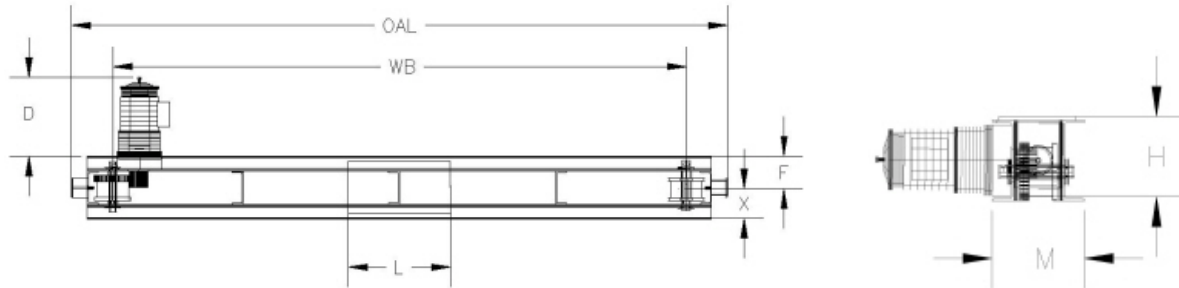
*All of our end trucks are delivered in primer coat. For epoxy blue or yellow color please contact the factory.

*General specifications and dimensions might vary depending on your specific needs.



7.4: Under Hung End Trucks

7.4.1: ETUM: Under Hung Motorized End Trucks- Dimensions and Specifications



Cap (tons)	Model	Wheel (in)	Max Span (ft)	Wheel base (WB) (ft)	Overall length (OAL) (in)	Max Speed Travel (fpm)	Drive (HP)
3	ETUM060070-032	4	32	4	70	60	2 X ½
	120					2 X 1	
	ETUM060140-032		40	5	82	60	2 X ½
	120					2 X 1	
	ETUM060070-040		48	6	94	60	2 X ½
	120					2 X 1	
	ETUM060140-040		60	7.5	112	60	2 X ½
	120					2 X 1	
5	ETUM060070-048	5	32	4	70	60	2 X ½
	120					2 X 1	
	ETUM060140-048		40	5	82	60	2 X ½
	120					2 X 1	
	ETUM100070-032		48	6	94	60	2 X ½
	120					2 X 1	
	ETUM100140-032		60	7.5	112	60	2 X ½
	120					2 X 1	
ETUM100070-040	60	7.5	112	60	2 X ½		
120				2 X 1			
ETUM100140-040	60	7.5	112	60	2 X ½		
120				2 X 1			

*Other capacities, wheel sizes and spans are available upon request.

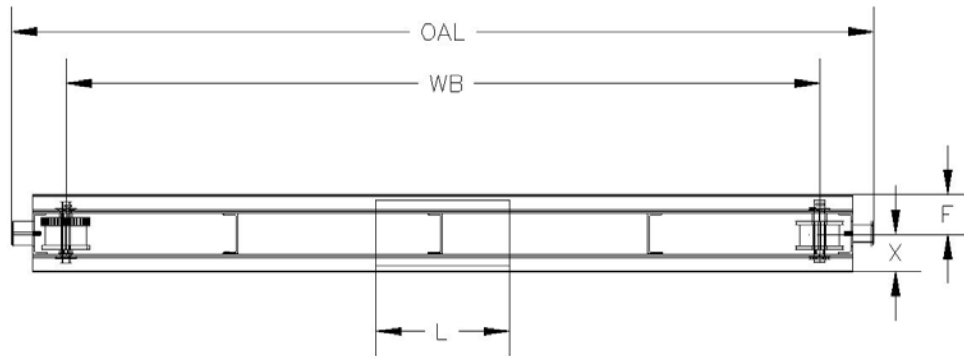
*The weight does not include the control box.

*All of our end trucks are delivered in primer coat. For epoxy blue or yellow color please contact the factory.

* We do not recommend single speed motor above 90 fpm.

* General specifications and dimensions might vary depending on your specific needs.

7.4.2: ETUP-Under Hung Push End Truck – Dimensions and Specifications



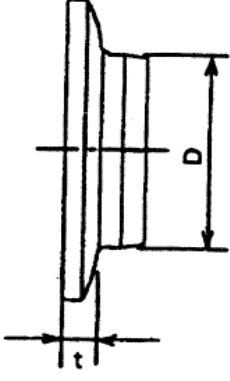
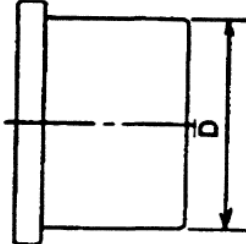
Cap (tons)	Model	Wheel (in)	Max Span (ft)	Wheel base (WB) (ft)	Overall length (OAL) (in)
3	ETUP060-032	4	32	4	70
	ETUP060-040		40	5	82
	ETUP060-048		48	6	94
	ETUP060-060		60	7.5	112
5	ETUP100-032	5	32	4	70
	ETUP100-040		40	5	82
	ETUP100-048		48	6	94
	ETUP100-060		60	7.5	112

* Other capacities, wheel sizes and spans are available upon request.

* All of our end trucks are delivered in primer coat. For epoxy blue or yellow color please contact the factory.

* General specifications and dimensions might vary depending on your specific needs.

7.5: Hand Wheel Assy & Drive Shaft

End Truck Wheel Dimensional Data					
Under-Running Crane					
	D	Standard	2.48 in (63 mm)	3.15 in (80 mm)	3.93 in (100mm)
		Discard	2.28 in (58 mm)	2.95 in (75 mm)	3.73 in (195 mm)
	t	Standard	0.59 in (15 mm)	0.63 in (16 mm)	0.67 in (17 mm)
		Discard	0.43 in (11 mm)	0.47 in (12 mm)	0.51 in (13 mm)
Top Running Crane					
	D	Standard	5 in (127 mm)	6 in (152 mm)	8 in (203 mm)
		Discard	4.72 in (120 mm)	5.67 in (144 mm)	7.64 in (194 mm)
	D	Standard	10 in (254 mm)	12 in (305 mm)	16 in (406 mm)
		Discard	9.53 in (242 mm)	11.50 in (292 mm)	15.43 in (392 mm)

8.0: ACI'S WARRANTY

Every end truck is thoroughly inspected and tested before it is shipped from the factory. If any problem develops within one-year return the complete hoist prepaid to the factory. If an inspection reveals that the problem is caused by defective workmanship or material, repairs will be made without charge and the hoist will be returned, transportation prepaid.

This warranty does not cover: (a) deterioration caused by normal wear, abuse, eccentric or side loading, overloading, chemical or abrasive actions, improper maintenance or excessive heat; (b) problems resulting from repairs, modifications or alterations made by people other than factory or ACI representative; (c) the end truck has been abused or damaged due to an accident; (4) repair parts or accessories other than ACI equipment are used on the hoist. Equipment and accessories not of the seller's manufacture are warranted only to extent that they are warranted by the manufacturer. EXCEPT AS STATED HERE, ACI MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WARRANTIES FOR A PARTICULAR PURPOSE.