

# INSTRUCTIONS AND PARTS LIST

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CraneSource™

## SINGLE GIRDER UNDERHUNG CRANE BRIDGE KITS

## HAND GEARED AND MOTOR DRIVEN

Follow all instructions and warnings while installing or operating this crane bridge. The installation or operation of any crane bridge presents some risk of personal injury or property damage if proper instructions and warnings are not followed. Before installing or operating this crane bridge the operator should become thoroughly familiar with all warnings, instructions and recommendations in this manual.

Retain this manual for future reference & use.

## FOREWORD

This manual contains important information to help you install, operate, maintain and service your new single girder under running 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 actions you will be assured of the maximum service from your crane bridge.

The crane bridges described in this manual are intended for indoor service. Bridges to be used for outdoor service require special considerations.

### IMPORTANT!

When ordering replacement parts, be sure to include with your order the CATALOG and KEY NUMBERS, which are identified elsewhere in this manual.

Information given in this manual is subject to change without notice.

## GENERAL DESCRIPTION

**GENERAL** - These under running crane bridges are designed to operate on parallel American Standard or Wide Flange crane runway beams. Motors and controls are designed for 230V, 460V or 575V, 3 phase, 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. Under running single girder crane bridges described herein are built in capacities from 1 through 10 tonnes with spans through 60'-0".

## 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 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.

## INSTALLATION

**GENERAL** - Runway beams on which these cranes will operate must be sufficiently strong enough to support crane bridge, hoisting equipment and rated load. Runway beams must be in accordance with CMAA 74-latest edition Table 1.4.1-1 and the 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".

## INSTALLING CRANE BRIDGE

Only a qualified crane installer shall perform the installation of the crane on the runway.

For information regarding attaching, lifting and moving the loads during installation refer to ANSI B30.11-latest edition, Chapter 11-3 and other applicable codes.

### ⚠ WARNING

**Working in or near exposed energized electrical equipment presents the danger of electric shock.**

#### TO AVOID INJURY:

**Disconnect power and lockout/tagout disconnecting means before installing crane or runway.**

Prior to the start of any crane erection the building should be measured for span 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 with respect to the runway.

These types of cranes are usually lifted into position on the runway beams 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 beams check the wheel flange clearances to the runway beam. See Figure 1. Encroachment of flange connections may cause interference.

**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

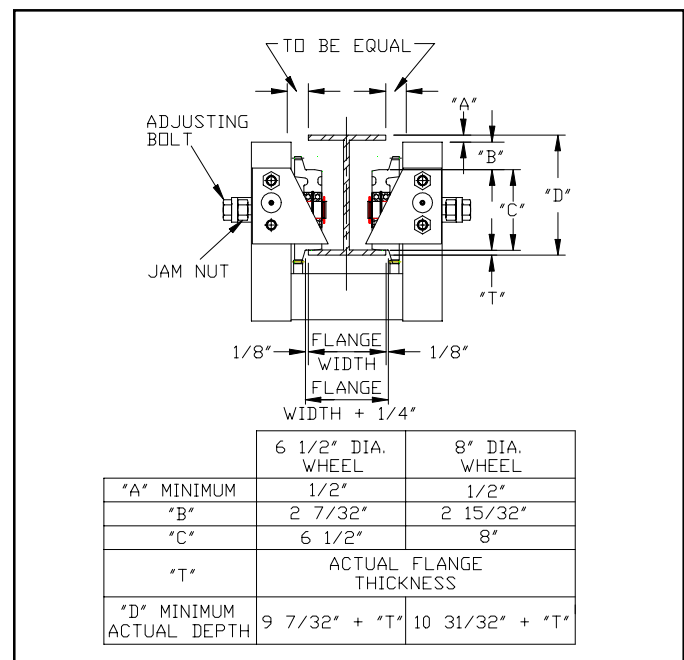


Figure 1.

inside faces of the wheel flanges should be the width of the bottom flange of the runway beam plus 1/4". See Figure 1. Note also that the dimensions from the flanges of the runway to the side of the truck should be equal as shown in Figure 1. If all dimensions are correct, lift the crane bridge so that the wheels are level with the contact surface on the runway beam. Carefully move the crane bridge onto the runway.

<b>▲WARNING</b>
<b>For a crane bridge mounted on a runway beam, the omission of end stops can result in loss of crane bridge with resultant injury or damage.</b>
<b>TO AVOID INJURY OR DAMAGE:</b> <b>Install end stops to prevent the crane from running off the end of the beam.</b>

**2. Removable Runway Section.** In some installations a removable section of runway may be available. If so remove runway section, install crane bridge as in paragraph 1 and reinstall 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, as in "Assembling the End Trucks". 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 per Section 8.d.1 of the AISC "Specifications for Structural Joints using ASTM A325 or 490 Bolts" : tighten snug tight, then make 1/3 more turn.

<b>▲WARNING</b>
<b>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</b>
<b>TO AVOID INJURY OR DAMAGE:</b> <b>Be certain that prior to crane use the safety lugs are firmly bolted in place using the supplied high strength bolts.</b>

**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.

**CONNECTING BRIDGETO ELECTRICAL SERVICE**

Crane panel wiring diagrams are shown in Part No. 113533-83, Wiring Diagrams for Bridge Control Panels.

<b>▲WARNING</b>
<b>Improper power supply can damage electrical components</b>
<b>TO AVOID DAMAGE:</b> <b>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.</b> <b>Do not operate crane until "Pre-Operation Checks" below are made.</b>

**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. Refer also to article 6.10 of N.E.C.

<b>▲WARNING</b>
<b>Working in or near exposed electrical equipment presents the danger of electric shock.</b>
<b>TO AVOID INJURY:</b> <b>Before attempting any electrical connections, the main power switch feeding the runway must be locked in the open (off) position.</b>

Install, adjust and align collectors with runway conductors. Connect collectors to appropriate crane wiring as shown in 113533-83, Wiring Diagrams for Bridge Control Panels.

**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) in accordance with the appropriate crane wiring diagram shown in 113533-83, Wiring Diagrams for Bridge Control Panels.

**TROLLEY COLLECTORS**

Electrically operated hoists and/or trolleys 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.

**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 conductors. Check along runway for possible interference if power is cable reel or festooned cable.


2. Check cross conductors and collectors for adjustment and proper tracking.

3. Check gearing at wheels and the oil level of the gear case. If lubricant is required see LUBRICATION under MAINTENANCE. Make sure that the vent is installed in the gear case and is at the highest possible level.

4. Inspect 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 brake adjustment and electrical connections.

6. The hoist/trolley unit should be checked as instructed in the Hoist Manufacturer's Instruction Manual. 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.

 <b>WARNING</b>
<b>The omission or incorrect location of trolley stops can result in loss of hoist trolley with resultant injury and damage.</b>
<b>TO AVOID INJURY AND DAMAGE:</b> <b>Install end stops per the Trolley Stop Table on the Bridge Assembly Drawings to prevent the hoist trolley from running off the end of the beam.</b>

7. 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 wheels and the beam flanges, extra cross conductors and collectors must be provided for grounding purposes.

## OPERATION

**OPERATOR QUALIFICATIONS** - 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 book as well as of 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 B30.11 - latest edition.


Prior to placing the crane into service, OSHA requires that the user performs and records certain tests including proof loading of the crane. Refer to ANSI B30.11 for information about these requirements.

## OPERATING RULES

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.

## OPERATING PRECAUTIONS

 <b>WARNING</b>
<b>Supporting or transporting people or transporting loads over people can result in injury.</b>
<b>TO AVOID INJURY:</b> <b>DO NOT USE These crane bridges for support or transport of people or for transporting loads over people.</b>

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 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 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.

## WARNING

**Injury to personnel or damage to equipment may result if all installation and operation checks are not done in accordance with instructions.**

### **TO AVOID INJURY OR DAMAGE:**

**Make sure all INSTALLATION AND OPERATION CHECKS have been made in accordance with instructions furnished with the HOIST and TROLLEY before turning on the power.**

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 also be installed.

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

Read and comply with ANSI/ASME B30.11 - latest edition. Read and comply with all local, state and national safety codes.

## **GENERAL**

Motor driven cranes are operated from a pendant push button station. The push button may be suspended from the bridge, trolley or hoist. Push button control stations, supported by a strain cable, have a built-in interlock to prevent energizing opposing motions at the same time.

## **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

**Damage to personnel or equipment may occur if power is turned on when pushbutton binds or sticks in any position.**

### **TO AVOID INJURY OR DAMAGE:**

**DO NOT turn power on. Determine the cause of malfunction and correct it before operating the crane.**

## **OPERATING THE CONTROLS (NO LOAD)**

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

**Step 1.** - Close the crane runway disconnect switch.

**Step 2.** - Close 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. Rotating the handle operates the switch. 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. This stop-start circuit, as well as other control circuits, operates 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 two-speed motors 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.

## WARNING

**ABRUPT CHANGE OF BRIDGE DIRECTION WHILE IN MOTION MAY CAUSE ADVERSE OPERATING CHARACTERISTICS OR DAMAGE TO BRIDGE AND DRIVE COMPONENTS.**

### **TO AVOID DAMAGE:**

**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 interference between crane and building part. 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 bridge from one end of the runway to the other checking for obstructions or interference. 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.

<b>⚠WARNING</b>
<b>Working in or near exposed electrical equipment presents the danger of electric shock.</b>
<b>TO AVOID INJURY:</b> <b>Lock main runway disconnect switch in open position before attempting to adjust main collectors or conductors.</b>

**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" farther, causing the crane to run at faster speed. Again note the distance the crane requires to stop after releasing the push button.

The above checkout procedure may be used for the trolley noting some minor differences:

The trolley push button is labeled "LEFT" and "RIGHT".

**Note:** Since a variety of hoist/trolley combinations may be used on this type of bridge, consult the Manufacturer's Instructions to familiarize yourself with that equipment. Refer also to ANSI/ASME B30.16.

After becoming familiar with these motions, the operator can now depress the hoist "UP" button.

<b>⚠WARNING</b>
<b>Damage to hoist can occur if hook lowers when "up" button is depressed.</b>
<b>TO AVOID DAMAGE:</b> <b>STOP AT ONCE - DO NOT attempt to operate again. Report this condition to the proper supervisor for correction.</b>

Depress the "DOWN" button. Practice moving the hook up and down.

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 that will stop the hoist when this position is reached. Consult the Hoist Manufacturer's Manual.

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.

<b>⚠WARNING</b>
<b>Damage to hoist can occur if hook block contacts hoist frame.</b>
<b>TO AVOID DAMAGE:</b> <b>DO NOT contact or strike the hoist frame with the hook block. If the limit switch does not interrupt the hoist motion, stop the hoist by removing your finger for the button and/or depressing the STOP button. DO NOT attempt further operation until the limit switch is operable. Consult the Hoist Manufacturer's instructions.</b>

Repeat upper limit switch test described above at full speed.

**Note:** During this test and under any other operating condition - OPERATOR SHOULD NEVER BE POSITIONED UNDER THE HOOK OR LOAD.

**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.

<b>⚠WARNING</b>
<b>Supporting or transporting loads over people can result in injury.</b>
<b>TO AVOID INJURY:</b> <b>DO NOT USE These crane bridges for support or transport of people or for transporting loads over people.</b>

### 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. Refer to ANSI/ASME B30.11 for proper hand signals.

**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 increasing speed as distance permits move 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.


### 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.

### INSPECTION

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, or anything wrong or apparently wrong should be reported to the operator's supervisor immediately. Inspect hoist and trolley as recommended in the manufacturer's manuals.

 <b>WARNING</b>
<b>Damage to crane, hoist or trolley can occur if they have unusual vibrations, sounds or warnings or anything wrong or apparently wrong.</b>
<b>TO AVOID DAMAGE:</b> <b>Determine the correct cause of the unusual conditions and make certain that the crane can be operated SAFELY. Danger may be present that the crane operator cannot see.</b>

Complete inspection of the crane is to be performed at least every six months and more frequently when conditions require. Inspect areas listed below and any other area that may be adversely affected due to activity, severity of service or crane environment that could cause unsafe crane operation.

 <b>WARNING</b>
<b>Working in or near exposed electrical equipment presents the danger of electric shock.</b>
<b>TO AVOID INJURY:</b> <b>Always lock the main switch in the open (off) position before inspection.</b>

Items to be inspected include but are not limited to:

1. All functional operating mechanisms for maladjustment interfering with crane operation.
2. Operating parts for excessive wear.
3. All safety devices for malfunction.
4. All connections and mountings for loose bolts, nuts and other fasteners for tightness.
5. All structural members for deformation, cracks or corrosion.
6. All electrical apparatus, including control contactors, limit switches, push button stations for signs of pitted contact points, wear or deterioration.
7. All hoists and trolleys installed on the crane in accordance with the manufacturer's recommendation.

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. A typical Inspection Schedule and Maintenance Report Form is shown on Page 18.

### MAINTENANCE

**GENERAL** - Maintenance services required on under running cranes are, for the most part, simple periodic inspections and adjustments. Procedures for lubrication, routine adjustments and replacement of parts, if required, are described in the following paragraphs.

### LUBRICATION

1. Wheel bearings are permanently lubricated and require no additional lubricant.
2. Drive wheel gears are to be lubricated with an open type gear grease which is heavy, plastic, extreme pressure and tacky such as MOBILTAC 375 NC or equal.
3. The gear case lubricant should be changed every year or 2000 hours of service for moderate usage. The lubricant should be changed more frequently if the service is more severe. Use 17 ounces of AGMA extreme pressure lubricant number 5, compounded, (Mobil Gear 630 or equal) if the ambient temperature is 15° to 60° F or AGMA lubricant number 7, compounded, (Mobil Gear 634 or equal) if the ambient temperature is 50° to 125° F.

4. It is recommended that the areas of the cross shaft covered by bearings and couplings are coated with 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. See Part No. 113533-82, Operating Instructions and Parts List, Bridge Drive Gear Case, included with in this package.

A separate piece of literature in the literature package covers maintenance of the brake.

For hoist and trolley lubrication instructions refer to the manufacturer's manuals.

### WHEEL REMOVAL

Refer to parts illustration Figure 2.

To remove the wheels follow the steps below:

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

<b>⚠ WARNING</b>
<b>Injury to personnel and/or damage to equipment can occur when truck wheel is removed if proper instructions are not followed.</b>
<b>TO AVOID INJURY OR DAMAGE:</b> <b>Make sure that the truck is adequately supported so that it cannot drop when the wheel is removed.</b>

2. Remove two bolts and lock washers (Ref. No. 10 & 11) and remove drop lug (Ref. No. 9)

3. Remove load from wheel. This can be accomplished by jacking a very small distance.

4. Remove the hairpin clip (Ref. No. 17) and spacer washer (Ref. No. 16) from the axle.

5. The wheel axle (Ref. No. 8) is held in position by a jam nut (Ref. No. 7) on the adjusting bolt (Ref. No. 6). Removal of this bolt allows removal of the axle.

6. Pull the axle away from 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 (Ref. No. 13) separates the bearings (Ref. No. 12). It is recommended that bearings and wheels be replaced as a unit.

9. Replace wheels in reverse order of disassembly.

### GEAR CASE

The gear case is shown in 113533-82, Operating Instructions and Parts List, Bridge Drive Gear Case.

## ELECTRICAL

### 1. Motors.

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

b. For hoist and trolley motors, consult the hoist and trolley literature.

### 2. Brake.

a. Consult the literature provided with the brake for friction disc replacement and brake adjustment.

### 3. Bridge Control Panel.

a. All connections should be checked frequently for tightness.

b. Figure 8 shows components in the electrical enclosure and their identifying numbers.

### 4. Hoist and Trolley.

a. Panel, brakes, limit switches, etc. Consult hoist and trolley literature for maintenance and spare parts information.

## REPLACEMENT PARTS

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 give the catalog number, model 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. Motor or gear case service is available, however, from your crane builder.

<b>⚠ WARNING</b>
<b>NON-FACTORY AUTHORIZATIONS OR MODIFICATION OF EQUIPMENT AND USE OF NON-FACTORY REPAIR PARTS CAN LEAD TO DANGEROUS OPERATION AND INJURY.</b>
<b>TO AVOID INJURY:</b> <b>DO NOT alter or modify equipment without factory authorization.</b> <b>DO use only factory provided replacement parts.</b>

<b>Note:</b>
The numbers assigned to the parts of the various assemblies in the parts lists are not the part numbers used in manufacturing the part. They are identification numbers, that when given with the catalog number permits us to identify, select or manufacture, and ship the correct part needed.



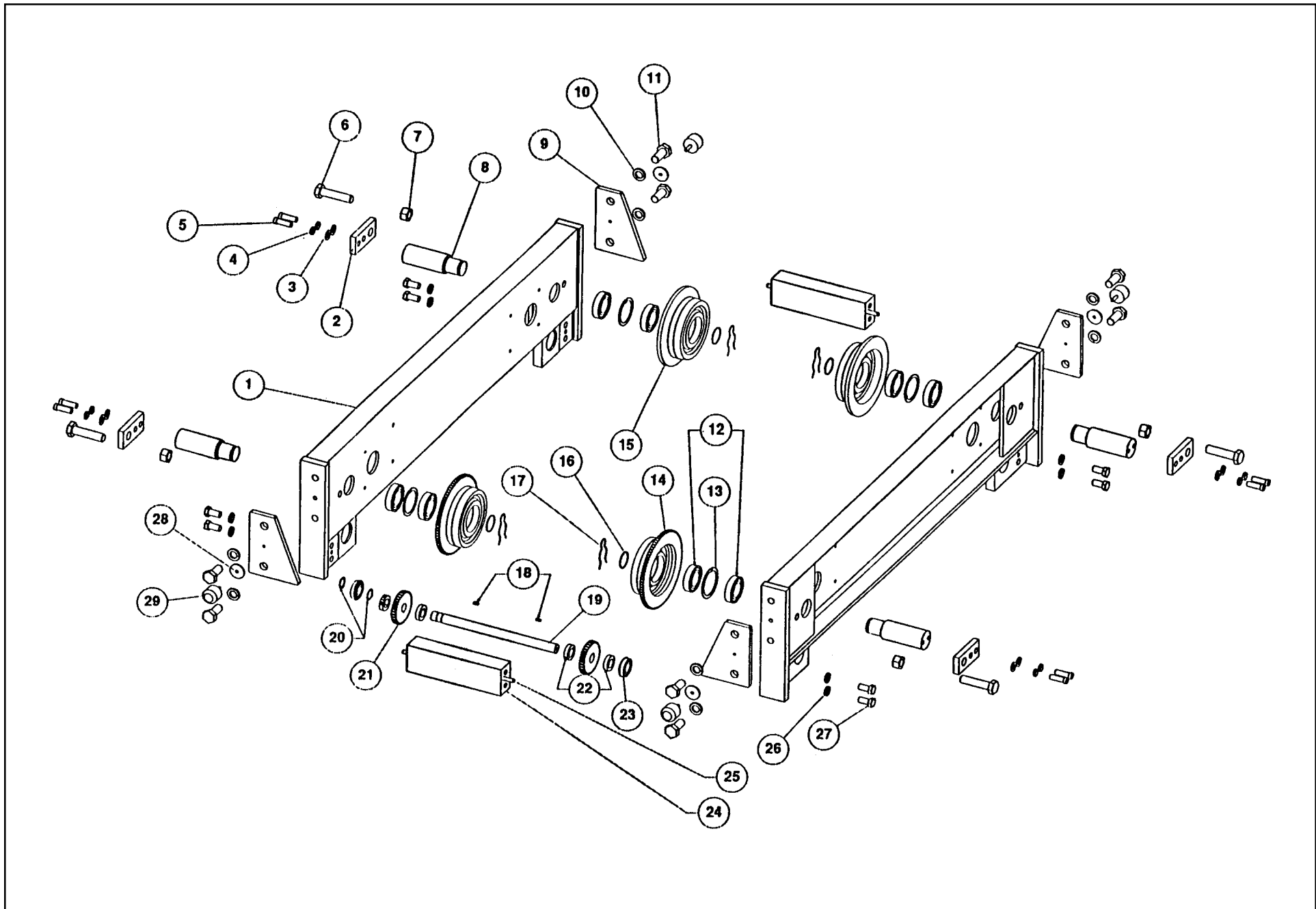
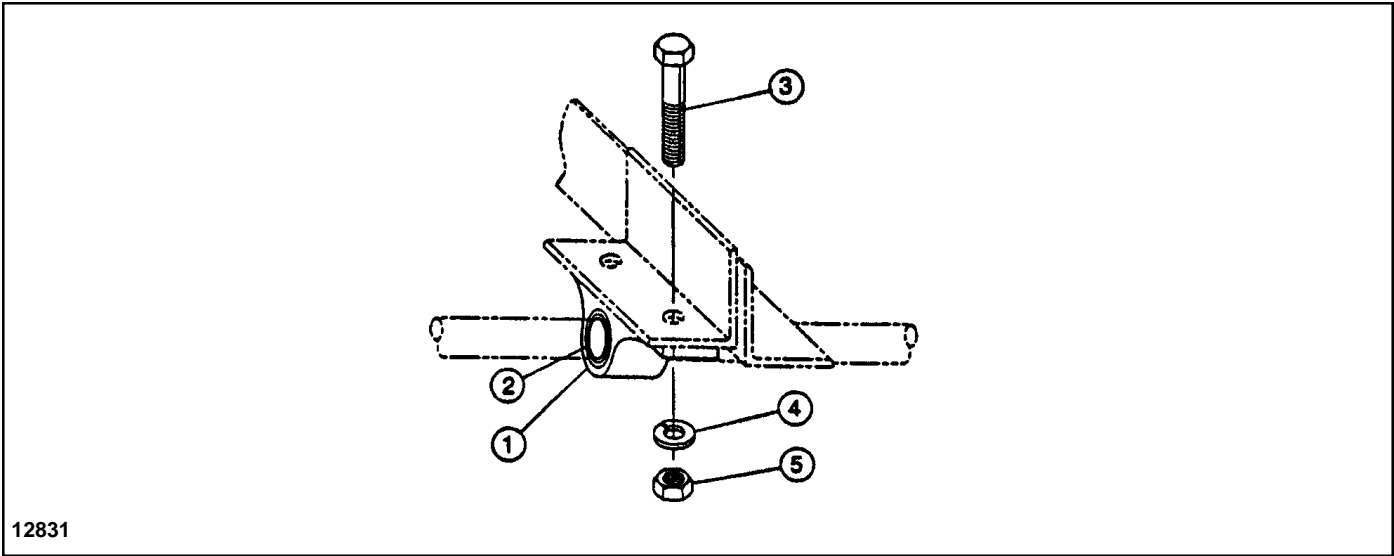


Figure 2. End Truck Assembly

**Figure 2. End Truck Assembly**

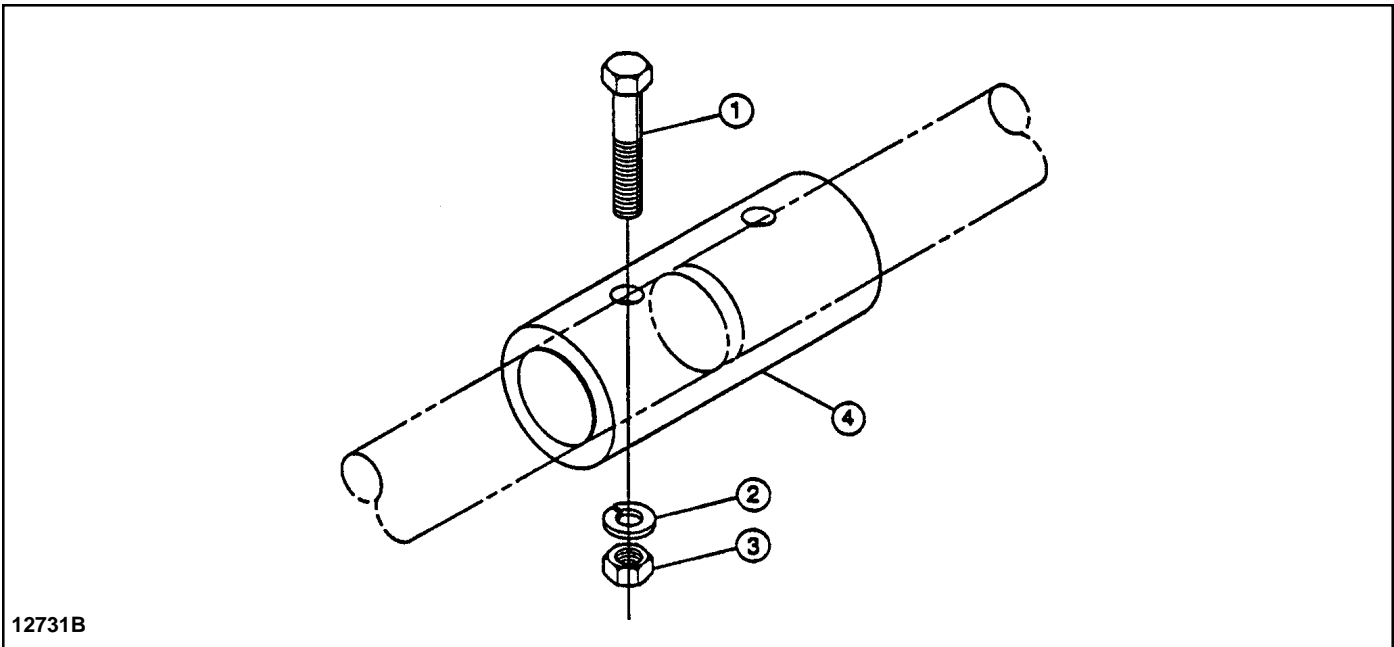
Reference Number	Part Number		Quantity Required	Description	
	6-1/2" Wheels	8" Wheels			
1	TRK-901	TRK-902	2	Truck Side 54' Wheelbase	
	TRK-903	TRK-904		Truck Side 72' Wheelbase	
	TRK-905	TRK-906		Truck Side 90' Wheelbase	
2	TRK-907	TRK-908	4	Flat	
3	TRK-909		8	Washer Hardened 1/2"	
		TRK-910		Washer Hardened 5/8"	
4	TRK-911			Spring Washer 1/2"	
		TRK-912		Spring Washer 5/8"	
5	TRK-913			Screw Cap SOC HD1/2-13 X 1-3/4	
		TRK-914		Screw Cap SOC HD 5/8-11 X 2	
6	TRK-915		4	Tap Bolt 3/4-10 X 4-1/4" Grade 5	
		TRK-916		Tap Bolt 1-8 X 4-1/4" Grade 5	
7	TRK-917			Nut Hex Jam Heavy 3/4-10 Plated	
		TRK-918		Nut Hex Jam Heavy 1"-8 Plated	
8	TRK-919	TRK-920			Axle
9	TRK-921	TRK-922			Drop Lug
10	TRK-923		8	LockWasher 3/4"	
		TRK-924		LockWasher 1" Medium Plated	
11	TRK-925			Bolt 3/4-10 X 1 3/4 ASTM A 325 Plain	
		TRK-926		Bolt 1"-8 X 2-1/4 ASTM A 325 Plain	
12	TRK-927	TRK-928			Bearing
13	TRK-929	TRK-930		4	Retaining Ring
14	TRK-931	TRK-932	2	Driver Wheel	
15	TRK-933	TRK-934		Trailer Wheel	
16	TRK-935	TRK-936	4	Spacer Washer	
17	TRK-937	TRK-938		Hitch Pin	
18	TRK-939	TRK-939	2	Key	
19	TRK-940	TRK-940	1	Cross Shaft Flange Width 4-5/8 TO 7-1/2	
	TRK-941	TRK-941		Cross Shaft Flange Width 7-5/8 TO 12	
20	TRK-942	TRK-942	2	Retaining Ring	
21	TRK-943	TRK-943		Cross Shaft Pinion	
22	TRK-944	TRK-944	4	Clamp Collar	
23	TRK-945	TRK-945	2	Bearing	
24	TRK-946	TRK-946		Spacer Block Flange Width 4 5/8 - 6	
	TRK-947	TRK-947		Spacer Block Flange Width 6 1/8 - 7 1/2	
	TRK-948	TRK-948		Spacer Block Flange Width 7 5/8 - 9	
	TRK-949	TRK-949		Spacer Block Flange Width 9 1/8 - 10 1/2	
	TRK-950	TRK-950		Spacer Block Flange Width 10 5/8 - 12	
25	TRK-951	TRK-951	4	Dowel Pin	
26	TRK-923	TRK-923	8	LockWasher 3/4"	
27	TRK-952	TRK-952		Bolt Heavy Hex HD 3/4-10 X 2-1/2	
28	TRK-953	TRK-953	4	Bumper Spacer	
29	TRK-954			Bumper Size 40	
		TRK-955		Bumper Size 50	



12831

Figure 3. Cross Shaft Bearing Assembly. (Catalog Number 904625).

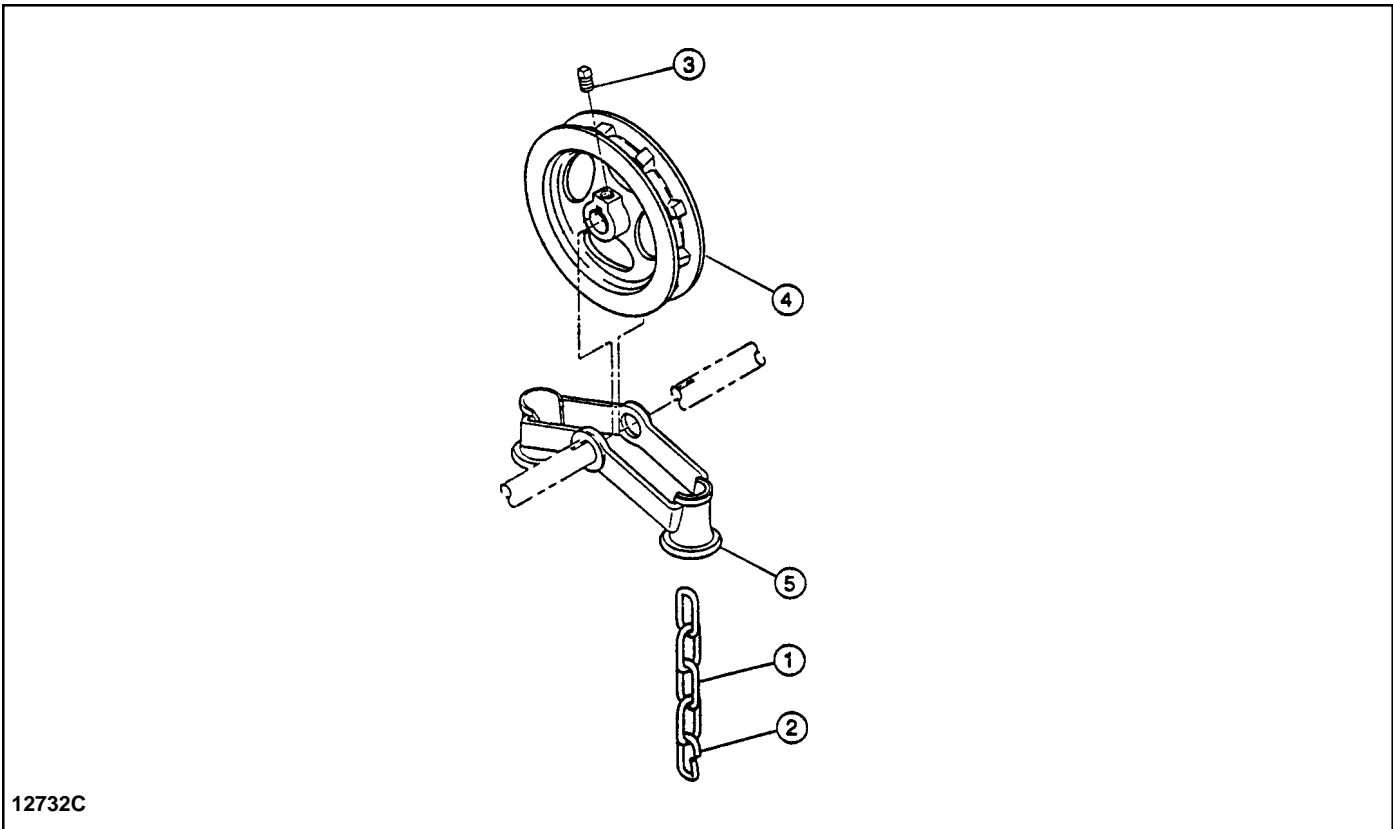
Reference Number	Part Number	Quantity Required	Description
1	TRK - 201	1	Pillow Block
2	--	1	Locking Collar (Included with Pillow Block)
3	TRK - 202	2	Hex Head Bolt (1/2-13 x 1-1/4)
4	TRK - 203	2	Spring Lockwasher (1/2)
5	TRK - 204	2	Hex Nut (1/2)



12731B

Figure 4. Coupling. (Catalog Number 8280).

Reference Number	Part Number	Quantity Required	Description
1	TRK - 301	2	Hex Head Fit Bolt (3/8-16 x 2-1/2)
2	TRK - 305	2	Spring Lockwasher - Plated (3/8)
3	TRK - 303	2	Heavy Semi-Finish Hex Nut (3/8-16)
4	TRK - 304	1	Coupling



12732C

Figure 5. Hand Chain Drive. (Catalog Numbers 8282 and 913115).

Reference Number	Part Number	Quantity Required	Description
1	TRK - 401	36 feet	Catalog Number 8282 Consists of Ref. Nos. 1 and 2: Hand Chain Connecting Link Hand Chain Drive
2	TRK - 410	1	
3	TRK - 403	1	Catalog Number 913115 Consists of Ref. Nos. 3 thru 5 Hex Socket Set Screw (1/2-13 x 1) Hand Chain Wheel Chain Wheel Guide
4	TRK - 404	1	
5	TRK - 405	1	

**NOTES**

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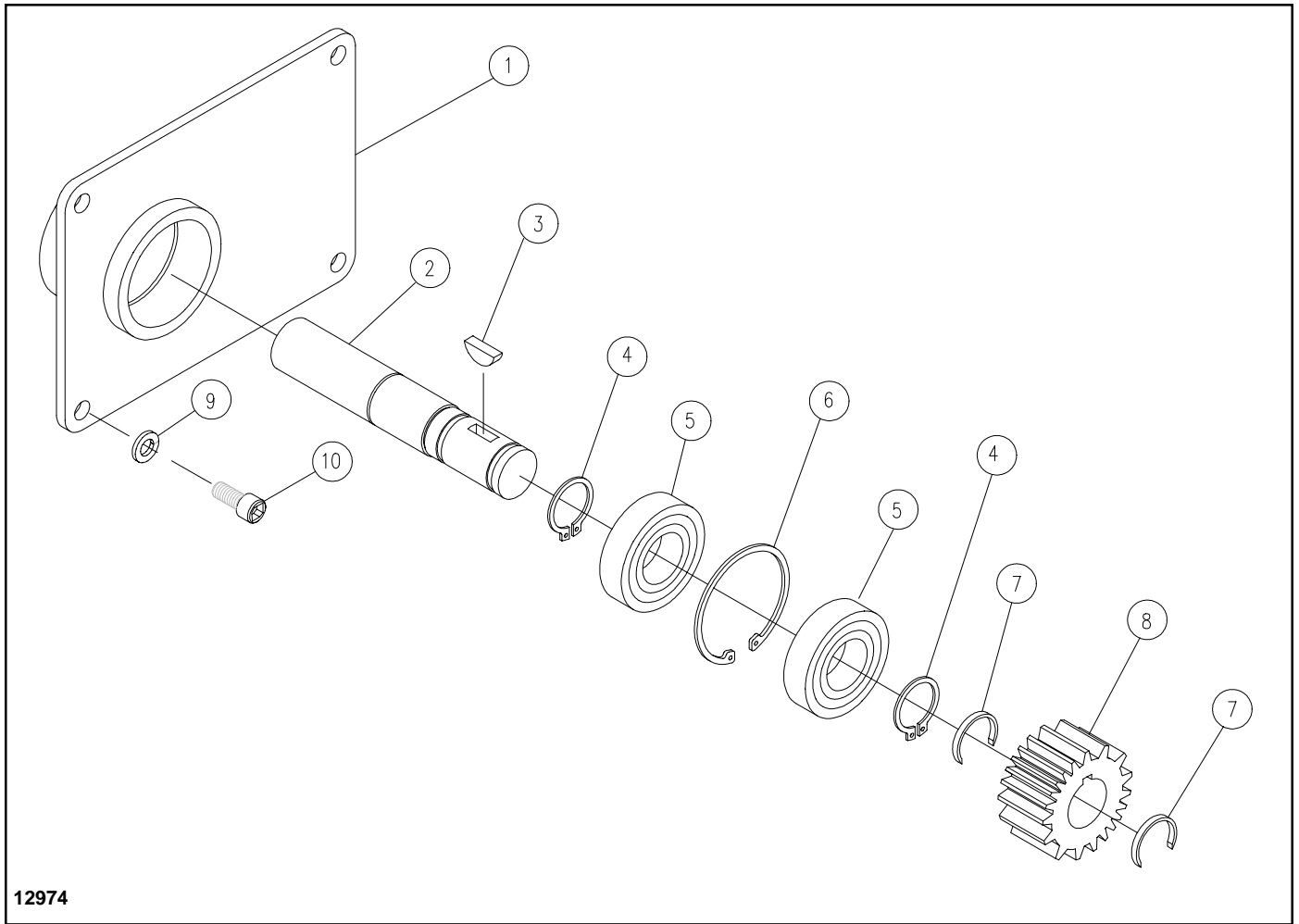
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12974

Figure 6. Hand Geared Adapter.

Reference Number	Part Number	Quantity Required	Description
1	TRK - 501	1	Machined Housing Weldment
2	TRK - 502	1	Output Shaft
3	TRK - 503	1	Woodruff Key
4	TRK - 504	2	External Retaining Ring
5	TRK - 505	2	Ball Bearings
6	TRK - 506	1	Internal Retaining Ring
7	TRK - 511	2	Open Square Section Retaining Rings
8	TRK - 508	1	Output Pinion - 19 Teeth
	TRK - 513		Standard Spark Resistant Application Only
9	TRK - 509	4	Hi-Collar Spring Lock Washer - Plated - 3/8
10	TRK - 510	4	Socket Head Cap Screw - Plated - 3/8-16 x 3/4
11	TRK - 512	1	Wheel Gear Grease (Not Shown)

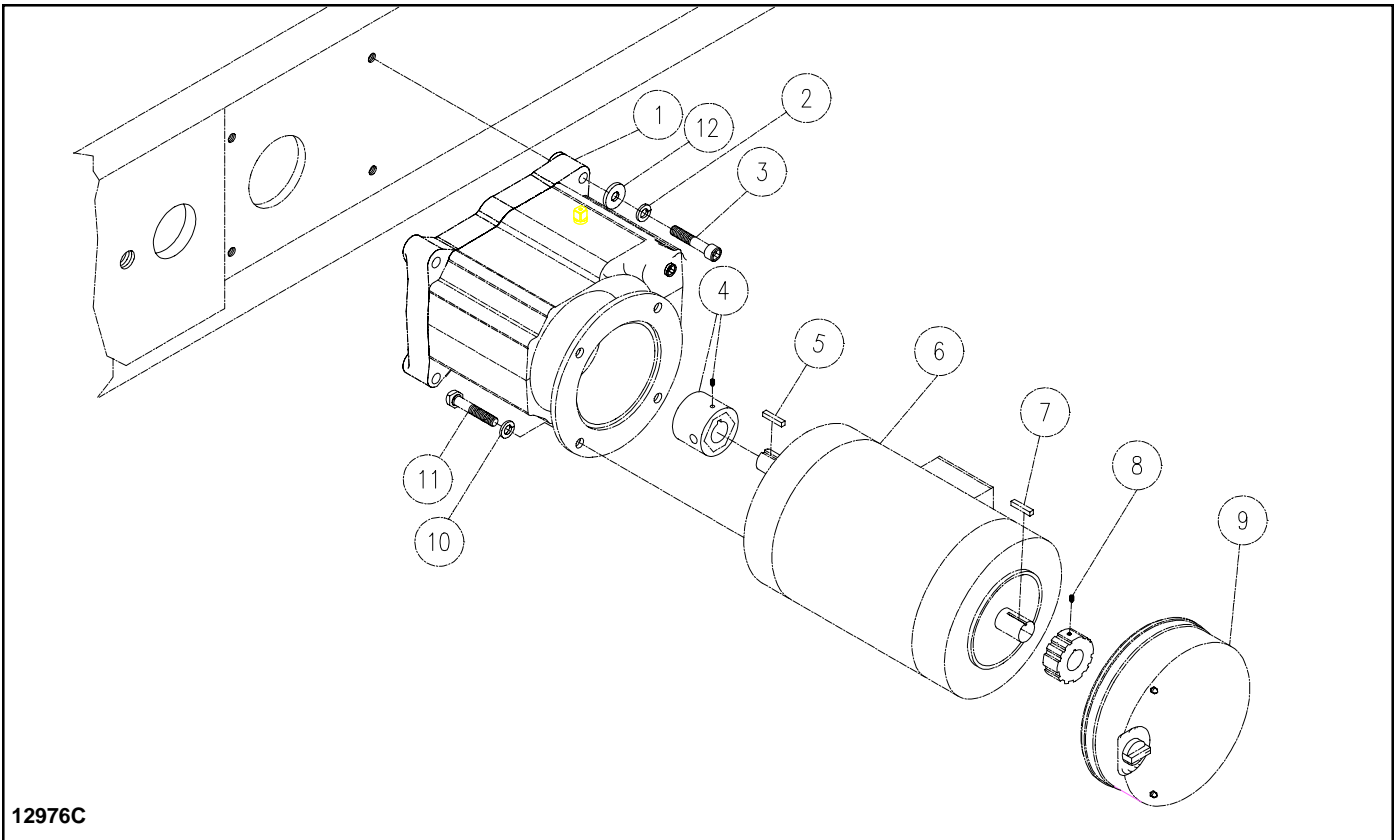


Figure 7. Drive Assembly.

Reference Number	Part Number	Quantity Required	Description
1		1	Gear Case - See 113533-82, Operating Instructions and Parts List, Bridge Drive Gear Case 13.04 : 1 Ratio 8.96 : 1 Ratio 6.97 : 1 Ratio 6.08 : 1 Ratio
	TRK - 601		Truck Mounting Hardware (Not Shown) - Includes required Vent Plug and Wheel Gear Grease
	TRK - 602	1	
	TRK - 603	1	Motor Mounting Hardware - Includes Coupling (Not Shown)
	TRK - 604		For Motor with 56C Frame
	TRK - 666		For Motor with 145TC Frame
	TRK - 667		For Motor with 180C Frame
2	TRK - 664	4	Hi-Collar Spring Lock Washers (3/8 - Plated)
3	TRK - 665	4	Socket Head Cap Screw (3/8-16 x 2 - Plated)
4	TRK - 670	1	Coupling
	TRK - 671		For 56C Face Motor
5	TRK - 609		For 145TC and 180C Face Motor
6		1	Plain Parallel Key (3/16 x 3/16 x 1)
		1	Motor:
			Single Speed:
			208-230/460-3-60:
	TRK - 610		1/2 HP, 1200 RPM
	TRK - 611		3/4 HP, 1200 RPM
	TRK - 612		1 HP, 1200 RPM
	TRK - 613		1/2 HP, 1800 RPM
	TRK - 614		3/4 HP, 1800 RPM
	TRK - 615		1 HP, 1800 RPM
	TRK - 616		1-1/2 HP, 1800 RPM
	TRK - 617		2 HP, 1800 RPM

**Figure 7. Drive Assembly (continued)**

Reference Number	Part Number	Quantity Required	Description
6		1	Motor: (continued) Single Speed: (continued) 575-3-60: 1/2 HP, 1200 RPM 3/4 HP, 1200 RPM 1 HP, 1200 RPM 1/2 HP, 1800 RPM 3/4 HP, 1800 RPM 1 HP, 1800 RPM 1-1/2 HP, 1800 RPM 2 HP, 1800 RPM 3 HP, 1800 RPM Two Speed: 230-3-60 .5/.25 HP, 1200/600 RPM .75/.38 HP, 1200/600 RPM 1/5 HP, 1200/600 RPM .5/.17 HP 1800/600 RPM .75/.25 HP, 1800/600 RPM 1/.33 HP 1800/600 RPM 1.5/.5 HP 1800/600 RPM 2/.67 HP, 1800/600 RPM 3/1 HP, 1800/600 RPM 460-3-60: .5/.25 HP, 1200/600 RPM .75/.38 HP, 1200/600 RPM 1/5 HP, 1200/600 RPM .5/.17 HP 1800/600 RPM .75/.25 HP, 1800/600 RPM 1/.33 HP 1800/600 RPM 1.5/.5 HP 1800/600 RPM 2/.67 HP, 1800/600 RPM 3/1 HP, 1800/600 RPM 575-3-60: .5/.25 HP, 1200/600 RPM .75/.38 HP, 1200/600 RPM 1/5 HP, 1200/600 RPM .5/.17 HP 1800/600 RPM .75/.25 HP, 1800/600 RPM 1/.33 HP 1800/600 RPM 1.5/.5 HP 1800/600 RPM 2/.67 HP, 1800/600 RPM
7	TRK - 619		
	TRK - 620		
	TRK - 621		
	TRK - 622		
	TRK - 623		
	TRK - 624		
	TRK - 625		
	TRK - 626		
	TRK - 627		
	TRK - 628		
	TRK - 629		
	TRK - 630		
	TRK - 631		
	TRK - 632		
	TRK - 633		
	TRK - 634		
	TRK - 635		
	TRK - 636		
	TRK - 637		
	TRK - 638		
	TRK - 639		
	TRK - 640		
	TRK - 641		
	TRK - 642		
	TRK - 643		
	TRK - 644		
	TRK - 645		
	TRK - 646		
	TRK - 647		
	TRK - 648		
	TRK - 649		
	TRK - 650		
	TRK - 651		
	TRK - 652		
	TRK - 653		
7	TRK - 655	1	Plain Parallel Key (3/16 x 3/16 x 1)
8	TRK - 656	2	Self Locking Hex Socket Set Screw - Cup Point 5/16-24 x 1/2
		1	Brake:
9			230 or 460V thru 1-1/2 HP 575V thru 1-1/2 HP 230V or 460V over 1-1/2 HP 575V over 1-1/2 HP
	TRK - 657		
	TRK - 658		
	TRK - 659		
	TRK - 660	4	Spring Lock Washer - Plated 3/8
10	TRK - 661		For All Motors Except Those With 180C Frame:
11		4	Hex Head Bolt - Plated - 3/8-16 x 1
	TRK - 662		For Motors With 180C Frame:
		4	Hex Head Bolt - Plated - 3/8-16 x 1-1/2
	TRK - 664	4	Hardened Flat Washer - 3/8
12	TRK - 663		

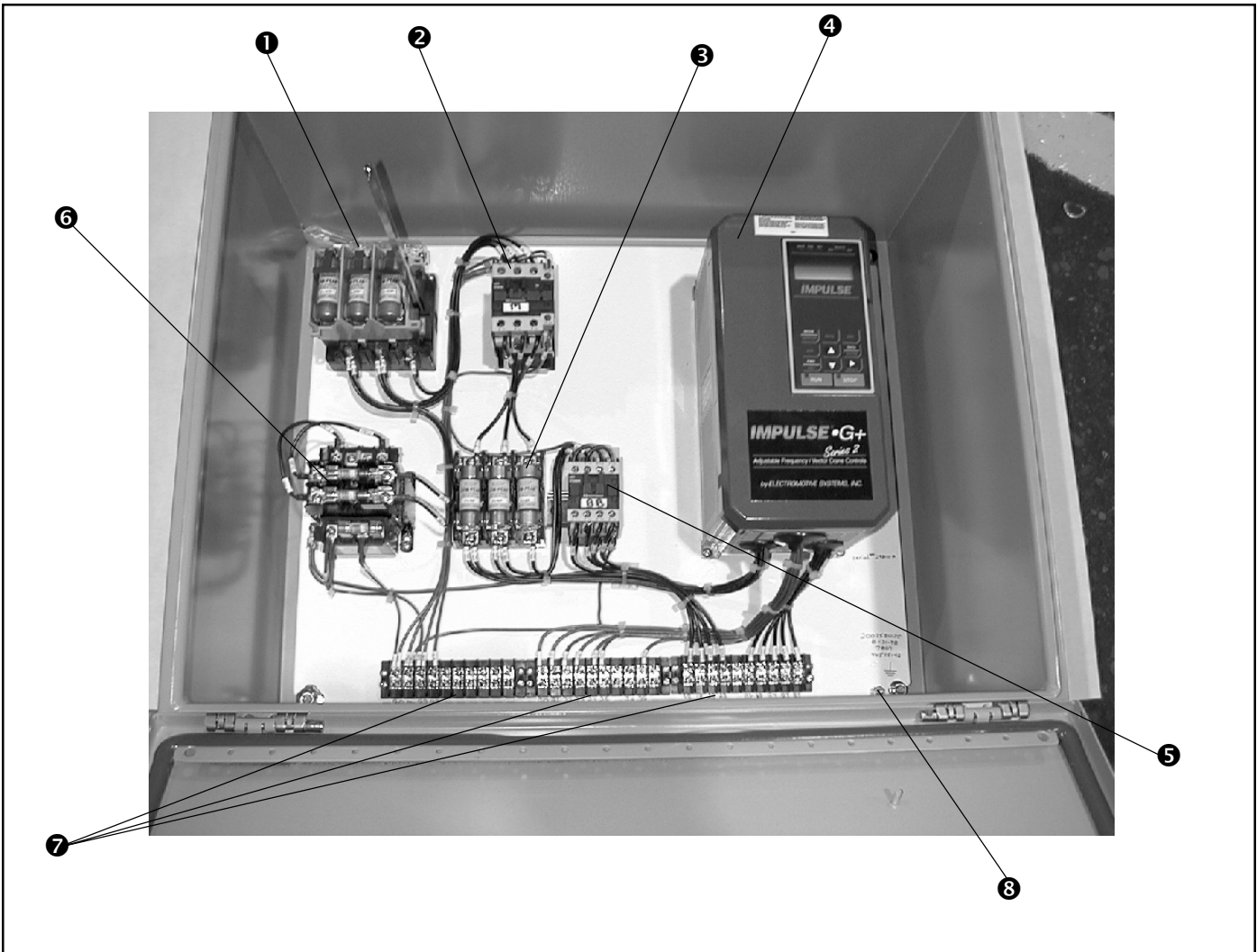


Figure 8. Electrical Enclosure.

Reference Number	Part Number	Quantity Required	Description
1	TRK - 701	1	Fused Disconnect Switch Thru 3 HP Over 3 HP
	TRK - 702		
	TRK - 703	3	Replacement Fuses - 600V 15 Amp 30 Amp 60 Amp
	TRK - 704		
TRK - 705			
2	TRK - 706	1	Mainline Contactor Thru 3 HP Over 3 HP
	TRK - 707		
9	TRK - 770	1	Dynamic Braking Resistor (not shown) 1 HP 230 Volt 2 HP 230 Volt 3 HP 230 Volt 5 HP 230 Volt 7.5 HP 230 Volt 10 HP 230 Volt 1 HP 460 Volt 2 HP 460 Volt 3 HP 460 Volt 5 HP 460 Volt 7.5 HP 460 Volt 10 HP 460 Volt
	TRK - 771		
	TRK - 772		
	TRK - 773		
	TRK - 774		
	TRK - 775		
	TRK - 776		
	TRK - 777		
	TRK - 778		
	TRK - 779		
	TRK - 780		
	TRK - 781		



**Figure 8. Electrical Enclosure (continued).**

Reference Number	Part Number	Quantity Required	Description
3	TRK - 708	1	Fuse Base
		3	Fuses - 600V
	TRK - 709		2 Amp
	TRK - 710		3 Amp
	TRK - 711		4 Amp
	TRK - 712		5 Amp
	TRK - 713		6 Amp
	TRK - 714		8 Amp
	TRK - 715		10 Amp
	TRK - 716		12 Amp
	TRK - 717		15 Amp
	TRK - 718		20 Amp
	TRK - 719		25 Amp
	TRK - 720		30 Amp
4		1	Variable Frequency Drive or Reversing Contactor for One and Two Speed Plus An Accelerating Contactor for Two Speed Only.
			Variable Frequency Drive
	TRK - 753		1 HP, 230V
	TRK - 754		2 HP, 230V
	TRK - 755		3 HP, 230V
	TRK - 756		5 HP, 230V
	TRK - 757		7.5 HP, 230V
	TRK - 758		10 HP, 230V
	TRK - 759		1 HP, 460V
	TRK - 760		2 HP, 460V
	TRK - 761		3 HP, 460V
	TRK - 762		5 HP, 460V
	TRK - 763		7.5 HP, 460V
	TRK - 764		10 HP, 460V
			Reversing Contactor for One and Two Speed
	TRK - 733		3 HP, 200 & 230V; 7.5 HP, 460V; 10 HP, 575V
	TRK - 734		7.5 HP, 200 & 230V; 15 HP, 460V; 20 HP, 575V
	TRK - 735		10 HP, 200 & 230V; 30 HP, 460V; 30 HP, 575V
			Accelerating Contactor for Two Speed Only
	TRK - 736		3 HP, 200 & 230V; 7.5 HP, 460V; 10 HP, 575V
	TRK - 737		7.5 HP, 200 & 230V; 15 HP, 460V; 20 HP, 575V
	TRK - 738		10 HP, 200 & 230V; 30 HP, 460V; 30 HP, 575V
5	TRK - 739	1	Brake Relay (For V.F.C. Control)
6		1	Fused Transformer
	TRK - 740		75VA, 230/460V
	TRK - 741		75VA, 208/277V
	TRK - 742		75VA, 575V
	TRK - 743		100VA, 230/460V
	TRK - 744		100VA, 208/277V
	TRK - 745		100VA, 575V
		3	Fuses - 600V
	TRK - 746		.6 Amp
	TRK - 747		.8 Amp
	TRK - 748		1 Amp
	TRK - 749		1.4 Amp
	TRK - 750		2 Amp
7	TRK - 765	3	Terminal Boards
8	TRK - 752	1	Ground Lug

## INSPECTION SCHEDULE AND MAINTENANCE REPORT

CRANE SERIAL NO. (MFGRS) \_\_\_\_\_  
 CAPACITY \_\_\_\_\_  
 TYPE \_\_\_\_\_  
 VOLTAGE \_\_\_\_\_

CUSTOMER CRANE IDENTITY NO. \_\_\_\_\_  
 LOCATION IN PLANT \_\_\_\_\_  
 THIS INSPECTION IS MONTHLY  ANNUAL   
 SEMI-ANNUAL

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
LOCATION	COMPONENT, UNIT OR PART	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	DATE	
		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.



## Recommended Spare Parts for Your Crane Bridge

Certain parts of your crane will, in time, require replacement under normal wear conditions. It is suggested that the following parts be purchased for your crane as spares for future use.

- 1 Set of Wheels
- 1 Set of Wheel Bearings
- 1 Set of Fuses
- 1 Set of Contactors

**NOTE:** When ordering parts always furnish Catalog Number and Part Number.

Parts for your crane are available from your authorized repair station. For the location of your nearest repair station, write:



414 West Broadway Avenue  
P.O. Box 769  
Muskegon, Michigan 49443-0769  
(800) 742-9269 Phone  
(800) 742-9270 Fax

# WARRANTY

## **WARRANTY AND LIMITATION OF REMEDY AND LIABILITY**

A. Seller warrants that its products and parts, when shipped, and its work (including installation, construction and start-up), when performed, will meet applicable specifications, will be of good quality and will be free from defects in material and workmanship. All claims for defective products or parts under this warranty must be made in writing immediately upon discovery and, in any event, within one (1) year from shipment of the applicable item unless Seller specifically assumes installation, construction or start-up responsibility. All claims for defective products or parts when Seller specifically assumes installation, construction or start-up responsibility, and all claims for defective work must be made in writing immediately upon discovery and, in any event, within one (1) year from completion of the applicable work by Seller, provided, however, all claims for defective products and parts made in writing no later than eighteen (18) months after shipment. Defective items must be held for Seller's inspection and returned to the original f.o.b. point upon request. **THE FOREGOING IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES WHATSOEVER, EXPRESS, IMPLIED AND STATUTORY, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS.**

B. Upon Buyer's submission of a claim as provided above and its substantiation, Seller shall at its option either (i) repair or replace its product, part or work at either the original f.o.b. point of delivery or at Seller's authorized service station nearest Buyer or (ii) refund an equitable portion of the purchase price.

C. This warranty is contingent upon Buyer's proper maintenance and care of Seller's products, and does not extend to normal wear and tear. Seller reserves the right to void warranty in event of Buyer's use of inappropriate materials in the course of repair or maintenance, or if Seller's products have been dismantled prior to submission to Seller for warranty inspection.

D. The foregoing is Seller's only obligation and Buyer's exclusive remedy for breach of warranty, and is Buyer's exclusive remedy hereunder by way of breach of contract, tort, strict liability or otherwise. In no event shall Buyer be entitled to or Seller liable for incidental or consequential damages. Any action for breach of this agreement must be commenced within one (1) year after the cause of action has accrued.