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*INSTRUCTION
AND
PARTS MANUAL*

*SINGLE AND DOUBLE GIRDER
TOP RUNNING BRIDGES
WITH
INDIVIDUAL MOTOR DRIVEN AND
HAND GEARED TRUCKS*



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 suggestions 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 PART NUMBERS, which are identified elsewhere in this manual.

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

GENERAL DESCRIPTION

GENERAL

These top running crane bridges are designed to operate on parallel crane runway beams, with 25# thru 85# ASCE crane rails (thru 40# for 6" diameter wheels). Motor and control 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. Top running single girder crane bridges described herein are built in capacities from 1 through 15 tonnes, spans through 60'-0". Double girder crane bridges described are built in capacities from 1 through 25 tonnes, spans through 60'-0".

BASIC CONSTRUCTION

The basic construction of single and double girder top running bridges consists of American Standard or Wide Flange beam girders rigidly connected to the top and side of each end truck. Each truck has a driver wheel and a trailer wheel 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 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 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.

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, refer to ANSI B30.2-latest edition, Chapter 2-3; ANSI B30.17-latest edition, Chapter 17-3 and other applicable codes.

WARNING

Before installing the crane on the runway, lock the runway conductor disconnect 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 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.

CONNECTING BRIDGE TO ELECTRICAL SERVICE

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

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.

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.

MAIN COLLECTORS

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 inter-connection 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.

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.

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 B30.2 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 the crane. Refer to ANSI B30.2 or B30.17 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

WARNING

These crane bridges are not designed nor intended to be used 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 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.

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 B30.2 or B30.17-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, which controls the bridge electrically. 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.

CAUTION

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.

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

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.

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. 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. This stop-start circuit, 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 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.

⚠ CAUTION

ALWAYS ALLOW THE CRANE BRIDGE TO COME TO A COMPLETE STOP BEFORE CHANGING DIRECTION. ABRUPT CHANGE OF BRIDGE DIRECTION WHILE IN MOTION MAY CAUSE ADVERSE OPERATING CHARACTERISTICS OR DAMAGE TO BRIDGE AND DRIVE COMPONENTS.

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 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.

⚠ WARNING

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 to stop after releasing the push button.

The above check-out 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.

After becoming familiar with these motions, the operator can now depress the hoist “Up” button.

⚠ WARNING

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 with the instructions furnished with your hoist manual.

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 which 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.

⚠ 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. Consult the Hoist Manufacturer's Instructions.

Repeat the 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.

⚠ WARNING

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

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 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 hitches.
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, 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.

WARNING

Do not operate a crane, hoist or trolley having unusual vibrations, sounds, warnings or with anything wrong or apparently wrong. Danger may be present that the crane operator cannot see. Determine and correct the cause of the unusual conditions and make certain that the crane can be operated SAFELY.

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 which may be adversely affected due to activity, severity of service or crane environment that could cause unsafe crane operation.

WARNING

Always lock main switch in the open position (off) before inspection.

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 8.

MAINTENANCE

GENERAL

Maintenance services required on top 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 MOBIL 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 one quart of AGMA lubricant number 5, compounded, (Mobilgear 630 or equal) if the ambient temperature is 15° to 60° F or AGMA lubricant number 7, compounded, (Mobilgear 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 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. See Part No. 113533-82, Operating Instructions and Parts List, Traverse 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 1.

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

Make sure that truck is adequately supported so that it cannot drop when wheel is removed. Also lock main runway disconnect switch in the open position (off) when working on wheels adjacent to runway conductors.

2. Remove load from wheel axle. This can be accomplished by jacking or lifting at the girder(s). Jacking or lifting only one end of the truck may permanently damage the crane.

CAUTION

MAKE SURE ALL JACKING OR LIFTING OF END TRUCK FOR WHEEL REMOVAL IS DONE NEAR THE BRIDGE GIRDER(S) OR **SIMULTANEOUSLY AT EACH END OF THE TRUCK BETWEEN THE WHEEL AND THE GIRDER(S). JACKING OR LIFTING ONLY ONE END OF THE TRUCK MAY PERMANENTLY DAMAGE THE CRANE.**

3. Support and secure wheel before removing axle.
4. Wheel axle (Ref. No. 6) is held in position by a retaining ring. Removal of this retaining ring allows removal of axle (Ref. No. 7).
5. Pull axle toward center of crane. Completely remove axle from truck and store in a safe place.
6. The wheel is now free. Carefully lower wheel to rail. Roll directly up the crane rail, maintaining a secure hold so that the wheel does not fall from the runway.
7. The bearings (Ref. No. 3) are held by internal snap rings. It is necessary to remove these snap rings for bearing removal. There is a spacer between the bearings.
8. Replace wheels in reverse order of disassembly. It is recommended that the bearings be replaced when replacing wheels.

GEAR CASE

The gear case is shown in 113533-82, Operating Instructions and Parts List, Traverse 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. 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 7 shows components in the electrical enclosure and their identifying numbers.
4. Hoist and Trolley. Panel, brakes, limit switches, etc. Consult hoist and trolley literature for maintenance and spare parts information.

INSPECTION SCHEDULE AND MAINTENANCE REPORT

CRANE SERIAL NO. (MFGRS) _____
 CAPACITY _____
 TYPE _____
 VOLTAGE _____

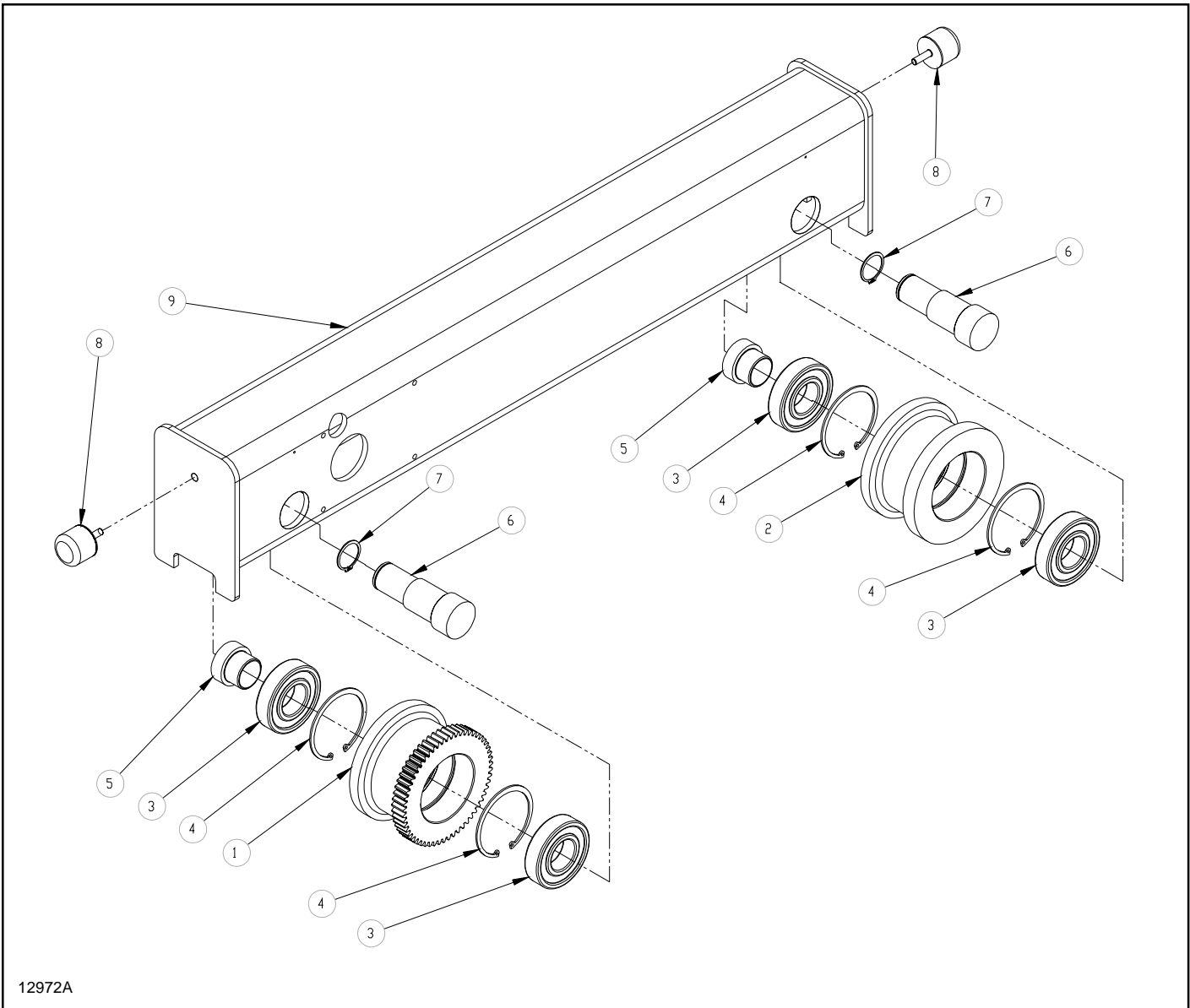
CUSTOMER CRANE IDENTITY NO. _____
 LOCATION IN PLANT _____
 THIS INSPECTION IS MONTHLY ANNUAL
 SEMI-ANNUAL
 INSPECTED BY _____ DATE _____

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	
					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		
LOCATION	COMPONENT, UNIT OR PART	MONTHLY	SEMI-ANNUAL	ANNUAL									
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
 MAGNETIC PARTICLE OR EQUIVALENT EXAMINATION REQUIRED.

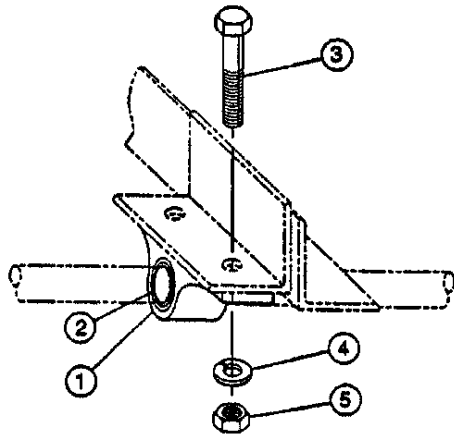
Typical Inspection Schedule and Maintenance Report form.
 User must adjust inspection interval and components to suit his individual conditions and usage.



12972A

Figure 1. End Truck Assembly

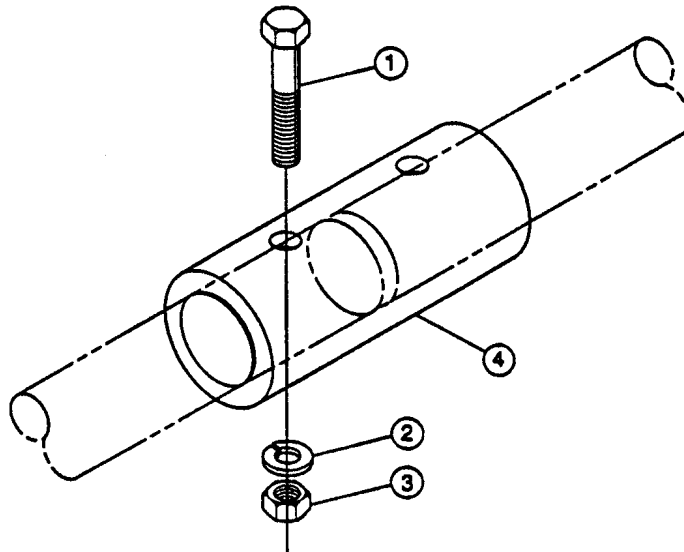
Reference Number	Part Number			Quantity Required	Description
	6" Wheels	8" Wheels	10" Wheels		
1	TRK-101	TRK-102	--	1	Drive Wheel - Geared - 2-5/8" Tread
	--	TRK-103	TRK-104	1	Drive Wheel - Geared - 3-1/2" Tread
2	TRK-105	TRK-106	--	1	Trailer Wheel - Plain - 2-5/8" Tread
	--	TRK-107	TRK-108	1	Trailer Wheel - Plain - 3-1/2" Tread
3	TRK-109	TRK-110	TRK-111	4	Ball Bearings
4	TRK-112	TRK-113	TRK-114	4	Internal Retaining Ring - Plated
5	TRK-160	TRK-161	TRK-162	2	Flanged Bushing
6	TRK-170	TRK-171	TRK-172	2	Fixed Axle
7	TRK-180	TRK-181	TRK-182		External Retaining Ring
8	TRK-129	TRK-130	TRK-130	2	Bumper (2"/2.5" diameter only)
	--	TRK-131	TRK-131	2	Bumper (3.2" diameter only)
9				1	Truck Weldment Machined - (contact factory)



12831

Figure 2. Cross Shaft Bearing Assembly. (Catalog Number 904625)

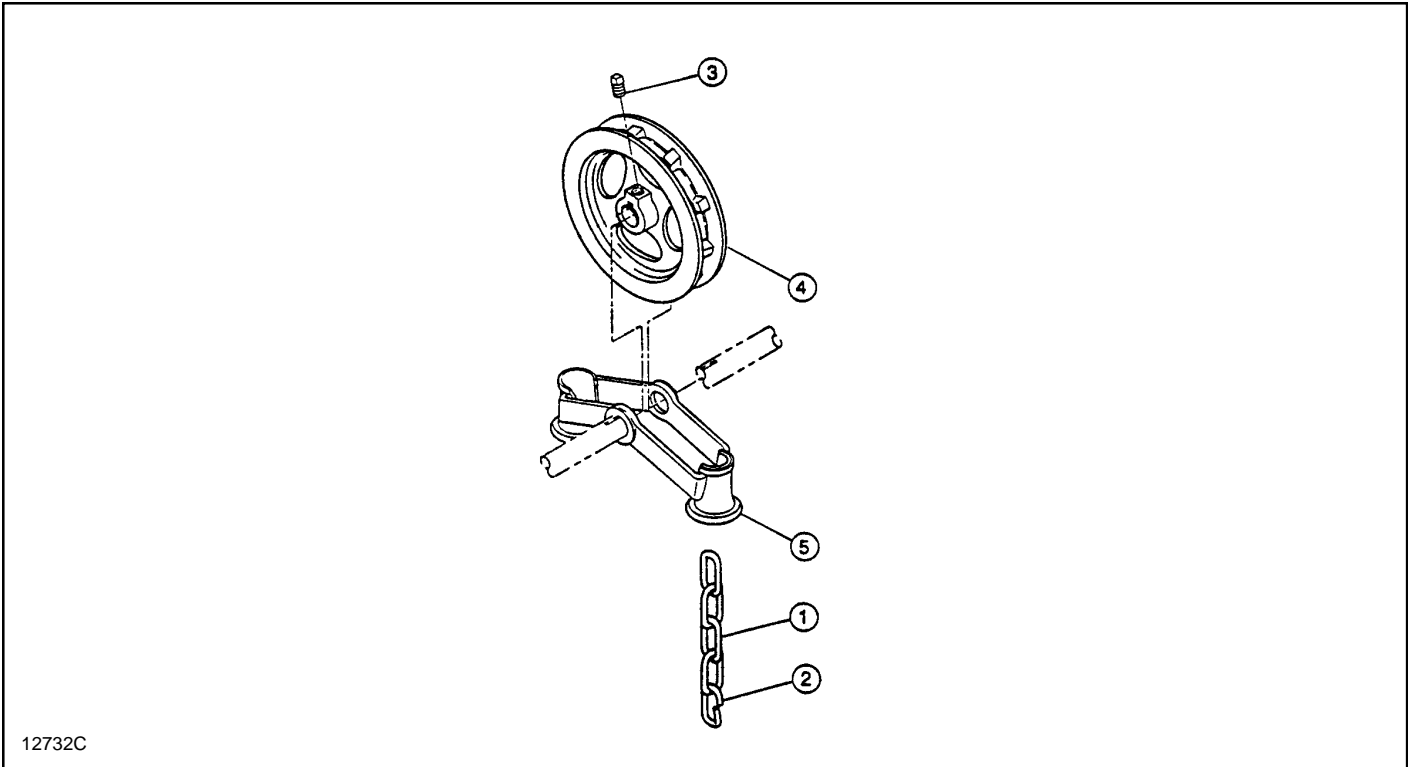
Reference Number	Part Number	Quantity Required	Description
1	TRK - 201	1	Pillow Block
2	--	1	Locking Collar (Included with Pillow Block)
3	TRK - 202	2	Hex Head Bolt (1/2-13 x 1-1/4)
4	TRK - 203	2	Spring Lockwasher (1/2)
5	TRK - 204	2	Hex Nut (1/2)



12731B

Figure 3. 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

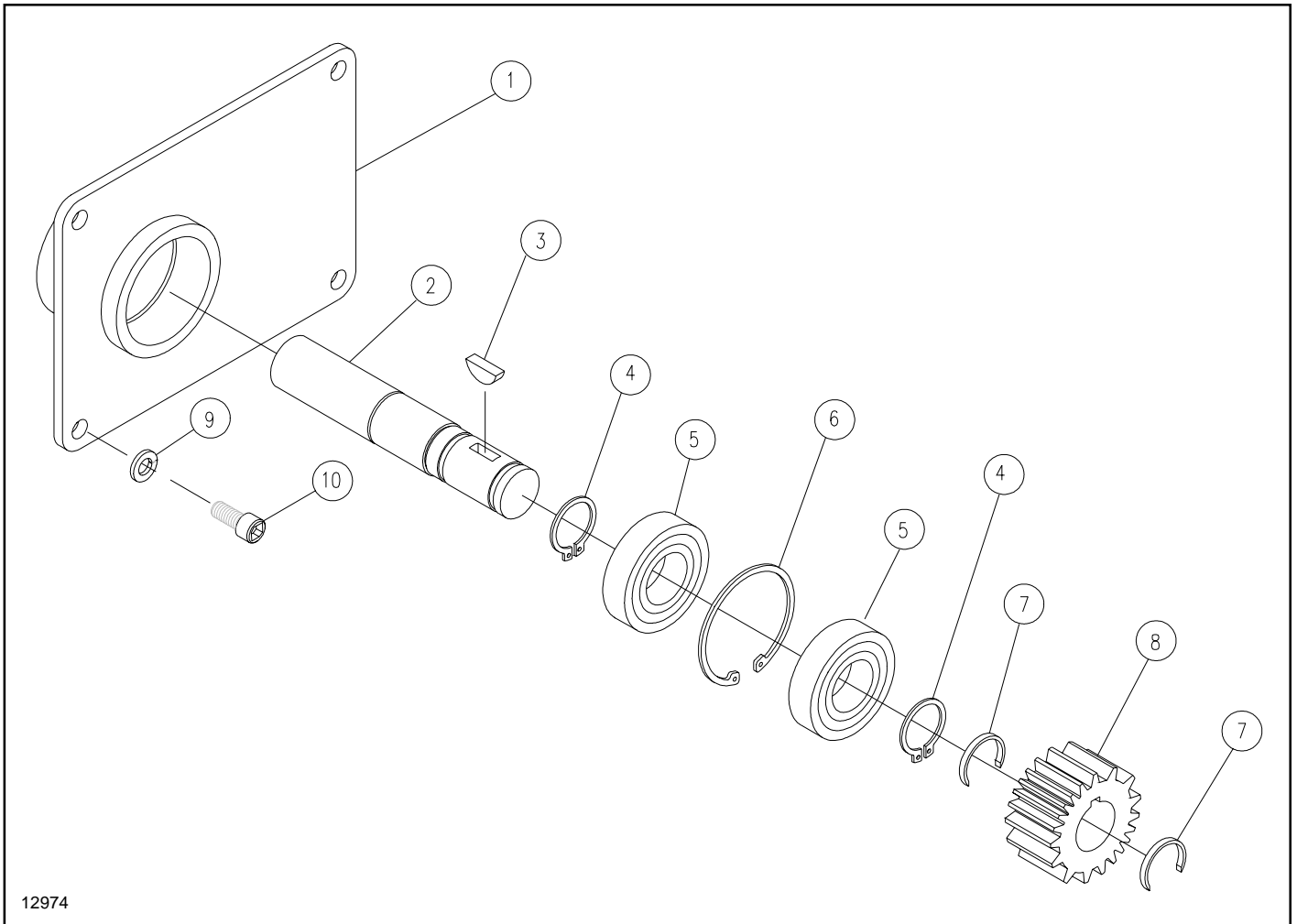


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Figure 4. Hand Chain Drive. (Catalog Numbers 8282, 913115 and 332189-3)

Reference Number	Part Number	Quantity Required	Description
1	TRK - 401	36 ft.	Catalog Number 8282 Consists of Ref. Nos. 1 and 2: Hand Chain
2	TRK - 410	1	
Hand Chain Drive for Cranes Under 10 Tonnes			
Catalog Number 913115 Consists of Ref. Nos. 3 thru 5:			
3	TRK - 403	1	Hex Socket Set Screw (1/2-13 x 1)
4	TRK - 404	1	Hand Chain Wheel
5	TRK - 405	1	Chain Wheel Guide
Hand Chain Drive for Cranes 10 Tonnes and over			
Catalog Number 332189-3 Consists of Ref. Nos. 3 thru 6:			
3	TRK - 406	1	Hex Socket Cup Point Set Screw (3/8-16 x 5/8)
4	TRK - 407	1	Hand Chain Wheel
5	TRK - 408	1	Chain Wheel Guide
6	TRK - 409	1	Plain Parallel Key (5/16 x 5/16 x 2-3/8)

NOTES



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Figure 5. Hand Geared Drive 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
	TRK - 513		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)

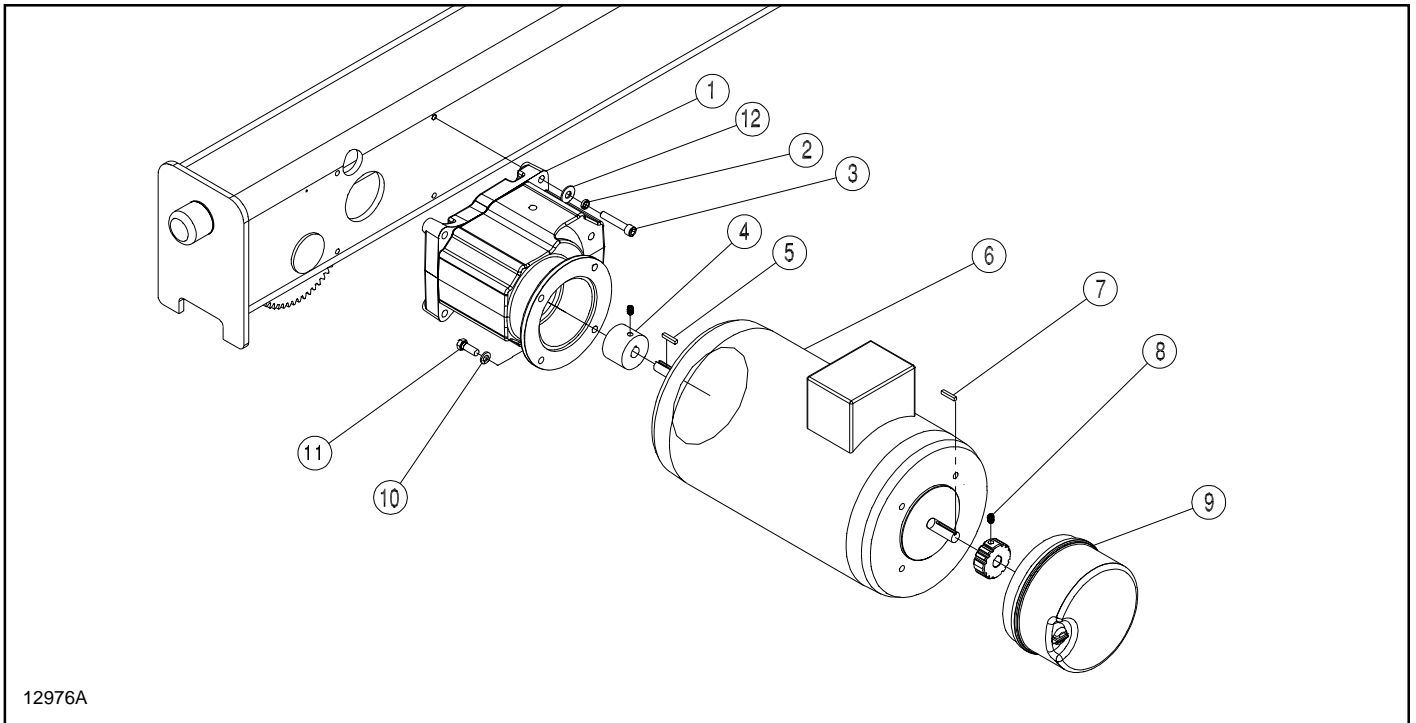


Figure 6. Drive Assembly

Reference Number	Part Number	Quantity Required	Description
1	TRK-601 TRK-602 TRK-603 TRK-604 TRK-666	1	Gear Case - SEE 113533-82, Operating Instructions and Parts List, Traverse Gear Case 13.04:1 Ratio 8.96:1 Ratio 6.97:1 Ratio 6.08:1 Ratio
		1	Truck Mounting Hardware (Not Shown) - Includes Required Vent Plug and Wheel Gear Grease
		1	Motor Mounting Hardware - Includes Coupling (Not Shown)
	TRK-667 TRK-668 TRK-669		For Motor with 56C Frame For Motor with 145TC Frame 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		1	Coupling For 56C Face Motor For 145TC and 180C Face Motor
5	TRK-609	1	Plain Parallel Key (3/16 x 3/16 x 1)
6		1	Motor: Single Speed: 208-230/460-3-60: 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
	TRK-610 TRK-611 TRK-612 TRK-613 TRK-614 TRK-615 TRK-616 TRK-617 TRK-618		

Figure 6. Drive Assembly. (Continued).

Reference Number	Part Number	Quantity Required	Description
6		1	Motor: (Continued) Single Speed: 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 3/1 HP, 1800/600 RPM
	TRK-619		
	TRK-620		
	TRK-621		
	TRK-622		
	TRK-623		
	TRK-624		
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	TRK-654		
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
9		1	Brake: 230 or 460V Thru 1-1/2 HP 575V Thru 1-1/2 HP 230 or 460V Over 1-1/2 HP 575V Over 1-1/2 HP
	TRK-657		
	TRK-658		
	TRK-659		
	TRK-660		
10	TRK-661	4	Spring Lock Washer - Plated - 3/8
11			For All Motors Except Those With 180C Frame:
	TRK-662	4	Hex Head Bolt - Plated - 3/8-16 x 1
			For Motors With 180C Frame:
	TRK-664	4	Hex Head Bolt - Plated - 3/8-16 x 1-1/2
12	TRK-663	4	Hardened Flat Washer - 3/8

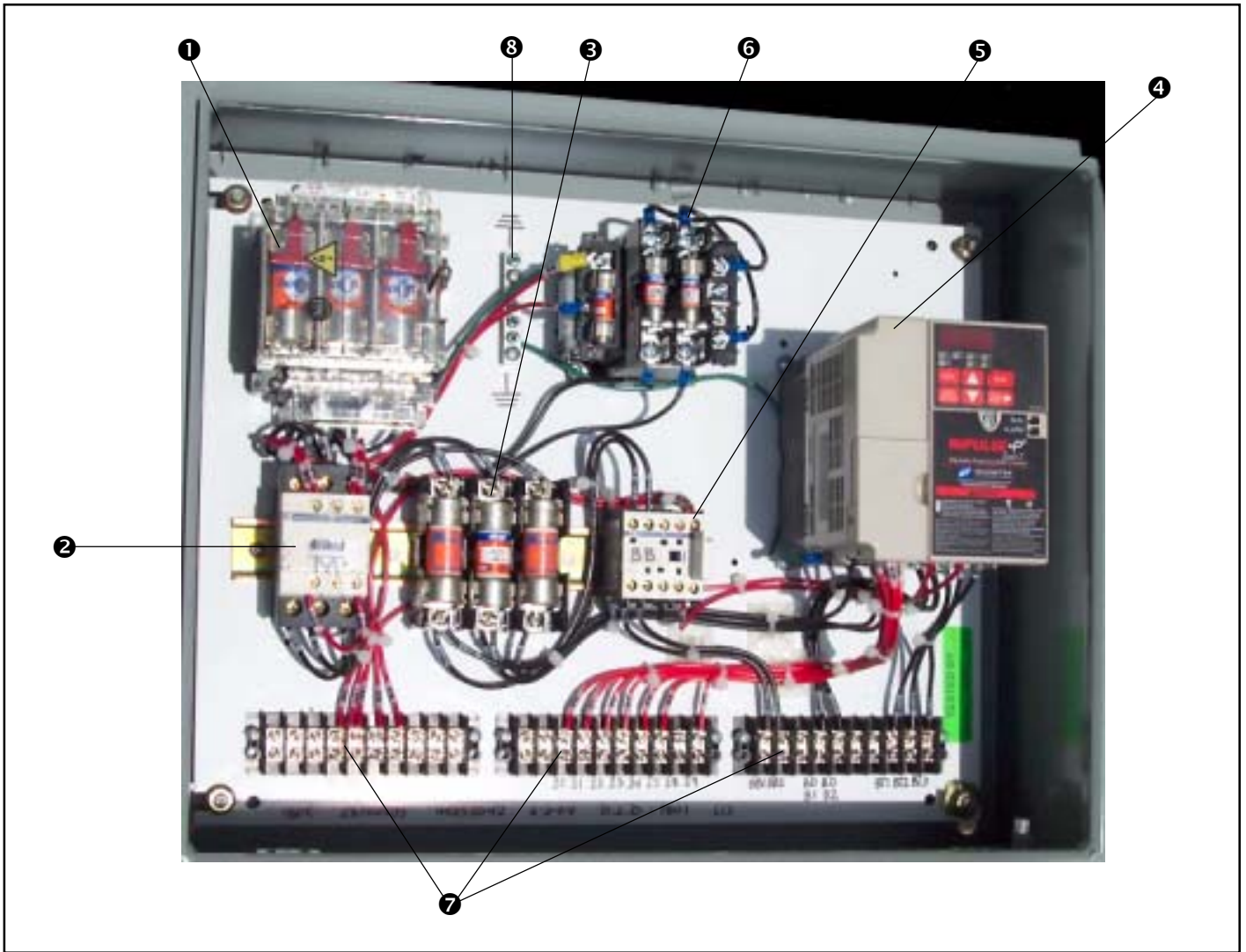


Figure 7. Electrical Enclosure.

Reference Number	Part Number	Quantity Required	Description
1	TRK-701	1	Fused Disconnect Switch
	TRK-702		Thru 3 HP
	TRK-703	3	Over 3 HP
	TRK-704		Replacement Fuses - 600V
TRK-705	15 AMP		
2	TRK-706	1	30 AMP
	TRK-707		60 AMP
			Mainline Contactor
			Thru 3 HP
			Over 3 HP

Figure 7. 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
	TRK-733		Reversing Contactor for One and Two Speed 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
	TRK-736		Accelerating Contactor for Two Speed Only 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
	TRK-746	3	Fuses - 600V
	TRK-747		.6 AMP
	TRK-748		.8 AMP
TRK-749		1 AMP	
TRK-750		1.4 AMP	
TRK-750		2 AMP	
7	TRK-765	3	Terminal Boards
8	TRK-752	1	Ground Lug

Recommended Spare Parts For Your Crane

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 Wheel Bearings
- 1 Set of Fuses

Note: When ordering parts always furnish the part number and the manufacturer's serial number.

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.