Manual # 99904385

IMT 2003i Technical Specifications & Parts

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IOWA MOLD TOOLING CO., INC.
PO Box 189
Garner, IA 50438
Tel: 641-923-3711 FAX: 641-923-2424
Website: http://www.imt.com

Iowa Mold Tooling Co., Inc. is an Oshkosh Corporation Company.

Contents

Revisions

DATE	LOCATION	DESCRIPTION
20090312	THROUGHOUT	ADDED COMPONENT SPARE PARTS, UPDATED ELECTRICAL KIT, ASSEMBLIES.
20100427	99904884	ADDED BATTERY CIRCUIT DRAWING.
20100615	SPECS.	CORRECTED ELECTRICAL INSTALLATION REQUIREMENTS
20100812	71570921	ADDED 71570921 WINCH PARTS
20111117		ECN 11628 - EDIT STABILIZER WORDING, UPDATE DECALS.
20131120	99904352-2	ECN 12043 & 11974
20140909	GREASING INSTRUCTIONS	ECN 12264 – MOLUB-ALLOY 882 WAS MOLUB-ALLOY 936
20170313	70392399	CN:519:Updated to new grease info

CHAPTER 1

Introduction

GENERAL

This manual will help you operate your IMT crane correctly and safely. The manual does not replace any government regulations, safety codes or insurance carrier requirements. Read and understand the manual and all safety procedures for this crane prior to operation.

⚠ WARNING

Failure to read, understand and follow any safety procedures for this equipment may result in death, serious injury or equipment damage.

Use caution and common sense. Refer to ANSI/ASME B30.5, the standard for Telescoping and Mobile Boom Cranes, for more information on crane design and test criteria. (Contact the American Society of Mechanical Engineers at *www.asme.org* for information on ANSI/ASME B30.5.) Crane operators must also be familiar with OSHA 29CFR, Subpart N, Article 1926.550 and CAL-OSHA Title 8, Article 93 (California).

CRANE AND SAFETY EQUIPMENT MODIFICATIONS

Do not modify your crane with anything other than IMT approved equipment. If in doubt, contact IMT prior to making modifications. DO NOT alter or modify any safety device! All safety devices must be inspected, tested and maintained in proper working condition.

Decals regarding crane safety and operation are safety equipment and must be maintained. Decals must be kept clean and legible.

OWNER RESPONSIBILITIES

You must maintain and operate this unit for the safest working conditions possible. You must follow existing Federal, State, and Local codes and regulations governing the safe use and maintenance, and must make sure anyone involved in equipment operation understands how to operate and maintain the crane safely. Contact IMT or your IMT distributor for clarification.

WARRANTY

The equipment warranty on this unit will be void on any part of the unit subjected to misuse due to overloading, abuse, lack of maintenance and unauthorized modifications. No warranty - verbal, written or implied - other than the official, published IMT new machinery and equipment warranty is valid with this unit.

MANUAL STRUCTURE

Throughout the manual, NOTEs, CAUTIONs, WARNINGs and DANGERs are used to draw the attention of personnel. They are defined as follows:

NOTE

A NOTE is used to either convey additional information or to provide further emphasis for a previous point.

⚠ CAUTION

A CAUTION is used when there is the very strong possibility of damage to the equipment or premature equipment failure.

⚠ WARNING

A WARNING is used when there is the potential for personal injury or death.

⚠ DANGER

Danger indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. Danger is used in the most extreme situations.

NOTICE TO THE OWNER / USER

If the crane is involved in a property damage accident, contact your IMT distributor immediately and provide them with the details of the accident and the serial number of the equipment. If an accident involves personal injury, immediately notify your distributor and IMT Technical Support at:

IOWA MOLD TOOLING CO., INC.
500 HWY 18 WEST
GARNER, IA 50438
641 - 923 - 3711

CHAPTER 2

Safety

In This Chapter

Safety Instructions

⚠ WARNING

Keep children, by-standers, and persons not required in the operation of equipment at least 10'-0" (3.05 m) from the outermost range of the crane.

SAFE CRANE OPERATION

- Do NOT operate crane unless you have been trained in safe operation.
- Read, understand, and follow manual, labels, safety instructions, and your employer's work rules.
- Make sure guards, safety signs, and safety features are in place and in good condition.
- Read, understand and follow the crane load and work area charts. Do not exceed crane or winch ratings.
- Keep three wraps of loadline on winch.
- Operate crane controls slowly and smoothly.
- Know the position of the booms at all times while operating the crane. Eliminate swing by positioning the boom tip directly over the center of the load before lifting.
- Do NOT operate in excessive wind speeds.
- Keep load under boom tip. Do NOT side load boom, drag, or swing loads.
- Stow boom and stabilizers before traveling.
- Do not allow anyone to ride crane boom, hook, or load.
- Follow all inspections and maintenance practices listed in manuals.

ELECTRICAL SYSTEM

This crane operates using electrical power from the vehicle battery.

⚠ DANGER

Avoid electrocution! Do NOT work on the crane before turning off the crane power supply in the crane cabinet and removing the crane power disconnect cable from the vehicle battery.

STABILITY

Use crane on solid, level surface with stabilizers properly extended, and keep vehicle level. Reduce loads when operating on uneven ground. Keep personnel clear of moving stabilizers. When you rotate the crane, the load may change from being supported by the stabilizers to the vehicle suspension. Be cautious as you rotate the crane, because the springs on the carrier vehicle will respond differently to the load than the tires will.

WINCH

Never use the winch to drag a load into position before lifting. This may sideload the crane or stress the wire rope beyond safe limits. Equipment damage may result.

When using a winch, always keep the tip of the extension boom as close to the load as practical. This will prevent the load from swinging out of control when using the rotation (swing) function.

⚠ DANGER

DO NOT permit personnel to ride the boom, loadline, hook or load, as this action may cause DEATH or serious injury.

Use only specified wire rope for lifting. Retain at least three full wraps of wire rope on the winch drum at all times.

WIRE ROPE

Before extending the boom, always pay out the wire rope. Failure to do so may overstress the wire rope and cause a two block condition.

Daily Safety Inspection

Use the Crane Log, IMT Manual No. 99900686, the inspection checklist in the reference section of this manual, or the following list when inspecting your unit at start-up and during operation:

1 Vehicle - Check oil level, battery, lights, brakes, and tires for inflation, pressure, cuts, and loose or missing wheel lugs.

2 Safety Accessories - Check for proper function, oil levels, leaks and malfunctions.

3 Hydraulic Oil Reservoir - Check for proper oil level, leaks and blockages.

4 Weldments - Check visually for damage, especially cracks or breaks in welds.

5 Cylinders - Check for leakage and scored rods.

6 Fasteners - Check pins, sheaves, nuts and bolts for breakage, excessive wear and tightness.

7 Crane Hooks - Check for the presence of a safety catch, twists, cracks, or damage.

8 Ropes & Slings - Check for frayed edges, broken strands, kinks, flat spots, and end attachments.

9 Covers and Guards - Check for missing or improperly maintained covers and guards.

10 Operation Placards and Safety Decals - Check for illegible or missing decals and placards. Refer to the decal section of this manual for more information on the required decals.

Replace or repair any items as needed prior to equipment operation.

Electrical Hazards

DANGER

ELECTROCUTION HAZARD

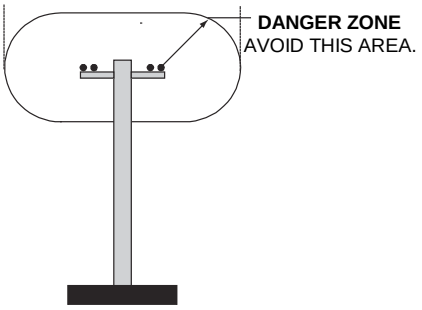
- Vehicle is not insulated.
- Do NOT raise boom into power lines.
- Look up and use light to search for power lines in the dark.
- Keep boom and vehicle a minimum of 20 ft. (6.1 m) away from power lines.
- Do not step off a charged vehicle.
- If you touch a charged vehicle while standing on the ground, you will die.

Overhead power lines are not insulated. While some lines have a weather covering and appear to be insulated, they are not. The vehicle or parts of the vehicle do not need to touch the power line for the vehicle to become energized. Electricity will arc across gaps, and all overhead wires or cables should be considered hazardous and dangerous. Always operate the crane so that no part of the crane or load enters the "Danger Zone", the minimum clearance distance for a powerline.

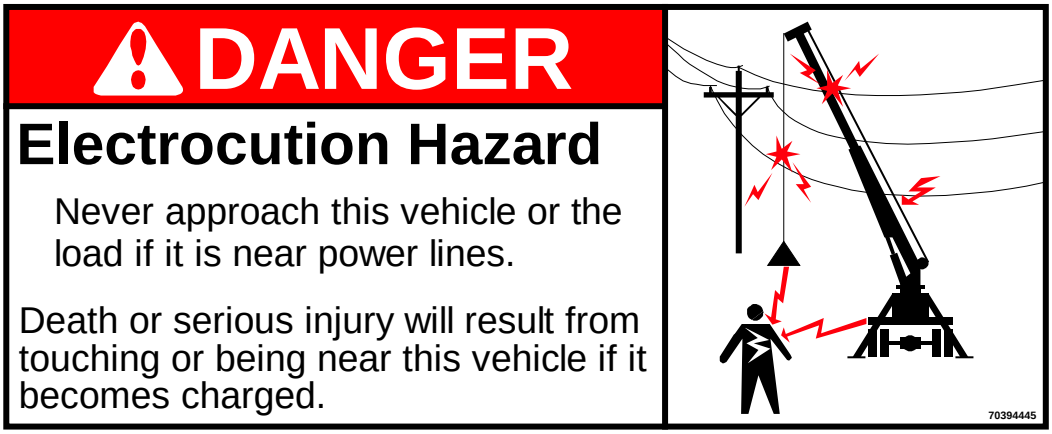
DANGER

VOLTAGE HAZARD

The danger zone of a particular powerline is based on its voltage. High voltage levels increase the danger zone. See figure.



DANGER ZONE FOR CRANES OPERATING NEAR ELECTRICAL POWERLINES



REQUIRED CLEARANCE OF CRANES FROM ELECTRICAL TRANSMISSION LINES		
	NORMAL VOLTAGE kV (Phase to Phase)	MINIMUM CLEARANCE REQUIRED Feet (meters)
OPERATION NEAR HIGH VOLTAGE POWERLINES	From 0 to 350	20 (6.10)
	Above 350 or unknown	50 (15.24)
OPERATION IN TRANSIT WITH NO LOAD AND BOOM OR MAST LOWERED	From 0 to 0.75	4 (0.22)
	From 0.75 to 50	6 (0.83)
	From 50 to 345	10 (3.05)
	From 345 to 750	16 (4.87)
	From 750 to 1000	20 (8.10)

GUIDELINES WHEN WORKING AROUND POWER LINES:

- Make sure the work area is clear of major obstacles and overhead obstructions
- Do not work within 20 feet (6.10 m) of high-voltage lines energized up to 35,000 volts, and 50 feet (15.24 m) of high-voltage lines energized up to 50,000 volts or of unknown voltage. It is the law. The operator can be liable if activities in violation of this law cause injury or property damage.
- Only operate in conditions where the vehicle and equipment can be stabilized. Do not set up or operate on soft soil, mud, snow or other unstable ground conditions that could allow the vehicle or equipment to shift and move within 20 feet (6.10 m) of a power line.
- Look up and live. Always check the operating vicinity for power lines before you drive into it. Tree branches can hide power lines or cables from view. If operating at night, use powerful lights to search for power lines or poles.
- During windy conditions, allow additional clearance.
- Do not rely on cage-type boom guards, insulating links, or proximity warning devices for safety. Adhere to the required distances listed in table titled *REQUIRED CLEARANCE OF CRANES FROM ELECTRICAL TRANSMISSION LINES*.

- Contact the utility company before beginning work near powerlines.
- Always assume overhead lines to be energized.
- Avoid transporting a crane over uneven terrain.
- When using rope to steady a load or restrain spinning of the load, be aware that rope will also conduct electricity, especially if wet or damp.
- Reduce operating speed when in close proximity to powerlines in order to allow the operator more reaction time.

IF ELECTRICAL CONTACT OCCURS:

1 If you are on or inside a vehicle that contacts or is energized by a power line, stay where you are. Exiting the vehicle is more hazardous than remaining inside. Unless there is a fire, it is safer to stay in the vehicle than to attempt an exit. Stay in or on the vehicle until a power company representative informs you that the line has been de-energized and grounded and that the area is safe.

2 If it is critical that you leave the vehicle, JUMP as far away as possible landing with both feet together. Maintain balance or fall forward, don't fall back towards the vehicle which could result in the body becoming a pathway between the vehicle and the ground. No part of your body should touch the vehicle and the ground at the same time.

3 If you are outside of the vehicle that contacts or is energized by a power line, move away from the vehicle and stay away. Warn others to stay away. You are safe from electrical shock as long as you do not become a pathway for current to flow to the ground. Do not approach the vehicle until a power company representative informs you that the line has been de-energized and grounded and that the area is safe

4 In certain circumstances the ground around a charged vehicle or downed power line may be energized. The ground becomes charged in concentric circles around the vehicle with varying voltage potential. Straddling these bands can result in serious injury or death as the current passes through your body. Stay away from the vehicle or power line, keeping both feet on the ground at the same time. This will prevent you from becoming a conductor between two areas of the ground that are charged differently.

5 If someone is trapped inside a vehicle that has come in contact with a power line, instruct them to stay inside and not to try to exit, unless their life is in eminent danger or a fire is present. Call 911 immediately and instruct the 911 operator to contact the power company. The power company personnel are trained to eliminate the hazard by de-energizing the line.

6 Do not attempt any rescue a person on or inside an energized vehicle, or who is energized themselves. If you touch someone whose body is conducting current, the current will flow through you too. Your muscles will seize up and you will not be able to escape.

ELECTRICAL CONTACT FOLLOW-UP:

1 Inspect and repair any equipment affected by electrical contact.

2 Replace any wire rope which has had high voltage contact.

Crane Capacity

The IMT crane is designed to lift specific loads. These loads are defined on the capacity placard mounted near the operator's station and on the crane. Exceeding the limits presented on the capacity placard will create severe safety hazards and will shorten the life of the crane. The operator and other concerned personnel must know the load capacity of the crane and the weight of the load being lifted!

The capacity chart for each model is located in the specific crane technical specifications manual and on placards on the crane and body.

⚠ WARNING

Never exceed the crane's rated load capacities. Doing so will cause structural damage to winches and cables which can lead to death or serious injury.

NOTE

Capacity Placards are intentionally located near the operator to assure ready reference in determining when a load can or cannot be handled.

Load limit information on the capacity placards is formulated on 85% of tipping. Tipping refers to the crane actually tipping with its opposite stabilizer and tires having broken contact with the surface.

Prior to lifting a load:

1 Determine the weight of the load.

2 Determine the weight of any load handling devices.

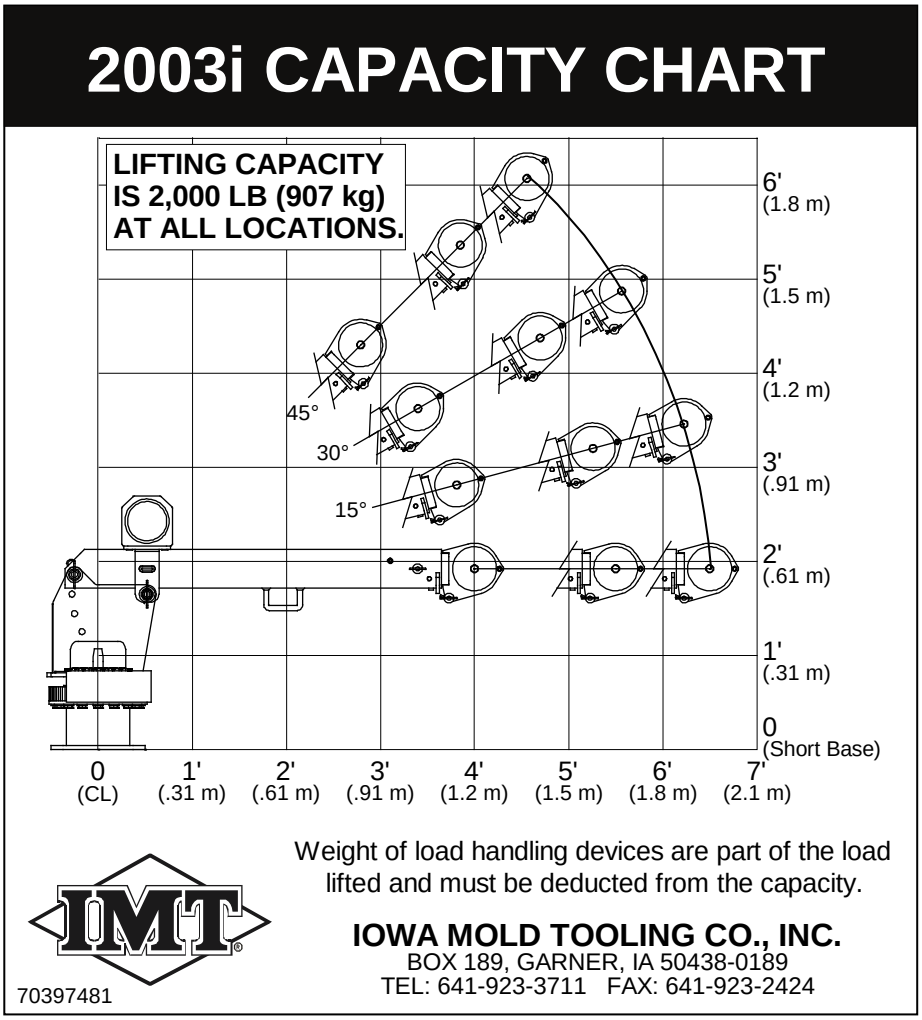
3 Add the weight of the load and the weight of the load handling devices. The sum is the total weight of the load being lifted.

4 Determine the distance from the centerline of crane rotation to the centerline of the load being lifted.

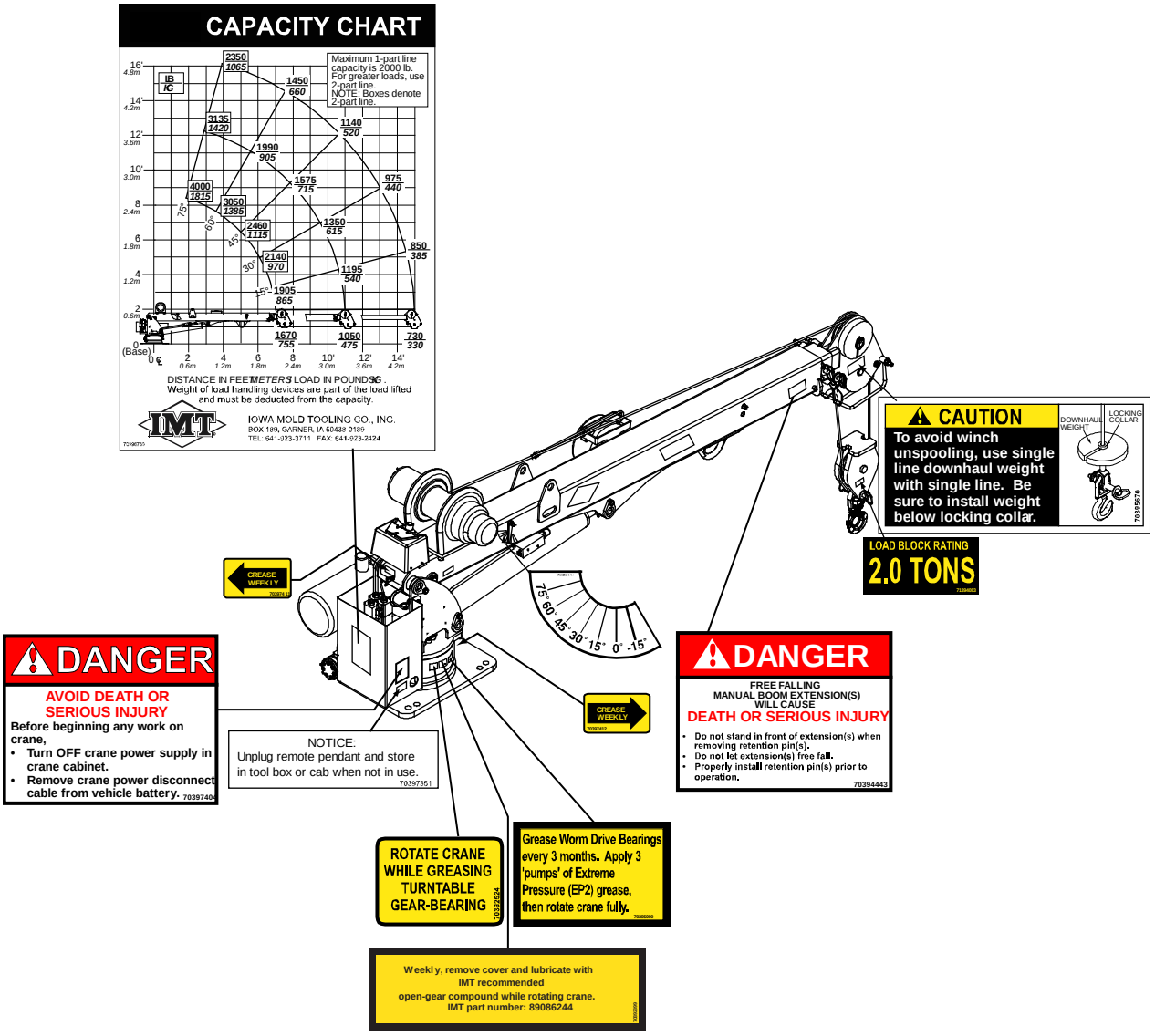
5 Determine the distance from the centerline of crane rotation to the centerline of where the load is to be moved to.

6 The actual distance used should be figured as the larger of items 4 and 5 above.

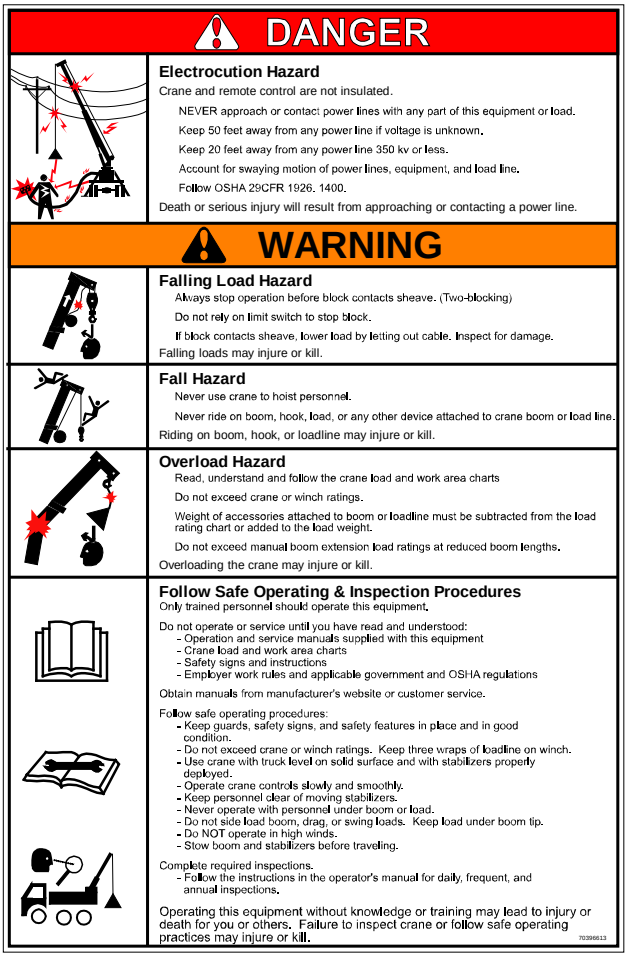
2003i Capacity Chart

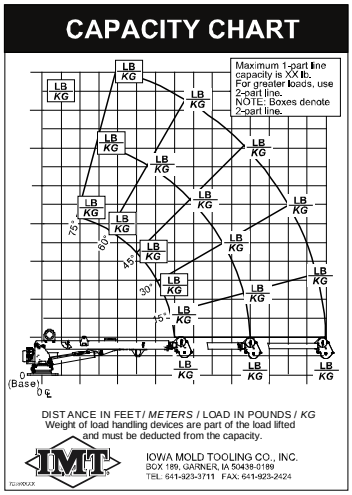


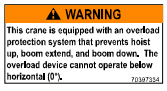
Electric Crane Danger Decal Placement

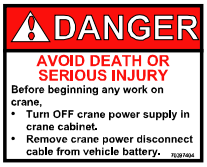


Additional danger decals are applied inside the truck body door. These decals include the following.

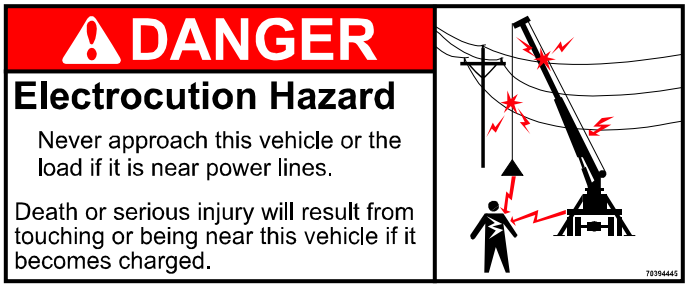


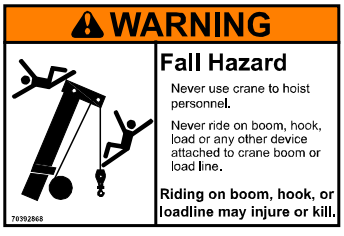




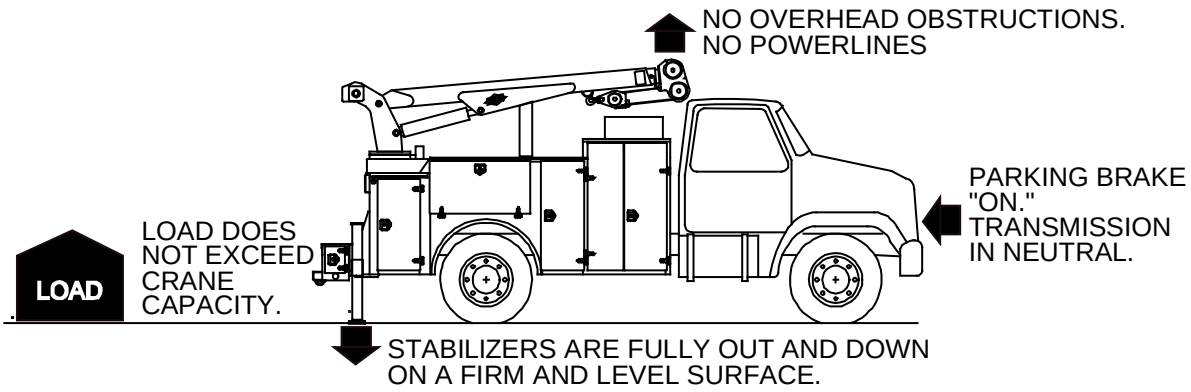


There are two warning decals applied to the front, sides and rear of the carrier vehicle.





Work Site Planning



Lift safety depends on work site preparation. Plan your lifts carefully. Consider:

- Powerlines
- Bystanders
- Overhead obstructions
- Solid surface support

Determine the weight of the load to be lifted. Use the crane capacity chart to make sure all lifts are performed within the rated capacity of the crane. Position the carrier vehicle with these capacities in mind and avoid any overhead obstructions which can impair the lift.

⚠ DANGER

AVOID POWER LINES! Read and understand the Electrical Hazard section of this manual before attempting any crane operations near powerlines.

Position the carrier vehicle so that when the crane is fully extended it can't contact electrically charged lines or apparatus. Twenty feet (6.10 meters) is the minimum distance that any portion of the crane, loadline or load can be to electrical lines carrying up to 35,000 volts. Allow 50 feet (15.24 m) minimum for powerlines with unknown voltages, or with voltages above 35,000 volts.

In windy conditions, allow extra space for powerline and loadline sway and deflection. Provide additional clearance between the crane and electrical lines. If the powerline or apparatus voltage is not known, contact the electrical utility prior to the lift.

If a lift is impossible to perform within the minimum distance between electrical source and crane, ask the power company to de-energize the powerlines or apparatus before any lift is attempted.

Use a qualified signal person or spotter when working near electrical sources, even if the powerline has been de-energized.

Stabilizer Operation

Stabilizers help stabilize the crane and carrier vehicle during a lift, but they can be hazardous due to their close proximity to the operator and other personnel. They are the only component of the crane which normally contact the ground.

⚠ WARNING
Stabilizers can cause serious injury!

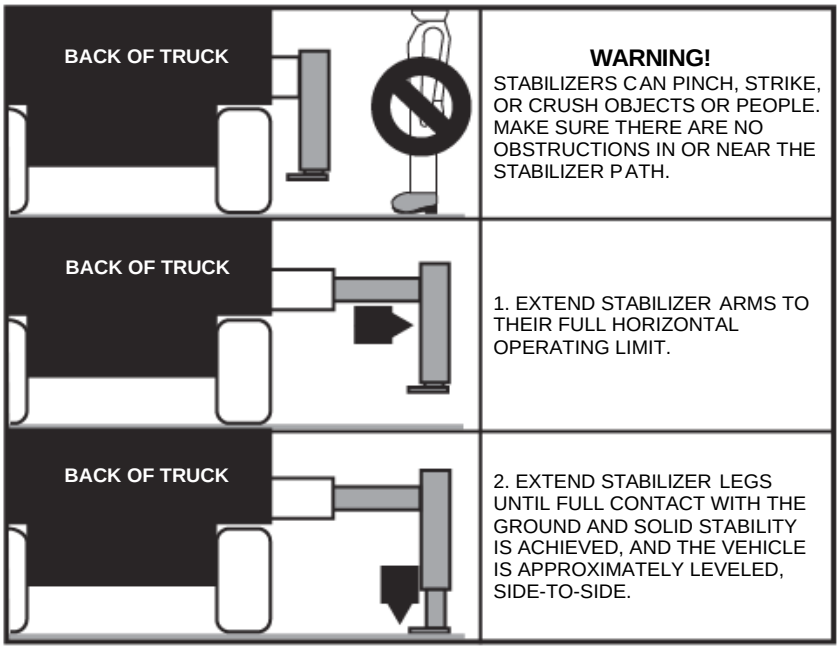
Avoid stabilizer injuries including:

1 Hitting people while moving out.

2 Crushing people or equipment when contacting the ground.

3 Pinching people when being retracted.

There are various stabilizer designs available, but all require extreme caution in their use. See figures for proper stabilizer operation sequence and warnings.



Ground Support

Position the carrier vehicle on a firm, level surface for adequate stabilizer support. If stabilizers appear to bury themselves in a less than firm surface, then DO NOT perform a lift until a suitable location is found. DO NOT position the stabilizers near sharp drop-offs or areas of uncertain firmness.

Before a lift is made, be certain that the parking brake is set and the drive axle is disengaged.

Extend stabilizers fully out and then down. Park the carrier vehicle so that it is level from the front to the rear. Use the power down stabilizer function to level the vehicle from side-to-side. Utilize a signal person if the stabilizers are not in view from the operator's station when extending or lowering the stabilizers.

Winch Safety

1 DO NOT pull the load block or sheave back so that it makes contact with the boom tip. This is two blocking and should be avoided.

2 Pay out loadline before the boom is extended to avoid two blocking.

3 DO NOT permit personnel to ride the boom, loadline, hook or load. This action may cause DEATH or serious injury.

4 Use only specified wire rope for lifting.

5 Retain at least three full wraps of wire rope on the winch drum at all times.

6 See *Wire Rope Precautions* for additional information.

CHAPTER 3

Operation

In This Chapter

Electric Crane Start-up and Task Performance

⚠ CAUTION

AVOID MOTOR DAMAGE! The DC electric motor can overheat. Run for short periods to avoid overheating. The maximum pump working period depends on the pressure required, but working periods should never exceed 5 minutes followed by cool down to ambient temperature. See the technical specifications for pump performance charts and operating intervals.

Prior to lifting a load:

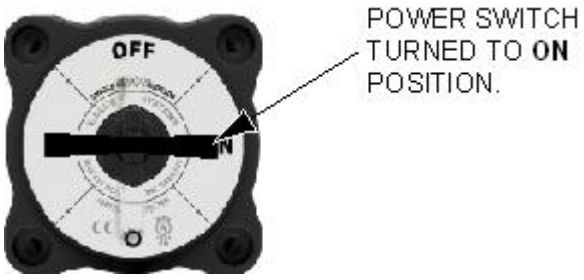
1. Find the weight of the load.
2. Find the weight of any load handling devices.
3. Add the load and load handling device weights. The sum is the total weight of the load being lifted.
4. Find the distance from the crane rotation centerline to the load centerline.
5. Find the distance from the crane rotation centerline to the centerline of where the load is to be moved to.
6. The crane reach required is the larger of items 4 and 5 above.
7. Check crane capacity using this distance and the load weight.

Lifting a Load:

1 Position the crane as close to the job as possible on a firm, dry and level surface. Avoid overhead obstructions on the work side of the unit.

2 Set the auxiliary (parking) brake. Make sure the vehicle engine is on and the transmission is in park or neutral.

3 Make sure the crane electric power switch, located in the crane remote storage cabinet, is turned to the "ON" position.



4 See the Electric Crane Controls section for information on how to move a load using your controls.

5 Before conducting any boom operations, make sure vehicle is stable. Extend both stabilizers on carrier vehicle. Level the vehicle side to side. Provide blocks if necessary to level the unit on sloping ground or bearing pads if the stabilizers tend to sink into soft terrain or hot asphalt. Some concrete or asphalt surfaces are relatively thin and cannot withstand the stabilizer loading. Concrete can break through and cause instability.

⚠ WARNING

Avoid injury or equipment damage! Do NOT attempt to handle a load if the stabilizers are unable to make solid contact with the ground.

Stability over the front (without front stabilizers) can be hampered by raising the vehicle excessively. Use extreme caution when operating in areas around the truck which are not supported by stabilizers because of cushion of tires and springs. When swinging loads from areas supported by stabilizers, use extreme caution because of potential sudden shifting of the support point. Always keep the load as close to the ground as possible.

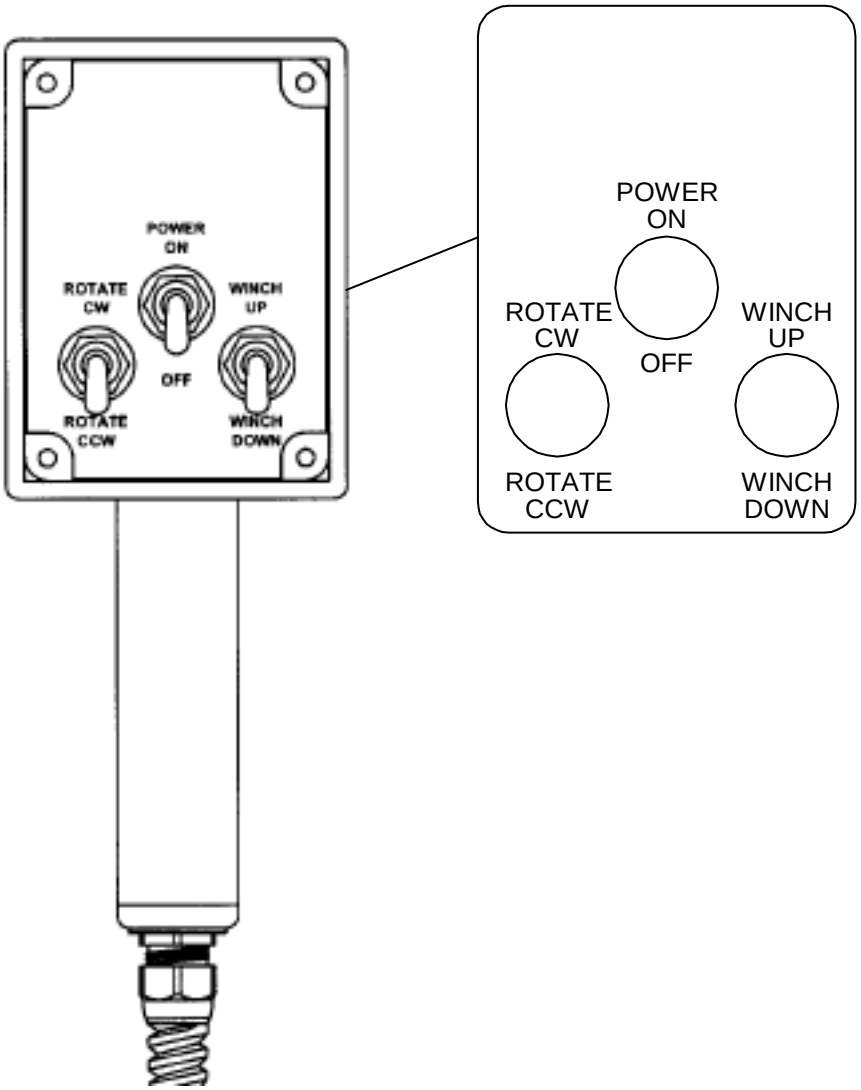
⚠ CAUTION

Avoid injury or equipment damage! Do NOT attempt to rotate the crane before placing it in the deployed position.

6 Raise the lower boom.

7 Rotate the boom to the selected location. If the crane is equipped with a winch, be sure to lower the hook block to an adequate length to allow for extended boom length before extending any telescoping boom sections.

Tethered Remote Handle Operating Instructions



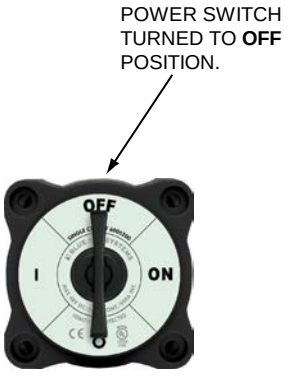
1. Make sure the vehicle engine is on; the vehicle is in park or neutral; and the parking brake is on.
2. Make sure the crane electric power switch, located in the crane cabinet, is turned to the "ON" position.
3. Turn on the crane remote power via the on/off switch of the tethered remote handle.
4. Pull back on the trigger until the power unit begins to run.
5. Select the required function on the crane handle to move the crane as desired, making sure not to release tension on the trigger assembly.
6. When done with the function, continue to hold the trigger assembly in until all immediate movements of the crane have been completed.
7. If no further work with the crane is needed, or if all immediate movements of the crane have been completed, then release the trigger assembly to return the power unit back to a rested state.
8. Turn off power to the handset.

NOTE

Excessive or rapid “On/Off” cycling of the trigger assembly should be avoided, particularly if a function is engaged. This will cause premature aging or extensive damage to the power unit components.

Crane Shut Down

1. Retract the extension boom (and cable if applicable).
2. Stow the crane in its travel configuration.
3. Secure the hook.
4. Stow the stabilizers.
5. Turn the crane power supply, located in the crane cabinet, to the OFF position. See figure.
6. Secure loose items on truck bed.
7. Unplug and stow the remote control.
8. Release the auxiliary brake.



Operation in Poor Conditions

Operating your equipment in poor weather conditions can affect the performance. Please note the following operation procedures for poor weather conditions.

1 Dusty and Sandy Areas - Operating in dusty or sandy areas presents special problems due to the abrasive action of dust. This will shorten the life of equipment parts. Keep dust and sand out of the moving parts of the machinery and engine. Keep lubricants clean, and cap lubrication and fluid fill areas tightly.

2 High Humidity and Salt Air - Moisture and salt will deteriorate paint, cables, wiring and exposed metallic parts. Keep parts dry and well lubricated in high humidity or salt air conditions. Remove rust and corrosion if and when it appears.

3 High Altitudes - Operation at high altitudes presents special problems due to lower atmospheric pressure and wide temperature ranges. Consult the vehicle owner's manual regarding operating the vehicle at high altitudes.

4 Cold Weather - Warm up vehicle engine per manufacturer requirements. Use appropriate hydraulic oil for outside air temperature.

Hand Signals

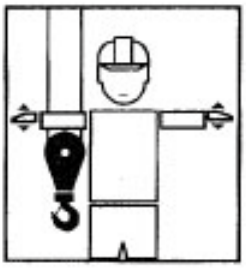
Hand signals can be used to communicate between crane operators and assistants when the job site noise level is too high to communicate in other ways.

Signals to the operator shall follow ASME B30.5 standards, unless voice communication is utilized. Signals shall be discernible or audible at all times. No response by the operator is to be made unless the signal is clearly understood.

For operations not covered by the ASME hand signals, additions to or modifications may be made. These special signals must be agreed upon by the operator and signal person before the crane is operated.

If verbal instructions are required rather than hand signals, all crane motions must be stopped before doing so. Figure includes an illustration of the hand signal, the operation associated with the signal, and a description of the signal. The operator and signal person must review these signals and agree to their use before implementation. For complete hand signal information, refer to ASME/ANSI B30.5 - Mobile and Locomotive Cranes, published by the American Society of Mechanical Engineers.

The hand signals presented by The American Society of Mechanical Engineers have been accepted by the Occupational Safety and Health Administration (OSHA).



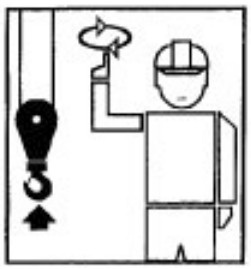
EMERGENCY STOP- Both arms extended, palms down, move arms back and forth horizontally.

STOP- Arm extended, palm down, move arm back and forth horizontally.

MOVE SLOWLY- One hand gives any motion signal; place other hand motionless in front of that hand. (Hoist slowly shown.)

USE MAIN HOIST- Tap fist on head; then use regular signals.

EXTEND BOOM- (Telescoping Booms) One Hand Signal. One fist in front of chest with thumb tapping chest.

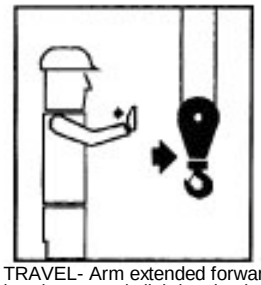


HOIST- With forearm vertical, forefinger pointing up, move hand in small horizontal circles.

SWING - Arm extended, point with finger in direction of boom swing.

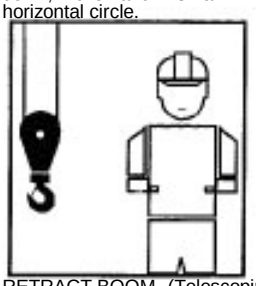
EXTEND BOOM- (Telescoping Booms) Both fists in front of body with thumb pointing outward.

USE WHIPLINE- (Auxiliary Hoist) - Tap elbow with one hand; then use regular signals.

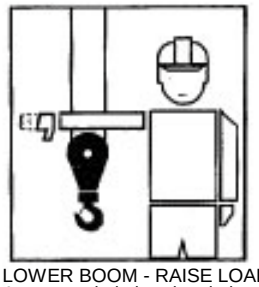


TRAVEL- Arm extended forward, hand open and slightly raised, make pushing motion in direction of travel.

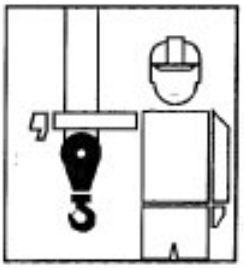
LOWER- With arm extended downward, forefinger pointing down, move hand in small horizontal circle.



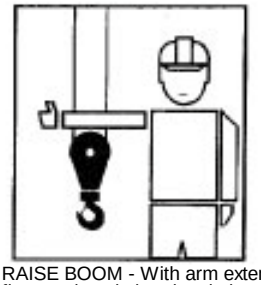
RETRACT BOOM- (Telescoping Booms) Both fists in front of body with thumbs pointing inward.



LOWER BOOM - RAISE LOAD Arm extended, thumb pointing down, flex fingers in and out until desired movement is completed.



LOWER BOOM - With arm extended, fingers closed, thumb pointing downward.



RAISE BOOM - With arm extended, fingers closed, thumb pointing upward.

RAISE BOOM - LOWER LOAD Arms extended, thumb pointing up flex fingers in and out until desired movement is completed.

DOG EVERYTHING - Clasp hands in front of body.

RETRACT BOOM - (Telescopic Booms) - One Hand Signal. One fist in front of chest, thumb pointing outward and heel of fist tapping chest.

CHAPTER 4

Maintenance & Repair

In This Chapter

Maintenance Introduction

Proper, regularly scheduled maintenance is essential in keeping your crane at peak operating efficiency. This section outlines maintenance information and service intervals which should be followed by maintenance personnel.

Following the designated lubrication procedures is important in providing maximum crane life. The procedures and lubrication charts in this section include information on the types of lubricants used, location of lubrication points and frequency of lubrication. Information concerning the lubrication requirements of the truck chassis is not included. Refer to the appropriate truck manufacturer's manuals for chassis lubrication requirements.

The service intervals specified are for normal operation where moderate temperatures, humidity and atmospheric conditions prevail. In areas of extreme conditions, the service periods and lubrication specifications should be altered to meet those conditions. For information concerning extreme condition lubrication, contact your local service representative.

⚠ CAUTION

All maintenance personnel must be familiar with equipment operation and safety per the specific operation manual for their product prior to beginning maintenance.

Electric Crane Power Safety

Your electric crane runs using power from the vehicle battery. Before beginning major maintenance or repairs, disconnect the power to the crane.

DANGER

AVOID DEATH OR SERIOUS INJURY!

Before beginning any work on crane,

- Turn OFF crane power supply in crane cabinet.
- Remove crane power disconnect cable from vehicle battery.

1 Make sure the power switch located inside the crane cabinet is turned to the OFF position.

2 Make sure the crane power disconnect cable is disconnected from the vehicle battery.

Maintenance Schedule

Detailed steps on numerous maintenance procedures are described in the following pages. Use the following chart to help you determine the time schedule of the maintenance requirements.

TIME FRAME	MAINTENANCE ACTIVITY
Weekly	Lubricate: ▪ Turntable Bearing ▪ Hinge Pins ▪ Grease Zerks
Monthly	Complete all required monthly inspections. (See IMT Inspection Checklist in the General Reference section of this manual.)
Quarterly	Complete all required quarterly inspections. (See IMT Inspection Checklist in the General Reference section of this manual.)
Every year	Complete all required annual inspections. (See IMT Inspection Checklist in the General Reference section of this manual.)
Every 2 years	Inspect pins.

Electric Crane Lubrication

Different lubricants are required for different sections of your crane. Contact your lubricant supplier for specific product information.

Follow the grease and lubricant specifications and intervals listed in this manual for best results.

APPLICATION POINT	LUBRICATION PRODUCT	APPLICATION METHOD	INTERVAL
Turntable Bearing (rotate while greasing) Cylinder Pins Boom Hinge Pins	Shell Alvania 2EP or Shell Retinax "A" or Mobilith AW2 or equivalent	Hand Grease Gun or Pneumatic Pressure Gun	Weekly
Gearbox bearings	Lithium or GP bearing lube	Grease gun	Every 50 hours

Grease Zerks

Crane grease zerks must be greased on a weekly basis during normal operating conditions. Under severe operating conditions the zerks must be greased more frequently. Each grease zerk is marked with a decal, “Grease Weekly”, as shown.

Crane worm gear teeth and bearing teeth must be lubricated weekly with Molub-Alloy 882 Heavy or equivalent. See chart for the lubrication product schedule. Apply products with a grease gun or brush as directed.

Pin Removal & Inspection

⚠ DANGER

Avoid serious injury! Support the crane with hoists or straps prior to removing any pins. Removing crane pins can cause crane sections to suddenly come apart.

Pins are frequently used as structural components on IMT cranes. Critical structural pins which require inspection and repair include pins which secure the lower boom assembly to the mast, pins which secure the main cylinder base end to the mast, pins which secures the main cylinder rod end to the lower boom assembly, pins which secure the main cylinder to the extension cylinder section, and pins which secure the extension boom assembly to the boom tip.

Every two years, disassemble the crane and inspect the critical structural pins (noted above) for damage. Check pins for signs of wear, using Pin Defect chart. The pin should be shiny with no galling or pitting in the contact areas. Minor blemishes (see chart) can be dressed and the pins can be reused. Pins with cracks which extend into the pin cross section must be replaced. To repair pins, dress the edges of the flaw with a file so no metal protrudes above the circular surface of the pin. Pins with defects larger than those listed, or with large cracks extending into the pin cross section, must be replaced.

PIN DEFECT	MAXIMUM TOLERANCE
Nick, gouge or scratch	Up to 1/8" (3.2 mm) diameter
Circular scratch around the pin	Up to 1/16" (1.6 mm) wide or deep
Lengthwise scratch	Up to 1/32" (0.8 mm)

NOTE

Use care when removing pins not to crush the snap ring groove.

Apply a lubricating compound like Never-Seez prior to reinstalling pins. Avoid getting Never-Seez on Gar-Max bushings.

⚠ WARNING

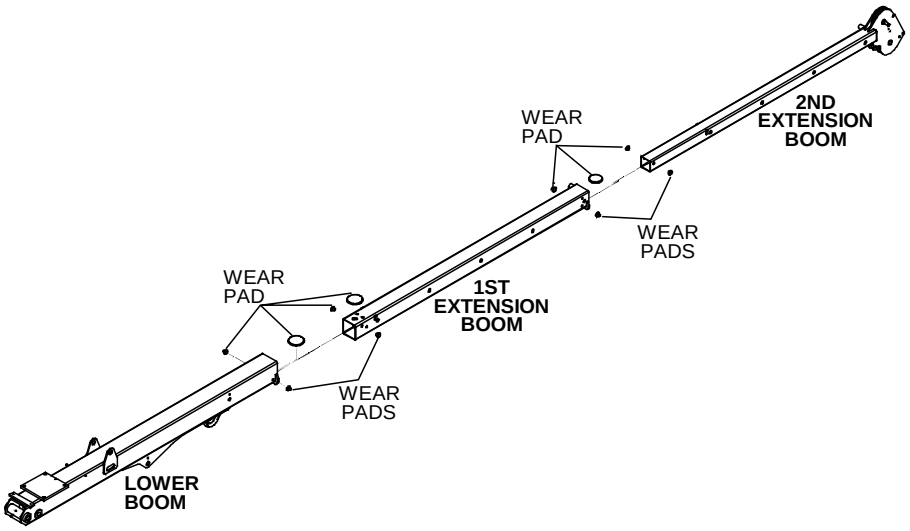
Disconnect electrical power to crane prior to beginning major maintenance or repairs.

See ***Maintenance Safety*** (see "Electric Crane Power Safety" on page 28) for details.

Electric Crane Wear Pads

IMT crane booms extend and retract on synthetic wear pads. The pads drop in place at the top or bottom of the inside of the booms, or snap in place into the sides of the booms. See figure for wear pad locations. With crane use, wear pads wear and must be replaced. Replace wear pads when any of the following conditions exist:

- When pads wear such that boom sections rub on boom sections with the result of metal scraping and the removal of paint on the boom sections.
- With the boom sections extended in the horizontal position, there is noticeable droop. Any visible droop in the boom sections indicates the need for wear pad replacement.



To remove boom wear pads:

1 Remove cable and limit switch on boom tip.

2 Raise the lower boom slightly to provide clearance for the extension cylinder base pin. Remove pin. You will to remove all the wear pads at the end of the boom prior to removing the cylinder, as it is trapped in place.

3 Lower the boom to drop back to the horizontal position.

4 Manually pull out the required extension boom section sufficiently to allow wear pad access. Remove wear pads. Replace.

5 For manual extensions, you will need to remove the stop screws between the hydraulic and manual extensions to remove the extension and replace any worn wear pads.

To reassemble crane:

1 Reverse steps to re-assemble with new wear pads. Torque according to torque charts in general reference section.

2 Start the crane. Slowly cycle the boom in and out with no load to purge air from system.

3 After the air has been purged from the system, check the reservoir oil level. Top off oil level if needed.

Wire Rope Inspection

OSHA requires regular inspections and permanent, signed record-keeping on wire rope inspections. These inspections help the crane operator determine whether the rope can be safely used. Inspection criteria, including number and location of broken wires, wear and elongation, have been established by OSHA, ANSI, ASME and similar organizations.

WIRE ROPE INSPECTION CRITERIA

1 INSPECTOR - The wire rope inspector must keep written reports of the rope condition on file at the work site and must have the authority to order wire rope replacements and keep unsafe wire rope from being used.

2 PERIODS OF INSPECTION - Set up inspection periods for each material hoist wire rope. Determine inspection frequency by considering environment, degree of hazard to materials, frequency of operation and the frequency with which the wire rope is subjected to its capacity limits. Inspect at least every 30 days.

3 METHODS OF INSPECTION - To inspect, unwind the working length of the wire rope from the hoist drum. Thoroughly inspect the rope sections that pass over sheaves, drums or contact saddles or which make opposing turns. Inspect the rope close to the end attachments. DO NOT open the rope for inspection.

4 USED WIRE ROPE - Thoroughly inspect used wire rope prior to installation.

5 IDLE EQUIPMENT - Inspect wire rope on idle equipment prior to operation.

DAILY INSPECTION: Inspect for kinking (sharp bends), crushing, unstranding, birdcaging, core protrusion, rope diameter loss, rope strand unevenness, general corrosion, broken or cut strands, heat damage, and integrity of end attachments.

MONTHLY INSPECTION: Each month, inspect the entire length of the rope, the wire rope eye, and the sheaves, drums and other apparatus with which the rope makes contact.

When a wire rope has been removed from service because it is no longer suitable for use, it must not be re-used on another application. Every wire rope user should understand that each type of fitting attached to a wire rope has a specific efficiency rating which can reduce the working load of the rope assembly or rope system, and this must be given due consideration in determining the capacity of a wire rope system.

Wire Rope Lubrication

Wire rope used on IMT cranes does not have continuous lubrication replenishment. Use open gear lubricant to protect the wire rope on your crane. The areas of rope which experience the most wear are located over sheaves or are otherwise hidden, and these areas require the most rope lubrication.

Lubricate the wire rope using ChainMate™ Chain and Wire Rope lubricant, Vitalife® 400, or equivalent. To lubricate the rope:

1 Clean dirt, dust, and foreign matter from the rope.

2 Apply ChainMate lubricant or equivalent, penetrating the strands of the rope. Apply according to the lubricant specifications.

3 Apply lubricant heavily to portions which encounter bending such as at the sheave and winch.

Wire Rope Maintenance

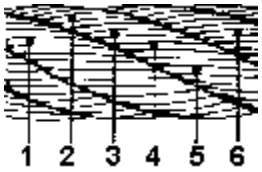
If the daily wire rope inspection shows a problem with the wire rope, the rope must be repaired or replaced. Use only original wire rope from IMT. Failure to do so may cause problems with the anti-two-block system and the downhaul weights.

Wire Rope Inspection & Replacement

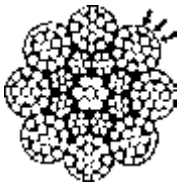
Wire rope with any of the deficiencies shown below shall be removed and replaced immediately.

a Corrosion can be cause for replacement. Any development of corrosion must be noted and monitored closely.

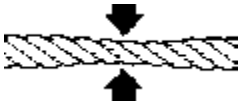
b When there are either three broken wires in one strand or a total of six broken wires in all strands in any one rope lay.



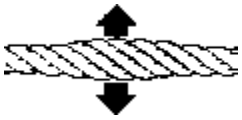
c When flat spots on the outer wires appear and those outside wires are less than 2/3 the thickness of the unworn outer wire.



d When there is a decrease of diameter indicating a core failure.

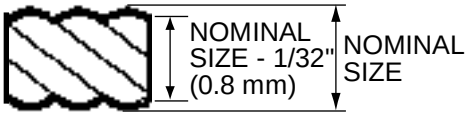


e When kinking, crushing, birdcaging or other distortion occurs.



f When there is noticeable heat damage (discoloration) of the rope by any means.

g When the diameter is reduced from nominal size by 1/32" (0.8 mm) or more.



h If a broken wire protrudes or loops out from the core of the rope.

Additional Inspections

Every three months, and more frequently when the equipment is subject to heavy usage, perform the following inspections in addition to those specified in the Crane Inspection Checklist in the Reference Section.

LOWER AND EXTENSION BOOMS

1 Check structural defects evidenced in weld cracks, dents or bends.

2 Check slide pads for wear.

3 Check lower and extension cylinder pins for proper installation. Check hinge pin bushings for excessive wear.

BOOM & MAST ASSEMBLY

1 Check control valvebank and all other fittings for oil leaks and tightness.

2 Check all bolts and retainer plates on pin assemblies for proper installation.

3 Check torque on all unit mounting bolts. See the installation drawing in the crane parts manual for mounting bolt torque.

4 Check for loose bolts, fatigue cracks or corroded structural members.

BASE ASSEMBLY

1 Check base casting housing for cracks.

2 Check for proper rotation function by making several start-stop operations. Maximum allowable free-play at mast front should be 3.2 mm (1/8") to 4.8 mm (3/ 16").

3 Check for proper gear mesh in turntable gear-bearing. Check motor and gear-mounting bolts for tightness.

HYDRAULIC SYSTEM

1 CYLINDERS

a) Check rods for damage such as scarring, nicks, dents and rust on out-of-service units.

b) Check for leaks at weld joints and rod seals. Check for drift indicating leakage around piston rings or defective holding valves.

c) Check extension cylinder head and piston positions.

d) Check cylinder case for dents.

2 HYDRAULIC POWER UNIT

a) Check for leaks at shaft seal.

b) Check for drop in operating speed.

c) Check hydraulic oil for excessive heating.

d) Check bolts and fasteners for tightness.

e) Note any unusual vibration or noise.

CHAPTER 5

Technical Specifications

In This Chapter

2003i Technical Data

GENERAL SPECIFICATIONSCRANE RATING	2,000 lb at All Locations (907.18 kg at All Locations)
MAXIMUM HORIZONTAL REACH (from centerline of rotation)	78" (198 cm)
MANUAL EXTENSION (1)	30" (76.2 cm)
MAXIMUM VERTICAL REACH (from base of crane to centerline of sheave)	6'-1" (1.8 m) (Short base) 8'-4" (2.6 m) (Pedestal)
CRANE WEIGHT	350 lb (159 kg) (Short base) 420 lb (190.5 kg) (Pedestal)
CRANE STORAGE HEIGHT	32.5" (82.6 cm) (Short base) 60" (152.4 cm) (Pedestal)
MOUNTING SPACE REQUIRED (crane base)	12" x 12" (30.5 cm x 30.5 cm)
ELECTRICAL SYSTEM REQUIREMENTS	12VDC with two 1000 amp batteries* and 100 amp alternator min.
CENTER OF GRAVITY - HORIZONTAL FROM CENTERLINE OF ROTATION (BOOMS RETRACTED)	6" (15.2 cm)
- HORIZONTAL FROM CENTERLINE OF ROTATION (BOOMS EXTENDED)	11" (27.9 cm)
- VERTICAL FROM BOTTOM OF CRANE BASE	13.5" (34.3 cm)
TIE-DOWN BOLT PATTERN (on center)	9.25" x 9.5" x 10" (23.5 cm x 24.1 cm x 25.4 cm)
ROTATION TORQUE	1958 ft-lb (0.26 ton-m)
MINIMUM CHASSIS REQUIREMENT	6,500 lb (2,950 kg) GVWR

* The two batteries must be identical in size with maximum cold-crank amp rating of 1000 CCA.

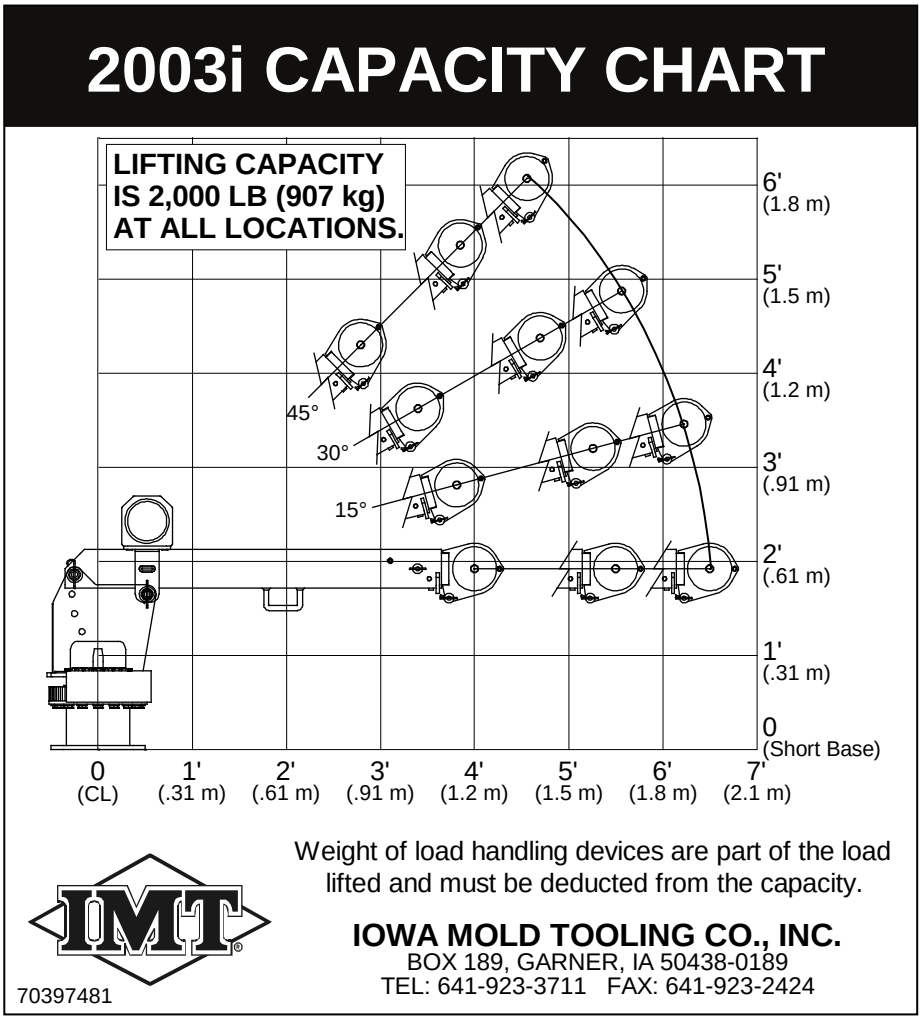
WINCH SPECIFICATIONS

WINCH PULL LINE	1,100 lb (500 kg)
PULL LINE SPEED WITHOUT LOAD	24 ft/min (7.3 m/min)
ROPE DIAMETER	7/32" (5.5 mm)
WIRE ROPE LENGTH	65' (19.8 m)
CABLE BREAKING STRENGTH	5,600 lb (2540 kg)

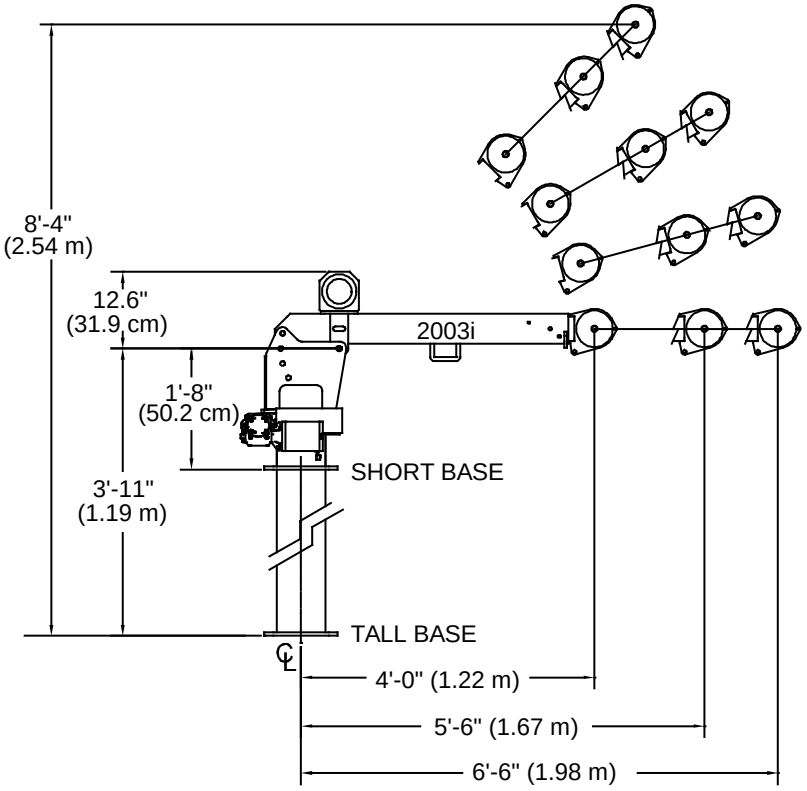
PERFORMANCE CHARACTERISTICS

	SPECIFICATION	SPEED
ROTATION	Continuous 360° (6.28 rad)	64 seconds

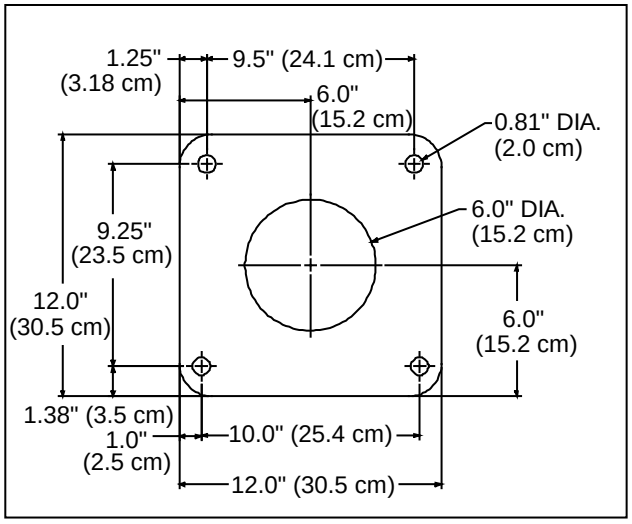
2003i Capacity Chart



2003i Geometric Configuration & Mounting Pattern



2003i MOUNTING HOLE PATTERN

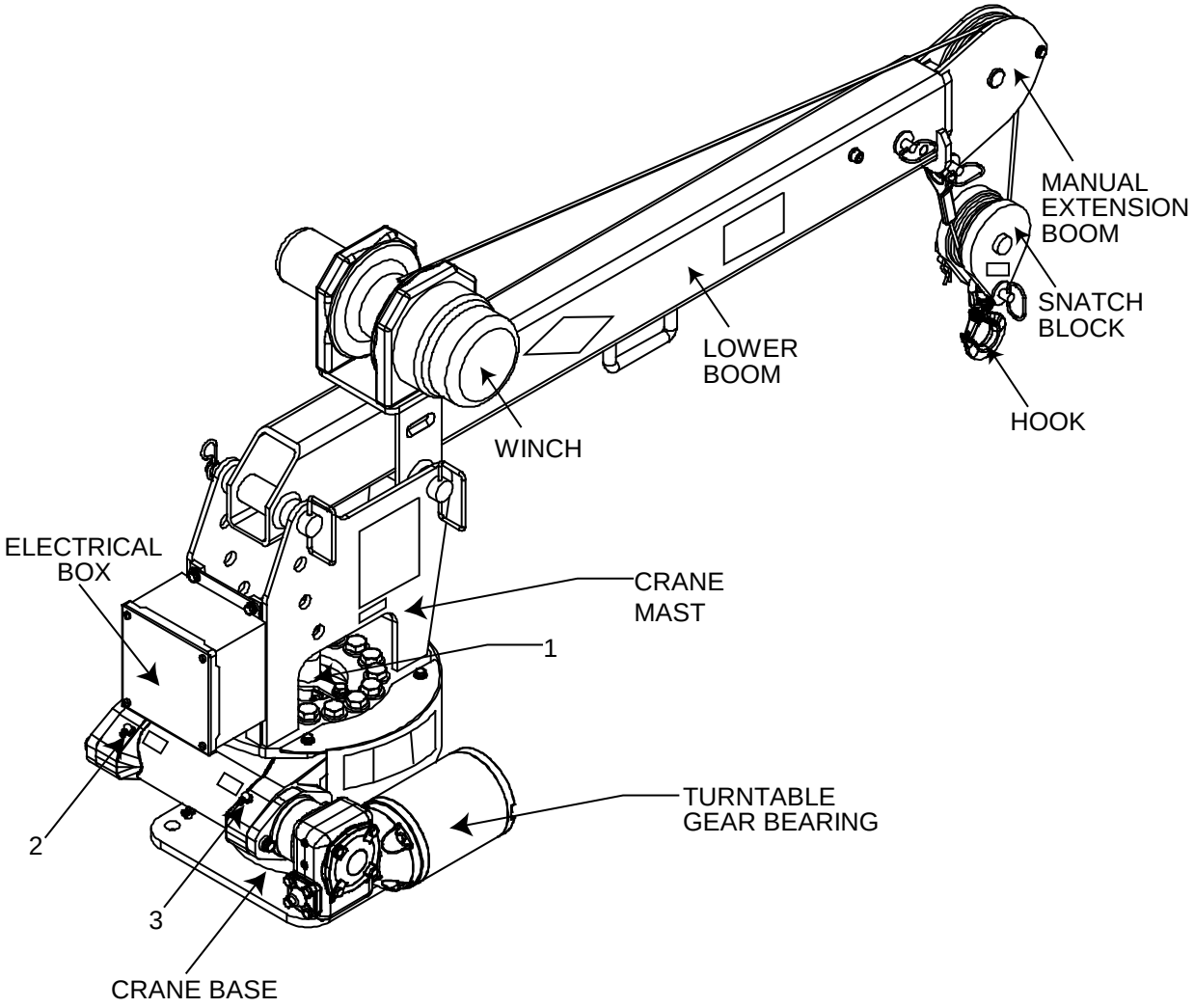


CHAPTER 6

Crane Reference

In This Chapter

2003i Assemblies & Grease Zerk Locations



ITEM	LOCATION DESCRIPTION	LUBRICANT	FREQUENCY
1.	Gear Rotator Grease Extension *Rotate crane while greasing.	Shell Alvania 2EP or Shell Retinax "A"	Weekly
2.	Turntable gear		
3.	Turntable gear		

NOTE: All application points must be greased weekly under normal workloads and moderate weather conditions. Under severe operating conditions, lubrication should be performed more frequently. See the IMT Electric Crane Operation & Safety manual (IMT # 99904381) for additional lubrication requirements.

2003i Recommended Spare Parts

Part Number	Description	Quantity
BASE & MAST ASSEMBLY		
72060151	CAP SCR .62-11X 2.00 HH GR8 Z	16
60118032	CABLE CONNECTOR MODIFICATION	1
BOOM ASSEMBLY		
60030369	WEAR PAD-RND 2.00 DIA X .60 DIA X 1.00 LG	2
60030379	WEAR PAD-RND 1.00 DIA X .50 DIA X .50L	4
60132302	STOP SCREWEW 3/8-24 X .50	2
71734310	PIN-QUICK RLSE .50D/3.5 CRIT	3
60030377	SHEAVE (PART OF EXTENSION BOOM 52721340)	
60030378	SHEAVE (PART OF SNATCH BLOCK 52721341)	
BOOM, WINCH & CRANE ASSEMBLY		
71734310	PIN-QUICK RLSE .50D/3.5 CRIT	3
77041800	CONTACTOR-WINCH 12V DC500	1
WINCH (71570875)		
77566639	BRAKE	1
ELECTRICAL SYSTEM (99904398)		
60118032	CABLE CONNECTOR MODIFICATION	1
72601692	SET SCR .25-20X .38 SC W/NYL	1
77441281	CABLE CONNECTOR-FEMALE	1

Electric Crane Control

IMT's electric cranes are controlled by tethered remote controls. For complete details on operating your crane, refer to the remote control manual.

CHAPTER 7

Parts

In This Chapter

Parts Information

GENERAL

This section contains the exploded parts drawings and accompanying parts lists for the assemblies used on this crane. These drawings are intended to be used in conjunction with the instructions found in the maintenance and repair manuals for this crane family. For optional equipment such as winches and remote controls, refer to the appropriate service manual.

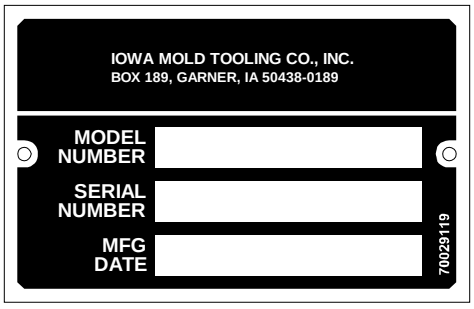
⚠ WARNING

Do not attempt to repair any component without reading the information contained in the repair section. Pay particular attention to statements marked Warning, Caution or Note in that section. Failure to comply with these instructions may result in damage to the equipment, personal injury or death.

CRANE IDENTIFICATION

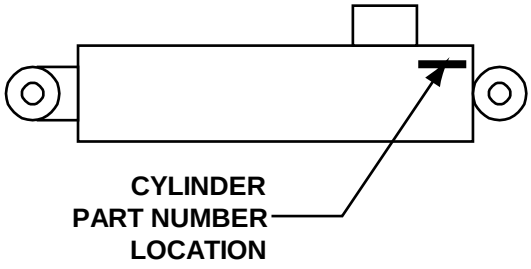
Every IMT crane has an identification placard (see figure). This placard is attached to the inner boom, mast, or crane base. When ordering parts, communicating warranty information, or referring to the unit in correspondence, always include the serial number and model numbers. Address all inquiries to your authorized IMT distributor or to:

Iowa Mold Tooling Co., Inc.
Box 189, Garner, IA 50438-0189
Telephone: 641-923-3711
Technical Support Fax: 641-923-2424



CYLINDER IDENTIFICATION

To insure proper replacement parts are received, it is necessary to specify the complete number/letter sequence for any part requested. Part numbers may be cross checked by comparing the stamped identification on the cylinder case (See figure below) against the information contained in the service manual. You must include the part number stamped on the cylinder case when ordering parts.



WELDMENT IDENTIFICATION

Each of the major weldments - base, mast, inner boom, outer boom, extension boom and stabilizer weldments bear a stamped part number. Any time a major weldment is replaced, you must specify the complete part number as stamped on the weldment. The locations of the part numbers are shown in the Crane Reference Section.

ORDERING REPAIR PARTS

When ordering replacement parts:

1 Give the model number of the unit.

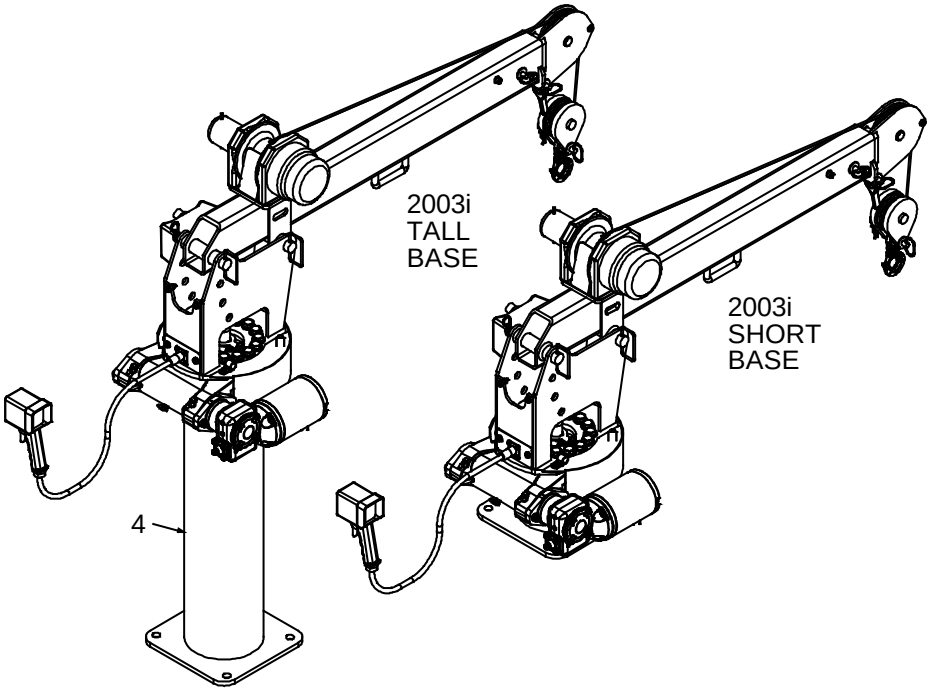
2 Give the serial number of the unit.

3 Specify the complete part number. When ordering cylinder parts, or one of the main weldments, always give the stamped part number.

4 Give a complete description of the part.

5 Specify the quantity required.

Crane Assembly & Complete Parts List (99904352-1)

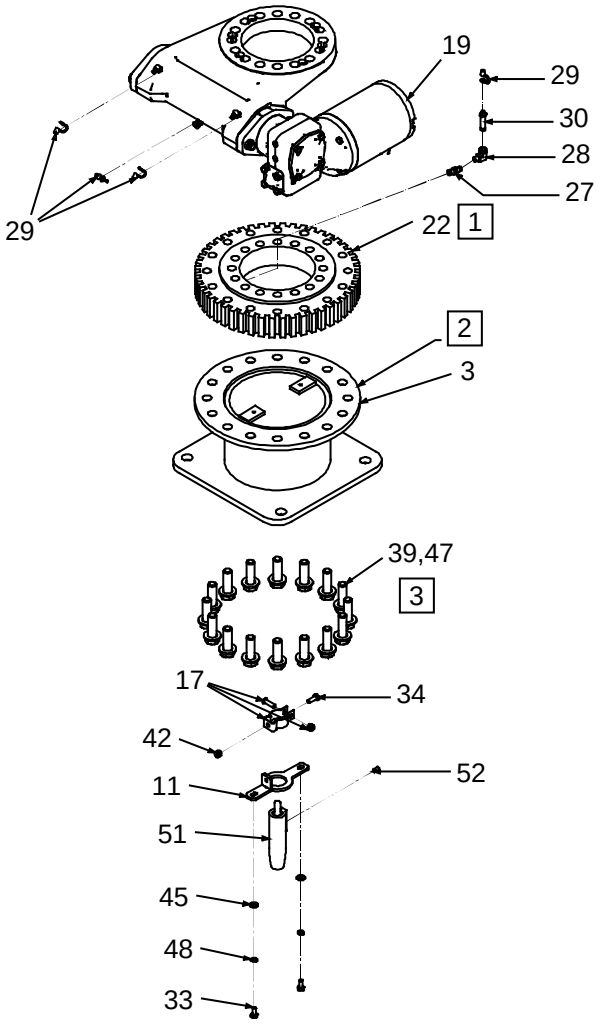


99904352 PARTS LIST				
ITEM	PART #	DESCRIPTION	KIT #	QUANTITY
1.	51721434	HARDWARE KIT, 2002I		1
2.	91721686	KIT, ELECTRICAL INSTALLATION		1
3.	52721337	WELDMENT-BASE 20002I		1
4.	52721478	WELDMENT-TALL BASE 2003I		1
5.	52721338	WELDMENT-MAST 2002I		1
6.	52721339	LOWER BOOM- 2002I		1
7.	52721340	EXTENSION BOOM-2002I		1
8.	52721341	SNATCH BLOCK- 2002I		1
9.	52721352	TURNTABLE GEAR SHROUD		1
10.	52721306	WELDMENT-ELEC ROTATOR BRKT TOP		1
11.	52721307	WELDMENT- ELEC ROTATOR BRKT BOTTOM		1
12.	60030369	WEAR PAD-RND 2.00 DIA X .60 DIA X 1.00 LG		2
13.	60030379	WEAR PAD-RND 1.00 DIA X .50 DIA X .50L		4
14.	60132302	STOP SCREWEW 3/8-24 X .50		2
15.	70144211	PIN- .75X 6.50LG WORKSAVER		2
16.	70580059	WIRE ROPE ASM-.22 X 7 X 19 X 65ft PGA		1
17.	70580194	CLAMP-I" CONDUIT HANGER W/BOLT		2
18.	70734306	HOOK- 1 TON		1
19.	71056635	GEAR-TRNTBL BRG 2002i		1

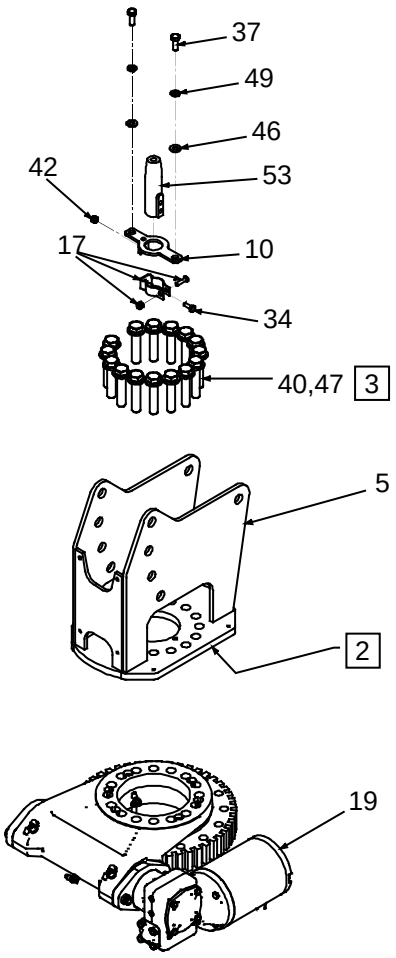
99904352 PARTS LIST				
ITEM	PART #	DESCRIPTION	KIT #	QUANTITY
20.	60133130	BRKT-WIRE HARNESS 2003I		1
21.	71056636	TURNTABLE RING		1
22.	71570921	WINCH-DC500-12VDC (WAS 71570875 THROUGH 2-09)		1
23.	77041800	CONTACTOR-WINCH 12V DC500		1
24.	71734310	PIN-QUICK RLSE .50D/3.5 CRIT		3
25.	72066144	HAIR PIN .16 DIA .63-1.00 SHAFT (PART OF 71734310)	#24	3
26.	72053719	ADPTR-MPT/HEX/MPT .12 .12		1
27.	72531130	ELBOW-STREET STL .12 X 90 DEG		1
28.	70034382	CAP-GREASE PRO20 GC-RED	#1	4
29.	72534418	ZERK-NPT .12 X 1.75 LG	#1	1
30.	72601725	SCREW-MACH # 6-32 .50 RDH PHLPS	#1	4
31.	72060000	CAP SCREW .25-20X .50 HH GR5 Z	#1	4
32.	72060001	CAP SCREW .25-20X .62 HH GR5 Z	#1	2
33.	72060002	CAP SCREW .25-20X .75 HH GR5 Z	#1	2
34.	72060004	CAP SCREW .25-20X 1.00 HH GR5 Z	#1	4
35.	72060009	CAP SCREW .25-20X 2.25 HH GR5 Z	#1	1
36.	72060046	CAP SCREW .38-16X 1.00 HH GR5 Z	#1	2
37.	72060047	CAP SCREW .38-16X 1.25 HH GR5 Z	#1	4
38.	72060151	CAP SCREW .62-11X 2.00 HH GR8 Z	#1	16
39.	72060177	CAP SCREW .62-11X 3.00 HH GR8 Z	#1	15
40.	72601941	CAP SCREW .25-20X .38 BTNHD ZC	#1	2
41.	72062104	NUT .25-20 HEX NYLOCK	#1	7
42.	72601726	NUT 6-32 HEX NYLOCK	#1	4
43.	72601705	WASHER #6 W FLAT ANSI B27.2	#1	4
44.	72063001	WASHER .25 FLAT	#1	12
45.	72063003	WASHER .38 FLAT	#1	2
46.	72063119	WASHER .62 FLAT ASTM F436	#1	31
47.	72063049	WASHER .25 LOCK	#1	6
48.	72063051	WASHER .38 LOCK	#1	8
49.	72066580	CLAMP-UMP20 S464-G12	#1	3
50.	51721944	CABLE ASM-1GA-3/8RNG X SWVL MX 60.00 LG	#2	1
51.	51722289	CABLE ASM-4GA-1/4RNGX SWVL FX 17.50 LG	#2	1
52.	51721749	HANDLE ASM-TETHERED ELECTRIC CRANES	#2	1
53.	77441287	HARNESS-TETHER ELECTRIC CRANE 2003i	#2	1
REV. C 20090311				

Base & Mast Assembly (99904352-2)

(See Parts List for Effectivity Dates)



BASE ASSEMBLY



MAST ASSEMBLY

NOTES (IF TIED TO DRAWING, SEE REFERENCE NUMBER IN

1 APPLY BLACK "MOLUB-ALLOY 882 HEAVY" GEAR GREASE TO TURNTABLE GEAR.

2 APPLY RUST PREVENTATIVE.

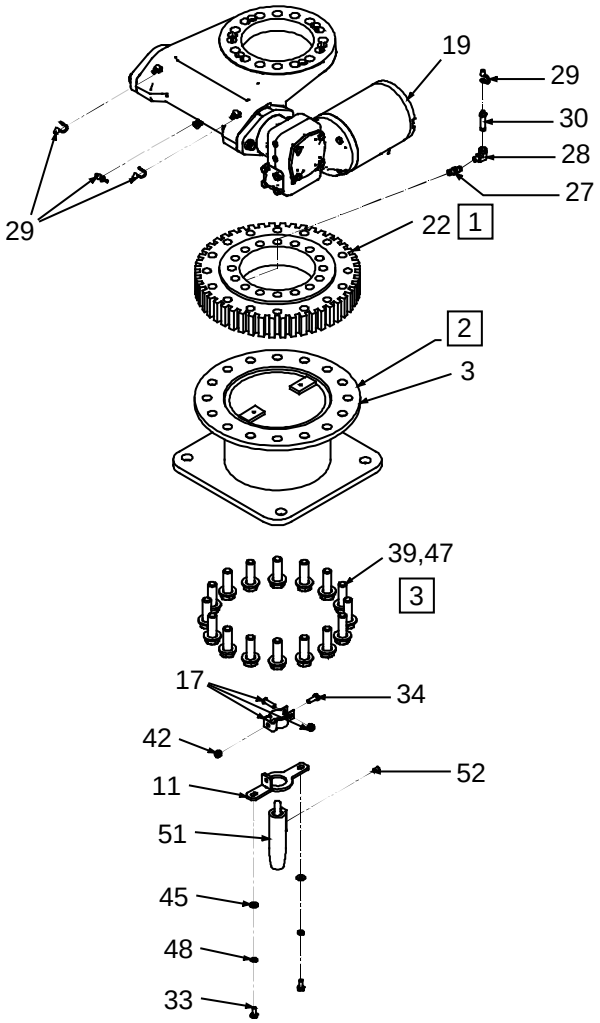
3 TORQUE TO 160 FT-LB.

99904352-2 PARTS LIST				
ITEM	PART #	DESCRIPTION	KIT #	QUANTITY
1.	51721434	KIT-HARDWARE		1
2.	91721686	KIT- 2003I ELECTRICAL INSTALLATION		1
3.	52721337	WELDMENT-BASE		1
5.	52721338	WELDMENT-MAST		1

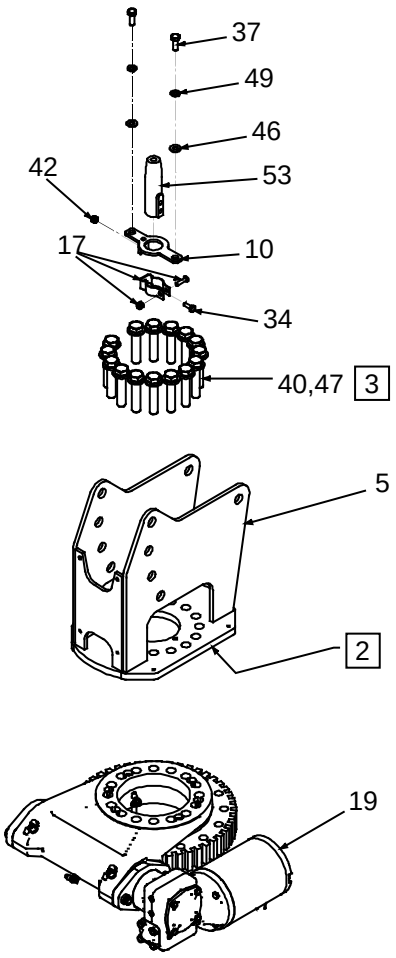
99904352-2 PARTS LIST				
ITEM	PART #	DESCRIPTION	KIT #	QUANTITY
10.	52721306	WELDMENT-ELEC ROTATOR BRACKET TOP (effective through 05/10/13)		1
11.	52721307	WELDMENT- ELEC ROTATOR BRACKET BOTTOM (effective through 05/10/13)		1
17.	70580194	CLAMP-I" CONDUIT HANGER W/BOLT		2
19.	71056635	GEAR-TRNTBL BRG		1
21.	71056636	TURNTABLE RING		1
26.	72053719	ADPTR-MPT/HEX/MPT .12 .12 (effective through 09/03/13)		1
27.	72531130	ELBOW-STREET STL .12 X 90 DEG (effective through 09/03/13)		1
28.	70034382	CAP-GREASE PRO20 GC-RED	#1	4
29.	72534418	ZERK-NPT .12 X 1.75 LG (effective through 09/03/13)	#1	1
32.	72060001	CAP SCREW .25-20X .62 HH GR5 Z	#1	2
33.	72060002	CAP SCREW .25-20X .75 HH GR5 Z	#1	2
36.	72060046	CAP SCREW .38-16X 1.00 HH GR5 Z	#1	2
38.	72060151	CAP SCREW .62-11X 2.00 HH GR8 Z	#1	16
39.	72060177	CAP SCREW .62-11X 3.00 HH GR8 Z	#1	15
41.	72062104	NUT .25-20 HEX NYLOCK	#1	7
44.	72063001	WASHER .25 FLAT	#1	12
45.	72063003	WASHER .38 FLAT (effective through 09/03/13)	#1	2
46.	72063119	WASHER .62 FLAT ASTM F436	#1	31
47.	72063049	WASHER .25 LOCK	#1	6
48.	72063051	WASHER .38 LOCK	#1	8
50.	51721944	CABLE ASSEMBLY- 1GA-3/8RNGX SWVL MX 60.00LG	#2	1
51.	51722289	CABLE ASSEMBLY- 4GA-1/4RNGX SWVL FX 17.50LG	#2	1
REV. C 20090311				

Base & Mast Assembly (99904352-2)

(See Parts List for Effectivity Dates)



BASE ASSEMBLY



MAST ASSEMBLY

NOTES (IF TIED TO DRAWING, SEE REFERENCE NUMBER IN

1 APPLY BLACK "MOLUB-ALLOY 882 HEAVY" GEAR GREASE TO TURNTABLE GEAR.

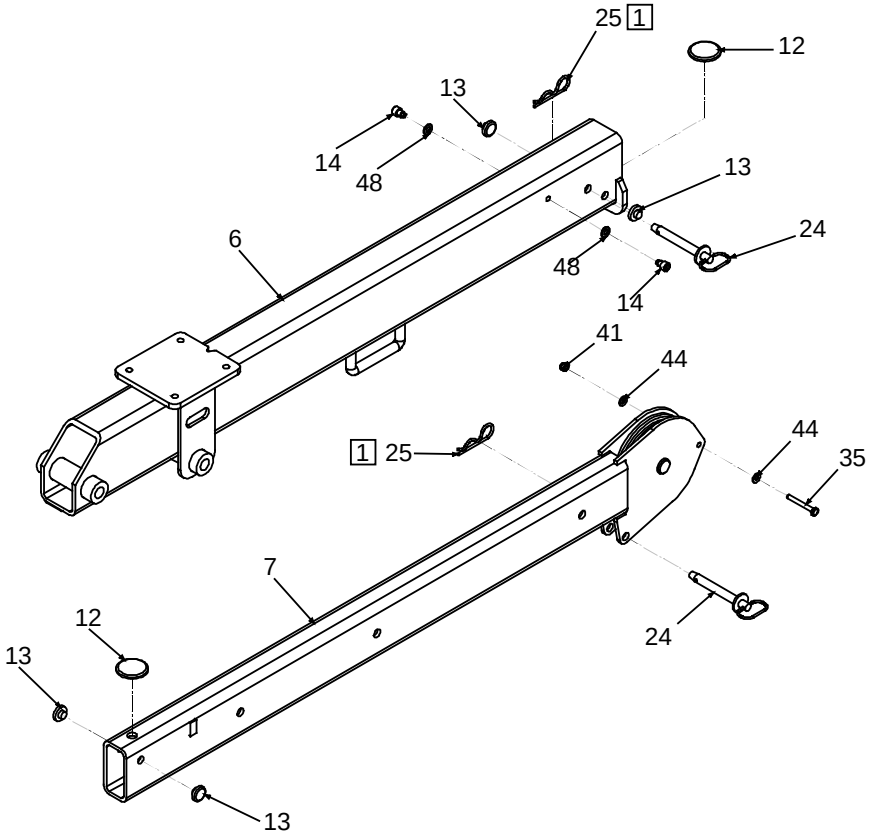
2 APPLY RUST PREVENTATIVE.

3 TORQUE TO 160 FT-LB.

99904352-2 PARTS LIST				
ITEM	PART #	DESCRIPTION	KIT #	QUANTITY
1.	51721434	KIT-HARDWARE		1
2.	91721686	KIT- 2003I ELECTRICAL INSTALLATION		1
3.	52721337	WELDMENT-BASE		1
5.	52721338	WELDMENT-MAST		1

99904352-2 PARTS LIST				
ITEM	PART #	DESCRIPTION	KIT #	QUANTITY
15.	70580194	CLAMP-I" CONDUIT HANGER W/BOLT		2
17.	71056635	GEAR-TRNTBL BRG		1
19.	71056636	TURNTABLE RING		1
24.	70034382	CAP-GREASE PRO20 GC-RED	#1	4
26.	72060001	CAP SCREW .25-20X .62 HH GR5 Z	#1	2
27.	72060002	CAP SCREW .25-20X .75 HH GR5 Z	#1	2
30.	72060046	CAP SCREW .38-16X 1.00 HH GR5 Z	#1	2
32.	72060151	CAP SCREW .62-11X 2.00 HH GR8 Z	#1	16
33.	72060177	CAP SCREW .62-11X 3.00 HH GR8 Z	#1	15
35.	72062104	NUT .25-20 HEX NYLOCK	#1	7
38.	72063001	WASHER .25 FLAT	#1	12
39.	72063003	WASHER .38 FLAT (effective from 09/03/13)	#1	3
40.	72063119	WASHER .62 FLAT ASTM F436	#1	31
41.	72063049	WASHER .25 LOCK	#1	6
42.	72063051	WASHER .38 LOCK	#1	8
43.	51721944	CABLE ASSEMBLY- 1GA-3/8RNGX SWVL MX 60.00LG	#2	1
44.	51722289	CABLE ASSEMBLY- 4GA-1/4RNGX SWVL FX 17.50LG	#2	1
48.	60141128	PLATE- ELEC ROTATOR BRACKET BOTTOM (effective from 05/10/13)		1
49.	60141129	WELDMENT-ELEC ROTATOR BRACKET TOP (effective from 05/10/13)		1
50.	51399503	HOSE – AA 0.13 X 9.00 (2-2) (effective from 09/03/13)		1
51.	72053301	COUPLING-61V 0.12 SCH 40 (effective from 09/03/13)		1
52.	72053508	ZERK-NPT .12 (effective from 09/03/13)	#1	1
REV. C 20090311				

Boom Assembly (99904352-3)

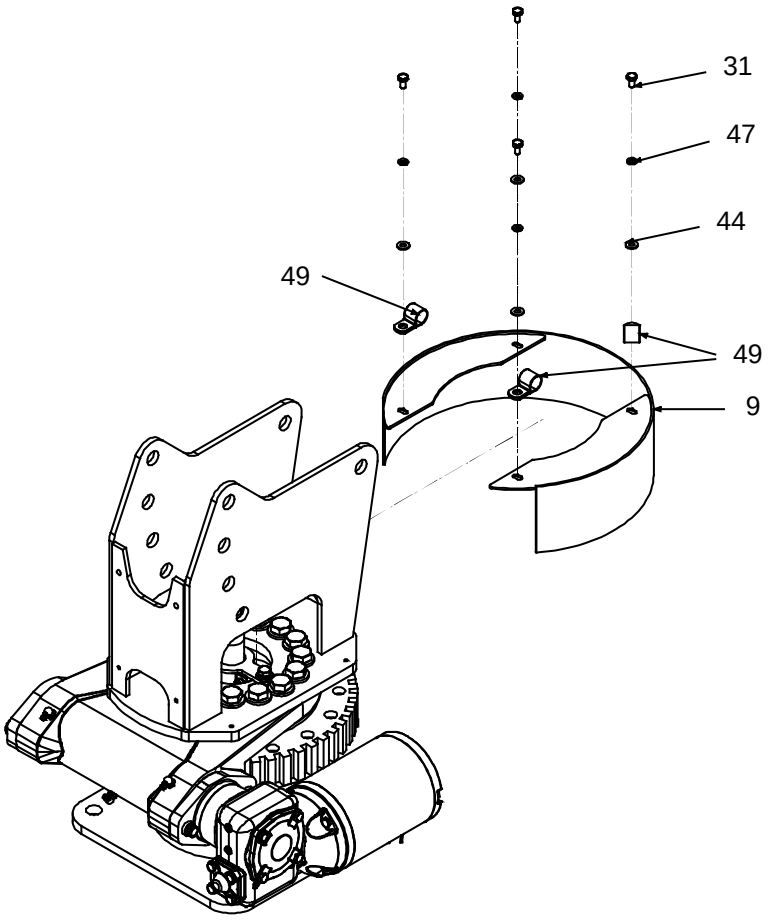


NOTES (SEE REFERENCE NUMBER IN BOX):

1 PART OF 71734310 PIN.

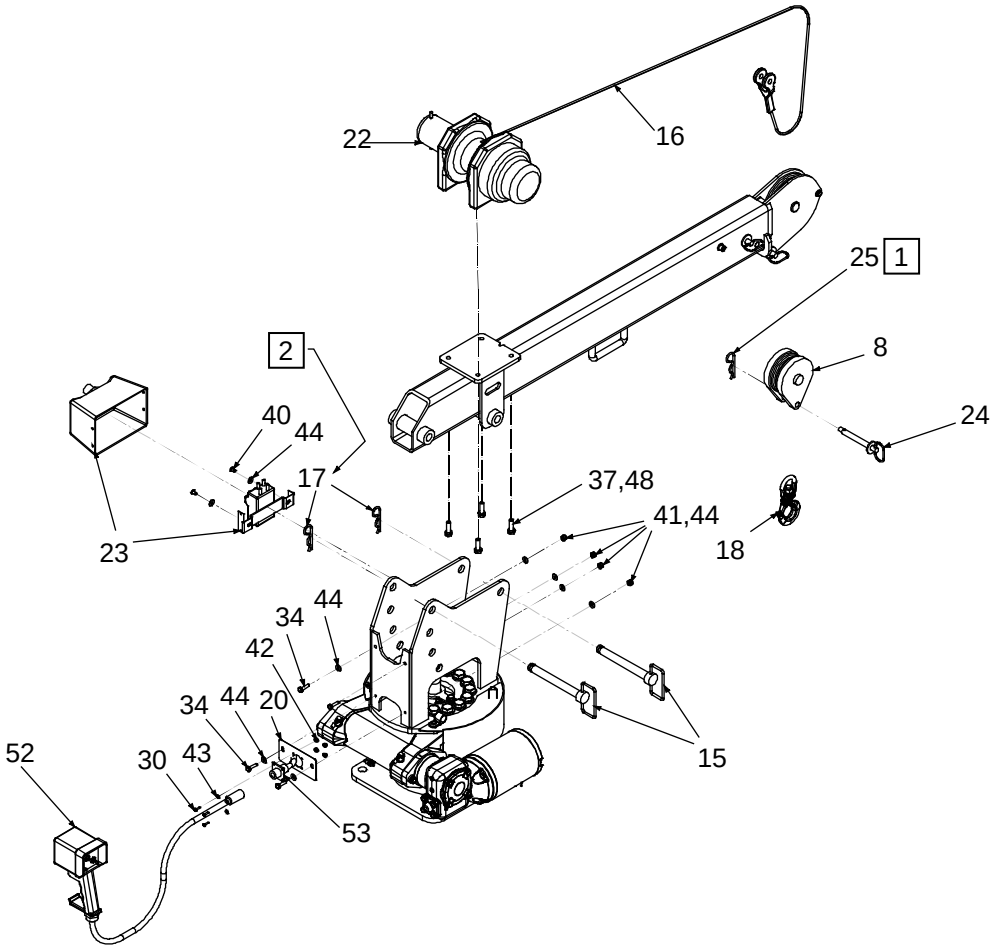
99904352-3 PARTS LIST				
ITEM	PART #	DESCRPITION	KIT #	QUANTITY
1.	51721434	KIT-HARDWARE		1
6.	52721339	LOWER BOOM		1
7.	52721340	EXTENSION BOOM		1
	60030377	SHEAVE (PART OF #7)		
12.	60030369	WEAR PAD-RND 2.00 DIA X .60 DIA X 1.00 LG		2
13.	60030379	WEAR PAD-RND 1.00 DIA X .50 DIA X .50L		4
14.	60132302	STOP SCREW 3/8-24 X .50		2
24.	71734310	PIN-QUICK RLSE .50D/3.5 CRIT		3
25.	72066144	HAIR PIN .16 DIA .63-1.00 SHAFT (PART OF 71734310)	#24	3
35.	72060009	CAP SCR .25-20X 2.25 HH GR5 Z	#1	1
41.	72062104	NUT .25-20 HEX NYLOCK	#1	7
44.	72063001	WASHER .25 FLAT	#1	12
48.	72063051	WASHER .38 LOCK	#1	8
REV. C 20090311				

Electrical Box & Gear Guard (99904352-4)



99904352-4 PARTS LIST				
ITEM	PART #	DESCRIPTION	KIT #	QUANTITY
9.	52721352	TURNTABLE GEAR SHROUD		1
31.	72060000	CAP SCREW .25-20X .50 HH GR5 Z	#1	4
44.	72063001	WASHER .25 FLAT	#1	12
47.	72063049	WASHER .25 LOCK	#1	6
49.	72066580	CLAMP-UMP20	#1	3
REV C 20090311				

Boom, Winch, & Crane Assembly (99904352-5)



NOTES (SEE REFERENCE NUMBER IN BOX):

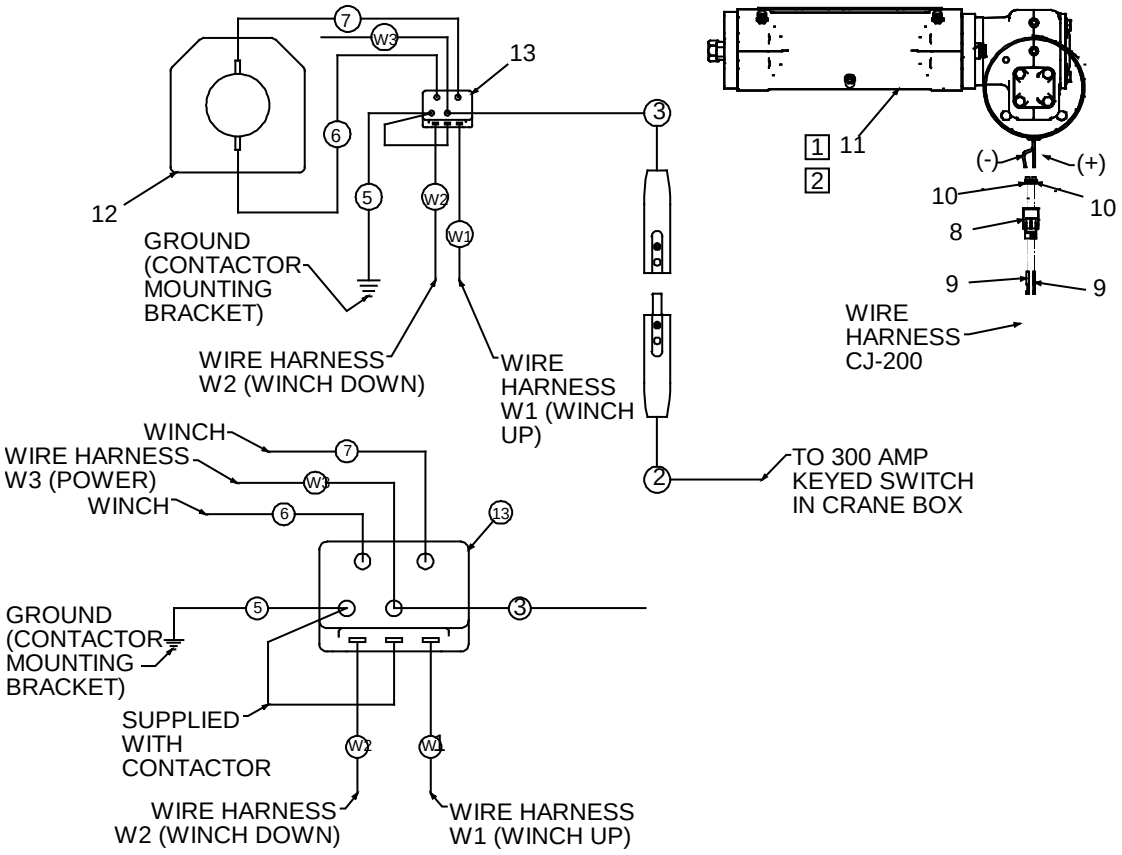
1 PART OF 71734310 PIN

2 INCLUDED WITH 70144211 PIN

99904352-5 PARTS LIST				
ITEM	PART #	DESCRIPTION	KIT #	QUANTITY
1.	51721434	KIT-HARDWARE		1
2.	91721686	KIT- 2003I ELECTRICAL INSTALLATION		1
8.	52721341	SNATCH BLOCK- 2002I		1
	60030378	SHEAVE (PART OF #8)		REF
15.	70144211	PIN- .75X 6.50LG WORKSAVER		2
16.	70580059	WIRE ROPE ASM-.22 X 7 X 19 X 65ft PGA		1
17.	70580194	CLAMP-I" CONDUIT HANGER W/BOLT		2
18.	70734306	HOOK- 1 TON		1
20.	60133130	BRKT-WIRE HARNESS 2003I		1
22.	71570921	WINCH-DC500 12VDC (WAS 71570875 THROUGH 2-09)		1
23.	77041800	CONTACTOR-WINCH 12V DC500		1

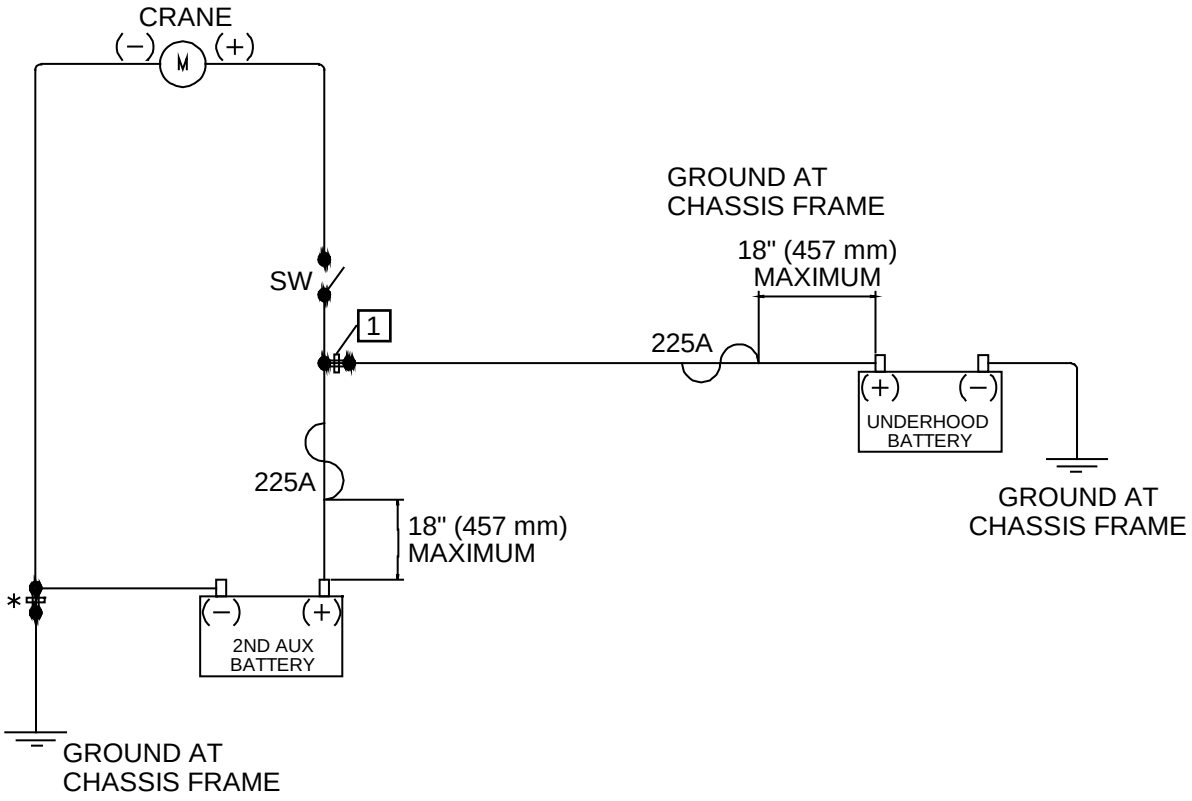
99904352-5 PARTS LIST				
ITEM	PART #	DESCRIPTION	KIT #	QUANTITY
24.	71734310	PIN-QUICK RLSE .50D/3.5 CRIT		3
25.	72066144	HAIR PIN .16 DIA .63-1.00 SHAFT (PART OF 71734310)	#24	3
30.	72601725	SCR-MACH # 6-32 .50 RDH PHLPS	#1	4
34.	72060004	CAP SCR .25-20X 1.00 HH GR5 Z	#1	4
37.	72060047	CAP SCR .38-16X 1.25 HH GR5 Z	#1	4
40.	72601941	SCR-MACH .25-20X .38 BTNHD ZC	#1	2
41.	72062104	NUT .25-20 HEX NYLOCK	#1	7
42.	72601726	NUT 6-32 HEX NYLOCK	#1	4
43.	72601705	WASHER #6 W FLAT ANSI B27.2	#1	4
44.	72063001	WASHER .25 FLAT	#1	12
48.	72063051	WASHER .38 LOCK	#1	8
52.	51721749	HANDLE ASM-TETHERED ELECTRIC CRANES	#2	1
53.	77441287	HARNESS-TETHER ELECTRIC CRANE 2003i	#2	1
REV. C 20090311				

Electrical Installation (99904398)



99904398 PARTS LIST				
ITEM	PART #	DESCRIPTION	KIT #	QUANTITY
1.	91721686	KIT- 2003I ELECTRICAL INSTALLATION		1
2.	51721944	CABLE ASM- 1GA-3/8RNGX SWVL MX 60.00LG	#1	1
3.	51722289	CABLE ASM- 4GA-1/4RNGX SWVL FX 17.50LG	#1	1
4.	77441287	HARNESS-TETHER ELECTRIC CRANE 2003i	#1	1
5.	77441288	CABLE ASM- 4GA-1/4RNGX 1/4RNGX 5.50LG	#1	1
6.	77441289	CABLE ASM- 4GA-1/4RNGX 1/4RNGX 15.75LG	#1	1
7.	77441290	CABLE ASM- 4GA-1/4RNGX 1/4RNGX 17.00LG	#1	1
8.	77044574	CONN-PKRD WEATHERPACK 2 CAV FEMALE/TOWER	#1	1
9.	77045883	TERM-PKRD WEATHERPACK 12GA FEMALE	#1	2
10.	77044659	CABLE SEAL-PKRD WP/MP 10-12 GA BLUE	#1	2
11.	71056635	GEAR-TRNTBL BRG 2002i		REF
12.	71570921	WINCH-DC500 12VDC		REF
13.	77041800	CONTACTOR-WINCH 12V DC500		REF
REV. B 20090311				

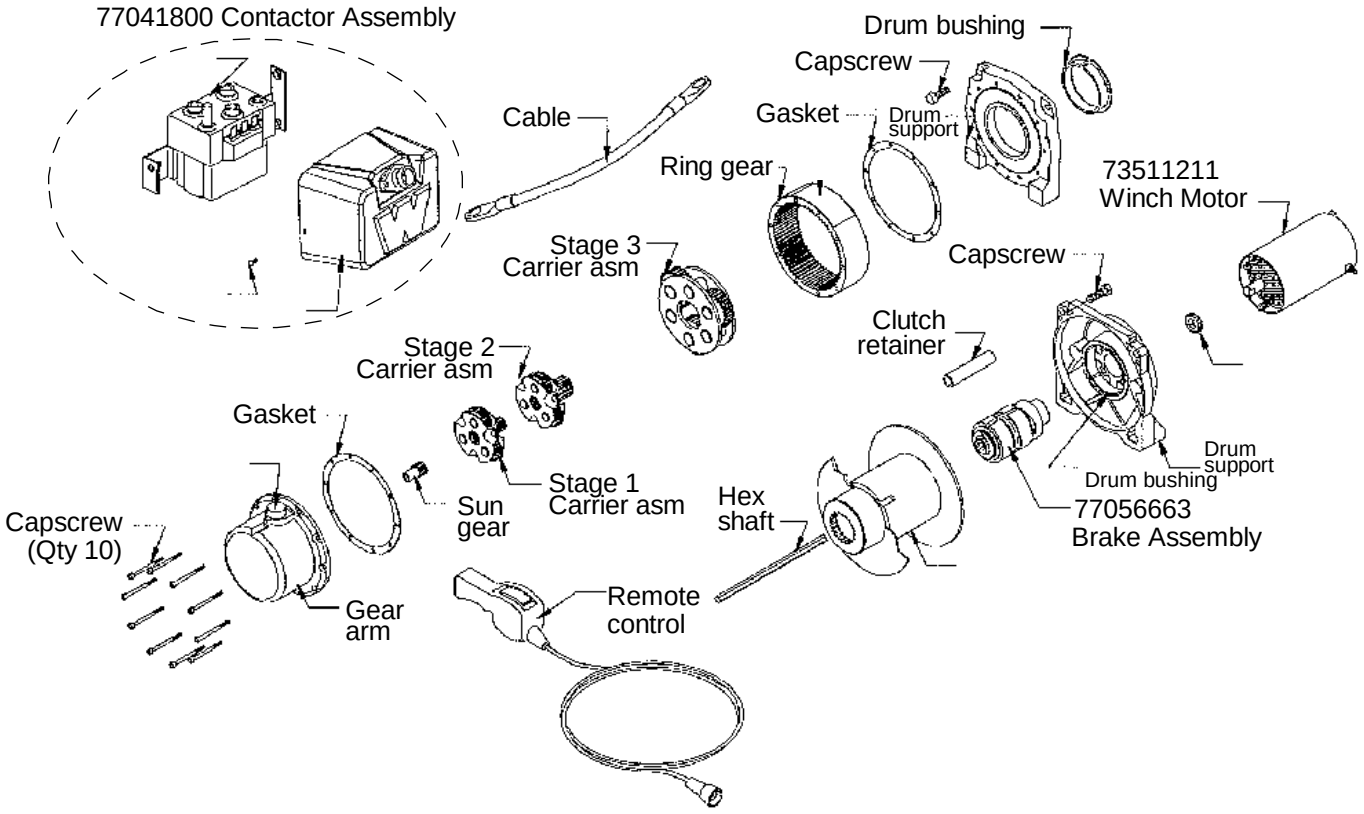
Electric Crane Battery Circuit (99904884)



NOTES (SEE REFERENCE NUMBER IN BOX*)*:

1 ELECTRIC BULKHEAD PASS-THRU CONNECTOR. USE WHENEVER POWER OR GROUND PASSES THROUGH A COMPARTMENT WALL.

Winch (71570921) (Eff 2-09)

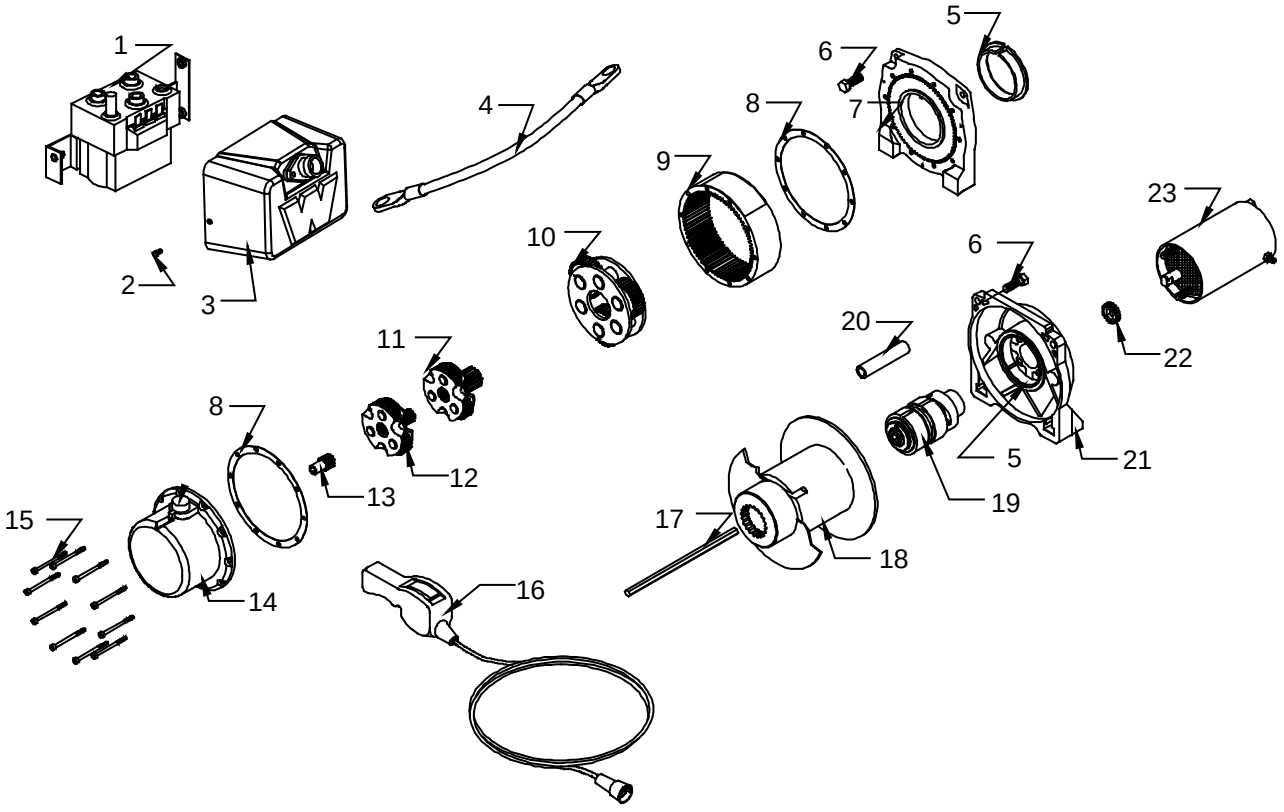


WINCH SPECIFICATIONS

MOTOR TYPE:	12V
MOTOR HP:	1:1
GEAR RATIO:	261:1
WEIGHT:	25 LB
MAX RATED LOAD:	1100 LB (500 KG)
MAX WIRE ROPE RECOMMENDED:	3/16" 4200 LB (1909 KG) MIN. BREAKING STRENGTH

LAYER	LOAD (LB)	SPEED (FPM)
1	1100	16.9
2	965	19.3
3	859	21.6
4	775	24.0
1st Layer		
LINE LOAD (LB)	LINE SPEED (FPM)	AMP DRAW
0	21.3	38
500	19.5	65
750	18.4	78
1100	16.9	99

Winch (71570875) (Through 2-09)



71570875 PARTS LIST		
ITEM	PART #	DESCRIPTION
1.	77041800	CONTACTOR
2.		COVER
3.		SCREW
4.		CABLE (QUANTITY 2)
5.		DRUM BUSHING, NYLATRON
6.		CAPSCREW (QUANTITY 2)
7.		DRUM SUPPORT
8.		GASKET
9.		RING GEAR
10.		CARRIER ASSEMBLY (STAGE 3)
11.		CARRIER ASSEMBLY (STAGE 2)
12.		CARRIER ASSEMBLY (STAGE 1)
13.		SUN GEAR
14.		GEAR ARM
15.		CAPSCREW (QUANTITY 10)
16.		REMOTE CONTROL
17.		HEX SHAFT

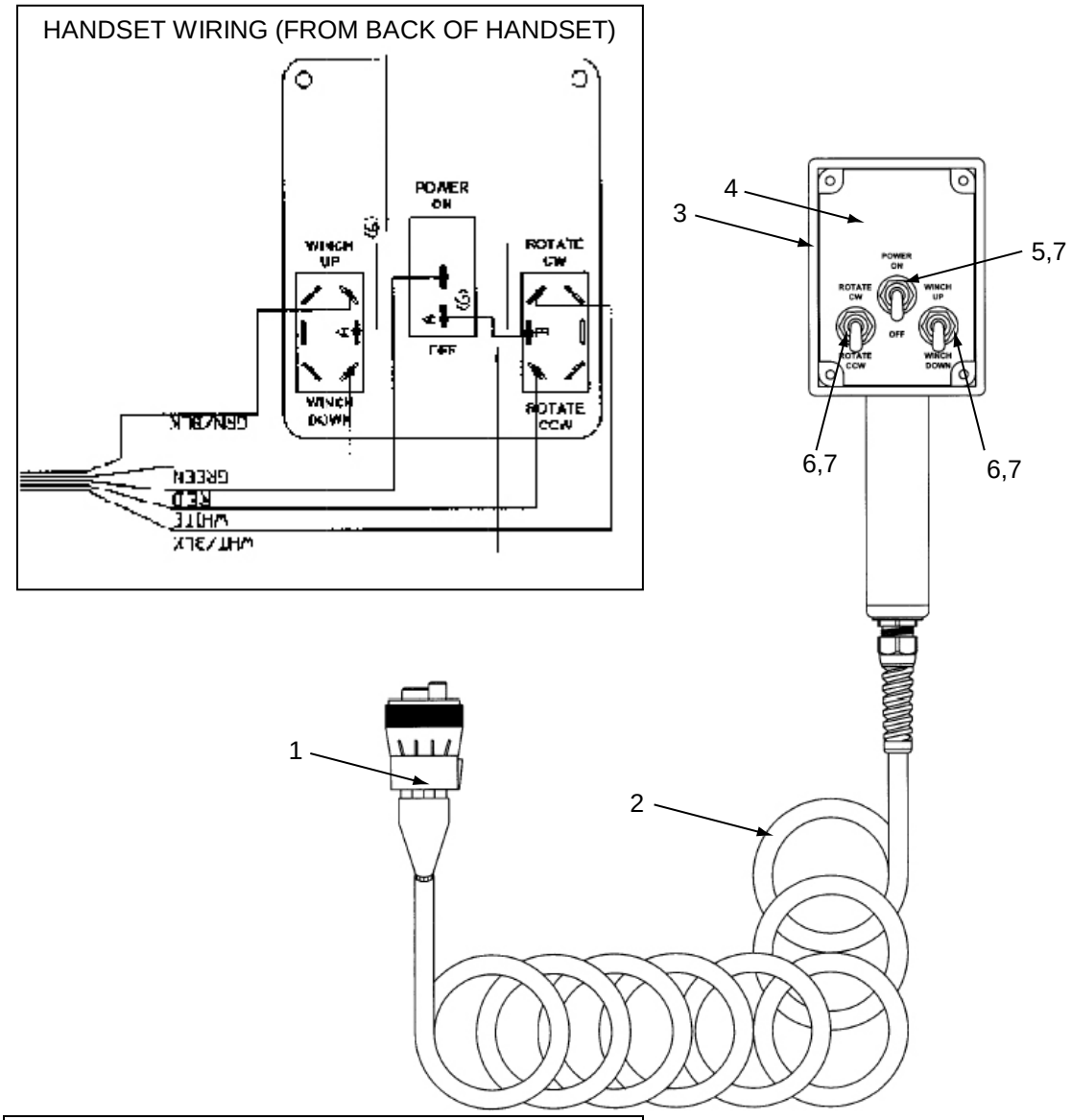
71570875 PARTS LIST		
ITEM	PART #	DESCRIPTION
18.		DRUM
19.	77566639	BRAKE ASSEMBLY
20.		CLUTCH RETAINER
21.		DRUM SUPPORT
22.		MOTOR COUPLER
23.	73511195	MOTOR

WINCH SPECIFICATIONS

MOTOR TYPE: 12V
MOTOR HP: 1:1
GEAR RATIO: 261:1
WEIGHT: 25 LB

MULTI-LAYER PERFORMANCE		
LAYER	LOAD (LB)	SPEED (FPM)
1	1100	16.9
2	965	19.3
3	859	21.6
4	775	24.0
FIRST LAYER PERFORMANCE		
LOAD (LB)	SPEED (FPM)	AMP DRAW
0	6.5	38
500	5.9	65
750	5.6	78
1100	5.2	99

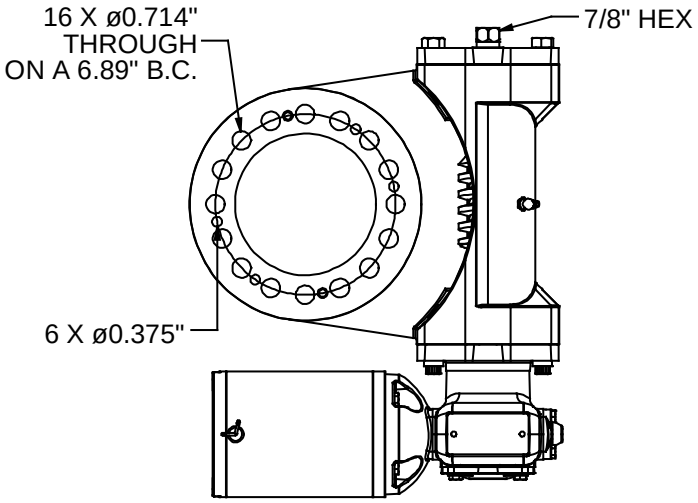
Handle Assembly, Tethered Remote (51721683)



WIRING CHART		
PIN#	COLOR	FUNCTION
A	RED	HOT TO SWITCHES
B	GREEN/BLACK	WINCH DOWN
C	GREEN	WINCH UP
D	WHITE	ROTATE CW
E	WHITE/BLACK	ROTATE CCW

51721683 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
1.	77041813	CABLE END-CRANE	1
2.	77041814	CABLE	1
3.	77041815	HOUSING	1
4.	77041816	REMOTE OVERLAY	1
5.	77041817	TOGGLE SWITCH, SPST	1
6.	77041818	TOGGLE SWITCH, DPDT	2
7.	77041819	RUBBER BOOT	3
8.	77041820	TERMINAL, A, FEM .250 FI 14-16 BL	2
9.	77041821	TERMINAL, B, FEM .250 FI 10-12 YW	1

Turntable Gear (71056635)

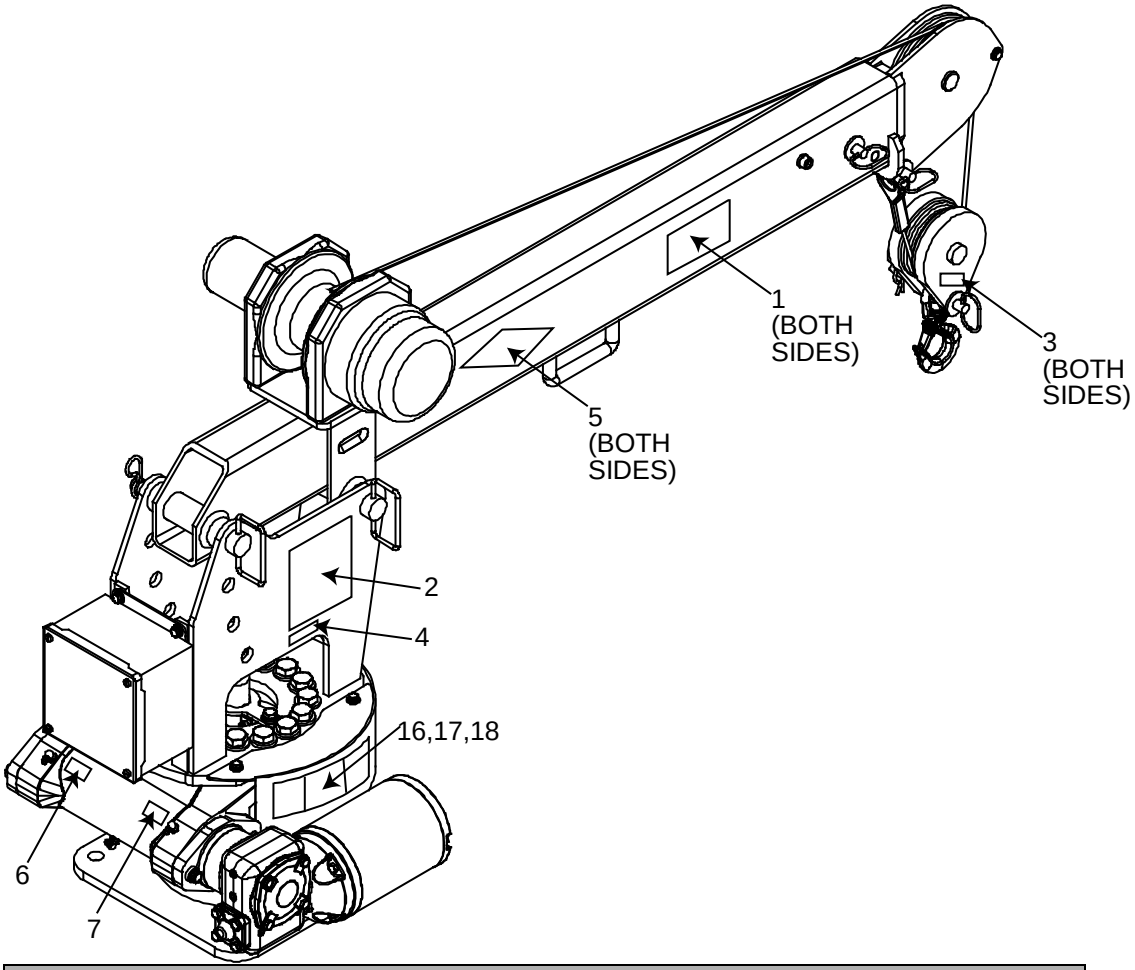


MAXIMUM TILTING MOMENT	10,416 FT-LB
OUTPUT TORQUE WHEN MOUNTED WITH 61 TOOTH, 5 MOD., 14.5 P.A. SLEW RING	16,000 IN-LB
12V MOTOR IS TOTALLY ENCLOSED AND NON-VENTILATED. MOTOR RATINGS:	1/4 HP CONTINUOUS DUTY @ 2400 RPM.
	12" LEADS MARKED WITH + AND - FOR CLOCKWISE ROTATION OF MOTOR WEN VIEWED FROM MOTOR SHAFT END.
	40:1 REDUCTION IN PRIMARY
	61:1 REDUCTION IN SECONDARY
	2440: 1 REDUCTION TOTAL
	SLEWING RING NOT INCLUDED.

71056635 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
1.		BEARING, ROLL CUP & CONE	2
2.		OIL SEAL	2
3.		CAP, WORM	1
4.		SCREW, CBB 1/2-13 X 1 1/5 2	2
5.		CAPSCREW, HEX HEAD 1/4-20 NC X 3/4	12
6.		CAPSCREW, HEX HEAD 1/4-20 NC X 1 1/8"	4
7.		O-RING	1
8.	73511194	MOTOR 1/4 HP 12VDC 2400 RPM	1
9.		HOUSING	1
10.		CAPSCREW, 1/2-13 X 1 1/2" HH GRD 8	2
11.		KEY	1
12.		SEAL, OIL	1
13.		HEX PLUG, 1/8-27 NPTF	5
14.		CAP, BLIND GEAR	1

71056635 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
15.		SHIM, GEAR .0075 NATURAL	AS REQ.
15.		SHIM, GEAR .005 BLUE	AS REQ.
15.		SHIM, GEAR .003 GREEN	AS REQ.
16.		GEAR, WORM 40:1	1
17.		VENT, PRESSURE 1-5 PSIG	1
18.		SEAL, OIL	1
19.		OIL SEAL	1
20.		GREASE FITTING	3
21.		CAPSCREW, 5/16-18 X 1 1/4" SH	4
22.		ADAPTER	1
23.		WORM, GROUND	1
24.		HOUSING	1
25.		O-RING	1
26.		BEARING, BALL OPEN	1
27.		GASKET .010 BROWN	AS REQ.
27.		GASKET .0075 CLEAR	AS REQ.
27.		GASKET .005 BLUE	AS REQ.
27.		GASKET .003 GREEN	AS REQ.
28.		GASKET .020 YELLOW	1
29.		CAP, WORM	1
30.		SHIM, WORM .005 BLUE	2
31.		SNAP RING-EXT	1
32.		BEARING, DOUBLE BALL, SPECIAL	1
33.		SNAP RING-INT	1
34.		MOTOR ADAPTER	1
35.		WORM, GROUND	1
36.		O-RING	2

Decal Kit (95721546)



DECAL PLACEMENT (IF NOT SHOWN ON CRANE)	
ITEM #	PLACEMENT
8,12,14,15,19	AT OR NEAR REMOTE HANDLE STORAGE POINT
13	AT FRONT AND REAR STABILIZERS
10,11	ON ALL FOUR SIDES OF CARRIER VEHICLE
9	ON CRANE POWER CABLE CONNECTION AT VEHICLE BATTERY

95721546 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
1.	70396778	DECAL-2003i IDENTIFICATION	2
2.	70397481	DECAL-2003i CAPACITY PLACARD	2
3.	71394083	DECAL-LOAD BLOCK RATING, 2.0 TON	2
4.	70397351	DECAL-REMOTE PENDANT STORAGE	1
5.	70397413	DECAL-IMT DIAMOND 4.5 X 9	2
6.	70397411	DECAL-GREASE WEEKLY, LEFT, SMALL	3

95721546 PARTS LIST			
ITEM	PART #	DESCRIPTION	QUANTITY
7.	70397412	DECAL-GREASE WEEKLY, RIGHT, SMALL	3
8.	70397404	DECAL-DANGER, UNPLUG ELEC CRANE	2
9.	70397405	DECAL-ELEC CRANE DISCONNECT	1
10.	70397389	DECAL-DANGER ELEC HZD	4
11.	70397390	DECAL-DANGER CR LOADLINE	4
12.	70397444	DECAL-DANGER ELECTRO TELES	1
13.	70392864	DECAL-WARNING STAB STAND CLEAR	4
14.	70392982	DECAL-SERVICE & REPAIR	1
15.	70392213	DECAL-CAUTION, DON'T WASH/WAX	1
16.	70395090	DECAL-GREASE WORM DRIVE BEARINGS	1
17.	70392524	DECAL-ROTATE CRANE WHILE GREASING	1
18.	70392399	DECAL-LUBRICATE WORM	1
19.	70396614	DECAL-DANGER, CRANE SAFETY	1
NEW 20080618			

CHAPTER 8

General Reference

In This Chapter

Inspection Checklist

NOTICE:

The user of this form is responsible for determining that these inspections satisfy all applicable regulatory requirements.

OWNER/COMPANY:	TYPE OF INSPECTION (circle one):			
CONTACT PERSON:	DAILY	MONTHLY	QUARTERLY	ANNUAL
CRANE MAKE & MODEL:	DATE INSPECTED:			
CRANE SERIAL NUMBER:	HOURMETER READING (if applicable):			
UNIT I.D. NUMBER:	INSPECTED BY (print):			
LOCATION OF UNIT:	SIGNATURE OF INSPECTOR:			

TYPE OF INSPECTION
NOTES:
Daily and monthly inspections are to be performed by a “competent person”, who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

Quarterly and annual inspections are to be performed by a “qualified person” who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training and experience, successfully demonstrated the ability to solve/resolve problems relating to the subject matter, the work, or the project.

One hour of normal crane operation assumes 20 complete cycles per hour. If operation exceeds 20 cycles per hour, inspection frequency should be increased accordingly.

Consult Operator / Service Manual for additional inspection items, service bulletins and other information.

Before inspecting and operating crane, crane must be set up away from power lines and leveled with stabilizers fully extended.

DAILY (D): Before each shift of operation, those items designated with a (D) must be inspected.

MONTHLY (M): Monthly inspections or 100 hours of normal operation (whichever comes first) includes all daily inspections plus items designated with an (M). This inspection must be recorded and retained for a minimum of 3 months.

QUARTERLY (Q): Every three to four months or 300 hours of normal operation (whichever comes first) includes all daily and monthly inspection items plus items designated with a (Q). This inspection must be documented, maintained, and retained for a minimum of 12 months, by the employer that conducts the inspection.

ANNUAL (A): Each year or 1200 hours of normal operation (whichever comes first) includes all items on this form which encompasses daily, monthly and quarterly inspections plus those items designated by (A). This inspection must be documented, maintained, and retained for a minimum of 12 months, by the employer that conducts the inspection.

INSPECTION CHECKLIST STATUS KEY:

S = Satisfactory	X = Deficient (NOTE: If a deficiency is found, an immediate determination must be made as to whether the deficiency constitutes a safety hazard and must be corrected prior to operation.)
R = Recommendation (Should be considered for corrective action)	
NA = Not Applicable	

FREQUENCY	ITEM	KEY	INSPECTION DESCRIPTION	STATUS (S,R,X,NA)
D	1	Labels	All load charts, safety & warning labels, and control labels are present and legible.	
D	2	Crane	Check all safety devices for proper operation.	
D	3	Controls	Control mechanisms for proper operation of all functions, leaks and cracks.	
D	4	Station	Control and operator's station for dirt, contamination by lubricants, and foreign material.	
D	5	Hydraulic System	Hydraulic system (hoses, tubes, fittings) for leakage and proper oil level.	
D	6	Hook	Presence and proper operation of hook safety latches.	

FREQUENCY	ITEM	KEY	INSPECTION DESCRIPTION	STATUS (S,R,X,NA)
D	7	Wire Rope	Inspect for apparent deficiencies per applicable requirements and manufacturer's specifications.	
D	8	Pins	Proper engagement of all connecting pins and pin retaining devices.	
D	9	General	Overall observation of crane for damaged or missing parts, cracked welds, and presence of safety covers.	
D	10	Operation	During operation, observe crane for abnormal performance, unusual wear (loose pins, wire rope damage, etc.). If observed, discontinue use and determine cause and severity of hazard.	
D	11	Remote Ctrl	Operate remote control devices to check for proper operation.	
D	12	Electrical	Operate all lights, alarms, etc. to check for proper operation.	
D	13	Anti Two-Block or Two-Block Damage Prevention	Operate anti two-block or two-block damage prevention device to check for proper operation.	
D	14	Tires	Check tires (when in use) for proper inflation and condition.	
D	15	Ground Conditions	Check ground conditions around the equipment for proper support, watching for ground settling under and around stabilizers and supporting foundations, ground water accumulation, or similar conditions.	
D	16	Level	Check the equipment for level position within the tolerances specified by the equipment manufacturer's recommendations, both before each shift and after each move and setup.	
D	17	Operator cab windows	Check windows for cracks, breaks, or other deficiencies which would hamper the operator's view.	
D	18	Rails, rail stops, rail clamps and supporting surfaces	Check rails, rail stops, rail clamps and supporting surfaces when the equipment has rail traveling.	
D	19	Safety devices	Check safety devices and operational aids for proper operation.	
D	20	Electrical	Check electrical apparatus for malfunctioning, signs of apparent excessive deterioration, dirt or moisture accumulation.	
D	21		Other	
D	22		Other	
M	23	Daily	All daily inspection items.	
M	24	Cylinders	Visual inspection of cylinders for leakage at rod, fittings, and welds. Damage to rod and case.	
M	25	Valves	Holding valves for proper operation.	
M	26	Valves	Control valves for leaks at fittings and between stations.	
M	27	Valves	Control valve linkages for wear, smoothness of operation, and tightness of fasteners. Relief valve for proper pressure settings.	
M	28	General	Bent, broken, or significantly rusted/corroded parts.	
M	29	Electrical	Electrical apparatus for malfunctioning, signs of apparent excessive deterioration, dirt or moisture accumulation. Electrical systems for presence of dirt, moisture, and frayed wires.	
M	30	Structure	All structural members for damage.	
M	31	Welds	All welds for breaks and cracks.	
M	32	Pins	All pins for proper installation and condition.	

FREQUENCY	ITEM	KEY	INSPECTION DESCRIPTION	STATUS (S,R,X,NA)
M	33	Hardware	All bolts, fasteners and retaining rings for tightness, wear and corrosion.	
M	34	Wear Pads	Presence of wear pads.	
M	35	Pump & Motor	Hydraulic pumps and motors for leakage at fittings, seals, and between sections. Check tightness of mounting bolts.	
M	36	PTO	Transmission/PTO for leakage, abnormal vibration & noise, alignment, and mounting bolt torque.	
M	37	Hyd Fluid	Quality of hydraulic fluid and presence of water.	
M	38	Hyd Lines	Hoses & tubes for leakage, abrasion damage, blistering, cracking, deterioration, fitting leakage, and secured properly.	
M	39	Hook	Load hook for abnormal throat distance, twist, wear, and cracks.	
M	40	Wire Rope	Condition of load line.	
M	41	Manual	Presence of operator's manual with unit.	
M	42		Other	
M	43		Other	
Q	44	Daily	All daily inspection items.	
Q	45	Monthly	All monthly inspection items.	
Q	46	Rotation Sys	Rotation bearing for proper torque of all mounting bolts.	
Q	47	Hardware	Base mounting bolts for proper torque.	
Q	48	Structure	All structural members for deformation, cracks and corrosion.	
	49		• Base	
	50		• Stabilizer beams and legs	
	51		• Mast	
	52		• Inner Boom	
	53		• Outer Boom	
	54		• Extension(s)	
	55		• Jib boom	
	56		• Jib extension(s)	
	57		• Other	
Q	58	Hardware	Pins, bearing, shafts, gears, rollers, and locking devices for wear, cracks, corrosion and distortion.	
	59		• Rotation bearing(s)	
	60		• Inner boom pivot pin(s) and retainer(s)	
	61		• Outer boom pivot pin(s) and retainer(s)	
	62		• Inner boom cylinder pin(s) and retainer(s)	
	63		• Outer boom cylinder pin(s) and retainer(s)	
	64		• Extension cylinder pin(s) and retainer(s)	
	65		• Jib boom pin(s) and retainer(s)	
	66		• Jib cylinder pin(s) and retainer(s)	
	67		• Jib extension cylinder pin(s) and retainer(s)	
	68		• Boom tip attachment	
	69		• Other	
Q	70	Hyd Lines	Hoses, fittings and tubing for proper routing, leakage, blistering, deformation and excessive abrasion.	
	71		• Pressure line(s) from pump to control valve	
	72		• Return line(s) from control valve to reservoir	
	73		• Suction line(s) from reservoir to pump	
	74		• Pressure line(s) from control valve to each function	
	75		• Load holding valve pipe(s) and hose(s)	
	76		• Other	

FREQUENCY	ITEM	KEY	INSPECTION DESCRIPTION	STATUS (S,R,X,NA)
Q	77	Pumps & Motors	Pumps and Motors for loose bolts/fasteners, leaks, noise, vibration, loss of performance, heating & excess pressure.	
	78		• Winch motor(s)	
	79		• Rotation motor(s)	
	80		• Other	
Q	81	Valves	Hydraulic valves for cracks, spool return to neutral, sticking spools, proper relief valve setting, relief valve failure.	
	82		• Main control valve	
	83		• Load holding valve(s)	
	84		• Stabilizer or auxiliary control valve(s)	
	85		• Other	
	86		• Other	
Q	87	Cylinders	Hydraulic cylinders for drifting, rod seal leakage and leakage at welds. Rods for nicks, scores and dents. Case for damage. Case and rod ends for damage and abnormal wear.	
	88		• Stabilizer cylinder(s)	
	89		• Inner boom cylinder(s)	
	90		• Outer boom cylinder(s)	
	91		• Extension cylinder(s)	
	92		• Rotation cylinder(s)	
	93		• Jib lift cylinder(s)	
	94		• Jib extension cylinder(s)	
	95		• Other	
Q	96	Winch	Winch, sheaves and drums for damage, abnormal wear, abrasions and other irregularities.	
Q	97	Hyd Filters	Hydraulic filters for replacement per maintenance schedule.	
A	98	Daily	All daily inspection items.	
A	99	Monthly	All monthly inspection items.	
A	100	Quarterly	All quarterly inspection items.	
A	101	Hyd Sys	Hydraulic fluid change per maintenance schedule.	
A	102	Controls	Control valve calibration for correct pressure & relief valve settings.	
A	103	Valves	Safety valve calibration for correct pressure & relief valve settings.	
A	104	Valves	Valves for failure to maintain correct settings.	
A	105	Rotation Sys	Rotation drive system for proper backlash clearance & abnormal wear, deformation and cracks.	
A	106	Lubrication	Gear oil change in rotation drive system per maintenance schedule.	
A	107	Hardware	Check tightness of all fasteners and bolts, using torque specifications on component drawings or torque chart.	
A	108	Wear Pads	Wear pads for excessive wear.	
A	109	Loadline	Loadline for proper attachment to drum.	

Deficiency / Recommendation / Corrective Action Report

DATE:	OWNER:	UNIT I.D. NUMBER:

GUIDELINES

a A deficiency (X) may constitute a hazard. Deficiency must be corrected and/or faulty parts replaced before resuming operation.

b Recommendations (R) should be considered for corrective actions. Corrective action for a particular recommendation depends on the facts in each situation.

c Corrective actions (CA), repairs, adjustments, parts replacement, etc. are to be performed by a qualified person in accordance with all manufacturer's recommendations, specifications and requirements.

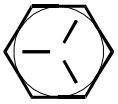
NOTE: Deficiencies (X) listed must be followed by the corresponding corrective action taken (CA).

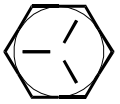
X = DEFICIENCY R = RECOMMENDATION CA = CORRECTIVE ACTION TAKEN

X,R,CA	ITEM #	EXPLANATION	DATE CORRECTED

X,R,CA	ITEM #	EXPLANATION	DATE CORRECTED

Thread Torque Chart (English)

FINE THREAD BOLTS (ENGLISH)					
SIZE	BOLT DIA.	GRADE 5  SAE J429 GRADE 5		GRADE 8  SAE J429 GRADE 8	
(DIA-TPI)	(INCHES)	PLAIN	PLATED	PLAIN	PLATED
		(FT-LB)	(FT-LB)	(FT-LB)	(FT-LB)
5/16-24	0.3125	19	14	27	20
3/8-24	0.375	35	26	49	35
7/16-20	0.4375	55	41	78	58
1/2-20	0.5	90	64	120	90
9/16-18	0.5625	120	90	170	130
5/8-18	0.625	170	130	240	180
3/4-16	0.75	300	225	420	315
7/8-11	0.875	445	325	670	500
1-12	1	645	485	995	745
1 1/8-12	1.125	890	670	1445	1085
1 1/4-12	1.25	1240	930	2010	1510
1 3/8-12	1.375	1675	1255	2710	2035
1 1/2-12	1.5	2195	1645	3560	2670

COARSE THREAD BOLTS (ENGLISH)					
SIZE	BOLT DIA.	GRADE 5  SAE J429 GRADE 5		GRADE 8  SAE J429 GRADE 8	
(DIA-TPI)	(INCHES)	PLAIN	PLATED	PLAIN	PLATED
		(FT-LB)	(FT-LB)	(FT-LB)	(FT-LB)
5/16-18	0.3125	17	13	25	18
3/8-16	0.375	31	23	44	33
7/16-14	0.4375	49	37	70	52
1/2-13	0.5	75	57	105	80
9/16-12	0.5625	110	82	155	115
5/8-11	0.625	150	115	220	160
3/4-10	0.75	265	200	375	280
7/8-9	0.875	395	295	605	455
1-8	1	590	445	910	680
1 1/8-7	1.125	795	595	1290	965
1 1/4-7	1.25	1120	840	1815	1360
1 3/8-6	1.375	1470	1100	2380	1780
1 1/2-6	1.5	1950	1460	3160	2370

NOTES

1 Tightening torques provided are midrange.

2 Consult bolt manufacturer's particular specifications, when provided.

3 Use flat washers of equal strength.

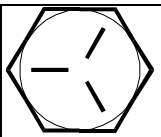
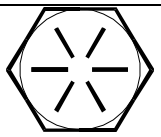
4 All torque measurements are given in foot-pounds.

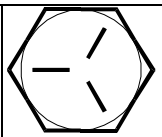
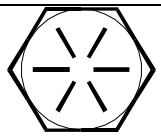
5 Torque values specified are for bolts with residual oils or no special lubricants applied. If special lubricants of high stress ability, such as Never-Seez compound graphite and oil, molybdenum disulphide, colloidal copper or white lead are applied, multiply the torque values in the charts by the factor .90. The use of Loctite does not affect the torque values listed above.

⚠ WARNING

Anytime a gear-bearing bolt is removed, it must be replaced with a new bolt of the identical grade and size. Once a bolt has been torqued to 75% of its proof load and then removed, the torque coe fficient may no longer be the same as when the bolt was new thus giving indeterminate clamp loads after torqueing. Failure to replace gear-bearing bolts may result in bolt failure due to metal fatigue causing death or serious injury.

Thread Torque Chart (Metric)

FINE THREAD TORQUE CHART (METRIC)					
TIGHTENING TORQUE					
SIZE (DIA-TPI)	BOLT DIA. (INCHES)	 SAE J429 GRADE 5		 SAE J429 GRADE 8	
		PLAIN (KG-M)	PLATED (KG-M)	PLAIN (KG-M)	PLATED (KG-M)
5/16-24	0.3125	3	2	4	3
3/8-24	0.375	5	4	7	5
7/16-20	0.4375	8	6	11	8
1/2-20	0.5	12	9	17	12
9/16-18	0.5625	17	12	24	18
5/8-18	0.625	24	18	33	25
3/4-16	0.75	41	31	58	44
7/8-11	0.875	62	45	93	69
1-12	1	89	67	138	103
1 1/8-12	1.125	123	93	200	150
1 1/4-12	1.25	171	129	278	209
1 3/8-12	1.375	232	174	375	281
1 1/2-12	1.5	304	228	492	369

COARSE THREAD TORQUE CHART (METRIC)					
TIGHTENING TORQUE					
SIZE (DIA-TPI)	BOLT DIA (INCHES)	 SAE J429 GRADE 5		 SAE J429 GRADE 8	
		PLAIN (KG-M)	PLATED (KG-M)	PLAIN (KG-M)	PLATED (KG-M)
5/16-18	0.3125	2	2	3	2
3/8-16	0.375	4	3	6	5
7/16-14	0.4375	7	5	10	7
1/2-13	0.5	10	8	15	11
9/16-12	0.5625	15	11	21	16
5/8-11	0.625	21	16	30	22
3/4-10	0.75	37	28	52	39
7/8-9	0.875	55	41	84	63
1-8	1	82	62	126	94
1 1/8-7	1.125	110	82	178	133
1 1/4-7	1.25	155	116	251	188
1 3/8-6	1.375	203	152	329	246
1 1/2-6	1.5	270	210	438	328

NOTES

1 Tightening torques provided are midrange.

2 Consult bolt manufacturer's particular specifications, when provided.

3 Use flat washers of equal strength.

4 All torque measurements are given in kilogram-meters.

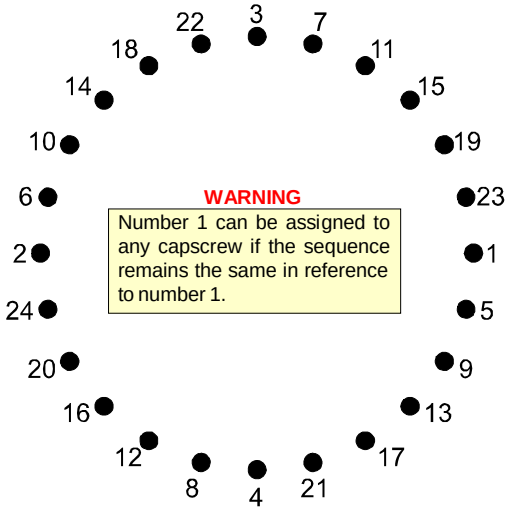
5 Torque values specified are for bolts with residual oils or no special lubricants applied. If special lubricants of high stress ability, such as Never-Seez compound graphite and oil, molybdenum disulphite, collodial copper or white lead are applied, multiply the torque values in the charts by the factor .90. The use of Loctite does not affect the torque values listed above.

⚠ WARNING

Anytime a gear-bearing bolt is removed, it must be replaced with a new bolt of the identical grade and size. Once a bolt has been torqued to 75% of its proof load and then removed, the torque coefficient may no longer be the same as when the bolt was new thus giving indeterminate clamp loads after torqueing. Failure to replace gear-bearing bolts may result in bolt failure due to metal fatigue causing death or serious injury.

Turntable Bearing Thread Tightening Sequence

Refer to the turntable bearing thread tightening diagram below for proper tightening/torqueing sequence of the turntable bearing to the crane base and crane mast. The total quantity of cap screws varies dependent on crane model.



TIGHTENING PROCEDURE

1 Refer to the Torque Data Chart to determine the proper torque value to apply to the size of capscrew used.

2 Follow the tightening sequence shown in the diagram. Note that the quantity of capscrews may differ from the diagram, but the sequence must follow the criss-cross pattern as shown in the diagram.

3 Torque all capscrews to approximately 40% of the specified torque value, by following the sequence.

(EXAMPLE: .40 x 265 FT-LB = 106 FT-LB)

(EXAMPLE-METRIC: .40 x 36 KG-M = 14.4 KG-M)

4 Repeat Step 3, but torquing all capscrews to 75% of the specified torque value. Continue to follow the tightening sequence.

(EXAMPLE: .75 x 265 FT-LB = 199 FT-LB)

(EXAMPLE-METRIC: .75 x 36 KG-M = 27 KG-M)

5 Using the proper sequence, torque all capscrews to the listed torque value as determined from the Torque Data Chart.

Turntable Bearing Inspection

Turntable bearings may experience wear. One of the following conditions may indicate turntable bearing wear:

1 Metal particles present in the bearing lubricant.

2 Increased drive power required to rotate the crane.

3 Noise emitting from the bearing during rotation.

4 Rough rotation.

5 Uneven or excessive wear between the pinion gear and turntable gear.

If one or more of the above conditions exists, further inspection may be required. Limits are measured in “TILT” which is dependent on the internal clearances of the bearing. TILT is the most practical determination of a bearings' internal clearance once mounted on a crane. You can measure the tilt using the ***Turntable Bearing Tilt Test.*** (see "Turntable Bearing Tilt Test" on page 80)

Periodic readings indicating a steady increase in TILT may be an indicator of bearing wear.

Note: A bearing found to have no raceway cracks or other structural irregularities should be reassembled and returned to service.

Turntable Bearing Tilt Test

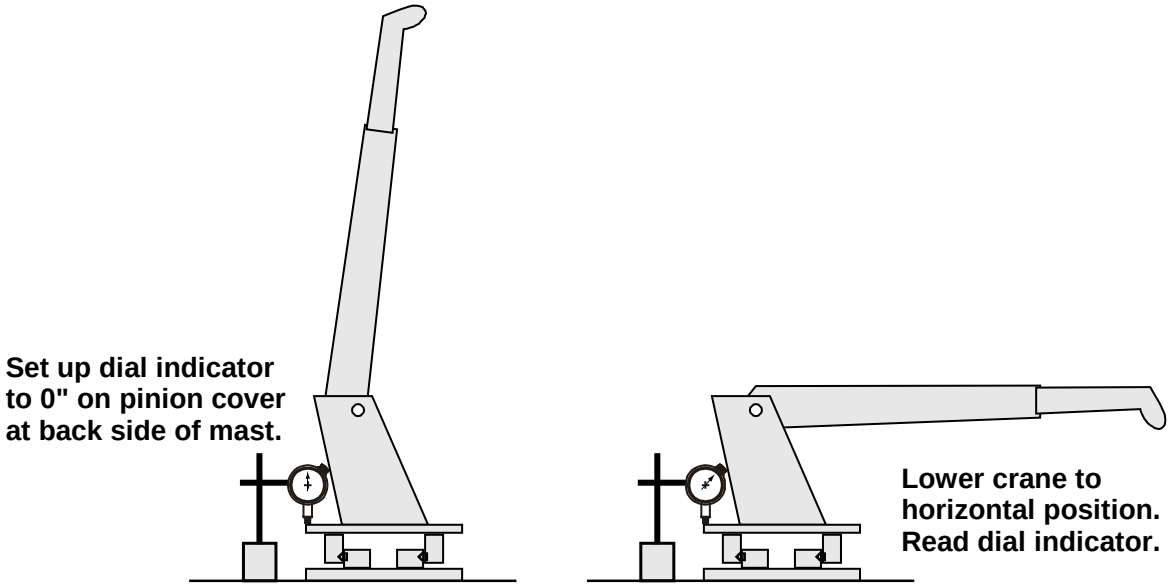
1 Place crane in vertical position.

2 Set a dial indicator at 0 on the pinion cover plate at back side of mast.

3 Lower crane to the horizontal position.

4 Check and record the dial indicator change. It should not exceed the tilt measurement noted in the chart below.

5 Return the crane to the vertical position. The dial indicator should return to 0.



COMPARISON CHART - MEASURED TILT DIMENSION PER CRANE MODEL					
NOTE: The tilt dimensions listed in this chart are service guidelines and do not, in themselves, require that the bearing be inspected. If there is reason to suspect an excess of bearing wear **AND** the measured tilt dimension exceeds the dimension listed, remove the bearing for inspection.					
IMT Crane, Loader or Tirehand Model	1007 1014/1014A 1015 2015/2020 2109 2820 3000 3016/3020 3203i 3816/3820 4004i 421/425 4300 5005i 5016/5020 6006i 6016/6020 6022 5525 / 6025 / 6625 EZ Hauler I, II EZ Hauler 3000 / 5500	5200 5200R 5217 5800 7020 7025 7200 7415 8025 9000	16000-I, II, III 32018 32027 32030 T30 T40	23516 14K160TH COMMANDER IV	1221R 1225R 8000L 9800 12916 13031 13034 14000 15000 18000 20017 8000L H1200 H1200RR T50
Ball Dia. (Ref)	.875" (22 mm)	1.00" (25 mm)	1.18 - 1.25" (30-32 mm)	1.5” (38 mm)	1.75" (44 mm)
Tilt Dim.	.060" (1.524 mm)	.070" (1.778 mm)	.075" (1.905 mm)	.085” (2.159 mm)	.090" (2.286 mm)

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