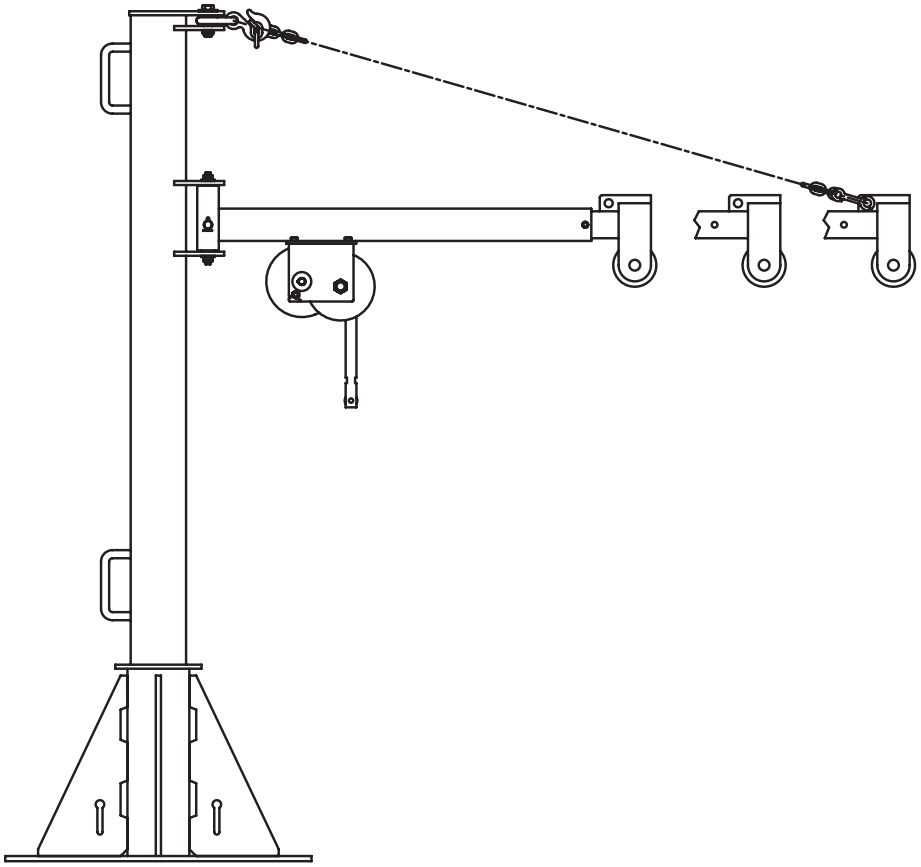
THERN

**Read this Owner's Manual thoroughly before operating the equipment. Keep it with the equipment at all times. Replacements are available from Thern, Inc., PO Box 347, Winona, MN 55987, 507-454-2996. www.thern.com**

**IMPORTANT: Please record product information on page 2. This information is required when calling the factory for service.**



# Owner's Manual

## For
## Series 5334
## Portable Davit Crane

A6111A-0405

# Two-Year Limited Warranty

**Please record the following:**

Date Purchased:

Crane Model No.:

Crane Serial No.:

**If sold with a winch:**

Winch Model No.:

Winch Serial No.:

**This information is required when calling the factory for service.**

Thern, Inc. warrants its products against defects in material or workmanship for two years from the date of purchase by the original using buyer, or if this date cannot be established, the date the product was sold by Thern, Inc. to the dealer. To make a claim under this warranty, contact the factory for an RGA number. The product must be returned, prepaid, directly to Thern, Inc., 5712 Industrial Park Road, Winona, Minnesota 55987. The following information must accompany the product: the RGA number, the date of purchase, the description of the claimed defect, and a complete explanation of the circumstances involved. If the product is found to be defective, it will be repaired or replaced free of charge, and Thern, Inc. will reimburse the shipping cost within the contiguous USA.

This warranty does not cover any damage due to accident, misuse, abuse, or negligence. Any alteration, repair or modification of the product outside the Thern, Inc. factory shall void this warranty. This warranty does not cover any costs for removal of our product, downtime, or any other incidental or consequential costs or damages resulting from the claimed defects. This warranty does not cover brake discs, wire rope or other wear components, as their life is subject to use conditions which vary between applications.

FACTORY AUTHORIZED REPAIR OR REPLACEMENT AS PROVIDED UNDER THIS WARRANTY IS THE EXCLUSIVE REMEDY TO THE CONSUMER. THERN, INC. SHALL NOT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES FOR BREACH OF ANY EXPRESS OR IMPLIED WARRANTY ON THIS PRODUCT. EXCEPT TO THE EXTENT PROHIBITED BY APPLICABLE LAW, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ON THIS PRODUCT IS LIMITED IN DURATION TO THE DURATION OF THIS WARRANTY.

Some states do not allow the exclusion or limitation of incidental or consequential damages, or allow limitations on how long an implied warranty lasts, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

**Note: Thern, Inc. reserves the right to change the design or discontinue the production of any product without prior notice.**

# About This Manual

The Occupational Safety and Health Act of 1970 states that it is the employer's responsibility to provide a workplace free of hazard. To this end, all equipment should be installed, operated, and maintained in compliance with applicable trade, industrial, federal, state, and local regulations. It is the equipment owner's responsibility to obtain copies of these regulations and to determine the suitability of the equipment to its intended use.

This Owner's Manual, and warning labels attached to the equipment, are to serve as guidelines for hazard-free installation, operation, and maintenance. They should not be understood to prepare you for every possible situation.

The information contained in this manual is applicable only to the Thern Model 5334M1 Portable Davit Crane. Do not use this manual as a source of information for any other equipment.

**The following symbols are used for emphasis throughout this manual:**

**⚠WARNING**

Failure to follow 'WARNING!' instructions may result in equipment damage, property damage, and/or serious personal injury.

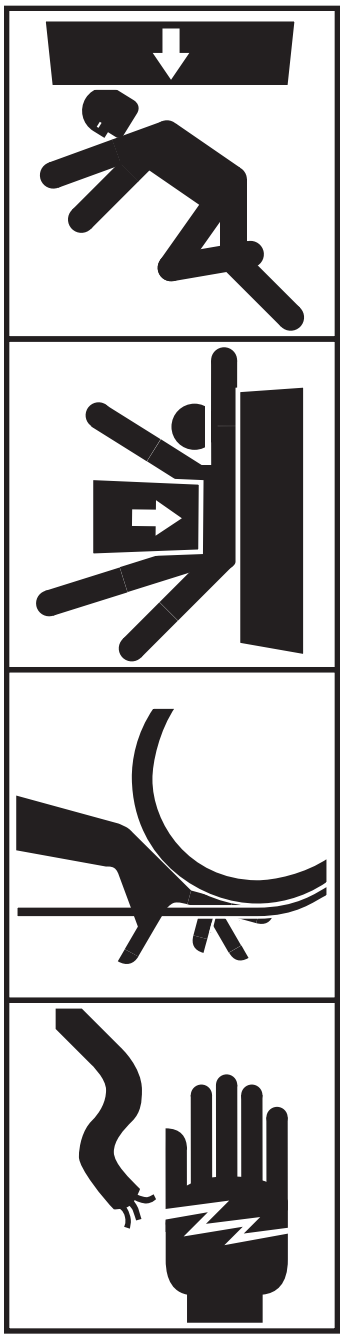
**⚠CAUTION**

Failure to follow 'CAUTION!' instructions may result in equipment damage, property damage, and/or minor personal injury.

**Important!**

Failure to follow 'important!' instructions may result in poor performance of the equipment.

# Suggestions for Safe Operation



**⚠WARNING**

## DO the following:

**Read and comply with the guidelines set forth in this Owner's Manual. Keep this manual, and all labels attached to the crane, readable and with the equipment at all times. Contact Thern, Inc. for replacements.**

**Check lubrication before use.**

**Install the wire rope securely to the winch drum.**

**Keep at least 4 wraps of wire rope wound on the drum at all times, to serve as anchor wraps. With less than 4 wraps on the drum the wire rope could come loose, causing the load to fall.**

**Keep hands away from sheaves, gears, wire rope, and other moving parts of the equipment.**

**Disconnect the power before servicing the equipment.**

**Keep all unnecessary personnel away from the crane while in operation. Keep out of the path of the load, and out of the path of a broken wire rope that might snap back and cause injury.**

## DO NOT do the following:

**Do not lift people, or things over people. Do not walk or work under a load or in the line of force of any load.**

**Do not exceed the load rating of the crane or any other component in the system. To do so could result in failure of the equipment.**

**Do not use more than one crane to move a load that exceeds the load rating of a single crane. A shift in load weight could overload the equipment.**

**Do not use damaged or malfunctioning equipment. To do so could result in failure of the equipment.**

**Do not modify the equipment in any way. To do so could cause equipment failure.**

**Do not wrap the wire rope around the load. This damages the wire rope and could cause the load to fall. Use a sling or other approved lifting device.**

**Do not operate the crane with guards removed or improperly installed.**

**Do not divert your attention from the operation. Stay alert to the possibility of accidents, and try to prevent them from happening.**

**Do not jerk or swing the load. Avoid shock loads by starting and stopping the load smoothly. Shock loads overload the equipment and may cause damage.**

**Do not remove the winch or other components from the crane, and do not use these components for any use other than for their original intended function.**

**Do not use the crane to drag or pull loads. This will create side pulls which could damage the equipment or cause the load to tip.**

**Do not leave a suspended load unattended. Place the load on the ground if it must be left unattended.**

**Do not adjust the winch brake with the load suspended.**

# 1.1 Installing the Crane

**Important!**

- A qualified professional should inspect or design the foundation to insure that it will provide adequate support.
- Locate the crane so it will be visible during the entire operation.

**⚠WARNING**

**Do not install the crane in an area defined as hazardous by the National Electric Code, unless installation in such an area has been thoroughly approved.**

**Do not install the crane near corrosive chemicals, ammable materials, explosives, or other elements that may damage the crane or injure the operator. Adequately protect the crane and the operator from such elements.**

**Position the crane so the operator can stand clear of the load, and out of the path of a broken wire rope that could snap back and cause injury.**

**Attach the crane to a rigid and level foundation that will support the crane and its load under all load conditions, including shock loading.**

1.1.1 CONSULT APPLICABLE CODES AND REGULATIONS for specific rules on installing the equipment.

1.1.2 LOCATE THE CRANE in an area clear of traffic and obstacles that could interfere with operation. Make sure the crane is accessible for maintenance and operation.

1.1.3 INSTALL THE CRANE on a level surface. **An unlevel surface may cause the boom to rotate in the direction the mast is leaning.**

1.1.4 FASTEN THE BASE securely to the foundation.

a FOR STANDARD PRODUCTS referred to in this manual, use 5/8 inch coarse thread fasteners, grade 5 or better, torqued dry to 150 ft-lbs without lubrication. Make sure mounting holes are secured to a solid foundation able to support the crane and the load under all conditions with design factors based on accepted engineering practices.

b NON-STANDARD PRODUCTS that vary from the original design may have different fastening requirements. Contact a structural engineer or Thern, Inc. for this information.

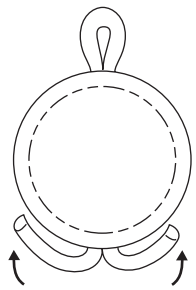
**TO COMPLY WITH LOCAL CODES, CONTACT A QUALIFIED PROFESSIONAL TO OBTAIN PROPER STRUCTURE OR FOUNDATION SPECIFICATIONS FOR THE MOUNTING OF THERN PRODUCTS.**

## 1.2 Assembling the Crane

**Important!**

- Inspect the crane during assembly according to the Instructions for Periodic Inspection. This will give you a record of the condition of the crane with which to compare future inspections.
- Save all boxes and crates that the crane was shipped in, use them again if you need to repackage the crane.
- Contact the factory immediately if any parts are missing or damaged.
- Do not overtighten fasteners, this may strip threads or cause damage to other parts.

**Figure 1 – Cotter Pins**




1.2.1 STUDY PARTS DRAWINGS to understand how the crane is assembled. See page 17.

1.2.2 LUBRICATE PINS and other components prior to assembly. Refer to the Lubrication Instructions.

1.2.3 INSTALL THE BASE then assemble the crane in the following order.

a INSTALL THE MAST in the base.

b INSTALL THE GRAB HOOK between the upper mast ears using the spacer and fasteners provided. **Make sure the hook opening faces up. See figure 2.**

c INSTALL THE BOOM SWIVEL, see figure 2.

- PLACE THE BUSHINGS in the boom swivel and position this assembly between the lower mast ears. **Make sure the swivel is positioned correctly.**
- INSERT FASTENERS and tighten until cotter pins can be inserted. **Make sure cotter pins are locked in the slots of the hex nuts.**

d INSTALL THE BOOM in the boom swivel using the pin provided. **Make sure the boom is positioned correctly,** and install the boom extension.

e ATTACH ONE END OF THE LOAD CHAIN to the boom extension and the other end to the grab hook. **Avoid twisting the chain and make sure it is seated in the saddle of the hook. See figure 2.**

f INSTALL THE SHEAVE using the pins provided.

g INSTALL THE WINCH using the fasteners provided. **Make sure the winch is positioned correctly.**

1.2.4 COMPLETE ASSEMBLY.

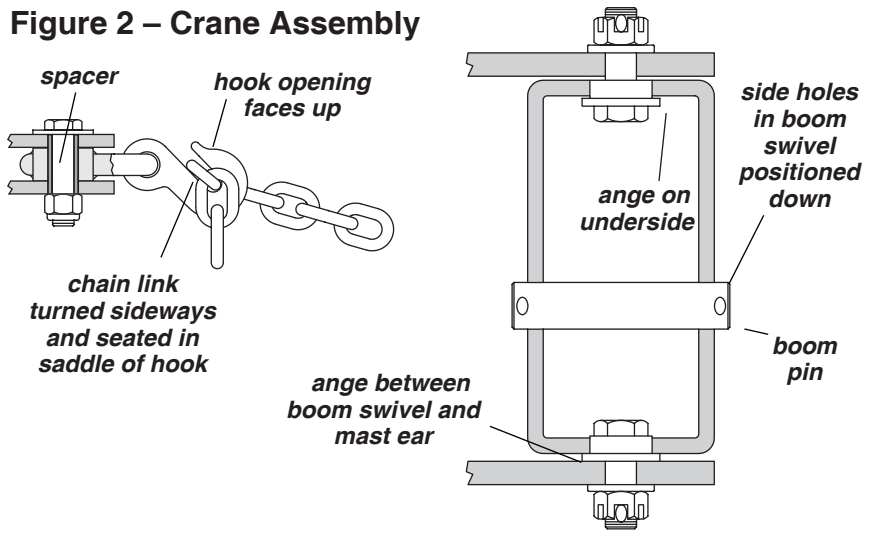
a MAKE SURE ALL FASTENERS are tightened, and cotter pins properly bent to secure them in place, see figure 1.

b LUBRICATE THE ENTIRE CRANE.

c INSTALL THE WINCH HANDLE according to the instructions in the Winch Owner's Manual.

d INSTALL THE WIRE ROPE according to the instructions in the Winch Owner's Manual.

**Figure 2 – Crane Assembly**



# 2.1 General Theory of Operation

**Important!**

- Limit nonuniform winding by keeping tension on the wire rope.
- It is your responsibility to detect and account for different factors affecting the condition and performance of the equipment.

2.1.1 THE PULL REQUIRED to move the load must not exceed the load rating of the crane. Consider the total force required to move the load, not the weight of the load.

2.1.2 THIS EQUIPMENT CAN develop forces that will exceed the load rating. It is the responsibility of the equipment user to limit the size of the load. Inspect the equipment regularly for damage according to the instructions contained in this manual.

2.1.3 PERFORMANCE RATINGS of the equipment are affected by the position of the boom, and the amount of wire rope you use.

a LOAD RATING represents the maximum pull that can be placed on new equipment. Load ratings are assigned values for specific boom positions and wire rope lengths. **The load rating decreases as you increase boom length.**

b LIFT varies with the position of the boom and the length of the wire rope.

c REACH varies with the position of the boom.

2.1.4 DUTY RATINGS refer to the type of use the equipment is subject to. Consider the following when determining duty rating.

a ENVIRONMENT: harsh environments include hot, cold, dirty, wet, corrosive, or explosive surroundings. **Protect the equipment from harsh environments when possible.**

b MAINTENANCE: poor maintenance, meaning poor cleaning, lubrication, or inspection, leads to poor operation and possible damage of the equipment. **Minimize poor maintenance by carefully following the instructions contained in this manual.**

c LOADING: severe loading includes shock loading and moving loads that exceed the load rating of the equipment. **Avoid shock loads, and do not exceed the load rating of the equipment.**

d FREQUENCY OF OPERATION: frequent or lengthy operations increase wear and shorten the life span of gears, bearings, sheaves, and other components. **Increase maintenance of the equipment if used in frequent operations.**

CONTACT THE FACTORY FOR MORE INFORMATION.

## 2.2 Preparing for Operation

**Important!**

- When determining whether the load will exceed the load rating, consider the total force required to move the load.

2.2.1 CONSIDER THE OPERATION. Do not begin until you are sure you can perform the entire operation without hazard.

2.2.2 INSPECT ALL COMPONENTS of the system.

a INSPECT THE CRANE and other equipment according to the Instructions for Frequent Inspection.

b INSPECT THE WINCH according to the instructions in the Winch Owner's Manual.

c OPERATORS must be in good health, alert, thoroughly trained in operating the equipment, and properly clothed (hard hat, safety shoes and safety glasses, no loose clothing).

d THE LOAD must be clear of other objects and free to move. Make sure the load will not tip, spin, roll away, or in any way move uncontrollably.

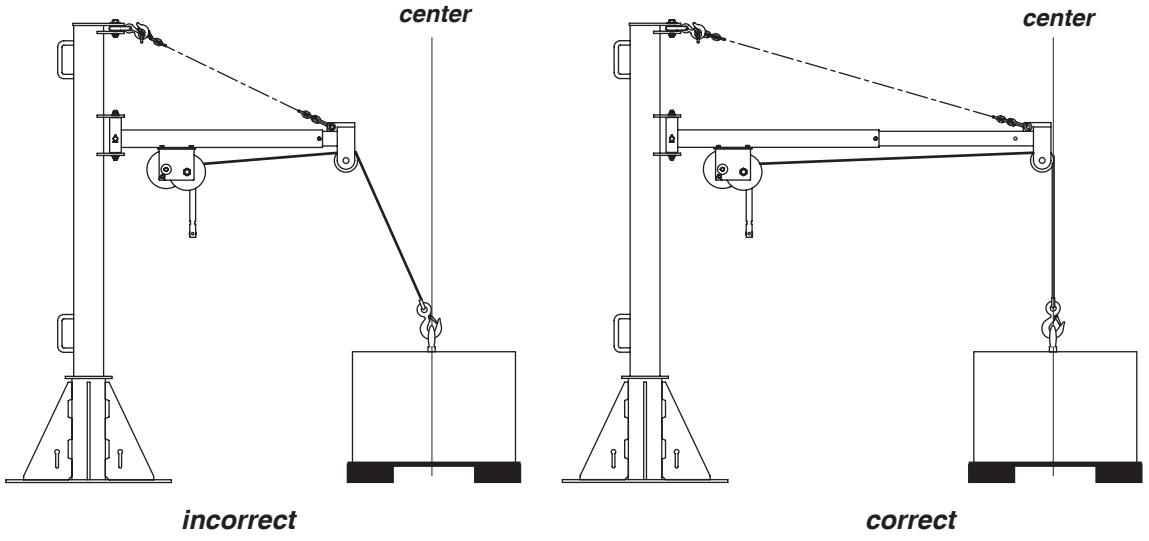
2.2.3 KNOW YOUR LOAD and make sure you do not exceed the load rating of the crane or any other equipment in the system.

2.2.4 POSITION THE BOOM so the load hook is centered over the load, by adjusting boom length and height. **Avoid side pulls which could damage the crane or cause the load to tip. See figure 3.**

2.2.5 ADJUST BOOM LENGTH by unhooking the load chain, moving the boom extension in or out, and reattaching the load chain. **The load rating decreases as you lengthen the boom.**

2.2.6 ADJUST BOOM HEIGHT by unhooking the load chain, raising or lowering the boom, and reattaching the load chain. **Do not position the boom below horizontal or at an angle greater than 45°.**

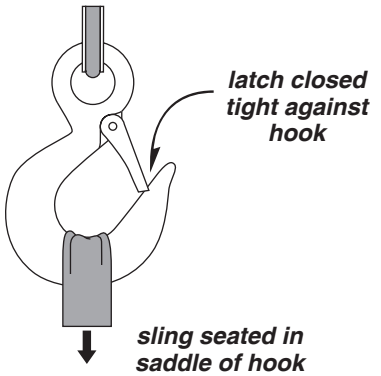
**Figure 3 – Positioning the Boom**




*Note: the load rating decreases as you lengthen the boom.*

## 2.3 Attaching the Load

**Figure 4 – Attaching Load**




**⚠WARNING**

**Do not wrap the wire rope around the load. This damages the wire rope and could cause the load to fall. Use a sling or other approved lifting device.**

2.3.1 CLEAR OBJECTS from the path of the load so you can move it freely and observe it at all times during the operation.

2.3.2 MAKE SURE THE WIRE ROPE is not twisted. A twisted wire rope could cause the load to spin when it is raised off the ground.

2.3.3 ATTACH THE LOAD using a nylon sling, or other approved lifting device. Follow the recommendations of the sling manufacturer.

a SEAT THE SLING in the saddle of the hook with the hook latch completely closed. See figure 4.

b CENTER THE LOAD on the hook so it will remain balanced and not tip or rotate to one side.

## 2.4 Moving the Load

**Important!**

- Obey a stop signal from anyone.
- Maintain tension on the wire rope to keep it tightly and evenly wound on the drum.
- If the crane and load are not visible during the entire operation, get help from another person.
- Appoint a supervisor if more than one person is involved in the operation. This will reduce confusion and increase safety.
- When lifting a load, use a tag line to keep the load from swinging or twisting, while keeping yourself away from the load.

2.4.1 MOVE THE LOAD slowly and smoothly, only a small distance at first. Make sure the load is balanced and securely attached before continuing.

2.4.2 OPERATE THE WINCH to raise or lower the load. Refer to the instructions in the Winch Owner's Manual**.**

2.4.3 OBSERVE THE WIRE ROPE as it winds onto the drum. If it becomes loose, uneven, or overlapped, stop the operation and rewind the wire rope before continuing. **Continued operation with overlapped or uneven wire rope can damage the wire rope and shorten its life.**

2.4.4 ROTATE THE BOOM to move the load side-to-side.

a ROTATE THE BOOM slowly and smoothly to avoid swinging the load or causing shock loads. **Do not jam the boom against the mast or other objects.**

b PUSH AGAINST THE BOOM just in front of the winch to rotate the boom. **Do not push or pull the load, wire rope, or any other part of the crane other than the boom.**

## 3.1 Cleaning the Crane

**Important!**

Increase the frequency of maintenance procedures if the crane is:

- Operated for long periods.
- Used to lift heavy loads.
- Operated in wet, dirty, hot, or cold surroundings.

Clean the crane to remove dirt and help prevent rust and corrosion.

3.1.1 CLEAN THE CRANE every six months or whenever it is dirty.

a WIPE ALL EQUIPMENT to remove dirt and grease.

b LEAVE A LIGHT FILM of oil on all surfaces to protect against rust and corrosion.

c WIPE OFF excessive amounts of oil to avoid the accumulation of dirt.

3.1.2 REMOVE UNNECESSARY OBJECTS from the area surrounding the crane.

## 3.2 Lubricating the Crane

**Important!**

- Make sure lubricant has a temperature rating appropriate for the ambient temperatures of the operation.

Lubricate the crane properly to help protect it from wear and rust. Read the following instructions carefully.

3.2.1 LUBRICATE THE GRAB HOOK at least every 6 months. Use a grease gun to apply an NLGI #2 grease to the grease fitting until excess lubricant comes out the sides.

3.2.2 LUBRICATE THE BOOM SWIVEL BUSHINGS at least every 6 months. Apply 2 to 3 drops of 150 grade gear oil to the bushings. Rotate the boom to allow oil to penetrate, and wipe off excess oil to avoid accumulation of dirt.

3.2.3 LUBRICATE ALL PINS before installation and at least every 3 months. Use a grease brush to apply a light film of NLGI #2 grease to all pins.

3.2.4 LUBRICATE THE WINCH. Refer to the Winch Owner’s Manual for instructions.

3.2.5 LUBRICATE THE WIRE ROPE and other equipment by following the manufacturer's recommendations.

## 3.3 Inspecting the Equipment

**Important!**

- Start an inspection program as soon as you put the crane into use.
- Appoint a qualified person to be responsible for regularly inspecting the equipment.
- Keep written records of inspection. This allows comparison with comments from previous inspections so you can see changes in condition or performance.

**Perform frequent inspections:**

- Before each operation.
- Every 3 hours during operation.
- Whenever you notice signs of damage or poor operation.

**⚠WARNING**

**Do not use damaged or malfunctioning equipment. Place an "OUT OF ORDER" sign on the crane. Do not use the crane until the sign is removed by a qualified maintenance person who has completely corrected the problem.**

Inspect the crane to detect signs of damage or poor operation before they become hazardous.

3.3.1 CONSULT APPLICABLE CODES AND REGULATIONS for specific rules on inspecting the crane and other equipment.

3.3.2 REFER TO THE WINCH OWNER'S MANUAL for information regarding winch inspection.

3.3.3 **Instructions for Frequent Inspection**

a VISUALLY INSPECT the entire crane and all other equipment involved in the operation.

- Check all equipment for cracks, dents, bending, rust, wear, corrosion and other damage.
- Make sure the wire rope is installed correctly and anchored securely to the drum.
- Make sure the entire crane is properly lubricated.
- Make sure the load chain is not twisted and is securely fastened to the boom and grab hook.
- Make sure all fasteners are tight and secure.
- Make sure mounting fasteners are tightened securely.
- Make sure the foundation is in good condition, and capable of supporting the crane and its load under all load conditions.

b TEST CRANE PERFORMANCE by moving a test load equal to 10% of the rated capacity.

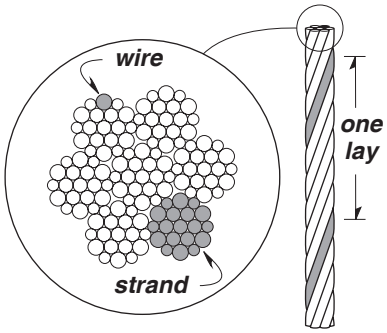
- Listen for unusual noises, and look for signs of damage as you operate the crane.
- Make sure the wire rope winds evenly and tightly onto the drum. If it is loose or uneven, rewind it before continuing.
- Make sure the load moves smoothly, without hesitation or strain.
- On hand operated models, make sure the winch handle rotates freely in both directions.
- On power operated models, make sure the winch responds to the control devise. It must rotate as shown on the control labels, and it must turn off when you release the control.
- Make sure the boom rotates freely when you push it, and remains stationary when you release it.
- Check the brake. Raise the load, then lower it and stop it a few feet off the ground. If the load continues to coast or creep, the brake may be in need of repair or adjustment.

**Completely correct all problems before continuing. Use the Troubleshooting Chart to help determine the cause of certain problems. See table 2.**

**Perform periodic inspections:**

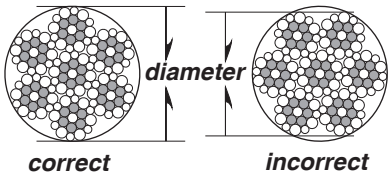
- Every 6 months.
- Whenever you return the crane to service from storage.
- Whenever you notice damage or poor operation in a frequent inspection.
- Whenever you have, or think you may have, overloaded or shock loaded the crane.

## Figure 5 – Broken Wires




***Wire rope assembly must be replaced if more than 6 wires are broken in one lay, or if more than 3 wires are broken in one strand in one lay.***

## Figure 6 – Rope Diameter




***The wire rope assembly must be replaced if the diameter measures less than the minimum diameter at any point.***

| wire rope diameter | minimum diameter |
|---|---|
| 1/8 in | 7/64 in (.1094 in) |
| 3/16 in | 11/64 in (.1719 in) |
| 1/4 in | 15/64 in (.2344 in) |
| 5/16 in | 19/64 in (.2969 in) |

### 3.3.4 Instructions for Periodic Inspection

a VISUALLY INSPECT the crane and all other equipment.

- Check the finish for wear, aking, or other damage.
- Check all equipment for cracks, dents, bending, rust, wear, corrosion and other damage. If the crane was overloaded, or if you notice cracks and other signs of overloading, check for damage using magnetic or chemical crack detecting procedures.
- Check all fasteners for stripped threads, wear, bending, and other damage.
- Make sure the entire crane is properly lubricated.
- Make sure all labels and plates are readable, firmly attached, free of damage and clean. Replacements are available from the factory.

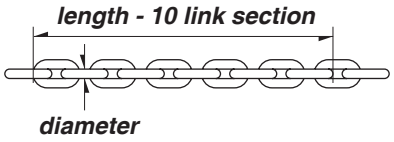
b REMOVE THE WIRE ROPE entirely from the crane.

- Always wear protective clothing when handling wire rope.
- Check the entire length of wire rope for bent wires, crushed areas, broken or cut wires, corrosion, and other damage. Carefully inspect areas that pass over sheaves or through roller guides.
- Note the location and concentration of broken wires. Replace wire rope if more than 6 wires are broken in one lay, or more than 3 wires are broken in one strand in one lay. See figure 5.
- Make sure the load hook or other device is securely attached to the wire rope, and the wire rope where it is attached is not frayed, corroded, broken, or otherwise damaged.
- Measure the throat opening, thickness, and twist of the hook. Replace the hook if it shows signs of damage. See figure 9.
- Make sure hook latch opens without binding and closes when released.
- Check the anchor holes in the drum and the surrounding area for signs of wear or distortion.

c PLACE 100 POUNDS of tension on the wire rope.

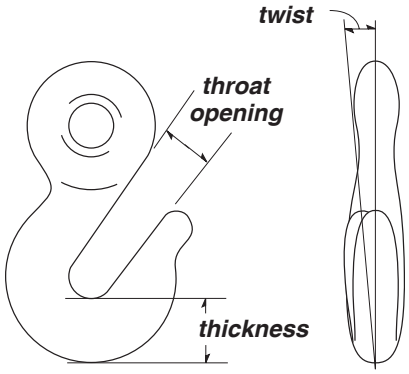
- Measure the diameter of the wire rope, especially in areas where wear is noticeable. Replace the wire rope if the diameter measures below the minimum diameter at any point. See figure 6.

## Figure 7 – Load Chain Inspection



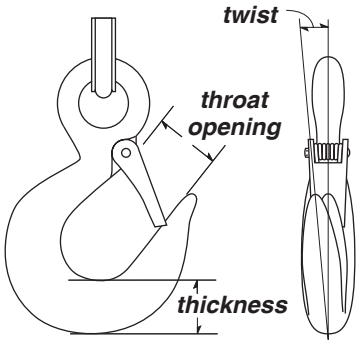

***The load chain must be replaced if the length of any 10 link section exceeds maximum allowable length, or if the diameter of any link measures 20% less than nominal.***

## Figure 8 – Grab Hook Inspection




***The hook must be replaced if the throat opening is 15% wider than nominal, if the thickness is 10% less than nominal, or if the hook is twisted 10° or more.***

## Figure 7 – Load Hook Inspection




***The wire rope assembly must be replaced if the throat opening is 15% wider than nominal, if the thickness is 10% less than nominal, or if the hook is twisted 10° or more.***

d REMOVE THE WINCH and inspect it by following the instructions in the Winch Owner's Manual.

e DISASSEMBLE THE CRANE, and inspect each part for damage.

f PLACE 50 POUNDS OF TENSION on the load chain. Measure the length of several 10 link sections of chain, and measure the diameter at several points on each link. Replace the load chain if it shows signs of wear, stretching, or other damage. See figure 7.

g REMOVE THE GRAB HOOK, and measure the throat opening, thickness, and twist of the hook. Replace the hook if it shows signs of damage. See figure 8.

h REMOVE THE CRANE BASE from the foundation.

- Check fasteners for stripped threads, wear, bending, and other damage.
- Check the foundation for cracks, corrosion, and other damage.

i FASTEN THE CRANE BASE securely to the foundation.

j REASSEMBLE THE CRANE.

k TEST CRANE PERFORMANCE by operating the crane with a test load equal to the load rating.

- Listen for unusual noises, and look for signs of damage as you operate the crane.
- Make sure the wire rope winds evenly and tightly onto the drum. If it is loose or uneven, rewind it before continuing.
- Make sure the load moves smoothly, without hesitation or strain.
- On hand operated models, make sure the winch handle rotates freely in both directions.
- On power operated models, make sure the winch responds to the control devise. It must rotate as shown on the control labels, and it must turn off when you release the control.
- Make sure the boom rotates freely when you push it, and remains stationary when you release it.
- Check the brake. Raise the load, then lower it and stop it a few feet off the ground. If the load continues to coast or creep, the brake may be in need of repair or adjustment.

**Completely correct all problems before continuing. Use the Troubleshooting Chart to help determine the cause of certain problems. See table 2.**

## Table 1 – Inspection Checklist

***checked boxes indicate damage or problem in need of repair***

| | damages | problems |
|---|---|---|
| **general** | ☐ finish weathered, aking, otherwise damaged | ☐ equipment not properly lubricated |
| | ☐ parts cracked, bent, rusted, worn, otherwise damaged | ☐ unusual noises, other signs of malfunction |
| **foundation** | ☐ loose, unstable, otherwise damaged | ☐ not level - boom swerves |
| **fasteners** | ☐ stripped threads, bent, worn, otherwise damaged | ☐ loose, not tightened to the proper torque |
| **grab hook** | ☐ twisted, bent, worn, otherwise damaged, see figure 8 | ☐ grease fitting is clogged or dirty |
| | replace if twist is 10 degrees or more | twist = |
| | replace if throat width is 15% larger than nominal | throat width = |
| | replace if thickness is 10% less than nominal | thickness = |
| **boom assembly** | ☐ holes worn, distorted, or otherwise damaged | ☐ does not rotate freely |
| **load chain** | ☐ corroded, worn, or otherwise damaged, see figure 7 | ☐ twisted or improperly installed |
| | replace if any 10 link length is more than nominal | 10 link length = |
| | replace if any link diameter is reduced 20% | link diameter = |
| **winch assembly** | ☐ gears, bearings, and other parts worn, otherwise damaged | ☐ winch jerks or hesitates under load |
| | ☐ brake corroded, cracked, worn, otherwise damaged | ☐ brake does not operate properly |
| **sheave** | ☐ holes worn, distorted, or otherwise damaged | ☐ does not rotate freely |
| **wire rope** | ☐ bent, crushed, otherwise damaged | ☐ wire rope loosely or unevenly wound |
| | ☐ broken wires, see figure 5 | |
| | replace if more than 6 wires in one lay, | number per strand = |
| | or 3 wires in one strand in one lay, are broken | number per lay = |
| | ☐ diameter reduced, see figure 6 | |
| | replace if diameter is excessively worn | diameter = |
| **end connections** | ☐ corroded, rusted, worn, otherwise damaged | ☐ not securely attached |
| **load hook** | ☐ twisted, bent, worn, otherwise damaged, see figure 9 | ☐ hook latch fails to close when released |
| | replace if twist is 10 degrees or more | twist = |
| | replace if throat width is 15% larger than nominal | throat width = |
| | replace if thickness is 10% less than nominal | thickness = |
| **labels and plates** | ☐ dirty, illegible, otherwise damaged | ☐ loosely attached or missing |

**comments:**

**authorized signature:** _____ **date** _____

## 3.4 Repairing the Crane

**Important!**

- It is your responsibility to determine when to replace parts. When considering whether to continue using a part or to replace it, remember that replacing it is the best way to avoid further equipment damage.
- Appoint a qualified person to be responsible for all repairs to the equipment.

3.4.1 GET FACTORY AUTHORIZATION for all repairs. Unauthorized repairs will void the warranty, and may lead to damage or failure of the crane.

3.4.2 REPLACE DAMAGED OR POORLY OPERATING PARTS with Thern repair parts.

3.4.3 REFINISH AREAS where the paint is worn or flaking. A good finish helps to protect against corrosion and weather damage.

a REMOVE THE FINISH from damaged areas, down to the bare metal.

b CLEAN THE AREA thoroughly.

c REPAINT with a high quality primer and finishing coat.

3.4.4 TO ORDER REPAIR PARTS, contact your local dealer. Include the following information when ordering:

- model number
- serial number (or code number)
- part number
- date purchased, and from whom
- description of what happened, or what is wrong
- your name and return address

### Table 2 – Troubleshooting Chart

| problem | cause | correction |
|---|---|---|
| **overheating** | • operated too long without rest | allow to cool |
| | • load too heavy | lighten load |
| | • poor lubrication | inspect and lubricate as necessary |
| | • bearing seized up | inspect and replace as necessary |
| **boom bounces up and down** | • load too heavy | lighten load |
| | • mounting bolts loose | tighten mounting bolts to proper torque |
| | • sheave worn or damaged | inspect and replace as necessary |
| | • foundation loose or unlevel | inspect and repair as necessary |
| | • winch gears worn or damaged | inspect and repair as necessary |
| **boom does not rotate** | • rotation points contaminated or worn | inspect and repair as necessary |
| | • ange bearing broken or locked | inspect and replace as necessary |
| | • grab hook spacer broken or seized | inspect and replace as necessary |
| **boom rotates on its own** | • foundation loose or unlevel | inspect and repair as necessary |
| | • mast bent, distorted, or leaning | inspect and repair as necessary |
| **unusual noises** | | |
| high pitched squeak | • poor lubrication | lubricate entire crane properly |
| grinding noise | • contaminated lubricant at rotation points | clean and lubricate rotation points |
| rattling noise | • loose bolts, set screws or other fasteners | tighten all bolts and other fasteners |

**Refer to the Winch Owner's Manual for possible problems with the winch and brake.**

## 4.1 Transporting the Crane

**Important!**

- Keep a record of what you ship, and when you send it.

4.1.1 PARTIALLY DISASSEMBLE THE CRANE into parts that can be easily transported.

4.1.2 PACK THE CRANE for transport, using the original packaging materials, if appropriate.

4.1.3 REASSEMBLE THE CRANE at its new location following the instructions under Assembling the Crane.

4.1.4 INSPECT THE CRANE according to the Instructions for Frequent Inspection before installing it for operation.

## 4.2 Storing the Crane

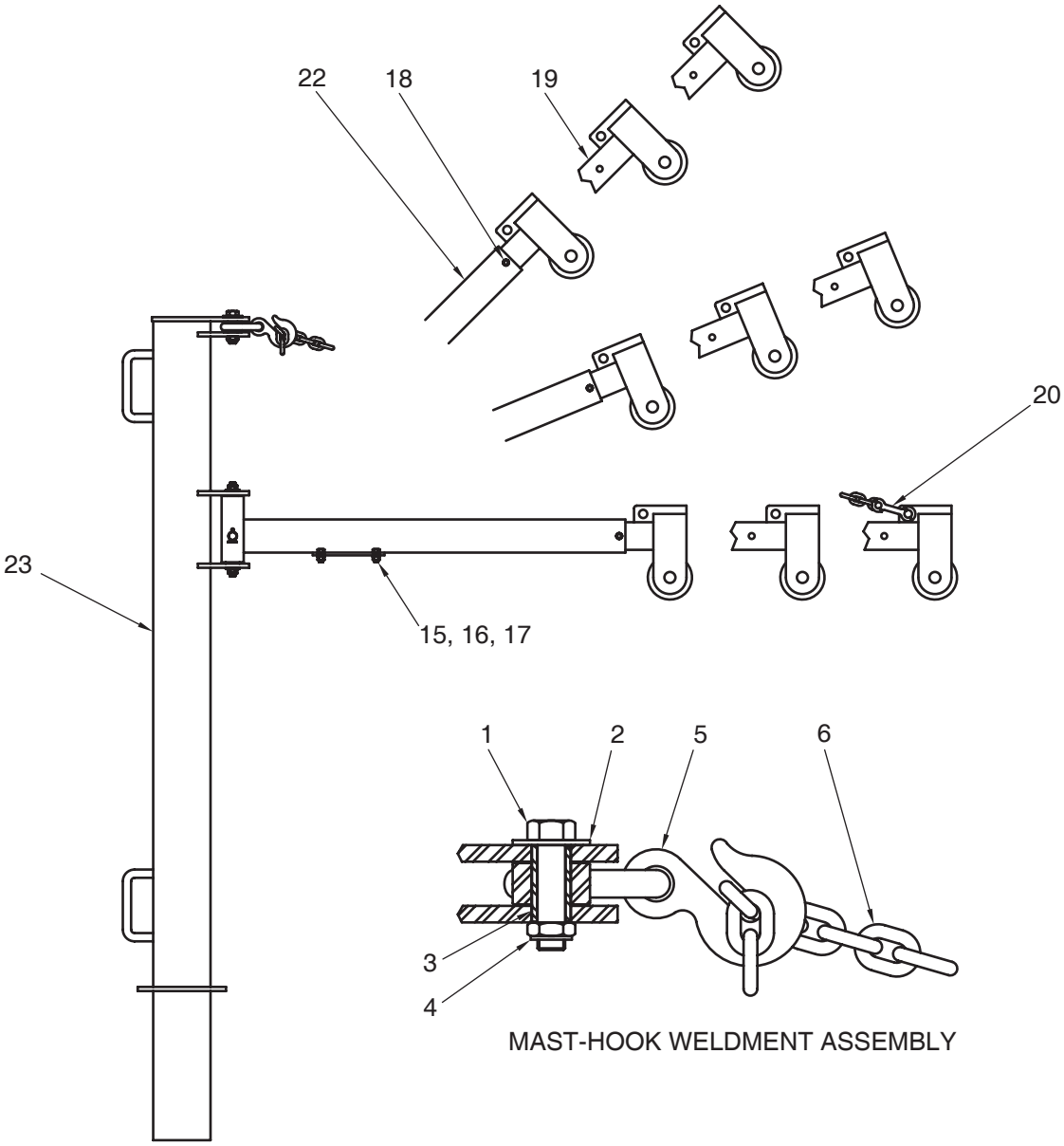
4.2.1 DISASSEMBLE THE CRANE and store all parts in a cool clean place away from corrosive chemicals and moisture.

4.2.2 SEAL THE CRANE in plastic with a desiccant to help protect it from rust, corrosion, and other damage.

4.2.3 REASSEMBLE THE CRANE at its new location following the instructions under Assembling the Crane.

4.2.3 INSPECT THE CRANE according to the Instructions for Periodic Inspection before installing it for operation.

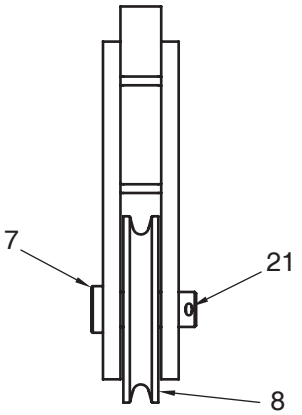
| Portable Davit Crane | | Model 5334M1 | |
|---|---|---|---|
| **item** | **description** | **part number** | **qty.** |
| 1 | Capscrew HxHd .625-11NC x 2.750 SST | A3347 | 1 |
| 2 | Flat Washer SAE .625 SST | A3348 | 1 |
| 3 | Spacer | A1382 | 1 |
| 4 | Hex Jam Nut NyLk .625-11NC SST | A4331 | 1 |
| 5 | Hook Weldment | B1778 | 1 |
| 6 | Chain | A2723 | 1 |
| 7 | Clevis Pin .750 x 1.765 SST | A4438 | 1 |
| 8 | Sheave | B2462 | 1 |
| 9 | Boom Swivel Pin | A3263 | 2 |
| 10 | Bushing | A2808 | 2 |
| 11 | Slotted Hex Nut .500-13NC SST | A3265 | 2 |
| 12 | Headless Pin .750 DIA x 3.032 | A2462 | 1 |
| 13 | Flat Washer .516 SST | A3266 | 2 |
| 14 | Boom Swivel | B1776 | 1 |
| 15 | Capscrew HxHd .375-16NC x 1.000 SST | A3355 | 4 |
| 16 | Hex Nut .375-16NC SST | A3356 | 4 |
| 17 | Lock Washer HlSpr .375 SST | A3357 | 4 |
| 18 | Quick Release Pin .500 x 2.125 STL ZNPL | A2463 | 1 |
| 19 | Boom Extension | C2599 | 1 |
| 20 | Double Clevis Link .312-.375 | A4581 | 1 |
| 21 | Cotter Pin .125 x 1.250 SST | A4305 | 5 |
| 22 | Boom | C3108 | 1 |
| 23 | Mast | C1416 | 1 |
| 24 | Hand Winch (not shown) | M4312PB-K | 1 |



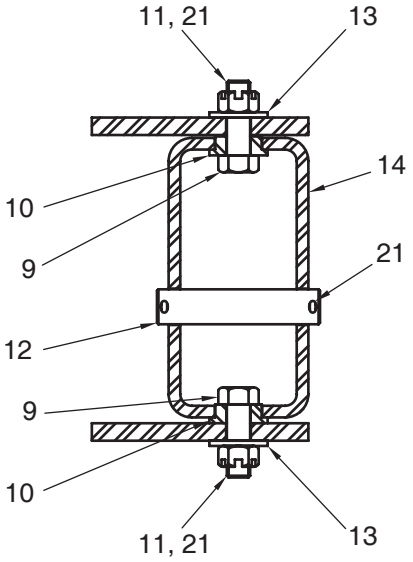




MAST-HOOK WELDMENT ASSEMBLY




BOOM TIP ASSEMBLY




BOOM SWIVEL ASSEMBLY

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