Thern®
Winches & Cranes

Read this Owner's Manual thoroughly before operating the equipment. Keep it with the equipment at all times. Replacements are available from Thern, Inc., 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.

ORIGINAL TEXT



COMMANDER® AL

OWNER'S MANUAL
For 5AT1, 5AT2 Series
Aluminum Portable Davit Cranes

A34637-A-0226

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 Commander Series Model 5AT1 and 5AT2 Portable Davit Cranes. 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

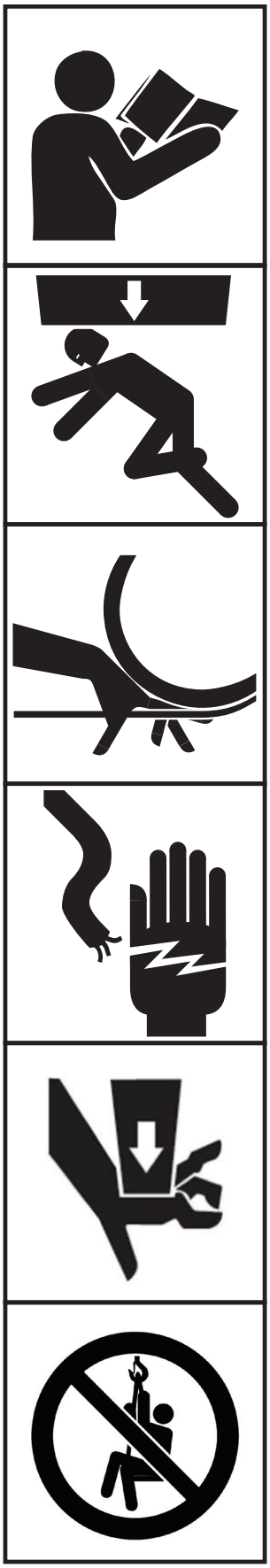
Failure to follow 'WARNING!' instructions may result in equipment damage, property damage, and/or serious personal injury.

⚠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 escape.

Keep hands away from sheaves, gears, wire rope, and other moving parts.

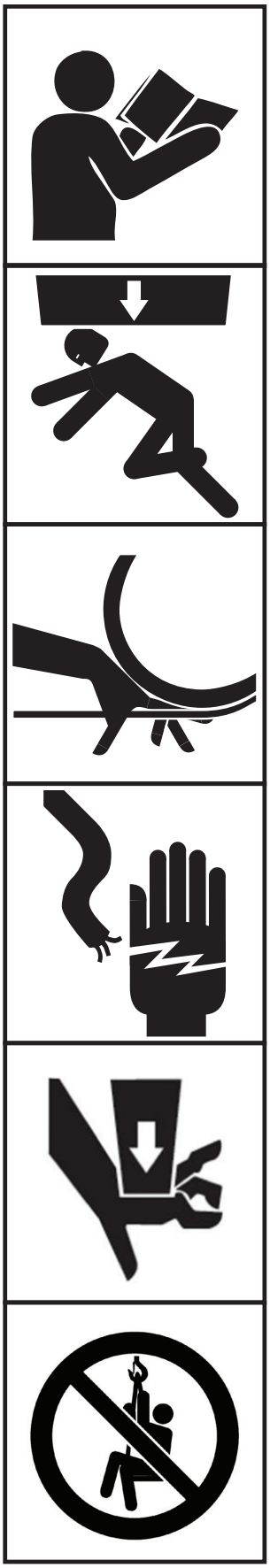
Disconnect electric power before servicing the equipment.

Keep all unnecessary personnel away from 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.

When operating the ratchet jack, avoid fully un-threading. Test the travel limits of the ratchet jack before assembly to the crane and before loading, to verify it does not fully un-thread. Contact Thern if it does fully un-thread.

Ensure that both threaded ends of the ratchet jack are threaded an equal distance out of the jack when assembled to the crane. If threaded ends are not equal, the crane boom will not be able to operate in its full range of motion, and equipment damage could occur.



Suggestions for Safe Operation (cont.)

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 escape. 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 use the crane and winch 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.

Do not operate or apply loads without all pins securely in place.

Do not adjust the boom extension while the crane is loaded.

Do not make adjustments to the ratchet jack while the crane is loaded. To do so may require the use of excessive force which could allow the operator to shear the travel limit pin and cause damage or injury.

Do not force the ratchet handle past travel limits. This could sheer the travel limit pin and cause damage or injury.

Do not adjust the ratchet jack with the use of a ratchet handle extension. To do so could allow the elevator to shear the travel limit pin and cause damage or injury.

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, flammable 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 uneven surface may cause the boom to rotate in the direction the mast is leaning.**

1.1.4 FASTEN THE BASE securely to the foundation to withstand applicable overturning moments and mounting bolt reaction. See Table 1.

a FOR STANDARD PRODUCTS referred to in this manual, use 5/8-inch coarse thread fasteners, grade 5 or better. Recommended torque for Grade 5 zinc plated bolts without lubrication is 125 ft-lb.

Refer to manufacturer's instructions for other fastener types with specific torque or installation instructions.

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.

Table 1 - Crane Reactions[2]

				Pedestal Base		Wall Mount Base			
Crane Model	Mast Moment		Suggested Bolt Size	Axial Force per Bolt[1]		Axial Force per Bolt[1]		Shear Force per Bolt	
5AT1	20,490 in-lbs	2,316 N-m	5/8 inch (M16)	910 lbs	4,049 N	780 lbs	3,470 N	620 lbs	2,759 N
5AT2	37,400 in-lbs	4,226 N-m	5/8 inch (M16)	1,660 lbs	7,385 N	1,420 lbs	6,317 N	1,110 lbs	4,938 N

1 Force in tension.

2 This information may change without prior notice. It is the responsibility of the installer and/or end user to ensure the most current information is used.

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.

⚠CAUTION

When installing the ratchet jack, support the end of the boom so the boom does not fall and the ratchet jack does not swing up causing damage or injury.

When installing the boom extension, hold the boom extension securely so it does not slide abruptly in or out of the boom causing damage or injury.

1.2.1 STUDY PARTS DRAWINGS to understand how the crane is assembled. See pages 20-23.

1.2.2 LUBRICATE PINS and other components prior to assembly. See Section 3.2 - Lubricating the Crane.

1.2.3 INSTALL THE BASE. See Section 1.1 for additional information and crane overturning moments and mounting bolt reaction forces.

1.2.4 INSTALL THE FLANGE BEARING in the base. Bearing must be set level on the base.

1.2.5 ASSEMBLE THE CRANE in the following order.

a FASTEN THE WINCH to the mounting plate using the fasteners provided. On some models you will need to use an additional winch adapter plate and fasteners provided to fasten the winch to the crane. **Make sure the winch is positioned correctly with the winch drum facing toward the load. See Figure 3.**

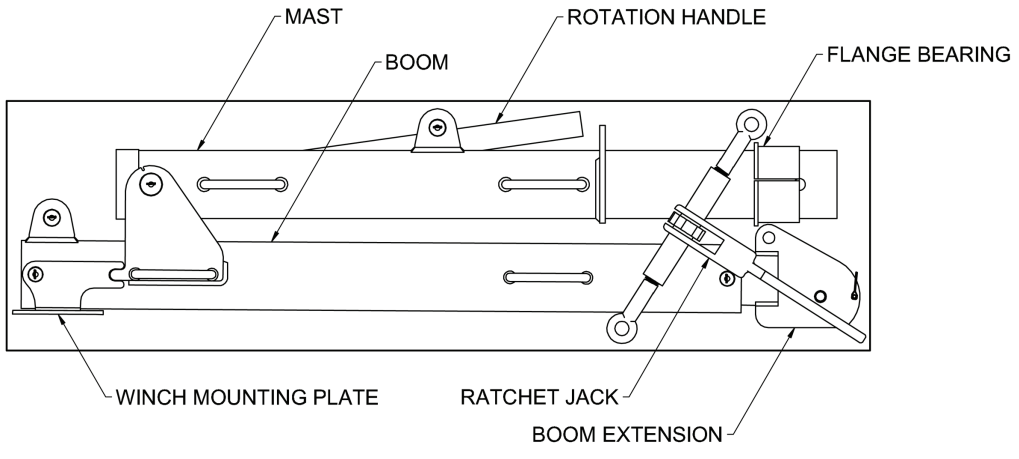
b INSTALL THE MAST in the base. Move the mast side-to-side to make sure the bottom of the mast properly seats on the pin in the bottom of the base. **The crane will not be stable unless properly seated. See Figure 2.**

c FASTEN THE BOOM to the mast using the clevis pin and lynch pin provided. **Make sure the boom is positioned correctly, with the carrying handles located on the same side as the handles on the mast.**

d INSTALL THE HANDLE using the mast clevis pin and lynch pin provided.

e BEFORE INSTALLING THE RATCHET JACK Ensure that both threaded ends of the ratchet jack are threaded an equal distance out of the jack when assembled to the crane. If threaded ends are not equal, the crane boom will not be able to operate in its full range of motion, and equipment damage could occur.

Figure 1 – Crane Packaging



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Figure 2 – Assembly Steps

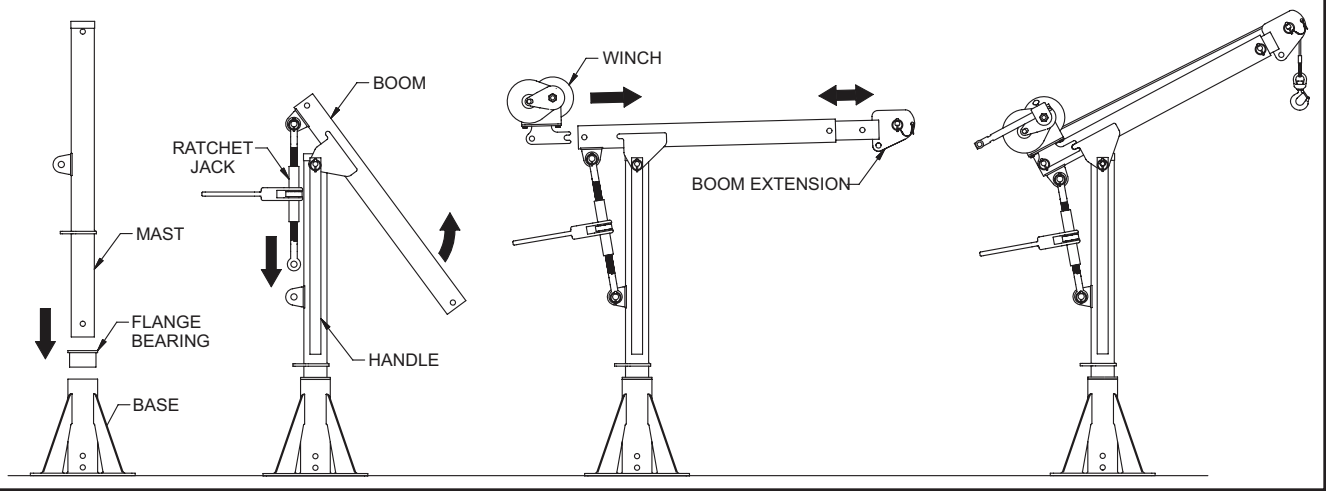


Figure 3 – Winch Mounting

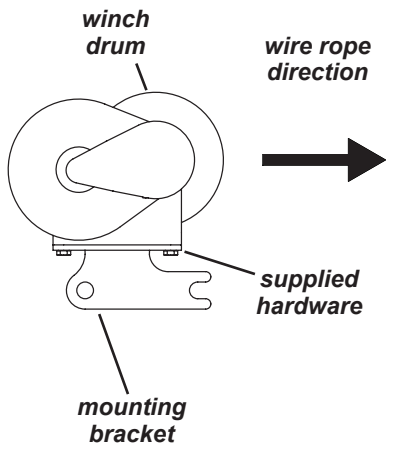
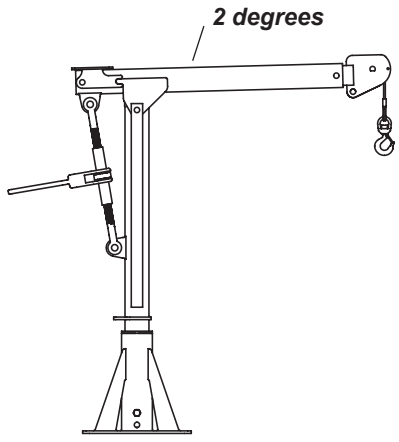


Figure 4 – Lowest Boom Angle



f INSTALL THE RATCHET JACK by fastening one end of the ratchet jack to the mounting ear on the boom with the clevis and lynch pin provided. Carefully pivot the boom up until the other end of the ratchet jack aligns with the mounting ear on the mast, and secure the ratchet jack to the mast using the clevis pin and lynch pin provided.

g ADJUST THE BOOM with the ratchet jack so the boom is slightly above the lowest boom angle. See Figure 4. **Do not lower boom below the lowest point, or the boom could fall and may result in the load escaping.**

h SLIDE THE BOOM EXTENSION into the boom, and secure in place with the clevis pin and lynch pin provided. **Make sure the boom extension is positioned correctly. See Figure 2.**

i INSTALL THE WINCH onto the boom. Slide into position and secure with provided clevis pin and lynch pin.

1.2.6 INSTALL THE WINCH HANDLE on hand winches, or connect electric current on power winches. Refer to instructions in the Winch Owner's Manual.

1.2.7 INSTALL THE WIRE ROPE. **Use wire rope assemblies in the length specified on page 24-25.**

a REMOVE ROPE KEEPER PIN at the sheave to allow rope to be installed.

b PASS THE WIRE ROPE over the sheave at the end of the boom.

c REINSTALL ROPE KEEP PIN to prevent the rope from escaping the sheave rope groove.

d ANCHOR THE WIRE ROPE to the winch drum and wind 4 wraps of wire rope onto the drum to act as anchor wraps. Refer to the instructions in the Winch Owner's Manual.

1.2.8 MAKE SURE ALL CLEVIS PINS ARE PROPERLY INSTALLED with all lynch pins in place to prevent components from shifting during use.

1.2.9 ADJUST BOOM ANGLE for the desired position using the ratchet-jack (if equipped). See Figure 2.

1.2.10 INSTALL UPPER TRAVEL LIMIT SWITCH when supplied with power winches as directed in supplemental instructions provided with limit switch kit.

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 INTENDED USE of this machinery is to lift and lower loads of its rated capacity or less. It is not for lifting people or things over people.

2.1.2 THE FORCE REQUIRED to lift the load must not exceed the load rating of the crane. Consider the total force required to lift the load, not the weight of the load.

2.1.3 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.

2.1.4 PERFORMANCE RATINGS of the equipment are affected by the position of the boom, the amount of wire rope you use and whether you use a single or two part line. **Crane load ratings decrease as you extend the reach.** See the Performance Characteristics Tables on page 24-25.

a LOAD RATING represents the maximum force that can be placed on new equipment.

b LIFT varies with the position of the boom, the length of the wire rope, and the rigging configuration (single or two part line).

c REACH varies with the position of the boom.

2.1.5 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.** Operating temperature range with manual spur gear winches is -40°F to +122°F. Operating temperature range for standard worm gear and power winches is -4°F to 104°F.

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 lifting 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.**

2.1.6 AIRBORNE NOISE EMISSIONS vary depending on load and the type of winch being used. Standard configurations do not typically exceed a sound pressure level of 80dB(A) at workstations.

2.1.7 VIBRATION LEVELS vary depending on load and type of winch being used. Standard configurations do not typically exceed vibration levels of 2.5 m/s^2.

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.

⚠WARNING

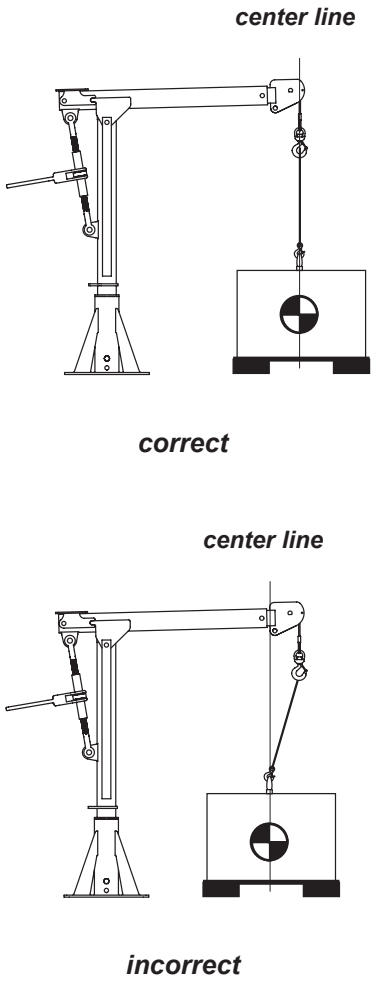
When operating the ratchet jack, avoid fully un-threading. Test the travel limits of the ratchet jack before assembly to the crane and before loading, to verify it does not fully un-thread. Contact Thern if it does fully un-thread.

Do not force the ratchet handle past travel limits. This could shear the travel limit pin and cause damage or injury.

⚠CAUTION

When adjusting boom length, set the boom angle just above the lowest angle and hold the boom extension securely so it does not slide abruptly in or out of the boom causing damage or injury.

Figure 5 – Positioning the Boom



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. **Avoid side pulls which could damage the crane or cause the load to tip. See Figure 5.**

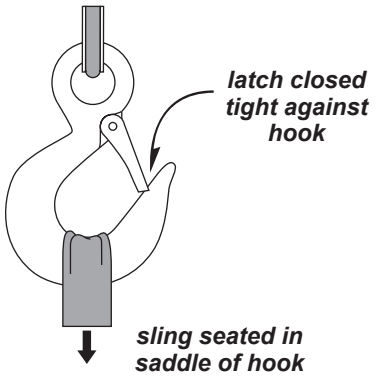
a ADJUST BOOM LENGTH by moving the boom extension in or out. **Do not make adjustments while the crane is loaded. The load rating decreases as you increase boom length. See the Performance Characteristics Tables page 24-25.**

b ADJUST BOOM ANGLE by operating the ratchet jack to raise or lower the boom. **The lift height below base level decreases as you raise the boom. See the Performance Characteristics Tables page 24-25.**

2.2.5 CONFIGURE THE CRANE for single part or two-part line operation. **Load ratings may increase with two-part line, lift height below base level will decrease with two part line.** Study parts drawing on page 23.

2.3 Attaching the Load

Figure 6 – Attaching Load



⚠WARNING

Do not wrap the wire rope around the load. This damages the wire rope and could cause the load to escape. 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 6.

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.

⚠WARNING

When operating the ratchet jack, avoid fully un-threading. Test the travel limits of the ratchet jack before assembly to the crane and before loading, to verify it does not fully un-thread. Contact Thern if it does fully un-thread.

Do not force the ratchet handle past travel limits. This could shear the travel limit pin and cause damage or injury.

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 OPERATE THE RATCHET JACK if necessary, to adjust the angle of the boom to keep the sheave centered over the load.

2.4.5 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 other objects.**

b USE THE HANDLE to rotate the boom. **Do not push or pull the load or the wire rope to rotate 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 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.

3.2.2 LUBRICATE THE BASE PIN located on the bottom of the base before installation and at least every 3 months. Use a grease brush to apply a film of NLGI #2 grease to the pin.

3.2.3 LUBRICATE THE MAST BEARING located on top of the base before installation and at least every 3 months. Use a grease gun to apply NLGI #2 grease to the outside surfaces (between bearing and base).

3.2.4 LUBRICATE THE RATCHET JACK before installation and at least every 3 months. Use a grease gun to apply NLGI #2 grease to the grease fittings on the ratchet jack until excess grease can be seen. Wipe away any excess lubricant.

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

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

3.3 Disassembling the Crane

⚠CAUTION

When removing the boom extension, hold the boom extension securely so it does not slide abruptly in or out of the boom causing damage or injury.

When removing the ratchet jack, support the end of the boom so the boom does not fall and the ratchet jack does not swing up causing damage or injury.

3.3.1 STUDY PARTS DRAWINGS to understand how the crane is assembled. See pages 20-23.

3.3.2 REMOVE ANY ATTACHED LOAD from the wire rope.

3.3.3 REMOVE THE WIRE ROPE

a REMOVE THE ROPE KEEPER PIN located at the end of the boom.

b UNWIND THE ROPE from the winch drum and release the anchor.

c REPLACE THE ROPE KEEPER PIN

3.3.4 REMOVE THE WINCH HANDLE on hand winches, or disconnect electric current on power winches. Refer to instructions in the Winch Owner's Manual.

3.3.5 REMOVE THE WINCH and mounting bracket from the boom. Replace the clevis pin to prevent loss.

3.3.6 REMOVE THE BOOM EXTENSION.

a ADJUST THE BOOM ANGLE using the ratchet jack, so the boom is just slightly above horizontal.

b SECURE THE BOOM EXTENSION then remove the lynch pin and clevis pin securing the boom extension to the boom.

c CAREFULLY PULL THE BOOM EXTENSION out of the boom, then reinstall the clevis pin and lynch pin in the boom.

3.3.7 REMOVE THE RATCHET JACK.

a SECURE THE BOOM to prevent it from falling when the ratchet jack is released.

b DISCONNECT THE RATCHET JACK at the mast (bottom) by removing the lynch pin and clevis pin and slowly lower the boom until it is resting against the mast. Be careful that the ratchet jack does not swing up and cause injury.

c REMOVE THE PIN AT THE BOOM (top) to disconnect the ratchet jack from the crane. Hold onto the ratchet jack to prevent it from falling away.

d RECONNECT the clevis pins to the boom and mast with the appropriate lynch pins.

3.3.8 REMOVE THE ROTATION HANDLE from the mast.

3.3.9 DISCONNECT THE BOOM from the mast.

a SECURE THE BOOM to prevent it from falling away when the pins are removed.

b REMOVE THE LYNCH PIN AND CLEVIS PIN and carefully remove the boom.

c REPLACE the clevis pin and lynch pin in the mast.

3.3.10 REMOVE THE MAST from the base by lifting it straight out of the base.

3.3.11 REMOVE THE BEARING from the base. Install a cap over the base to prevent debris and other contaminants from getting into the base.

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.

Frequent Wire Rope Inspection:

- Use ASME B30.7 as a guideline for rope inspection, replacement and maintenance.
- Check the wire rope, end connections and end fittings for corrosion, kinking, bending, crushing, birdcaging or other signs of damage.
- Check the number, distribution and type of visible broken wires. See paragraph 3.4.4 b and Figure 7.
- Check the wire rope for reduction of rope diameter from loss of core support, or wear of outside wires. See Figure 9.
- Take extra care when inspecting sections of rapid deterioration such as sections in contact with saddles, sheaves, repetitive pickup points, crossover points and end connections.

3.4 Inspecting the Equipment

⚠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 person who has completely corrected the problem.

Inspect the crane to detect signs of damage or poor operation before they become hazardous. See Table 2 Inspection Checklist.

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

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

3.4.3 **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.
- Make sure the entire crane is properly lubricated.
- Make sure all fasteners are tight and secure.
- Make sure mounting fasteners are tightened securely.
- Check the ratchet jack for signs of leakage or damage, and make sure it operates smoothly to raise and lower the boom.
- 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 operating the crane with a load not exceeding 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 device. 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 the handle, and remains stationary when you release it.
- Check the winch brake. Raise the load, then lower it and stop it a few feet off the ground. If the load continues to coast or creep under normal operating conditions, the brake may be worn and in need of repair or replacement. Contact the factory.

Completely correct all problems before continuing. Use the Troubleshooting Chart to help determine the cause of certain problems. See Table 3.

Table 2 – Inspection Checklist

checked boxes indicate damage or problem in need of repair

	damages	problems
general	☐ finish weathered, flaking, 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
boom assembly	☐ holes worn, distorted, or otherwise damaged	☐ does not rotate freely
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
sheaves	☐ 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 7	
	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 9	
	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 8	☐ 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

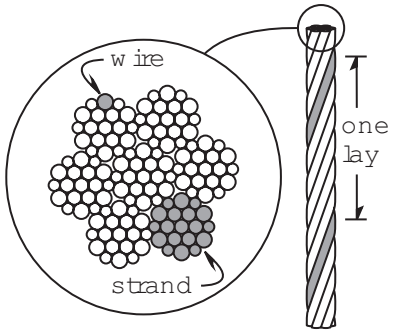
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Perform frequent inspections:

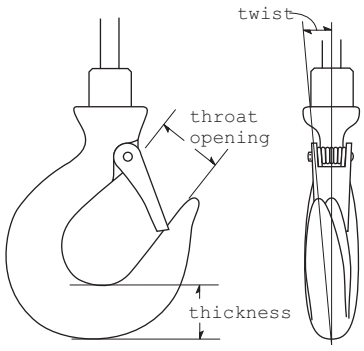
- Every 6 months.
- Whenever you return the crane to service from storage.
- Whenever you notice damage or poor operation in a frequent inspection.
- Whenever you have, or think you may have, overloaded or shock loaded the crane.

Figure 7 – 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 8 – 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.

3.4.4 **Instructions for Periodic Inspection**

a VISUALLY INSPECT the crane and all other equipment.

- Check the finish for wear, flaking, or other damage.
- Check all equipment for cracks, dents, bending, rust, wear, corrosion and other damage. If the equipment was overloaded, or if you notice cracks and other signs of overloading and damage, promptly remove equipment from use and have it repaired or replaced. **DO NOT CONTINUE TO USE DAMAGED OR OVERLOADED EQUIPMENT OR WIRE ROPE**.
- Check all fasteners for stripped threads, wear, bending, and other damage.
- Make sure the entire crane is properly lubricated.
- Check the ratchet jack for signs of leakage or damage, and make sure it operates smoothly to raise and lower the boom.
- Remove the ratched jack from the crane assembly. Test the travel limits of the ratchet jack. Make sure it does not fully un-thread.
- Make sure all labels and plates are readable, firmly attached, free of damage and clean. Replacements are available from the factory.

b INSPECT THE WIRE ROPE according to the wire rope manufacturer's recommendations, or follow accepted industry standards for wire rope inspection.

- 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 7.
- 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 8.
- 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 enough weight to keep the wire rope straight and tightly drawn.

- 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 9.

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

e DISASSEMBLE THE CRANE. Inspect each component for damage.

f REMOVE THE CRANE BASE from the foundation.

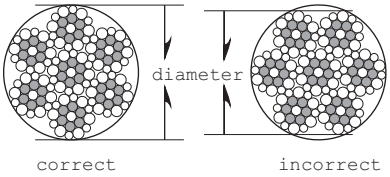
- Check fasteners for stripped threads, wear, bending, and other damage.
- Check the foundation for cracks, corrosion, and other damage.

g FASTEN THE CRANE BASE securely to the foundation.

h REASSEMBLE THE CRANE.

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

Figure 9 – Rope Diameter



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

wire rope size	minimum diameter
3/16 in	11/64 in (.1719 in)
1/4 in	15/64 in (.2344 in)
5/16 in	19/64 in (.2969 in)
3/8 in	11/32 in (.3438 in)

- 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 device. 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 the handle, 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 under normal operating conditions, the brake may be worn and in need of repair or replacement. Contact the factory.

Completely correct all problems before continuing. Use the Troubleshooting Chart to help determine the cause of certain problems. See Table 3.

Table 3 – 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
	• flange bearing broken or locked	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
resistance felt in ratchet jack - boom not able to raise or lower to the published angle limits	• threaded ends of ratchet jack do not protrude equally from the jack	Adjust the threaded rod ends by removing the jack and turning the ends until an equal amount of threads are showing
ratchet jack fully un-threads	• travel limit pin damaged	contact Thern

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

3.5 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.

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

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

3.5.3 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.

3.5.4 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 4 – Crane Weight Chart

	Model 5AT1		Model 5AT2	
Component	**LB**	**KG**	**LB**	**KG**
Mast Assembly	15	6.8	30	13.6
Boom Assembly	14	6.3	24	10.9
Boom Ext Assembly	9	4.1	14	6.3
Ratchet Jack	12	5.5	12	5.5
Handle	3	1.4	3	1.4
TOTAL	53	24.1	81	37.7
Winch (including bracket)	**LB**	**KG**	**LB**	**KG**
M1 (M4022PB)	17	7.7	-	-
M1 (M4312PB)	-	-	29	13.2
M3 (M4042PBSS)	25	11.3	-	-
M3 (M4312PBSS)	-	-	29	13.2
M2 (4WM2-K)	38	17.2	39	17.7
E2 (4WP2-K)	73	33.1	74	33.6
E4 (4777-K)	95	43.1	96	43.5
E4DC (4777DC-K)	119	54.0	120	54.5

3.6 Field Test Procedure

⚠CAUTION

Use the following instructions to perform a pre-service load test on new, undamaged, and unaltered equipment only. **For field testing of existing in-service equipment, do not exceed 100% rated capacity.**

3.6.1 VISUALLY INSPECT the product for any signs of wear, damage, or deformation. **Do not apply test loads until problems have been corrected.**

3.6.2 ASSEMBLE THE CRANE according to the instructions found within the owner's manual.

3.6.3 OPERATE THE CRANE, without load, through its designed range of motion. The product should operate smoothly, braking systems of power driven components operate effectively, and motion limiting devices are adjusted and functioning properly. **Do not continue until problems have been corrected.**

3.6.4 PREPARE A TEST LOAD with a load sensing device.

3.6.5 FOR MAXIMUM DYNAMIC LOAD TEST, load the crane to 110% of its rated capacity and operate the crane through its designed range of motion while checking for signs of damage.

a SLOWLY RELEASE THE LOAD and visually inspect the product for signs of wear, damage, or deformation. **Do not continue until problems have been corrected.**

3.6.6 FOR MAXIMUM STATIC LOAD TEST, load the crane to 125% of its rated capacity and hold for 10 minutes while checking for signs of damage. Do not exceed 125% of rated capacity.

a SLOWLY RELEASE THE LOAD and visually inspect the product for signs of wear, damage, or deformation. **Do not continue until problems have been corrected.**

3.6.6 OPERATE THE CRANE, without load, through its designed range of motion to confirm no failures.

Tests are considered successful if no fractures, permanent deformations, or damage affecting the function or safety of the crane are visible and if no connections have loosened or show signs of damage.

Important!

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

4.1 Transporting the Crane

4.1.1 PARTIALLY DISASSEMBLE THE CRANE into components that can be transported.

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

4.1.3 PACK THE WINCH for transport, using the original packaging materials, if appropriate. Please see the winch owner's manual for instructions.

4.1.4 REASSEMBLE THE CRANE at its new location following the instructions under Section 1.2 - Assembling the Crane.

4.1.5 INSPECT THE CRANE according to the Instructions for Frequent Inspection before installing it for operation. See Section 3.4.3 - Instructions for Frequent Inspection.

4.2 Storing the Crane

4.2.1 PARTIALLY 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 SEAL THE WINCH in plastic with a desiccant to help protect it from rust, corrosion, and other damage. Please see the winch owner's manual for instructions.

4.2.4 REASSEMBLE THE CRANE at its new location according to Section 1.2 - Assembling the Crane.

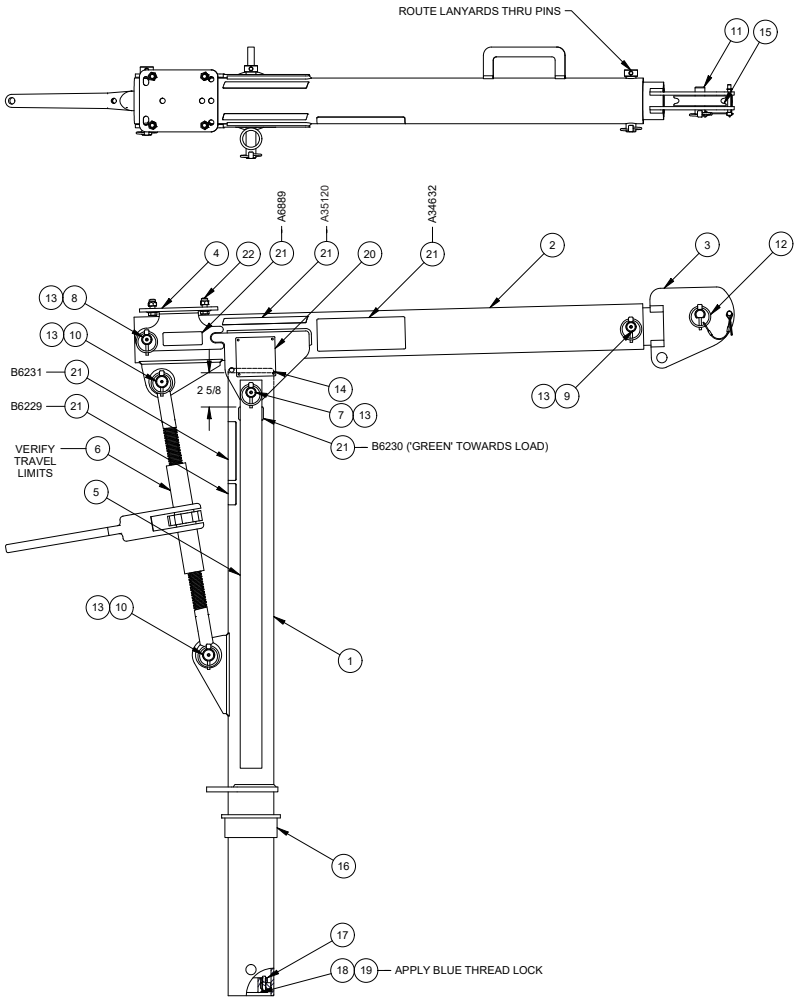
4.2.5 INSPECT THE CRANE according to Section 3.4.4 - Instructions for Periodic Inspection before installing it for operation.

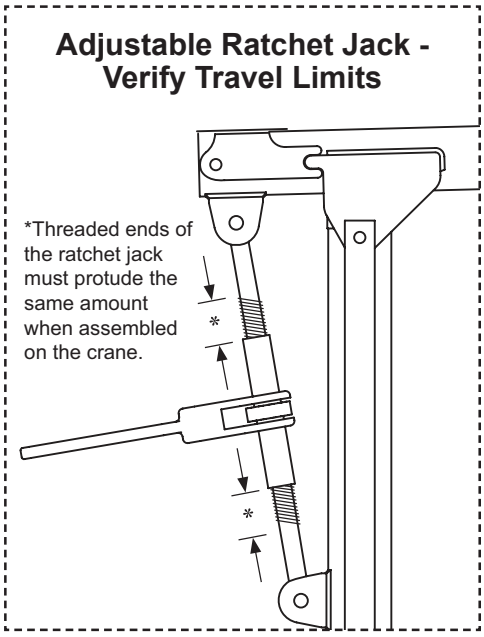
Table 5 – Winch Part Numbers

5AT1 Series	**-M1**	**-M2**	**-M2X**	**-M3**
Description	**Part Number**	**Part Number**	**Part Number**	**Part Number**
MANUAL WINCH	**M4022PB**	**4WM2-K**	**4WM2EGRA-K**	**M4042PBSS**
5AT2 Series	**-M1**	**-M2**	**-M2X**	**-M3**
Description	**Part Number**	**Part Number**	**Part Number**	**Part Number**
MANUAL WINCH	**M4312PB**	**4WM2-K**	**4WM2EGRA-K**	**M4312PBSS**
	-E2	**-E4**	**-E4DC**	**-E2T**
Description	**Part Number**	**Part Number**	**Part Number**	**Part Number**
ELECTRIC WINCH ADAPTER PLATE	**4WP2-K**	**4777-K** C3114	**4777DC-K** C5137	**4WP2T-K**
	-E2X	**-E4X**	**-E4DCX**	**-E2TX**
Description	**Part Number**	**Part Number**	**Part Number**	**Part Number**
ELECTRIC WINCH ADAPTER PLATE	**4WP2EGRA-K**	**4777EGRA-K** C3114EGRA	**4777DCEGRA-K** C5137EGRA	**4WP2TEGRA-K**

Model 5AT1

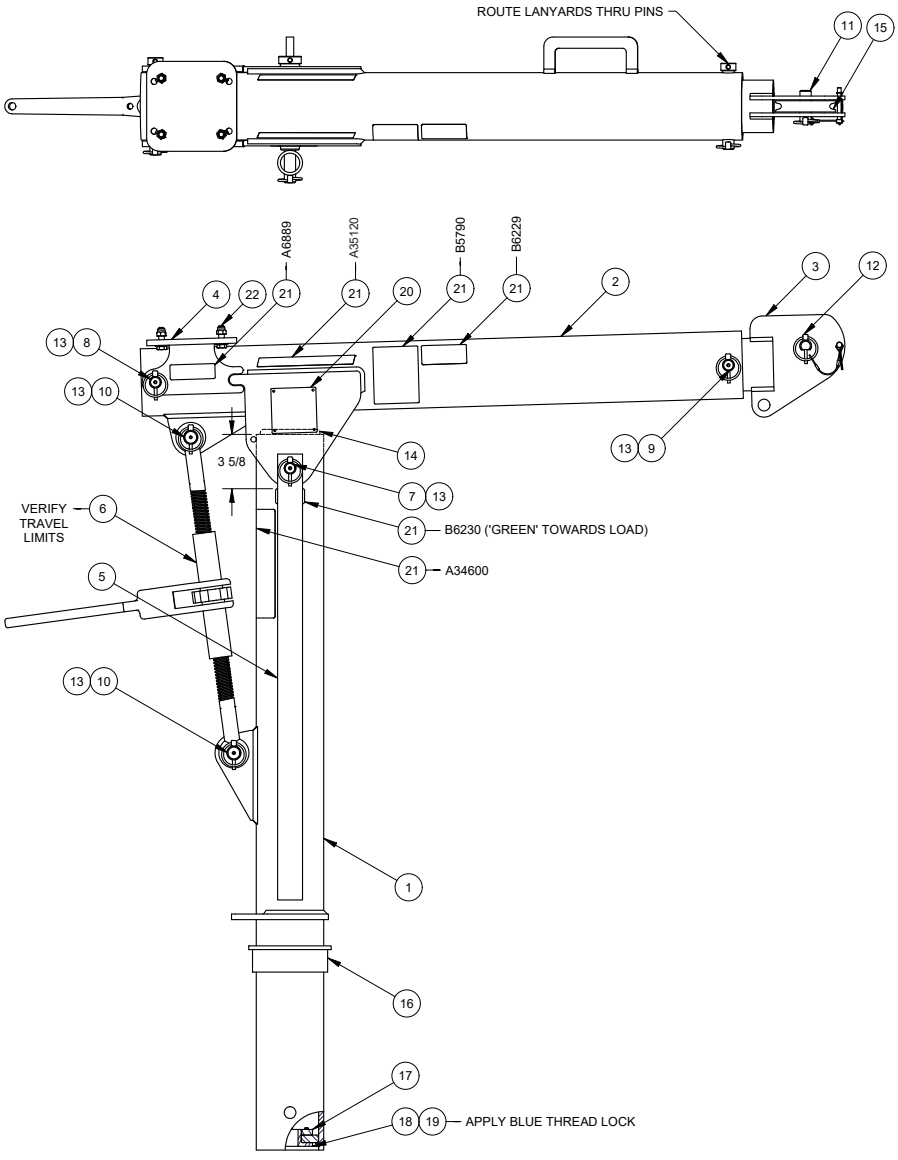
item	description	part number	qty.
1	**WELDMENT MAST**	**A34616**	**1**
2	WELDMENT BOOM	A34620	1
3	WELDMENT BOOM EXTENSION	A34623	1
4	WELDMENT WINCH MOUNT	A34627	1
5	HANDLE ROTATION	A32022	1
6	**JACK SCREW**	**C3410**	**1**
7	PIN CLEVIS .750 X 6.125 EFF LENGTH SST	A12310	1
8	PIN CLEVIS .750 X 4.250 EFF LENGTH SST	A12311	1
9	PIN CLEVIS .750 X 3.750 EFF LENGTH SST	A12312	1
10	PIN CLEVIS .906 X 2.750 EFF LENGTH SST	A12313	2
11	**PIN CLEVIS .750 DIA 5PT SHEAVE SST**	**A12314**	**1**
12	PIN LYNCH D ASSY	A12414	1
13	PIN LYNCH ASSY - LANYARD NOT SHOWN	A12415	5
14	PLUG FINISH RND 3.000 X SCH 40	A13550	1
15	SHEAVE ASSEMBLY	B2462	1
16	**FLANGE BEARING**	**B6592**	**1**
17	MAST BUSHING PLATE	A34631	1
18	MAST BUSHING	A34630	1
19	CAPSCR SOKFLTHD .250-20NC	A9553	4
20	LABEL NAMEPLATE CRANES CE	A11529	1
21	**LABEL SHEET SET 5AT1 SERIES**	**A34633**	**1**
22	WINCH HARDWARE KIT	A7264	1



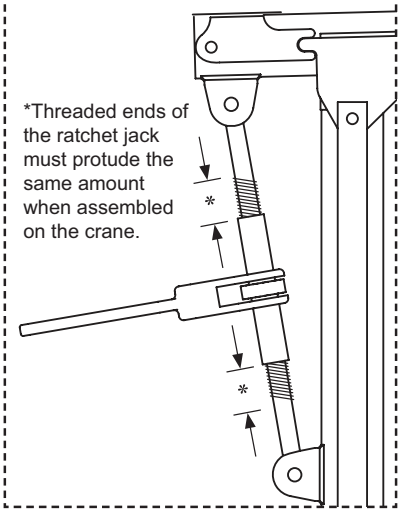


Model 5AT2

item	description	part number	qty.	material
1	**WELDMENT MAST**	**A32006**	**1**	
2	WELDMENT BOOM	A34602	1	
3	WELDMENT BOOM EXTENSIO	A34605	1	
4	WELDMENT WINCH MOUNT	A32019	1	
5	HANDLE ROTATION	A32022	1	
6	**JACK SCREW**	**C3410**	**1**	
7	PIN CLEVIS 1.250 DIA 5PT MAST SST	A12315	1	
8	PIN CLEVIS .750 X 5.500 EFF LENGTH SST	A12316	1	
9	PIN CLEVIS .750 X 4.750 EFF LENGTH SST	A12317	1	
10	PIN CLEVIS .906 X 2.750 EFF LENGTH SST	A12313	2	
11	**PIN CLEVIS .750 DIA 5PT SHEAVE SST**	**A12314**	**1**	
12	PIN LYNCH D ASSY	A12414	1	
13	PIN LYNCH ASSY - LANYARD NOT SHOWN	A12415	5	
14	PLUG FINISH RND 4.000 X 10-16 GA	A13540	1	
15	SHEAVE ASSEMBLY	B2462	1	
16	**FLANGE BEARING**	**B6593**	**1**	
17	MAST BUSHING PLATE	A32030	1	
18	MAST BUSHING	A32029	1	
19	CAPSCR SOKFLTHD .250-20NC	A9553	6	
20	LABEL NAMEPLATE CRANES CE	A11529	1	
21	**LABEL SHEET SET 5AT2 SERIES**	**A34601**	**1**	
22	WINCH HARDWARE KIT	A7264	1	



Adjustable Ratchet Jack - Verify Travel Limits



Pedestal Base[1]

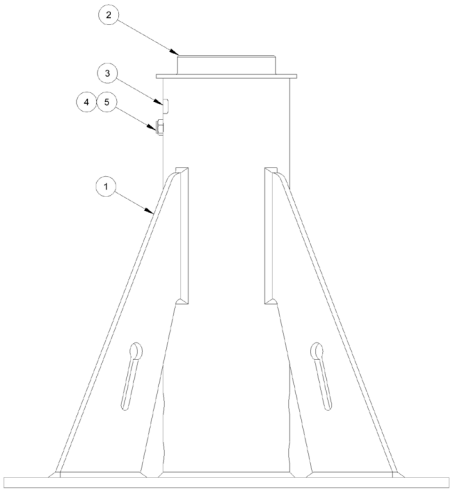
5BP10

item	part no.	description
1	**B6181**	**WELDMENT BASE 5BP10**
2	B5C10	BASE COVER W/LANYARD
3	A14588	LABEL THERN
4	A4379	NUT HEX JAM NYLK .312-18NC SST 18-8
5	A13820	CAPSCR SOKLHD .312-18NC X .500 ZNPL

5BP20

item	part no.	description
1	**B6191**	**WELDMENT BASE 5BP20**
2	B5C10	BASE COVER W/LANYARD
3	A14588	LABEL THERN
4	A4379	NUT HEX JAM NYLK .312-18NC SST 18-8
5	A13820	CAPSCR SOKLHD .312-18NC X .500 ZNPL

[1] When ordering parts, be sure to specify whether the finish is red, galvanized, epoxy or stainless.



5BP10, 5BP20
Pedestal Base

Wall Base[1]

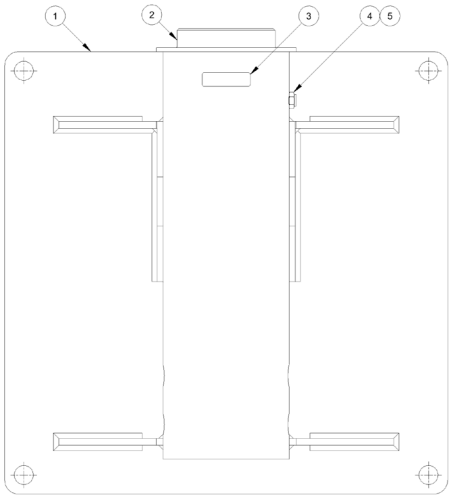
5BW10

item	part no.	description
1	**B6179**	**WELDMENT BASE 5BW10**
2	5BC10	BASE COVER W/LANYARD
3	A14588	LABEL THERN
4	A4379	NUT HEX JAM NYLK .312-18NC SST 18-8
5	A13820	CAPSCR SOKLHD .312-18NC X .500 ZNPL

5BW20

item	part no.	description
1	**B6189**	**WELDMENT BASE 5BW20**
2	5BC10	BASE COVER W/LANYARD
3	A14588	LABEL THERN
4	A4379	NUT HEX JAM NYLK .312-18NC SST 18-8
5	A13820	CAPSCR SOKLHD .312-18NC X .500 ZNPL

[1] When ordering parts, be sure to specify whether the finish is red, galvanized, epoxy or stainless.



5BW10, 5BW20
Wall Base

Flush Base[1]

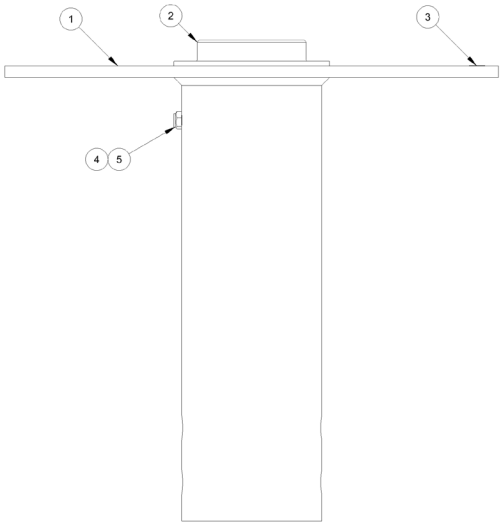
5BF10

item	part no.	description
1	**B6180**	**WELDMENT BASE 5BF10**
2	5BC10	BASE COVER W/LANYARD
3	A14588	LABEL THERN
4	A4379	NUT HEX JAM NYLK .312-18NC SST 18-8
5	A13820	CAPSCR SOKLHD .312-18NC X .500 ZNPL

5BF20

item	part no.	description
1	**B6190**	**WELDMENT BASE 5BF20**
2	5BC10	BASE COVER W/LANYARD
3	A14588	LABEL THERN
4	A4379	NUT HEX JAM NYLK .312-18NC SST 18-8
5	A13820	CAPSCR SOKLHD .312-18NC X .500 ZNPL

[1] When ordering parts, be sure to specify whether the finish is red, galvanized, epoxy or stainless.



5BF10, 5BF20
Flush Base

A34637-A-0226

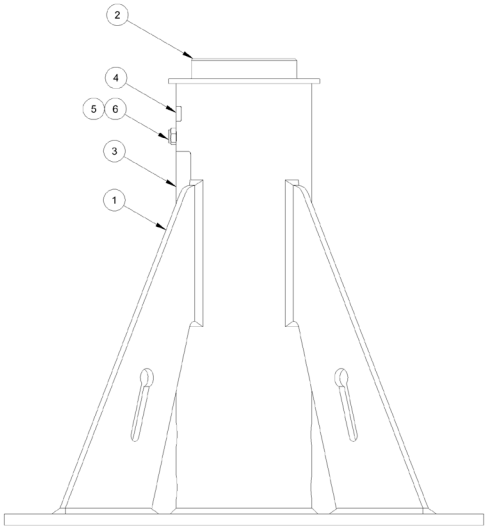
Pedestal Base - Aluminum

5ABP1

item	part no.	description
1	**A43723**	**WELDMENT BASE 5ABP1**
2	5BC10	BASE COVER W/LANYARD
3	A34727	LABEL WARNING 5AT1 SERIES
4	A14588	LABEL THERN
5	A4379	NUT HEX JAM NYLK .312-18NC SST 18-8
6	A13820	CAPSCR SOKLHD .312-18NC X .500 ZNPL

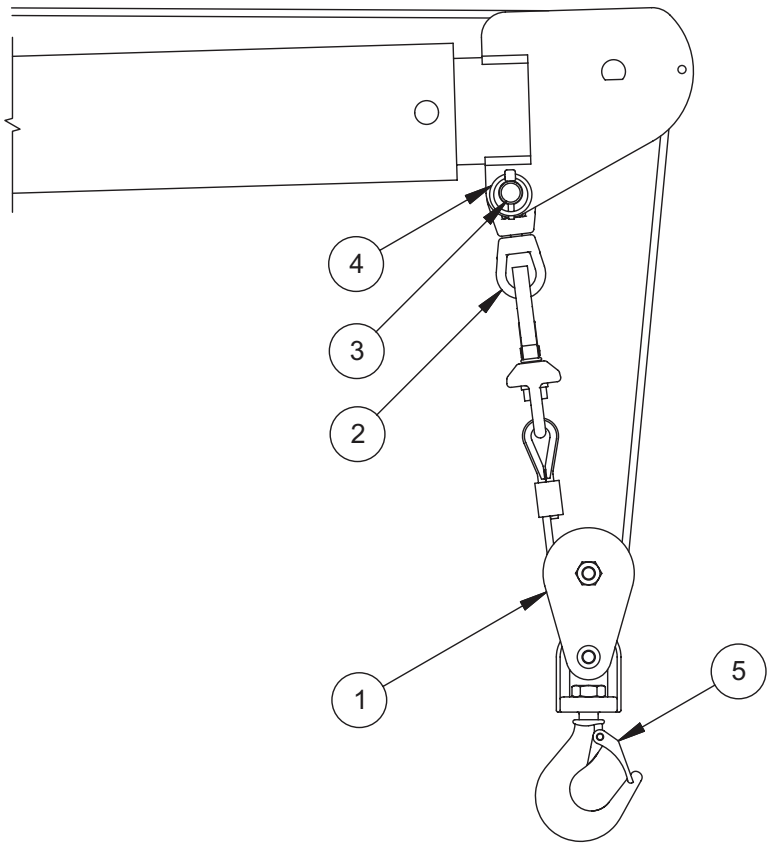
5ABP2

item	part no.	description
1	**A32023**	**WELDMENT BASE 5ABP2**
2	5BC10	BASE COVER W/LANYARD
3	A34728	LABEL WARNING 5AT2 SERIES
4	A14588	LABEL THERN
4	A4379	NUT HEX JAM NYLK .312-18NC SST 18-8
5	A13820	CAPSCR SOKLHD .312-18NC X .500 ZNPL



5ABP1, BABP2
Pedestal Base

Two Part Line Option		Model 5PT10TPL	
item	description	part number	qty.
1	**BLOCK SNATCH WITH HOOK**	**A4779**	**1**
2	SWIVEL REGULAR CHAIN GALV	A7306	1
3	PIN CLEVIS .750 X 1.500 EFF LENGTH SST	A12703	1
4	PIN LYNCH .188 X 1.000 SST	A12416	1
5	HOOK LATCH KIT	A9028	1

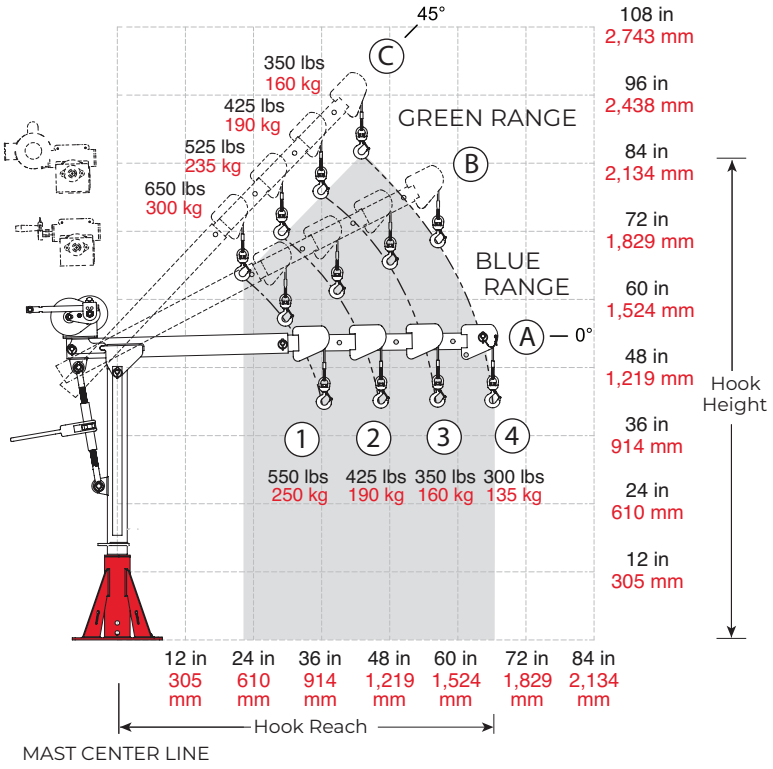


5AT1 Series Lift Below Floor [2]

Lift Below [1] Floor				Wire Rope Diameter		Wire Rope [3] Length		Winch Configurations				
Minimum (C4)		Maximum (C1)						M1	M2	M3	E2	E4
(ft)	(m)	(ft)	(m)	(in)	(mm)	(ft)	(m)					
2	0.6	7	2.1	3/16	5	20	6.0	x	-	x	-	x
10	3.0	15	4.5	3/16	5	28	8.5	x	-	x	-	x
18	5.4	23	7.0	3/16	5	36	10.9	x	-	x	-	x
27	8.2	32	9.7	3/16	5	45	13.7	x	-	x	-	x
42	12.8	47	14.3	3/16	5	60	18.2	x	-	x	-	x
57	17.3	62	18.8	3/16	5	75	22.8	-	-	x	-	x
72	21.9	77	23.4	3/16	5	90	27.4	-	-	x	-	x
2	0.6	7	2.1	1/4	6	20	6.0	-	x	x	x	x
10	3.0	15	4.5	1/4	6	28	8.5	-	x	x	x	x
18	5.4	23	7.0	1/4	6	36	10.9	-	x	x	x	x
27	8.2	32	9.7	1/4	6	45	13.7	-	x	x	x	x
42	12.8	47	14.3	1/4	6	60	18.2	-	x	x	x	x
57	17.3	62	18.8	1/4	6	75	22.8	-	x	-	x	x

Commander 5AT1 Hook Height and Reach [2]

	Boom Position	Load Rating		Hook Reach		Hook Height	
		(lb)	(kg)	(in)	(mm)	(in)	(mm)
BLUE RANGE	A-1	550	250	36	914	42	1066
	A-2	425	190	46	1168	42	1066
	A-3	350	160	56	1422	42	1066
	A-4	300	135	66	1676	42	1066
GREEN RANGE	B-1	650	300	29	736	56	1422
	B-2	525	235	38	965	60	1524
	B-3	425	190	47	1193	65	1651
	B-4	350	160	56	1422	69	1752
	C-1	650	300	22	558	64	1625
	C-2	525	235	29	736	71	1803
	C-3	425	190	36	914	78	1981
	C-4	350	160	43	1092	85	2159



IMPORTANT:
It is the owner or operator's responsibility to determine the suitability of the equipment to its intended use. Study all applicable codes, manuals and regulations. Be sure to read the Owner's Manual supplied with the equipment before operating it.

[1] Lift below floor level varies depending on boom position and base configuration. For longer lifts, including use with two-part lines kits, please contact factory.

[2] Performance Characteristics are for standard products referred to in this manual. Non-standard products may vary from the original design. Contact Thern, Inc. for this information.

[3] Wire rope assemblies include a hook and a swaged ball fitting to work with quick disconnect anchor on the winch. 316SS wire rope is available. Please contact the factory.

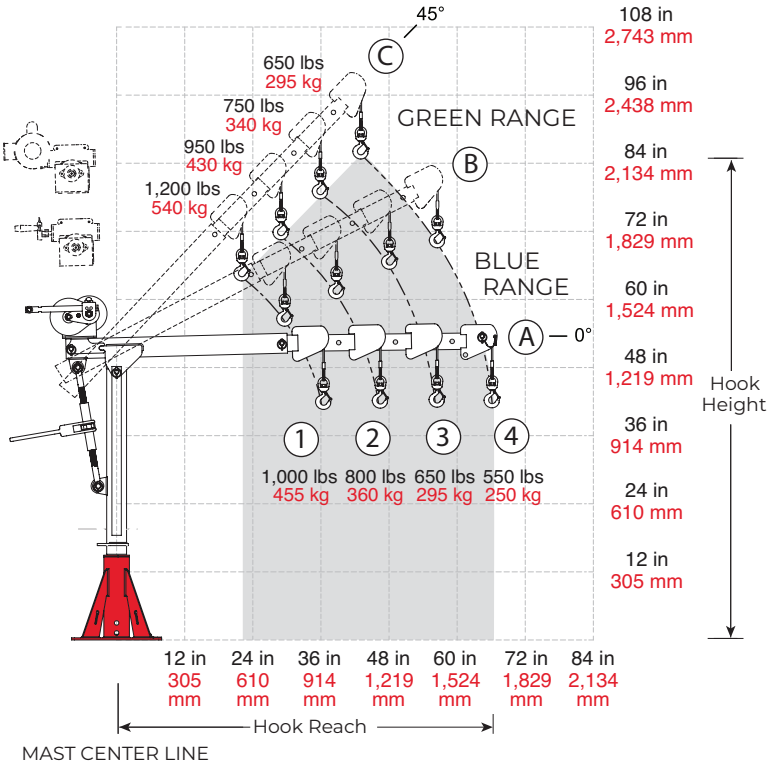
5AT2 Series Lift Below Floor [2]

Lift Below [1] Floor				Wire Rope Diameter		Wire Rope [3] Length		Winch Configurations					
Minimum (C4)		Maximum (C1)						M1	M2	M3	E2	E2T	E4
(ft)	(m)	(ft)	(m)	(in)	(mm)	(ft)	(m)						
2	0.6	7	2.1	3/16	5	20	6.0	x	-	x	-	-	x
10	3.0	15	4.5	3/16	5	28	8.5	x	-	x	-	-	x
18	5.4	23	7.0	3/16	5	36	10.9	x	-	x	-	-	x
27	8.2	32	9.7	3/16	5	45	13.7	x	-	x	-	-	x
42	12.8	47	14.3	3/16	5	60	18.2	x	-	x	-	-	x
57	17.3	62	18.8	3/16	5	75	22.8	-	-	x	-	-	x
72	21.9	77	23.4	3/16	5	90	27.4	-	-	x	-	-	x
2	0.6	7	2.1	1/4	6	20	6.0	-	x	x	x	x	x
10	3.0	15	4.5	1/4	6	28	8.5	-	x	x	x	x	x
18	5.4	23	7.0	1/4	6	36	10.9	-	x	x	x	x	x
27	8.2	32	9.7	1/4	6	45	13.7	-	x	x	x	x	x
42	12.8	47	14.3	1/4	6	60	18.2	-	x	x	x	x	x
57	17.3	62	18.8	1/4	6	75	22.8	-	x	-	x	x	x

Commander 5AT2 Hook Height and Reach[2]

	Boom Position	1st Layer Load Rating*		Hook Reach		Hook Height	
		(lb)	(kg)	(in)	(mm)	(in)	(mm)
BLUE RANGE	A-1	1000	455	36	914	42	1066
	A-2	800	360	46	1168	42	1066
	A-3	650	295	56	1422	42	1066
	A-4	550	250	66	1676	42	1066
GREEN RANGE	B-1	1200	540	29	736	56	1422
	B-2	950	430	38	965	60	1524
	B-3	750	340	47	1193	65	1651
	B-4	650	295	56	1422	69	1752
	C-1	1200	540	22	558	64	1625
	C-2	950	430	29	736	71	1803
	C-3	750	340	36	914	78	1981
	C-4	650	295	43	1092	85	2159

* Crane maximum load rating: load rating may decrease as layers of rope wind into the winch drum. Refer to winch load rating



IMPORTANT:
It is the owner or operator's responsibility to determine the suitability of the equipment to its intended use. Study all applicable codes, manuals and regulations. Be sure to read the Owner's Manual supplied with the equipment before operating it.

[1] Lift below floor level varies depending on boom position and base configuration. For longer lifts, including use with two-part lines kits, please contact factory.

[2] Performance Characteristics are for standard products referred to in this manual. Non-standard products may vary from the original design. Contact Thern, Inc. for this information.

[3] Wire rope assemblies include a hook and a swaged ball fitting to work with quick disconnect anchor on the winch.

NOTES:

NOTES:



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