

MODEL RTC-80130 II
BOOK No. 1143
SERIAL No. _____

CALIFORNIA

Proposition 65 Warning

Diesel engine exhaust and some of its constituents, and certain vehicle components contain or emit chemicals known to the State of California to cause cancer, birth defects, and other reproductive harm.

CRANE SERIAL NUMBER

The crane serial number is on the Crane Rating Manual located inside the operator's cab. The serial number should always be furnished when ordering parts for the crane or when corresponding with the distributor or factory concerning the crane. Providing the serial number is the only way of ensuring the correct parts and/or information can be furnished.

In the event the serial number is not readable, a number is stamped on the top right side of the carrier frame and on the right side of the upper frame just below the boom hoist cylinder lug. This number can then be used to identify the crane.



Crane Serial Number

The crane serial number is written on the Crane Rating Manual located in the lower right interior of the operator's cab. The crane serial number should always be furnished when ordering parts for the crane, or when corresponding with the distributor or factory regarding the crane. The serial number is the only method the distributor or factory has of ensuring that the correct parts will be furnished.

In the event the serial number can not be found on the Crane Rating Manual, a number is stamped on the top right side of the carrier frame and on the right side of the upper frame just below the boom hoist cylinder lug. This number can then be used to identify the crane.

Operator's Manual



WARNING

CONSTRUCTION EQUIPMENT CAN BE DANGEROUS IF IMPROPERLY OPERATED OR MAINTAINED. THIS CRANE SHOULD BE OPERATED AND MAINTAINED ONLY BY TRAINED AND EXPERIENCED PEOPLE WHO HAVE READ, UNDERSTOOD, AND COMPLY WITH THE OPERATOR'S & MAINTENANCE MANUAL.

The productive life of construction equipment depends largely on the care and consideration given to it. This especially holds true for hydraulic cranes. This Operator's & Maintenance Manual (Operator's Manual) was compiled to explain the procedures and adjustments necessary for proper operation of this crane.

A study of this Operator's Manual will acquaint the operator and service personnel with the construction of this crane. It will enable them to identify and remedy most problems that may occur. Any questions pertaining to the care and upkeep of this crane which are not covered in this Operator's Manual should be directed to your nearest distributor.

The Operator's Manual is stored in the pocket on the rear of the operator's seat. The Operator's Manual should remain in the cab and accessible at all times. **If the Operator's Manual becomes lost, damaged, or unreadable, it must be replaced before operating the crane.**

In addition to this Operator's & Maintenance Manual, a Parts Manual, Crane Rating Manual, and Safety Manual are supplied with the crane. Read and understand all safety guidelines before operating the crane. Additional copies of all manuals are available through your distributor.

Operator's Manual

Throughout this Operator's Manual, reference is made to the left, right, front, and rear pertaining to direction and locations. These reference directions are relative to the operator, sitting in the operator's seat with the upper directly over the front of the carrier (single axle to the front), unless otherwise stated.

Danger, warning, and caution captions as well as special notes are used throughout this Operator's Manual and on the crane to emphasize important and critical instructions. Labels, plates, decals, etc. should be periodically inspected and cleaned as necessary to maintain good legibility for safe viewing. **If any instruction, caution, warning, or danger labels, decals, or plates become lost, damaged, or unreadable, they must be replaced.** Information contained on such labels, decals, and plates is important and failure to follow the information they contain could result in an accident. Replacement labels, decals, and plates can be ordered through your distributor. For the purpose of this Operator's Manual, and the labels which are placed on the crane, danger, warning, and caution captions and notes are defined as follows:



DANGER

An operating procedure, practice, etc. which, if not correctly followed, will result in severe personal injury, dismemberment, or loss of life.



WARNING

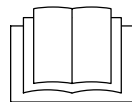
An operating procedure, practice, etc. which, if not correctly followed, may result in personal injury and may result in damage to or destruction of equipment or property.

CAUTION

An operating procedure, practice, etc. which, if not correctly followed, may result in damage to or destruction of equipment or property.

NOTE

Note: An operating procedure, step, condition, etc. which is essential in order for the process to be completed properly.



This symbol may appear in this Operator's Manual and/or on a label on the crane to alert personnel that additional instructions are included in the crane Operator's Manual.

Operator's Manual

General Index

A detailed table of contents for each section of this manual is included at the beginning of each section. The following is a description of each section:

Section 1 – Operating Instructions Pages 1–1 Thru 1–124

Section 1 includes the necessary information for safe, productive crane operation. It includes the nomenclature and operation of all control switches, levers, pedals, and instrumentation of the crane.

Section 2 – Lubrication And Preventive MaintenancePages 2–1 Thru 2–30

Section 2 includes the necessary information for proper lubrication and preventive maintenance for daily operations. It includes the check/change intervals and procedures for maximizing the service life of the crane under normal working conditions. It also includes lubrication types and specifications approved for use in the crane.

Section 3 – Periodic Adjustments Pages 3–1 Thru 3–20

Section 3 includes the adjustments which must be made periodically to keep the crane in proper, safe working order. It includes the procedures and necessary information for adjusting the brakes, mechanical linkages, and hydraulic pressures on the crane.

Section 4 – Attachments Pages 4–1 Thru 4–70

Section 4 includes the use and operation of the crane attachments. It includes the necessary information for installation, erection, storage, and removal of the auxiliary lifting sheave and lattice fly section.

Section 5 – General Information Pages 5–1 Thru 5–22

Section 5 includes general information on the Crane Rating Manual and serial number as well as wire rope specifications, inspection, replacement, connections, and reeving. General specifications for the crane are also included.

Section 6 – Fundamental Terms Pages 6–1 Thru 6–6

Section 6 includes a list of terms which are used to refer to crane functions, assembly, operation, and maintenance. These terms are defined as to how they are used in this Operator's Manual.

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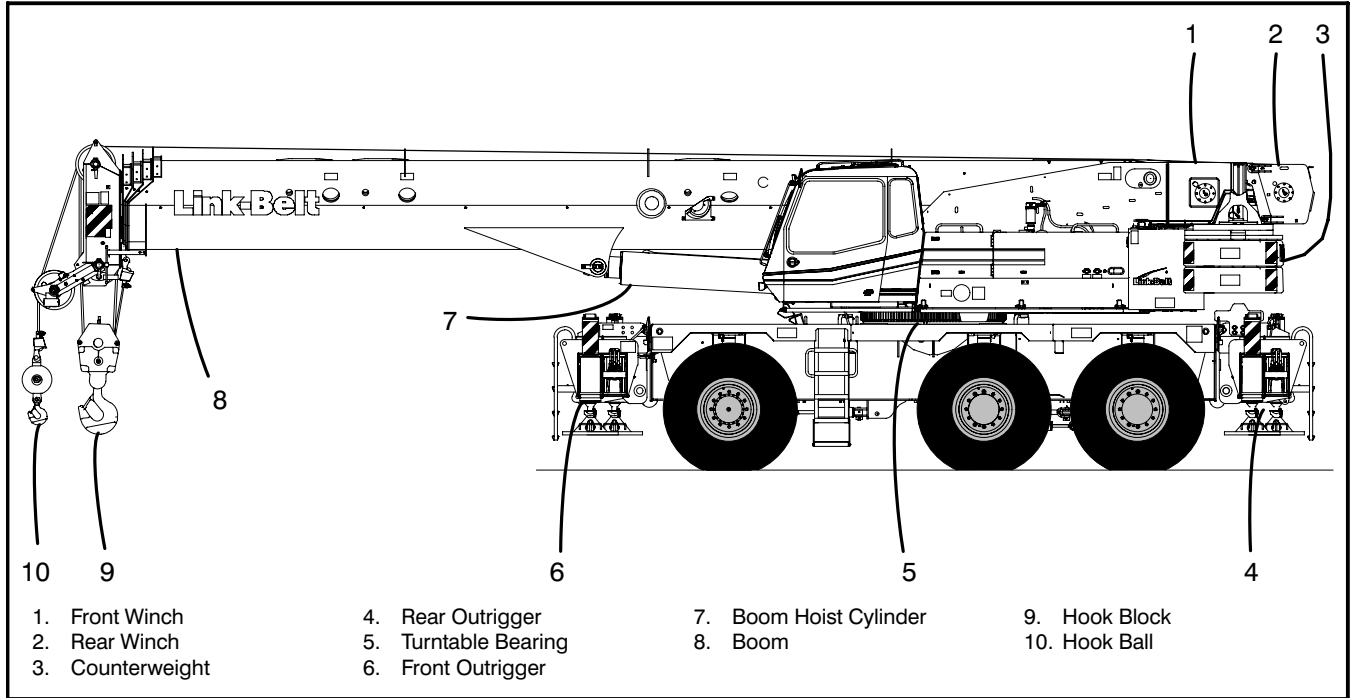


Figure 1-1
Crane Nomenclature

On Delivery

When a new crane is delivered, follow the instructions outlined in the latest version of Technical Bulletin General Series #213.


Operating Safety

Remember SAFETY every day. Someone's LIFE may depend on it, **MAYBE YOUR OWN**.

Safe operations of a hydraulic crane requires a well trained, qualified operator. Crane operation is more involved than it may appear, and operation by a careless or unqualified person can result in a serious accident.

When a hydraulic crane is maintained and used properly it can be a safe, highly productive piece of equipment but, if not used properly, it can be dangerous.

Think Safety – You, the operator, are in charge of an important piece of equipment. It is very important that you know what it can do. It is also important that you know what it should not do. No set of instructions can anticipate all of the situations you will encounter. The rules given here cover the general usage, and some of the more common specific cases. If conditions arise not covered by these rules, consult your nearest distributor. A phone call could save someone's life.



⚠ **WARNING**

Do not lift, suspend, swing or lower loads or attachments over anyone. Do not allow anyone to ride on any part of load or attachment.

SAFETY INSTRUCTIONS

Construction equipment can be dangerous if improperly operated or maintained. This crane should be operated and maintained only by trained and experienced people who have read, understood, and complied with the Operator's Manual.

Before leaving operator's position, lower load to the ground.

Do not use swing brake for swing lock. When facing over rear some functions will be reversed relative to operator.

Raise the crane on outriggers, or block the wheels before working on the crane. Replace all guards or panels before operating the crane.

Do not deface or remove this label from the crane.

Figure 1-2
Read and understand all points covered in this Operator's Manual before operating the crane.

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Figure 1-3
Keep hands and tools clear of moving parts.



Figure 1-4
Diesel exhaust fumes can be harmful.

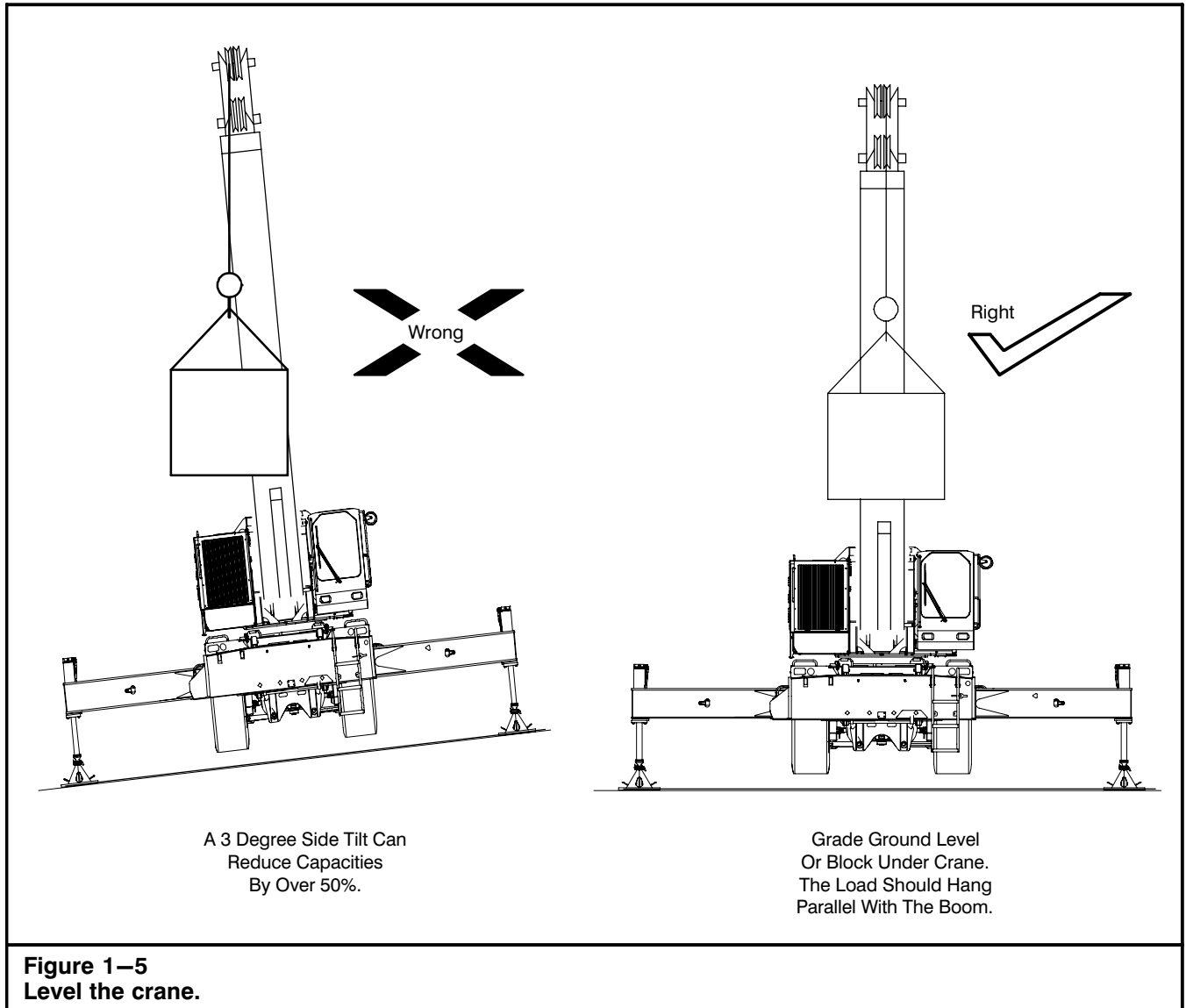
General Safety Rules

The following is a list of safety rules which should be followed during all crane operations.

Operator Awareness

1. Read this Operator's Manual and heed it. This Operator's Manual contains important information.
2. An operator must not eat, read, or otherwise divert his attention while operating a crane. Remember—operating is a full-time job.
3. Don't smoke when fueling, or fuel up near an open flame. Keep the nozzle in contact with the filler neck to prevent static electric sparks. Shutdown the engine when fueling.
4. Start and operate the engine in a well ventilated area. Diesel exhaust fumes can be harmful. If it is necessary to operate in an enclosed area, vent the exhaust to the outside. Properly maintain the exhaust system to its original design.
5. Keep fingers, feet, and clothing away from sheaves, drums, and ropes unless the crane is shutdown and everyone knows what you are doing. Do not place a hand on wire ropes when climbing on the crane. A sudden movement could pull you into the drums or sheaves.
6. Keep your shoes clean. Before entering the operator's cab, wipe clean any mud, gravel, moisture, or grease from your shoes. Slippery shoes could cause momentary loss of control of crucial foot operated controls.
7. Keep all walking surfaces (steps, ladders, platforms, etc.) and non-skid materials on the crane clean. Non-skid materials placed on the crane assist operators and service personnel with safe access/egress to/from the crane and to/from adjustment and inspection areas. Do not allow non-skid materials to become contaminated with mud, snow, ice, oil, paint, wax, etc. Any contamination can cause the non-skid materials to become slick, reducing their effectiveness for safety while walking on the crane. If any non-skid materials become ineffective due to wear, age, or destroyed in any way, they must be replaced.
8. To prevent movement of individual boom sections, shutdown the engine and ensure that the operator has properly vacated the operator's cab before putting hands or tools inside the boom. Unexpected movement of the boom sections could sever fingers, hands, arms, etc.
9. The operator, supervisor, or person in charge of the load must observe the following rules:
 - a. Loads must be well secured before lifting. Be sure that the rigging cannot slip off or pull away from the load, or get out of position on the load. Be sure the load is rigged so it will not turn over.
 - b. Chains and slings must be of adequate size, in good condition, and not twisted around each other.

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- c. The load must not catch on an obstruction when lifting or swinging. Be sure the load, fall lines, or any other parts of the crane do not snag or strike any obstruction.
- d. Do not allow the load to rotate out of control. Personal injury to ground personnel, load damage, crane damage, or damage to anti-two block system may occur.
- e. When hoisting with single part line, especially in long falls applications, the design of wire rope and hookball is crucial to minimize the potential for uncontrolled rope and/or load rotation. Rotation-resistant wire rope is recommended for single part of line applications. See Wire Rope Capacity Chart in the Crane Rating Manual for the specific types of rotation resistant wire rope recommended for your crane.
- f. Avoid sudden starts and stops. Lift carefully, swing gently, brake smoothly, lower and set loads carefully. Jerking the load, swinging and engaging swing brake roughly, and lowering the load rapidly and slamming on brakes, will put shock loadings and possible side loadings on the boom. Unnecessary abuse labels the operator as a beginner. Be a professional.
- g. Do not wrap the winch rope around the load. Do not use discarded, worn, or damaged wire ropes for slings. They may fail and drop the load.
- h. The crane must be level on a firm supporting surface before making a lift. Use the bubble level to determine the crane is level. Check its accuracy frequently with a carpenter's level. Remember, a three degree side tilt can reduce capacities by 50% or more.

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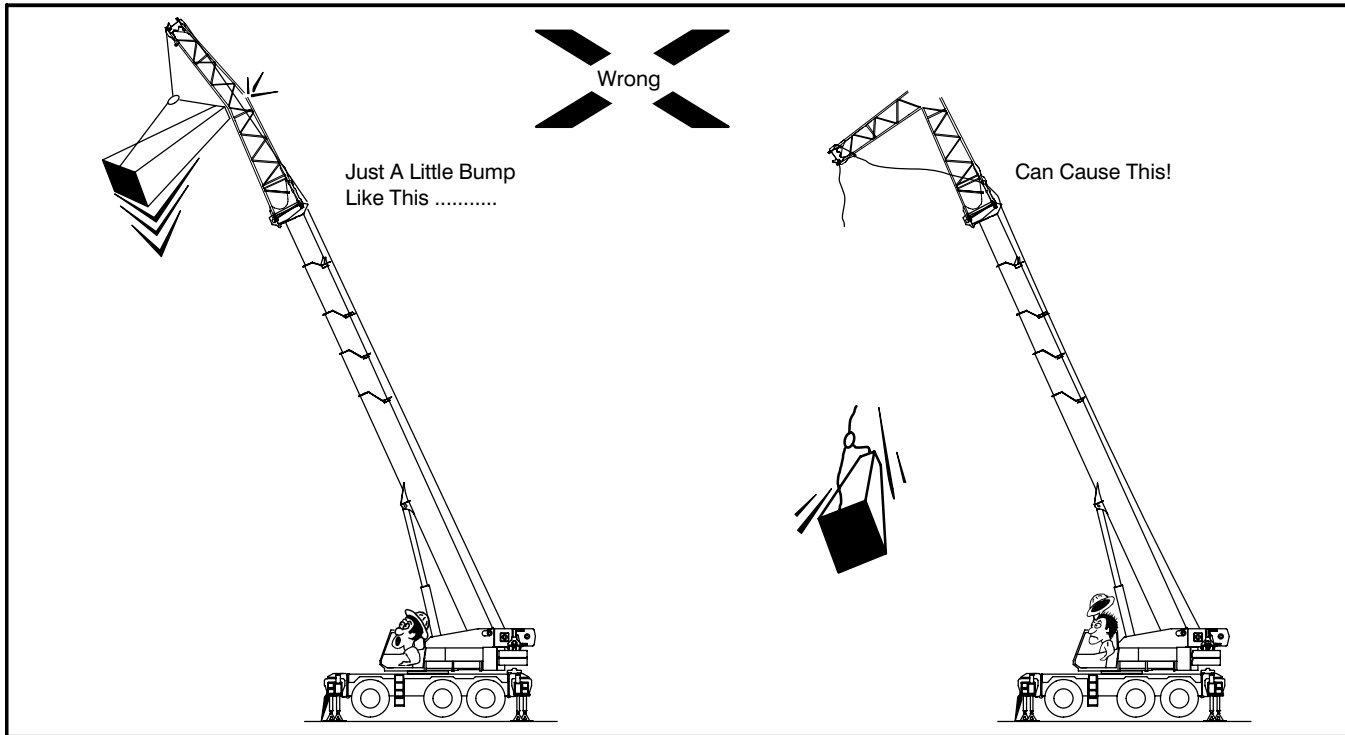


Figure 1-6
Do not let the load hit the boom or fly.

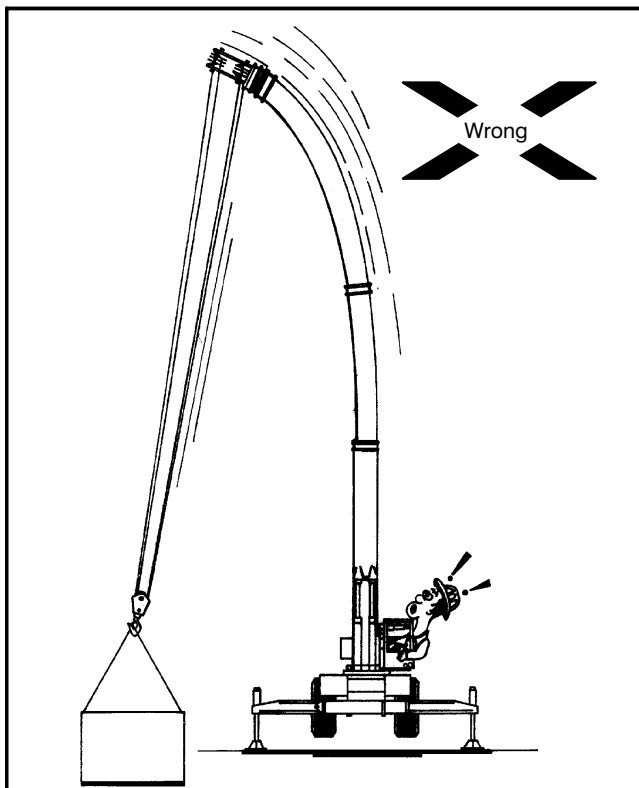


Figure 1-7
Do not use the boom to pull sideways.

10. Don't let the load or bucket hit the boom or fly. Don't let the boom or attachment rest on, or hit, a building or any other object. A dent or other damage could result, which will weaken the boom or attachment. If the damage is major, the attachment could collapse. If a lattice or diagonal bracing member on the fly is broken, cracked, or bent, contact your local distributor for repair procedures. If the boom or fly is struck, or damaged by anything, STOP. The loading on a boom or attachments increases as they are lowered, therefore their suspension systems could collapse during lowering. Use another crane to lower a damaged boom or attachment.
11. Don't pull sideways on the boom or fly, not even a little. Lift straight up on every load. Moving trucks, rail cars, barges, or anything else pulling sideways on the winch rope could buckle the boom or fly. It could also damage the swing mechanism. Pulling sideways on a boom or fly can overturn the crane.
12. Do not "two block" (pull the hook block, hook ball, or load into the head machinery) as this can cause wire rope and sheave breakage resulting in an accident.
13. After slack winch rope operation, make sure the winch rope is properly seated in sheaves and on

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drums before continuing to operate. Use a stick or mallet to set the winch rope, not your hands.

14. Do not lower the load beyond the point where less than three full wraps of winch rope are left on the drum. This condition could occur when lowering a load beyond ground level. If all the winch rope runs off the drum, the load will jerk which could break the winch rope.
15. Make sure there is a safety latch on the hook, and that it works properly. Without a latch, it is possible for slings or chains to come off the hook, allowing the load to fall.
16. Don't alter any part of the crane. Additions to or changes in any part of the equipment can create loadings for which the crane was not designed. Such changes may seriously affect the usable capacities and make all the capacities in the Crane Rating Manual invalid. Alterations can dangerously overload or weaken critical parts and may cause major failures.
17. Do not exceed the rated capacities of the crane under any circumstances. While a crane has more stability when lifting over a corner (as compared to straight over the side) the crane capacity is not increased. Anytime the load exceeds the rated capacities listed in the Crane Rating Manual, the crane is overloaded. Overloads can damage the crane and such damage could cause major failures and serious accidents.
18. When operating on outriggers, all beams must be equally extended; all fully retracted, all intermediate extended, or all fully extended. All jacks must be extended so all tires are clear of the ground, and the crane must be level. Be sure that pontoons are set on a firm surface, adequate to support the blocking, pontoon, crane and load without settling, slipping, or collapsing. Blocking or matting under pontoons must form a smooth level surface under the entire pontoon. Do not block under outrigger beams inside the pontoons as this reduces stability. Blocking must be under pontoons only. Remember—there are tremendous loadings on pontoons and blocking — the weight of the entire crane plus any load.

When blocking or matting under pontoons, ensure that each pontoon is supported fully — no unsupported pontoon area is permissible. Ensure pontoons are on a smooth surface. Rough surface, rocks, etc., under pontoons will cause unequal loadings, and can puncture them, causing them to collapse.

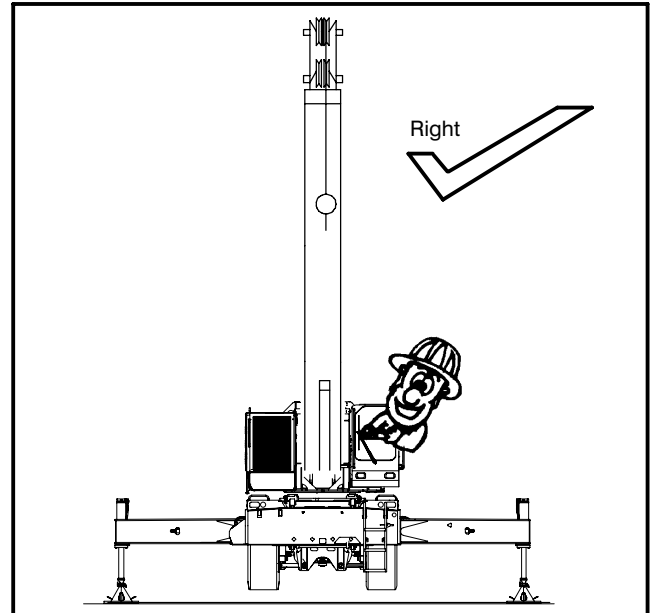


Figure 1—8
Crane level, all beams extended equally (all fully extended, intermediate extended, or fully retracted) and tires clear of the ground.

Capacities are based on all outriggers being equally extended: all fully retracted, all intermediate extended, or all fully extended. Working on outriggers that are not equally extended will reduce capacities and crane stability considerably and could cause an accident. Do not make any lifts while on outriggers without the outrigger beams equally extended.

19. Before attempting to move the carrier, ensure there is enough oil pressure to operate the brakes. Always check the brake operation before traveling the crane.
20. Brake firmly in one application. Avoid fanning the brakes. This could exhaust oil pressure so fast that the pump may not supply enough oil.
21. Do not coast downhill with the transmission shifter in neutral. It makes control of the crane more difficult and dangerous.
22. Position the transmission shifter to neutral before operating the crane. When parking, shift to neutral and engage the park brake. Block wheels if not on a level surface.

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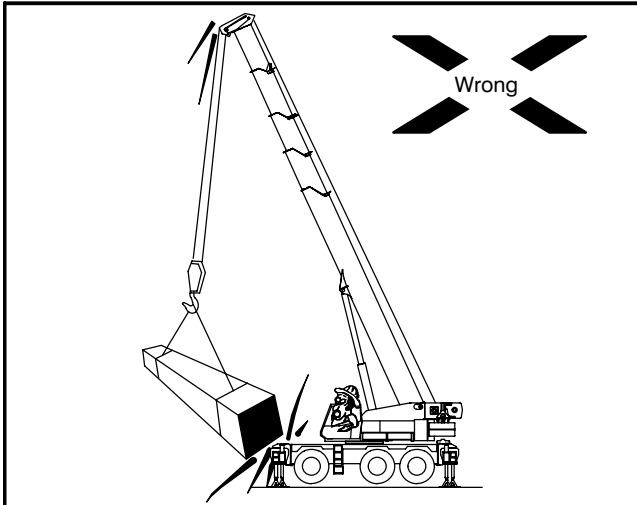


Figure 1-9
Watch that carrier!

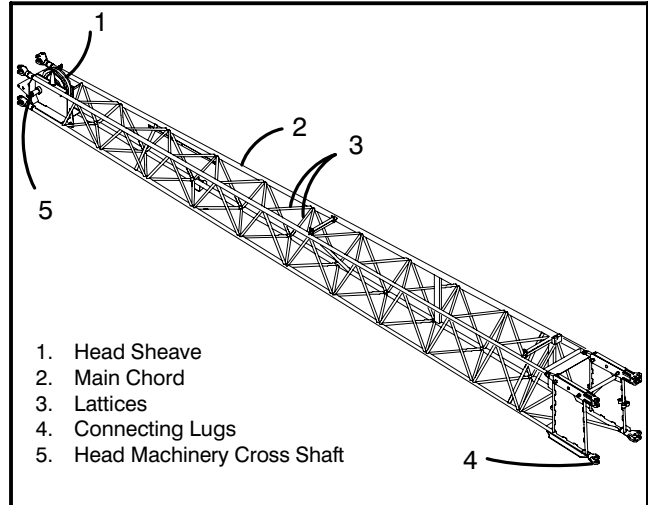
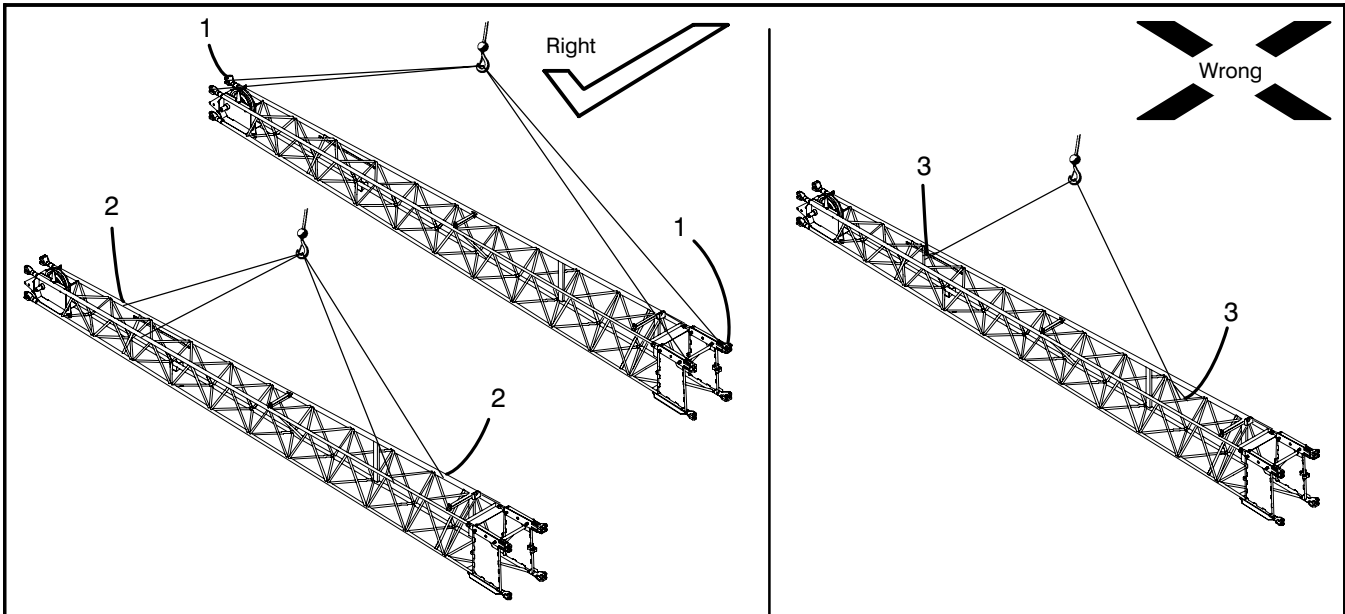


Figure 1-10
Fly Section Nomenclature



1. Use The Connecting Lugs And/Or Head Machinery Cross Shafts As Lifting Points.
2. Use The Main Chords As Lifting Points With Nylon Straps Only.

3. Do Not Attach Slings To Lattices, They Will Bend.

Figure 1-11
Handling The Fly Section(s).

23. When operating with the boom at a high angle, use care not to let the load hit the carrier.
24. Use care handling the fly when loading, transporting, and unloading. Damage that occurs during these operations can go undetected and could result in failure of these components, once subjected to loading. Do not attach slings to the lattices when lifting the fly, as they will bend. Use the connecting lugs and/or head machinery cross shaft as the lifting points. It is also permissible to attach nylon straps around all four main chords.

25. Block under and between the fly section when loading it on a transport vehicle. When securing the fly to a transport vehicle, it is best to use synthetic webs or slings. If using wire rope slings, pad the fly to protect it from damage. Do not overtighten the tie downs or the fly may be damaged. Do not use chain tie downs, as they may dent and damage the fly section(s).

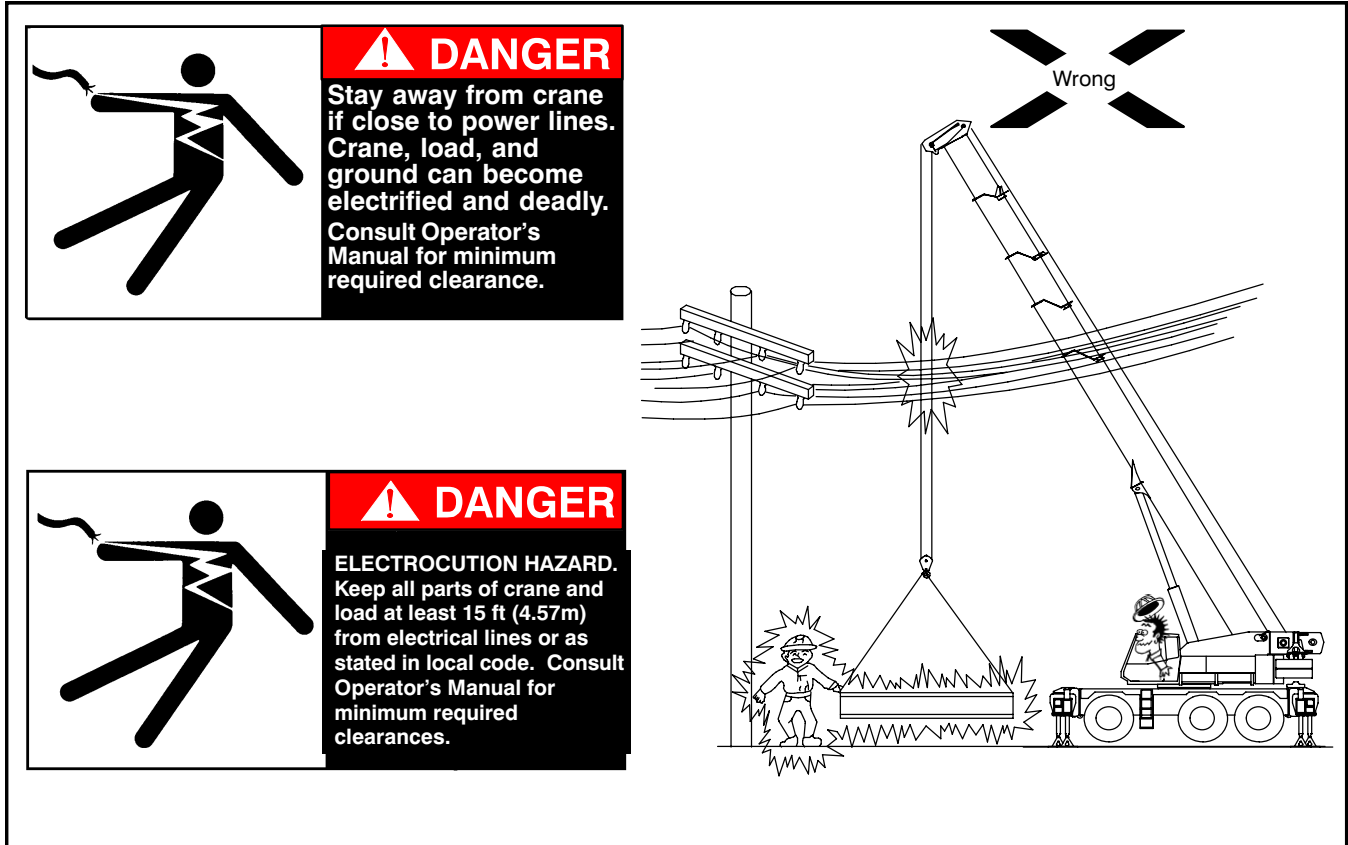


Figure 1–12
Stay Away From Power Lines.

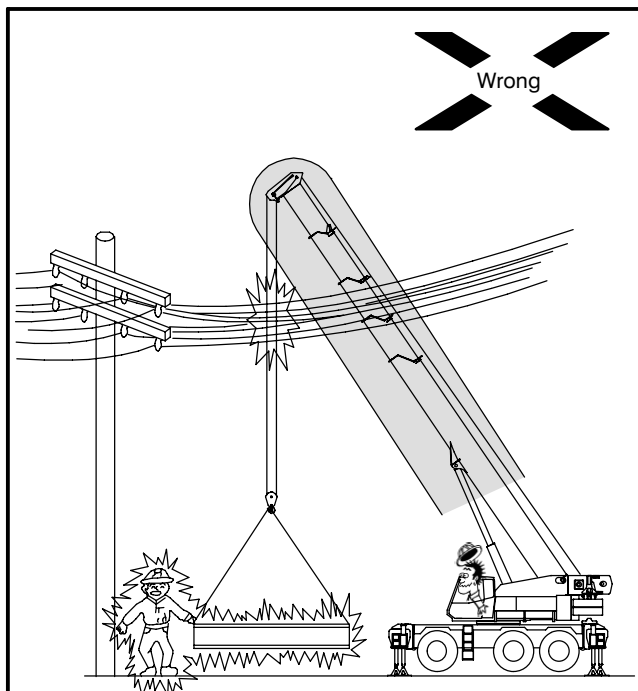
26. Thoroughly inspect all the elements of the fly section before installing it on the crane. Check each main chord, picture frame, diagonal, lattice, and connecting lug for bends, dents, and cracked or corroded welds. Picture frames must be square. Do not use any fly section that is even slightly damaged. Consult your local distributor for the proper repair procedures.

Electrical Dangers

1. All Electrical Power Lines Are Dangerous. Contact with them, whether insulated or not, can cause death or injury. When operating near power lines, the best rule is to have the power company turn off the power and ground the lines. However, in some cases, the operator may be unable to have the power turned off. Follow these rules whether the power is turned off or not.
 - a. Be alert. You are working around conditions which can cause death.
 - b. Keep all parts of the crane, fall lines, hook block, hook ball, and load, at least 15 ft (4.57m) away from the electrical lines or as specified in the “High Voltage Power Line Clearance Chart” or other distance specified by applicable codes. Slow down crane operation.

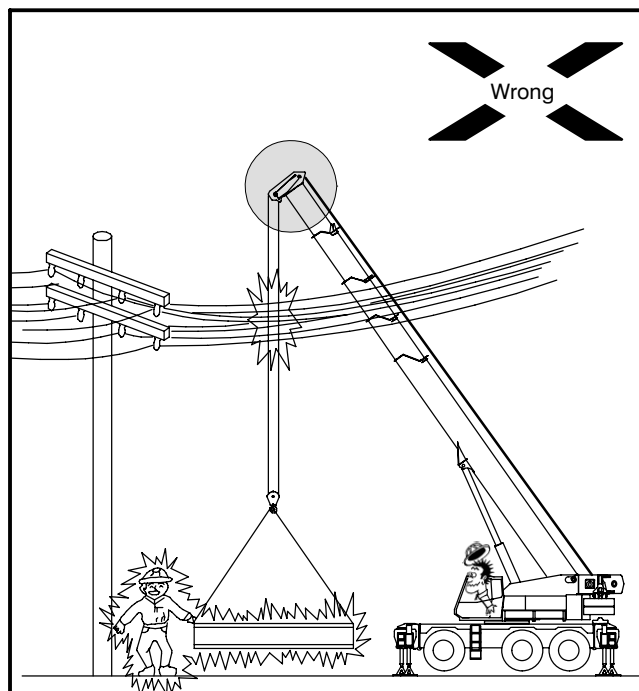
Minimum Required Clearance For Normal Voltage In Operation Near High Voltage Power Lines And Operation In Transit With No Load And Boom Or Mast Lowered.	
Normal Voltage, kV (Phase to Phase)	Minimum Required Clearance, ft (m) See Note 1
Operation Near High Voltage Power Lines	
To 200	15 (4.57)
Over 200 To 350	20 (6.10)
Over 350 To 500	25 (7.62)
Over 500 To 750	35 (10.67)
Over 750 To 1000	45 (13.72)
Operation in Transit with no Load and Boom or Mast Lowered	
To 345	15 (4.57)
Over 345 To 750	16 (4.87)
Over 750 To 1000	20 (6.10)
Note 1: Environmental conditions such as fog, smoke, or precipitation may require increased clearances.	
High Voltage Power Line Clearance Chart	

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Shaded area shows "sensitivity zone" with full boom length sensor used, and adjusted for 15 ft. (4.57m) clearance. Contact can be made outside this zone by the fall lines, winch rope, cab, etc. In such cases, the alarm will not sound, but the crane will be electrified and deadly.

Figure 1–13
Crane equipped with proximity warning device on the entire boom.



Shaded area shows "sensitivity zone" with the probe near the boom peak and adjusted for 15 ft. (4.57m) clearance. Contact can be made outside this zone by the fall lines, winch rope, cab, etc. In such cases, the alarm will not sound, but the crane will be electrified and deadly.

Figure 1–14
Crane equipped with proximity warning device on boom tip.

- c. Assume that every line is "Hot".
- d. Appoint a reliable person equipped with a loud signal (whistle or horn) to warn the operator when any part of the crane is working around a power line. This person should have no other duties while the crane is working around a power line.
- e. Warn all personnel of the potential danger. Don't allow unnecessary persons in the area. Don't allow anyone to lean against or touch the crane. Don't allow ground workers to hold load lines, or rigging gear unless absolutely necessary. In these cases use dry plastic ropes as tether lines. Make certain everyone stays at least 15 ft (4.57m) away from the load, or as specified in the "High Voltage Power Line Clearance Chart" or such distance as required by applicable codes.
- f. The use of boom point guards, proximity devices, insulated hooks, or swing limit stops do not assure safety. Even if codes or regulations require the use of such devices, you must follow rules listed here. If you do not follow them, the result could be serious injury or death.

- g. Grounding the crane can increase the danger. Poor grounding such as a pipe driven into the ground, will give little or no protection. In addition, a grounded crane may strike an arc so heavy that a live line may be burned down. This could cause the crane and the area around it to be electrified.
 - h. When operating near radio or T.V. transmitting stations, high voltage can be induced in metal parts of the crane, or in the load. This can occur even if the crane is some distance from the transmitter or antenna. Painful, dangerous shocks could occur. Consult trained electronic personnel before operating the crane to determine how to avoid electrical hazards.
2. **What do you do if a power line is touched by a crane or load?**
- a. Remain calm – think – a mistake can kill someone.
 - b. Warn all personnel to keep clear.
 - c. If crane will still operate, try to move it away from contact. You, the operator are reasonably safe in the cab unless the crane is on fire or an arc is cutting through the cab.