

MODEL HTC-86100
BOOK No. 1185
SERIAL No.

CALIFORNIA

Proposition 65 Warning

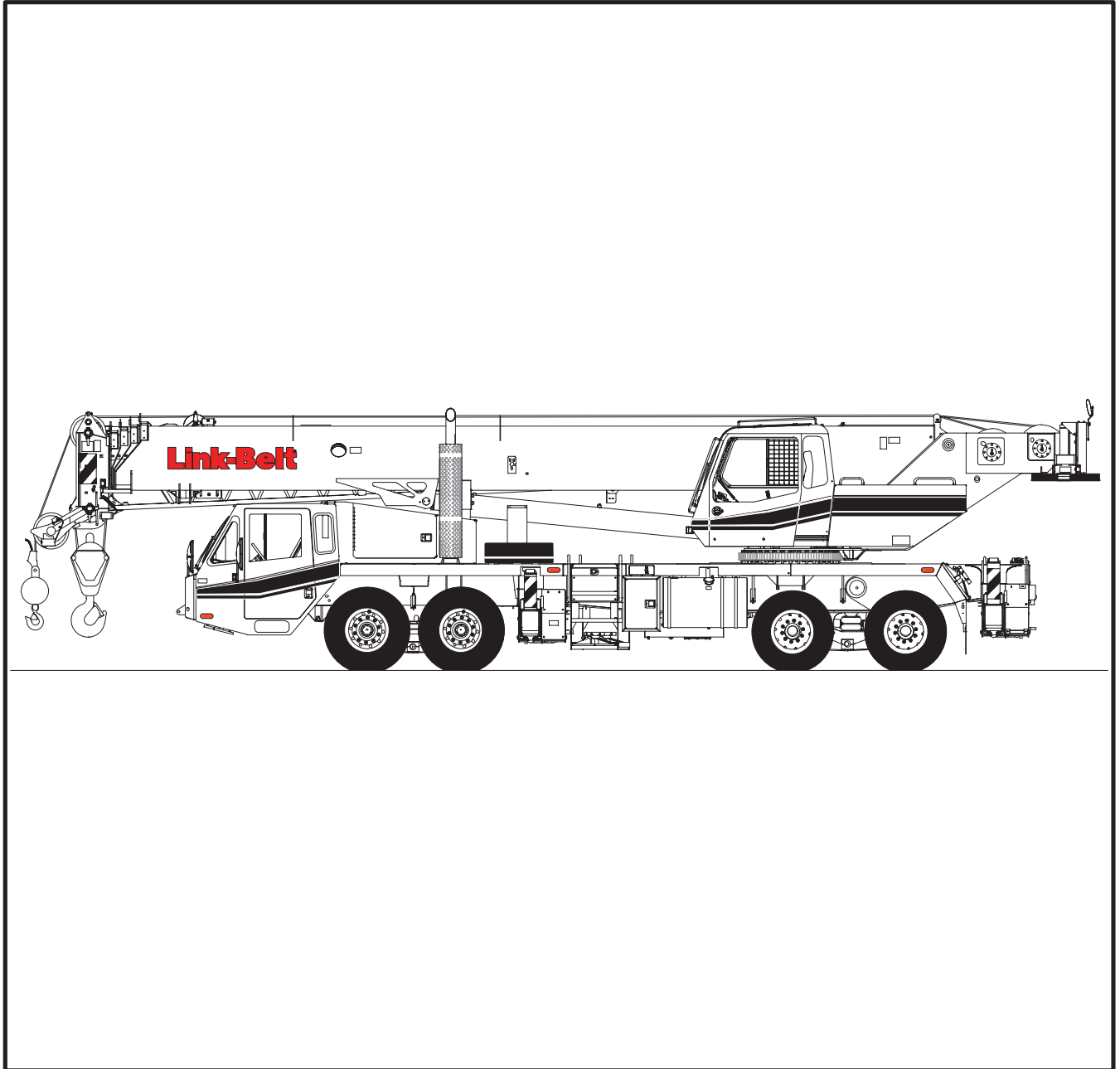
Diesel engine exhaust and some of its constituents, and certain vehicle components contain or emit chemicals known to the State of California to cause cancer, birth defects, and other reproductive harm.

CRANE SERIAL NUMBER

The crane serial number is written on the Crane Rating Manual in the upper operator's cab. The serial number and a Vehicle Identification Number (VIN) is also stamped on a plate on the front center of the carrier cab dash. The crane serial number should always be furnished when ordering parts for the crane, or when corresponding with the Link-Belt Distributor or factory regarding the crane. The serial number is the only method of ensuring that the correct parts and/or information can be furnished.

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

Operator's Manual



Crane Serial Number

The crane serial number is written on the Crane Rating Manual in the lower right interior of the upper operator's cab. The serial number and a Vehicle Identification Number (VIN) is also stamped on a plate on the front center of the carrier cab dash. The crane serial number should always be furnished when ordering parts for the crane, or when corresponding with the Link-Belt Distributor or factory regarding the crane. The serial number

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In the event the serial number cannot be found, a number is stamped on top of the bumper on the right side of the carrier and on the right side of the upper frame just above 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 THIS 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 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 Link-Belt Distributor.

An Operator's Manual is stored in the pocket on the rear of each of the carrier and upper operator's seat. The Operator's Manuals should remain in the cabs and accessible at all times. **If an 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 Link-Belt 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 of the carrier cab with the upper directly over the front of the carrier, 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 Link-Belt 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

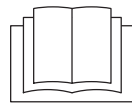
An operating procedure, practice, etc. which, if not correctly followed, may result in personal injury.

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 or on a label on the crane to alert personnel that additional instructions are included in this crane Operator's Manual.

Operator's Manual

General Index

A detailed Table Of Contents for each Section of this Operator's 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 1–176

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 Maintenance Pages 2–1 Thru 2–38

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 3–24

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 4–24

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 offset lattice fly sections.

Section 5 – General Information Pages 5–1 Thru 5–26

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 6–4

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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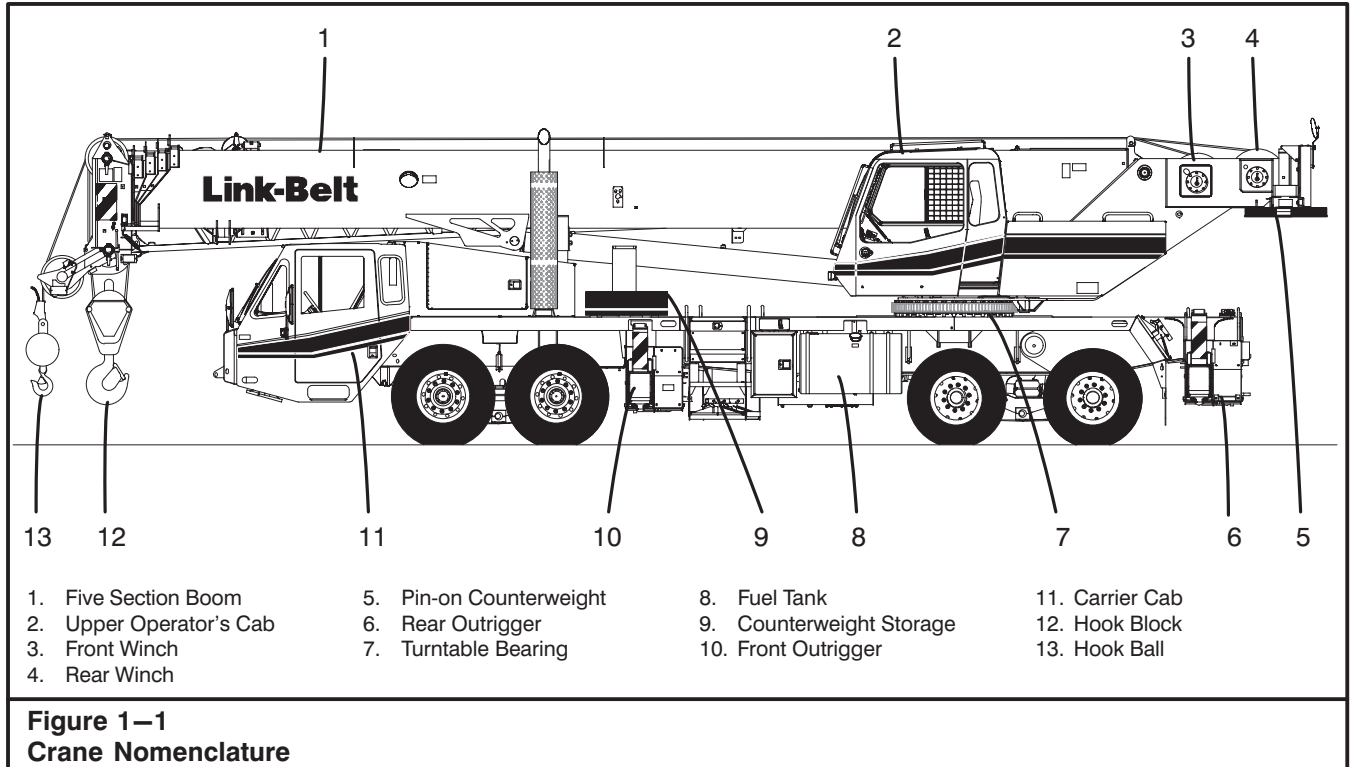
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On Delivery

When a new crane is delivered, follow the instructions outlined in the latest version of Technical Bulletin General Series #213. A copy of this bulletin can be obtained from your Link-Belt Distributor.


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, contact your Link-Belt 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 this 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.

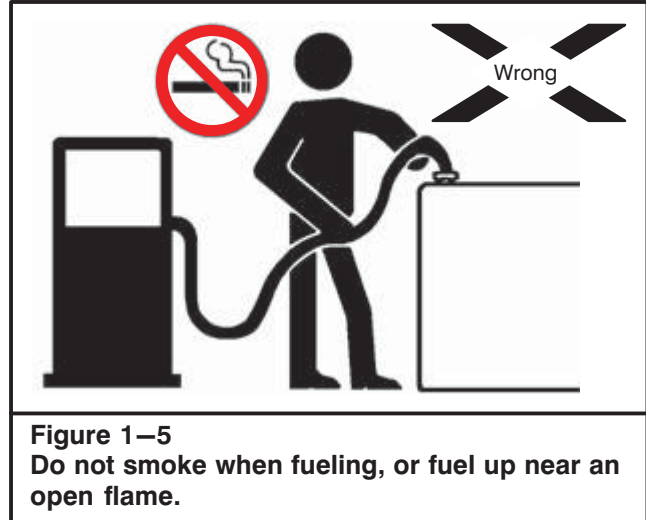
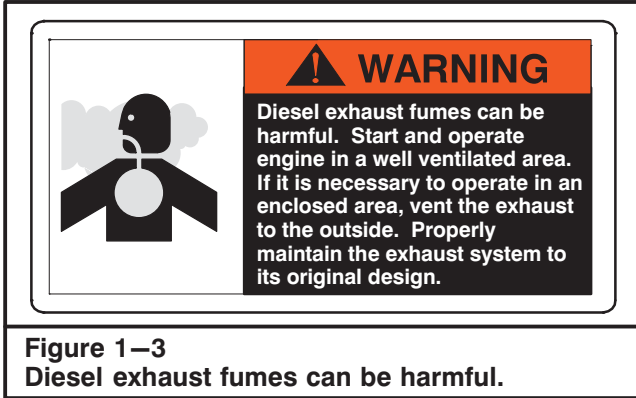
Raise the crane on outriggers, or block the wheels before working on the crane. Replace all guards or panels before operating the crane.

With the boom removed from upper, do not swing over side on tires or on retracted outriggers.

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.

Operator's Manual



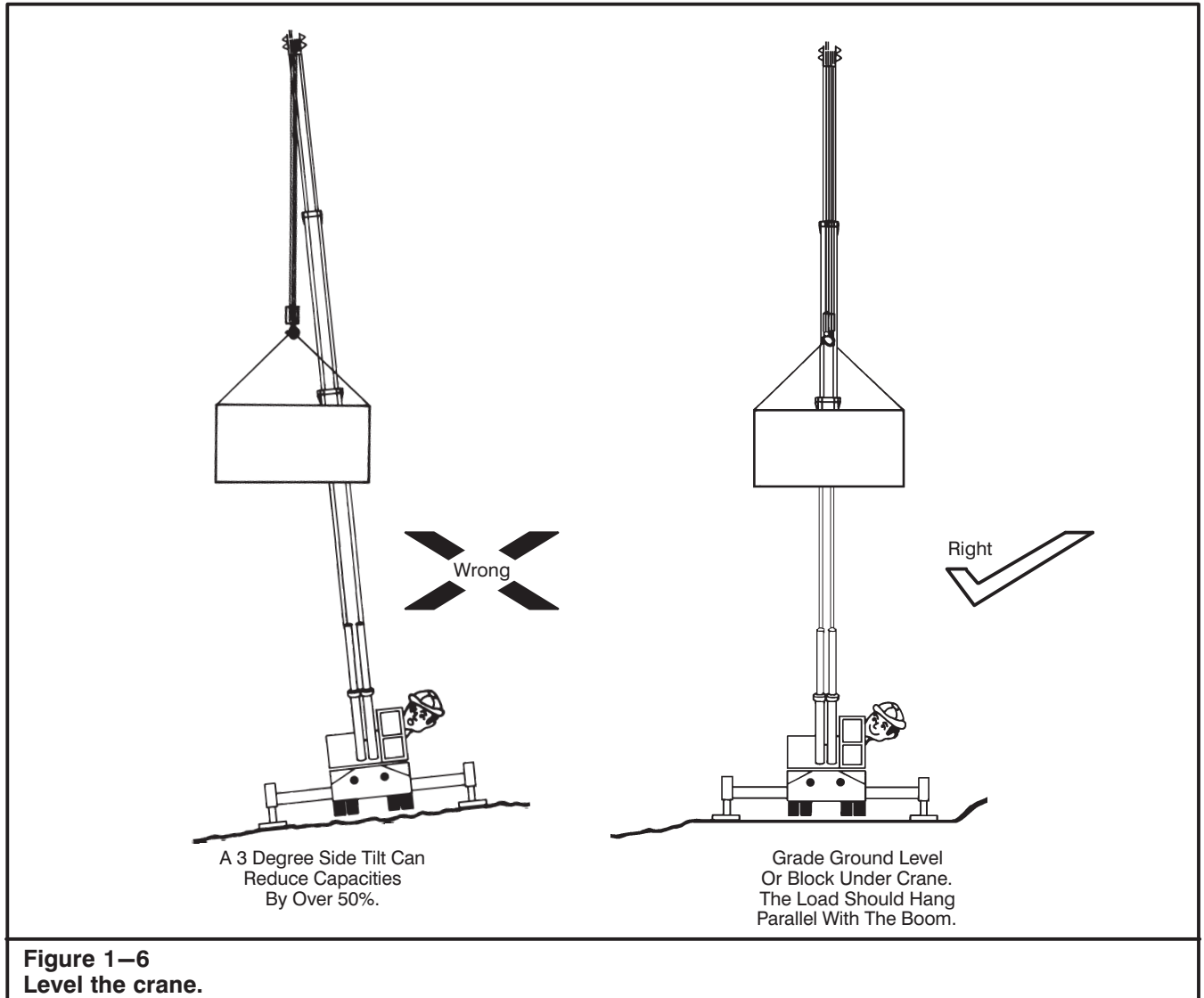
General Safety Rules

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

Operator Awareness

1. Read and understand this Operator's Manual, all Safety Manuals, and the Crane Rating Manual and heed them. These manuals contain 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 your shoes clean. Before entering the carrier or upper operator's cab, clean any mud, gravel, snow, ice, moisture, or grease from your shoes. Slippery shoes could cause momentary loss of control of crucial foot operated controls.
6. Keep all walking surfaces (steps, ladders, platforms, etc.) and non-skid materials on the crane clean. Non-skid materials are placed on the crane to 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.
7. Keep fingers, feet, and clothing away from sheaves, drums, and wire 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 them into the drums or sheaves.
8. To prevent movement of the individual boom sections, shutdown the engine and ensure that the operator has vacated the upper operator's cab before putting your hands or tools inside the boom. Unexpected movement of the boom section 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.
 - 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.

Operator's Manual



- 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 of line, especially in long falls applications, the design of wire rope and hook ball is crucial to minimize the potential for uncontrolled wire 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 the 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 wire rope around the load. Do not use discarded, worn, or damaged wire ropes for slings. They may break and drop the load.
- h. The crane must be level before making a lift. Use the bubble level, to level the crane. 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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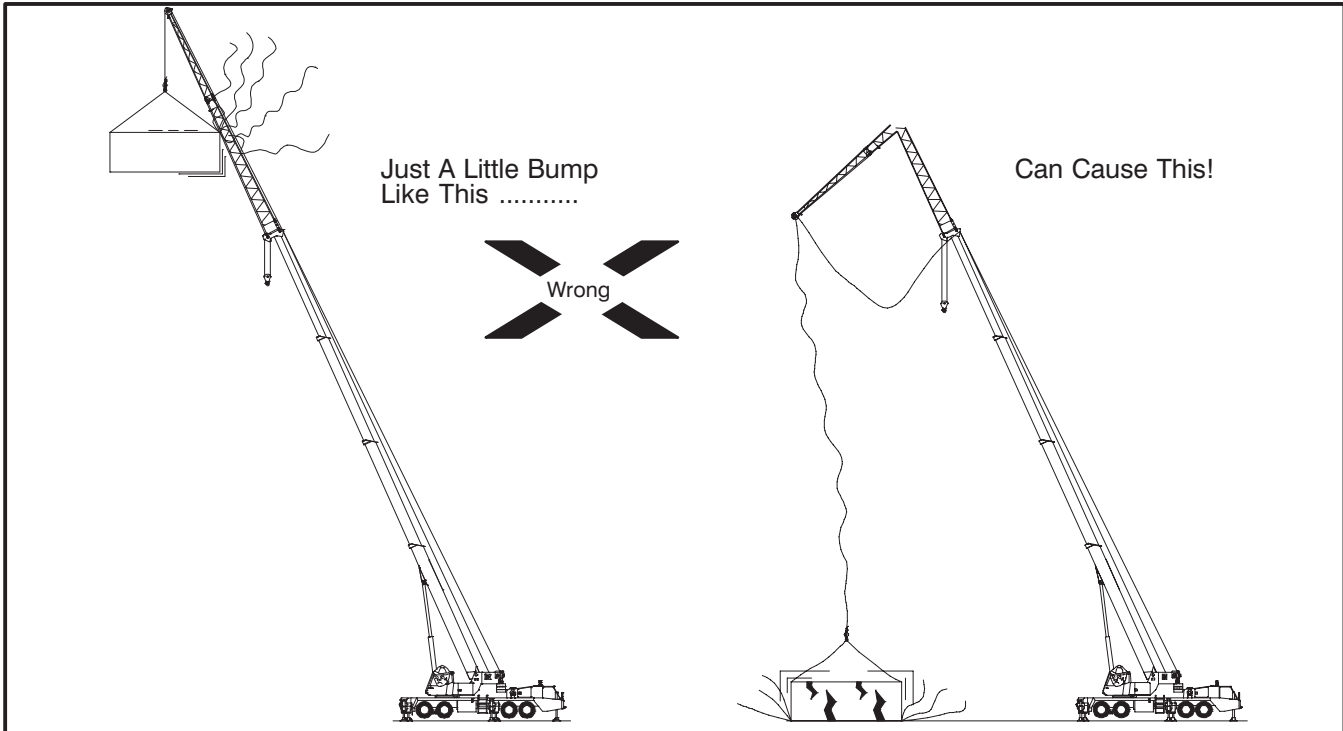


Figure 1-7
Do not let the load hit the boom or fly.

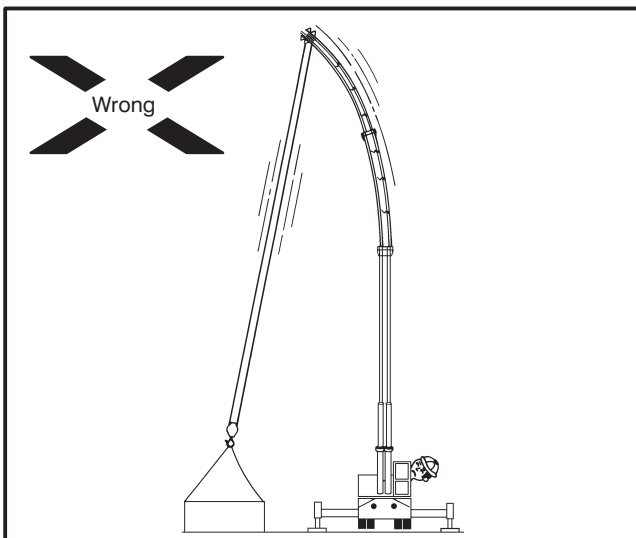


Figure 1-8
Do not use the boom to pull sideways.

10. Don't let the load or bucket hit the boom or fly. Don't let the boom or attachment rest, 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 Link-Belt 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, etc. pulling sideways on the winch wire 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" (pulling the hook block, hook ball, or load into the head machinery) as this can cause winch wire rope and sheave breakage resulting in an accident.
13. After slack winch wire rope operation, make sure the winch wire rope is properly seated in sheaves and on drums before continuing to operate. Use a stick or mallet to set the winch wire rope, not your hands.
14. Do not lower the load beyond the point where less than three full wraps of winch wire rope are left on the drum. This condition could occur when lowering a load beyond ground level. If all the winch wire rope runs off the drum, the load will jerk which could break the winch wire rope.
15. Ensure 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.

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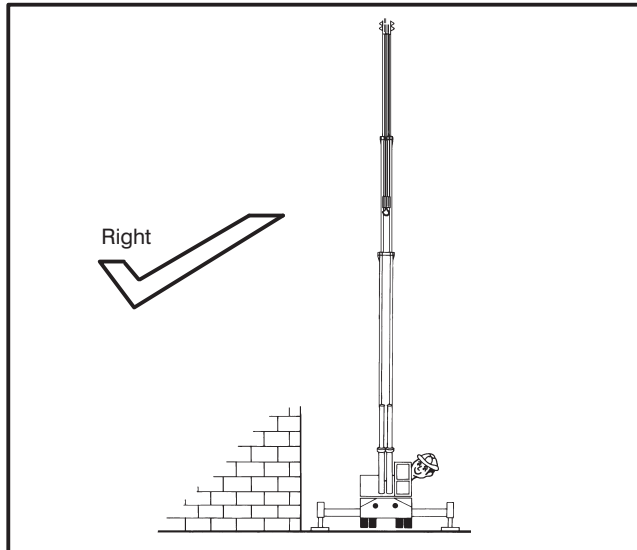


Figure 1-9
Crane level, all beams extended equally (all fully extended, all intermediately extended, or fully retracted), and tires clear of the ground.

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 have a major affect on the usable capacities and make the entire Crane Rating Manual invalid. Such changes 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 in the Crane Rating Manual, the crane is overloaded. Overloads can damage the crane and such damage could cause failure and accidents.
18. When operating on outriggers, all beams must be extended equally; all fully extended, all intermediately extended, or all fully retracted. All jacks must be extended so all tires are clear of the ground, and the crane must be level. Be sure that blocking or 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.

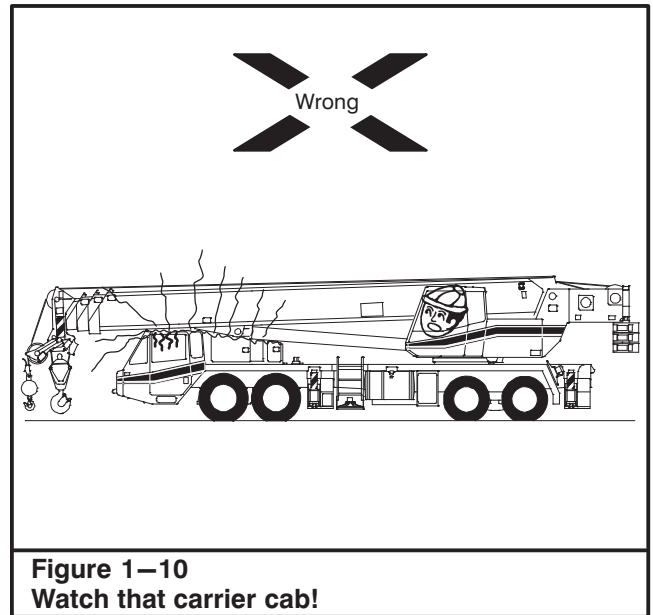


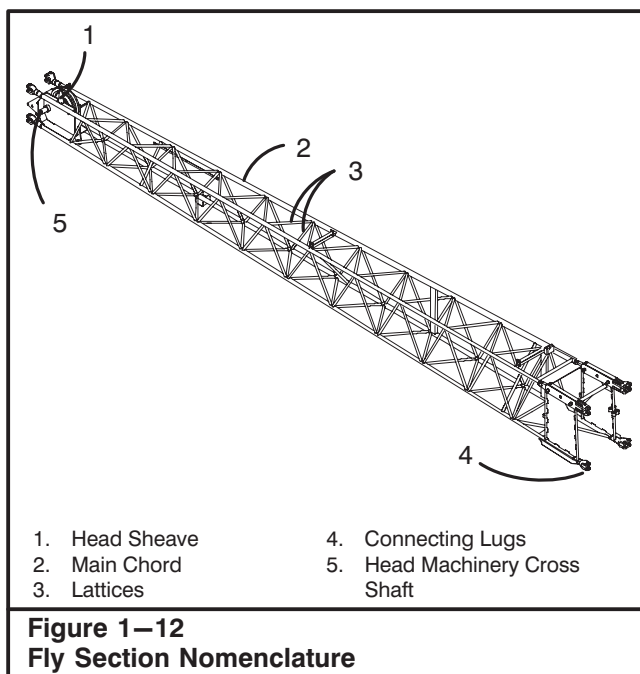
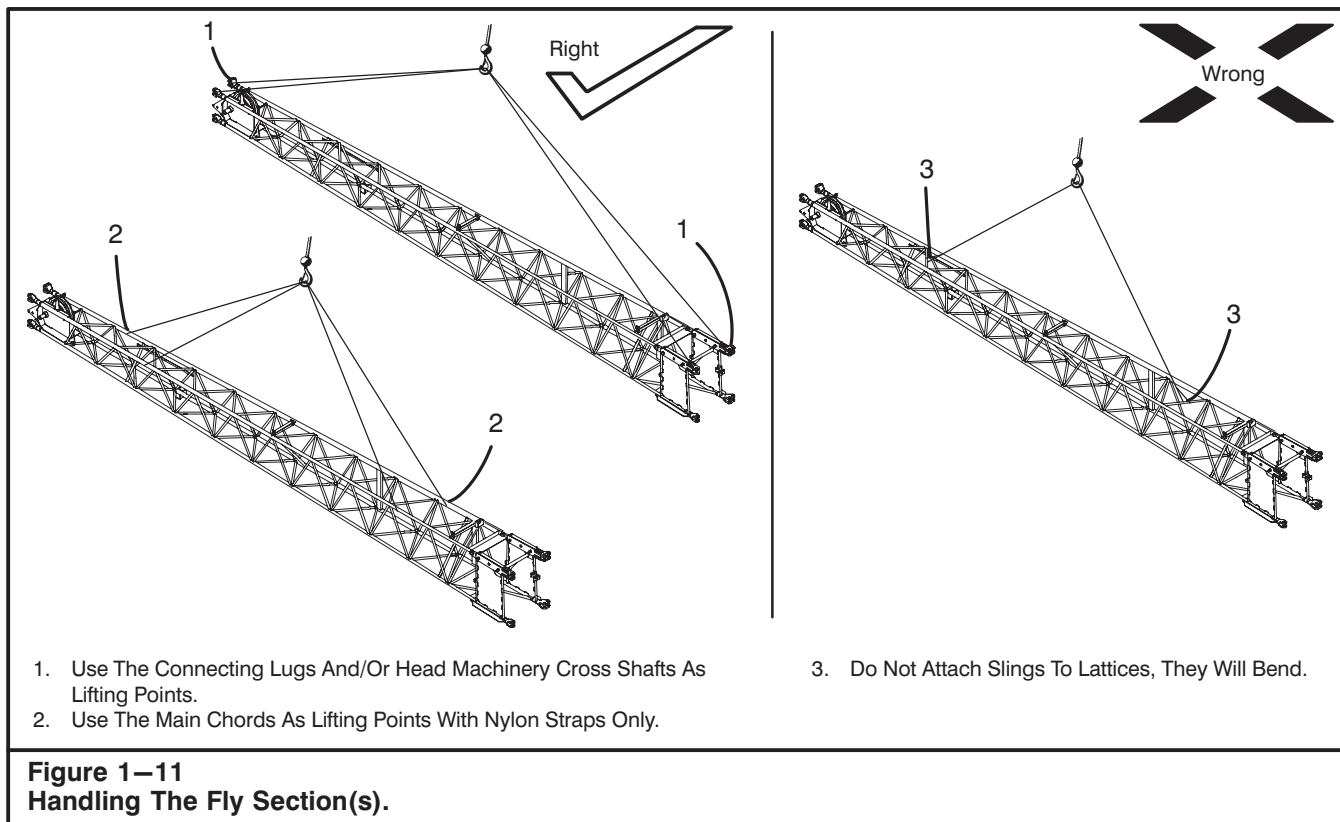
Figure 1-10
Watch that carrier cab!

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

Capacities are based on outriggers equally extended; all fully extended, all intermediately extended, or all fully retracted. 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, make sure there is enough air 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 air pressure so fast that the compressor may not supply enough air.
21. Do not coast downhill with the transmission in neutral. It makes control of the crane more difficult and dangerous.
22. Shift the transmission to neutral before operating the crane. Crane operation can cause movement which can damage the transmission or drive line. When parking, shift to neutral and engage the park brake. Block wheels if on an unlevel surface.
23. When operating over the front, use care not to hit the carrier cab or front of the crane with the load or boom.

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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 the attachment, once subjected to loading. Do not attach slings to the lattices, when lifting the fly, as they will bend. It is recommended that the connecting lugs and/or head machinery cross shaft be used as the lifting points. However, it is permissible to attach nylon straps around all four main chords.
25. Block under and between the fly when loading them 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 ties downs, as they may dent and damage the sections.
26. Thoroughly inspect all the elements of each fly 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 that is even slightly damaged. Contact your Link-Belt Distributor for the proper repair procedures.