

OWNER'S MANUAL

This manual has been prepared for and is considered part of -

1100 Series Telescoping Crane

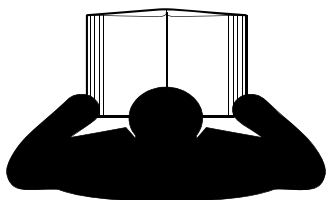
This Manual is divided into the following sections:

INTRODUCTION AND TABLE OF CONTENTS
SAFETY INFORMATION
OPERATING CONTROLS AND PROCEDURES
MAINTENANCE INSPECTION
LUBRICATION
SERVICE
SPECIFICATIONS
INSTALLATION CONFIGURATIONS
INSTALLATION PROCEDURES
OPTIONS

NOTICE

The crane serial number is the only method your distributor or the factory has of providing you with correct parts and service information.

The crane serial number is identified on the builder's decal attached to the crane frame. ***Always furnish crane serial number*** when ordering parts or communicating service problems with your distributor or the factory.



WARNING

To prevent death or serious injury:

- Avoid unsafe operation and maintenance.
- This crane must be operated and maintained by trained and experienced personnel. National Crane is not responsible for qualifying these personnel.
- Do not operate or work on this crane without first reading and understanding Operator's Manual and Load Chart supplied with crane.
- Store Operator's Manual in holder provided on crane.

SAFE OPERATION

OPERATION - SETTING UP AT THE JOB SITE

One of the most important prerequisites to proper set up on the job site is to thoroughly plan the lift before positioning the vehicle. The following items must be considered:

1. Vehicle should be positioned in an area free from overhead obstructions to allow performance of the entire task without repositioning. Check the capacity chart for areas of reduced capacity and position vehicle accordingly.
2. The vehicle should be positioned so that it is impossible for any portion of the equipment to come within the minimum required safe distance to any energized power line. You must maintain a clearance of at least 10 feet between any part of the crane, loadline or load and any electrical line or apparatus carrying up to 50,000 volts. One foot additional clearance is required for every additional 30,000 volts or less. Ground markers must be set in place 10 feet out from power lines so they can be used as a reference to assist in making sure the crane does not encroach upon the 10' minimum clearance. Remember power lines and loadlines deflect in winds and additional clearances must be allowed. If you do not know the voltage of the electrical line and therefore the minimum required safe distance, you shall request the electrical utility to advise you of the line's voltage. Death or serious injury will result from contact or arcing due to inadequate clearance to anyone working around the crane. All overhead wires should be considered energized until the electrical utility authorities verify that they are not and the wires are visibly grounded.



DANGER

ELECTROCUTION HAZARD

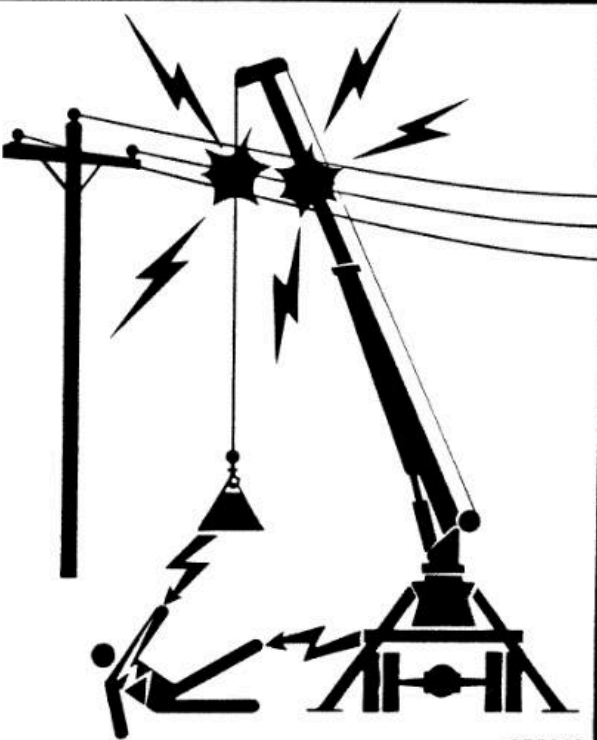
THIS CRANE IS NOT INSULATED
DEATH OR SERIOUS INJURY
WILL RESULT FROM CONTACT
OR INADEQUATE CLEARANCE

Maintain safe clearances from electrical lines. Allow for boom, electrical line, and load line swaying.

This crane does not provide protection from contact with or proximity to an electrically charged conductor.

Maintain a clearance of at least 10 feet between any part of the crane, loadline or load and any electrical line carrying up to 50,000 volts.

One foot additional clearance is required for every additional 30,000 volts or less.



875887

ANTI-TWO BLOCK SYSTEM

DESCRIPTION/OPERATION

With untrained or inexperienced or distracted operators, two blocking the winch cable is a very real possibility. When the winch cable and end attachments contact the underside of the sheave case, whether by winching up or extending the boom without paying out the winch cable, the winch cable can be damaged by crimping or over tensioning.

The anti-two-block system provided on your National Crane can help prevent cable damage by sensing the position of the winch cable end attachments with respect to the sheave case and disabling the functions that can cause a two block condition.

The anti-two-block system consists of normally open, work port unloader valves in the main and winch control valves. When the cartridge solenoid is energized, the crane functions normally, when de-energized, the oil to the boom extend, boom down, and winch up crane functions are diverted to tank. These solenoids are controlled by a limit switch, which is attached to the boom or jib sheave case. This switch is held in the closed position by a chain suspended weight. The weight, which is looped around the winch cable, causes the contacts to remain closed until the winch cable end attachments contact the weight and release the ten-

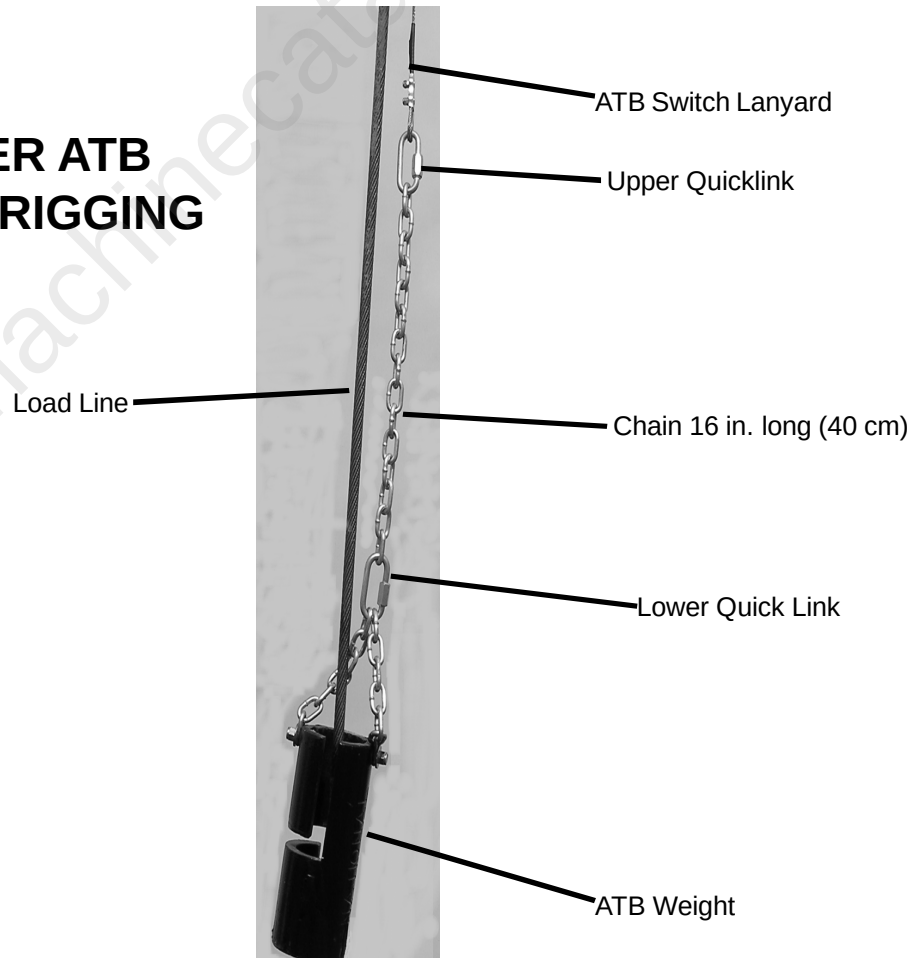
sion on the switch. At this point the contacts in the switch open, breaking electrical continuity through the circuit provided by the internal anti-two-block cord routed with a reel or through the boom. When this continuity is broken, the unloader cartridges de-energize and divert the function oil to tank.

An audible and visual warning of the two block condition is provided by the display console of the LMI system. See LMI operators handbook for additional information.

If the machine is equipped with an optional Hydraulic Capacity Alert (HCA) system, an indicator light provided on the console will alert the operator when a two block condition is detected.

Normal functioning is restored by winching down (or retracting boom) until the weight is once again suspended freely. Occasionally if the winch up and boom extend functions are operated at maximum speed in the dump mode, the back pressure induced in the circuit will cause the winch up or boom extend functions to creep slightly (with no load on the hook). Such a condition is not cause for alarm, as the back pressure is not of sufficient magnitude to damage the cable or end connections.

PROPER ATB WEIGHT RIGGING



TROUBLE DIAGNOSIS

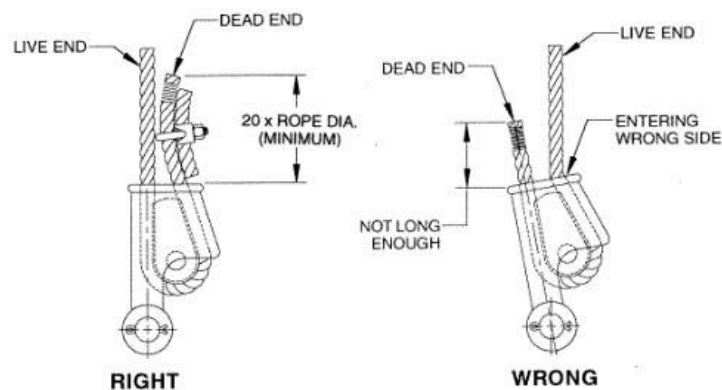
ART010

The following chart lists malfunctions which may occur during equipment operation, followed immediately by the possible cause and possible solution. These are not all inclusive but are designed to help isolate the problem and should be checked before calling the factory Service Department.

CONDITION	POSSIBLE CAUSE	POSSIBLE SOLUTION
No response to control	• Load too heavy. • PTO not engaged. • Low hydraulic fluid supply. • Suction line blocked. • Broken hydraulic pressure line. • Defective hydraulic pump. • Incorrect relief valve setting. • Relief valve sticking.	• Check Capacity Chart. • Engage PTO. • Check and fill as required. • Drain tank and hose and remove blockage. • Replace as required. • See Pump Service Manual. • Adjust relief. • Clean relief.
Poor hydraulic system performance	• Pump not operating at proper speed. • Low hydraulic fluid supply. • Relief valve sticking. • Relief setting too low. • Worn pump, motor or cylinder. • Plugged filter. • Valve spools not fully open. • Boom holding valves out of adjustment. • Oil temperature too high. • Hydraulic oil too cold or dirty. • Line restricted. • Internal control valve crack. • Load too heavy.	• Check PTO ratio, pump size and engine speed for proper oil flow. • Check and fill as required. • Remove and clean. • Readjust to proper setting. • Replace bad part. • Change filter. • Adjust linkage so valve has full throw. • Adjust or clean as required. • Reduce engine speed, slow cycle time to cool oil or add oil cooler option. • Warm oil or use less viscous oil. • Check lines; clean and repair as necessary. • Replace valve. • Check Capacity Chart and reduce load.
Swing moves erratic or loosely	• Loose turntable bearing. • Loose swing gearbox mounting bolts. • Worn gears or bearings. • Operator control of lever too erratic. • Motor counterbalance valves dirty or not set properly. • Brake not holding properly. • Brake releasing at wrong time or erratically.	• Torque bearing mounting bolts. • Tighten bolts. • Replace worn parts or adjust gearbox spacing. • Operate controls smoothly. • Clean or replace counterbalance valves not set at 600 psi. • Check for no pressure in brake pilot line when turn is in neutral. • Replace worn brake parts or shim brake to proper torque. • Bleed air from brake with bleed screw on side of brake.

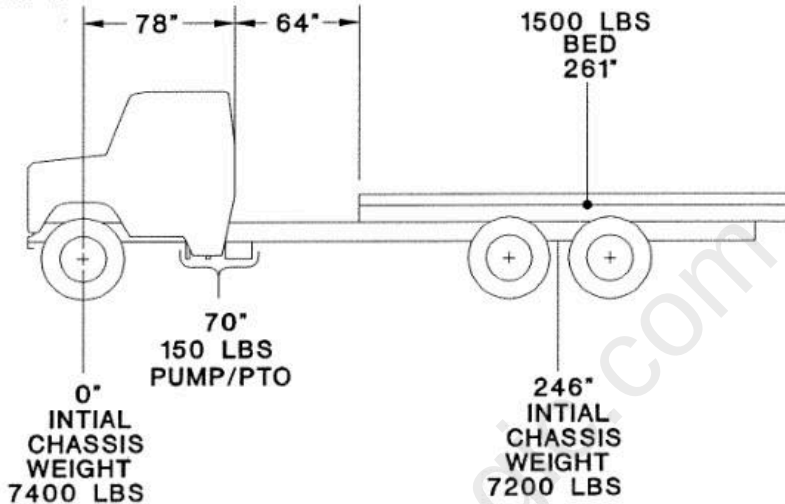
Pin lift cylinder barrel in position in the turret. Pin boom pivot to turret. (It will be necessary to use an overhead hoist for lifting boom and lift cylinder.) Connect the 1/2" R2 hoses to the lift cylinder. Support outer end of boom securely and use the overhead hoist to position the lift cylinder with the control valve to pin the cylinder to the boom ears. Torque pin keeper capscrews to proper torque. Grease the three pin joints with gun grease and operate the boom and lift cylinder through several complete cycles before placing machine in operation.

12. Route the 1/2" R2 telescope hoses over the turret cross tube and to the back side of the boom. Connect to the telescope cylinder connections at the back of the boom.
13. Install side and top boom covers to the back of the boom.
14. Route the 3/4" R9 winch hoses and the 1/4" R2 winch drain hose over the turret cross tube, then through the holes in the side of the winch mount and boom covers and connect to the winch fittings.
15. Unspool approximately 25 feet of cable and route the cable through the boom cable guides from the front of the boom to the winch.
16. Install one end of the loadline cable into the winch drum using the wedge socket provided. See "Winch Service Manual" in the Service and Maintenance Section for proper placement of the wedge socket with 9/16 diameter wire rope.
17. Remove the cable keeper thumbscrew from the sheave case and lay the cable over the top sheave. Replace the top cable keeper thumbscrew.
18. Unspool the remainder of the cable out from the back of the truck being sure the cable is straight and without kinks. Attach downhaul weight, wedge socket, hook and cable clamp to the end of cable as shown in Loadline Section. Torque cable clamp (clip) to 95 ft-lbs. This torque must be rechecked after initial operation of the crane. Be sure cable clamp is attached to the free end of the cable only. If equipped with optional 2/3 part block, omit downhaul weight and assemble as shown in Loadline Section. Special care should be taken to reeve the cable through the wedge socket as shown below.



EXAMPLE

A typical truck is shown below with all the permanently attached equipment also shown. A Series 1195 crane will be mounted on this truck and a 180° stability working area around the rear of the truck is desired as in "Configuration I".



$$\frac{(\text{WEIGHT}) \times (\text{DISTANCE FROM FRONT AXLE})}{\text{WHEEL BASE}} = \text{REAR AXLE WEIGHT} \quad (\text{WEIGHT}) - (\text{REAR AXLE WEIGHT}) = \text{FRONT AXLE WEIGHT}$$

	REAR	FRONT
1. Initial Front Axle Weight	7400 (0)/246 = 0 lb.	7400 - 0 = 7400 lbs.
2. Pump & PTO	150(70)/246 = 40 lbs.	150 - 40 = 110 lbs.
3. Initial Rear Axle Weight	7200(246)/246 = 7200 lbs.	7200 - 7200 = 0 lbs.
4. Bed Weight	1500(261)/246 = 1600 lbs.	1500 - 1600 = -100 lbs.
5. Add Front and Rear Axle Weights	8840 lbs.	7410 lbs.
6. Compare with weight requirements for this type of mount from Mounting Configuration I	9700	7900 lbs.
DIFFERENCE	-860 lbs	-490 lbs.

Full Version Available

National Crane 1100 Boom Truck Operator Manual

National Crane 1100 boom truck operator manual covering controls, safe operation, outrigger setup and load charts. Instant PDF download.

VIEW THE FULL MANUAL

<https://machinecatalogic.com/national-crane-1100-boom-truck-operator-manual/>

Book No: CTRL032-05 · File Pages: 383 · File Count: 2 · File Language: English