

OWNER'S MANUAL

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

1400 Series Telescoping Crane

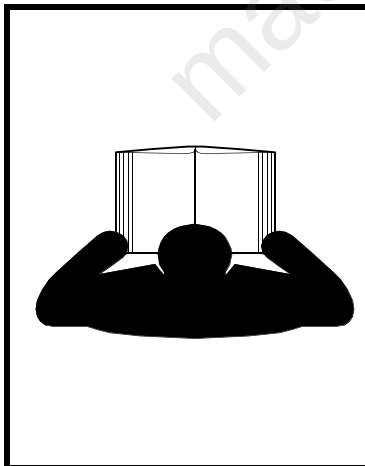
This Manual is divided into the following sections:

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

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:

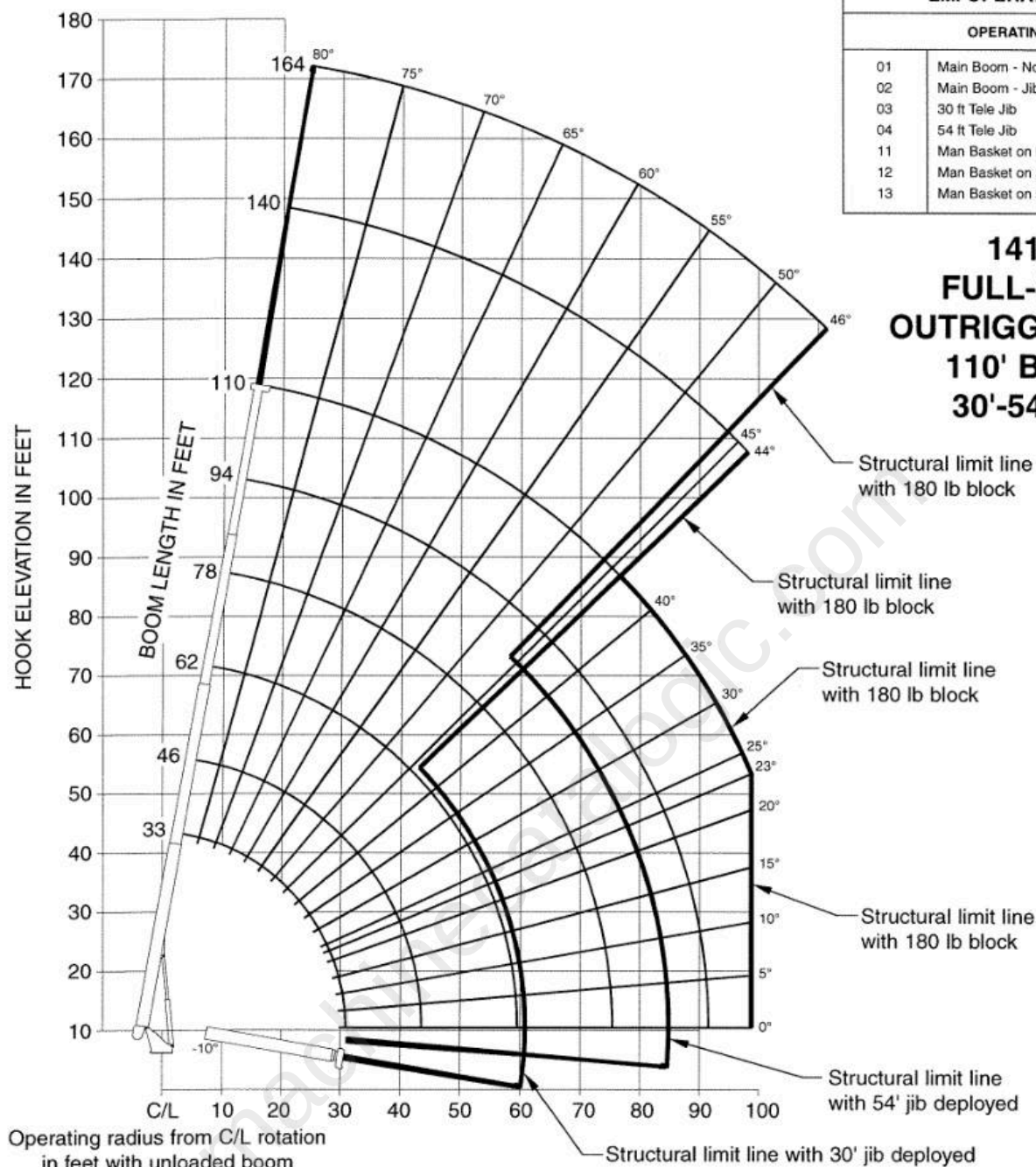
- Avoid unsafe operation and maintenance.
- This crane must be operated and maintained by trained and experienced personnel. National Crane is not responsible for qualifying these personnel.
- Do not operate or work on this crane without first reading and understanding Operator's Manual and Load Chart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

LMI OPERATING CODE

OPERATING MODE

01	Main Boom - No jib Stowed
02	Main Boom - Jib Stowed
03	30 ft Tele Jib
04	54 ft Tele Jib
11	Man Basket on Main Boom
12	Man Basket on 30 ft Tele Jib
13	Man Basket on 54 ft Tele Jib

14110 FULL-SPAN OUTRIGGER 24'6" 110' BOOM 30'-54' JIB



SET-UP

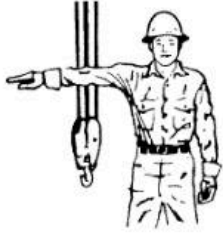
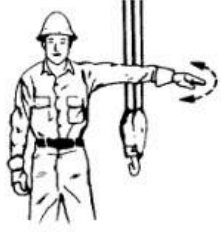
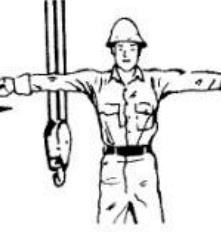
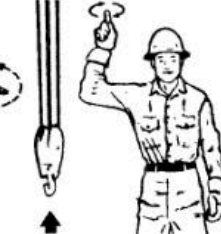
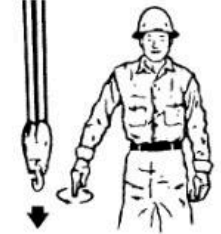
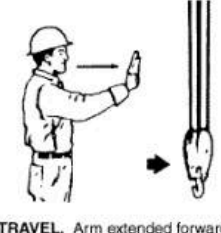
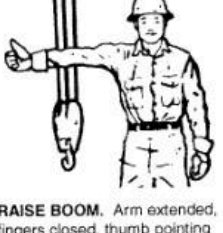
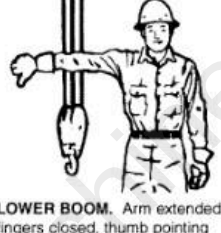
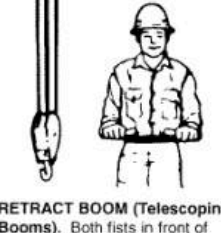
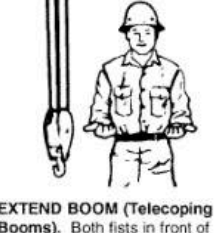
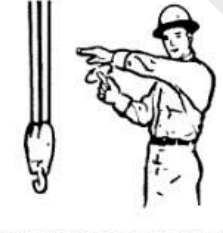
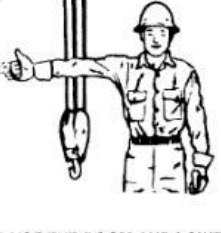
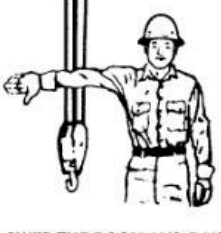
1. Fully extend and set outriggers to full-span location, level crane and set front stabilizer.

OPERATION

1. The 33 ft. boom length capacities are based on boom fully retracted. If not fully retracted, do not exceed 46 ft. boom length capacities.
2. Do not extend unloaded boom or jib beyond stability limit line on range chart as loss of stability may occur.
3. Load blocks and slings are considered to be a part of the load.
4. Operate with jib by radius when main boom is fully extended and by boom angle when main boom is partially extended. Do not exceed jib capacities at any partially extended boom length.
5. All jib loads must be lifted with single part reeving.

FIGURE B

STANDARD HAND SIGNALS FOR CONTROLLING CRANE OPERATIONS

 SWING. Arm extended, point with finger in direction of swing of boom.	 STOP. Arm extended, palm down, move arm back and forth horizontally.	 EMERGENCY STOP. Both arms extended, palms down, move arms back and forth horizontally.	 HOIST. With forearm vertical, forefinger pointing up, move hand in small horizontal circle.	 LOWER. With arm extended downward, forefinger pointing down, move hand in small horizontal circle.
 USE MAIN HOIST. Tap fist on head; then use regular signals.	 TRAVEL. Arm extended forward, hand open and slightly raised, making pushing motion in direction of travel.	 DOG EVERYTHING. Clasp hands in front of body.	 TRAVEL (Both Tracks). Use both fists in front of body, making a circular motion about each other, indicating direction of travel, forward or backward. (For land cranes only.)	 USE WHIPLINE (Auxiliary Hoist). Tap elbow with one hand; then use regular signals.
 RAISE BOOM. Arm extended, fingers closed, thumb pointing upward.	 LOWER BOOM. Arm extended, fingers closed, thumb pointing downward.	 TRAVEL (One Track). Lock the track on side indicated by raised fist. Travel opposite track in direction indicated by circular motion of other fist, rotated vertically in front of body. (For land cranes only.)	 RETRACT BOOM (Telescoping Booms). Both fists in front of body with thumbs pointing toward each other.	 EXTEND BOOM (Telescoping Booms). Both fists in front of body with thumbs pointing outward.
 MOVE SLOWLY. Use one hand to give any motion signal and place other hand motionless in front of hand giving the motion signal. (Hoist slowly shown as example.)	 RAISE THE BOOM AND LOWER THE LOAD. With arm extended, thumb pointing up, flex fingers in and out as long as load movement is desired.	 LOWER THE BOOM AND RAISE THE LOAD. With arm extended, thumb pointing down, flex fingers in and out as long as load movement is desired.	EXTRACTED FROM ANSI STANDARD ASME B30.5 - 2000 THIS COMPLIES WITH OSHA STANDARDS	

PTO HORSEPOWER REQUIREMENTS

A three pump hydraulic system is furnished with this crane. The unit is equipped with a three section pump that will supply 32 GPM (121 LPM) to the winch, 32 GPM (121 LPM) to the boom and telescope and 16 GPM (61 LPM) to the turn and outriggers circuit. To provide these flows, the pump shaft must turn at proper RPM as shown below. The PTO requirement is a torque rating of at least 400 ft-lb (542 N-m) or 85 HP (63 kW) per 1000 RPM of PTO shaft speed.

PUMP VENDOR	RPM
CASAPPA	1800
DENISON	2000
HALDEX	2200

DIRECT MOUNT PUMP TO PTO

Most pump installations can be direct mounted to the PTO using adapter assemblies available from the PTO supplier. If the pump is direct mounted, its weight should be supported by a strap between the pump and the transmission. The splined shaft coupling in a direct mount pump installation requires lubrication. #200S Silver Streak Special Multi-Lube (Medium) should be applied to the shaft during original installation and reapplied to the shaft or zerk provided on PTO housing shaft semi-annually thereafter.

PTO RATIO

Pump shaft speed is determined by truck engine RPM and PTO ratio:

$$\text{Pump Shaft Speed} = \frac{\text{Truck Engine RPM} \times \text{PTO Ratio}}{1000}$$

The following PTO ratio - engine speed combinations will provide proper pump shaft speed which is the recommended maximum speed for the 1400 pump:

The speeds shown below are optimum operating speeds. The engine must be operated at a speed such that the horsepower developed is adequate to pull the pumps under pressure and flow requirements.

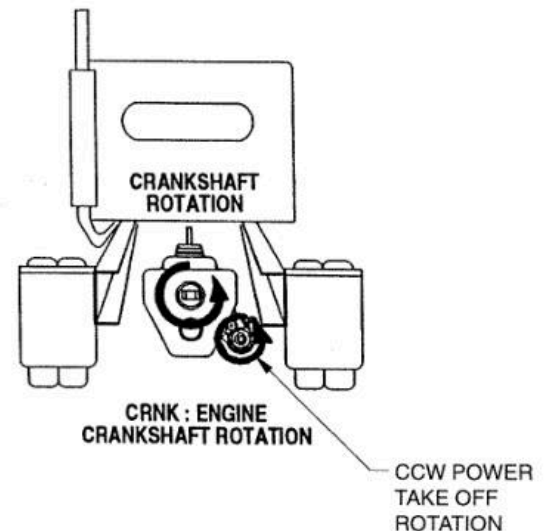
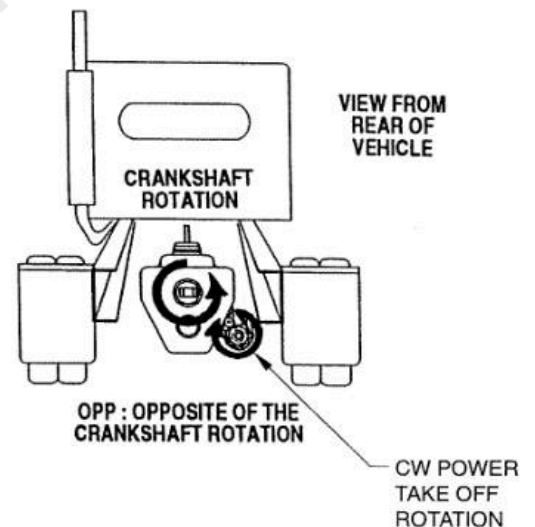
ENGINE SPEED (RPM)		PTO RATIO		
		1800 RPM PUMP	2000 RPM PUMP	2200 RPM PUMP
Gasoline Engine Optimum Speed Range	2900	62%	69%	76%
	2800	64%	71%	79%
	2600	69%	77%	85%
	2400	75%	83%	91%
	2200	82%	91%	100%
Diesel Engine Optimum Speed Range	2000	90%	100%	110%
	1800	100%	111%	122%
	1600	113%	125%	138%
	1500	120%	133%	147%
	1400	129%	143%	157%

PUMP ROTATION

It is imperative that the three section hydraulic pump installed in a 1400 application be the correct pump rotation configuration for the truck drive train/power take off rotation direction. Make certain which direction the power take off output shaft rotates before selecting a clockwise (cw) or counter-clockwise (ccw) rotation hydraulic pump. Either cw or ccw rotation pumps are available, and are marked clearly with a directional arrow on the pump housing.

Do not attempt to turn pump in the opposite direction of the indicating arrow on the pump housing. Pump failure will result.

Do not confuse engine crankshaft rotation with power take off rotation. If the power take off shaft rotates opposite the engine crankshaft, it is turning in a clockwise (cw) direction when viewed from the rear of the truck. If the power take off shaft rotates the same as the engine crankshaft, it is turning in a counter-clockwise (ccw) direction when viewed from the rear of the truck. See illustration below.



Full Version Available

National Crane 1400 Boom Truck Operator Manual

National Crane 1400 boom truck operator manual, 176 pages covering controls, safe operation, setup and daily checks. Instant PDF download.

VIEW THE FULL MANUAL

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