

OPERATOR'S MANUAL

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

1300A Series Cranes

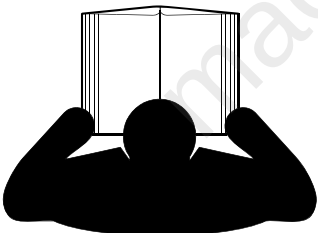
This Manual is divided into the following sections:

SECTION 1	INTRODUCTION
SECTION 2	SAFETY PRECAUTIONS
SECTION 3	CONTROLS AND OPERATING PROCEDURES
SECTION 4	SET-UP
SECTION 5	LUBRICATION PROCEDURE AND CHARTS
SECTION 6	MAINTENANCE CHECKLIST
OPTIONS	PERSONNEL BASKET RADIO REMOTE CONTROLLER

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 right side of the turret. ***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. Manitowoc is not responsible for qualifying these personnel.
- Do not operate or work on this crane without first reading and understanding Operator's Manual and Rating Plate supplied with crane.
- Store Operator's Manual in holder provided on crane.
- Attach laminated Capacity Charts supplied with crane to chain in operator's cab.
- If Operator's Manual or Capacity Charts are missing from cab, contact your distributor for new ones.

SECTION 2
SAFETY PRECAUTIONS

DIESEL ENGINE EXHAUST HAZARD



PROPOSITION 65 WARNING

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

BATTERY POSTS, TERMINALS, AND
RELATED ACCESSORIES HAZARDS



PROPOSITION 65 WARNING

The battery posts, terminals, and related accessories contains chemical lead and lead compounds, chemicals known to the State of California to cause cancer, birth defects or other reproductive harm. Wash hands after handling.

SAFETY MESSAGES

General

The importance of safe operation and maintenance cannot be overemphasized. Carelessness or neglect on the part of operators, job supervisors and planners, rigging personnel, and job site workers can result in their death or injury and costly damage to the crane and property.

To alert personnel to hazardous operating practices and maintenance procedures, safety messages are used throughout the manual. Each safety message contains a safety alert symbol and word to identify the hazard's degree of seriousness.

Safety Alert Symbol



This safety alert symbol means **ATTENTION!** Become alert - **your safety is involved!** Obey all safety messages that follow this symbol to avoid possible death or injury.

Safety Definitions



DANGER

Identifies **immediate hazards** that will result in death or serious injury if the message is ignored.



CAUTION

Identifies **potential hazards** that could result in minor or moderate injury if the message is ignored.

CAUTION

Without the safety alert symbol, identifies **potential hazards** that could result in property damage if the message is ignored.

NOTE: Emphasizes operation or maintenance procedures.

GENERAL INFORMATION

It is impossible to compile a list of safety precautions covering all situations. However, there are basic principles that must be followed during your daily routine. Safety is your primary responsibility, since any piece of equipment is only as safe as the person at the controls.

This information has been provided to assist you in promoting a safe working atmosphere for yourself and those around you. It is not meant to cover every conceivable circumstance which could arise. It is intended to present basic safety precautions that should be followed in daily operation.

NOTE: Illustrations have only been included in this section to emphasize certain proper and improper points. You must read and follow the printed instructions.

Because you, the operator, are the only part of the crane that can think and reason, your responsibility is not lessened by the addition of operational aids or warning devices. You must guard against acquiring a false sense of security when using them. They are there to assist, not direct the operation. Operational aids or warning devices can be mechanical, electrical, electronic, or a combination thereof. They are subject to failure or misuse and should not be relied upon in place of good operating practices.

contraction allows a cylinder to retract as the hydraulic fluid in the cylinder cools.

The change in the length of a cylinder is proportional to the extended length of the cylinder and to the change in temperature of the oil in the cylinder. For example, a cylinder extended 25 feet in which the oil cools 60°F would retract approximately 7 3/4 inches (see chart below). A cylinder extended 5 feet in which the oil cools 60°F would only retract approximately 1 1/2 inches. The rate at which the oil cools depends on many factors and is more noticeable with a larger difference in oil temperature versus the ambient temperature.

Thermal contraction coupled with improper lubrication or improper wear pad adjustments may, under certain conditions, cause a "stick-slip" condition in the boom. This "stick-slip" condition could result in the load not moving smoothly. Proper boom lubrication and wear pad adjustment is important to permit the boom sections to slide freely.

If a load and the boom are allowed to remain stationary for a period of time and the ambient temperature is cooler than the oil temperature, the oil in the cylinders cool. The load lowers as the telescope cylinder(s) retracts allowing the boom to

come in. Also, the boom angle decreases as the lift cylinder(s) retracts resulting in an increase in radius and a decrease in load height.

This situation also occurs in reverse. If a crane is set up in the morning with cool oil and the daytime ambient temperature heats the oil, the cylinders extend in similar proportions.

The chart below has been prepared to assist you in determining the approximate amount of retraction/extension that may be expected from a hydraulic cylinder as a result of change in the temperature of the hydraulic oil inside the cylinder. The chart is for dry rod cylinders. If the cylinder rod is filled with hydraulic oil, the contraction rate is somewhat greater.

NOTE: Operators and service personnel must be aware that load movement, as a result of temperature, can be mistaken as leaking cylinder seals or faulty holding valves. If leaking seals or faulty holding valves are suspected to be the problem, refer to your National Crane Distributor or Manitowoc Crane Care.

$$\text{Coeff} = 0.00043 \text{ (in}^3/\text{in}^3/\text{°F)}$$

STROKE (FT)	Temperature Change (°F)									
	10	20	30	40	50	60	70	80	90	100
5	0.26	0.52	0.77	1.03	1.29	1.55	1.81	2.06	2.32	2.58
10	0.52	1.03	1.55	2.06	2.58	3.10	3.61	4.13	4.64	5.16
15	0.77	1.55	2.32	3.10	3.87	4.64	5.42	6.19	6.97	7.74
20	1.03	2.06	3.10	4.13	5.16	6.19	7.22	8.26	9.29	10.32
25	1.29	2.58	3.87	5.16	6.45	7.74	9.03	10.32	11.61	12.90
30	1.55	3.10	4.64	6.19	7.74	9.29	10.84	12.38	13.93	15.48
35	1.81	3.61	5.42	7.22	9.03	10.84	12.64	14.45	16.25	18.06
40	2.06	4.13	6.19	8.26	10.32	12.38	14.45	16.51	18.58	20.64
45	2.32	4.64	6.97	9.29	11.61	13.93	16.25	18.58	20.90	23.22
50	2.58	5.16	7.74	10.32	12.90	15.48	18.06	20.64	23.22	25.80
55	2.84	5.68	8.51	11.35	14.19	17.03	19.87	22.70	25.54	28.38
60	3.10	6.19	9.29	12.38	15.48	18.58	21.67	24.77	27.86	30.96

Length of change in inches = Stroke (ft) x Temperature Change (°F) x Coeff (in³/in³/°F) x 12 in/ft

Hand Signals

A qualified signal person shall be used at all times when:

- Working in the vicinity of power lines.
- The crane operator cannot clearly see the load at all times.
- Moving the crane in an area or direction in which the operator cannot clearly see the path of travel.

At all times use standardized hand signals - previously agreed upon and completely understood by the operator and signal person.

If communication with the signal person is lost, crane movement must be stopped until communications are restored.

Keep your attention focused on the crane's operation. If for some reason you must look in another direction, stop all crane movement first.

When vision is obscured, use and follow the directions of a single qualified signal person.

Obey a signal to stop from anyone

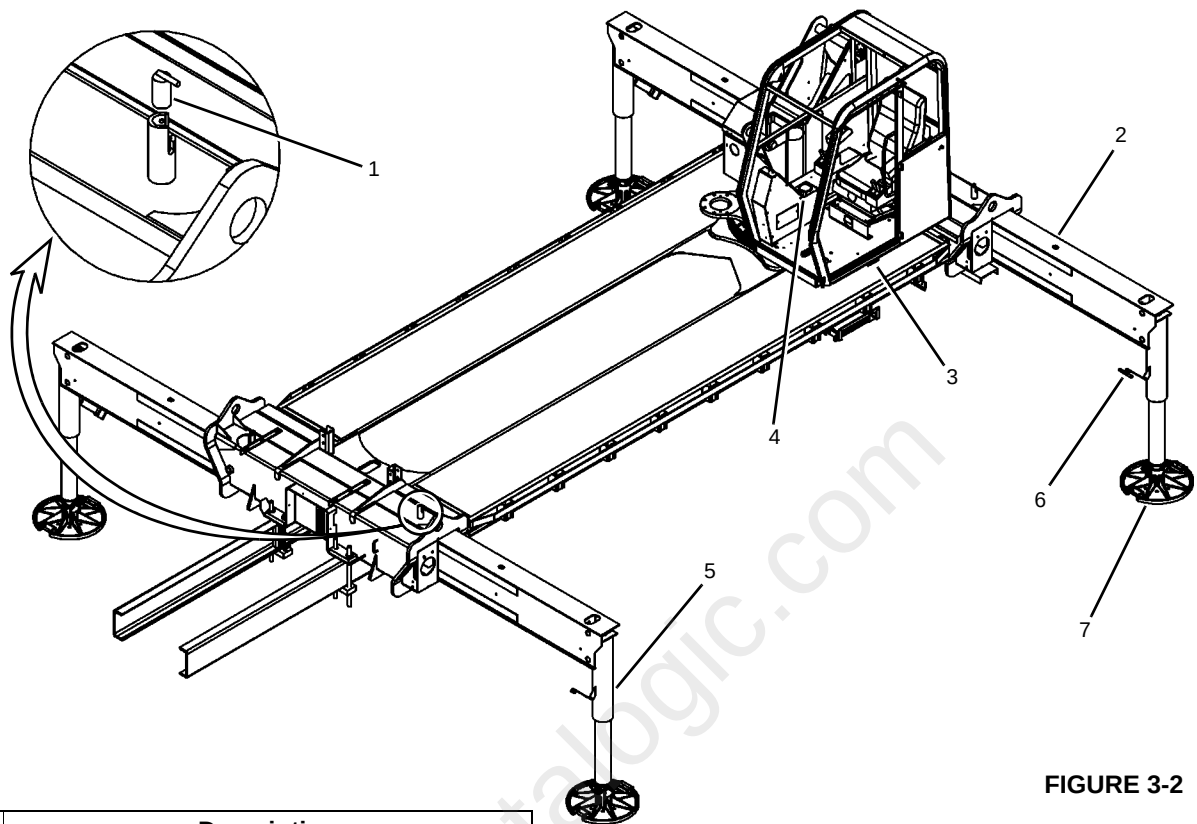


FIGURE 3-2

Item	Description
1	Outrigger Midspan Selector Pin
2	Outrigger Extension Beam
3	Remote Engine Throttle
4	Secondary Level Indicator (optional)

Item	Description
5	Outrigger Stabilizer
6	Outrigger Float Stow Peg
7	Outrigger Float

CRANE CONTROLS

The crane controls are located in the crane cab and are used for all crane functions. See (Figure 3-3) for crane cab item number (#) identification. For best control response, run the engine at governed RPM when operating the crane.

NOTE: The operator must be in the crane cab seat for the crane controls to operate properly.

Hydraulic Oil Temperature Warning Light

The Hydraulic Oil Temperature Warning Light (20) is located on the crane cab console and illuminates when the hydraulic oil overheats. If overheating occurs, run the crane at idle with the controls in neutral until the light goes out.

CAUTION

Do not operate the crane with overheated hydraulic oil or damage to seals in the hydraulic components may result.

Crane Ignition Switch

The crane ignition switch (3) is located on the crane cab console and controls the truck engine and crane cab power. The ignition switch has three positions. OFF shuts down engine and cab power, ON activates truck engine ignition as well as all cab power, and Start is truck engine start.

Crane Function Power Switch

The crane function power switch (5) is located on the crane cab console and is used to disable the crane functions for the armrest controls. This prevents inadvertent operation of the crane functions due to bumping. Push the switch to the ON position to enable the armrest controllers. The red LED in the switch is illuminated when the switch is in the ON position.

JIB SAFETY INFORMATION

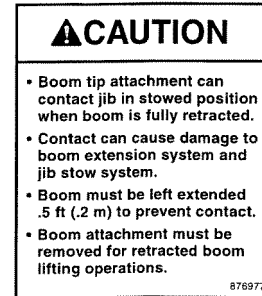
1. Only use the model 1300A jib on the 1300A boom. Do not try to use another model's jib. Other model jibs can be overloaded and collapse on the 1300A boom.
2. The anti-two-block switch weight and cord must be attached to the jib when deployed.
3. Do not lift load with the boom tip when the jib is pinned on the boom tip.
4. Operate with jib by radius when main boom is fully extended. If necessary, increase boom angle to maintain loaded radius.

When radius is between points listed on capacity chart, the load shown at the next longer radius shall be used.

5. Operate with jib by boom angle when main boom is not fully extended. Do not exceed rated jib capacities at any reduced boom lengths.

When angle is between points listed on capacity chart, the load shown at next lower boom angle shall be used.

6. Ensure jib is stowed correctly (Figure 4-2):
 - a. Removal of swing around pins, C1, without proper installation of stow pin A and jib swing pin B, may allow jib to fall off.
 - b. Extending boom with jib stowed and failure to remove swing pins, C1, will damage unit upon extension.
7. Only swing jib into working or stowed position when boom is horizontal, stow pin A and jib swing pin B, are removed and swing pins, C1, are in place. Jib could swing uncontrollably if boom is not horizontal.
8. Crane shall be fully set up according to proper set-up procedures outlined previously when stowing or unstowing jib.
9. Operate boom and turn functions very slowly and carefully when using jib since jibs can increase boom length by 50%.
10. Area where jib swings around must be clear of obstructions and power lines when stowing and unstowing jib.
11. Use safety glasses when pounding pins with hammer.
12. Do not extend/retract boom unless boom is horizontal when stow pin A and jib swing pin B are removed during stowing or unstowing procedures.
13. Always put spring clips in pins to ensure that they will stay in place.
14. When the jib is stowed, the boom can not be fully retracted if a boom tip attachment option is installed.



Also, on manually extendable jib options:

1. Extension retaining pin, E, must always be installed when operating.
2. All swing around (stow and unstowing) operations shall be done with jib retracted and pinned.
3. Extendable section may slide out of 1st section jib when pin, E, is removed. Keep personnel clear of area.

SIDE FOLDING-SWING AROUND JIB OPERATION

Deployment Procedure

1. Using boom telescope function, fully retract boom.
2. Using lift function, lower boom so that jib deployment pins C1 and C2 are easily accessible from the ground.

NOTE: When lowering the boom below horizontal, two persons may be required. With the telescope control in neutral, the boom may creep out when below horizontal.

3. Install pins C1 in upper and lower jib ears. Install retainer spring clips. These pins are used as a pivot point to swing jib into the deployed position.
4. Locate the stowed position of pins C2. If in jib attachment holes or boom sheave case jib holes, remove pins from storage location.
5. Remove jib swing Pin B from top ear of jib.
6. Remove stow Pin A from ramp/side stow bracket assembly on jib and stow in Stow Loop D and install spring clip.
7. Attach tag line to sheave case end of jib.
8. Using the lift function, raise the boom to the horizontal position.
9. Using telescope function, slowly extend boom approximately one foot. This procedure will pull the jib out of the side stow bracket.

SECTION 5

LUBRICATION PROCEDURE AND CHARTS

GENERAL

Following the designated lubrication procedure is important in ensuring maximum crane lifetime and utilization. The procedures and lubrication charts in this section include information on the types of lubricants used, the location of the lubrication points, the frequency of lubrication, and other information. The information included in this section does not include lubrication requirements for the truck chassis. Refer to appropriate truck manufacturer's manual for this information.

The service intervals specified are for normal operation where moderate temperature, humidity, and atmospheric conditions prevail. In areas of extreme conditions, the service periods and lubrication specifications should be altered to meet existing conditions. For information on extreme condition lubrication, contact your local National Crane Distributor or Manitowoc Crane Care.

Arctic Conditions Below -18°C (0°F)

In general, petroleum based fluids developed especially for low temperature service may be used with satisfactory results. However, certain fluids, such as halogenated hydrocarbons, nitro hydrocarbons, and phosphate ester hydraulic fluids, might not be compatible with hydraulic system seals and wear bands. If you are in doubt about the suitability of a specific fluid, check with your authorized Manitowoc distributor or Manitowoc Crane Care.

NOTE: All fluids and lubricants may be purchased by contacting the Manitowoc Crane Care Parts Department.

Regardless of temperature and oil viscosity, always use suitable start-up procedures to ensure adequate lubrication during system warm-up.

Chassis Grease.

CAUTION

Do not use air pressure devices to apply chassis grease otherwise damage to sealed fittings may result.

Lubricating grease of proper consistency is to be applied periodically at relatively frequent intervals with grease guns through grease fittings. Minimum apparent viscosity of 300 SUS (Saybolt Universal Seconds) at 100° F (38° C) is recommended.

CAUTION

The multipurpose grease installed during manufacture is of a lithium base. Use of a noncompatible grease could result in damage to equipment.

Extreme Pressure Multipurpose Gear Lubricant

This gear lubricant is compounded to achieve high load carrying capacity and meet the requirements of either API-GL-5 or MIL-L-2105C. Unless otherwise specified, SAE 80W-90 viscosity may be used for year round service. Low temperature usage is restricted as follows:

SAE Viscosity Number	Minimum Ambient Temperature F (C)
75W	-40 (-40)
80W	-15 (-26)
85	+10 (-12)
90	+20 (-7)
140	+40 (+5)
250	+50 (+10)

Open Gear Lubricant

This is a special high-graphite adhesive lubricant that helps to eliminate fretting corrosion, is water resistant, and forms a dry lubrication film which does not attract dust. Lubricant meets NLGI Class 1-2 specifications.

Anti-wear Additives

Excessive wear in the system may cause a loss in volumetric efficiency, and may cause shutdowns for maintenance. An efficient anti-wear oil protects the components against rusting, resists oxidation and helps prevent wear.

Surface Protection for Cylinder Rods

Steel cylinder rods include a thin layer of chrome plating on their surfaces to protect them from corroding. However, chrome plating inherently has cracks in its structure which can allow moisture to corrode the underlying steel. At typical ambient temperatures, hydraulic oil is too thick to penetrate these cracks. Normal machine operating temperatures will allow hydraulic oil to warm sufficiently to penetrate these cracks and if machines are operated daily, protect the rods. Machines that are stored, transported, or used in a corrosive environment (high moisture, rain, snow, or coastline

SPECIFICATIONS

Hydraulic System

Requirements:

Boom Lift Up/Down	29 GPM (98 LPM), 3600 psi +100/-0 (24.8 MPa +689/-0 kPa)
Boom Telescope Out	29 GPM (98 LPM), 2800 psi +100/-0 (19.3 MPa +689/-0 kPa)
Boom Telescope In	29 GPM (98 LPM), 2950 psi +100/-0 (20.3 MPa +689/-0 kPa)
Winch System	34 GPM (129 LPM), 3300 psi +100/-0 (22.75 MPa +689/-0 kPa)
Outrigger	14 GPM (53 LPM), 3000 psi +100/-0 (20.68 MPa +689/-0 kPa)
Swing	12 GPM (53 LPM), 3000 psi +100/-0 (20.68 MPa +689/-0 kPa)
Reservoir Capacity	76 gal. (287.6 L) at full mark
System Capacity	125 Gallons (473 L)
Filtration	10 Micron (Return Filter)
Flow rates listed are at free flow condition (approx. 100 psi / 698 kPa)	

Winch System

Wire cable	Standard 325 ft (99 m) of 9/16 in. (14.3 mm) dia. Rotation Resistant Nominal Breaking Strength - 38,500 lbs. (17,463 kg)
------------------	--

Winch Performance (with 1 part of line)

Layer	Winch Pull		Winch Speed		BOS Winch Speed	
	lbs	(kg)	fpm	(mpm)	fpm	(mpm)
1	10,200	(4626)	111	(33.8)	206	(62.7)
2	9,200	(4173)	123	(37.4)	228	(69.4)
3	8,400	(3810)	135	(41.1)	251	(76.5)
4	7,700	(3492)	147	(44.8)	273	(83.2)
5	7,100	3220	159	(48.4)		

All ratings based on 34 GPM at 3300 psi. (129 LPM at 22.75 MPa)

Burst of Speed maximum pull = 3000 lbs. (1361 kg)

Crane Operating Speeds

Rotation, 360°	30 sec. ±5 sec.
Boom Up, (-10° to 80°)	24 sec. ±5 sec.
Boom Down, (80° to -10°)	22 sec. ±5 sec.
Boom Extend	48 fpm ±6 fpm (14.6 mpm ±1.8 mpm)
Boom Retract	42 fpm ±6 fpm (12.8 mpm ±1.8 mpm)
Outrigger Beam Extend	8 sec ±3 sec.
Outrigger Beam Retract	7 sec ±3 sec.
Outrigger Jack Extend	14 sec ±3 sec.
Outrigger Jack Retract	13 sec ±3 sec.

NOTE: Crane operating speeds based on engine speed at governed RPM and hydraulic reservoir temperature at 100°F (37.7°C).

Condition B

The following steps shall be taken when lifting personnel in a Condition B situation:

1. A meeting, on the job site, between the job site management and either a qualified representative of the owner of the power lines or the electric utility shall take place. Procedures to safely complete the lift shall be established.
2. The clearance specified in the Required Clearance Table or in the Electrocution Hazard decal shall be maintained between the hoisting equipment, load line and personnel platform at all times.
3. Power line movement, horizontal and vertical, due to wind shall be added to the distances specified. A qualified representative of the power line owner or a designated representative of the electric utility shall be consulted for the movement distances.
4. The required clearances to the power lines shall be continuously monitored by a dedicated and qualified signal person in constant communication with the hoist equipment operator.
5. Personnel platform movement restraint, when required, shall be done through electrically non- conductive tag lines.
6. No person outside the personnel platform shall be permitted to touch the hoist equipment, load line or platform unless the signal person identified in (4) above indicates it is safe.
7. Operation of the boom or the personnel platform over power lines shall not be permitted.
8. Power line visibility enhancing devices, such as ribbons or balls, should be attached to the power lines to aid in the location of the prohibited zone established in (2) and (3) above.
9. Durable signs shall be posted warning that electrocution or serious bodily injury may occur unless the minimum clearance is maintained between the hoisting equipment and platform and power lines. These signs shall be posted at the hoist equipment operating station, on the outside of the hoist equipment, and inside the personnel platform.
10. If proximity warning devices, insulated links or boom cages are used, by choice or legal man- date, they shall

not be substituted for any of the requirements of this section. If these devices are used, the hoist equipment operator, ground crew and platform occupants shall be instructed by management on the limitations of the devices, operating condition requirements of the devices and the devices testing requirements prescribed by the device manufacturer.

Condition C

Lifting personnel under this condition is prohibited.

Condition D

The following steps shall be taken when transiting to a personnel lifting location in a Condition D situation:

1. While in transit and with no occupants in the platform, the clearance to power lines shall be as specified in ASME 630 volume applicable to the hoisting equipment.
2. When planning the transit of the hoisting equipment the effect of transit speed and transit surface on the hoisting equipment movement shall be considered.

INSPECTION

Falling hazard. Do not operate the basket without the proper pins in place. Inspect the pins each time the basket is used.

The platform shall be inspected by a qualified person prior to initial use at each new job site according to the items listed in the "Personnel Lift Platform Pre-Lift Inspection" form in this section. The platform shall then be inspected at least once each day, before use, by a designated person to identify conditions that could create a hazardous operating condition. Any hazardous condition found shall be corrected before personnel are lifted. Dated record of the platform inspections shall be kept with the crane and be available for review. At each new job site, prior to lifting people in the personnel platform, the platform shall be tested to 125 percent of the platform's rating. With the test load evenly distributed in the platform, the platform shall be lifted and held in a raised position for not less than five minutes. After the test, a qualified person shall inspect the platform. Any damage revealed by the inspection shall be corrected and another test conducted. The most recent record of the test shall be maintained at the job site.

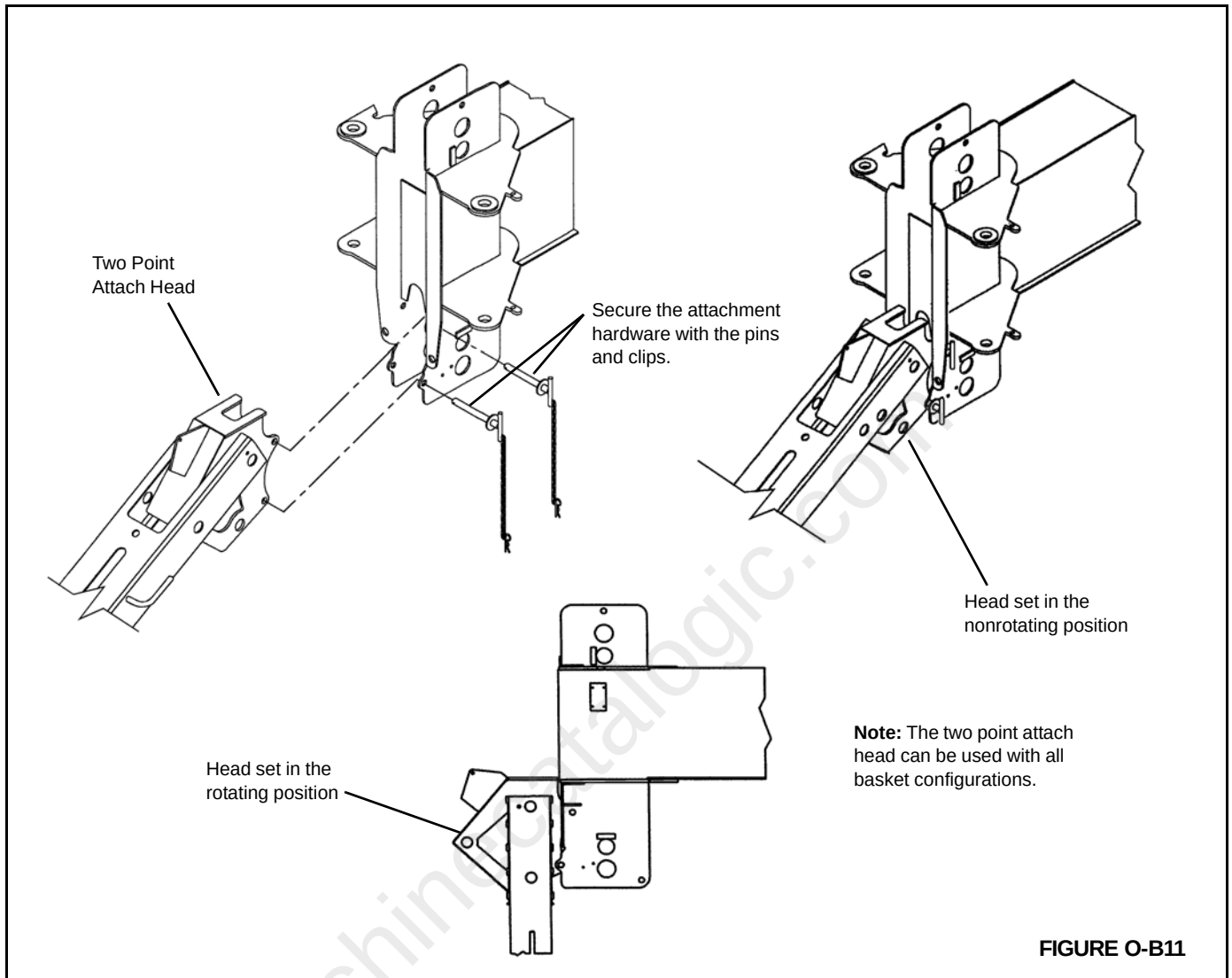


FIGURE O-B11

Operation

1. To enter the basket, lower the gate.

NOTE: Operation of the gate is the same for all models of one and two person baskets.

- a. Push the release button in the center of the pin securing the gate (Figure O-B12).
 - b. Pull the pin out and lower the gate.
2. Connect the safety harness and pull the gate up and reinstall the pin.

3. Loosen the brake on the attachment hardware so that the basket can swing freely as the basket is raised to the work location (Figure O-B12).
4. After the platform is raised into position, lock the brake.
5. For a BSA-R1 rotating basket, release the rotation locks and rotate the basket with the rotation handle (Figure O-B12).
6. After the platform is in position, set the rotation locks.

Full Version Available

National Crane 1300A Boom Truck Operator Manual

National Crane 1300A boom truck operator manual covering controls, safe operation, setup and travel. 2 searchable PDF files. Instant PDF download.

VIEW THE FULL MANUAL

<https://machinecatalogic.com/national-crane-1300a-boom-truck-operator-manual/>

Book No: CTRL050-03 · File Pages: 178 · File Count: 2 · File Language: English