



OPERATION MANUAL

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**NATIONAL
CRANE**
by **Manitowoc**

OPERATOR MANUAL

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

Personnel Basket Option

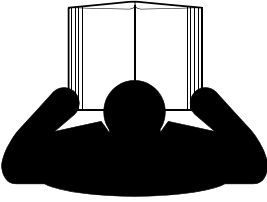
This Manual is divided into the following sections:

1-1	SAFETY
1-6	INSPECTION AND TESTING
1-15	BASKET BOOM APPLICATION
1-15	BOOM NOSE ATTACHMENT
1-18	DESCRIPTION
1-21	INSTALLATION AND OPERATION

NOTICE

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

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 basket 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 basket without first reading and understanding this Operator Manual the crane Operator Manual and Rating Plate supplied with crane.
- Store Operator Manual in holder provided.
- If the Operator Manual is missing from cab, contact your distributor for new ones.

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PERSONNEL BASKET

SAFETY

The following safety rules apply specifically to basket operation and are to be used in conjunction with and supplemental to the safety information in the Safety and Operation sections in the front of the Operator Manual.

General Safety Requirements

1. Verify that there are no less hazardous alternatives to performing the work, or providing access to the area.
2. Lift controls and basket shall be tested and inspected each day prior to use to determine the system is in safe working condition.
3. Only authorized persons shall operate the crane and personnel platform.
4. Belting off to an adjacent pole, structure, or equipment while working from a personnel lift shall not be permitted.
5. Occupants shall always stand firmly on the floor of the basket, and shall not sit or climb on the edge of the basket or use planks, ladders, or other devices for a work position.
6. A body harness shall be worn and a lanyard attached to the designated tie-off anchor at all times when working from a personnel platform, unless special work requirements dictate otherwise.
7. Boom and basket load limits specified shall not be exceeded.
8. The crane and/or truck on which the crane is mounted shall not be moved when the boom is elevated, or the platform is occupied.
9. Climbers shall not be worn while performing work from a personnel platform.
10. Before moving the crane for road travel, the boom, platform and outriggers shall be properly stowed.
11. Do not operate near power line or other electrical hazards. This device is not insulated. Remain a minimum of 20 feet away from any electrical component. Consult minimum clearance table or Electrocution Hazard decal for additional clearance information (Figure 1-1). Hoisting personnel within 20 feet of a power line that is up to 350kV, and hoisting personnel within 50 feet of a power line that is over 350kV, is prohibited (Figure 1-1). You must use a signal person on the ground to guide the operator.
12. No modifications or additions which affect the mechanical, hydraulic, or electrical integrity or the safe operation of the crane or personnel platform shall be made without the written approval of the manufacturer or an equivalent entity. See 29CFR1926.1412(a) and 29CFR1926.1434.
13. Do not use the load line to lift or handle loads while personnel are in the basket. Load block must be removed from load line. Loadline must be stowed on stow pegs provided on main boom and anti-two block switch must be overridden.
14. Safety harness and lanyards shall be used only for employee safeguarding. Any safety harness or lanyard actually subjected to an in-service loading shall be immediately removed from service and discarded or destroyed.
15. A personnel lift plan containing at least the information shown in "Personnel Platform Lift Planning and Authorization Form" shall be prepared.
16. Do not allow personnel lifts in winds in excess of 20 miles per hour (32 km/hr) at the raised platform height, or during electric storms, snow, ice, sleet, or other adverse weather conditions that could affect the safety of personnel. Terminate personnel lifting operations if hazardous conditions develop during the lift.
17. Conduct of Pre-lift briefing attended by the equipment operator, platform occupants and ground crew.
18. Appropriately brief any individuals that are changed during a series of personnel lifts.
19. The contents of the Pre-Lift briefings shall cover, as a minimum:
 - a. The proper use of all equipment involved.
 - b. Assignment and responsibilities of each person involved in the lift operation.
 - c. The procedures to be followed.
 - d. Guidance on general and specific safety precautions.
 - e. Special signals for the operation.
 - f. Unique considerations of the lift.
 - g. Work to be accomplished during lift.
 - h. If applicable, the responsibilities and assignments of a signal person when lifting personnel near electrical power lines.
20. Allow personnel platforms to be only used for personnel, their tools, and sufficient material to do their work. Make sure the weight of the personnel and tools do not overload the personnel platform. Never use personnel platforms to transport bulk materials.

21. Have a qualified person evaluate the safety issues of the operational environment and verify the platform and hoisting equipment are suitable for use.
 22. Determine if special work circumstances require further precautions.
 23. Precautions such as but not limited to the following shall be taken:
 - a. When welding is to be accomplished from the personnel platform, suitable electrode holders shall be provided to protect them from contact with any conducting components of the platform.
 - b. When personnel lifts are conducted over water, personal flotation devices shall be provided and required to be worn. Personal fall protection devices with quick release features shall be provided, and required to be worn. The fall protection device shall be appropriately attached while personnel are lifted over land and detached while personnel are lifted over water.
 - c. A boat with appropriate rescue personnel shall be available at all times during a personnel lift over water.
 - d. Appropriate personnel protective equipment shall be provided and required to be used around toxic, flammable or hazardous substances or fumes.
 24. Review any concentrated loading of the platform to preclude the over stressing of any component or the impairing of the platform stability.
3. Not engage in a personnel lift when physically or mentally unfit. The operator has the right to refuse any personnel lift under the following circumstances:
 - a. The operator does not feel physically or mentally fit to perform the operation.
 - b. The operator has been working for more than ten hours prior to the start of the lift or the lift will not be completed before the operator has been working for twelve hours.
 - c. The operator did not have at least eight hours off immediately prior to the work shift containing the personnel lift operation.
 4. Not engage in any practice that will divert their attention while actually engaged in operating the hoisting equipment.
 5. Only respond to signals from the Personnel Lift Supervisor or a designated signal person. The operator shall obey a stop signal at any time, no matter who gives it.
 6. Consult with the Personnel Lift Supervisor before commencing or continuing the lift whenever the operator has any doubt as to the safety of the lift.
 7. When involved with a boom mounted platform without controls, remain at the hoisting equipment controls whenever personnel are in the platform.
 8. When involved with a boom mounted platform with boom motion controls and a means of lowering, retracting and rotating in the event the primary power source becomes inoperative, be free not to remain at the hoisting equipment controls.
 9. Consult the Safety and Operation sections in the Operator Manual for specific instruction on the equipment operation.
 10. Inspect the hoist equipment setup area before the personnel lift and report his observations to the Personnel Lift Supervisor. The operator shall inspect the area for potential hazards such as, but not limited to:
 - a. Excessive load or radius.
 - b. Overhead obstructions and electrical transmission lines.
 - c. Hazardous locations.
 - d. Inadequate surface and support to withstand all forces imposed.
 - e. Wind, weather and other unstable conditions.
 - f. Any potentially hazardous conditions.
 11. Inspect the hoist equipment immediately prior to starting a personnel lift operation. The criteria for a frequent

Equipment Operator

Equipment Operator shall:

1. Comply with any applicable qualification criteria. As a minimum the qualification requirements shall include, but not be limited to:
 - a. Qualification to operate the specific type hoisting equipment used in the personnel lift.
 - b. Successfully meeting the physical qualification criteria as established in the applicable hoisting equipment ASME B30 volume. Additionally, the operator shall have tested for substance abuse. Testing shall be in accordance with applicable government regulations and the policies of the employer.
 - c. Successfully meeting the training and qualification criteria established in the applicable hoisting equipment ASME B30.5 volume for telescoping cranes.
2. Be qualified to operate the platform controls of a platform with controls.

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PERSONNEL BASKET

inspection as specified in the appropriate hoisting equipment ASME B30 volume shall be used.

12. Operate hoisting equipment with outriggers and front stabilizers properly set. Only operate with full horizontal extension of all of outrigger beams. Handling of personnel is not permitted with mid span or zero span outrigger positions.
13. Verify that the hoisting equipment is set up and maintained within one percent of grade level (0.56 degrees).
14. For hoisting equipment with a boom attached platform, verify that the platform is attached as specified in the basket installation section.
15. Not allow the total weight of the lifted load including rigging, platform, personnel, tools and material to exceed 50 percent of the hoisting equipment's rated load, under the planned conditions of operation. (Except during testing as outlined in Inspection Section.)
16. Not allow the platform's rating or the hoisting equipment's reduced rated load, to be exceeded when loads are transferred to the hoisted platform.
17. Perform a trial lift prior to lifting personnel with the platform on each shift and after any change of set up location, hoist equipment configuration or operator. These lifts shall be used to ascertain that hoist equipment set up and configuration is correct, load capacities are adequate, that no hazardous interferences exist, and to further demonstrate the operator's operational competence.
18. Verify that during the trial lift, the platform is loaded to at least the weight expected during the actual lift.
19. Not knowingly allow the platform load to exceed the platform rating. (Except during testing as out- lined in inspection section).
20. Not travel the hoisting equipment with personnel in the personnel platform.
21. Perform all movements of the platform under the direction of a designated signal person and in a slow, controlled manner to minimize sudden movements of the platform.
22. Remain at the hoisting equipment controls at all times when the platform is occupied.
23. Set all brakes and locks on the hoisting equipment after positioning of the personnel platform and before personnel perform any work.
24. Not move platforms over, under or in the vicinity of power lines unless the requirements of the minimum

clearance shown in the required clearance table and on the Electrocution Hazard decal are met.

25. Not lift any other loads, on any other load lines, while conducting a personnel lift. See item 13 under General Safety Requirements. When the hoisting equipment has a boom attached platform without controls it shall not be used for other lifting service.
26. Not disable, or allow to be disabled, any hoist equipment safety device during a personnel lift.
27. Not operate a platform with motion controls without the platform operation manual available in the platform.
28. Avoid the simultaneous operation of more than one of the hoisting equipment motion controls, unless such practice increases the safety of the lift operation.

Ground Crew

Ground Crew shall:

1. Visually inspect the personnel lifting platform, and its associated rigging, for hazardous conditions, prior to and during any operation.
2. Assist in the entrance and exit of personnel occupants at ground level.
3. Verify the personnel platform is securely attached to the hoisting equipment and in a manner specified by the platform manufacturer and that all attachments and the platform are secure.
4. Verify that boom attached personnel platforms are only attached using the pins and fittings specified by the hoist equipment manufacturer or a qualified person.
5. Keep people from passing under the raised personnel platform.
6. Not use a suspension system for lifting personnel that has been used for lifting loads other than the personnel platform.
7. Maintain continuous and positive communication between the personnel platform occupants and the operator, if signal persons are part of the ground crew.
8. Not engage in any practice or have any other duties that will reduce the safety of the personnel lift operation.
9. Observe the weight test and report any deformation or hazardous conditions to the Personnel Lift Supervisor.
10. Verify the platform is evenly loaded, material secured, and the total platform weight does not exceed the platform rating or the reduced hoisting equipment lift capacity.
11. Not allow an occupied platform over, under or in the vicinity of power lines unless the requirements minimum

clearance distances are met as shown in the required clearance table and on the Electrocution Hazard decal.

Platform Occupants

Personnel Platform Occupants shall:

1. Maintain a stable and even loading on the platform.
2. Keep all parts of their body inside the platform during raising, lowering and positioning, except when performing duties as a designated signal person.
3. Not interfere with the platform operator or the designated signal person in the platform except to give an emergency stop signal.
4. Keep their personnel fall protection device lanyard fastened to the provided anchorage points at all times, while occupying the platform, unless special circumstance work requirements dictate otherwise.
5. Be familiar with the hand signals posted in the platform. All occupants shall know the emergency stop signal.
6. Conduct their work in a manner to help maintain the platform stability, and the safety of the personnel lift operation.
7. Remain in continuous sight or in communication with the operator, and in sight and communication of a signal person.
8. Use personal protective equipment such as hard hats, safety glasses, hearing protection and gloves in conditions where a hazard of injury exists.
9. Wear personal fall protection devices with lanyards attached to a specific anchorage point(s), unless Special Circumstance Work requirements dictate otherwise.
10. Limit their number commensurate with the work being performed, the platform design and hoisting equipment limitations.
11. Evenly distributing and securing materials and equipment while the platform is lifted.
12. Not stand, sit on, or work from the top rail, intermediate rail, toe board or use any other device to enhance their vertical height working capability
13. Not pull the platform out of plumb with the hoisting equipment.
14. Not enter or exit a suspended platform while it is raised unless the platform has an installed gate and the platform is physically secured to the structure to which

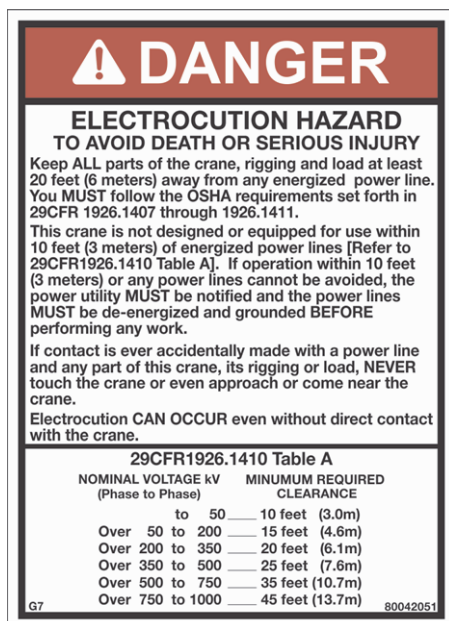
they are entering or exiting and to which they have attached their safety harness lanyard.

15. Not enter or exit a platform that does not have an installed gate, while it is suspended or raised.
16. Keep entrance gate closed and pinned in the horizontal position, except when entering or exiting the platform.

Communications

1. A communication system shall be used that effectively addresses the unique lift constraints, environmental issues and communication security necessary for a safe operation.
2. All communications shall be discernible to the operator. No response to a signal shall be made unless the signal is clearly understood.
3. If communications between operator and platform occupants are disrupted, all operations shall be stopped until communication is re-established.
4. Communication systems to be used during the lift shall be verified as functioning and effective prior to commencing each lift.
5. Hand signals to the operator shall be in accordance with the hoisting equipment ASME B30 Volume, unless voice communication (telephone, radio, or equivalent) is utilized.
 - a. A pictorial representation of the hand signals shall be posted conspicuously at the following locations:
 - As required by the hoisting equipment ASME B30 volume.
 - Inside the personnel platform.
 - At any platform motion control locations.
 - b. Some operations may require additions to, or modifications of, standard hand signals.
 - Any special signals shall be agreed upon and understood by the signal persons and the hoisting equipment operator.
 - Special signals shall not conflict with the hoisting equipment standard signals.
6. Radios or other electronic means of communications, if used, should operate on a secure channel.
7. Audible and visual alert devices should be provided in the platform for use in an emergency (i.e. air horns or strobe lights).

Lifting Personnel Near Power Lines



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FIGURE 1-1

Required Clearance for Lifting Personnel Near High Voltage Power Lines	
Kilovolts (kV)	Minimum Radial Distance ft (m)
to 50	10 (3)
over 50 to 200	15 (4.6)
over 200 to 350	20 (6.1)
over 350 to 500	25 (7.6)
over 500 to 750	35 (10.7)
over 750 to 1000	45 (13.7)

1. Lifting personnel where the crane equipment or platform can become electrified from electric power lines is an extremely hazardous practice. It is advisable to perform the lift so there is no possibility of any of the crane equipment, load line or personnel platform becoming a conductive path. This hoisting equipment shall not be used to lift personnel under, beside, or over electric power lines if any combination of boom, personnel platform, load line and machine component will enter the prohibited zone as specified in the required clearance table or the Electrocutation Hazard decal (Figure 1-1). Lifting personnel near electric power lines is not allowed unless there is no less hazardous way to do the job. However, under no circumstance are the required clearance distances to be violated.

Four situations to consider when lifting personnel near electric power lines are:

- a. Power lines are de-energized and grounded to ground and between phases. (This is the preferred condition.)
- b. Power lines are energized with the hoisting equipment outside the prohibited zone but there is a potential for the hoisting equipment or platform being energized.
- c. Power lines are energized with the hoisting equipment inside the prohibited zone and there is a possibility that the hoisting equipment or platform can become energized. **(Lifting personnel in this condition is prohibited)**
- d. Hoisting equipment is in transit with the boom lowered and no personnel in the platform.

Condition A

This is the preferred condition under which a personnel lift can be performed. The hazard of injury or death due to electrocution has been removed. The following steps shall be taken when lifting personnel in a Condition A situation:

1. The power company or owner of the power lines shall de-energize the lines.
2. The power lines shall be visibly grounded to ground and between the phases to avoid the possibility of electrical feedback.
3. A qualified representative of the owner of the power lines or a designated representative of the electric utility shall be on the site to verify that step (1) and (2) of this section have been completed and that the power lines are not energized.
4. Durable signs shall be installed at the operators station, and on the outside of the crane, warning that electrocution or serious bodily injury may occur unless the minimum clearance shown in the required clearance table and on the Electrocutation Hazard decal 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.
5. If proximity warning devices, insulated links or boom cages are used, by choice or legal mandate, they shall not be a substitute 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 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 (Figure 1-1) shall be maintained between the hoisting equipment, load line and personnel platform at all times.
3. Hoisting personnel within 20 feet of a power line that is up to 350kV, and hoisting personnel within 50 feet of a power line that is over 350kV, is prohibited (Figure 1-1).
4. 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.
5. 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.
6. Personnel platform movement restraint, when required, shall be done through electrically non-conductive tag lines.
7. 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.
8. Operation of the boom or the personnel platform over power lines shall not be permitted.
9. 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.
10. 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.
11. If proximity warning devices, insulated links or boom cages are used, by choice or legal mandate, 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 29CFR1926.1411 and ASME B30.23 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 AND TESTING

The following instructions are for Inspection and Weight Testing of both the Steel Basket Assemblies and the Yoke Basket Assemblies.

The purpose of inspecting and testing the basket platform is to comply with ASME B30.23.



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

Inspection**Initial Inspection**

Prior to initial use and at each new job site, the basket platform and all attachment points shall be inspected by a qualified person for damage or excessive wear, and inspected using the "Personnel Lift Platform Pre-Lift Inspection" form on page 8.

Regular Inspection

Frequent Inspection - The platform, suspension system, attachment points, and any platform motion controls shall be inspected at least once each day, before use and by a designated person. The inspection is to identify conditions that could create hazardous operating conditions. Inspect for damage or excessive wear, and inspect using the "Personnel Lift Platform Pre-Lift Inspection" form on page 8.

Periodic Inspection - At least once every 12 months inspect the basket platform. Basket platforms that have

been out of service for 12 or more consecutive months shall be inspected prior to use.

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