

# National Series N95 Specifications

November, 1989

## General

This specification shall cover a hydraulically actuated truck mounted articulating crane. This crane shall be capable of lifting the rated capacities at the radii and boom lengths set forth below under "Capacities" without creating a force greater than 85% of that required to overturn the truck when the outriggers are set properly and the truck on firm, level ground provided that the crane shall be mounted on a truck having a minimum empty weight including chassis and platform body of 11,100 lbs. with a distance from the back of the cab to the center of the rear axle of not less than 120 inches and a distance from the back of the cab to the center of the front axle of not less than 74 inches with a front axle of a rated capacity of not less than 10,860 lbs., rear axle 18,500 lbs. Each main frame channel of the truck frame shall have a minimum section modulus of 21 inch cube with 50,000 psi yield steel or 14 inch cube section modulus with 110,000 psi yield steel, or be reinforced to reach these requirements. The crane hydraulic oil supply shall be provided by one hydraulic pump, driven by a power takeoff having an output ratio of 70-85% of engine speed, mounted on a truck transmission. All components shall be American made and assembled.

## Construction

The crane weight, including outriggers, must not exceed 5,150 lbs. and must comply with ASME/ANSI B30.22 1987 Standard, AWS and OSHA Standards. The manufacturer may be required to submit copies of the test data confirming this unit complies with ANSI/SAE J1063.

## Boom

Boom shall have a horizontal reach of not less than 26'6" hydraulically and not less than 39' with manual extensions. The boom shall have the ability of being hydraulically extended to a maximum vertical reach of 33' and 45' with the manual extensions above truck frame. All manual extensions must be capable of telescoping back into the hydraulic extensions when not in use.

## Capacities

Crane rating—93,000 ft/lbs.

Capacities shall be:

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6'	15,500 lbs.	26'6"	3,200 lbs.
9'	10,000 lbs.	32'9"	2,350 lbs.
14'4"	6,400 lbs.	39'	1,850 lbs.
20'5"	4,300 lbs.		

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6'	15,500 lbs.	20'5"	4,300 lbs.
9'	10,000 lbs.	26'6"	3,200 lbs.
14'4"	6,400 lbs.		

## Space Requirement

Crane shall be capable of stowing behind cab of truck in no more than 34 inches of mounting space.

## Crane Height

Height of crane above mounting surface shall not exceed 87 inches.

## Outriggers

Outriggers shall be fully hydraulic up and down with no less than 25½ inches of stroke. The outrigger legs shall be hydraulically extendable outward to a width of no less than 174 inches. The vertical outrigger cylinders shall have a pilot operated check valve to preclude collapse in case of hydraulic line failure. The vertical cylinders shall be fully enclosed to protect the shafts from dirt and foreign objects. Pads must have a minimum area of 112 square inches each.

## Controls

Crane shall have horizontal, waist level controls on each side of machine with an external engine throttle on one side. Control valve shall have open center, four way spring centered spools with each valve spool controlling a separate function of the crane. Valve shall be equipped with a main system relief section to prevent damage to pump, cylinders and hoses.

The operator pressure shall not exceed 2950 psi.

## Cylinder Protection

All boom cylinders shall be double acting and have pilot operated holding valves to prevent collapse in case of hydraulic line failure and be equipped with internal safety relief valves to protect against overload.

## Rotation

The rotation system shall be of the rack and pinion type and the crane boom and mast shall be capable of rotating not less than 390 degrees. The turn cylinders shall be equipped with flow restrictors to prevent damage to the crane from excessive rotational speed. Swivels shall be incorporated into any hoses which rotate with mast to prevent damage to the hose due to twisting.

## SAE Components

The crane must have all standard SAE type cylinders, hoses, fittings, etc. No others will be acceptable.

## Bearings

The crane shall have large diameter bearings at all boom pivot points.

## Oil Tank

The crane shall have a detachable oil tank of no less than 16 gallons capacity with a sight gauge and 10 micron replaceable, spin on type return line filter.

## Options

### A. Hydraulic Out Outriggers

Crane shall have two extra valve sections with controls on both sides of the machine to power additional hydraulic attachments to the end of the boom.

### B. Remote Controls

Crane shall be equipped with a hand-held remote control system having the following functions:

- |                        |             |
|------------------------|-------------|
| 1. Main                | raise/lower |
| 2. Knuckleboom section | raise/lower |
| 3. Telescope           | out/in      |
| 4. Rotation            | left/right  |
| 5. Winch               | raise/lower |

This control system will also have a truck engine start/stop function as well as priority control valve operated by finger-trigger on the remote control handle allowing regulation of oil flow which controls speed movement of the crane functions with fine metering characteristics.

### C. Hydraulic Winch

This unit shall be equipped with a boom mounted hydraulic winch, with 4,400 lbs. full drum line pull and 76 fpm line speed—5,300 lbs. bare drum pull and 62 fpm line speed. Winch and easy single-pin boom tip sheave can be stowed without removing. Includes winch control and anti-two-block feature to prevent cable damage when winching up or extending the boom without paying out the winch cable.

### D. Personnel Basket

Unit shall be equipped with a one-man light-weight fiberglass basket having a capacity of 300 lbs. Bucket dimensions 22" x 22" x 42" height equipped with gravity hung basket and a mechanical swing lock and shall include a personnel safety belt and lanyard, and easy on/off detachable mounting system of the pin-on type. **Working height** of this system shall be a minimum of 43' above the truck frame. Horizontal reach shall be a minimum of 39'.