National Series N65 Specifications

October, 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 8,450 lbs. with a distance from the back of the cab to the center of the rear axle of not less than 108 inches and a distance from the back of cab to the center of the front axle of not less than 69 inches with a front axle of a rated capacity of not less than 7,000 lbs., rear axle 15,000 lbs. Each main frame channel of the truck frame shall have a minimum section modulus of 14 inch cube with 50,000 psi yield steel or 9 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** vane type 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 3,100 lbs. and is to be constructed of high strength, low alloy steel 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 27'2" hydraulically and not less than 33'5" with one manual extension. The outer boom shall extend and retract proportionately and be powered by one stage cylinder and rope crowd. The boom shall have a maximum vertical hydraulic reach of 37'3" and 43'7" with manual extension above truck frame.

Capacities

Crane rating—63,890 ft/lbs.

Capacities shall be:

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6'3"	10,000 lbs.	21'4"	2,850 lbs.
8'6"	7,500 lbs.	27'2"	2,100 lbs.
15'7"	4,100 lbs.	33'5"	1,600 lbs.

Space Requirement

Crane shall be capable of stowing behind cab of truck in no more than 28 inches of mounting space. 30 inches if a winch option on crane.

Crane Height

Height of crane above mounting surface shall not exceed 93 inches.

Outriggers

Outrigger cylinder vertical movement shall be fully hydraulic with no less than 25½ inches of stroke. The outrigger legs shall be manually extendable outward to a width of no less than 204 inches. The vertical outrigger cylinders shall have pilot operated check valves 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.

Controls

Crane shall have horizontal hydraulic controls, with identical operation on each side of machine with an external engine throttle on one side. 5-spool control valves with fine metering capabilities to allow for precise control of all crane functions. The main boom can be worked and rotated simultaneously. Valve shall be equipped with a main system relief section to prevent damage to pump, cylinders and hoses.

The operating pressure shall not exceed 3150 psi.

Cylinder Protection

Counterbalance valves shall be on the lift, fold and extend cylinders to hold these cylinders in place until they are powered to move. They must hold the cylinders in place in the event of hose failure and serve as overload relief valves to slowly lower the load in the event of an overload condition.

Rotation

The rotation system shall consist of a double-reduction planetary gear box with a spring applied hydraulically released brake. The brake shall have the ability to slip through to reduce impact loads on the rotation system. The drive gear shall maintain full tooth contact with the rotation gear without the necessity of adjustment. The mast and main frame mounting surface for the bearing shall be machined after welding. Rotation gear is to be attached to the crane frame by use of high strength bolts for ease of service. A full circle bolt pattern between the main frame, rotation bearing and mast shall be used for equal load distribution. Rotation shall be 410 degree non-continuous with cushioned rotation-stop.

SAE Components

The crane must have all standard SAE type ports, hoses and o-ring seal fittings in all pressure lines. No other will be acceptable.

Bearings

The crane shall have large diameter composite bearings at all boom pivot points. The pins shall be extra smooth, rust resistant, chrome plated to give long bearing life with minimal maintenance.

Oil Tank

The crane shall have a detachable oil tank of no less than 10.5 gallons capacity with a sight gauge and 10 micron replaceable, spin on type return line filter and magnetic plug.

Options

A. Hydraulic Out Outriggers

Crane shall be equipped with hydraulic horizontal extending outriggers.

B. Remote Controls

Crane shall be equipped with a hand-held remote control system with a priority control valve operated by a finger trigger on the remote control handle allowing regulation of oil flow which controls speed movement of crane functions with fine metering characteristics. This control will have a truck engine start/stop function and controls for the following crane functions.

1. Inner Boom raise/lower
2. Outer Boom raise/lower
3. Telescope in/out
4. Rotation left/right

C. Hydraulic Winch

This unit shall be equipped with a boom mounted hydraulic winch, with 4,400 lbs. full drum line pull and 38 fpm line speed—5,300 lbs. bare drum pull and 32 fpm line speed. Winch and easy single-pin boom tip sheave can be stowed without removing. Includes winch control option on crane and two blocking damage preventive feature to prevent damage to the hoist rope or other machinery components when extending the boom.

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 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 41′ above the truck frame. Horizontal reach shall be a minimum of 33′.

E. Accessory Valves

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.