

National N-85

Specifications

GENERAL

This specification shall cover a hydraulically actuated truck mounted articulating type 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 or body of 13,750 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 RBM of 1,050,000 in./lbs. and a minimum section modulus of 21 in.³ or be re-enforced 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 the truck transmission. All components shall be American made and assembled.

BOOM

Boom shall have a reach of not less than 16' 3" hydraulically and not less than 28' 6" with manual jibs. All manual jibs must be capable of telescoping back into main jib when not in use.

CAPACITIES

Capacities shall be:

N85

6' 3"	14,400 lbs.	20' 6"	3,600 lbs.
12' 3"	6,600 lbs.	24' 6"	3,000 lbs.
16' 3"	4,800 lbs.	28' 6"	2,600 lbs.

N85-H21

6' 3"	14,400 lbs.	21'	3,600 lbs.
12' 3"	6,600 lbs.	25'	3,000 lbs.
16' 3"	4,800 lbs.		

SPACE REQUIREMENT

Crane shall be capable of stowing behind cab of truck in no more than 37 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" of stroke. The outrigger legs shall be hydraulically extendable outward to a width of no less than 145¾". Outrigger cylinders shall have a pilot operated check valve to preclude collapse in case of hydraulic line failure. The 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. In addition, the control valve shall have cylinder port relief and anticavitation checks to prevent damage to the crane due to overload. The operating pressure of the crane shall not exceed 2850 psi. Flow restrictors shall be incorporated into the plumbing for the main and secondary boom cylinders to maintain equal speeds while raising or lowering the booms.

CYLINDER PROTECTION

All cylinders with the exception of the turn cylinders, shall be double-acting with safety check valves to prevent sudden collapse in case of hydraulic line failure. The turn cylinders shall be equipped with flow restrictors to prevent damage to the crane from excessive rotational speed.

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. Swivels shall be incorporated into any hoses which rotate with mast to prevent damage to the hose due to twisting. Load hook with safety latch shall incorporate a swivel to prevent the binding of suspended loads.

ACCESSORY VALVES

The control valve shall be capable of accepting two extra valve sections with controls on both sides of the machine to power additional hydraulic attachments to end of boom.

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 greaseless bearings at all boom pivot points.

EXTENSION CYLINDER

The hydraulic boom extension cylinder shall be fully enclosed to protect the shaft from dirt and foreign objects.

OIL TANK

The crane shall have a detachable oil tank of no less than 19 gallons capacity with a sight gauge and 10 micron replaceable, spin on type return line filter.