

National N-160 Articulating Crane

From
America's
Truck-Mounted
Hydraulic
Crane Leader



NATIONAL
CRANE
A Grove
Worldwide
Company

- **Crane Rating:**
164,900 ft•lb
(22.44 t•m)
with the N-160/25 boom
- **Maximum Capacity:**
9 tons (8 t)
- **Maximum
Vertical Reach:***
65 ft 2 in (19.87 m)
- **Horizontal Reach:***
54 ft (16.46 m)
- **Reach Below
Truck Frame:***
39 ft 8 in (12.09 m)
- **Total Hydraulic
Extension:***
46 ft (14.02 m)

* From ground level with an
N-160/46-5/4 crane mounted
on a 42-in (1067-mm) high
truck frame

The National Advantage

When you invest in a National articulating crane, you are assured of these competitive advantages:

Quality

National cranes are designed for durability, performance, and ease of service. National's cutting-edge technologies set the industry standard for the manufacture of lifting and materials handling equipment. An experienced workforce turns innovative designs into quality-crafted cranes. Factory prototypes are subjected to some of the toughest testing requirements in the industry. Each National crane is checked throughout the manufacturing and assembly process, then given a detailed final inspection before it is released from the factory.

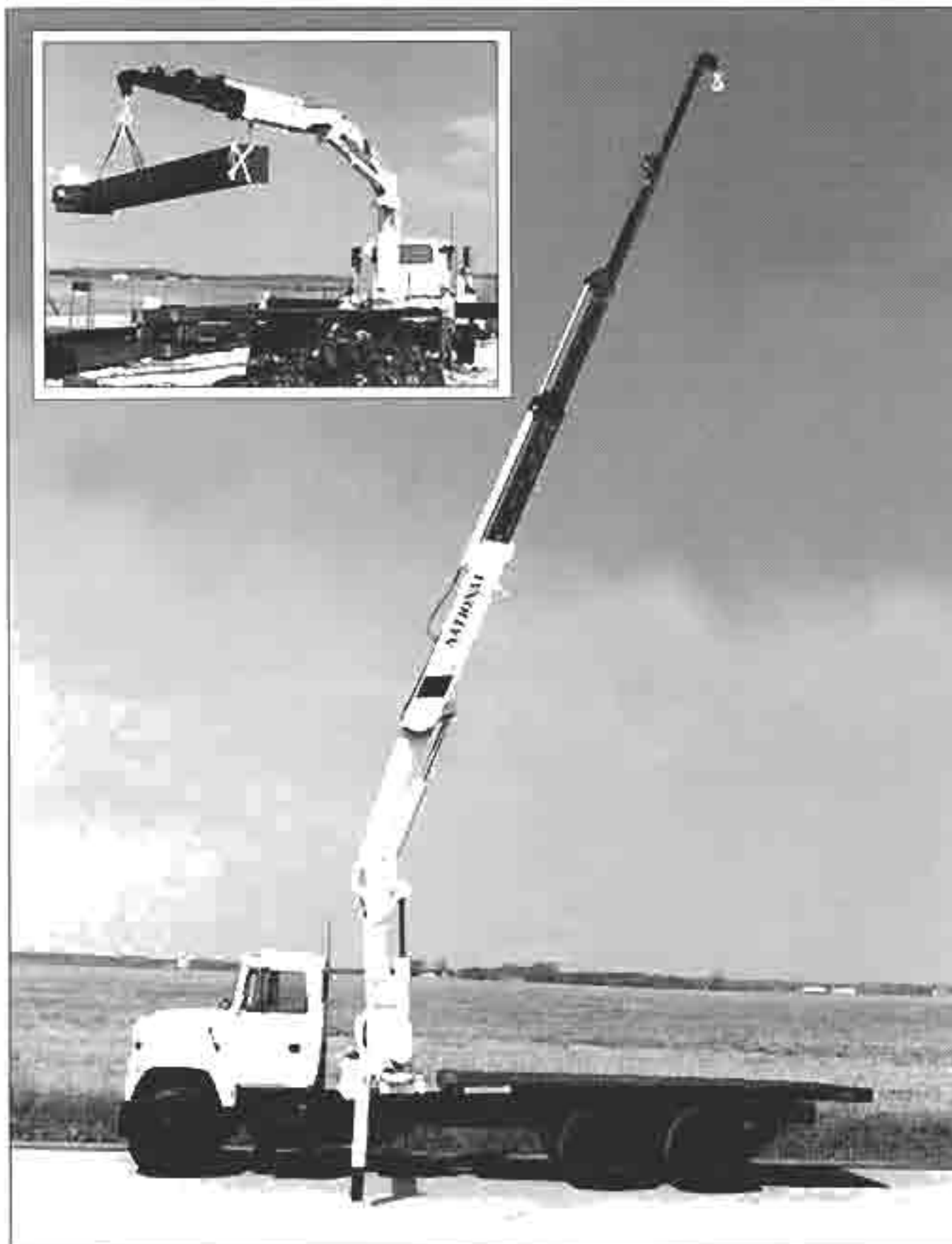
Performance

Each user-friendly National gives you what you expect in a crane: Long reach. High capacity. Fast set-up. Easy operation. Smooth movement. Versatile accessories. Premium components. Add it all up—you'll find that a National is not only a pleasure to operate, but a reliable investment in bottom line performance.

Value

National has manufactured cranes since 1965. With a National you get field-proven reliability plus the best factory/dealer support in the industry. National's warranty provides protection against defects in materials and workmanship for a full year from the date the customer takes delivery. Dealers maintain extensive parts stocking programs. Should a dealer be unable to supply a part you need, National's back-up program is committed to providing equipment replacement parts on a breakdown rush basis, holding your downtime to a minimum. These advantages enhance a National crane's resale value—consistently the highest in the industry!

National Crane is ISO certified



**164,900-ft•lb (22.44-t•m)
crane rating with the
N-160/25 boom**
**9.0-ton (8.0-t)
maximum lifting capacity**
**65-ft 2-in (19.87-m)
maximum vertical reach***
**54-ft (16.46-m) horizontal
reach***
**39-ft 8-in (12.09-m) reach
below truck frame***
**46-ft (14.02-m)
total hydraulic extension***

** From ground level with an
N-160/46-51 crane mounted on a
42-in (1067-mm) high truck frame*

Strong booms and jibs

- Five-section proportional outer boom design extends each section in equivalent lengths during the telescoping process
- Proportional boom design enhances boom weight distribution, maximizes operational efficiency, and allows higher capacities, particularly in normal working radii
- Ultra-strong boom sections manufactured from low-alloy, high-strength steel
- Four-bar link design at inner and outer boom pivot points allow maximum capacity loads to be raised vertically to full-rated height
- Four-bar links facilitate close load placement to crane mast
- Long-wearing *Easy Glide* wear pads enhance smooth boom performance

Durable cylinders

- Cylinder shafts are hard chrome-plated and high pressure tubing is used wherever possible to reduce hose wear
- All cylinders are double acting for smooth, positive control

Clean design

- Wherever possible, heavy-duty wire-braided hoses are routed inside the mast and boom for protection from bumps, twists, cuts and abrasions, and to enhance the crane's appearance

Boom tip and hardware

- The boom tip or jib is equipped with a swivel hook and safety latch (rated for maximum crane capacity); it is designed to accept all boom tip options by a simple pin-on procedure

Counterbalance valves

- Pilot operated counterbalance valves on lift, fold and extend cylinders lock all cylinders in place in the event of hose failure or until they are powered to move—they help prevent inadvertent cylinder movement

Capacity alert

- Standard capacity alert system with load range gage helps prevent crane operation beyond the crane capacity; blocks functions that increase overload, allows operator to reduce load radius to acceptable limits (not applicable with manual jib)

Efficient rotation

- Low maintenance shear ball bearing rotation system with smooth, precise planetary control
- When not powered, the swing is locked in place by a spring-applied, hydraulically released brake
- Powered by a high-torque, low-speed motor through a double reduction planetary gearbox

High performance hydraulics

- Couplings and fittings are of highest quality; hydraulic hoses, tubes and fittings have a +1 minimum safety factor on burst
- The high-performance, pressure-compensated, load-sensing hydraulic system provides ultra-precise metering of the crane's multi-function operation while conserving prime mover horsepower and reducing heat
- Each valve section is pressure-compensated for smooth, precise, multiple function control, simultaneously without interaction
- A high-capacity, high-pressure, variable volume piston pump produces full system pressure—even at truck engine idle speed; the control valve communicates with the pump, ensuring that exact flow and pressure are maintained throughout the lifting process
- A two-bolt pump mounting flange can be integrally mounted to most PTO's to simplify mounting

- Detachable oil tank (for easy maintenance) comes with an oil level sight gage, breather, magnetic plug and 10-micron (10 μ m) external return line filter integrally mounted to the crane frame; special design reduces mounting time and space requirements

Chrome-plated pins

- Large-diameter chrome-plated pins with encapsulated composite bearings provide long life with reduced maintenance

User-friendly operation

- Identical crane function controls on both sides of crane—same controls, same hand positioning
- Operator can work controls from either station, keeping boom and load in full view at all times
- Boom can be worked and rotated simultaneously
- Extra-fine metering and low spool forces for smooth, precise fingertip control
- Control knobs are illustrated with function symbols
- Additional valve banks for operating hydraulic accessories can easily be added

Solid Stability

- 16-ft (4.9-m) hydraulic outriggers provide solid stability—even when the crane is set up on uneven ground; minimum trucks may require optional extra-wide 20-ft (6.1-m) outriggers
- 28-in (714-mm) stroke hydraulic-powered outrigger legs set up quickly and easily from either side of the crane
- Standard outrigger pads are 10x14 in (254x352 mm)
- Enclosed outrigger cylinders with pilot-operated check valves
- Legs are removable for shipment and storage

Simplified Mounting

- Easy three-point clamp-on mounting minimizes crane and truck-frame stress
- Mounts on standard single-axle trucks

*A wide choice of accessories
(see page 8)*

National N-160 Crane Specifications

Technical Data

Maximum working pressure.....	3,950 psi.....	272 bar
Pump Capacity (piston-type pump).....	17 gal/min.....	64 L/min
Reservoir oil capacity.....	19 gal.....	75 L
Outrigger span.....	16 ft***.....	4.88 m
Outrigger vertical travel.....	28.12 in.....	714 mm
Stowed height (above truck frame w/o T-box).....	8 ft 3 in.....	2.51 m
Basic Model N-160/25 weight*	6,775 lbs.....	3073 kg
Filter.....	10 micron replaceable (spin-on type).....	10 Hm
Rotation (non-continuous).....	390 degree.....	390 degree
Mounting space required.....	47 in.....	1194 mm
with optional winch.....	52.5 in.....	1334 mm
Boom rotation speed.....	360° in 26 sec**	
Boom hydraulic extension speed.....	40 sec for Model H46**	
Boom hydraulic retraction speed.....	29 sec for Model H46**	

Note: Contact the factory for continuous duty cycle applications

**Basic model—crane options and longer boom lengths will increase weight*

***Approximate*

****Based on suitable chassis; see mounting specifications*



Caution

- Do not operate crane booms, jib extensions, any accessories or loads within 10 ft (3 m) of live power lines or other conductors of electricity
- All capacities shown are maximum allowable loads, including the weight of any attached accessories
- Do not exceed capacities at reduced radii



National N-160 Crane Specifications

The Basic N-160

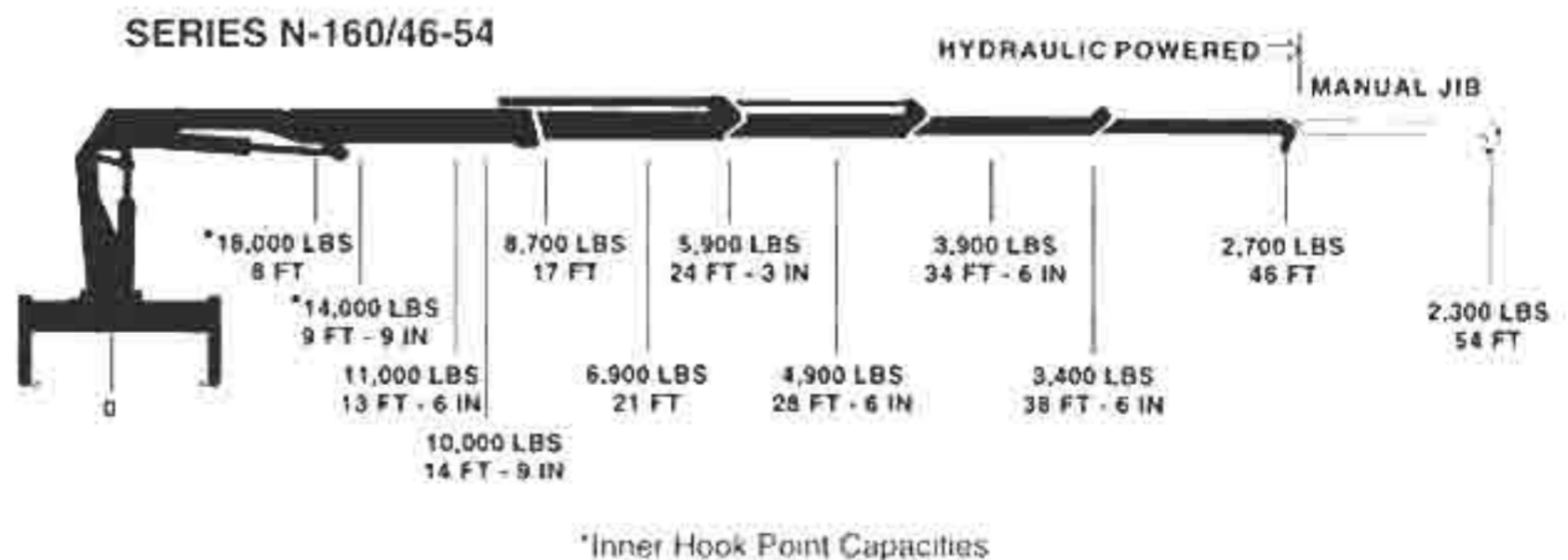
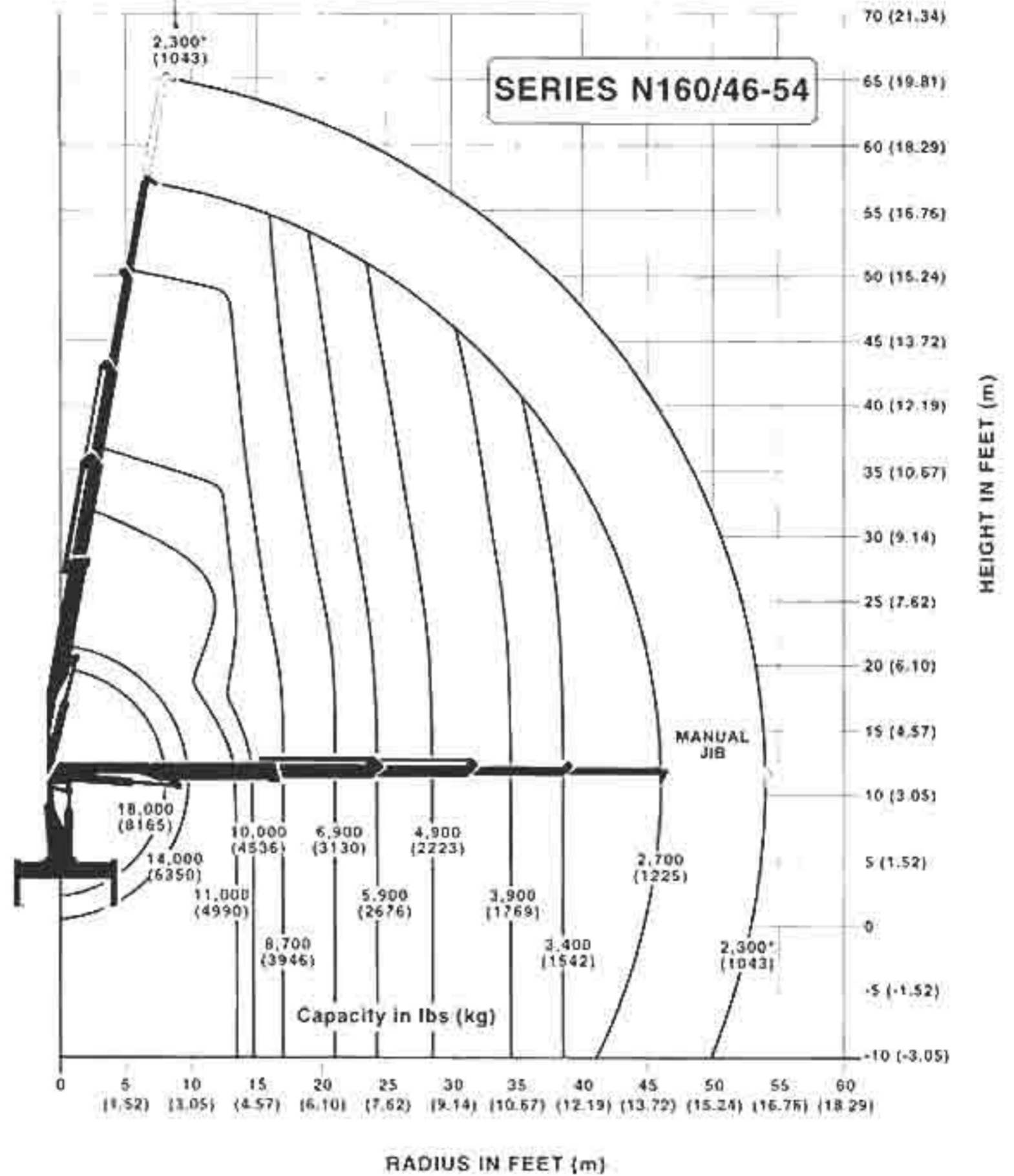
- 164,900-ft•lb (22.44-t•m) crane rating
- 9.0-ton (8.0-t) maximum lifting capacity
- Two hydraulic out-and-down outriggers extending to 16 feet (4.9 m)
- 390-degree rotation
- Five function control valves
- Counterbalance valves on lift, fold, and extend; pilot-operated check valves on outriggers
- High-capacity four-bar linkage at lift and fold joints
- Dual controls
- Manual cabled engine speed control
- Hydraulic capacity alert (HCA) system with load range gage
- Hydraulic reservoir
- Hydraulic pump and easy mounting group
- Crane hook with safety latch

Model 46/54

- 147,900-ft•lb (20.12-t•m) crane rating
- 9.0-ton (8.0-t) maximum lifting capacity
- Mast, inner boom, outer boom, four hydraulic and one manual extension reaching to 54 ft (16.46 m)
- 60-ft 5-in (18.42-m) reach above truck frame
- 40-ft 11-in (12.48-m) reach below truck frame
- 63-ft 11-in (19.49-m) maximum vertical reach when mounted on a 42-in (1067-mm) high truck frame

Ranges are indicative of unloaded conditions.
Capacity loaded conditions may restrict range because of deflection.

*Capacity of the manual jib is a maximum and should not be exceeded at any boom angle or boom length.

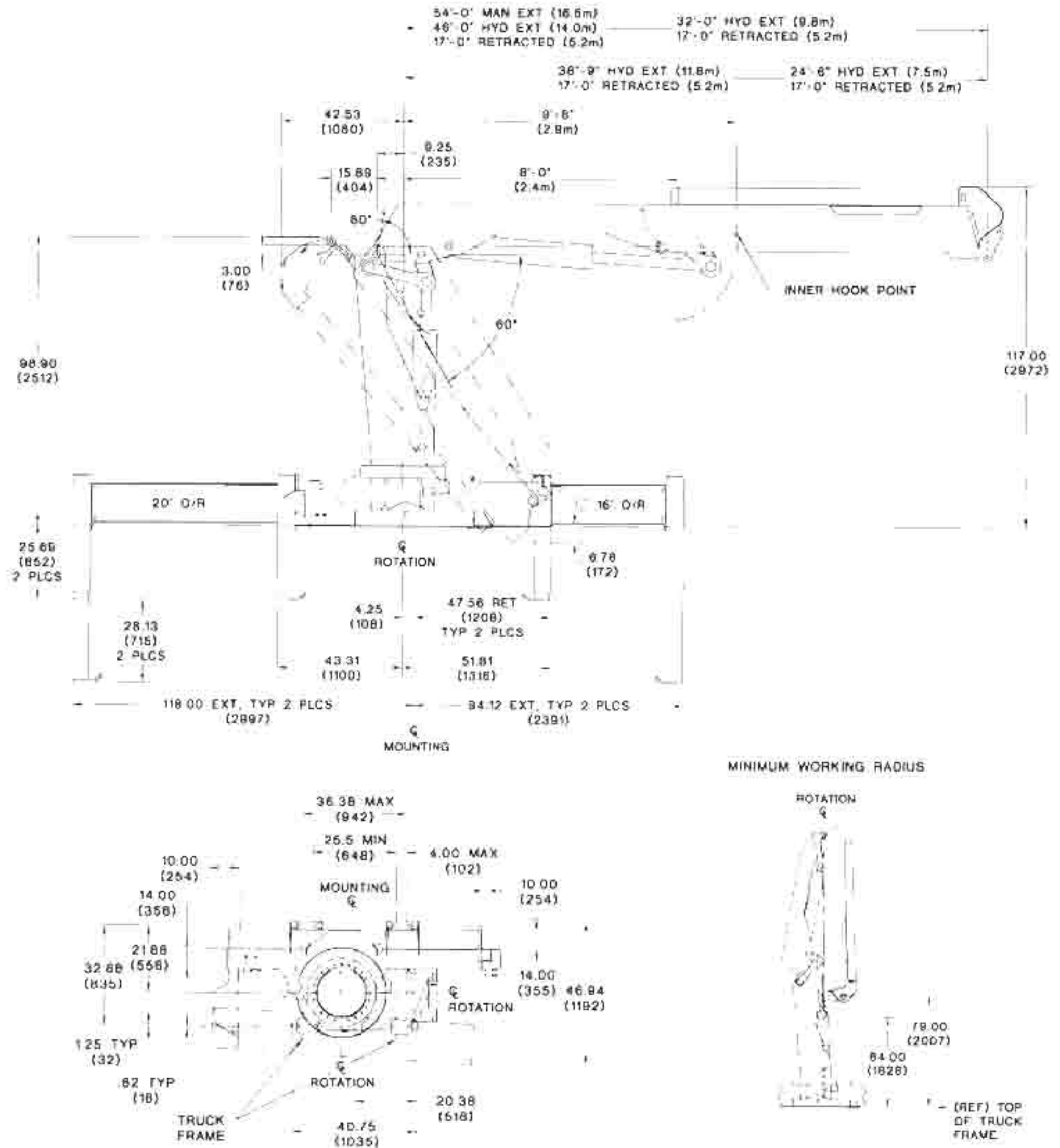


National N-160 Dimensional Specifications

Notes

These notes pertain to mounting specification data on preceding page.

- Truck used for mounting must meet these minimum requirements for capacity loads
- Always specify Gross Axle Weight Rating (GAWR) when purchasing trucks
- Rotate loads slowly and smoothly for maximum control
- Use caution when rotating boom from areas supported by outriggers to areas supported by springs—vehicle level changes as springs compress
- Under minimum front or rear axle chassis weights may require counterweight to keep unit stable
- Diesel engines, longer wheelbase or service bodies may increase minimum axle requirements—contact factory for information
- Diesel engines require variable speed governor
- Chassis weight may include bed, PTO, pump, rear bumper, or any other permanently attached items (other than the crane itself)



Rotation: 390 degree
(non-continuous)

Maximum Load Moment:
191.105 ft•lb (26.01 t•m)

Maximum Thrust Load:
29,000 lbs (12.95 t•m) at mounting
surface

Maximum Rotational Moment:
16.705 ft•lb (2.27 t•m)

National N-160 Accessories

Every National is part of a complete and versatile lifting system that lets you do more faster. You can tailor your crane to perform jobs that would otherwise call for a whole fleet of specialized equipment.

Information on specific accessories is available. Contact your National Crane dealer to learn more about these cost-efficient accessories.



Note: Weights of all accessories attached to the boom or loadline of the crane must be deducted from the effective lifting capacity. Additional accessories not listed may be available. Not all accessories are available for all crane series, and some accessories cannot be used in combination with other accessories. Consult your dealer or the factory for specific accessory capabilities, availability and pricing.

<p>Remote Controls One hand control. Precise control. Total load visibility. Diesel engines require electric shutoff.</p>	<ul style="list-style-type: none"> • <i>Model MR4</i> • <i>Model MR5</i> (requires AH1) • <i>Model MR6</i> (requires AH2)
<p>Radio Remote Controls Eliminate handling and maintenance concerns that accompany cabled remotes. Operate to a range of approximately 400 ft (12.2 m), varying with conditions.</p>	<ul style="list-style-type: none"> • <i>Model MR4R</i> • <i>Model MR5R</i> (requires AH1) • <i>Model MR6R</i> (requires AH2)
<p>Seated Controls Replaces dual side controls (except for outriggers). Not available with remote controls.</p>	<ul style="list-style-type: none"> • <i>Model SC</i>
<p>Articulating Hydraulic Fly Jib Additional articulating boom section. Comes with its own lift/extend cylinders.</p>	<ul style="list-style-type: none"> • <i>Model HFJ</i>
<p>One-Person Basket Fiberglass with 300-lb (136 kg) capacity. Gravity hung. Dual baskets available.</p>	<ul style="list-style-type: none"> • <i>Model BL1</i> (with swing lock, body harness and lanyard)
<p>Hydraulic Auger Digging depths to 4 ft 6 in (1.4 m) and flightings to 18 in (457 mm).</p>	<ul style="list-style-type: none"> • <i>Model AG</i> (Requires RAH1 or AH1) • <i>Model AGHP</i> (high-speed)
<p>Winch Heavy-duty, easy single pin attachment of boom-tip sheave head. Includes winch control and anti-two-block system.</p>	<ul style="list-style-type: none"> • <i>Model N16</i>
<p>Front Stabilizer Center-mount single front with a 25-in vertical stroke. Tilts forward for chassis with tilt hood. SFOH includes control valve.</p>	<ul style="list-style-type: none"> • <i>Model SFOH</i> (hydraulic) • <i>Model SFOM</i> (manual)
<p>Pallet Fork A fork with 4,400-lb (1996 kg) capacity, plus adjustable throat and teeth.</p>	<ul style="list-style-type: none"> • <i>Model MKF</i> (manual leveling adjustable throat) • <i>Model HKF</i> (hydraulic leveling adjustable throat—requires AH1) • <i>Model HKFR</i> (hydraulic leveling adjustable throat with hydraulic rotator, requires AH2)
<p>Grapple Grapples are available in butt or bypass type. Both come with a hydraulic rotator and quick connect fittings.</p>	<ul style="list-style-type: none"> • <i>Model BTG</i> (requires AH2) • <i>Model BPG</i> (requires AH2)
<p>Clam Bucket The clam bucket can be used to load or move materials in 1/3 yd³ (.25 m³) bites.</p>	<ul style="list-style-type: none"> • <i>Model GPC</i> (requires AH2)
<p>Accessory Control Valves Allow operation of hydraulic accessories, mount easily on the control panel. RAH1 and RAH2 are same as AH1 and AH2 but provide boom hose take-up reel in lieu of piping.</p>	<ul style="list-style-type: none"> • <i>Model AH1</i> (single function for rotator or auger) • <i>Model AH2</i> (two functions for grapple or clam)
<p>Continuous Rotation</p>	<ul style="list-style-type: none"> • <i>Model CR</i>

NATIONAL CRANE
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Your National Dealer:

National
Crane is
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