

National N-50

Truck-Mounted Articulating Cranes and Accessories



From America's Truck-Mounted Hydraulic Crane Leader

- Crane Rating: 53,400 Ft-Lbs (7.83 Ton-Meters)
- Maximum Capacity: 8,300 Pounds (3.8 Metric Tons)
- Reach (Vertical) Above Truck Frame: 42 Feet 8 Inches (13 Meters)
- Reach Below Truck Frame: 33 Feet 2 Inches (9.2 Meters)
- Maximum Horizontal Reach: 40 Feet (12.2 Meters)

National N-50 Articulating Crane



- 27-foot all-hydraulic extension
- Proportional telescoping boom design
- Clean design—hoses routed inside mast
- Extra-wide 15-foot outrigger span (standard outrigger pads are 8 by 14 inches)
- Outrigger tubes ride on steel rollers for easy deployment

- Enclosed outrigger cylinders
- Hydraulic overload protection is standard
- Rugged, field-proven rack-and-pinion rotation
- Improved three-point mounting alleviates truck frame stress
- 42-foot 8-inch working height personnel basket (optional)

Why should I buy a National N-50 Articulating Crane?

The all-new N-50 exemplifies National's field-proven commitment to quality. Here are some sensible reasons to consider this compact yet rugged articulating crane for your materials and equipment handling requirements:

Field-proven durability

- National has manufactured cranes since 1963.

Attention to quality

- National never skimps on quality. Materials and components used in Nationals often cost more (because of their quality) than those found in competitive products. With a National, you get more for each dollar you invest in a crane.
- Each crane undergoes numerous quality inspections at all levels of manufacture and assembly. No crane is shipped without a rigid final inspection.
- Component manufacturers are critically reviewed by National's senior management before they qualify as a supplier of parts.
- Inspections of incoming materials and components ensure that purchased items meet National's standards.
- Material certifications are maintained and steel composition is regularly verified.
- All structural welders at National must pass AWS welder certifications.

Industry-leading test program

- All National articulating cranes comply with ASME/ANSI (B30.22), AWS, and OSHA standards.
- Each prototype model must pass the stringent test requirements of SAE J1063.
- National's test program subjects all prototype cranes to state-of-the-art stress coat and strain gauge testing, a procedure that measures metal deformation as small as one-millionth of an inch. These and the tests noted below verify the structural integrity of National cranes.
- Prototype cranes undergo life-cycle tests (National's are the toughest in the industry). They receive more punishment than most cranes encounter in a lifetime of on-the-job use. Every structural part of the crane is cycle tested. Some components are operated through 60,000 cycles at full-capacity load. Testing requires thousands of working hours and takes months to complete.

More value for your investment

- Nationals consistently have the highest resale value in the industry.

Responsive service and parts support

- Each N-50 is backed by strong after-sale and service support. National's professional dealer network is worldwide. That

means service and repair resources are always near.

- The typical National dealer has been associated with National for 11 years. He knows the product.
- Authorized National dealers maintain a parts stocking program for your crane. When your N-50 needs parts or service, it will be back on the job without undue delay.
- When a dealer cannot immediately supply a part for your N-50, the factory can. National's parts back-up program provides 24-hour parts shipping in most breakdown rush orders.

The National warranty

- The National warranty covers your crane against defects in materials and workmanship for six months from the date of shipment, subject to the conditions of the warranty.

The National Service Center

- National maintains a fully equipped Service Center at the plant to handle factory crane mounting and special crane modifications or repairs. Most dealers can handle all but the most unusual or serious service/repair requirements.

The N-50 offers these features:

- A crane rating of 53,400 ft-lbs (7.38t-m) and an 8,300-pound (3.7t) lifting capability.

- A 42'8" (13m) reach above truck frame
- A 40' (12.2m) horizontal reach
- A 30'2" (9.2m) reach below the truck frame
- Model N-50/40 has two hydraulic extensions reaching to 27' (8.2m) with two gull-out manual boom extensions to 40' (12.2m).
- Jib pins in place with a pin carried at the jib-tip
- Booms constructed of high-strength, low-alloy steel
- The outer boom extends and retracts smoothly and proportionately on long-wearing, lubricant-impregnated wear pads and is powered by a one-stage cylinder and cable crowd.
- The boom nose or jib nose is equipped with a swivel hook (rated for maximum crane capacity) with a safety latch and is designed to accept all boom-tip options via a simple pin-on procedure.
- Counterbalance valves on the lift, fold and extend cylinders hold these cylinders in place until they are powered to move; they 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.
- Large-diameter, chrome-plated pins combined with composite bearings provide long life with reduced maintenance.

The Basic National N-50 Articulating Crane

- Rack-and-pinion rotation for precision, durability and control.
- Wide manual-out, hydraulic-down outriggers.
- Hose connections in the hydraulic system use positive acting O-ring face seals to help eliminate leaks, minimize downtime, and reduce maintenance costs.
- All hoses are routed internally where possible to protect against damage and to enhance the crane's appearance.
- A new control valve with low-effort, special metering spools allows for the precise control of all crane functions.
- Dual, waist-level controls with identical operations of normal crane functions are positioned on both sides of the machine.
- Mounts on standard, single-axle trucks.
- Three-point, clamp-on mount simplifies crane mounting and reduces crane and truck frame stress.

**Compare and
invest in
National
quality and
value!**

Built strong and for reliability

The National N-50, though light in weight, is designed for tough materials-handling jobs. It's manufactured from extra-tough, high-strength, low-alloy, steel for exceptionally high strength-to-weight ratio.

Special counterbalance valves hold the lift, fold, and extend 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.

Cylinder shafts are hard-chrome plated. High-pressure tubing is used wherever possible to reduce hose wear.

The heavy-duty wire-braided hydraulic hoses are routed inside structural members where possible for protection from bumps, twists, cuts, and abrasions. Our special three-point mounting system absorbs loading flex, protecting the truck frame from excessive stress.

Heavy-duty hydraulics

All N-50 couplings and fittings are of high quality. All hydraulic hoses, tubes, and fittings have a 4:1 minimum safety factor on burst. All cylinders are double acting for smooth, positive control.

High-capacity, heavy-duty pumps are standard. An efficient, high-pressure gear pump produces full system pressure even at truck engine idle speed and maintains high efficiency throughout its

life. A two-bolt mounting flange can be integrally mounted to most PTO's to simplify mounting.

A specially-designed oil tank with an oil level sight gauge, breather, magnetic plug, and a 10-micron external return line filter integrally mounted to the crane frame reduces mounting time and space requirements. The oil tank is detachable for fast, easy maintenance.

American-made

All National parts are manufactured in America. Parts are readily available and service is easily obtained.

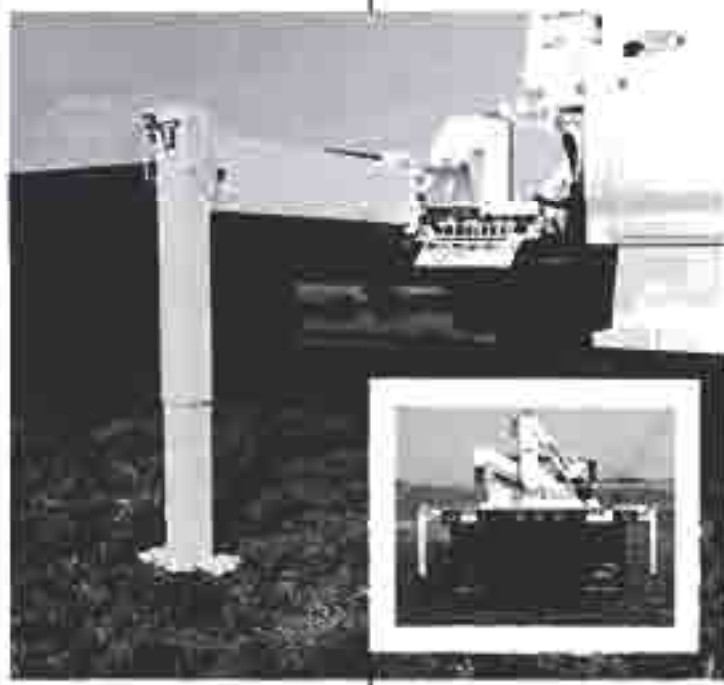
Wide outriggers provide stability

Standard, wide span outriggers constructed from high-strength, low-alloy steel form a lightweight, stable base which can be set up quickly from either side of the truck. N-50 outriggers extend to 15

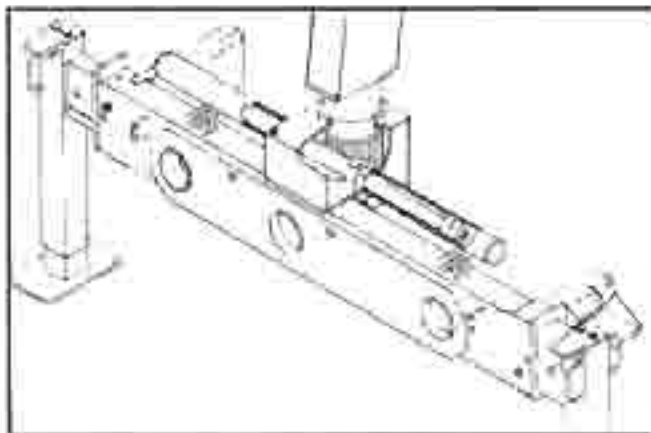
feet (4.5m) horizontally and 25.5 inches (65.4cm) vertically. Horizontal extension is manual; vertical extension is manual; vertical extension is powered hydraulically. Optional hydraulic horizontal extension can be specified.

The wide 15-foot outrigger span allows for lower truck chassis weight requirements and more payload capability - up to 10,200 pounds (4,627kg) on a minimum single-axle truck. Large outrigger footpads (8 by 14 inches) help provide solid stability in soft or uneven ground conditions.

Outrigger vertical legs lock in place up or down by pilot-operated check valves. The vertical cylinders lock automatically when stowed, so they will not leak down in transit. The legs are removable to facilitate shipment or storage.



National N-50 Reach/Capacity Data



Rack and pinion rotation

The N-50 gives you the smoothness, precision and control of rack-and-pinion rotation. National's rack-and-pinion system is simple, reliable, and - because it has few parts - easy to maintain. Service is easy. Rack-and-pinion rotation also reduces the bulk of the crane frame above the truck, lowering the center of gravity for greater stability.

Easy operation

The N-50 provides dual, wain-level controls with identical operation of normal crane functions. The operator can work the controls from either side of the crane and keep the boom and load in full view at all times. The control knobs are illustrated with function symbols and operate the smooth, fine-metering, five spool control valves with pinpoint accuracy. The boom can be worked and rotated simultaneously. You won't find a crane easier to operate. Additional valve banks can be added easily for operating hydraulic accessories.



N-50 (Model 40)

lift and reach capabilities

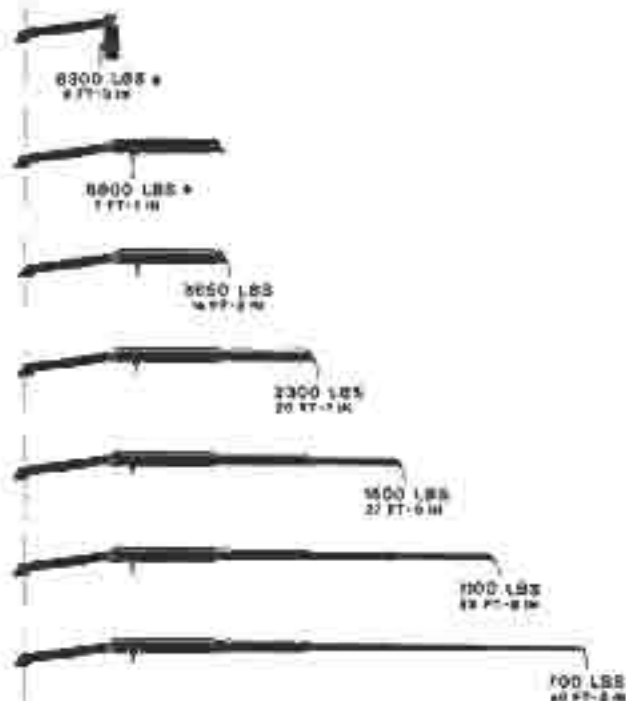
Lifting capacities shown at each length are maximum allowable loads, including the weight of any attached accessories.

Ft-Lb rating at 14'2" (4.31m): 53,400 (7.38 t-m)

Caution

Do not operate crane booms, jib extensions, any accessories, or loads within 10 feet (3m) of live power lines or other conductors of electricity. Jib and boom capacities shown are maximum for each section. Do not exceed capacities at reduced radii. Booms must be folded slightly to lift the rated load.

ROTATION TO HOOK POINT



* Lifting in this configuration will require optional intermediate crane hook link.

National N-50 Articulating Crane

Model 27

- Hydraulic reservoir
- Two hydraulic outriggers with manual extension to 15' (4.5m) span
- Frame, inner boom, outer boom with two hydraulic extensions to 27' (8.2m)
- 390-degree rotation
- Five spool control valves
- Counterbalance valves on lift, fold, extend, automatic check valves on outriggers
- Dual controls
- Manual truck throttle
- Crane hook
- Hydraulic pump and easy mounting group

Model 27 maximum reach

- Above truck frame to 30'8" (9.34m)
- Below truck frame to 18'8" (5.7m)
- Horizontal to 27' (8.2m)

Model 40

This model is the same as Model 27, but has two (optional) manual pull-out extensions that extend the reach to 40' (12.2m). The hydraulic extensions retract and extend under full load and reach to 27' (8.2m). The manual pull-out extensions are quick to rig and easy to use.

Model 40 maximum reach

- Above truck frame to 42'8" (13m)
- Below truck frame to 30'2" (9.2m)
- Horizontal to 40' (12.2m)

Other N-50 Models

Consult the factory for specifications for N-50 Models 21 and 33. Model 21 has one hydraulic boom. Model 33 has two hydraulic booms and one manual extension.

Special safety features

- Boom cylinders have counterbalance valves with internal safety relief valves to help protect against overload and hose failure
- Dual hydraulic controls with identical operations on each side
- Double-acting cylinders
- Pilot-operated outrigger check valves (standard)



Technical Data

Working pressure.....	3,250 psi.....	224 bar
Pump capacity (gear-type pump).....	9 gallons/min.....	34.06 liters/min.
Reservoir oil capacity.....	10.5 gallons.....	39.7 liters
Outrigger span.....	15.....	4.5 m
Stowed height (above truck frame).....	6'6".....	2 m
N50/27 Weight (with oil).....	2,850 lbs.....	1,293 kg
Filter.....	10 micron replaceable (spin-on type) filter	
Rotation (non-continuous).....	390 degrees.....	390-degrees
Mounting space required.....	28.5'.....	72 cm
Mounting space required with optional winch.....	33.5'.....	85.1 cm
with optional reel.....	36'.....	91.4 cm
with optional high performance winch.....	46.75'.....	118.7 cm
Boom rotation speed.....	16 degrees per second*	
Boom hydraulic extension speed.....	1.07 feet per second*.....	32 meters per second*
Boom hydraulic retraction speed.....	1.6 feet per second*.....	48 meters per second*

Notes: Contact the factory for continuous duty cycle applications.

* Approximate.

National N-50 Mounting Specifications

Mounting It is essential that the truck used for mounting this crane meet the minimum requirements (shown at the right) for capacity loads.	Minimum Truck Specifications			
	180° Working Area This vehicle will permit lifting capacity loads in all areas around the rear of the vehicle in a 180° arc from outrigger to outrigger. No load should be lifted over the front of the vehicle unless extra stabilizing provisions are made, such as the addition of front stabilizers and/or extra weight in the truck bed.	360° Working Area This vehicle will permit lifting capacity loads in all areas around the vehicle in a 360° arc. Caution should be employed when rotating from the rear to the front as the vehicle springs will compress and cause a change in the level of the vehicle. Always rotate loads slowly and smoothly to maximize control.	Fixed-span Outriggers This vehicle will permit lifting capacity loads in all areas around the vehicle in a 360° arc. Caution should be employed when rotating from the rear to the front as the vehicle springs will compress and cause a change in the level of the vehicle. Always rotate loads slowly and smoothly to maximize control.	Rear Mount The advantages of a rear mount are: (1) location of the crane allows the operator to effectively use the close-in working area to lift heavier capacity loads and (2) it permits lifting capacity loads in a 360° arc. Caution should be employed when rotating from the rear to the front as vehicle springs will compress and cause a change in the level of the vehicle. Always rotate loads slowly and smoothly to maximize control.
Minimum wheelbase	177 inches	177 inches	207 inches	189 inches
Rear	108 inches	108 inches	138 inches	120 inches
Recom. axle rating (F)*	7,000 lbs. GAWR*	7,000 lbs. GAWR*	12,000 lbs. GAWR*	7,000 lbs. GAWR
Recom. axle rating (R)*	15,000 lbs. GAWR	15,000 lbs. GAWR	21,000 lbs. GAWR	15,000 lbs. GAWR
Working Area	180°	360°	360°	360°
Truck weight	8,000 lbs. (3)	8,400 lbs. (3)	15,500 lbs. (3)	9,500 lbs. (3)
Chassis weight front axle*	4,000 lbs. minimum* 4,900 lbs. maximum**	4,000 lbs. minimum* 4,900 lbs. maximum**	8,000 lbs. minimum*	4,500 lbs. minimum (3)*
Chassis weight rear axle*	4,000 lbs. minimum (3)*	4,400 lbs. minimum (3)*	7,500 lbs. minimum (3)*	5,000 lbs. minimum (3)*
Frame: 50,000 PSI yield steel 110,000 PSI yield steel	13-inch ³ Section Modulus 8-inch ³ Section Modulus	13-inch ³ Section Modulus 8-inch ³ Section Modulus	13-inch ³ Section Modulus 8-inch ³ Section Modulus	14-inch ³ Section Modulus 9-inch ³ Section Modulus
Frame height	38 inches or less preferred			
Power take off	70-85 percent of engine speed. Minimum horsepower 20 at 1,500 rpm			
Notes: (1) GAWR means Gross Axle Weight Rating and is dependent on all components of the vehicle such as axles, tires, wheels, springs, brakes, steering and frame strength meeting manufacturer's recommendations. Always specify GAWR when purchasing trucks. (2) Minimum axle requirements may increase with use of diesel engines, longer wheelbase or service bodies. Contact factory for further information. (3) Chassis weight includes bed (4) Diesel engines require variable speed governor	<p>8000 LBS MAX 4000 LBS MAX</p>	<p>8000 LBS MAX 4000 LBS MAX</p>	<p>8000 LBS MAX 4000 LBS MAX</p>	<p>8000 LBS MAX 4000 LBS MAX</p>
	<p>FULL CAPACITY WITH AXLE</p>	<p>FULL CAPACITY WITH AXLE</p>	<p>FULL CAPACITY WITH AXLE</p>	<p>FULL CAPACITY WITH AXLE</p>
	**If front or rear axle chassis weight is less than minimum, counterweight may be required to lift rated capacity loads to keep unit stable. * Maximum rating can be exceeded if GAWRF is greater than 7,000 pounds.			

National N-50 Options and Accessories

Every National N-50 is more than just a crane. It is part of a complete lifting system.

The National Lifting System equips your crane to do more than just lift or handle materials. The accessories shown here enable one truck-mounted N-50 to perform jobs that typically require a whole fleet of specialized, expensive vehicles. With a National, you can do more, faster, with less equipment and manpower. That's money in your pocket!

NOTE:

Weights of all accessories attached to the boom or loadline of the crane must be deducted from the effective lifting capacity. Some accessories cannot be used in combination with other accessories. Consult your dealer for specific accessory availability.

Remote Control

Our one-hand remote control is ideal for use where precise control and total load visibility are required. Fine metering and instant response enables operators to position loads easily.

These reliable controls utilize solid state circuitry and provide high operating speeds and modular design. They work with standard dual controls. Model MR4 lifts, turns, folds and extends. Model MR5 is the same as MR4, plus one accessory. MR6 is the same as MR4 plus two accessories.

A priority control valve operated by a trigger on the remote control unit regulates oil flow and gives you fingertip speed control over all crane functions.

Model MR4

Model MR5

(Requires one accessory valve section)

Model MR6

(Requires two accessory valve sections)

Note: Diesel engines require an electric shutoff.



One Person Basket

This strong, lightweight fiberglass basket with 300-pound (136kg) capacity puts personnel where you want them for the occasional tough maintenance and installation jobs. Gravity or lock-type leveling.

Capacity..... 300 lbs
Weight..... 220 lbs
Dimensions..... 22" x 22" x 42"
Construction..... Fiberglass

Gravity hung, yoke style. Available only with brake. Includes easy on-off safety belt and lanyard. Cannot be used simultaneously with winch.

Model B1-LY (with lock)



Winch

This extra-capacity, heavy-duty, worm-gear winch handles up to 3,300 (1,497kg) pounds with a single part line block. Easy single-pin attachment of boom-tip sheave head. 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. The winch option reduces the capacities by approximately 200 pounds (91kg) and eliminates the inner hook point on the outer section boom. Requires 36.5 inches (92.7cm) mounting space.

Model N1

Line pull

1st wrap..... 4,000 lbs
2nd wrap..... 3,650 lbs
3rd wrap..... 3,300 lbs

Speed

1st wrap..... 25 ft./min.
2nd wrap..... 25 ft./min.
3rd wrap..... 27 ft./min.

Cable

90 ft. of 3/8" rotation resistant cable

Winch

6.75" diameter drum,
10.25" diameter flange, 6"
wide, safety brake. OSHA
requires 18:1 ratio drum
diameter to cable diameter.

Sheaves

Run on roller bearings with
OSHA required 18:1 ratio
sheave diameter to cable
diameter.

Controls

Includes hydraulic control
valve and hoses to winch.

Hydraulic-Powered Horizontal Outrigger Extension

An optional hydraulic-powered horizontal outrigger extension, with a 15-foot span, is available for the N-50. This feature allows for fast, convenient set-up of the crane.

Model HO-15

Intermediate Crane Hook Link

A load attachment link designed for installation on the outer boom section provides the capability of picking loads at 53° and 77° radii.

Model IH

Caution:

Do not operate crane, booms, any accessories, or loads within 10 feet (3m) of live power lines or other conductors of electricity. Jib and boom capacities shown are maximum for each section. Do not exceed capacities at reduced radii.

Hydraulic Auger

This popular N-50 accessory gives you digging depths to 4.5 feet (1.8m) and flightings up to 18 inches (46cm). Attaches easily, works fast and disconnects quickly. Requires AH1 Accessory Control Valve Group. Optional extension will provide a digging depth to 6.5 feet (2.4m). Contact factory for details.

Reach.....	27'
Reduction.....	4:1
RPM.....	65 rpm at 9 gpm
Pressure.....	3,250 psi
Pump.....	9 gpm required
Torque Output.....	1,500 ft-lbs
Drive Weight.....	205 lbs.
Length.....	48" overall
Controls.....	Requires AH1 hydraulic control valve option

Flighting and Weight		
Flighting Length	Weight	
9" - 30" double flighting	66 lbs.	
12" - 30" double flighting	78 lbs.	
15" - 30" double flighting	92 lbs.	

Model AG50



High-performance Hydraulic Auger

This auger is available for applications requiring higher speed. It requires 46.74 inches (118.7cm) of mounting space. Contact factory for details.

Model AGHP

Accessory Control Valves

These additional control valves are required for the operation of hydraulic accessories. Comes complete with controls for both sides of your machine, hoses, quick couplers, and piping to the end of the outer boom. Available in two models: AH1 single function for rotator or auger and AH2 with two functions for grapple or clam bucket. Mounts easily on the existing control panel.

Model AH1
Model AH2

Hydraulic Reel

Provides hydraulic accessory lines at the end of the second hydraulic section. Comes complete with controls for both sides of the machine, reel, hose, and quick couplers at the end of the second hydraulic section. Available in two models: RAH 1 with single function for rotator, and RAH 2 with two functions for operating hydraulic accessories. Requires 36 inches (91.4cm) mounting space.

Model RAH 1
Model RAH 2

Pallet Fork

Turns your N-50 into a versatile, payload-packing fork lift. Great for delivering palletized materials where you want them. 4,400 pounds (1,996kg) capacity with adjustable throat and teeth. Handles most loads with ease. Available with hydraulic leveling or with a manual slide collar for leveling. For extra versatility specify a National hydraulic rotator.

Capacity.....	4,400 lbs.
Throat.....	
Opening.....	41" to 65" (adjustable)
Tooth Length.....	38.5"
Tooth Width.....	53.5" min. to 57" max. (outside to outside)
Weight.....	
MPK.....	350 lbs.
MPK.....	350 lbs.
MPKR.....	450 lbs.

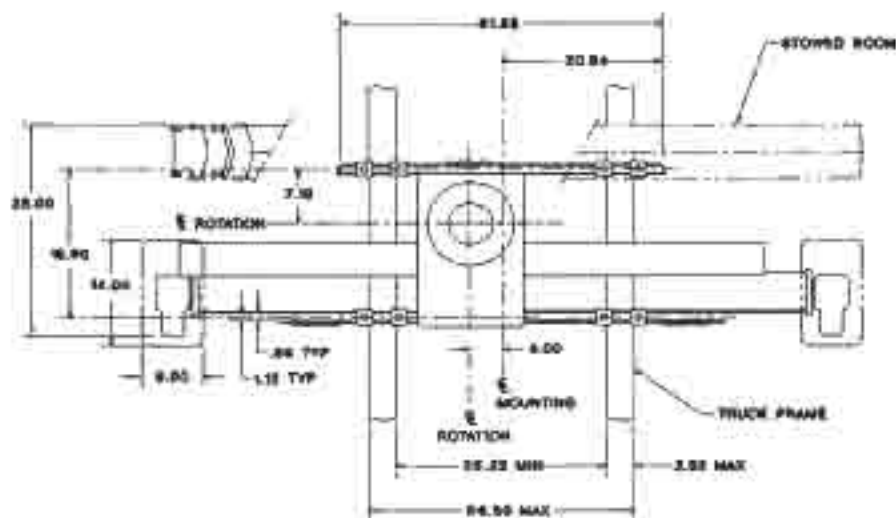
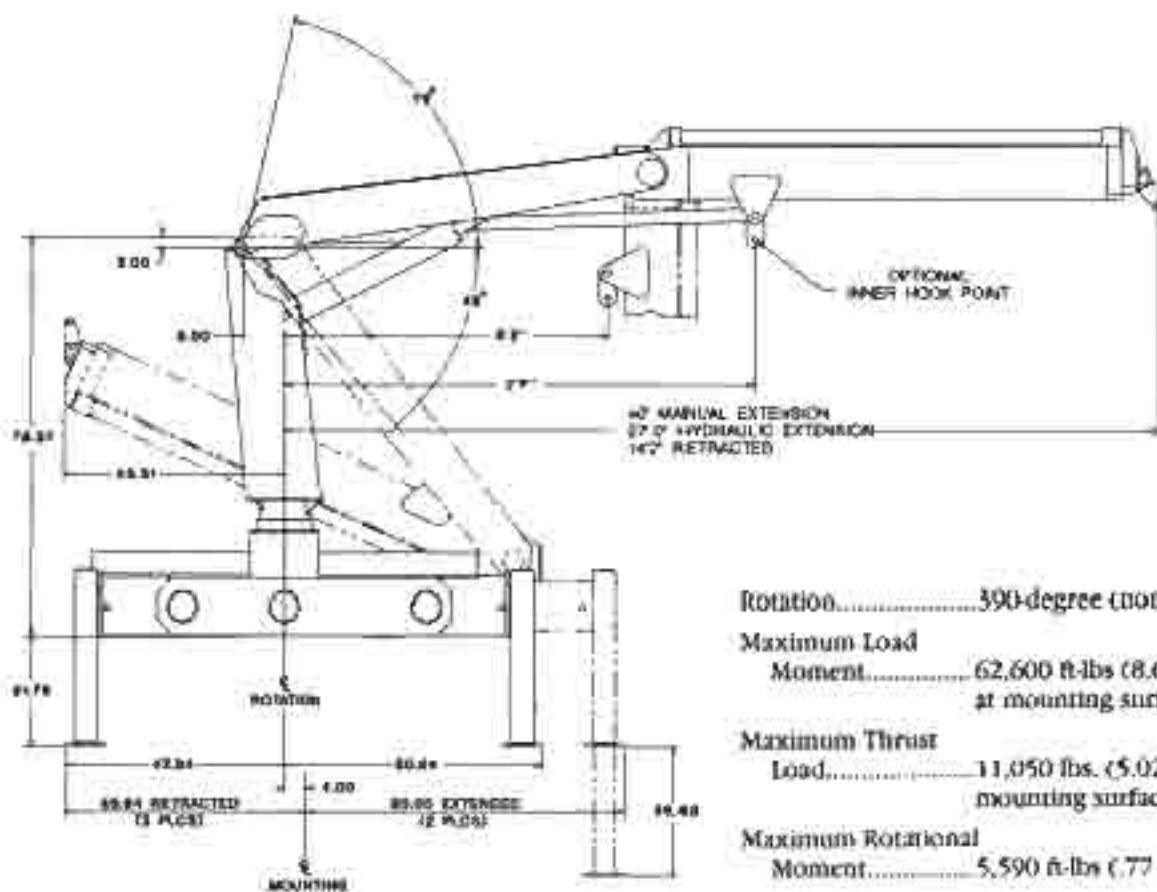
Model MPK
(Manual leveling, adjustable throat)

Model HFK
(Hydraulic leveling, adjustable throat)

Model HFKR
(Hydraulic leveling, adjustable throat with hydraulic rotator)
Requires AH2 or RAH 2



National N-50 Dimensional Specifications



National N-50 Proposal

	Description	Price
	Basic N-50/21	\$ _____
	Basic N-50/27	\$ _____
	Basic N-50/33	\$ _____
	Basic N-50/40	\$ _____
	Options/Accessories	
	1. Optional controls	\$ _____
		<input type="checkbox"/> MR4 Remote \$ _____
		<input type="checkbox"/> MR5 Remote \$ _____
		<input type="checkbox"/> MR6 Remote \$ _____
	2. Auger AG-50	\$ _____
	3. Winch NI	\$ _____
	4. Pallet Fork	\$ _____
		<input type="checkbox"/> MPK Manual Leveling \$ _____
		<input type="checkbox"/> HFK Hydraulic Leveling \$ _____
		<input type="checkbox"/> MPKR Hydraulic Leveling with Hydraulic Rotator \$ _____
	5. Grapples or Clam Bucket	\$ _____
		<input type="checkbox"/> BTG Butt-type \$ _____
		<input type="checkbox"/> BPG Bypassing \$ _____
		<input type="checkbox"/> GPC \$ _____
	6. Accessory Valves	\$ _____
		<input type="checkbox"/> AH1 Single Control \$ _____
		<input type="checkbox"/> AH2 Dual Control \$ _____
	7. Hydraulic Reel	\$ _____
		<input type="checkbox"/> RAH 1 Single Hydraulic Option \$ _____
		<input type="checkbox"/> RAH 2 Dual Hydraulic Option \$ _____
	8. One Person Basket	\$ _____
	9. Hydraulic Horizontal Outrigger	\$ _____
	10. Other _____	\$ _____
	Mounting	
	11. Installation: <input type="checkbox"/> Std. <input type="checkbox"/> Spec.	\$ _____
	12. Stability: <input type="checkbox"/> 180-degree <input type="checkbox"/> 360-degree	\$ _____
	13. Frame Reinforcing: <input type="checkbox"/> Weld <input type="checkbox"/> Bolt-Extra	\$ _____
	14. Platform Bed _____ ft. <input type="checkbox"/> Wood <input type="checkbox"/> Steel	\$ _____
	15. Weight in Bed _____ lbs. (if required)	\$ _____
	16. Chassis _____	\$ _____
	17. Rear Bumper Protection _____	\$ _____
	18. Back-up Alarm _____	\$ _____
	19. Freight _____	\$ _____
		Sub Total
	This quotation will remain firm for _____ days	
	Accepted by: _____	\$ _____
	(Name) (Title)	Total Price
	(Firm Name)	(Date)

Date _____

Prepared for: _____

Submitted by: _____

(Firm Name) _____

(Address) _____

(City & State) _____

(Zip) _____

(Phone) _____

Signed: _____

National N-50 Articulating Crane



NATIONAL CRANE
A Grove Worldwide Company

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Your National Dealer:

National Crane reserves the right to
change designs, prices and specifications
at any time without notice.