National Crane 600H Series
Product Guide

Features

• 18.1 t (20 USt) rating

• Six boom options available from 11.58 m (38 ft) to 27.42 m (90 ft)

• Full-, mid-, and retracted-span outriggers

• Mentor LMI System

• Internal anti-two block wiring

• Standard and rear mount options
National Crane Series 600H

- 18,1 t (20 USt) maximum capacity
- 30,2 m (99 ft) maximum tip height (main boom)
- 43,95 m (144 ft) maximum tip height (boom with jib)

Boom
At 27,5 m (90 ft) the 600H series four-section boom is the longest in its size range. The longer boom allows the operator to perform more lifts without the use of a jib, reducing setup time and improving efficiency. A 11,58 m (38 ft) three-section boom, 15 m (49 ft) four-section boom, 18,3 m (60 ft) three-section boom, 21,64 (71 ft) three-section boom, and 24,38 m (80 ft) four-section boom are also available.

"HO"-style outriggers

Standard Mount: Two sets of “HO”-style outriggers with 5,28 m (17 ft 4 in) span, with 3,04 m (10 ft) mid-span setting with manual locks and reduced capacity chart and fully retracted outrigger spread with reduced capacity chart.

Rear Mount: 4,7 m (15.3 ft) full span, with 4,05 m (13.3 ft) mid-span setting with manual locks and reduced capacity chart and fully retracted outrigger spread with reduced capacity chart.

Main outriggers are equipped with removable ball and socket aluminum foot pads standard.

Overload protection
Mentor Load Moment Indicator (LMI) with work area definition system (WADS) is standard on all Series 600H machines. The LMI display console is weatherproof and displays all crane load lifting values simultaneously.
Features

Improved serviceability and reliability helps keep you working longer

• Bearings on the boom and retract cables can be greased through access holes in the boom side plates

• Number of internal boom parts has been reduced, decreasing service time

• Internal anti-two-block wire routing eliminates damage potential

• Painting crane components before assembly reduces the possibility of rust and enhances the appearance of the machine

• State of the art control valve provides smoother operation. The new design eliminates parts, reducing repair costs and improving the machines serviceability

• Easy-reeve boom tip and sheave blocks simplify rigging changes by decreasing the time needed to change line reeving

Performance you can rely on

• The Series 600H is standard with 375° non-continuous rotation

• The optional duty cycle package which includes a burst of speed winch provides faster winch payout and pickup of unloaded cable

• The stronger standard torsion box improves rigidity, reduces truck frame flex and reduces the need for counterweight

• A control knob located on the swing motor brake release valve can be easily adjusted to the crane operator’s swing speed preference

• Easy Glide Boom Wear Pads reduce the conditions that cause boom chatter and vibration. The net result is smoother crane operation.
Contents

Features 2
Mounting configurations 5
Specifications 6
Capacities 7
Dimensions specifications 14
Accessories 15
Mounting configuration

The configurations are based on the Series 600H with an 85% stability factor. The complete unit must be installed in accordance with factory requirements and a test performed to determine actual stability and counterweight requirements since individual truck chassis vary.

Configuration 1 with torsion box – 180˚ full capacity work area

Working area ............................................ 180˚
Gross axle weight rating front .................. 6350 kg (14,000 lb)
Gross axle weight rating rear .................. 15,422 kg (34,000 lb)
Gross vehicle weight rating ..................... 21,773 kg (48,000 lb)
Wheelbase ............................................. 650 cm (256 in)
Cab to axle/trunnion (CA/CT) ...................... 488 cm (192 in)
Frame Section Modulus (SM) under crane:
758 MPa (110,000 PSI) .......................... 327.7 cm³/20 in³
Frame Section Modulus (SM) over rear stabilizers:
758 MPa (110,000 PSI) .......................... 213 cm³ (13 in³)
Stability weight, front .......................... 3946 kg (8700 lb) minimum*
Stability weight, rear .......................... 3901 kg (8600 lb) minimum*

This configuration is the least expensive method for the Model 600H. This mount, with the crane mounted behind the cab, requires the least weight of all mounts for stability; thus, you can haul larger payloads on your truck. It requires standard subbase and rear (ASH) stabilizers. *Weights do not include RSOD, PTO, pump, bed and SFO.

Configuration 2 with torsion box – 360˚ full capacity work area

Working area ............................................ 360˚
Gross axle weight rating front .................. 6350 kg (14,000 lb)
Gross axle weight rating rear .................. 15,422 kg (34,000 lb)
Gross vehicle weight rating ..................... 21,773 kg (48,000 lb)
Wheelbase ............................................. 650 cm (256 in)
Cab to axle/trunnion (CA/CT) ...................... 488 cm (192 in)
Frame Section Modulus (SM) under crane:
758 MPa (110,000 PSI) .......................... 328 cm³ (20 in³)
Frame Section Modulus (SM) over rear stabilizers:
758 MPa (110,000 PSI) .......................... 213 cm³ (13 in³)
Stability weight, front .......................... 3946 kg (8700 lb) minimum*
Stability weight, rear .......................... 3901 kg (8600 lb) minimum*

Requires front SFO stabilizer to give machine full capacity 360˚ around the truck. Truck must meet the minimum requirements above. Front stabilizer gives the machine a solid base, helping the operator control loads precisely. Extended front frame rails required for SFO installation. *Weights do not include RSOD, PTO, pump, bed and SFO.

Configuration 3 with torsion box – rear mount

Working area ............................................ 360˚
Gross axle weight rating front .................. 5443 kg (12,000 lb)
Gross axle weight rating rear .................. 15,422 kg (34,000 lb)
Gross vehicle weight rating ..................... 20,865 kg (46,000 lb)
Wheelbase ............................................. 650 cm (256 in)
Cab to axle/trunnion (CA/CT) ...................... 488 cm (192 in)
Frame Section Modulus (SM) under crane:
758 MPa (110,000 PSI) .......................... 261 cm³ (15.9 in³)
Frame Section Modulus (SM) over rear stabilizers:
758 MPa (110,000 PSI) .......................... 261 cm³ (15.9 in³)
Stability weight, front .......................... 2948 kg (6500 lb) minimum*
Stability weight, rear .......................... 4309 kg (9500 lb) minimum*

Allows the installation of the Model 600H on a chassis. In most cases, the chassis will not require reinforcing, and the amount of counterweight required is minimized, increasing payload capacities. *Weights do not include RSOD, PTO, pump, bed and SFO.

Notes:
- Gross Vehicle Weight rating (GVWR) is dependent on all components of the vehicle (axles, tires, springs, frame, etc.) meeting manufacturers’ recommendations: always specify GVWR when purchasing trucks
- Diesel engines require a variable speed governor and energize-to-run fuel solenoid for smooth crane operation; electronic fuel injection requires EET engine remote throttle
- All mounting data is based on a National Series 600H with an 85 percent stability factor
- The complete unit must be installed in accordance with factory requirements, and a test performed to determine actual stability and counterweight requirements per SAE J765; contact the factory for details
- Transmission neutral safety interlock switch is required with optional radio remote control

*Estimated axle scale rates prior to installation of crane, stabilizers and subbase for 85% stability.
## Specifications

### Boom and jib combinations data

<table>
<thead>
<tr>
<th>Model</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model 638H</strong></td>
<td>Equipped with a 4.88 m - 11.58 m (16 ft - 38 ft) three-section boom. Maximum tip height is 14.63 m (48 ft) (no jib option available).</td>
</tr>
<tr>
<td><strong>Model 649H</strong></td>
<td>Equipped with a 4.88 m - 15 m (16 ft - 49 ft) four-section boom. Maximum tip height is 17.98 m (59 ft).</td>
</tr>
<tr>
<td><strong>Model 660H</strong></td>
<td>Equipped with a 7.32 m - 18.3 m (24 ft - 60 ft) three-section boom. Maximum tip height is 21.3 m (70 ft) (no jib option available).</td>
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<tr>
<td><strong>Model 671H</strong></td>
<td>Equipped with a 8.23 m - 21.64 m (27 ft - 71 ft) three-section boom. This model can be equipped with a 7.62 m - 13.72 m (25 ft - 45 ft) two-section jib. Maximum tip height with 13.72 m (45 ft) jib is 38.25 m (125 ft).</td>
</tr>
<tr>
<td><strong>Model 680H</strong></td>
<td>Equipped with a 7.32 m - 24.38 m (24 ft - 80 ft) four-section boom. Maximum tip height is 27.44 m (90 ft) (no jib option available).</td>
</tr>
<tr>
<td><strong>Model 690H</strong></td>
<td>Equipped with a 8.23 m - 27.43 m (27 ft - 90 ft) four-section boom. This model can be equipped with a 7.62 m - 13.72 m (25 ft - 45 ft) two section jib. Maximum tip height with 13.72 m (45 ft) jib is 43.95 m (144 ft).</td>
</tr>
</tbody>
</table>

Note: Maximum tip is measured with outriggers/stabilizers fully extended.
### 600H Winch Data

- All winch pulls and speeds in this chart are shown on the fourth layer.
- Winch line pulls would increase on the first and second layers.
- Winch line pulls may be limited by the winch capacity or the ANSI 5 to 1 cable safety factor, shown below this chart.
- Hook blocks are rated at maximum capacity for the block. Do not exceed rated cable pull with any block.

<table>
<thead>
<tr>
<th>Winch</th>
<th>Cable supplied</th>
<th>Minimum breaking strength</th>
<th>Max. pull</th>
<th>Max. pull</th>
<th>Max. pull</th>
<th>Max. pull</th>
<th>Max. pull</th>
<th>Max. pull</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard planetary winch</td>
<td>9/16” diameter rotation resistant</td>
<td></td>
<td>17,463 kg (38,500 lb)</td>
<td>3493 kg (7700 lb)</td>
<td>6985 kg (15,400 lb)</td>
<td>10,478 kg (23,100 lb)</td>
<td>13,971 kg (30,800 lb)</td>
<td>17,463 kg (38,500 lb)</td>
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### Layer

<table>
<thead>
<tr>
<th>Layer</th>
<th>Winch pull</th>
<th>Winch speed</th>
<th>BOS winch speed</th>
<th>Rope capacity</th>
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<td>mpm</td>
<td>fpm</td>
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</tbody>
</table>

Note: All ratings based on 128.7 LPM at 22.75 MPa (34 GPM at 3300 psi). Burst of speed maximum pull = 1361 kg (3000 lb)

<table>
<thead>
<tr>
<th>Winch</th>
<th>Bare drum pull</th>
<th>Allowable cable pull</th>
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</thead>
<tbody>
<tr>
<td>With standard rotation resistant rope</td>
<td>4627 kg (10,200 lb)</td>
<td>3493 kg (7700 lb)</td>
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### Block Type

<table>
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<tr>
<th>Block Type</th>
<th>Rating</th>
<th>Weight</th>
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</thead>
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<tr>
<td>Downhaul Weight</td>
<td>6.4 t (7 USt)</td>
<td>78 kg (171 lb)</td>
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<tr>
<td>1 Sheave Block</td>
<td>11.3 t (12.5 USt)</td>
<td>91 kg (200 lb)</td>
</tr>
<tr>
<td>2 Sheave Block</td>
<td>20 t (22 USt)</td>
<td>161 kg (355 lb)</td>
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</tbody>
</table>
Other Series 600H load rating charts are available. National Crane will send you a chart on request – or you may secure needed load rating information through your nearest National Crane dealer.

CAUTION:
- Do not operate crane booms, jib extensions, any accessories or loads within 3 m (10 ft) 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.
- Load ratings shown on the appropriate charts are maximum allowable loads with the crane mounted on a factory-approved truck and all outriggers at either full span or at mid span range and set on a firm level surface so that the crane is level and all tires are suspended.
- Always level the crane with the level indicator located on the crane.
- The operator must reduce load to allow for factors such as wind, ground conditions, operating speeds and their effects on freely suspended loads.
- Overloading this crane may cause structural collapse or instability.
- Weights on any accessories attached to the boom or loadline must be deducted from the load chart capacities.
- Do not deadhead lineblock against boom tip when extending boom or winching up.
- Keep at least three wraps of loadline on drum at all times.
- Use only specified cable with this machine.

* Shaded areas are structurally limited capacities.
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- Do not deadhead lineblock against boom tip when extending boom or winching up.
- Keep at least three wraps of loadline on drum at all times.
- Use only specified cable with this machine.

**THIS CHART IS ONLY A GUIDE AND SHOULD NOT BE USED TO OPERATE THE CRANE.**

The individual crane’s load chart, operating instructions and other instructional plates must be read and understood prior to operating the crane.

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**649H: 15 m (49 ft) boom with full span outriggers, no jib**

**Load chart**

<table>
<thead>
<tr>
<th>LOADED RADIUS (ft)</th>
<th>LOADED BOOM ANGLE (deg)</th>
<th>16 FT BOOM (lb)</th>
<th>LOADED BOOM ANGLE (deg)</th>
<th>A 25 FT BOOM (lb)</th>
<th>LOADED BOOM ANGLE (deg)</th>
<th>B 33 FT BOOM (lb)</th>
<th>LOADED BOOM ANGLE (deg)</th>
<th>C 41 FT BOOM (lb)</th>
<th>LOADED BOOM ANGLE (deg)</th>
<th>49 FT BOOM (lb)</th>
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<td></td>
<td></td>
<td>19</td>
</tr>
</tbody>
</table>

| 0 | 10,950 | 0 | 6350 | 0 | 4350 | 0 | 3200 | 0 | 2600 |

* Shaded areas are structurally limited capacities.
Other Series 600H load rating charts are available. National Crane will send you a chart on request – or you may secure needed load rating information through your nearest National Crane dealer.

CAUTION:
- Do not operate crane booms, jib extensions, any accessories or loads within 3 m (10 ft) 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.
- Load ratings shown on the appropriate charts are maximum allowable loads with the crane mounted on a factory-approved truck and all outriggers at either full span or at mid span range and set on a firm level surface so that the crane is level and all tires are suspended.
- Always level the crane with the level indicator located on the crane.
- The operator must reduce load to allow for factors such as wind, ground conditions, operating speeds and their effects on freely suspended loads.
- Overloading this crane may cause structural collapse or instability.
- Weights on any accessories attached to the boom or loadline must be deducted from the load chart capacities.
- Do not deadhead lineblock against boom tip when extending boom or winching up.
- Keep at least three wraps of loadline on drum at all times.
- Use only specified cable with this machine.

* Shaded areas are structurally limited capacities.

**THIS CHART IS ONLY A GUIDE AND SHOULD NOT BE USED TO OPERATE THE CRANE.**

*The individual crane’s load chart, operating instructions and other instructional plates must be read and understood prior to operating the crane.*
671H: 21.6 m (71 ft) boom with 13.7 m (45 ft) jib and full span outriggers

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• Do not deadhead lineblock against boom tip when extending boom or winching up.
• Keep at least three wraps of loadline on drum at all times.
• Use only specified cable with this machine.

RADIUS IN FEET

NOTE:
1. Operate with jib by radius when main boom is fully extended. If necessary increase boom angle to maintain loaded radius.
2. Operate with jib by boom angle when main boom is not fully extended. Do not exceed rated jib capacities at any reduced boom lengths.

Load chart

<table>
<thead>
<tr>
<th>LOADED RADIUS (ft)</th>
<th>LOADED BOOM ANGLE</th>
<th>28 FT BOOM</th>
<th>LOADED BOOM ANGLE</th>
<th>A 35 FT BOOM</th>
<th>LOADED BOOM ANGLE</th>
<th>B 44 FT BOOM</th>
<th>LOADED BOOM ANGLE</th>
<th>C 53 FT BOOM</th>
<th>LOADED BOOM ANGLE</th>
<th>D 62 FT BOOM</th>
<th>LOADED BOOM ANGLE</th>
<th>71 FT BOOM</th>
</tr>
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* Shaded areas are structurally limited capacities.

25 ft-45 ft JIB FULL SPAN RATED LOADS

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<thead>
<tr>
<th>LOADED RADIUS (ft)</th>
<th>LOADED BOOM ANGLE</th>
<th>25 ft JIB Lb</th>
<th>LOADED BOOM ANGLE</th>
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THIS CHART IS ONLY A GUIDE AND SHOULD NOT BE USED TO OPERATE THE CRANE.

The individual crane's load chart, operating instructions and other instructional plates must be read and understood prior to operating the crane.
Capacities

680H: 23.4 m (80 ft) boom with full span outriggers, no jib

Other Series 600H load rating charts are available. National Crane will send you a chart on request – or you may secure needed load rating information through your nearest National Crane dealer.

**CAUTION:**
- Do not operate crane booms, jib extensions, any accessories or loads within 3 m (10 ft) 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.
- Load ratings shown on the appropriate charts are maximum allowable loads with the crane mounted on a factory-approved truck and all outriggers at either full span or at mid span range and set on a firm level surface so that the crane is level and all tires are suspended.
- Always level the crane with the level indicator located on the crane.
- The operator must reduce load to allow for factors such as wind, ground conditions, operating speeds and their effects on freely suspended loads.
- Overloading this crane may cause structural collapse or instability.
- Weights on any accessories attached to the boom or loadline must be deducted from the load chart capacities.
- Do not deadhead lineblock against boom tip when extending boom or winching up.
- Keep at least three wraps of loadline on drum at all times.
- Use only specified cable with this machine.

**Load chart**

<table>
<thead>
<tr>
<th>LOADED RADIUS (ft)</th>
<th>LOADED BOOM ANGLE (deg)</th>
<th>BOOM LENGTH IN FEET</th>
<th>LOADED BOOM ANGLE (deg)</th>
<th>HEIGHT IN FT</th>
<th>LOADED BOOM ANGLE (deg)</th>
<th>LOADED BOOM ANGLE (deg)</th>
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</table>

* Shaded areas are structurally limited capacities.

**THIS CHART IS ONLY A GUIDE AND SHOULD NOT BE USED TO OPERATE THE CRANE.**

The individual crane’s load chart, operating instructions and other instructional plates must be read and understood prior to operating the crane.
Other Series 600H load rating charts are available. National Crane will send you a chart on request – or you may secure needed load rating information through your nearest National Crane dealer.

**CAUTION:**
- Do not operate crane booms, jib extensions, any accessories or loads within 3 m (10 ft) 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.
- Load ratings shown on the appropriate charts are maximum allowable loads with the crane mounted on a factory-approved truck and all outriggers at either full span or at mid span range and set on a firm level surface so that the crane is level and all tires are suspended.
- Always level the crane with the level indicator located on the crane.
- The operator must reduce load to allow for factors such as wind, ground conditions, operating speeds and their effects on freely suspended loads.
- Overloading this crane may cause structural collapse or instability.
- Weights on any accessories attached to the boom or loadline must be deducted from the load chart capacities.
- Do not deadhead lineblock against boom tip when extending boom or winching up.
- Keep at least three wraps of loadline on drum at all times.
- Use only specified cable with this machine.

**NOTE:**
1. Operate with jib by radius when main boom is fully extended. If necessary increase boom angle to maintain loaded radius.
2. Operate with jib by boom angle when main boom is not fully extended. Do not exceed rated jib capacities at any reduced boom lengths.

**Load chart**

<table>
<thead>
<tr>
<th>LOADED RADIUS (ft)</th>
<th>LOADED BOOM (deg)</th>
<th>27 FT BOOM (lb)</th>
<th>LOADED BOOM (deg)</th>
<th>41 FT BOOM (lb)</th>
<th>LOADED BOOM (deg)</th>
<th>54 FT BOOM (lb)</th>
<th>LOADED BOOM (deg)</th>
<th>66 FT BOOM (lb)</th>
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* shaded areas are structurally limited capacities.
Dimensions

Standard mount

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<th>Dry weight*</th>
<th>w/oil weight*</th>
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<td>638H</td>
<td>123 cm (48.43 in)</td>
<td>116 cm (45.81 in)</td>
<td>6301 kg (13,891 lb)</td>
<td>6632 kg (14,622 lb)</td>
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<td>649H</td>
<td>141 cm (55.32 in)</td>
<td>123 cm (48.38 in)</td>
<td>6590 kg (14,529 lb)</td>
<td>6937 kg (15,294 lb)</td>
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<td>660H</td>
<td>168 cm (66.09 in)</td>
<td>128 cm (50.55 in)</td>
<td>6857 kg (15,116 lb)</td>
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<td>671H</td>
<td>176 cm (69.29 in)</td>
<td>134 cm (52.92 in)</td>
<td>7174 kg (15,816 lb)</td>
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<td>680H</td>
<td>165 cm (64.93 in)</td>
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<td>7365 kg (16,236 lb)</td>
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<td>690H</td>
<td>197 cm (77.45 in)</td>
<td>153 cm (60.08 in)</td>
<td>8007 kg (17,653 lb)</td>
<td>8398 kg (18,515 lb)</td>
</tr>
</tbody>
</table>

* ABOVE WEIGHTS DO NOT INCLUDE RESERVOIR, RSOD, JIB, PTO, PUMP, BED

**WEIGHT INCLUDES BOOM, WINCH, ROPE, TURRET, LIFT CYLINDER, FRAME, CONTROLS, OUTRIGGERS, PLATFORMS, TORQUE BOX, BOOM REST, BUMPER, DOWNHAUL WEIGHT

"H" style rear stabilizers

with oil weight

- 672 kg (1481 lb)

UNITS IN INCHES UNLESS SPECIFIED
Radio Remote Controls –
Eliminate the handling and maintenance concerns that accompany cabled remotes. Operate to a range of about 76 m (250 ft), varying with conditions. • RB4R

Heavy-duty Personnel Basket –
544 kg (1200 lb) capacity steel basket with safety loops for two passengers. Gravity leveling 183 cm x 107 cm (72 in x 42 in) platform. Fast attachment and secure rotation locking systems. • BSA-1
• BSA-R1 (provides

Duty Cycle Package –
Burst of speed winch (BOS) control option, hydraulic oil cooler (OC), and self-contained radiator system with electric fan. • DCPKG

Single Front Outrigger –
Center front stabilizer with a 25 in vertical stroke • SFO

Steel Outrigger Pads –
366,6 mm (14 in) diameter steel outrigger pads (non removable) in lieu of the standard 609,6 mm (24 in) diameter aluminum pads. Reduces ground penetration by 9,5 mm (3 3/4 in) and the overall width of completed unit increases to 2564 mm (101 in). • SOP

Bulkhead-steel • BHSD

Boom mounted hose reel
With control valve and hydraulic hoses • CRH

Spanish-Language Danger Decals, • SDD

Control Knobs, and Operators’ Manuals • SOM
Manitowoc Cranes

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