National Crane 600E2 Series
Product Guide

Features

• 27.4 m (90 ft) four-section boom
• 18.1 t (20 USt) rating
• Self-lubricating Easy Glide wear pads
• Internal anti-two block
Four-section boom
At 90 ft, the Series 600E2 four-section boom is the longest in its size range. The long boom allows the operator to perform more lifts without the use of a jib, reducing setup time and improving efficiency.

Easy Glide boom wear pads
Easy Glide boom wear pads reduce the conditions that cause boom chatter and vibration. The net result is smoother crane operation.

National Crane Series 600E2
• 16.3 t (18 USt) maximum capacity
• 36.9 m (121 ft) maximum vertical reach
• 24.7 m (81 ft) maximum vertical hydraulic reach

Outriggers
The Series 600E2 comes equipped with A-frame outriggers and ASH rear stabilizers. An optional single front stabilizer is available for 360° stability. Rear stabilizers include an independent stabilizer control and bolt/clamp-on mounting. Outriggers are equipped with a motion alarm and an outrigger monitoring system.
Front:
6.73 m (22.08 ft) span
Rear:
3 m (10 ft) span
Features

Best in class performance and serviceability

- The steel torsion box and flatbed further reduce frame flex
- Speedy-reeve boom tip and sheave blocks simplify rigging changes by decreasing the time needed to change line reeving
- Crane components painted before assembly reduce the chance of rust, improve serviceability and enhance the appearance of the crane
- A control knob located on the swing motor brake release valve can be easily adjusted to the crane operator’s swing speed preference
- Engine start/stop switches
- Emergency stop overrides located at control station
- Hydraulic reservoir capacity of 66 gal

Serviceability

- Bearings on the boom and retract cables can be greased through access holes in the boom side plates.
- Removable winch allows the internal telescoping cylinder to be removed quickly, without dismantling the boom
- Internal anti-two-block wire routing eliminates external reel and wire to protect crane components
- The boom sheave case is open, allowing access to replace the internal anti-two-block wire and to observe internal boom components
- Internal boom parts have been reduced, decreasing service time when rebuilding the machine

* Product may be shown with optional equipment.
Mounting configurations

The configurations are based on the Series 600E2 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

Requirements:
- Transmission neutral safety interlock switch is required with optional remote control
- 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 remote control

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

Configuration 2 with Torsion Box – 360° Full Capacity Work Area

Allows the installation of the Model 600E2 on a chassis. In most cases, the chassis will not require reinforcing, and the amount of counterweight required is minimized, increasing payload capacities. Extended front frame rails required for SFO installation.

Configuration 3 with Torsion Box – Rear Mount

Notes:
- All mounting data is based on a National Series 600E2 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 per SAE J765; contact the factory for details
- Transmission neutral safety interlock switch is required with optional remote control

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

Boom and jib combinations data

Available in six basic models:

Model 638E2 – 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).

Model 649E2 – Equipped with a 4,88 m - 15 m (16 ft - 49 ft) four-section boom. Maximum tip height is 17,98 m (59 ft).

Model 660E2 – Equipped with a 7,12 m - 18,3 m (24 ft - 60 ft) three-section boom. Maximum tip height is 21,3 m (70 ft) (no jib option available).

Model 671E2 – 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).

Model 680E2 – 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).

Model 690E2 – 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).

Note: Maximum tip is measured with outriggers/stabilizers fully extended.
### Specifications

#### 600E2 winch data

- All winch pulls and speeds 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>Average breaking strength</th>
<th>1 part line</th>
<th>2 part line</th>
<th>3 part line</th>
<th>4 part line</th>
<th>5 part line</th>
<th>6 part line</th>
</tr>
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<tbody>
<tr>
<td>Standard planetary</td>
<td>9/16 in diameter rotation resistant</td>
<td>17,463 kg (38,500 lb)</td>
<td>3492.66 kg (7700 lb)</td>
<td>6985.32 kg (15,400 lb)</td>
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<td>13,970.65 kg (30,800 lb)</td>
<td>14,514.96 kg (38,500 lb)</td>
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<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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**Note:** All ratings based on 128.7 LPM at 22.75 MPa (34 GPM at 3300 psi)

Burst of Speed maximum bull = 1361 kg (3000 lb)

#### Loadline deduct

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<tr>
<th>Block type</th>
<th>Rating</th>
<th>Weight</th>
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<tr>
<td>Downhaul weight</td>
<td>3.49 t (3.85 USt)</td>
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<td>1-sheave block</td>
<td>10.48 t (11.55 USt)</td>
<td>91 kg (200 lb)</td>
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<tr>
<td>2-sheave block</td>
<td>17.46 t (19.25 USt)</td>
<td>161 kg (355 lb)</td>
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</table>

### Winch

- With standard rotation resistant rope

<table>
<thead>
<tr>
<th>Bare drum pull</th>
<th>Allowable cable pull</th>
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<tbody>
<tr>
<td>4627 kg (10,200 lb)</td>
<td>3493 kg (7700 lb)</td>
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</table>
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 load rating charts are maximum allowable loads with the outriggers properly extended on a firm, level surface and the crane leveled and mounted on a factory recommended truck.
- 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 exceed jib capabilities at any reduced boom lengths.
- 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. All capacities are in pounds, angles in degrees, radius in feet.
2. Loaded boom angles are given as reference only.
3. Shaded areas are structurally limited capacities.

**National Crane will send you a chart on request – or you may secure needed load rating information through your nearest National Crane dealer.**
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**Series 649E2: 15 m (49 ft) boom**

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- Keep at least three wraps of loadline on drum at all times.
- Use only specified cable with this machine.

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**Load chart**

<table>
<thead>
<tr>
<th>LOADED RADIUS (ft)</th>
<th>LOADED BOOM ANGLE (deg)</th>
<th>LOADED 16 ft BOOM (lb)</th>
<th>LOADED BOOM ANGLE (deg)</th>
<th>LOADED 25 ft BOOM (lb)</th>
<th>LOADED BOOM ANGLE (deg)</th>
<th>LOADED 33 ft BOOM (lb)</th>
<th>LOADED BOOM ANGLE (deg)</th>
<th>LOADED 41 ft BOOM (lb)</th>
<th>LOADED BOOM ANGLE (deg)</th>
<th>LOADED 49 ft BOOM (lb)</th>
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</table>

**NOTE:**
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2. Loaded boom angles are given as reference only.
3. Shaded areas are structurally limited capacities.

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- Keep at least three wraps of loadline on drum at all times.
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<table>
<thead>
<tr>
<th>LOADED RADIUS (ft)</th>
<th>LOADED BOOM ANGLE (deg)</th>
<th>24 ft BOOM (lb)</th>
<th>LOADED BOOM ANGLE (deg)</th>
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<table>
<thead>
<tr>
<th>LOADED RADIUS (ft)</th>
<th>LOADED BOOM ANGLE (deg)</th>
<th>28 ft BOOM (lb)</th>
<th>LOADED BOOM ANGLE (deg)</th>
<th>A 35 ft BOOM (lb)</th>
<th>LOADED BOOM ANGLE (deg)</th>
<th>B 44 ft BOOM (lb)</th>
<th>LOADED BOOM ANGLE (deg)</th>
<th>C 53 ft BOOM (lb)</th>
<th>LOADED BOOM ANGLE (deg)</th>
<th>D 62 ft BOOM (lb)</th>
<th>LOADED BOOM ANGLE (deg)</th>
<th>71 ft BOOM (lb)</th>
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NOTE:
1. All capacities are in pounds, angles in degrees, radius in feet.
2. Loaded boom angles are given as reference only.
3. Shaded areas are structurally limited capacities.
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 load rating charts are maximum allowable loads with the outriggers properly extended on a firm, level surface and the crane leveled and mounted on a factory recommended truck.
• 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 exceed jib capacities at any reduced boom lengths.
• 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.

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- Keep at least three wraps of loadline on drum at all times.
- Use only specified cable with this machine.

Load chart

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<th>LOADED BOOM ANGLE (deg)</th>
<th>24 ft BOOM (lb)</th>
<th>LOADED BOOM ANGLE (deg)</th>
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NOTE:
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3. 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.
Capacities

Series 690E2: 27.43 m (90 ft) boom

National Crane will send you a chart on request – or you may secure needed load rating information through your nearest National Crane dealer.

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- Do not deadhead lneblock 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:
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2. Loaded boom angles are given as reference only.
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Load chart

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<th>LOADED BOOM ANGLE (deg)</th>
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NOTE:
1. All capacities are in pounds, angles in degrees, radius in feet.
2. Loaded boom angles are given as reference only.
3. 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.
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 load rating charts are maximum allowable loads with the outriggers properly extended on a firm, level surface and the crane leveled and mounted on a factory recommended truck.
- 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 exceed jib capabilities at any reduced boom lengths.
- 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.

<table>
<thead>
<tr>
<th>LOADED RADIUS (ft)</th>
<th>LOADED BOOM ANGLE (deg)</th>
<th>27 ft BOOM (lb)</th>
<th>LOADED BOOM ANGLE (deg)</th>
<th>A 41 ft BOOM (lb)</th>
<th>LOADED BOOM ANGLE (deg)</th>
<th>B 54 ft BOOM (lb)</th>
<th>LOADED BOOM ANGLE (deg)</th>
<th>C 66 ft BOOM (lb)</th>
<th>LOADED BOOM ANGLE (deg)</th>
<th>D 78 ft BOOM (lb)</th>
<th>LOADED BOOM ANGLE (deg)</th>
<th>90 ft BOOM (lb)</th>
<th>LOADED BOOM ANGLE (deg)</th>
<th>25 ft JIB (lb)</th>
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**NOTE:**
1. All capacities are in pounds, angles in degrees, radius in feet.
2. Loaded boom angles are given as reference only.
3. Shaded areas are structurally limited capacities.
Dimensions are in mm (in) unless otherwise specified.

Weight includes all items except Ash 363 kg (830 lb) and bed.

<table>
<thead>
<tr>
<th>Series</th>
<th>Retracted length</th>
<th>Extended length</th>
<th>Subbase</th>
<th>G (wet)</th>
<th>Dry/Wt</th>
<th>With oil/ wt</th>
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<tbody>
<tr>
<td>638E2</td>
<td>5.1 m (16 ft 7 in)</td>
<td>11.7 m (38 ft 3 in)</td>
<td>5.5 m (18 ft)</td>
<td>1.23 m (48.3 in)</td>
<td>6192 kg (13,651 lb)</td>
<td>6462 kg (14,246 lb)</td>
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<td>649E2</td>
<td>4.9 m (16 ft)</td>
<td>14.9 m (49 ft)</td>
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<td>1.28 m (50.7 in)</td>
<td>6481 kg (14,289 lb)</td>
<td>6751 kg (14,884 lb)</td>
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<td>660E2</td>
<td>7.3 m (24 ft)</td>
<td>18.3 m (60 ft)</td>
<td>5.5 m (18 ft)</td>
<td>1.52 m (59.9 in)</td>
<td>6748 kg (14,876 lb)</td>
<td>7018 kg (15,471 lb)</td>
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<td>671E2</td>
<td>8.4 m (27 ft 7 in)</td>
<td>21.6 m (71 ft)</td>
<td>6.1 m (20 ft)</td>
<td>1.90 m (74.7 in)</td>
<td>7181 kg (15,831 lb)</td>
<td>7451 kg (16,426 lb)</td>
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<td>680E2</td>
<td>7.3 m (24 ft)</td>
<td>24.4 m (80 ft)</td>
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<td>7256 kg (15,996 lb)</td>
<td>7526 kg (16,591 lb)</td>
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<tr>
<td>690E2</td>
<td>8.5 m (27 ft 10 in)</td>
<td>27.4 m (90 ft)</td>
<td>6.1 m (20 ft)</td>
<td>1.98 m (78.1 in)</td>
<td>7700 kg (16,976 lb)</td>
<td>7970 kg (17,571 lb)</td>
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<table>
<thead>
<tr>
<th>Subbase</th>
<th>Weight</th>
<th>C.G. length</th>
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<tbody>
<tr>
<td>Standard 18 ft</td>
<td>1229 kg (2710 lb)</td>
<td>2.87 m (113 ft)</td>
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<td>Standard 20 ft</td>
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<tr>
<td>Standard 22 ft</td>
<td>1444 kg (3184 lb)</td>
<td>3.18 m (125 ft)</td>
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</tbody>
</table>

Subbase C.G. are located from center of rotation.
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.

Heavy-duty Personnel Basket –
1200 lb (544 kg) 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 locking systems. Load chart must show 1043 kg (2300 lb) minimum to operate this accessory.

Duty Cycle Package –
Burst-of-Speed winch control option, with dual stand up control and hydraulic oil cooler, self-contained radiator system with electric fan.

Continuous Rotation–
Allows rotation of turret/boom without rotation stop.

Single Front Outrigger –
Center mount front stabilizer for 360° stability with a 25 in vertical stroke.

Bulkhead Options –
Steel 30 in solid wall bulkhead

Spanish-Language Danger Decals,
Control Knobs, and Operators’ Manuals

- RB4R
- BSA-1
- BSA-R1 (provides rotation)
- DCPKG
- CR
- SFO
- BHSD
- SDD
- SOM
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India
Pune
Italy
Niella Tanaro
Portugal
Baltar
Fânzeres
USA
Manitowoc
Port Washington
Shady Grove

This document is non-contractual. Constant improvement and engineering progress make it necessary that we reserve the right to make specification, equipment, and price changes without notice. Illustrations shown may include optional equipment and accessories and may not include all standard equipment.