# 500E2 Series

**Product Guide**

ASME B30.5 • Imperial 85%

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## Features

- 16.3 t (18 USt) rating
- 21.6 m (71 ft) three-section full power boom
- Standard hydraulic capacity alert system
- Internal anti-two block
The 500E2 stand-up boom truck is great for owner/operator businesses and rental fleets featuring a 16.3 t (18 USt) maximum capacity, 36.9 m (121 ft) maximum vertical reach, and 24.7 m (81 ft) maximum vertical hydraulic reach.

### Features

- **Three-section boom**
  With a capacity of 16.3 t (18 USt) the Series 500E2 is equipped with a three-section 21.6 m (71 ft) boom. The long boom allows the operator to perform more lifts without the use of a jib, reducing setup time and improving efficiency.

- **Innovative outrigger design**
  The Series 500E2 comes equipped “A” frame boxed slide outriggers with swivel pads and ASH type stabilizers. An optional single front outrigger is also available for 360° operation.

  - Front outriggers: 6.19 m (20.25 ft) span
  - Rear stabilizers: 3 m (10 ft) span

- **NEW Electronic throttle and OMS system**
  New electronic pedals utilizing J1939 communication for easy set up and reliable engine communication. Outrigger monitoring system (OMS) with improved system feedback at the hands of the operator.

- **Productivity increasing options and Lift Solutions™**
  - Hydraulic hose reels
  - Factory-installed toolbox options
  - Additional valve section and controls for hydraulic accessories
  - Fixed and rotating 2-person platforms
  - Four function radio remote controls
  - Continuous rotation

- **Chassis customization options**
  - Steel and aluminum tool boxes
  - 15 or 30 ton pintle hitch integrated in rear of machine
  - Polymeric outrigger cribbing and cribbing stowage
Jobsite benefits

- 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
- Rear stabilizers include an independent stabilizer control and bolt/clamp on mounting
- Engine start/stop switches
- Outriggers are equipped with a motion alarm and an outrigger monitoring system
- Emergency stop overrides located at control station
- Crane function control knobs use ISO symbols for language independence

Serviceability

- Bearings on the boom extension 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
Dimensions

<table>
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<tr>
<th>Series</th>
<th>Retracted length</th>
<th>Extended length</th>
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<th>Dry/Wt</th>
<th>With oil/Wt</th>
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<td>571E2</td>
<td>8.4 m (27 ft 6 in)</td>
<td>21.64 m (71 ft)</td>
<td>1.91 m (75 in)</td>
<td>6677 kg (14,721 lb)</td>
<td>6947 kg (15,316 lb)</td>
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Maintain clearance for R1144 (845.00) Tailswing

Dimensions are in mm (in) unless otherwise specified.

77' boom: 8.4 m (27 6”) Retracted / 21.64 m (71) Extended
Mounting configurations

The configurations are based on the Series 500E2 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:** 5443 kg (12,000 lb)
- **Gross Axle Weight Rating Rear:** 9525 kg (21,000 lb)
- **Gross Vehicle Weight Rating:** 14,968 kg (33,000 lb)
- **Wheelbase:** 602 cm (237 in)
- **Cab to Axle/trunnion (CA/CT):** 427 cm (168 in)
- **Frame Strength:** 758 MPa (110,000 PSI):
  - Frame Section Modulus (SM) under crane – 261 cm³ (15.9 in³)
  - Frame Section Modulus (SM) over rear stabilizers – 213 cm³ (13 in³)
- **Stability Weight, Front:** 3130 kg (6900 lb) minimum*
- **Stability Weight, Rear:** 2767 kg (6100 lb) minimum*
- **Estimated Average Final Weight:** 13,608 kg (30,000 lb)

This configuration is the least expensive method for the Model 571E2. 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.

### Configuration 2 with Torsion Box - 360° Full capacity work area

(Extended front frame rails required for SFO installation.)

**Working area:** 360°

- **Gross Axle Weight Rating Front:** 5443 kg (12,000 lb)
- **Gross Axle Weight Rating Rear:** 9525 kg (21,000 lb)
- **Gross Vehicle Weight Rating:** 14,968 kg (33,000 lb)
- **Wheelbase:** 602 cm (237 in)
- **Cab to Axle/trunnion (CA/CT):** 427 cm (168 in)
- **Frame Strength:** 758 MPa (110,000 PSI):
  - Frame Section Modulus (SM) under crane – 261 cm³ (15.9 in³)
  - Frame Section Modulus (SM) over rear stabilizers – 213 cm³ (13 in³)
- **Stability Weight, Front:** 3130 kg (6900 lb) minimum*
- **Stability Weight, Rear:** 3175 kg (7000 lb) minimum*
- **Estimated Average Final Weight:** 13,835 kg (30,500 lb)

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.

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

Minimum truck requirements

Many factors must be considered in the selection of proper truck for an 500E2 crane. Items which must be considered are:

1. Axle Rating. Axle ratings are determined by the axles, tires, rims, springs, brakes, steering and frame strength of the truck. If any one of these components is below the required rating, the gross axle rating is reduced to its weakest component value.

2. Wheelbase (WB), Cab-to-Trunnion (CT) and Bare Chassis Weight. The wheelbase, CT and chassis weights shown are required so the basic 500E2 can be legally driven in most states and meet stability requirements. The dimensions given assume the sub-base is installed properly behind the truck cab. If exhaust stacks, transmission protrusions, etc., do not allow a close installation to the cab, the WB and CT dimensions must be increased. Refer to the Mounting Configuration pages for additional information.

3. Truck Frame. Try to select a truck frame that will minimize or eliminate frame reinforcement or extension of the after frame (AF). Many frames are available that have the necessary after frame (AF) section modulus (SM) and resistance to bending moment (RBM) so that reinforcing is not required. The front hydraulic jack is used for a 360° working range around the truck. The frame under the cab through the front suspension must have the minimum S.M. and RBM because reinforcing through the front suspension is often difficult because of engine, radiator mounts and steering mechanics. See “Truck Requirements” and “Frame Strength” pages for the necessary section modulus and resistance to bending moment values. Integral extended front frame rails are required for front center stabilizer installation.

4. Additional Equipment. In addition to the axle ratings, wheelbase, cab-to-axle requirements and frame, it is recommended that the truck is equipped with electronic engine control, increased cooling and a transmission with a PTO opening available with an extra heavy duty PTO. A conventional cab truck should be used for standard crane mounts.

5. Neutral Start Switch. The chassis must be equipped with a switch that prevents operation of the engine starter when the transmission is in gear.

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 for smooth crane operation; electronic fuel injection requires EET engine remote throttle
- All mounting data is based on a National Series 500E2 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
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.

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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Working range

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**Load chart**

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**NOTE:**
1. Capacities do not exceed 85% stability.
2. Shaded areas are structurally limited capacities.

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Specifications

Superstructure

**Boom**
8,2 m – 21,6 m (27 ft – 71 ft), three-section boom with a max tip height of 24,69 m (81 ft). Includes Proportional extension via multi-stage hydraulic cylinder and cable operation; four-plate, high-strength steel construction; two-sheave, quick reeve boom nose and Easy-glide wear pads.

**Boom elevation**
One (1) double-acting, hydraulic cylinder with holding valve with a −10⁰ to +80⁰.

**Hydraulic Capacity Alert System (HCAS) and Anti-Two Block System (ATB)**
Hydraulic capacity alert (HCA) system to assist the operator in preventing crane overload when making lifts on main boom. This HCA system is a hydraulically operated, maximum capacity sensing device designed to stop all of the normal crane functions that can cause overload when maximum capacity is exceeded on the main boom. Any function that will increase the load radius plus winch up of load is interrupted when maximum capacity is exceeded. Color-coded load range gauge located at each operator station. Two indicator lights provide an alert to the operator of function power loss and distinguish whether the hydraulic capacity alert or anti-two block system is activated. A momentary override key switch for emergency repositioning of boom. Audio visual warning and crane function lockout. Hard-wired ATB circuit routed internally to the boom.

**Hydraulic system**
Open-center hydraulics system allowing for multifunction operation of all crane functions. One (1) SAE-BB mounted, three-section gear pump for all functions and optimized system performance.
Shaft input of 2400 RPM generating:
Section #1 (Boom/Telescope/Outriggers): 68 lpm (18 gpm) max flow
Section #2 (Hoist): 128.7 lpm (34 gpm) max flow
Section #3 (Swing): 37.9 lpm (10 gpm)
66 gallon (249,8 L) hydraulic reservoir with SAE o-ring connections and integrated suction shut-off ball valve for easy maintenance and SAE o-ring hydraulic fittings and hoses.

**Operator station**
Dual-station ASME B30.5 compliant proportional crane controls with mechanical direct-to-valve control of hoist, lift, telescope and swing functions on both the driver and passenger sides of the crane. Mechanical direct-to-valve control of all outrigger functions on both the driver and passenger sides of the crane. HCA system: Color-coded load range gauge located at each operator station; A momentary override key switch for emergency repositioning of boom. Sealed electric switches for control of engine start/stop and horn. Throttle pedal located at each side. Load chart(s) located at each side.

**Slewing**
One (1) planetary slewing gear with a low speed high torque motor. Integrated holding valves and spring applied, pressure released brake release circuit; 375° non-continuous rotation; manually adjustable swing speed needle valve.

**Chassis mounting**
Torsion resistant, high-strength steel subframe. Crane frame and subframe attached using threaded mounting bolts and drilled and bolted clamp plates for secure attachment to the truck chassis. Rear bumper underride protection standard on factory mounted cranes.

**Mounting configurations**
**Standard Mount:** Crane frame located behind the truck cab; Crane frame supported by a torsion resistant subframe; Subframe designed for a 20 ft (6,1 m) flatbed; A-frame style front outriggers at the crane frame; A-frame stabilizers; Full span outriggers load chart operation; boom stows over rear of truck; Removable boom rest fabricated from structural steel, located at the rear of the flatbed

**Outriggers**
Outrigger monitoring system for A-frame outriggers and A-frame stabilizers.

*Denotes optional equipment.*
Specifications

Optional items

• **Outriggers, Subframe and Flatbed**
  > Single Front Outrigger (SFO) option
  > Center mount front stabilizer with 25 in vertical stroke

• **Hook blocks**
  > 6,35 t (7 USt) Overhaul ball for single-part-line operation
  > Single-sheave, 11,3 t (12,5 USt) hook block for two to three part reeving
  > Two-sheave, 19,9 t (22 USt) hook block for four to five part reeving (includes auxiliary lineblock and pendant link)

• **Jib**
  > 7,0 m - 12,5 m (23 ft - 41 ft) telescoping boom extension (side fold for stowing), includes 5,5 m (18 ft) manual pull out section
  > Max tip height with 21,6 m (71 ft) boom is 37,2 m (122 ft)
  > RCL calibration for future jib option

• **Duty Cycle Package**
  > Burst-of-speed winch control option, with dual standup control and hydraulic oil cooler, self-contained radiator system with electric fan

• **Hydraulics**
  > Oil cooler option for duty-cycle operation
  > One-option control circuit including valve and control lever

• **Operator Aids**
  > Four-function wireless radio remote control
  > Metric capacity charts
  > Spanish documentation and decals

• **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 locking systems
  > Load chart must show 1043 kg (2300 lb) minimum to operate this accessory

• **Bulkhead**
  > Steel 30 in solid wall bulkhead
### Specifications

#### Hoist
10,200 lb (4627 kg) planetary gear with a single speed motor; Integrated motor manifold and spring applied, pressure released brake

<table>
<thead>
<tr>
<th>Parts of Line</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>
</thead>
<tbody>
<tr>
<td>Max boom length (ft) at max elevations with stated rigging and load block and ground level</td>
<td>27,43 m (90 ft)</td>
<td>27,43 m (90 ft)</td>
<td>16,46 m (54 ft)</td>
<td>12,8 m (42 ft)</td>
<td>8,23 m (27 ft)</td>
<td>8,23 m (27 ft)</td>
</tr>
<tr>
<td>Lift and speed</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>
<td>18 144 kg (40,000 lb)</td>
</tr>
<tr>
<td></td>
<td>30 m/min (100 fpm)</td>
<td>15 m/min (50 fpm)</td>
<td>10 m/min (33 fpm)</td>
<td>7,6 m/min (25 fpm)</td>
<td>6,1 m/min (20 fpm)</td>
<td>5,1 m/min (16.7 fpm)</td>
</tr>
</tbody>
</table>

NOTE: All hoist lifts and speeds in this chart are shown on the fourth layer. Hoist lifts would increase on the lower layers and hoist speeds would increase on the higher layers.

### Line Pulls and Reeving Information

<table>
<thead>
<tr>
<th>Hoists</th>
<th>Cable specs.</th>
<th>Permissible line pulls</th>
<th>Nominal cable length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main</td>
<td>Standard 9/16” (14 mm) diameter rotation resistant Min. Breaking Strength 17 463 kg (38,500 lb)</td>
<td>3493 kg (7700 lb)</td>
<td>99,1 m (325 ft)</td>
</tr>
</tbody>
</table>

The approximate weight of 9/16” (14 mm) in wire rope is 1,04 kg/m (0.70 lb/ft).

*With certain boom and hoist tackle combinations, the allowable line pull may be limited by hoist performance. Refer to Hoist Performance table for lift planning to ensure adequate hoist performance on drum rope layer required.

<table>
<thead>
<tr>
<th>Wire rope layer</th>
<th>Hoist Line Pull</th>
<th>Line speed</th>
<th>Drum Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4627 kg (10,200 lb)</td>
<td>33,8 m/min (111 ft/min)</td>
<td>19,5 m (64 ft)</td>
</tr>
<tr>
<td>2</td>
<td>4173 kg (9200 lb)</td>
<td>37,5 m/min (123 ft/min)</td>
<td>41,5 m (136 ft)</td>
</tr>
<tr>
<td>3</td>
<td>3810 kg (8400 lb)</td>
<td>41,2 m/min (135 ft/min)</td>
<td>65,5 m (215 ft)</td>
</tr>
<tr>
<td>4</td>
<td>3493 kg (7700 lb)</td>
<td>44,8 m/min (147 ft/min)</td>
<td>91,7 m (301 ft)</td>
</tr>
<tr>
<td>5</td>
<td>3221 kg (7100 lb)</td>
<td>48,5 m/min (159 ft/min)</td>
<td>120,1 m (394 ft)</td>
</tr>
</tbody>
</table>

*Refer to Line Pulls and Reeving Information table for max. lifting capacity of wire rope.

Synthetic rope layer height may vary and may reduce available line pull per layer.

### Weight Reductions for Load Handling Devices

<table>
<thead>
<tr>
<th>Hook blocks and headache balls</th>
<th>Overhaul ball</th>
<th>1 1/2 t single-sheave hook block</th>
<th>2 t two-sheave hook block</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>6,35 t (7 USt)</td>
<td>11,3 t (12.5 USt)</td>
<td>19,9 t (22 USt)</td>
</tr>
<tr>
<td>Hook blocks</td>
<td>77,6 kg (171 lb)+</td>
<td>85 kg (187 lb)+</td>
<td>161 kg (355 lb)+</td>
</tr>
</tbody>
</table>

+ Refer to rating plate for actual weight

When lifting over boom extension, deduct total weight of all load handling devices reeved over main boom nose directly from boom extension capacity.

NOTE: All load handling devices and boom attachments are considered part of the load and suitable allowances MUST BE MADE for their combined weights. Weights are for Manitowoc furnished equipment.
## Symbols glossary

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
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<tr>
<td><img src="image.png" alt="Axles" /></td>
<td>Axles</td>
</tr>
<tr>
<td><img src="image.png" alt="Drive" /></td>
<td>Drive</td>
</tr>
<tr>
<td><img src="image.png" alt="Heavy duty jib" /></td>
<td>Heavy duty jib</td>
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<tr>
<td><img src="image.png" alt="Radius" /></td>
<td>Radius</td>
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<tr>
<td><img src="image.png" alt="Boom" /></td>
<td>Boom</td>
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<tr>
<td><img src="image.png" alt="Electrical system" /></td>
<td>Electrical system</td>
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<tr>
<td><img src="image.png" alt="Hoist" /></td>
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<tr>
<td><img src="image.png" alt="Rotation" /></td>
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<tr>
<td><img src="image.png" alt="Boom elevation" /></td>
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<tr>
<td><img src="image.png" alt="Engine" /></td>
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<tr>
<td><img src="image.png" alt="Hook block" /></td>
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<td><img src="image.png" alt="Speed" /></td>
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<tr>
<td><img src="image.png" alt="Boom extension" /></td>
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<td><img src="image.png" alt="Extension" /></td>
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<td><img src="image.png" alt="Hydraulic system" /></td>
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<td><img src="image.png" alt="Steering" /></td>
<td>Steering</td>
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<td><img src="image.png" alt="Boom length" /></td>
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<td><img src="image.png" alt="Frame" /></td>
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<td><img src="image.png" alt="Insert" /></td>
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<tr>
<td><img src="image.png" alt="Suspension" /></td>
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<tr>
<td><img src="image.png" alt="Boom nose" /></td>
<td>Boom nose</td>
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<td><img src="image.png" alt="Fuel tank capacity" /></td>
<td>Fuel tank capacity</td>
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<td><img src="image.png" alt="Lights" /></td>
<td>Lights</td>
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<td><img src="image.png" alt="Outrigger controls" /></td>
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<tr>
<td><img src="image.png" alt="Counterweight" /></td>
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<tr>
<td><img src="image.png" alt="Height (no max)" /></td>
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</tr>
<tr>
<td><img src="image.png" alt="Outriggers" /></td>
<td>Outriggers</td>
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</table>
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