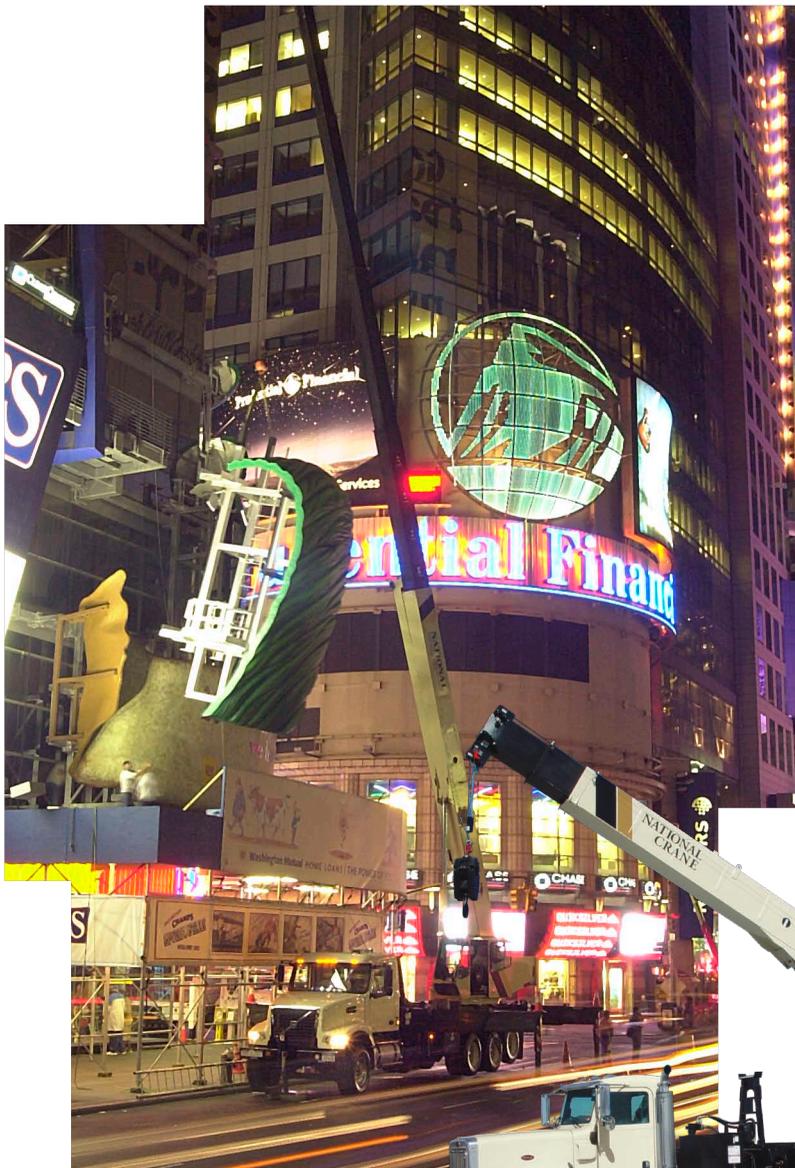


National Crane 1800 Series

Product Guide



Features

- 36,29 t (40 USt) rating
- 43,28 m (142 ft) five-section boom (80 ft)
- Self-lubricating "Easy Glide" wear pads
- Tailswing counterweight



Features



Deluxe operator's cab

Rigid galvanized steel structure, well insulated, with ample safety glass for operator visibility and comfort. Multi-position seat with arm rest controls, ventilation fans, diesel heater, and wipers. Optional air conditioning is available.



Outriggers

Outrigger span of 24.7 ft when fully extended; 17.5 ft at mid-span.

Equipped with both ground level and in-cab outrigger controls, the Series 1800 outriggers allow quick and easy crane set-up.

Overload protection

All National Crane boom trucks are equipped with overload protection. A Load Moment Indicator (LMI) is standard on all Series 1800 machines. The LCD display is visible in full or low light and displays all crane load lifting values simultaneously.



Five-section boom

At 142 ft, the Series 1800 five-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. Also available are optional boom lengths of 79 ft, 103 ft and 127 ft.

Features



Best in class performance and serviceability

- The stronger standard torsion box improves rigidity, reduces truck frame flex and reduces the need for counterweight.
- Easy Glide Boom Wear Pads reduce the conditions that cause boom chatter and vibration. The net result is smoother crane operation.
- 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 state-of-the-art control valve provides smooth operation. The new design eliminates parts, therefore reducing repair costs and improving the crane's serviceability.
- Bearings on the boom and retract cables can be greased through access holes in the boom side plates.
- Boom sections are supported by one hydraulic extend cylinder, minimizing maintenance.

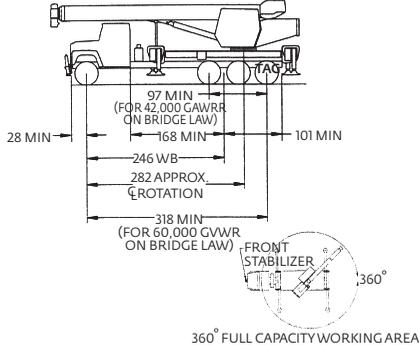
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Mounting configurations

The configurations are based on the Series 1800 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.

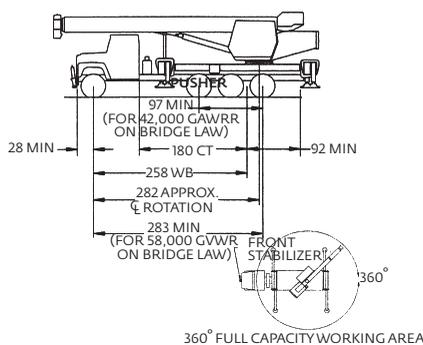
1800 w/Tag Axle 60,000 GVWR (79/103/127 ft boom)



Configuration 1: 24,08 m (79 ft), 31,39 m (103 ft) 38,71 m (127 ft) Boom with Tag Axle

Working area: 360°
 Gross Axle Weight Rating Front: 9072 kg (20,000 lb)
 Gross Axle Weight Rating Rear: 18 144 kg (40,000 lb)
 Gross Vehicle Weight Rating: 27 216 kg (60,000 lb)
 Wheelbase: 625 cm (246 in)
 Cab to Axle/trunnion (CA/CT): 427 cm (168 in)
 Frame Section Modulus (SM), front axle to end of AF: 785 MPa (110,000 PSI): 426 cm³ (30.0 in³)
 Stability Weight, Front: 4286 kg (9450 lb) minimum*
 Stability Weight, Rear: 4899 kg (10,800 lb) minimum*
 Estimated Average Final Weight: 25 830 kg (56,945 lb)**
 This configuration shows the 360° working area that is achieved with the front stabilizer (standard on the Series 1800). The front stabilizer is essential when extending the boom and lifting loads over the front of the truck.
 *Estimated axle scale weights prior to installation of crane, stabilizers and subbase for 85% stability.
 **Estimated final weight (wet) with 38,71 m (127 ft) boom, 182 kg (400 lb) 3-part block, steel decks, 1045 kg (2300 lb) swinging counterweight, 379 L (100 gal) fuel tank and two workers in cab.

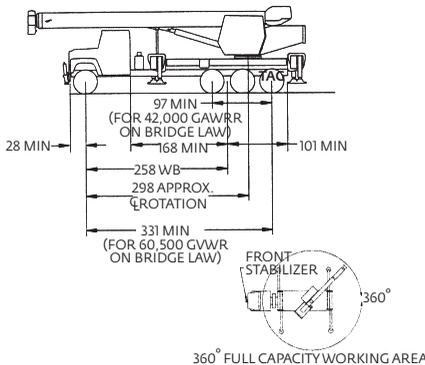
1800 w/Pusher Axle 58,000 GVWR (79/103/127 ft boom)



Configuration 2: 24,08 m (79 ft), 31,39 m (103 ft) 38,71 m (127 ft) Boom with Pusher Axle

Working area: 360°
 Gross Axle Weight Rating Front: 9072 kg (20,000 lb)
 Gross Axle Weight Rating Rear: 18 144 kg (40,000 lb)
 Gross Vehicle Weight Rating: 27 216 kg (60,000 lb)
 Wheelbase: 655 cm (258 in)
 Cab to Axle/trunnion (CA/CT): 457 cm (180 in)
 Frame Section Modulus (SM), front axle to end of AF: 785 MPa (110,000 PSI): 426 cm³ (30.0 in³)
 Stability Weight, Front: 4525 kg (9975 lb) minimum*
 Stability Weight, Rear: 4661 kg (10,275 lb) minimum*
 Estimated Average Final Weight: 25 830 kg (56,945 lb)**
 This configuration shows the 360° working area that is achieved with the front stabilizer (standard on the Series 1800). The front stabilizer is essential when extending the boom and lifting loads over the front of the truck.
 *Estimated axle scale weights prior to installation of crane, stabilizers and subbase for 85% stability.
 **Estimated final weight (wet) with 38,71 m (127 ft) boom, 182 kg (400 lb) 3-part block, steel decks, 1045 kg (2300 lb) swinging counterweight, 379 L (100 gal) fuel tank and two workers in cab.

1800 w/Tag Axle 60,000 GVWR (142 ft boom)



Configuration 3: 43,29 m (142 ft) Boom with Tag Axle

Working area: 360°
 Gross Axle Weight Rating Front: 9072 kg (20,000 lb)
 Gross Axle Weight Rating Rear: 18 144 kg (40,000 lb)
 Gross Vehicle Weight Rating: 27 216 kg (60,000 lb)
 Wheelbase: 655 cm (258 in)
 Cab to Axle/trunnion (CA/CT): 427 cm (168 in)
 Frame Section Modulus (SM), front axle to end of AF: 785 MPa (110,000 PSI): 426 cm³ (30.0 in³)
 Stability Weight, Front: 4207 kg (9275 lb) minimum*
 Stability Weight, Rear: 4797 kg (10,575 lb) minimum*
 Estimated Average Final Weight: 26 308 kg (58,000 lb)**
 This configuration shows the 360° working area that is achieved with the front stabilizer (standard on the Series 1800). The front stabilizer is essential when extending the boom and lifting loads over the front of the truck.
 *Estimated axle scale weights prior to installation of crane, stabilizers and subbase for 85% stability.
 **Estimated final weight (wet) with 43,29 m (142 ft) boom, 182 kg (400 lb) 3-part block, steel decks, 1045 kg (2300 lb) swinging counterweight, 379 L (100 gal) fuel tank and two workers in cab.

Minimum truck requirements

Many factors must be considered in the selection of proper truck for a 1800 series 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 1800 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. See "PTO Selection" pages. 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 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 1800 with an 85% stability factor (75% stability factor for New York City).
- 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

Specifications

Boom and jib combinations data

Available in four basic models:

Model 1879 – Equipped with a 9,45 m - 24,08 m (31 ft - 79 ft) three-section boom. There are no jib options for this boom model. Maximum tip height is 26,52 m (87 ft).

9,45 m - 24,08 m (31 ft - 79 ft) three-section hydraulic boom



Model 18103 – Equipped with a 9,45 m - 31,39 m (31 ft - 103 ft) four-section boom. This model can be equipped with a 9,45 m (31 ft) jib, offering a vertical reach of 43,29 m (142 ft) and a 9,45 m - 16,76 m (31 ft - 55 ft) side-stowing foldaway jib, providing a vertical reach of 50,60 m (166 ft).

9,45 m - 31,39 m (31 ft - 103 ft) four-section hydraulic boom **18FJ31** 9,45 m (31 ft) single-section offsettable manual jib



9,45 m - 31,39 m (31 ft - 103 ft) four-section hydraulic boom **18FJ55M** 9,45 m - 16,76 m (31 ft - 55 ft) two-section manual jib



Model 18127 – Equipped with a 9,45 - 38,71 m (31 ft - 127 ft) five-section boom. This model can be equipped with a 9,45 m (31 ft) jib, offering a vertical reach of 50,60 m (166 ft) or a 9,45 m - 16,76 m (31 ft - 55 ft) jib providing a vertical reach of 57,91 m (190 ft).

9,45 m - 38,71 m (31 ft - 127 ft) five-section hydraulic boom **18FJ31** 9,45 m (31 ft) single-section manual jib



9,45 m - 38,71 m (31 ft - 127 ft) five-section hydraulic boom **18FJ55M** 9,45 m - 16,76 m (31 ft - 55 ft) two-section manual jib



Model 18142 – Equipped with a 10,36 m - 43,29 m (34 ft - 142 ft) five-section boom. This model can be equipped with a 7,92 m (26 ft) jib, offering a vertical reach of 53,64 m (176 ft).

10,36 m - 43,29 m (34 ft - 142 ft) five-section hydraulic boom **18FJ26** 7,92 m (26 ft) single-section manual jib

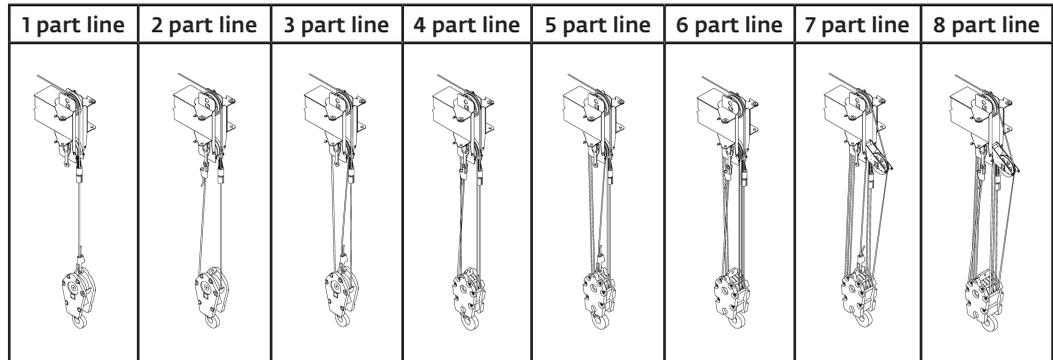


Note: Maximum tip is measured with outriggers/stabilizers fully extended.

Specifications

1800 winch data

- All winch pulls and speeds are shown on the fifth layer.
- Winch line pulls would increase on the first, second, third and fourth layers.
- Winch line speed would decrease on the first, second, third and fourth layers.
- Winch line pulls may be limited by the winch capacity or the ANSI 5 to 1 cable safety factor.



Standard planetary winch	Cable supplied	Average breaking strength	Lift and speed	Lift and speed	Lift and speed	Lift and speed	Lift and speed	Lift and speed	Lift and speed	Lift and speed
Low speed	5/8" diameter rotation resistant IWRC	25 583 kg (56,400 lb)	4536 kg (10,000 lb)	9072 kg (20,000 lb)	13 608 kg (30,000 lb)	18 144 kg (40,000 lb)	22 680 kg (50,000 lb)	27 216 kg (60,000 lb)	31 751 kg (70,000 lb)	36 287 kg (80,000 lb)
			62 m/min (205 fpm)	31 m/min (103 fpm)	21 m/min (68 fpm)	16 m/min (51 fpm)	13 m/min (41 fpm)	10 m/min (34 fpm)	9 m/min (29 fpm)	8 m/min (26 fpm)
High speed	5/8" diameter rotation resistant IWRC	25 583 kg (56,400 lb)	2268 kg (5000 lb)	4536 kg (10,000 lb)	6804 kg (15,000 lb)	9072 kg (20,000 lb)	11 340 kg (25,000 lb)	13 608 kg (30,000 lb)	15 876 kg (35,000 lb)	18 144 kg (40,000 lb)
			125 m/min (410 fpm)	62 m/min (205 fpm)	42 m/min (137 fpm)	31 m/min (103 fpm)	25 m/min (82 fpm)	21 m/min (68 fpm)	18 m/min (59 fpm)	16 m/min (51 fpm)

Winch	Full drum pull	Allowable cable pull
Standard planetary and auxiliary planetary	2268 kg (5000 lb) high speed 4536 kg (10,000 lb) low speed	5117 kg (11,280 lb)

Loadline deduct		
	Aux boom head	45 kg (100 lb)
5 USt	Downhaul weight	82 kg (180 lb)
15 USt	1-sheave block	170 kg (375 lb)
25 USt	2-sheave block	290 kg (640 lb)
35 USt	3-sheave block	395 kg (870 lb)
40 USt	4-sheave block	440 kg (970 lb)

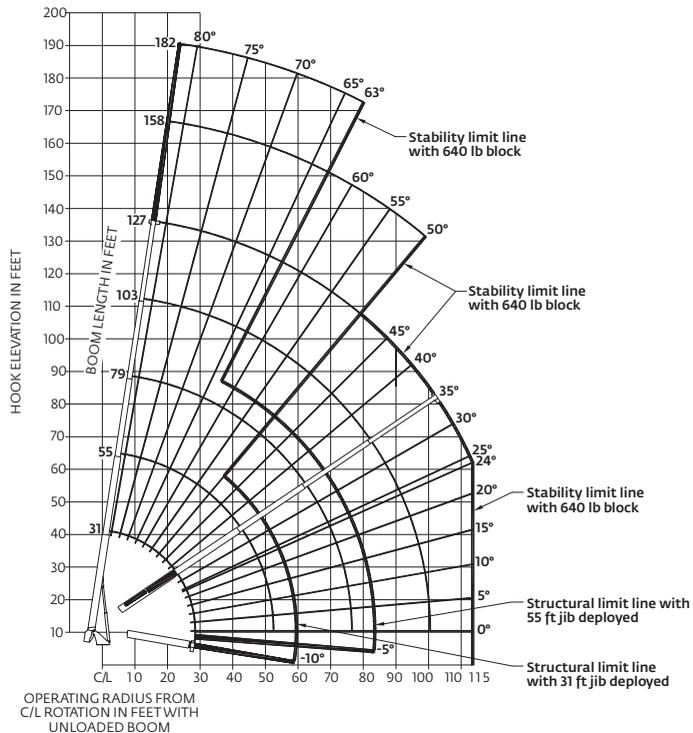
THIS CHART IS ONLY A GUIDE AND SHOULD NOT BE USED TO OPERATE THE CRANE.

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

Capacities

Series 18127: 38,71 boom with 9,45 m - 16,76 m (31 ft - 55 ft) jib/full span outrigger 7,6 m (24.7 ft)

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.

Load chart

31 ft - 127 ft BOOM RATED LOADS WITHOUT JIB

LOAD RADIUS (ft)	LOADED BOOM ANGLE	31 ft BOOM (lb)	LOADED BOOM ANGLE	55 ft BOOM (lb)	LOADED BOOM ANGLE	79 ft BOOM (lb)	LOADED BOOM ANGLE	103 ft BOOM (lb)	LOADED BOOM ANGLE	127 ft BOOM (lb)
7	74.5	80,000								
8	72.4	74,000								
10	68.2	64,000								
12	63.8	56,000	76.9	40,000						
15	56.9	43,000	73.8	38,000	79.8	29,000				
20	44.2	30,000	68.1	31,000	76.2	25,000	80	16,000		
25	27.4	22,500	62	23,400	72.5	21,500	77.2	14,500	80	10,000
30			55.5	18,300	68.5	18,700	74.4	13,000	78	9500
35			48.6	14,800	64.3	15,100	71.5	11,500	75.9	9000
40			40.7	12,100	59.9	12,500	68.6	10,500	73.6	8100
45			31.3	10,100	55.3	10,400	65.9	9500	71.2	7200
50			19.4	8500	50.9	8800	62.7	8500	68.8	6500
55					45.8	7500	59.3	7500	66.3	5800
60					40.1	6400	55.7	6500	63.7	5300
65					33.6	5400	52	5600	61.1	4800
70					25.6	4600	48.1	4700	58.4	4300
75					13.5	3850	43.9	3950	55.6	3900
80							39.3	3350	52.6	3400
85							34.3	2800	49.4	2850
90							28.4	2300	46	2350
95							21	1850	42.5	1900
100							8.2	1500	38.8	1550
105									34.6	1200
110									30	900
115									24.6	650
	0	19,000	0	7700	0	3600	0	1450		

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.
3. Capacities do not exceed 85% stability.
4. Shaded areas are structurally limited capacities.

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.

31 ft JIB RATED LOADS		
RADIUS FULLY EXTENDED	LOADED BOOM ANGLE	RATED LOADS ALL BOOM LENGTHS
30	80	3400
46	75	3200
60	70	2700
73	65	2100
85	60	1700
96	55	1200
106	50	650

55 ft JIB RATED LOADS		
RADIUS FULLY EXTENDED	LOADED BOOM ANGLE	RATED LOADS ALL BOOM LENGTHS
36	80	2200
54	75	2200
70	70	1600
85	65	1000

RATED LOAD REDUCTIONS WITH JIB		
BOOM LENGTH	31 ft JIB STOWED	31 ft - 55 ft JIB ERECTED AT 31 ft LENGTH
	31 ft	Reduce load 800 lb
55 ft	Reduce load 450 lb	Reduce load 2000 lb
79 ft	Reduce load 350 lb	Reduce load 1900 lb
103 ft	Reduce load 250 lb	Reduce load 1800 lb
127 ft	Reduce load 200 lb	Reduce load 1700 lb

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

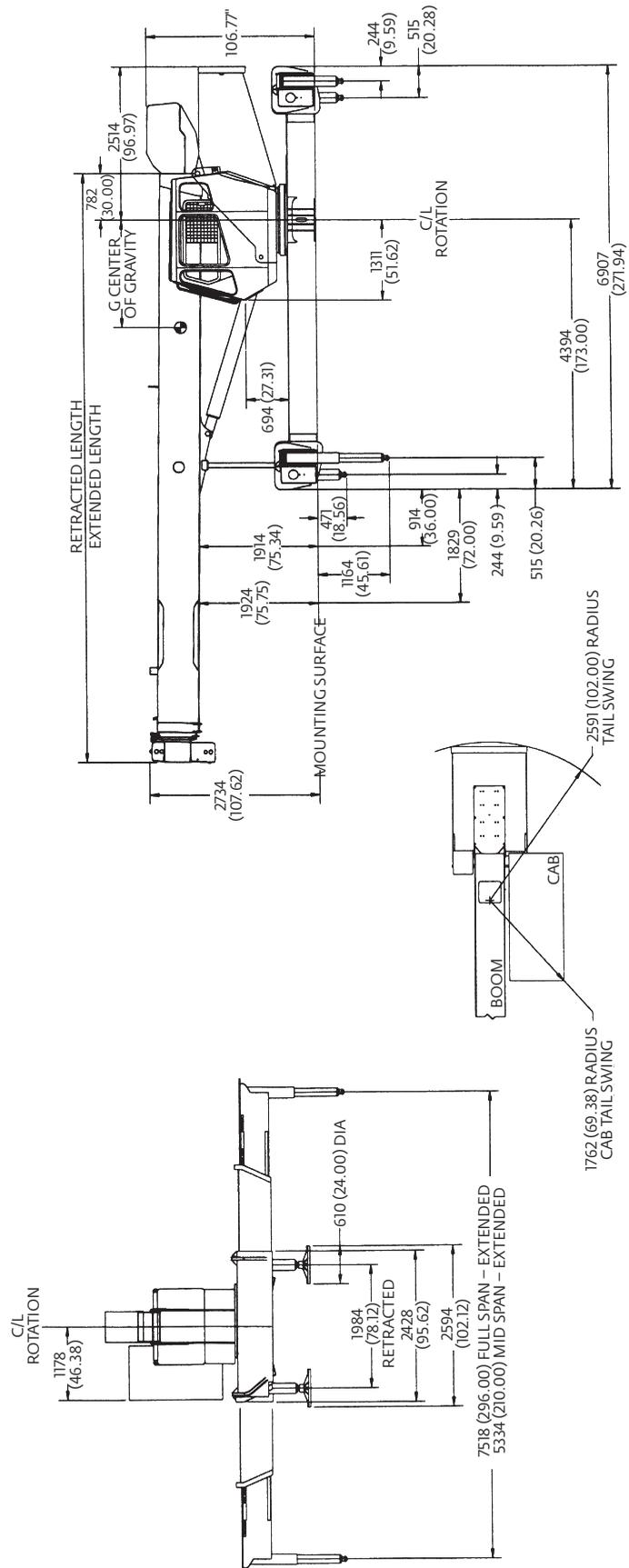
The individual crane's load chart, operating instructions and other instructional plates must be read and understood prior to operating the crane.

Dimensions specifications

Series	Retracted length	Extended length	G	w/oil weight*
18103	9,45 m (31 ft)	31,40 m (103 ft)	1,75 m (69 in)	15 354 kg (33,850 lb)
18127	9,45 m (31 ft)	38,72 m (127 ft)	1,75 m (69 in)	16 000 kg (32,275 lb)
18142	10,36 m (34 ft)	43,28 m (142 ft)	2,21 m (87 in)	16 769 kg (36,970 lb)
1879	9,45 m (31 ft)	24,08 m (79 ft)	1,75 m (69 in)	14 431 kg (31,815 lb)

* Weight includes all items including complete HO outriggers, 2300 lb counterweight, 375 lb block, decks and SFO. booms fully retracted.

Dimensions are in mm (in)



Accessories

Radio Remote Controls – (Ground level or boom tip)

Eliminate the handling and maintenance concerns that accompany cabled remotes. Operate to a range of about 76 m (250 ft), varying with conditions.

- NB4R (R4 functions)

One-Person Basket –

Strong but lightweight steel basket with 139 kg (300 lb) capacity, gravity hung with swing lock and full body harness.

- B1-S
- 2B1-S (for dual locking baskets)

Heavy-duty Personnel Basket –

544 kg (1200 lb) capacity steel basket with safety loops for two passengers. Gravity leveling 183 cm x 107cm (72 in x 42 in) platform. Fast attachment and secure locking systems.

- BSA-1
- BSA-R1 (provides rotation)

Air Conditioning for Crane Cab –

(Requires larger truck alternator) Provides excellent crane cab cooling to overcome the radiant heat from the sun reflection.

- A/C

Auxiliary Winch 10,000 lb Line Pull –

Second winch redundant to the main, planetary winch with boom tip “rooster sheave” to allow reeving of both winch lines.

- 18AW

Work Lights –

- Amber flashing beacon mounted on crane cab
- Spotlight mounted on cab, manually adjusted from the crane cab
- Worklight on boom, switch and wiring in-cab to operate customer supplied worklight (without remote controls)
- Worklight in fixed position on crane cab with in cab power
- Worklight adjustable from crane with in-cab power

- ABR
- MSL
- WLB
- WLF
- WLR

Winch Drum Rotation Indicator and Last Layer Indicator–

Winch drum rotation indicator in cab.

Winch drum rotation indicator in cab (for use with standard and auxiliary winches).

- WDRI-LLI
- WDRI-2-LLI2

Hour Meter –

Hour meter in truck cab to record crane operation hours.

- HRM

Steel Tool Box Options

**Spanish-Language Danger Decals,
Control Knobs, and Operators' Manuals**

- SDD
- SOM

Notes

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China

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Zhangjiagang

France

Charlieu

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Portugal

Baltar

Fânzeres

Slovakia

Saris

USA

Manitowoc

Port Washington

Shady Grove

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