NATIONAL CRANE

Series 1100

product guide

features

- 105' Four-Section Boom
- 28 Ton Rating
- Self-lubricating "Easy Glide" Wear Pads

contents

features

Why Buy a National Series 1100?

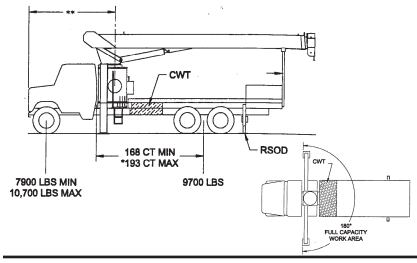
- 28-ton (25.40-t) maximum capacity
- 161 ft. (49.10-m) maximum vertical reach*
- 114-ft. (34.75-m) maximum vertical hydraulic reach*
- Load Moment Indicator System (LMI)
- Proportional boom extension
- High performance planetary winch
- Heavy-duty triple pump hydraulics

* Maximum vertical reach is ground-level to boom tip height at maximum extension and angle with outriggers/stabilizers fully extended.

- **28-ton Rating** – The 1100 provides a 28-ton capacity at a five-foot radius, an eight percent increase in capacity over the Series 900A.
- **105-foot Four-section Boom** – 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.
- **Overload Protection** – All National cranes are equipped with overload protection:
  – Load Moment Indicator (LMI) standard on all Series 1100 machines.
  – LMI display and CPU are weatherproof.
  – LCD display is visible in full or low light.
  – All crane load lifting values are displayed simultaneously.
- **Self-lubricating "Easy glide" Boom Wear Pads** – The standard self-lubricating boom pads reduce the conditions that cause boom chatter and vibration. The net result is smoother crane operation.
- **Stronger Torsion Box** – The stronger standard torsion box improves rigidity, reduces truck frame flex and reduces the need for counterweight.
- **Speedy Reeve Boom Tip and Sheave Blocks** – These standard features simplify rigging changes by decreasing the time needed to change line reevings.
- **Pre-painted Components** – Painting crane components before assembly reduces the possibility of rust, improves serviceability and enhances the appearance of the machine.
- **Improved Serviceability** –
  – Bearings on the boom extend and retract cables can be greased through access holes in the boom side plates.
- **State-of-the-art Control Valve** – Provides smoother operation. The new control valve has specially designed spools to provide optimum control for the smoothest metering and precise load positioning.
- **National Crane Is the Market Leader** – National is number one in the production of commercial truck-mounted boom trucks. National has many programs and people directly and indirectly involved to provide our customers reliable products.
- **National has the boom truck industry's leading test program.** Every structural part of the crane is cycle tested, some up to 60,000 cycles at full capacity. In addition to cycle testing, each model is subjected to state-of-the-art strain gauge testing that measures metal deformation as small as one one-millionth of an inch. The net result is that weak areas are caught in test, not on job sites where costly downtime occurs.
- All lift and telescoping cylinders are manufactured by National Crane, so that the seals, packing glands, and end plates are traced for accurate shipment of replacement parts.
- Parts are available for all National Crane machines, even if they are 35 years old.
- National has a formalized quality program and is ISO 9001 approved.
- **You Expect National Crane to be a Quality Product That Will Provide Years of Service, and So Do We.**

mounting configurations

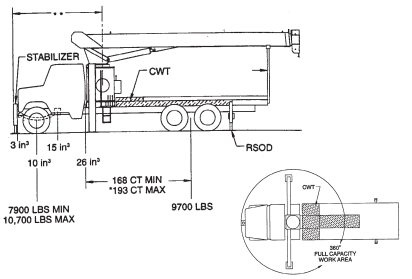
The configurations are based on the Series 1100 with an 85% stability factor. The complete unit must be installed in accordance with factory requirements and a test performed to determine actual stability and counterweight requirements since individual truck chassis vary. Trucks with a frame height in excess of 42 inches (107 cm) after mounting will have a final mounted unit height more than 13' 6" (411.5 cm). Chassis that do not meet these minimum stability weights may require counterweight.



Configuration 1 – 11105

Working area	180°
Gross Axle Weight Rating Front	18,000 lb (8 165 kg)
Gross Axle Weight Rating Rear	34,000 lb (15 422 kg)
Gross Vehicle Weight Rating	52,000 lb (23 587 kg)
Wheelbase	256 in (650 cm)
Cab to Axle/trunnion (CA/CT)	192 in (488 cm)
Frame Section Modulus (SM) under crane w/110,000 PSI (758 MPa)	15.9 in³ (261 cm³)
Frame Section Modulus (SM) over rear stabilizers w/110,000 PSI (758 MPa)	13.0 in³ (213 cm³)
Stability Weight, Front	7,900 lb (3 583 kg) minimum*
Stability Weight, Rear	9,700 lb (4 400 kg) minimum*
Estimated Average Final Weight	46,300 lb (21 001 kg)

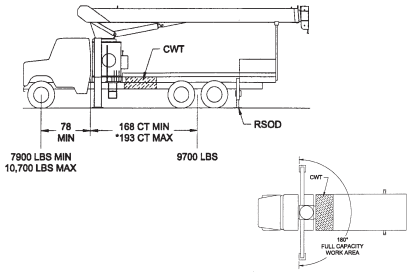
This configuration allows the installation of the Series 11105 by using the subbase for a 22-ft (6.71-m) bed.



Configuration 2 – 11105 with SFO

Working area	360°
Gross Axle Weight Rating Front	18,000 lb (7 257 kg)
Gross Axle Weight Rating Rear	34,000 lb (15 422 kg)
Gross Vehicle Weight Rating	52,000 lb (23 587 kg)
Wheelbase	256 in (650 cm)
Cab to Axle/trunnion (CA/CT)	192 in (488 cm)
Frame Section Modulus (SM) under crane w/110,000 PSI (758 MPa)	26.0 in³ (426 cm³)
Frame Section Modulus (SM) over rear stabilizers w/110,000 PSI (758 MPa)	15.0 in³ (245 cm³)
Stability Weight, Front	7,900 lb (3 583 kg) minimum*
Stability Weight, Rear	9,700 lb (4 400 kg) minimum*
Estimated Average Final Weight	46,300 lb (21 001 kg)

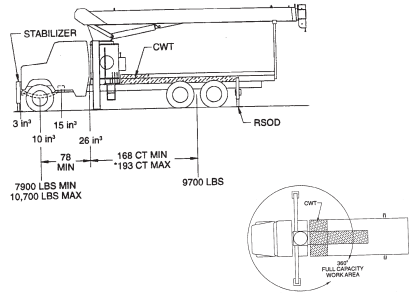
This mount requires front stabilizer for full capacity 360° around the truck. Front stabilizer gives the machine a solid base, helping the operator control loads precisely. This configuration requires a 22-ft (6.71-m) bed.



Configuration 3 – 1195 / 1169

Working area	180°
Gross Axle Weight Rating Front	18,000 lb (8 165 kg)
Gross Axle Weight Rating Rear	34,000 lb (15 422 kg)
Gross Vehicle Weight Rating	52,000 lb (23 587 kg)
Wheelbase	246 in (625 cm)
Cab to Axle/trunnion (CA/CT)	168 in (427 cm)
Frame Section Modulus (SM) under crane w/110,000 PSI (758 MPa)	15.9 in³ (261 cm³)
Frame Section Modulus (SM) over rear stabilizers w/110,000 PSI (758 MPa)	13.0 in³ (213 cm³)
Stability Weight, Front	7,900 lb (3 583 kg) minimum*
Stability Weight, Rear	9,700 lb (4 400 kg) minimum*
Estimated Average Final Weight	44,800 lb (20 321 kg)

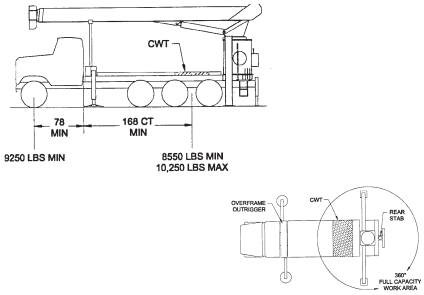
This configuration allows the installation of the Series 1195 or 1169 on a chassis with a small frame by using a subbase for a 20-ft (6.10-m) bed or a different subbase for a 22-ft (6.71-m) bed.



Configuration 4 – 1195 / 1169 with SFO

Working area	360°
Gross Axle Weight Rating Front	18,000 lb (8 165 kg)
Gross Axle Weight Rating Rear	34,000 lb (15 422 kg)
Gross Vehicle Weight Rating	52,000 lb (23 587 kg)
Wheelbase	246 in (625 cm)
Cab to Axle/trunnion (CA/CT)	168 in (427 cm)
Frame Section Modulus (SM) under crane w/110,000 PSI (758 MPa)	26.0 in³ (426 cm³)
Frame Section Modulus (SM) over rear stabilizers w/110,000 PSI (758 MPa)	13.0 in³ (213 cm³)
Stability Weight, Front	7,900 lb (3 583 kg) minimum*
Stability Weight, Rear	9,700 lb (4 400 kg) minimum*
Estimated Average Final Weight	44,800 lb (20 321 kg)

This configuration allows the installation of the 1195 or 1169 on a chassis by using a subbase for a 20-ft (6.10 m) bed or a different subbase for a 22-ft (6.71-m) bed. This mount requires front stabilizer for full capacity 360° around the truck. Front stabilizer gives the machine a solid base, helping the operator control loads.



Configuration 5 – Rear Mount

Working area	360°
Gross Axle Weight Rating Front	16,000 lb (7 257 kg)
Gross Axle Weight Rating Rear	40,000 lb (18 143 kg)
Gross Vehicle Weight Rating	56,000 lb (25 401 kg)
Wheelbase	246 in (625 cm)
Cab to Axle/trunnion (CA/CT)	168 in (427 cm)
Frame Section Modulus (SM) under crane w/110,000 PSI (758 MPa)	15.9 in³ (261 cm³)
Frame Section Modulus (SM) over rear stabilizers w/110,000 PSI (758 MPa)	15.9 in³ (261 cm³)
Stability Weight, Front	9,250 lb (4 196 kg) minimum*
Stability Weight, Rear	8,550 lb (3 878 kg) minimum*
Estimated Average Final Weight	48,000 lb (21 772 kg)

This configuration allows the rear-mount installation of the Series 1100. This configuration is 360° stable and allows the effective use of close working area to lift the heavier capacity loads. maximum bed length is 16 ft (4.87 m).

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 1100 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 remote control

**Estimated axle scale weights prior to installation of crane, stabilizers and subbase for 85% stability.*
***If the distance from the front bumper (SFO) to center of rotation exceeds 144 inches (366 cm), the 40-ft (12.19 m) overall truck length restriction will be exceeded. Overall length restrictions vary from state to state. In some states it is legal to be more than 40 ft (12.18 m) in length, and some states allow overlength permits.*

NATIONAL CRANE

specifications

Boom and Jib Combinations Data

Available in three basic models: 1169 three-section, 1195 four-section and 11105 four-section

Model 1169 — Equipped with a 27.5 ft - 69 ft (8.38-21.04 m) three-section boom. This model can be equipped with a 27-48 ft (8.23-14.63 m) two-section manual pull-out jib. Maximum tip height w/ 48 ft (14.63 m) jib is 127 ft (38.72 m).

27.5-69 ft (8.38-21.04 m) three-section boom

27.5-69 ft (8.23-21.04 m) three-section boom 11FJ48M 27-48 ft (8.23-14.63 m) manual pull-out jib

Model 1195 — Equipped with a 28-95 ft (8.53-28.96 m) four-section boom. This model can be equipped with a 25-44 ft (7.62-13.41 m) manual pull-out or a 27-48 ft (8.23-14.63 m) manual pull-out jib. Maximum tip height w/ 44 ft (13.41 m) jib is 147 ft (44.81 m) and 151 ft (46.04m) w/ 48 ft jib.

28-95 ft (8.54-28.96 m) four-section boom

28-95 ft (8.54-28.96 m) four-section boom **11FJ44M** 25-44 ft (7.62-13.41 m) manual pull-out jib

28-95 ft (8.54-28.96 m) four-section boom **11FJ48M** 27-48 ft (8.23-14.63 m) manual pull-out jib

Model 11105 — Equipped with a 31 ft to 105 ft (9.44-32.01 m) four-section boom. This model can be equipped with a 25-44 ft (7.62-13.41 m) manual pull-out or a 27-48 ft (8.23-14.63 m) manual pull-out jib. Maximum tip height w/ 44 ft (13.41 m) jib is 157 ft (47.24 m) and 161 ft w/ 48 ft jib.

31-105 ft (9.45-32.01 m) four-section boom

31-105 ft (9.45-32.01 m) four-section boom **11FJ44M** 25-44 ft (7.62-13.41 m) manual pull-out jib

31-105 ft (9.45-32.01 m) four-section boom **11FJ48M** 27-48 ft (8.23-14.63 m) manual pull-out jib

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

1100 Winch Data

- All winch pulls and speeds in this chart are shown on the fourth layer
- Winch line pulls would increase on the first, second and third layers
- Winch line speed would decrease on the first, second and third layers
- Winch line pulls may be limited by the winch capacity or the ANSI 5 to 1 cable safety factor (3.5 to 1 for optional 9/16" 6x25 IWRC cable)
- Hook blocks are rated at maximum capacity for the block. **Do not exceed rated cable pull with any block.**

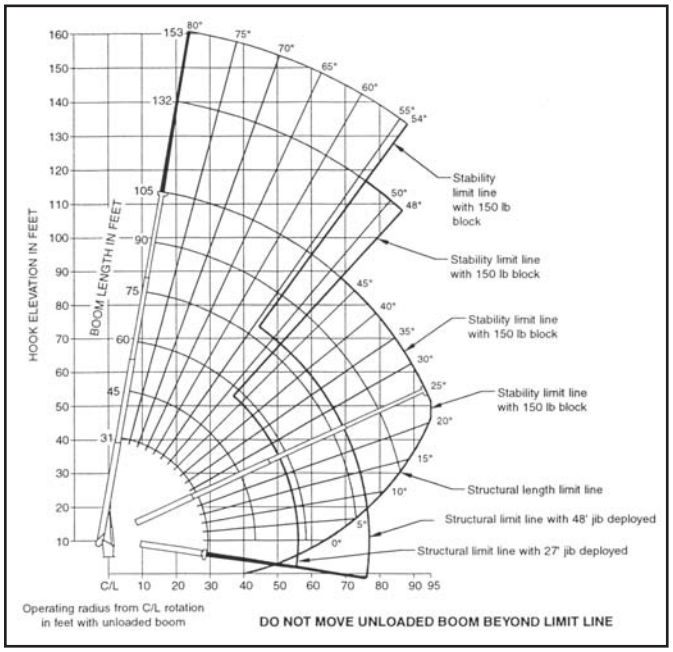
Winch	Cable Supplied	Average Breaking Strength	1 Part Line Lift and Speed	2 Part Line Lift and Speed	3 Part Line Lift and Speed	4 Part Line Lift and Speed	5 Part Line Lift and Speed	6 Part Line Lift and Speed	7 Part Line Lift and Speed
Standard Planetary Winch	9/16" Diameter Rotation Resistant 18 x 19 IWRC	38,500 lb (17 463 kg)	7,700 lb (3 492 kg) 164 fpm (50 m/min)	15,400 lb (6 985 kg) 82 fpm (25 m/min)	23,100 lb (10 477 kg) 55fpm (17 m/min)	30,800 lb (13 970 kg) 41 fpm (13 m/min)	38,500 lb (17 463 kg) 33 fpm (10 m/min)	46,200 lb (20 955 kg) 27 fpm (8 m/min)	53,900 lb (24 449 kg)* 23 fpm (7 m/min)
With "Burst-of-Speed	Same as corresponding cable data shown above		3,000 lb (1 361 kg) 265 fpm (81 m/min)	6,000 lb (2 722 kg) 133 fpm (41 m/min)	9,000 lb (4 082 kg) 88 fpm (27 m/min)	12,000 lb (5 443 kg) 66 fpm (20 m/min)	15,000 lb (6 803 kg) 53 fpm (16 m/min)	18,000 lb (8 164 kg) 44 fpm (13 m/min)	21,000 lb (9 525 kg) 37 fpm (11 m/min)

Winch	Bare Drum Pull	Allowable Cable Pull
With standard rotation resistant rope	10,000 lb (4 536 kg)	7,700 lb (3 493 kg)

Block Type	Rating	Weight
Downhaul Weight	3.85 ton (3.49 t)	150 lb (68 kg)
1 Sheave Block	11.55 ton (10.48 t)	305 lb (138 kg)
2 Sheave Block	19.25 ton (17.46 t)	355 lb (161 kg)
3 Sheave Block	28.0 ton (25.40 t)	690 lb (313 kg)

Load Rating Chart: Series 11105 with 48 ft. Jib

Other series 1100 Load Rating Charts are available. National will send you a chart on request – or you may secure needed load rating information through your nearest National dealer.



Caution:

- **Do not operate crane booms, jib extensions, any accessories or loads within 10 ft (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
- 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 loads 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 of 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
- Maximum capacity with Burst-of-Speed is 3,000 lb (1 361 kg) on single part line

SERIES 11105 WITH 48 FT JIB

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.

LMI OPERATING CODE	
OPERATING MODE	
01	Main Boom - No Jib Stowed
02	Main Boom - Jib Stowed
03	25 ft Tele Jib
04	44 ft Tele Jib
11	Man Basket On Main Boom
12	Man Basket On 25 ft Tele Jib
13	Man Basket On 44 ft Tele Jib

Load Rating: Series 11105 with 48 ft. Jib

Load Radius (Feet)	Loaded Boom Angle	31 Ft. Boom (lb)	Loaded Boom Angle	45 Ft. Boom (lb)	Loaded Boom Angle	60 Ft. Boom (lb)	Loaded Boom Angle	75 Ft. Boom (lb)	Loaded Boom Angle	90 Ft. Boom (lb)	Loaded Boom Angle	105 Ft. Boom (lb)
5	79.4	53,900*										
8	73.1	37,550	79.3	29,400								
10	68.9	30,950	76.8	28,500								
12	64.6	26,450	74.0	24,200	78.8	21,850						
14	60.2	22,850	71.2	21,100	76.8	19,050	80.0	15,050				
16	55.6	20,150	68.4	18,600	74.8	16,850	78.5	14,650				
20	45.5	15,850	62.6	15,000	70.7	13,650	75.4	12,250	78.4	10,500	80.2	7,450
25	29.1	11,350	54.8	11,900	65.4	10,850	71.3	9,850	75.1	8,700	77.8	7,050
30			46.3	9,600	59.8	8,950	67.1	8,150	71.8	7,500	75.0	6,250
35			36.1	7,600	53.9	7,500	63.1	6,700	68.6	6,200	72.2	5,450
40			23.5	5,500	48.0	6,150	58.6	5,750	65.0	5,250	69.3	4,750
45					40.8	5,100	53.8	4,900	61.3	4,500	66.2	4,050
50					32.2	4,100	48.7	4,200	57.5	3,900	63.1	3,550
55					20.6	2,850	43.0	3,550	53.5	3,400	60.0	3,150
60							36.7	2,900	49.2	2,900	56.6	2,700
65							29.1	2,300	44.6	2,450	53.2	2,400
70							18.7	1,450	39.4	1,900	49.5	2,050
75									33.6	1,500	45.5	1,600
80									26.8	1,100	41.2	1,200
85									17.2	500	36.5	900
90											31.2	600
95											24.8	350
	0	4,350	0	1,800	0	450						
ADD TO CAPACITIES WHEN NO JIB STOWED (lbs)		850		600		450		350		300		250

Load Radius (Feet)	Loaded Boom Angle	27 Ft. Jib (Lb)	Loaded Boom Angle	48 Ft. Jib (Lb)
30	78.6	4,200		
35	76.5	3,800	78.8	2,400
40	74.4	3,400	77.1	2,250
45	72.1	2,900	75.4	2,150
50	69.8	2,500	73.6	2,000
55	67.4	2,100	71.7	1,800
60	65.0	1,800	69.7	1,650
65	62.5	1,500	67.7	1,450
70	60.0	1,300	65.6	1,300
75	57.4	1,100	63.4	1,100
80	54.7	900	61.2	900
85	51.8	700	59.0	800
90	48.8	500	56.7	700
95			54.2	550

Shaded areas are structurally limited capacities.

*56,000-lb LOAD REQUIRES OPTIONAL 9/16" 6x25 IWRC CABLE

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.

Load Rating Chart: Series 11105 with No Jib

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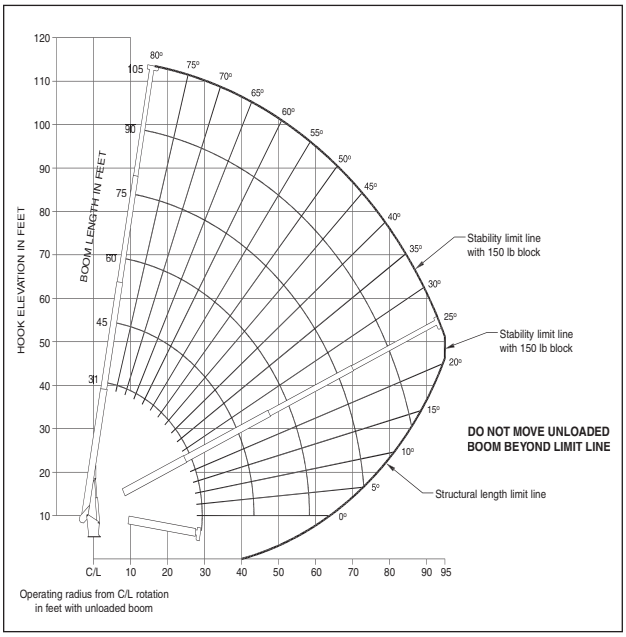

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- Jib and boom capacities shown are maximum for each section.
- Do not exceed capacities at reduced radii
- Load ratings shown on the load rating charts are maximum allowable loads with the outriggers properly extended on a firm, level surface and 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.

SERIES 11105 WITH NO JIB

LOADLINE EQUIPMENT DEDUCT (lb)

Downhaul weight	150
One sheave block	305
Two sheave block	355
Three sheave block	575

Load Rating Chart: Series 11105 with No Jib

LOAD RADIUS (FEET)	LOADED BOOM ANGLE	31FT BOOM (lb)	LOADED BOOM ANGLE	45FT BOOM (lb)	LOADED BOOM ANGLE	60FT BOOM (lb)	LOADED BOOM ANGLE	75FT BOOM (lb)	LOADED BOOM ANGLE	90FT BOOM (lb)	LOADED BOOM ANGLE	105FT BOOM (lb)
5	79.4	*53,900										
8	73.1	38,400	79.3	30,000								
10	68.9	31,800	76.8	29,100								
12	64.6	27,300	74	24,800	78.8	22,300						
14	60.2	23,700	71.2	21,700	76.8	19,500	80	15,400				
16	55.6	21,000	68.4	19,200	74.8	17,300	78.5	15,000				
20	45.5	16,700	62.6	15,600	70.7	14,100	75.4	12,600	78.4	10,800	80.2	7,700
25	29.1	12,200	54.8	12,500	65.4	11,300	71.3	10,200	75.1	9,000	77.8	7,300
30			46.3	10,200	59.8	9,400	67.1	8,500	71.8	7,800	75	6,500
35			36.1	8,200	53.9	7,950	63.1	7,050	68.6	6,500	72.2	5,700
40			23.5	6,100	48	6,600	58.6	6,100	65	5,550	69.3	5,000
45					40.8	5,550	53.8	5,250	61.3	4,800	66.2	4,300
50					32.2	4,550	48.7	4,550	57.5	4,200	63.1	3,800
55					20.6	3,300	43	3,900	53.5	3,700	60	3,400
60							36.7	3,250	49.2	3,200	56.6	2,950
65							29.1	2,650	44.6	2,750	53.2	2,650
70							18.7	1,800	39.4	2,200	49.5	2,300
75									33.6	1,800	45.5	1,850
80									26.8	1,400	41.2	1,450
85									17.2	800	36.5	1,150
90											31.2	850
95											24.8	600
	0	5,200	0	2,400	0	900						

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.

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

- ***Model NB4R***

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

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

Heavy-duty Personnel Basket –
1,200-lb. (544-kg) capacity steel basket with safety loops for four passengers. Gravity leveling 72- x 42-inch (183- x 107-cm) platform. Fast attachment and secure locking systems. Load chart must show 2,300 lb. (1 043 kg) minimum to operate this accessory.

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

Hydraulic Oil Cooler –
Automatic, self-contained radiator system with electric fans cools oil under continuous operation.

- ***Model OC***

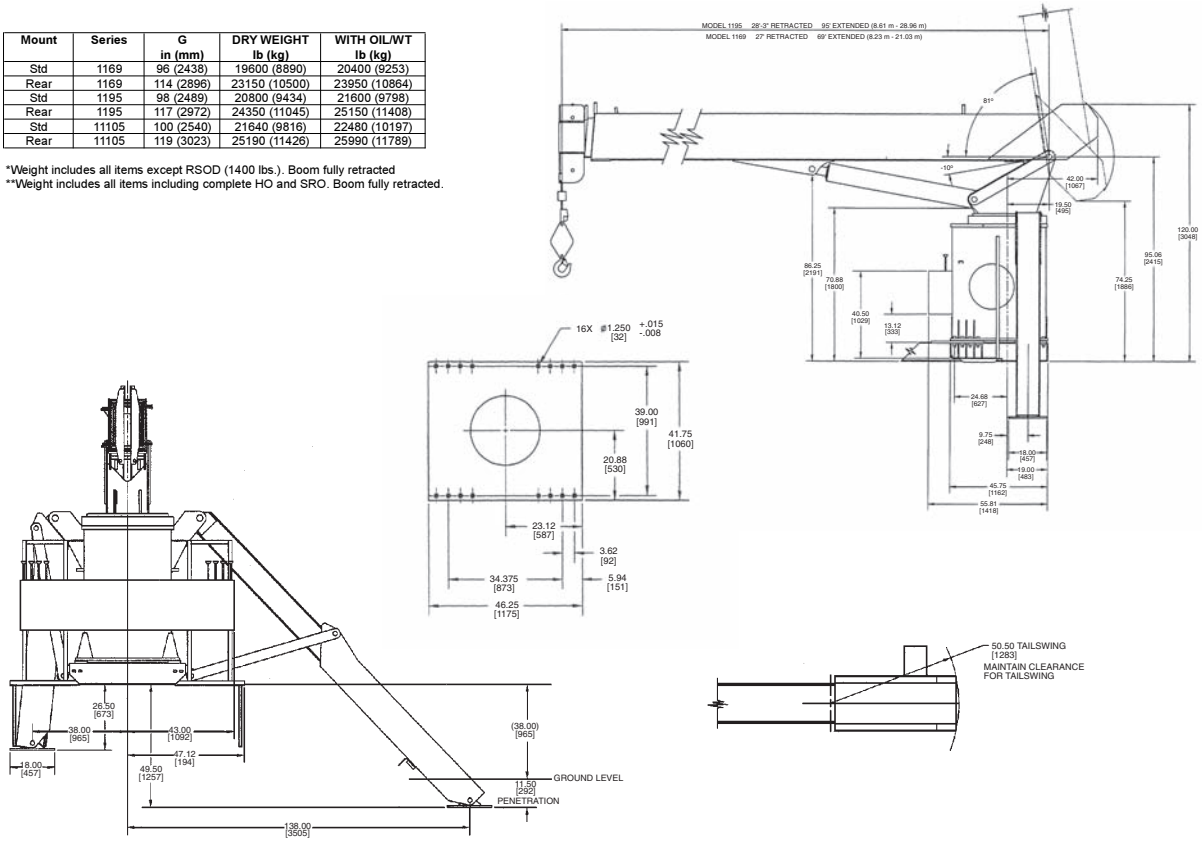
Continuous Rotation –
Allows rotation of turret/boom without rotation stop.

- ***Model CR***

Dimensions Specifications

Mount	Series	G in (mm)	DRY WEIGHT lb (kg)	WITH OIL/WT lb (kg)
Std	1169	96 (2438)	19600 (8890)	20400 (9253)
Rear	1169	114 (2896)	23150 (10500)	23950 (10864)
Std	1195	98 (2489)	20800 (9434)	21600 (9798)
Rear	1195	117 (2972)	24350 (11045)	25150 (11408)
Std	11105	100 (2540)	21640 (9816)	22480 (10197)
Rear	11105	119 (3023)	25190 (11426)	25990 (11789)

*Weight includes all items except RSOD (1400 lbs.). Boom fully retracted
**Weight includes all items including complete HO and SRO. Boom fully retracted.



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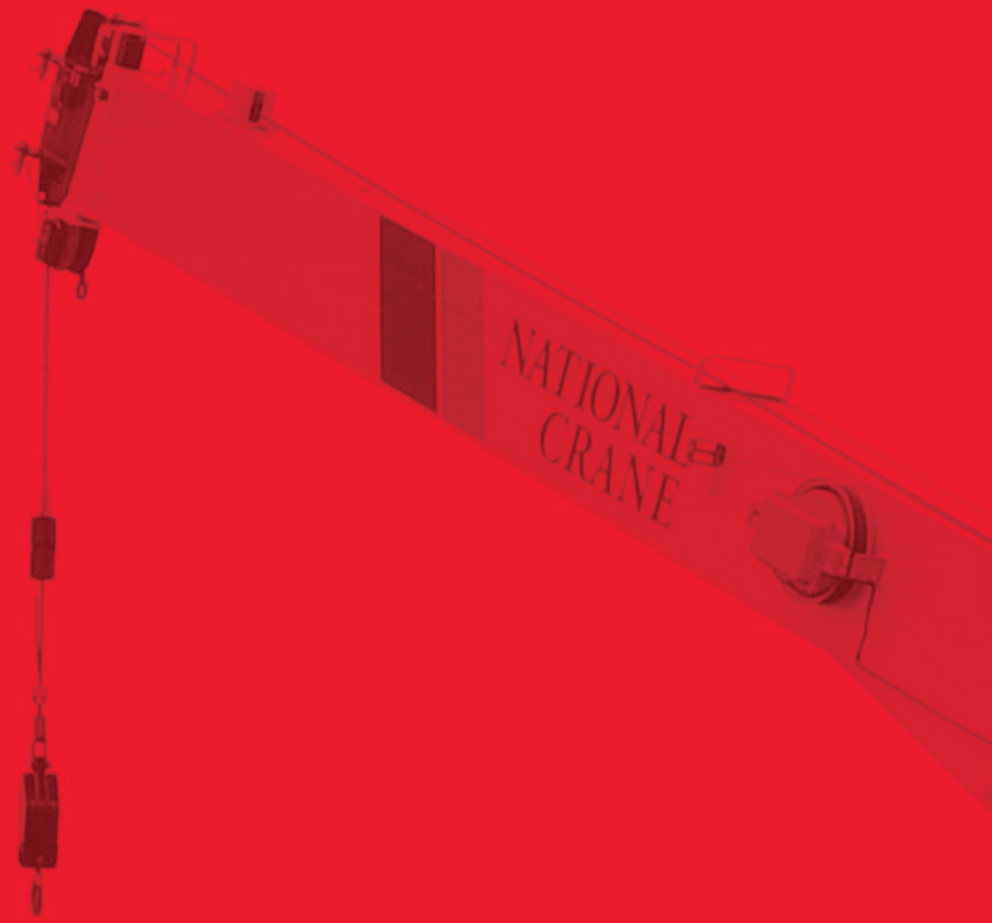

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