



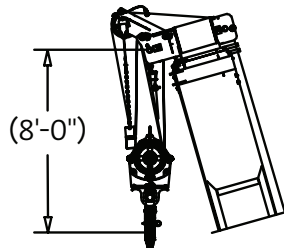
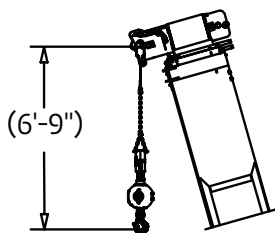
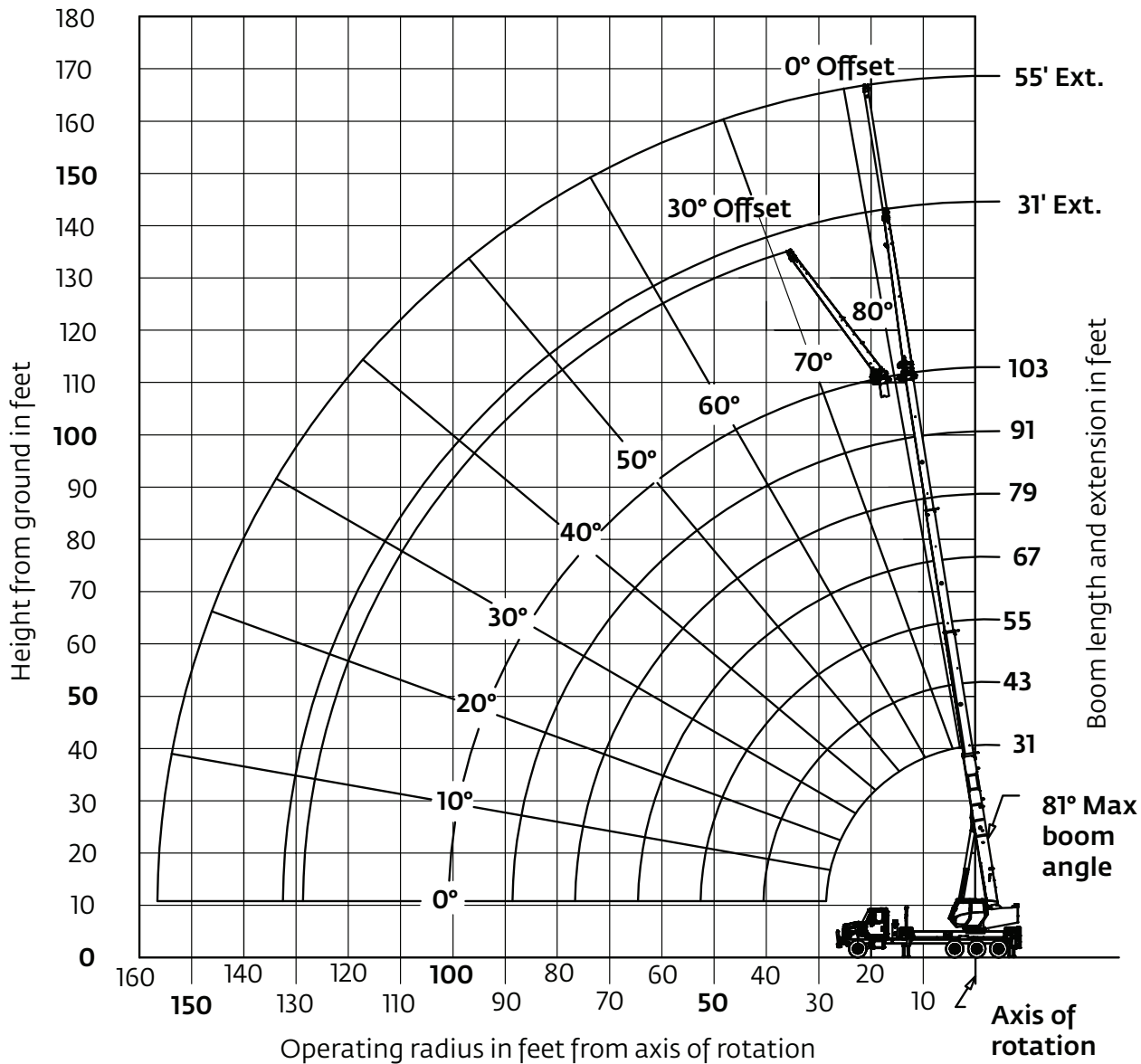
LIFTING CHARTS - Boom Trucks

NATIONAL MODEL NBT45 - 45 TON CAPACITY

Working range

103 ft main boom, full span outrigger, with 31 ft - 55 ft jib

Boom deflection not shown



Dimensions are for largest furnished hookblock and headache ball with anti-two block activated.

*Drawing is to show the physical reach of the machine. Always refer to load chart to see what portions of this range are structurally and stability limited.

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Load chart

103 ft main boom, full span outrigger, without jib

Radius in feet	#01						
	Main boom length in feet						
	31	43-A	55-B	67-C	79-D	91-E	103
7	90,000 (73.6)						
8	82,000 (71.6)	51,000 (76.9)					
10	69,950 (67.6)	51,000 (74.1)	50,000 (78)				
12	58,000 (63.4)	50,000 (71.2)	47,000 (75.8)	37,000 (78.7)			
15	45,700 (56.9)	46,050 (66.9)	40,000 (72.5)	36,000 (76.1)	33,000 (78.7)		
20	33,150 (44.5)	33,550 (59.1)	33,700 (66.8)	33,800 (71.7)	29,000 (75.1)	18,500 (77.3)	18,500 (79.5)
25	25,400 (28)	25,800 (50.7)	26,050 (60.8)	26,150 (66.9)	26,250 (71.2)	18,000 (74.2)	17,500 (76.8)
30		20,650 (40.9)	20,850 (54.4)	21,000 (62)	21,050 (67.2)	17,500 (71)	16,500 (74)
35		16,200 (28.6)	16,450 (47.5)	16,650 (56.9)	16,750 (63.1)	16,200 (67.6)	15,000 (71.1)
40			13,200 (39.6)	13,350 (51.4)	13,450 (58.8)	13,600 (64.1)	13,500 (68.2)
45			10,900 (30)	11,050 (45.5)	11,150 (54.2)	11,150 (60.4)	11,250 (65.1)
50			9000 (17.5)	9200 (39.5)	9300 (49.9)	9400 (56.9)	9500 (62.1)
55				7700 (31.8)	7800 (44.7)	7900 (52.8)	8000 (58.7)
60				6500 (21.7)	6600 (39)	6700 (48.5)	6750 (55.1)
65					5600 (32.4)	5700 (43.9)	5750 (51.4)
70					4750 (24.3)	4850 (38.8)	4900 (47.5)
75					4000 (11.2)	4100 (33.1)	4200 (43.3)
80						3500 (26.3)	3550 (38.8)
85						2950 (16.8)	3000 (33.7)
90							2550 (27.8)
95							2100 (20.2)
100							1700 (4.7)
Minimum boom angle (°) for indicated length (no load)							0
Maximum boom length (ft) at 0° boom angle (no load)							103

NOTE: Loads displayed in pounds. () Boom angles are in degrees.

#LMI operating code. Refer to LMI manual for operating instructions.

Lifting capacities at zero degree boom angle							
Boom angle	Main boom length in feet						
	31	43-A	55-B	67-C	79-D	91-E	103
0°	21,850 (28.5)	13,150 (40.5)	8450 (52.5)	5650 (64.5)	3850 (76.5)	2650 (88.5)	1600 (100.5)

NOTE: () Reference radii in feet.

80026252

Rated Load Reductions from main boom capacity when lifting over main boom nose with :							
tele. erected (retracted)	2300	2150	2000	1950	1900	1850	1800
31' off. erected at 0° offset	1800	1700	1550	1500	1450	1450	1400

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 chart

103 ft main boom, full span outrigger, with 31 ft - 55 ft jib

Radius in feet	#02						
	Main boom length in feet						
	31	43-A	55-B	67-C	79-D	91-E	103
7	89,200 (73.6)						
8	81,200 (71.6)	50,350 (76.9)					
10	69,150 (67.6)	50,350 (74.1)	49,550 (78)				
12	57,200 (63.4)	49,350 (71.2)	46,550 (75.8)	36,600 (78.7)			
15	44,900 (56.9)	45,400 (66.9)	39,550 (72.5)	35,600 (76.1)	32,650 (78.7)		
20	32,350 (44.5)	32,900 (59.1)	33,250 (66.8)	33,400 (71.7)	28,650 (75.1)	18,200 (77.3)	18,250 (79.5)
25	24,600 (28)	25,150 (50.7)	25,600 (60.8)	25,750 (66.9)	25,900 (71.2)	17,700 (74.2)	17,250 (76.8)
30		20,000 (40.9)	20,400 (54.4)	20,600 (62)	20,700 (67.2)	17,200 (71)	16,250 (74)
35		15,550 (28.6)	16,000 (47.5)	16,250 (56.9)	16,400 (63.1)	15,900 (67.6)	14,750 (71.1)
40			12,750 (39.6)	12,950 (51.4)	13,100 (58.8)	13,300 (64.1)	13,250 (68.2)
45			10,450 (30)	10,650 (45.5)	10,800 (54.2)	10,850 (60.4)	11,000 (65.1)
50			8550 (17.5)	8800 (39.5)	8950 (49.9)	9100 (56.9)	9250 (62.1)
55				7300 (31.8)	7450 (44.7)	7600 (52.8)	7750 (58.7)
60				6100 (21.7)	6250 (39)	6400 (48.5)	6500 (55.1)
65					5250 (32.4)	5400 (43.9)	5500 (51.4)
70					4400 (24.3)	4550 (38.8)	4650 (47.5)
75					3650 (11.2)	3800 (33.1)	3950 (43.3)
80						3200 (26.3)	3300 (38.8)
85						2650 (16.8)	2750 (33.7)
90							2300 (27.8)
95							1850 (20.2)
100							1450 (4.7)
Minimum boom angle (°) for indicated length (no load)							0
Maximum boom length (ft) at 0° boom angle (no load)							103

NOTE: Loads displayed in pounds. () Boom angles are in degrees.
#LMI operating code. Refer to LMI manual for operating instructions.

Boom angle	Lifting capacities at zero degree boom angle						
	Main boom length in feet						
	31	43-A	55-B	67-C	79-D	91-E	103
0°	21,050 (28.5)	12,500 (40.5)	8000 (52.5)	5250 (64.5)	3500 (76.5)	2350 (88.5)	1350 (100.5)

NOTE: () Reference radii in feet. 80026255

Rated Load Reductions from main boom capacity when lifting over main boom nose with :							
tele. erected (retracted)	2300	2150	2000	1950	1900	1850	1800
31' off. erected at 0° offset	1800	1700	1550	1500	1450	1450	1400

Radius in feet	0° OFFSET
	#06
25	8800 (80)
38	8000 (75)
49	6500 (70)
60	5100 (65)
70	4100 (60)
79	3300 (55)
88	2600 (50)
96	1900 (45)
103	1350 (40)
110	950 (35)
115	650 (30)
Min. boom angle for indicated length (no load)	25.1°
Max. boom length at 0° boom angle (no load)	103 ft

Radius in feet	30° OFFSET
	#09
39	6400 (80)
50	5700 (75)
60	5000 (70)
70	4200 (65)
79	3600 (60)
87	3000 (55)
95	2500 (50)
102	2000 (45)
108	1550 (40)
113	1200 (35)
118	1000 (30)
122	750 (25)
124	650 (21)
Min. boom angle for indicated length (no load)	20°
Max. boom length at 0° boom angle (no load)	103 ft

NOTE: Loads displayed in pounds.
() Boom angles are in degrees.
#LMI operating code. Refer to LMI manual for operating instructions.

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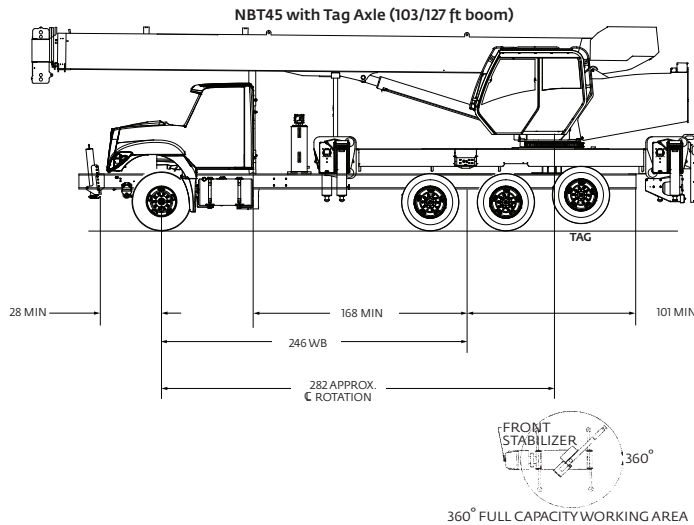
Boom extension capacity notes:

- All capacities above the bold line are based on structural strength of boom extension.
- 31 ft offsettable extension length may be used for single line lifting service
- Radii listed are for a fully extended boom with the boom extension erected. For main boom lengths less than fully extended, the rated loads are determined by boom angle. For boom angles not shown, use the rating of the next lower angle.
Warning: Operation of this machine with heavier loads than the capacities listed is strictly prohibited. Machine tipping with boom extension occurs rapidly and without advance warning.
- Boom angle is the angle above or below horizontal of the longitudinal axis of the boom base section after lifting rated load.
- Capacities listed are with outriggers properly extended and vertical jacks set.
- When lifting over the main boom nose with 31 ft offsettable extension erected, the outriggers must be fully extended or 50% (17.5 ft) spread.

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Mounting configurations

The configurations are based on the Series NBT45 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: 31,39 m (103 ft) or 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)

Tag Axle Weight Rating: 5987 kg (13,200 lb)

Wheelbase: 625 cm (246 in)

Cab to Axle/trunnion (CA/CT): 427 cm (168 in)

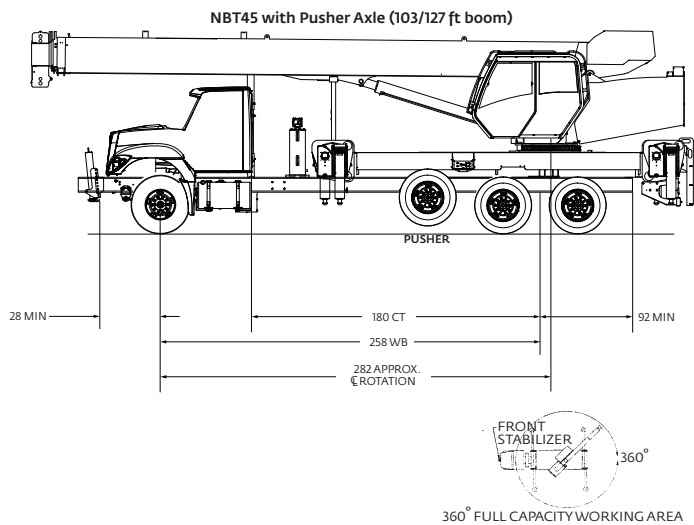
Frame Section Modulus (SM), front axle to end of AF: 785 MPa (110,000 PSI): 426 cm³ (30.0 in³)

Stability Weight, Front: 4286 kg (9450 lb) minimum*

Stability Weight, Rear: 4899 kg (10,800 lb) minimum*

This configuration shows the 360° working area that is achieved with the front stabilizer (standard on the Series NBT45). The front stabilizer is essential when extending the boom and lifting loads over the front of the truck. NOTE: Chassis will require extended front frame rails for SFO mounting.

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



Configuration 2: 31,39 m (103 ft) or 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)

Pusher Axle Weight Rating: 5987 kg (13,200 lb)

Wheelbase: 655 cm (258 in)

Cab to Axle/trunnion (CA/CT): 457 cm (180 in)

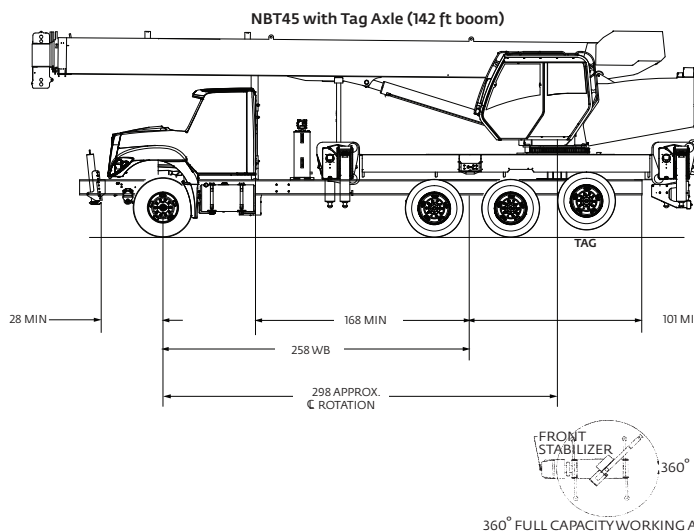
Frame Section Modulus (SM), front axle to end of AF: 785 MPa (110,000 PSI): 426 cm³ (30.0 in³)

Stability Weight, Front: 4525 kg (9975 lb) minimum*

Stability Weight, Rear: 4661 kg (10,275 lb) minimum*

This configuration shows the 360° working area that is achieved with the front stabilizer (standard on the Series NBT45). The front stabilizer is essential when extending the boom and lifting loads over the front of the truck. NOTE: Chassis will require extended front frame rails for SFO mounting.

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



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)

Tag Axle Weight Rating: 5987 kg (13,200 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)

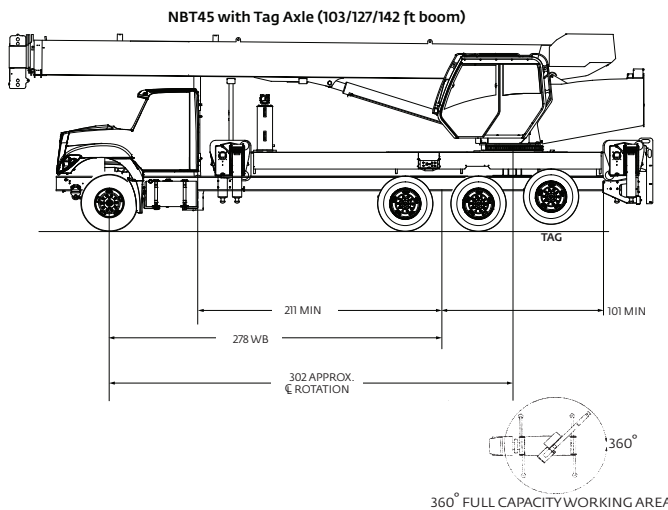
Stability Weight, Front: 4207 kg (9275 lb) minimum*

Stability Weight, Rear: 4797 kg (10,575 lb) minimum*

This configuration shows the 360° working area that is achieved with the front stabilizer (standard on the Series NBT45). The front stabilizer is essential when extending the boom and lifting loads over the front of the truck. NOTE: Chassis will require extended front frame rails for SFO mounting.

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

Mounting configurations



Configuration 4: Extended T-box 31,39 m (103 ft), 38,71 m (127 ft) or 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)

Tag Axle Weight Rating: 5987 kg (13,200 lb)

Wheelbase: 686 cm (270 in)

Cab to Axle/trunnion (CA/CT): 516 cm (203 in)

Frame Section Modulus (SM), front axle to end of AF: 785 MPa

(110,000 PSI); 426 cm³ (30.0 in³)

Stability Weight, Front: 4309 kg (9500 lb) maximum*

Stability Weight, Rear: 5103 kg (11,250 lb) minimum*

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

Other configurations are available, please consult the factory for more information.

Minimum truck requirements

Many factors must be considered in the selection of proper truck for a NBT45 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 NBT45 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.

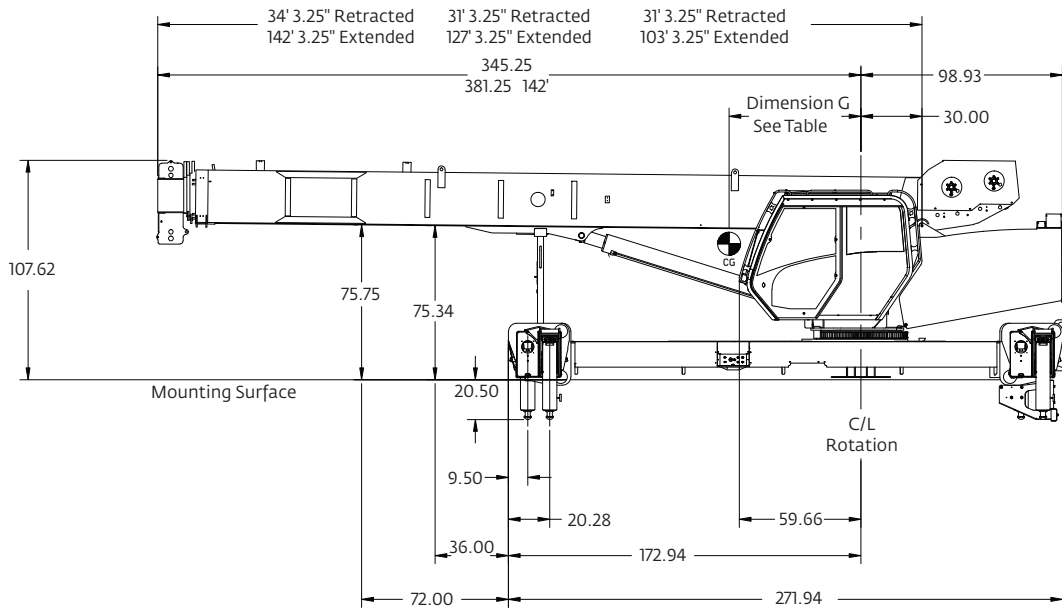
Notes:

- 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

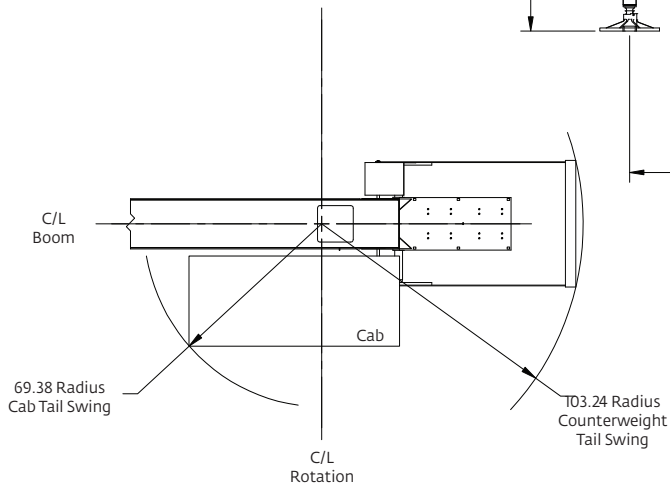
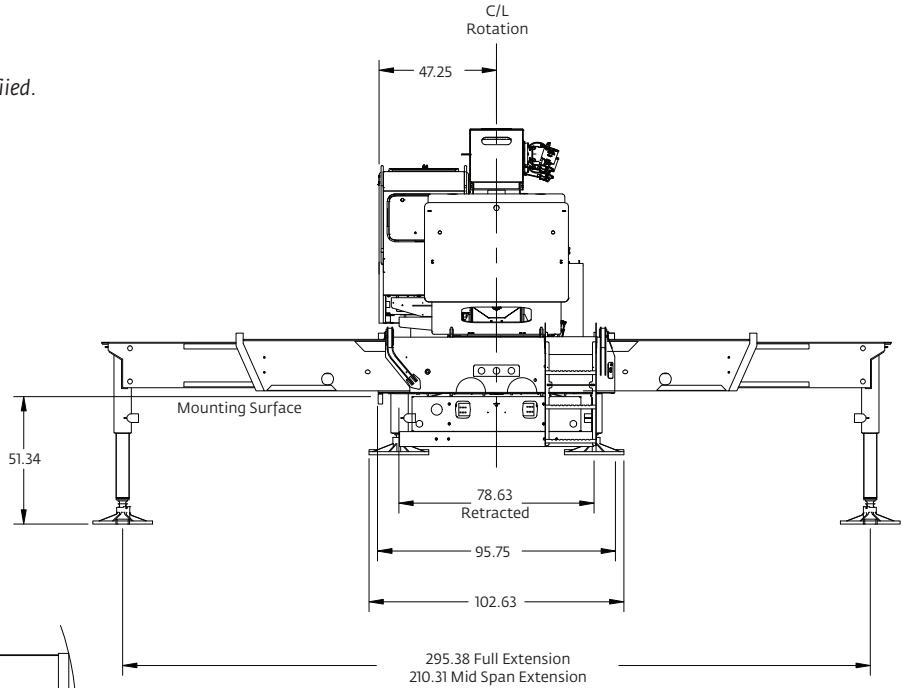
- All mounting data is based on a National Series NBT45 with an 85% stability factor (75% stability factor for New York City).
- The complete unit must be installed in accordance with factory requirements, and a test performed to determine actual stability and counterweight requirements per SAE J765; contact the factory for details

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Dimensions



Dimensions are in inches unless otherwise specified.



Weight/CG Data		
Series	Dimension G	Weight with oil
NBT45103	52"	36,679lb
NBT45127	56"	40,989 lb
NBT45142	64"	42,284 lb

No jib, no auxiliary hoist, with 2/3 hookblock.