

National Crane Series NBT45

Product Guide



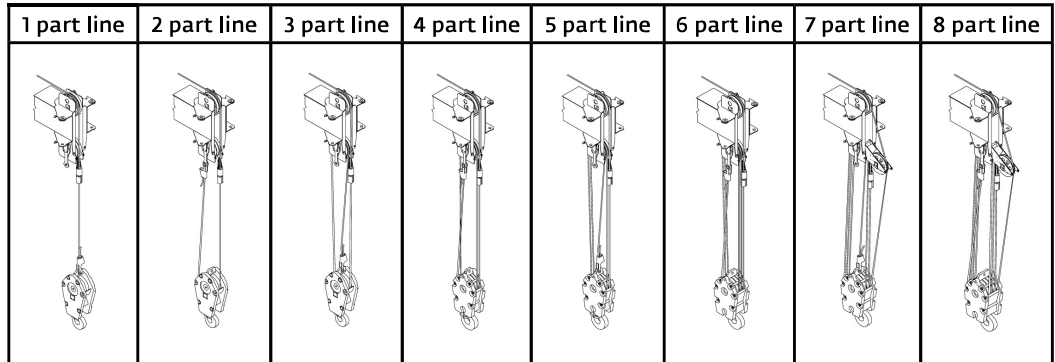
Features

- 40,8 t (45 USt) rating
- 43,3 m (142 ft) five-section boom
- Self-lubricating Easy Glide wear pads
- 2041 kg (4500 lb) tailswing counterweight

Specifications

NBT45 winch data

- All winch pulls and speeds 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.

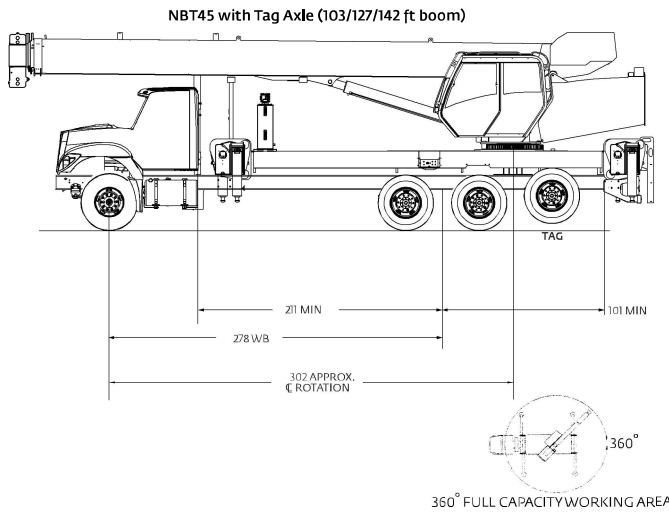


Standard planetary winch	Cable supplied	Average breaking strength	Max. pull	Max. pull	Max. pull	Max. pull	Max. pull	Max. pull	Max. pull	Max. pull
Low speed	5/8" diameter rotation resistant IWRC	25 583 kg (56,400 lb)	5103 kg (11,250 lb) 62 m/min (205 fpm)	10 206 kg (22,500 lb) 31 m/min (103 fpm)	15 309 kg (33,750 lb) 21 m/min (68 fpm)	20 412 kg (45,000 lb) 16 m/min (51 fpm)	25 515 kg (56,250 lb) 13 m/min (41 fpm)	30 618 kg (67,500 lb) 10 m/min (34 fpm)	35 721 kg (78,750 lb) 9 m/min (29 fpm)	40 824 kg (90,000 lb) 8 m/min (26 fpm)
High speed	5/8" diameter rotation resistant IWRC	25 583 kg (56,400 lb)	2268 kg (5000 lb) 125 m/min (410 fpm)	4536 kg (10,000 lb) 62 m/min (205 fpm)	6804 kg (15,000 lb) 42 m/min (137 fpm)	9072 kg (20,000 lb) 31 m/min (103 fpm)	11 340 kg (25,000 lb) 25 m/min (82 fpm)	13 608 kg (30,000 lb) 21 m/min (68 fpm)	15 876 kg (35,000 lb) 18 m/min (59 fpm)	18 144 kg (40,000 lb) 16 m/min (51 fpm)

Winch	Fourth layer pull	Allowable cable pull
Standard planetary and auxiliary planetary	2268 kg (5000 lb) high speed 5103 kg (11,250 lb) low speed	5117 kg (11,280 lb) 5117 kg (11,280 lb)

Block type	Rating	Weight
Aux boom head		45 kg (100 lb)
Downhaul weight	4,53 USt (7 USt)	78 kg (172 lb)
1-sheave block	13,60 t (20 USt)	149 kg (329 lb)
2-sheave block	22,67 t (30 USt)	290 kg (640 lb)
3-sheave block	31,74 t (40 USt)	272 kg (600 lb)
4-sheave block	32,65 t (50 USt)	361 kg (796 lb)

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:

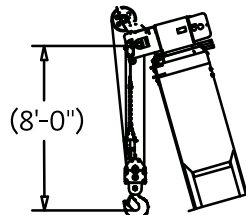
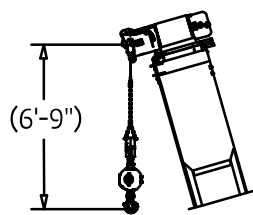
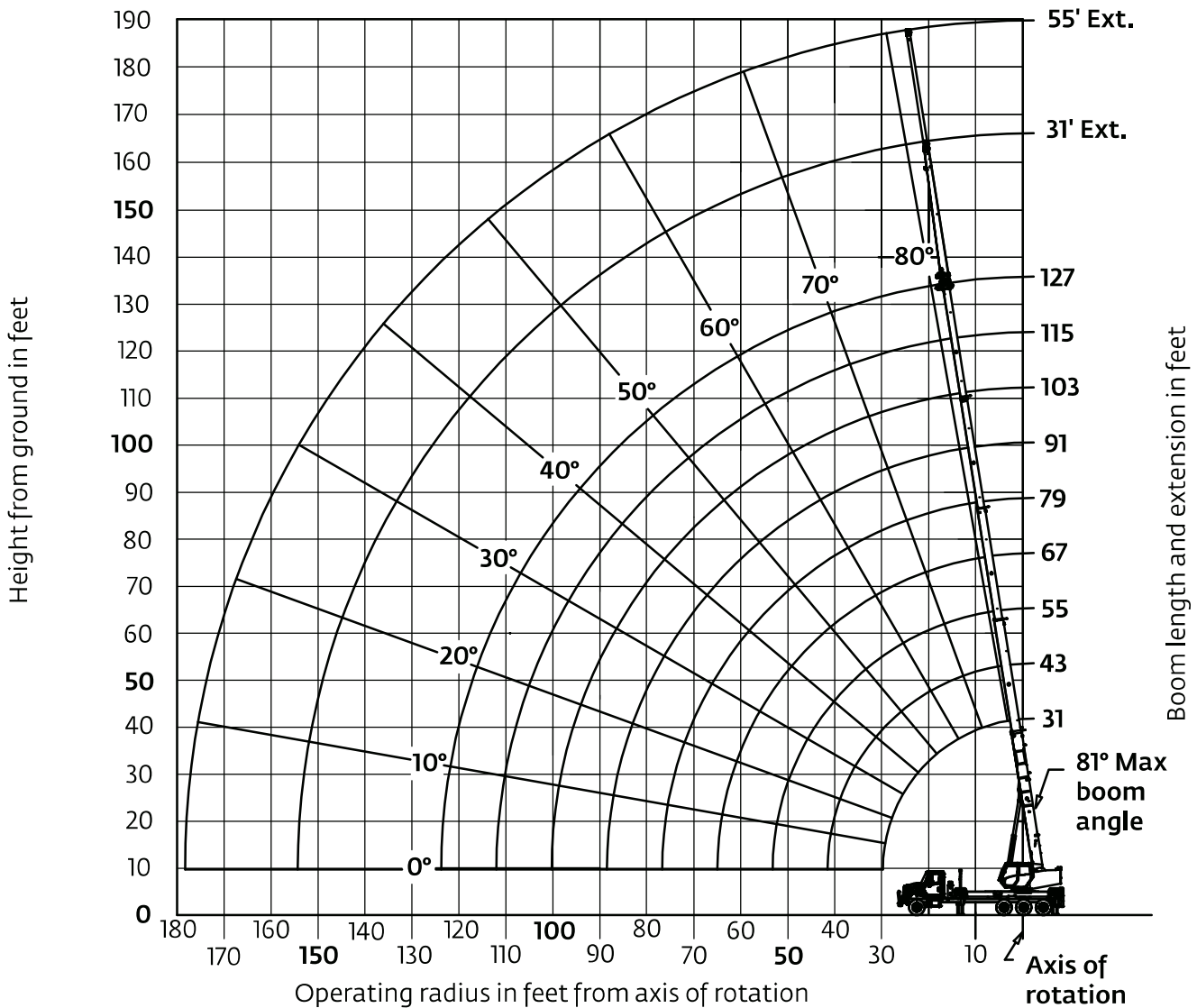
- Gross Vehicle Weight Rating (GVWR) is dependent on all components of the vehicle (axles, tires, springs, frame, etc.) meeting manufacturers' recommendations; always specify GVWR when purchasing trucks
- Diesel engines require a variable speed governor for smooth crane operation; electronic fuel injection requires EET engine remote throttle

- All mounting data is based on a National Crane 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 per SAE J765; contact the factory for details

Working range

127 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.

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

127 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-F	115-G	127
7	89,200 (73.6)								
8	80,600 (71.6)								
10	68,800 (67.6)	40,350 (74.2)							
12	56,800 (63.4)	40,350 (71.4)	40,050 (75.8)	39,900 (78.8)					
15	44,500 (56.8)	38,350 (67)	40,050 (72.6)	36,900 (76.2)	28,350 (78.6)	21,550 (80.4)			
20	31,900 (44.4)	32,550 (59.4)	33,150 (66.9)	33,000 (71.7)	24,750 (74.9)	19,100 (77.2)	16,050 (79.2)	12,600 (80.7)	
25	24,100 (27.8)	24,800 (51)	25,450 (61)	25,700 (67)	21,850 (71.1)	16,950 (74)	14,700 (76.5)	12,350 (78.4)	9800 (79.9)
30		19,600 (41.4)	20,250 (54.6)	20,500 (62.1)	19,800 (67.2)	15,350 (70.8)	13,450 (73.7)	11,550 (76)	9700 (77.9)
35		15,800 (29.4)	16,500 (47.8)	16,700 (57)	16,950 (63.1)	14,150 (67.4)	12,400 (70.8)	10,700 (73.7)	9300 (75.8)
40			13,000 (40)	13,250 (51.6)	13,500 (58.8)	12,950 (63.9)	11,350 (67.9)	10,050 (71.2)	8800 (73.6)
45			10,600 (30.6)	10,800 (45.7)	11,000 (54.3)	11,200 (60.3)	10,450 (65.1)	9350 (68.6)	8400 (71.4)
50			8650 (18.5)	9000 (39.8)	9200 (50)	9400 (56.8)	9600 (62)	8750 (65.9)	7900 (69)
55				7450 (32.2)	7700 (44.8)	7850 (52.7)	8050 (58.6)	8100 (63.1)	7450 (66.7)
60				6200 (22.3)	6450 (39.2)	6600 (48.4)	6800 (55.1)	6900 (60.1)	7000 (64.2)
65					5400 (32.7)	5600 (43.9)	5750 (51.4)	5850 (57)	6000 (61.5)
70					4550 (24.7)	4700 (38.9)	4900 (47.5)	4950 (53.7)	5100 (58.6)
75					3800 (12.4)	4000 (33.2)	4150 (43.3)	4200 (50.3)	4350 (55.7)
80						3350 (26.5)	3500 (38.8)	3550 (46.8)	3700 (52.7)
85						2750 (17.4)	2950 (33.8)	3000 (43)	3150 (49.5)
90							2450 (28)	2500 (38.9)	2650 (46.2)
95							2000 (20.6)	2050 (34.3)	2200 (42.7)
100							1600 (7.1)	1700 (29.2)	1800 (38.9)
105								1300 (22.9)	1450 (34.8)
110								1000 (13.9)	1100 (30.1)
115									800 (24.7)
Minimum boom angle (°) for indicated length (no load)									0
Maximum boom length (ft) at 0° boom angle (no load)									127

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	55	67	79	91	103	115
0°	20,400 (28.5)	12,250 (40.5)	7750 (52.5)	5200 (64.5)	3550 (76.5)	2400 (88.5)	1550 (100.5)	850 (112.5)

NOTE: () Reference radii in feet.

80026003

Radius in feet	31 ft LENGTH
	#03
30	3400 (80)
46	3200 (75)
60	2700 (70)
73	2100 (65)
85	1700 (60)
96	1200 (55)
106	650 (50)
Min. boom angle for indicated length (no load)	40.2°
Max. boom length at 0° boom angle (no load)	91 ft

Radius in feet	55 ft LENGTH
	#04
36	2200 (80)
54	2200 (75)
70	1600 (70)
85	1000 (65)
Min. boom angle for indicated length (no load)	42.8°
Max. boom length at 0° boom angle (no load)	91 ft

80025875

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

Boom extension capacity notes:

- All capacities above the bold line are based on structural strength of boom extension.
- 31 ft and 55 ft extension lengths 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 or 55 ft extension erected, the outriggers must be fully extended or 50% (17.5 ft) spread.