



Grove Manitowoc National Crane Potain



National Crane 600E2 Series

Product Guide



Features

- 27,4 m (90 ft) four-section boom
- 18,1 t (20 USt) rating
- Self-lubricating Easy Glide wear pads
- Internal anti-two block



Features

Improved serviceability

- Bearings on the boom 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



Four-section boom

At 90 ft, the Series 600E2 four-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.



Easy Glide boom wear pads

Easy Glide boom wear pads reduce the conditions that cause boom chatter and vibration. The net result is smoother crane operation.





Features

Best in class performance and serviceability

- 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



* Product may be shown with optional equipment.

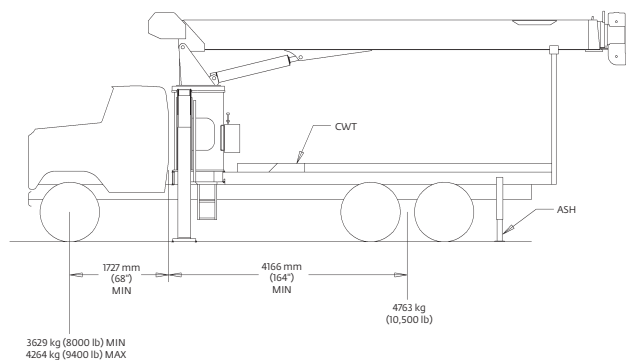


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Mounting configurations

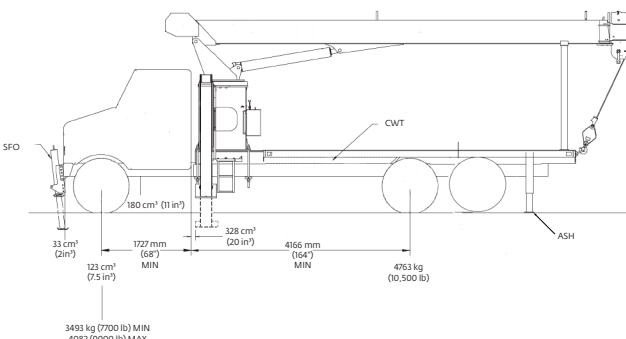
The configurations are based on the Series 600E2 with an 85% stability factor. The complete unit must be installed in accordance with factory requirements and a test performed to determine actual stability and counterweight requirements since individual truck chassis vary.



Configuration 1 with Torsion Box – 180° Full Capacity Work Area

Working area	180°
Gross Axle Weight Rating Front	6350 kg (14,000 lb)
Gross Axle Weight Rating Rear	15 442 kg (34,000 lb)
Gross Vehicle Weight Rating	21 773 kg (48,000 lb)
Wheelbase	589 cm (232 in)
Cab to Axle/trunnion (CA/CT)	417 cm (164 in)
Frame Section Modulus (SM) under crane:	
(758 MPa 110,000 PSI)	261 cm³ (15.9 in³)
Frame Section Modulus (SM) over rear stabilizers:	
(758 MPa 110,000 PSI)	213 cm³ (13 in³)
Stability Weight, Front	3629 kg (8000 lb) minimum*
Stability Weight, Rear	4763 kg (10,500 lb) minimum*
Estimated Average Final Weight	13 608 kg (30,000 lb)

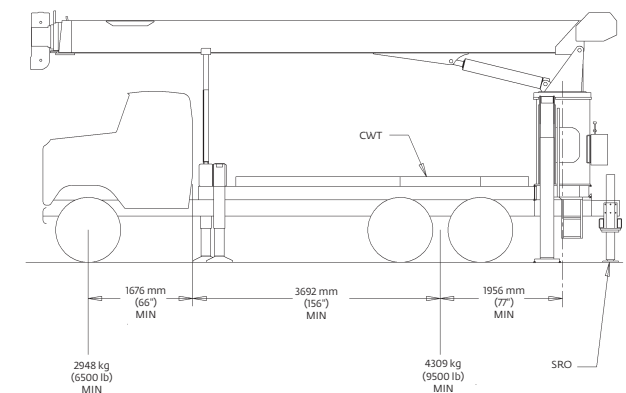
Requires front SFO stabilizer to give machine full capacity 360° around the truck. Truck must meet the minimum requirements above. Front stabilizer gives the machine a solid base, helping the operator control loads precisely. Extended front frame rails required for SFO installation.



Configuration 2 with Torsion Box – 360° Full Capacity Work Area

Working area	360°
Gross Axle Weight Rating Front	6350 kg (14,000 lb)
Gross Axle Weight Rating Rear	15 442 kg (34,000 lb)
Gross Vehicle Weight Rating	21 773 kg (48,000 lb)
Wheelbase	589 cm (232 in)
Cab to Axle/trunnion (CA/CT)	417 cm (164 in)
Frame Section Modulus (SM) under crane:	
(758 MPa 110,000 PSI)	328 cm³ (20 in³)
Frame Section Modulus (SM) over rear stabilizers:	
(758 MPa 110,000 PSI)	213 cm³ (13 in³)
Stability Weight, Front	3130 kg (7700 lb) minimum*
Stability Weight, Rear	3175 kg (10,500 lb) minimum*
Estimated Average Final Weight	13 879 kg (30,600 lb)

Allows the installation of the Model 600E2 on a chassis. In most cases, the chassis will not require reinforcing, and the amount of counterweight required is minimized, increasing payload capacities. Extended front frame rails required for SFO installation.



Configuration 3 with Torsion Box – Rear Mount

Working area	360°
Gross Axle Weight Rating Front	5443 kg (12,000 lb)
Gross Axle Weight Rating Rear	15 442 kg (34,000 lb)
Gross Vehicle Weight Rating	20 865 kg (46,000 lb)
Wheelbase	564 cm (222 in)
Cab to Axle/trunnion (CA/CT)	396 cm (156 in)
Frame Section Modulus (SM) under crane:	
(758 MPa 110,000 PSI)	261 cm³ (15.9 in³)
Frame Section Modulus (SM) over rear stabilizers:	
(758 MPa 110,000 PSI)	213 cm³ (15.9 in³)
Stability Weight, Front	3629 kg (6500 lb) minimum*
Stability Weight, Rear	4763 kg (9500 lb) minimum*
Estimated Average Final Weight	13 040 kg (28,750 lb)

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 600E2 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 with optional remote control

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

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.

Specifications

Boom and jib combinations data

Available in six basic models:

Model 638E2 – Equipped with a 4,88 m - 11,58 m (16 ft - 38 ft) three-section boom. Maximum tip height is 14,63 m (48 ft) (no jib option available).
4,88 m - 11,58 m (16 ft - 38 ft) three-section boom



Model 649E2 – Equipped with a 4,88 m - 15 m (16 ft - 49 ft) four-section boom. This model can be equipped with a 4,6 m - 7,6 m (15 ft - 25 ft) two section jib. Maximum tip height with 7,6 m (25 ft) jib is 26,5 m (87 ft).
4,88 m - 15 m (16 ft - 49 ft) four-section boom **6FJ29M** 4,6 m - 7,6 m (15 ft - 25 ft) two-section jib



Model 660E2 – Equipped with a 7,12 m - 18,3 m (24 ft - 60 ft) three-section boom. Maximum tip height is 21,3 m (70 ft) (no jib option available).
7,2 m - 18,3 m (24 ft - 60 ft) three-section boom



Model 671E2 – Equipped with a 8,23 m - 21,64 m (27 ft - 71 ft) three-section boom. This model can be equipped with a 7,62 m - 13,72 m (25 ft - 45 ft) two-section jib. Maximum tip height with 13,72 m (45 ft) jib is 38,25 m (125 ft).
8,23 m - 21,64 m (27 ft - 71 ft) three-section boom **6FJ45M** 7,62 m - 13,72 m (25 ft - 45 ft) two-section jib



Model 680E2 – Equipped with a 7,32 m - 24,38 m (24 ft - 80 ft) four-section boom. Maximum tip height is 27,44 m (90 ft) (no jib option available).
7,32 m - 24, 38 m (24 ft - 80 ft) four-section boom



Model 690E2 – Equipped with a 8,23 m - 27,43 m (27 ft - 90 ft) four-section boom. This model can be equipped with a 7,62 m - 13,72 m (25 ft - 45 ft) two section jib. Maximum tip height with 13,72 m (45 ft) jib is 43,95 m (144 ft).
8,23 m - 27,43 m (27 ft - 90 ft) four-section boom **6FJ45M** 7,62 m - 13,72 m (25 ft - 45 ft) two-section jib



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

Specifications

600E2 winch data

- All winch pulls and speeds are shown on the fourth layer.
- Winch line pulls would increase on the first and second layers.
- Winch line pulls may be limited by the winch capacity or the ANSI 5 to 1 cable safety factor, shown below this chart.
- Hook blocks are rated at maximum capacity for the block. **Do not exceed rated cable pull with any block.**

1 part line	2 part line	3 part line	4 part line	5 part line	6 part line
					

Winch	Cable supplied	Average breaking strength	Max pull	Max pull	Max pull	Max pull	Max pull	Max pull
Standard planetary winch	9/16 in diameter rotation resistant	17 463 kg (38,500 lb)	3492,66 kg (7700 lb)	6985,32 kg (15,400 lb)	10 477,98 kg (23,100 lb)	13 970,65 kg (30,800 lb)	14 514,96 kg (38,500 lb)	14 514,96 kg (40,000 lb)

Layer	Winch pull		Winch speed		BOS winch speed		Rope capacity	
	kg	lb	mpm	fpm	mpm	fpm	m	ft
1	4708	10,380	48	157	68	222	19	64
2	4246	9360	53	175	75	246	41	136
3	3865	8520	59	192	83	271	65	215
4	3547	7820	64	209	90	294	91	301
5	3279	7230	69	257	97	318	120	394

Note: All ratings based on 128,7 LPM at 22,75 MPa (34 GPM at 3300 psi)
Burst of Speed maximum bull = 1361 kg (3000 lb)

Winch	Bare drum pull	Allowable cable pull
With standard rotation resistant rope	4627 kg (10,2000 lb)	3493 kg (7700 lb)

Loadline deduct		
Block type	Rating	Weight
Downhaul weight	3,49 t (3.85 USt)	68 kg (150 lb)
1-sheave block	10,48 t (11.55 USt)	91 kg (200 lb)
2-sheave block	17,46 t (19.25 USt)	161 kg (355 lb)

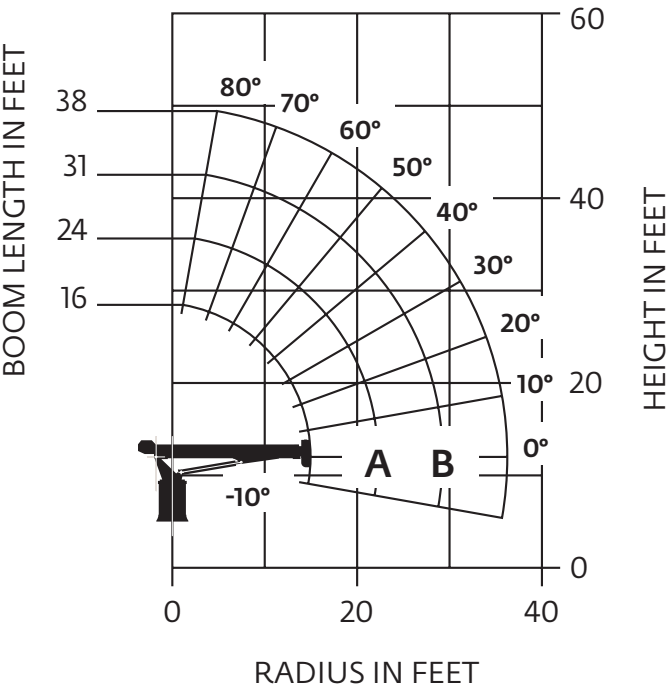
THIS CHART IS ONLY A GUIDE AND SHOULD NOT BE USED TO OPERATE THE CRANE.



Capacities

Series 638E2: 11,58 m (38 ft) boom

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

LOADED RADIUS (ft)	LOADED BOOM ANGLE (deg)	16 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	A 24 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	B 31 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	38 ft BOOM (lb)
5	67	40,000						
6	63	36,150						
8	55.5	30,250	68	28,550	74	27,500	77	25,750
10	45.5	25,600	62.5	24,300	69	23,450	73	22,200
12	34	21,900	56.5	20,900	65	20,150	70.5	19,200
14	15	16,750	50	18,150	60.5	17,800	66.5	17,050
16			43	16,200	56	15,800	64.5	15,200
18			34.5	14,200	51.5	14,150	59.5	13,750
20			26.5	12,200	47	12,900	57	12,500
25					31.5	10,150	46	9950
30							35.5	8350
35							18.5	6200
	0	10,850	0	7050	0	5100	0	3850

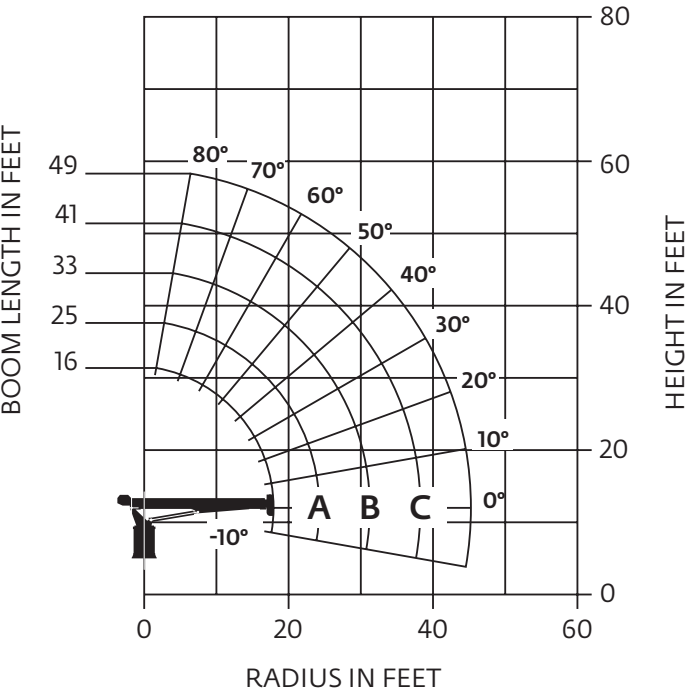
- NOTE:**
1. All capacities are in pounds, angles in degrees, radius in feet.
 2. Loaded boom angles are given as reference only.
 3. Shaded areas are structurally limited capacities.



Capacities

Series 649E2: 15 m (49 ft) boom

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

LOADED RADIUS (ft)	LOADED BOOM ANGLE (deg)	16 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	A 25 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	B 33 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	C 41 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	49 ft BOOM (lb)
5	67	40,000	76	38,100						
8	54	29,600	68	27,400	74	26,200	77.5	25,300		
10	44	24,700	63	23,200	70.5	22,200	74.5	21,300	77.5	19,500
12	31.5	20,400	57.5	20,200	66.5	19,250	71.5	18,450	75	17,500
14	8.5	13,750	51.5	17,750	62.5	17,000	68.5	16,300	72.5	15,000
16			45	15,750	58.5	15,200	65.5	14,550	70	13,750
20			29	12,100	49.5	12,500	59	12,050	65	11,750
25					36	9850	50	9800	58	9600
30					16.5	6950	40	8050	50.5	8050
35							27.5	6450	43	6800
40									33	5650
45									18.5	4300
	0	10,950	0	6350	0	4350	0	3200	0	2600

NOTE:

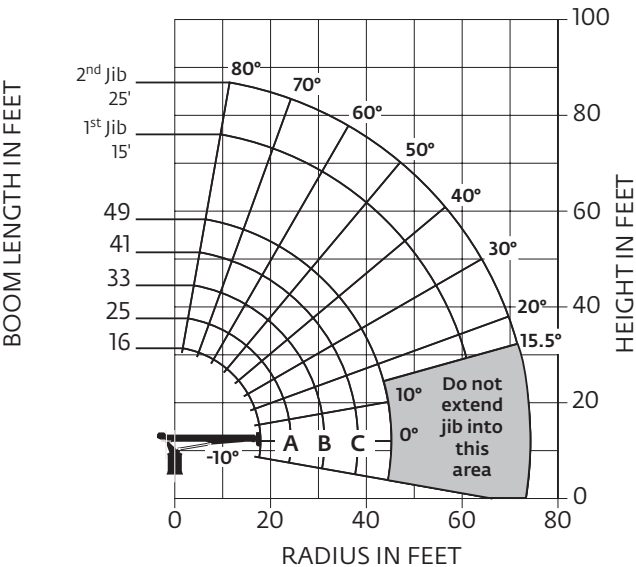
1. All capacities are in pounds, angles in degrees, radius in feet.
2. Loaded boom angles are given as reference only.
3. Shaded areas are structurally limited capacities.

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

Capacities

Series 649E2: 15 m (49 ft) boom with 7,6 m (25 ft) jib

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.

- 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.

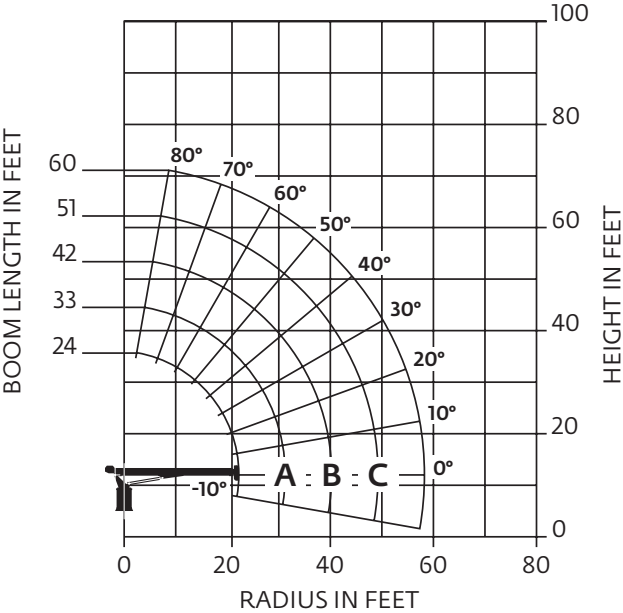
Load chart														
LOADED RADIUS (ft)	LOADED BOOM ANGLE (deg)	16 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	A 25 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	B 33 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	C 41 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	49 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	15 ft JIB (lb)	LOADED BOOM ANGLE (deg)	25 ft JIB (lb)
5	67	40,000	76	38,100										
8	54	29,600	68	27,400	74	26,200	77.5	25,300						
10	44	24,700	63	23,200	70.5	22,200	74.5	21,300	77.5	19,500				
12	31.5	20,400	57.5	20,200	66.5	19,250	71.5	18,450	75	17,500	78	7700		
14	8.5	13,750	51.5	17,750	62.5	17,000	68.5	16,300	72.5	15,000	76	7700	78.5	6950
16			45	15,750	58.5	15,200	65.5	14,550	70	13,750	74.5	7250	77	6500
20			29	12,100	49.5	12,500	59	12,050	65	11,750	70.5	6100	74	5650
25					36	9850	50	9800	58	9600	66	5350	70	4850
30					16.5	6950	40	8050	50.5	8050	61	4650	65.5	4050
35							27.5	6450	43	6800	55.5	4100	61.5	3600
40									33	5650	50	3650	57	3200
45									18.5	4300	43.5	3350	52	2850
50											36.5	3000	47	2600
55											28	2750	41	2400
60											15.5	2400	34.5	2200
65													27	2050
70													15.5	1950
	0	10,950	0	6350	0	4350	0	3200	0	2600				
Subtract from capacities when jib stowed		350		250		200		150		100				

- 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.

Capacities

Series 660E2: 18,3 m (60 ft) boom

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

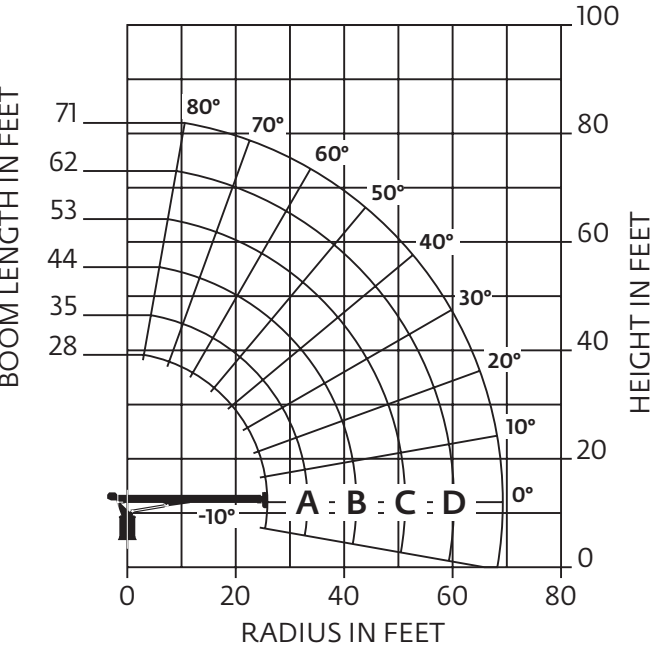
LOADED RADIUS (ft)	LOADED BOOM ANGLE (deg)	24 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	A 33 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	B 42 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	C 51 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	60 ft BOOM (lb)
5	75.5	40,000								
8	67.5	27,200	74	25,800	77.5	25,000				
10	62	22,800	70	21,600	75	20,700	78	20,400		
12	56	19,650	67	18,700	72	17,800	75.5	17,400	78.5	17,150
14	49.5	17,150	62.5	16,400	69	15,750	73	15,250	76.5	14,950
16	43	15,150	58.5	14,600	66	14,050	71	13,600	74.5	13,200
20	24.5	11,150	49.5	11,950	60	11,550	66	11,200	70.5	10,850
25			37.5	9400	51.5	9350	59.5	9100	65.5	8800
30			18	6600	42	7700	53	7600	60	7400
35					30.5	6100	45.5	6400	54.5	6200
40							36.5	5350	48	5400
45							25	4250	41	4550
50									33	3900
55									21.5	3000
	0	6150	0	3950	0	2700	0	1950	0	1300

- 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.

Capacities

Series 671E2: 21,64 m (71 ft) boom

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												
LOADED RADIUS (ft)	LOADED BOOM ANGLE (deg)	28 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	A 35 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	B 44 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	C 53 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	D 62 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	71 ft BOOM (lb)
5	77	40,000										
8	70.5	26,150	75	25,200	78.5	24,600						
10	65.5	21,600	71.5	21,450	76	20,800	79	20,400				
12	61	18,500	68	18,400	73	17,800	76.5	17,450	79	16,800		
14	56	16,600	64.5	16,000	70.5	15,850	74.5	15,300	77	14,650		
16	50.5	14,900	60.5	14,200	67.5	14,000	72	13,550	75	13,000	77.5	12,650
20	38	11,900	52.5	11,600	61.5	11,350	67	11,000	71	10,600	74	10,300
25	15.5	8250	40.5	9400	53.5	9100	61	8800	66	8550	69.5	8300
30			26	7100	45.5	7500	55	7300	61	7100	65.5	6850
35					35	6200	48.0	6150	55.5	6000	61	5950
40					20	4500	40.0	5200	49.5	5100	56	5050
45							29.5	4350	43	4350	51	4400
50							14.0	2800	35	3700	45.5	3800
55									25.5	3000	39	3250
60									5.5	1800	31.5	2750
65											22	2150
	0	4800	0	3600	0	2250	0	1500	0	950	0	550

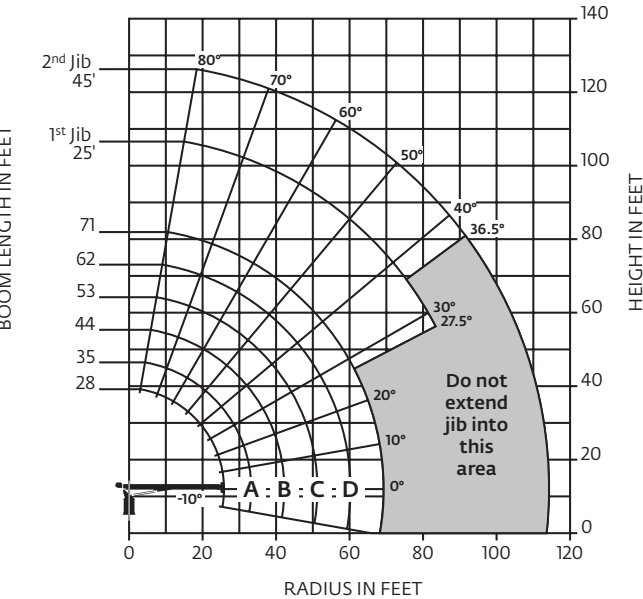
- NOTE:**
1. All capacities are in pounds, angles in degrees, radius in feet.
 2. Loaded boom angles are given as reference only.
 3. Shaded areas are structurally limited capacities.



Capacities

Series 671E2: 21,64 m (71 ft) boom with 13,72 m (45 ft) jib

National Crane will send you a chart on request – or you may secure needed load rating information through your nearest National Crane dealer.



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.

- 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

LOADED RADIUS (ft)	LOADED BOOM ANGLE (deg)	28 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	A 35 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	B 44 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	C 53 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	D 62 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	71 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	25 ft JIB (lb)	LOADED BOOM ANGLE (deg)	45 ft JIB (lb)
5	77	40,000														
8	70.5	25,550	75	24,750	78.5	24,250										
10	65.5	21,000	71.5	21,000	76	20,450	79	20,100								
12	61	17,900	68	17,950	73	17,450	76.5	17,150	79	16,550						
14	56	16,000	64.5	15,550	70.5	15,500	74.5	15,000	77	14,400	79	12,450				
16	50.5	14,300	60.5	13,700	67.5	13,650	72	13,250	75	12,750	77.5	12,450				
20	38	11,300	52.5	11,100	61.5	10,950	67	10,700	71	10,350	74	10,050				
25	19.5	7650	40.5	8900	53.5	8700	61	8500	66	8300	69.5	8050	75.5	4400		
30			26	6600	45.5	7100	55	7000	61	6850	65.5	6600	72.5	3900	76.5	2600
35					35	5800	48.0	5850	55.5	5750	61	5700	69	3200	74	2450
40					20	4100	40.0	4900	49.5	4850	56	4800	66	2750	72	2300
45							29.5	4050	43	4050	51	4150	62.5	2350	69	2100
50							14.0	2450	35	3400	45.5	3550	59.5	2000	66.5	1900
55									25.5	2700	39	3000	55.5	1750	64	1700
60									10	1500	31.5	2500	52	1500	61	1500
65											22	1900	48	1300	58.5	1350
70													43.5	1100	55	1200
75													39	900	52	1050
80													33.5	700	48.5	900
85													27.5	600	45	800
90															41	700
95															36.5	600
0		4200	0	3100	0	1850	0	1150	0	650						

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.

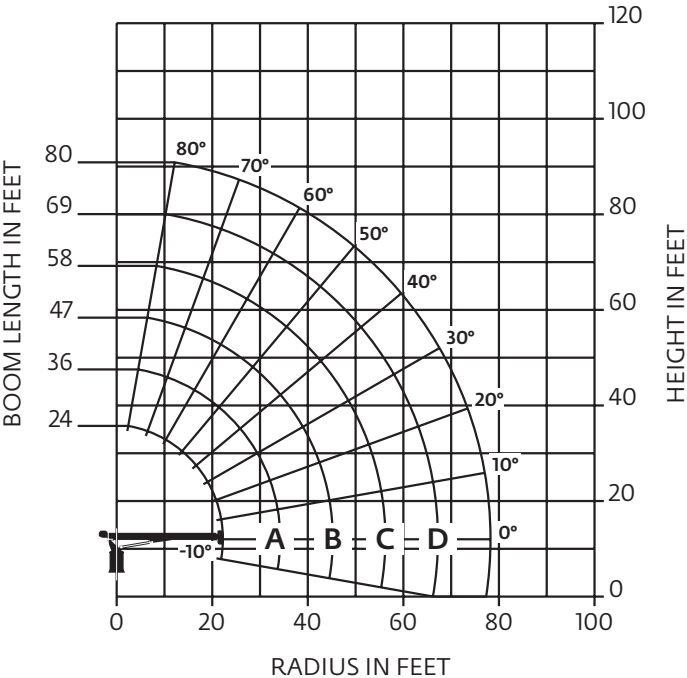
THIS CHART IS ONLY A GUIDE AND SHOULD NOT BE USED TO OPERATE THE CRANE.



Capacities

Series 680E2: 24,38 m (80 ft) boom

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

LOADED RADIUS (ft)	LOADED BOOM ANGLE (deg)	24 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	A 36 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	B 47 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	C 58 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	D 69 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	80 ft BOOM (lb)
5	76	40,000										
8	68	27,100	75	25,400								
10	62.5	22,400	72	21,400	76.5	20,600						
12	56.5	19,500	68.5	18,350	74	17,550	77.5	17,050				
14	50.5	17,100	65	16,000	71.5	15,300	75.5	14,750				
16	43.5	14,750	61	14,200	70	13,550	73.5	13,050	77	12,150		
20	27	11,100	53.5	11,450	63.5	11,000	69.5	10,550	73.5	10,100	77	8550
25			43	9150	55.5	9000	64	8450	69	8200	73	8000
30			29.5	7000	48	7200	58.5	7050	64.5	6850	69	6550
35					39	5850	52	5900	59.5	5700	65	5500
40					28	4650	45	4800	54.5	4850	61	4650
45					7.5	2600	37	4100	49	4150	56.5	4000
50							28	3450	43	3500	52	3450
55							13.5	2200	36	2950	47	3000
60									28	2450	41.5	2550
65									16	1550	35.5	2150
70											28.5	1700
75											18.5	1150
	0	5800	0	3050	0	1750	0	1000				

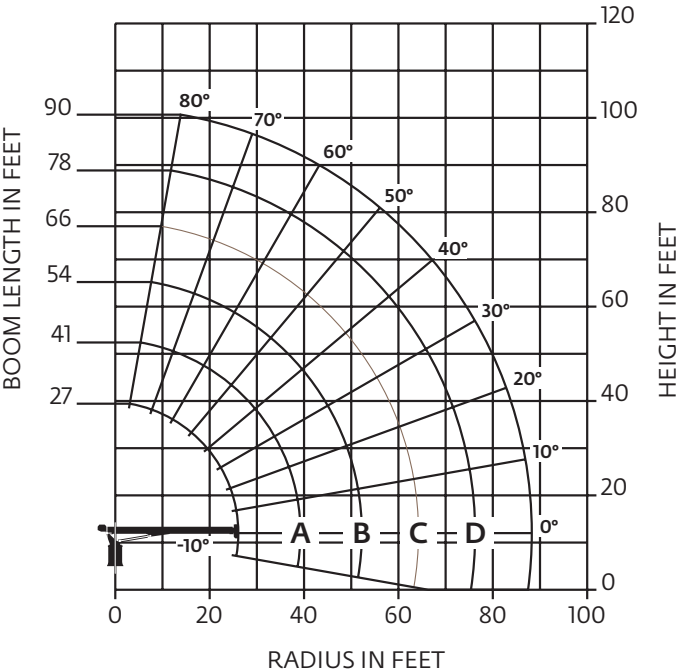
- NOTE:**
1. All capacities are in pounds, angles in degrees, radius in feet.
 2. Loaded boom angles are given as reference only.
 3. Shaded areas are structurally limited capacities.

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 690E2: 27,43 m (90 ft) boom

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

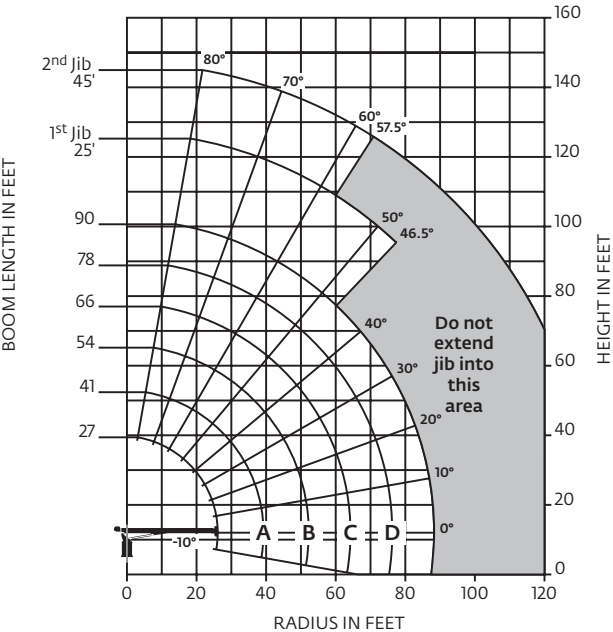
LOADED RADIUS (ft)	LOADED BOOM ANGLE (deg)	27 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	A 41 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	B 54 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	C 66 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	D 78 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	90 ft BOOM (lb)
5	77	40,000										
8	70	25,750										
10	66	21,400	74	20,950								
12	61.5	18,450	71	17,750	76	17,000						
14	57	16,400	68	15,250	74	15,000	77.5	14,450				
16	51	14,750	65.5	13,300	71.5	13,200	75.5	12,600				
20	40	11,250	58.5	10,800	67.5	10,500	72	9950	76	9700	77.5	7850
25	19	7500	50	9050	61.5	8150	67	7900	71.5	7750	74.5	7550
30			40	7550	55	6750	62.5	6450	68	6250	71.5	6150
35			26.5	5250	48	5700	58	5450	63.5	5200	68	5050
40					40	4600	52	4550	59.5	4400	64.5	4200
45					32	3850	46.5	3850	54.5	3700	61	3550
50					16.5	2450	39.5	3150	50	3150	57	3000
55							31	2550	44.5	2650	53.0	2550
60							21.5	1800	39.5	2250	48.5	2150
65									32.5	1750	44	1850
70									24	1250	39	1500
75									11	450	33	1150
80											26.5	800
	0	4150	0	1950	0	850						

- 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.

Capacities

Series 690E2: 27,43 m (90 ft) boom with 13,72 m (45 ft) jib

National Crane will send you a chart on request – or you may secure needed load rating information through your nearest National Crane dealer.



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.

Load chart																
LOADED RADIUS (ft)	LOADED BOOM ANGLE (deg)	27 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	A 41 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	B 54 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	C 66 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	D 78 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	90 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	25 ft JIB (lb)	LOADED BOOM ANGLE (deg)	45 ft JIB (lb)
5	77	40,000														
8	70	25,200														
10	66	20,800	74	20,550												
12	61.5	17,850	71	17,350	76	16,700										
14	57	15,800	68	14,850	74	14,700	77.5	14,250								
16	51	14,150	65.5	12,900	71.5	12,900	75.5	12,350								
20	40	10,650	58.5	10,400	67.5	10,200	72	9700	76	9500	77.5	7700				
25	19	6900	50	8650	61.5	7850	67	7650	71.5	7550	74.5	7400	78	2800		
30			40	7150	55	6450	62.5	6200	68	6050	71.5	6000	75.5	2500	78.5	1700
35			26.5	4850	48	5400	58	5200	63.5	5000	68	4850	73	2200	76.5	1500
40					40	4300	52	4300	59.5	4200	64.5	4000	70	1900	74	1300
45					32	3550	46.5	3600	54.5	3500	61	3350	67.5	1600	72	1100
50					16.5	2150	39.5	2900	50	2950	57	2800	65.5	1400	70	1000
55							31	2300	44.5	2450	53	2350	62.5	1200	67.5	900
60							21.5	1550	39.5	2050	48.5	1950	59.5	1000	65.5	800
65									32.5	1550	44	1650	56.5	800	63	700
70									24	1050	39	1300	53.5	700	60.5	600
75											33	950	50	600	58	500
80											26.5	600	47	500		
	0	3550	0	1550	0	550										

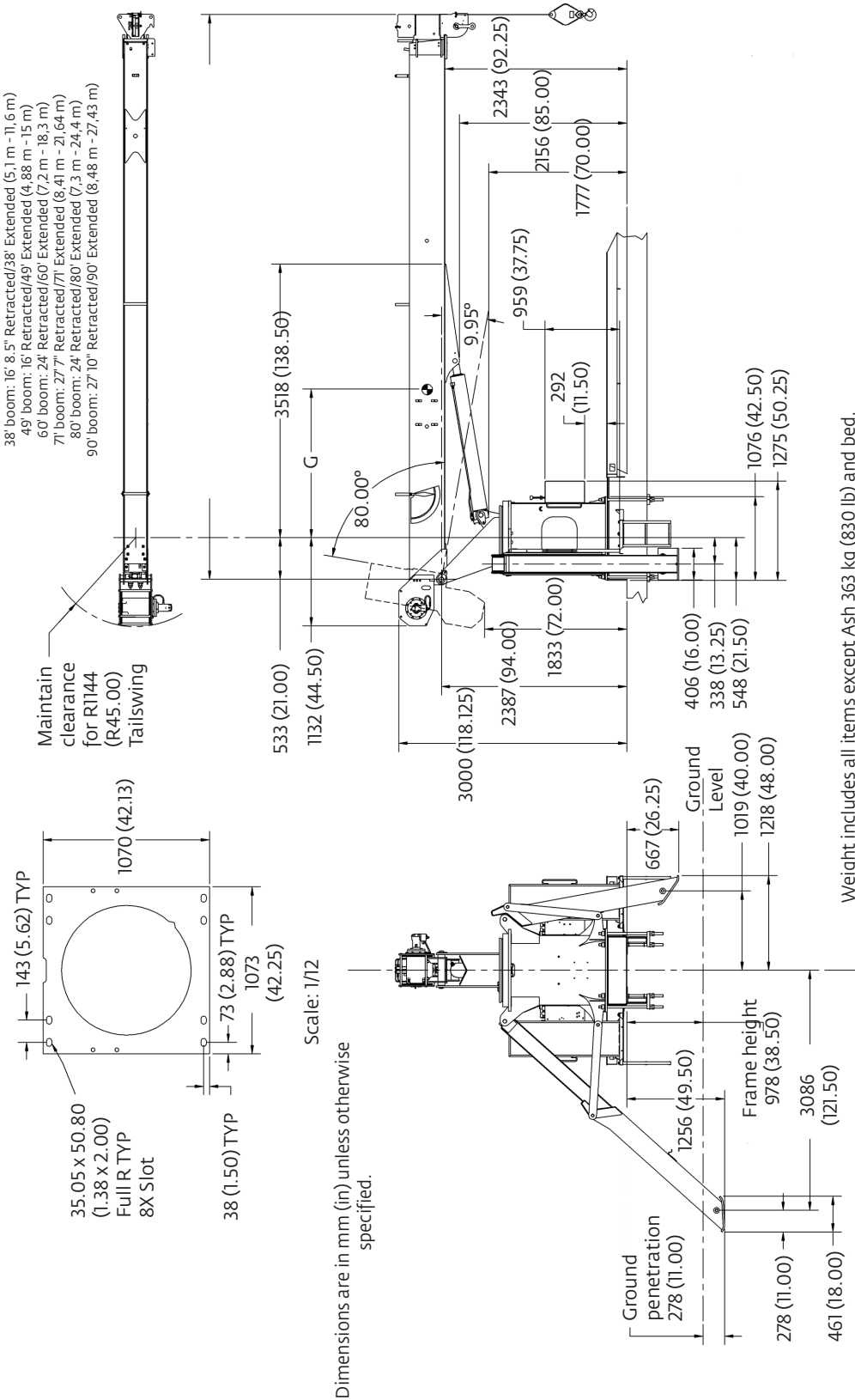
NOTE:

- 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.

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



Dimensions



Subbase	Weight	C.G. length
Standard 18 ft	1229 kg (2710 lb)	2.87 m (113 ft)
Standard 20 ft	1345 kg (2965 lb)	2.87 m (113 ft)
Standard 22 ft	1444 kg (3184 lb)	3.18 m (125 ft)

Subbase C.G. are located from center of rotation

Series	Retracted length	Extended length	Subbase	G (wet)	Dry/Wt	With oil/wt
638E2	16 ft 7 in	38 ft 3 in	18 ft	1.23 m (48.3 in)	6192 kg (13,651 lb)	6462 kg (14,246 lb)
649E2	16 ft	49 ft	18 ft	1.28 m (50.7 in)	6481 kg (14,289 lb)	6751 kg (14,884 lb)
660E2	24 ft	60 ft	18 ft	1.52 m (59.9 in)	6748 kg (14,876 lb)	7018 kg (15,471 lb)
671E2	27 ft 7 in	71 ft	20 ft	1.90 m (74.7 in)	7181 kg (15,831 lb)	7451 kg (16,426 lb)
680E2	24 ft	80 ft	18 ft	1.71 m (67.5 in)	7256 kg (15,996 lb)	7526 kg (16,591 lb)
690E2	27 ft 10 in	90 ft	20 ft	1.98 m (78.1 in)	7700 kg (16,976 lb)	7970 kg (17,571 lb)

Accessories

Radio Remote Controls –

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

- RB4R

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 –

1200 lb (544 kg) capacity steel basket with safety loops for four 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.

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

Hydraulic Oil Cooler –

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

- OC

Continuous Rotation –

Allows rotation of turret/boom without rotation stop.

- CR

Burst-of-Speed Winch –

Provides faster winch payout and pickup of unloaded cable.

- BOS

Single Front Outrigger –

Center mount front stabilizer for 360° stability with a 25 in vertical stroke.

- SFO

Outrigger Motion Alarms –

Available for “A” frame O/R and ASH stabilizers.
Available for RSOD stabilizers.

- OMA-1
- OMA-2

Hour Meter –

Hour meter in truck cab to record crane operation hours.

- HRM

Bulkhead Options –

Steel 30 in solid wall bulkhead

- BHSI
- BHSD

Steel Tool Box Options

Spanish-Language Danger Decals,
Control Knobs, and Operators’ Manuals

- SDD
- SOM



Notes



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