

Series 900A: National Telescoping Crane

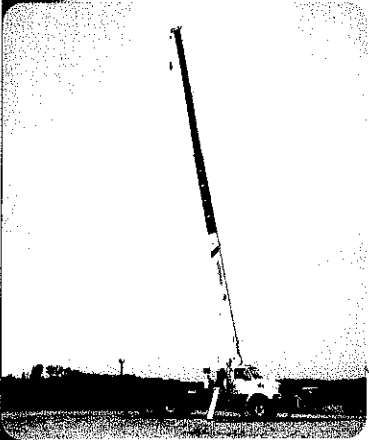
America's Leading Manufacturer of Truck-Mounted Hydraulic Cranes.

900A

National Pride

NATIONAL CRANE
A Grove Worldwide Company

Why Buy a National Series 900A?



- **26-ton Rating** – The new 900A is now a 26-ton machine, a 13% increase in capacity over the Series 900.
- **New 103-foot Four-section Boom** – The longest in its size range. The longer 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) required on all machines equipped with jibs or personnel baskets.
 - LMI or Hydraulic Capacity Alert System (HCAS) required when ordering machine without jib or personnel basket.
- **Self-lubricating "Easy glide" Wear Pads** – The self-lubricating pads, standard on the 900A, reduce the conditions that cause boom chatter and vibration. The net result is smoother crane operation.
- **Adjustable Swing Speed** – Standard on the 900A. A control knob located on the swing motor brake release valve can be easily adjusted to the crane operator's swing speed preference.
- **Heavier Duty Torsion Box** – The stronger standard torsion box improves rigidity, reduces truck frame flex and reduces the need for counterweight.
- **Quick-reeve Boom Tip** – This standard feature simplifies rigging changes.
- **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.
- **New State-of-the-art Control Valve** – Provides smoother operation. The new design eliminates parts, reducing repair costs and improving the machine's serviceability.
- **National Crane Is the Market Leader** – National is number one in the production of commercial truck-mounted boom trucks. National has the resources, programs and people to provide our customers with reliable products.
- **National has the boom truck industry's leading test program.** The Series 900A is a completely new design that has been through a strenuous six-month testing regimen. Structural parts of the crane have been cycle tested up to 60,000 cycles at full capacity. In addition to cycle testing, each model has been 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 any weak areas are caught in test, not on job sites where costly downtime occurs.
- All outrigger, 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 the life of all National Crane machines.
- 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.**

- 26-ton (23.59-t) maximum capacity

- 156-ft (47.54-m) maximum vertical reach*

- 112-ft (34.13-m) maximum vertical hydraulic reach*

- Load Moment Indicator system (LMI) or Hydraulic Capacity Alert System (HCAS)

- Proportional boom extension

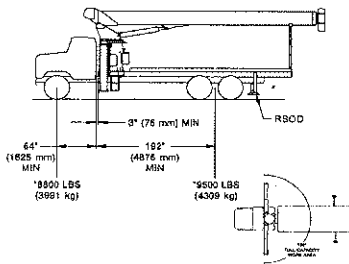
- High performance planetary winch

- 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.

Mounting Configurations

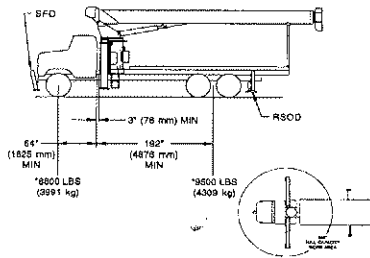
These configurations are based on the Series 900A with an 85% stability factor. The complete unit must be installed in accordance with factory requirements and a test performed to determine actual stability and counterweight requirements since individual truck chassis vary. Chassis that do not meet these minimum stability weights may require counterweight.



Configuration 1 - 9103A

Working area	180°
Gross Axle Weight Rating Front	16,000 lb (7257 kg)
Gross Axle Weight Rating Rear	34,000 lb (15 422 kg)
Gross Vehicle Weight Rating	50,000 lb (22 679 kg)
Wheelbase	256 in (650 cm)
Cab to Axle/trunnion (CA/CT)	192 in (488 cm)
Frame Section Modulus (SM) under crane: 110,000 PSI (758 MPa)	20 in ³ (327 cm ³)
Frame Section Modulus (SM) over rear stabilizers: 110,000 PSI (758 MPa)	15 in ³ (245 cm ³)
Stability Weight, Front	8,800 lb (3991 kg) minimum*
Stability Weight, Rear	9,500 lb (4309 kg) minimum*
Estimated Average Final Weight	42,600 lb (19 323 kg)

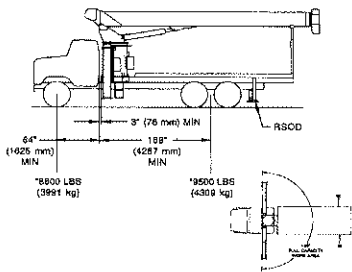
This configuration allows the installation of the Series 9103A on a chassis by using the subbase for a 22-ft (6.71-m) bed.



Configuration 2 - 9103A with SFO

Working area	360°
Gross Axle Weight Rating Front	16,000 lb (7257 kg)
Gross Axle Weight Rating Rear	34,000 lb (15 422 kg)
Gross Vehicle Weight Rating	50,000 lb (22 679 kg)
Wheelbase	256 in (650 cm)
Cab to Axle/trunnion (CA/CT)	192 in (488 cm)
Frame Section Modulus (SM) under crane: 110,000 PSI (758 MPa)	20 in ³ (327 cm ³)
Frame Section Modulus (SM) over rear stabilizers: 110,000 PSI (758 MPa)	15 in ³ (245 cm ³)
Stability Weight, Front	8,800 lb (3991 kg) minimum*
Stability Weight, Rear	9,500 lb (4309 kg) minimum*
Estimated Average Final Weight	42,900 lb (19 459 kg)

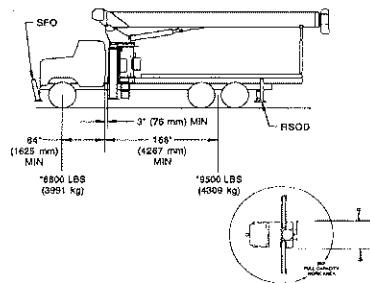
This mount requires front stabilizer for full capacity 360° around the truck. Front stabilizer gives the machine a solid base, helping the operator control loads. This configuration requires a 22-ft (6.71-m) bed.



Configuration 3 - 990A / 969A

Working area	180°
Gross Axle Weight Rating Front	16,000 lb (7257 kg)
Gross Axle Weight Rating Rear	34,000 lb (15 422 kg)
Gross Vehicle Weight Rating	50,000 lb (22 679 kg)
Wheelbase	232 in (589 cm)
Cab to Axle/trunnion (CA/CT)	168 in (427 cm)
Frame Section Modulus (SM) under crane: 110,000 PSI (758 MPa)	20 in ³ (327 cm ³)
Frame Section Modulus (SM) over rear stabilizers: 110,000 PSI (758 MPa)	15 in ³ (245 cm ³)
Stability Weight, Front	8,800 lb (3991 kg) minimum*
Stability Weight, Rear	9,500 lb (4309 kg) minimum*
Estimated Average Final Weight	40,600 lb (18 415 kg)

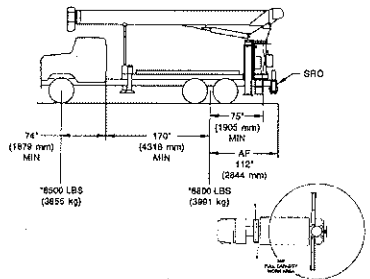
This configuration allows the installation of the Series 990A or 969A on a chassis with a small frame by using a subbase for a 20-ft (6.10-m) bed or a different subbase for a 22-ft (6.71-m) bed.



Configuration 4 - 990A / 969A with SFO

Working area	360°
Gross Axle Weight Rating Front	16,000 lb (7257 kg)
Gross Axle Weight Rating Rear	34,000 lb (15 422 kg)
Gross Vehicle Weight Rating	50,000 lb (22 679 kg)
Wheelbase	232 in (589 cm)
Cab to Axle/trunnion (CA/CT)	168 in (427 cm)
Frame Section Modulus (SM) under crane: 110,000 PSI (758 MPa)	20 in ³ (327 cm ³)
Frame Section Modulus (SM) over rear stabilizers: 110,000 PSI (758 MPa)	15 in ³ (245 cm ³)
Stability Weight, Front	8,800 lb (3991 kg) minimum*
Stability Weight, Rear	9,500 lb (4309 kg) minimum*
Estimated Average Final Weight	40,900 lb (18 551 kg)

This configuration allows the installation of the 990A or 969A 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 (7257 kg)
Gross Axle Weight Rating Rear	40,000 lb (18 143 kg)
Gross Vehicle Weight Rating	56,000 lb (25 401 kg)
Wheelbase	244 in (620 cm)
Cab to Axle/trunnion (CA/CT)	MINIMUM 170 in (432 cm)
Frame Section Modulus (SM) under crane: 110,000 PSI (758 MPa)	15.9 in ³ (260 cm ³)
Stability Weight, Front	8,500 lb (3855 kg) minimum*
Stability Weight, Rear	7,000 lb (3991 kg) minimum*
Estimated Average Final Weight	43,000 lb (19 504 kg)

This configuration allows the rear-mount installation of the Series 900A. 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 (axes, 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 900A 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.

Boom and Jib Combinations Data

Available in three basic models.

Model 969A — Equipped with a 27 ft 6 in to 69 ft 2 in (8.38-21.08 m) three-section boom. This model can be equipped with a 25-44 ft (7.62-13.41 m) two-section jib. Maximum tip height w/ 44ft (13.41 m) jib is 123 ft 9 in (37.71 m).

27'6" - 69'2" (8.38-21.08 m) three-section boom



27'6" - 69'2" (8.38-21.08 m) three-section boom **9FJ25M** 25-44 ft (7.62-13.41 m) two-section jib



Model 990A — Equipped with a 27 ft 6 in to 90 ft 6 in (8.38-27.58 m) four-section boom. This model can be equipped with a 21 ft (6.40 m) single section wireline jib or a 25-44 ft (7.62-13.41 m) two-section jib. Maximum tip height w/ 44ft (13.41 m) jib is 143 ft (43.58 m).

27'6" - 90'6" (8.38-27.58 m) four-section boom



27'6" - 90'6" (8.38-27.58 m) four-section boom **9FJ44M** 25-44 ft (7.62-13.41 m) two-section jib



Model 9103A — Equipped with a 30 ft 9 in to 102 ft 10 in (9.37-31.34 m) four-section boom. This model can be equipped with a 25-44 ft (7.62-13.41 m) two-section jib. Maximum tip height w/ 44 ft (13.41 m) jib is 155 ft (47.24 m).

30'9" - 102'10" (9.37-31.34 m) four-section boom



30'9" - 102'10" (9.37-31.34 m) four-section boom **9FJ25M** 25-44 ft (7.62-13.41 m) two-section jib



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

990A Winch Data

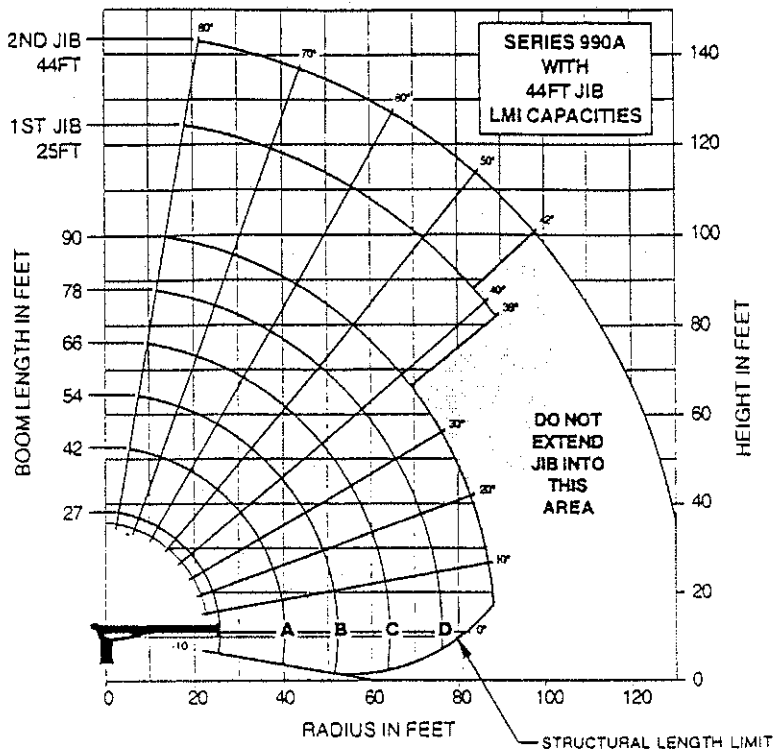
Winch	Cable Supplied	Average Breaking Strength	1 Part Line	2 Part Line	3 Part Line	4 Part Line	5 Part Line	6 Part Line	7 Part Line
			Lift and Speed	Lift and Speed	Lift and Speed	Lift and Speed	Lift and Speed	Lift and Speed	Lift and Speed
Standard Planetary Winch	9/16" Diameter Rotation Resistant	38,500 lb (17,463 kg)	7,700 lb (3,492.66 kg) 135 fpm (41 m/min)	15,400 lb (6,985.32 kg) 68 fpm (20 m/min)	23,100 lb (10,477.98 kg) 45 fpm (13 m/min)	30,800 lb (13,970.65 kg) 34 fpm (10 m/min)	38,500 lb (14,514.96 kg) 27 fpm (8 m/min)	46,200 lb (20,955 kg) 23 fpm (7 m/min)	52,000 lb (23,586 kg) 19 fpm (5 m/min)
	Optional 9/16" Diameter 6x25 IWRC	33,600 lb (13,494 kg)	8,400 lb (3,810.18 kg) 135 fpm (41 m/min)	16,800 lb (7,620.35 kg) 68 fpm (20 m/min)	25,200 lb (11,420.53 kg) 45 fpm (13 m/min)	32,000 lb (14,514.96 kg) 34 fpm (10 m/min)	42,000 lb (19,050 kg) 27 fpm (8 m/min)	50,400 lb (22,861 kg) 23 fpm (7 m/min)	52,000 lb (23,586 kg) 19 fpm (5 m/min)
With "Burst-of-Speed"	Same as corresponding cable data shown above		3,000 lb (1,360.78 kg) 206 fpm (62 m/min)	6,000 lb (2,721.55 kg) 103 fpm (31 m/min)	9,000 lb (4,082.33 kg) 68 fpm (20 m/min)	12,000 lb (5,443.11 kg) 51 fpm (15 m/min)	15,000 lb (6,803.89 kg) 41 fpm (12 m/min)	18,000 lb (8,164 kg) 34 fpm (10 m/min)	21,000 lb (9,525 kg) 29 fpm (8 m/min)

Winch	Bare Drum Pull	Allowable Cable Pull
With standard rotation resistant rope	10,200 lb (4627 kg)	7,700 lb (3493 kg)
With optional 6x25 IWRC rope	10,200 lb (4627 kg)	8,400 lb (3810 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)

- 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.**

NATIONAL CRANE CORPORATION



- 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.

LMI OPERATING CODE SWITCH	
SWITCH POSITION (REF #17)	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 RATINGS

LOAD RADIUS (FEET)	LOADED BOOM ANGLE	27FT BOOM (lb)	LOADED BOOM ANGLE	A 42FT BOOM (lb)	LOADED BOOM ANGLE	B 54FT BOOM (lb)	LOADED BOOM ANGLE	C 66FT BOOM (lb)	LOADED BOOM ANGLE	D 78FT BOOM (lb)	LOADED BOOM ANGLE	90FT BOOM (lb)
5	77	52,000										
8	70.5	35,900										
10	66	30,600	75	26,900	79	25,300						
12	60.5	25,900	72	23,000	77	21,600						
14	55.5	21,600	69	20,100	74	20,100	78	18,100				
16	50	19,300	66	17,800	72.5	16,700	76	15,700	78.5	14,700		
20	38.5	14,800	59.5	14,600	67.5	14,500	72.5	13,600	75.5	12,500	78	11,500
25			51.5	11,300	61.5	11,000	68	11,000	71.5	10,300	74.5	9,300
30			41.5	9,050	55	8,900	62.5	9,000	67.5	8,600	71	7,800
35			30	7,050	48.5	7,350	58	7,200	64	7,150	68	6,700
40					41	6,100	52.5	6,000	59.5	5,850	64.5	5,850
45					31.5	4,900	46.5	5,100	55	4,900	61	4,900
50					17.5	3,850	40	4,350	50.5	4,250	57	4,250
55							32.5	3,550	45	3,650	53	3,700
60							22	2,650	39.5	3,100	48.5	3,250
65									33	2,550	44	2,800
70									24.5	1,950	39	2,350
75									11	1,050	33.5	1,950
80											26.5	1,550
85											16.5	950
	0	6,400	0	3,000	0	1,600	0	700				

LOAD RADIUS (FEET)	LOADED BOOM ANGLE	25FT JIB (lb)	LOADED BOOM ANGLE	44FT JIB (lb)
30	75	4,850	77.5	3,300
35	72.5	4,350	75	3,250
40	70	3,900	73	3,200
45	67	3,500	71	3,050
50	64.5	3,150	69	2,750
55	61.5	2,800	66.5	2,400
60	59	2,500	64	2,150
65	56	2,200	61.5	1,900
70	52.5	1,750	59	1,700
75	49	1,400	56.5	1,550
80	45.5	1,100	54	1,400
85	42	800	51.5	1,250
90	38	550	48	1,000
95			45	800
100			42	600

LOADLINE EQUIPMENT DEDUCT (lb)

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

ADD TO CAPACITIES WHEN NO JIB STOWED (lb)

700	400	300	200	200	100
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1 PART LINE	2 PART LINE	3 PART LINE	4 PART LINE	5 PART LINE	6 PART LINE	7 PART LINE
MAX PULL 7,700 lb	MAX PULL 15,400 lb	MAX PULL 23,100 lb	MAX PULL 30,800 lb	MAX PULL 38,500 lb	MAX PULL 46,200 lb	MAX PULL 53,900 lb

NOTICE

- Do not deadhead line block against boom tip when extending boom.
- Keep at least 3 wraps of loadline on drum at all times.
- Use only 9/16" diameter rotation resistant cable with 38,500 lb breaking strength on this machine
- Maximum capacity with "burst of speed" is 3,000 lb

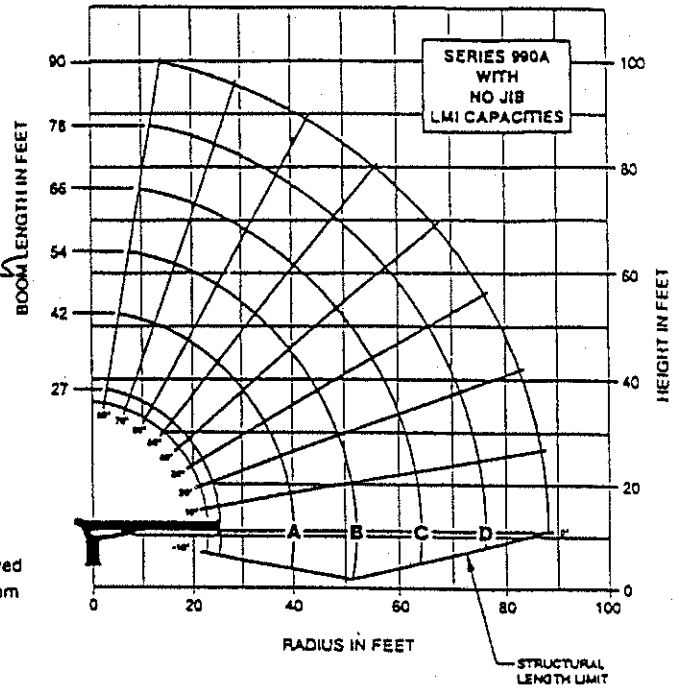


Loadline
Equipment
Deduct (lb)

Downhaul weight - 150
One sheave block - ~~200~~ 350
Two sheave block - 355

LMI
Operating
Code Switch

Switch Position (REF #17)	Operating Mode
01	Main Boom - No Jib Slowed
11	Man Basket on Main Boom



LOAD RATINGS

Load Radius Feet	Loaded Boom Angle	27 Ft Boom (lb)	Loaded Boom Angle	A 42 Ft Boom (lb)	Loaded Boom Angle	B 54 Ft Boom (lb)	Loaded Boom Angle	C 66 Ft Boom (lb)	Loaded Boom Angle	D 78 Ft Boom (lb)	Loaded Boom Angle	90 Ft Boom (lb)
5	77	52,000										
8	70.5	36,600										
10	66	31,300	75	27,300	79	25,600						
12	60.5	26,600	72	23,400	77	21,900						
14	55.5	22,300	69	20,500	74	20,400	78	18,300				
16	50	20,000	66	18,200	72.5	17,000	76	15,900	78.5	14,900		
20	38.5	15,500	59.5	15,000	67.5	14,800	72.5	13,800	75.5	12,700	78	11,600
25			51.5	11,700	61.5	11,300	68	11,200	71.5	10,500	74.5	9,400
30			41.5	9,450	55	9,200	62.5	9,200	67.5	8,800	71	7,900
35			30	7,450	48.5	7,650	58	7,400	64	7,350	68	6,800
40					41	6,400	52.5	6,200	59.5	6,050	64.5	5,950
45					31.5	5,200	46.5	5,300	55	5,100	61	5,000
50					17.5	4,150	40	4,550	50.5	4,450	57	4,350
55							32.5	3,750	45	3,850	53	3,800
60							22	2,850	39.5	3,300	48.5	3,350
65									33	2,750	44	2,900
70									24.5	2,150	39	2,450
75									11	1,250	33.5	2,050
80											26.5	1,650
85											16.5	1,050
	0	7,100	0	3,400	0	1,900	0	900				

NOTE: Capacities do not exceed 85% stability. Shaded areas are structurally limited capacities.

1 Part Line 2 Part Line 3 Part Line 4 Part Line 5 Part Line 6 Part Line 7 Part Line



Max. Pull
7,700 Lb.



Max. Pull
15,400 Lb.



Max. Pull
23,100 Lb.



Max. Pull
30,800 Lb.



Max. Pull
38,500 Lb.



Max. Pull
46,200 Lb.



Max. Pull
52,000 Lb.

NOTICE

- Do not deadhead line block against boom tip when extending boom.
- Keep at least 3 wraps of loadline on drum at all times.
- Use only 9/16" diameter rotation resistant cable with 38,500 lbs breaking strength on this machine.
- Maximum capacity with "Burst of Speed" is 3,000 lb.