STERLING CRANE

Operation

Main boom

approx. 142 s (39.5 ft – 154.3 ft)		-1.5° – 80.5° approx. 46 s (20° – 60°)	

Slewing

	1.5 min^{-1}

Hoist

		lb		
1	446 $^{ft}/_{min}$	15,900 lb	3/4“	892‘
2	446 $^{ft}/_{min}$	15,900 lb	3/4“	482‘

Outrigger cylinders

Max.	44,700 lb	132,500 lb	122,800 lb
	2‘1-3/16“	1‘5-11/16“	1‘7-7/8“

Hook blocks

	lb			lb	
7.9 ton	15,800 lb	–	1	370 lb	7.5 ft
22 ton	44,000 lb	1	2	690 lb	7.6 ft
55 ton	110,000 lb	3	6	1410 lb	8.0 ft
100 ton	200,000 lb	7	14	1800 lb	8.0 ft

Operation

Line speeds and pulls

Main or auxiliary winch – 15“ drum

N	low	high [1]	low [2]
1	253 ft/min.	354 ft/min.	21,800 lb
2	276 ft/min.	384 ft/min.	19,900 lb
3	299 ft/min.	413 ft/min.	18,200 lb
4	318 ft/min.	446 ft/min.	16,800 lb
5	341 ft/min.	476 ft/min.	15,600 lb

Maximum permissible line pull wire strength. 15,900 lb with 7 x 35 class rope.

1) Line speed based only on hook block, not loaded.

2) Developed by machinery with each layer of wire rope, but not based on rope strength or other limitations in machinery or equipment.

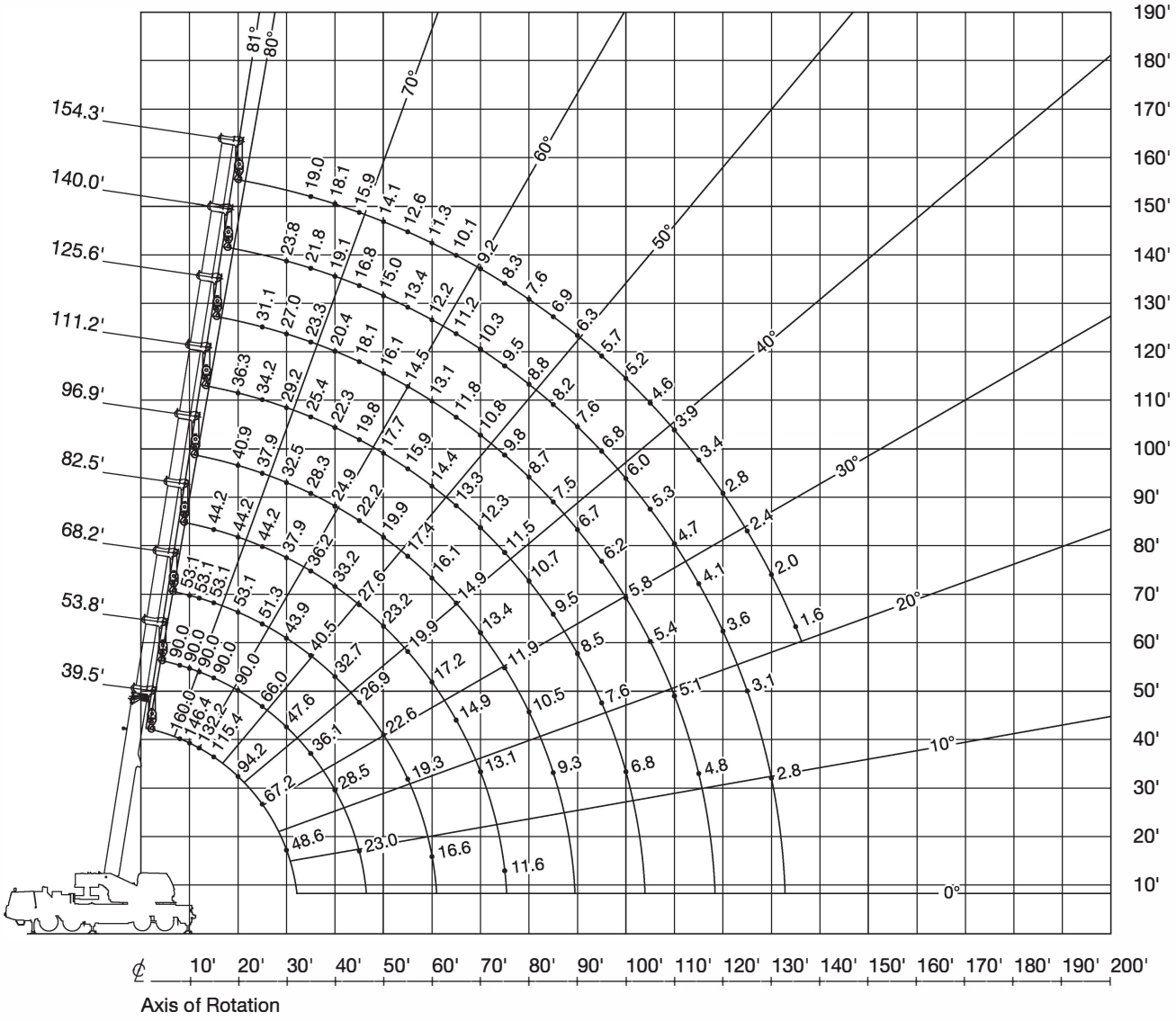
Drum wire rope capacities

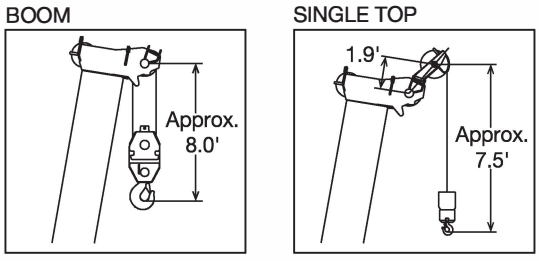
Main and auxiliary drum grooved lagging 3/4“ wire rope

N		Σ
1	147.0 ft	147.0 ft
2	159.4 ft	306.4 ft
3	172.2 ft	478.7 ft
4	184.7 ft	663.4 ft
5	197.2 ft	860.6 ft

Drum dimensions

Root diameter	15“
Length	29-1/4“
Flange diameter	26-5/8“





NOTE:

Boom geometry shown are for unloaded condition and machine standing level on firm supporting surface.
Boom deflection and subsequent radius and boom angle change must be accounted for when applying load to hook.

Operation

Fully extended – 360°

17,900 lb | 23‘7-1/2“ x 19’8-1/4” | 360°

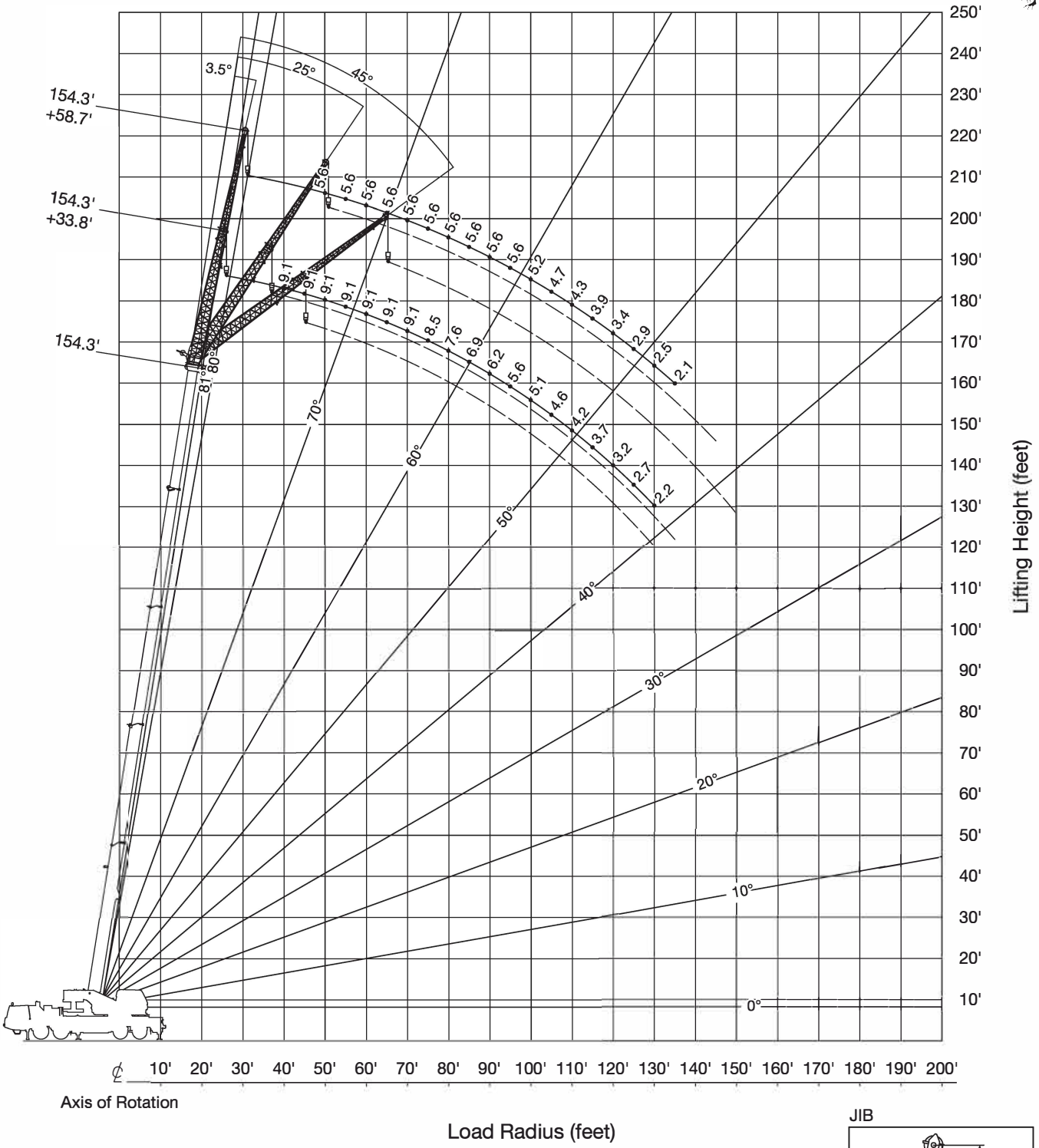
ft	39.5‘	53.8‘	68.2‘	68.2‘	82.5‘	82.5‘	96.9‘	96.9‘	111.2‘	111.2‘	125.6‘	125.6‘	140.0‘	140.0‘	154.3‘
							lb								
8	160,000	90,000	-	-	-	-	-	-	-	-	-	-	-	-	-
10	146,400	90,000	53,100	41,000	-	-	-	-	-	-	-	-	-	-	-
12	132,200	90,000	53,100	41,000	-	-	-	-	-	-	-	-	-	-	-
15	115,400	90,000	53,100	41,000	44,200	36,200	-	-	-	-	-	-	-	-	-
20	94,200	90,000	53,100	41,000	44,200	36,200	40,900	34,300	36,300	33,300	-	-	-	-	-
25	67,200	66,000	51,300	41,000	44,200	36,200	37,900	33,700	34,200	30,500	31,100	26,100	-	-	-
30	48,600	47,600	43,900	41,000	37,900	36,200	32,500	29,400	29,200	26,600	27,000	22,300	23,800	22,300	-
35	-	36,100	35,700	40,500	32,900	36,200	28,300	25,900	25,400	23,400	23,300	19,400	21,800	20,800	19,000
40	-	28,500	28,100	32,700	28,900	33,200	24,900	23,200	22,300	20,900	20,400	17,100	19,100	18,400	18,100
45	-	23,000	22,500	26,900	23,900	27,600	22,200	20,900	19,800	18,800	18,100	15,200	16,800	16,400	15,900
50	-	-	18,300	22,600	19,700	23,200	19,900	19,000	17,700	17,100	16,100	13,600	15,000	14,800	14,100
55	-	-	15,100	19,300	16,400	19,900	17,300	17,400	15,900	15,600	14,500	12,300	13,400	13,400	12,600
60	-	-	12,500	16,600	13,800	17,200	14,600	16,100	14,400	14,400	13,100	11,100	12,100	12,200	11,300
65	-	-	-	-	11,600	14,900	12,500	14,900	13,100	13,300	11,800	10,100	10,900	11,200	10,100
70	-	-	-	-	9,700	13,100	10,600	13,400	11,200	12,300	10,800	9,300	9,900	10,300	9,200
75	-	-	-	-	8,200	11,600	9,000	11,900	9,600	11,500	9,800	8,500	9,000	9,500	8,300
80	-	-	-	-	-	-	7,700	10,500	8,300	10,700	8,700	7,800	8,200	8,800	7,600
85	-	-	-	-	-	-	6,500	9,300	7,100	9,500	7,500	7,200	7,500	8,200	6,900
90	-	-	-	-	-	-	-	-	6,100	8,500	6,500	6,700	6,700	7,600	6,300
95	-	-	-	-	-	-	-	-	5,200	7,600	5,600	6,200	5,900	6,800	5,700
100	-	-	-	-	-	-	-	-	4,400	6,800	4,800	5,800	5,100	6,000	5,200
105	-	-	-	-	-	-	-	-	-	-	4,100	5,400	4,400	5,300	4,600
110	-	-	-	-	-	-	-	-	-	-	3,500	5,100	3,700	4,700	3,900
115	-	-	-	-	-	-	-	-	-	-	3,000	4,800	3,200	4,100	3,400
120	-	-	-	-	-	-	-	-	-	-	-	-	2,700	3,600	2,800
125	-	-	-	-	-	-	-	-	-	-	-	-	2,200	3,100	2,400
130	-	-	-	-	-	-	-	-	-	-	-	-	1,900	2,800	2,000
135	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,600
1)	0°	0°	0°	0°	0°	0°	0°	0°	0°	0°	0°	0°	0°	0°	20°

Telescopic conditions (%)

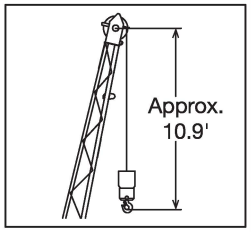
2)	1, 2	1	1	2	1	2	1	2	1	2	1	2	1	2	1, 2
2nd boom	0	50	100	0	100	0	100	0	100	0	100	0	100	50	100
3rd boom	0	0	0	33	16	50	33	67	50	83	67	100	83	100	100
4th boom	0	0	0	33	16	50	33	67	50	83	67	100	83	100	100
Top boom	0	0	0	33	16	50	33	67	50	83	67	100	83	100	100

1) Minimum boom angle (°) for indicator length (no load)

2) Telescopic mode



JIB



NOTE:

Jib geometry shown are for unloaded condition and machine standing level on firm supporting surface.
Boom deflection and subsequent radius and boom angle change must be accounted for when applying load to hook.

Operation

Fully extended – 360°

17,900 lb | 23‘7-1/2“ x 19’8-1/4” | 33.8‘ | 360°

	111.2‘						125.6‘						140.0‘						154.3‘		
	3.5°		25°		45°		3.5°		25°		45°		3.5°		25°		45°		3.5°	25°	45°
ft	lb																				
30	14,600	11,500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35	14,600	11,500	-	-	-	-	13,200	11,300	-	-	-	-	10,400	10,100	-	-	-	-	-	-	-
40	14,600	11,500	12,600	10,900	-	-	13,200	11,300	-	-	-	-	10,400	10,100	-	-	-	-	9,100	-	-
45	14,600	11,500	12,000	10,900	-	-	13,200	11,300	11,700	10,900	-	-	10,400	10,100	-	-	-	-	9,100	-	-
50	14,600	11,500	11,400	10,900	9,100	9,000	13,200	11,300	11,200	10,800	-	-	10,400	10,100	10,200	10,100	-	-	9,100	-	-
55	14,600	11,500	10,900	10,600	8,900	8,700	13,200	11,300	10,800	10,400	8,800	8,600	10,400	10,100	10,200	10,100	8,700	8,600	9,100	9,100	-
60	13,500	11,500	10,500	10,200	8,600	8,500	12,700	10,400	10,400	10,100	8,600	8,400	10,400	10,100	10,100	10,000	8,400	8,400	9,100	9,100	8,300
65	12,300	11,500	10,100	9,800	8,400	8,300	11,400	9,400	10,000	9,300	8,400	8,200	10,400	10,100	9,800	9,700	8,200	8,200	9,100	9,100	8,100
70	11,200	10,900	9,700	9,400	8,200	8,100	10,400	8,600	9,700	8,600	8,200	8,000	9,800	9,400	9,500	9,100	8,100	8,000	9,100	9,100	7,900
75	10,200	10,100	9,400	9,100	8,000	7,900	9,400	7,800	9,300	7,800	8,000	7,800	8,900	8,600	9,100	8,400	7,900	7,800	8,500	8,800	7,800
80	9,300	9,400	9,100	8,800	7,900	7,700	8,600	7,100	8,700	7,200	7,800	7,200	8,000	7,800	8,300	7,800	7,700	7,600	7,600	7,900	7,600
85	8,600	8,800	8,600	8,600	7,700	7,600	7,800	6,500	8,000	6,600	7,700	6,700	7,300	7,200	7,500	7,200	7,600	7,100	6,900	7,200	7,300
90	7,500	8,200	8,000	8,100	7,600	7,500	7,200	6,000	7,300	6,100	7,500	6,100	6,600	6,700	6,900	6,600	7,000	6,600	6,200	6,500	6,700
95	6,600	7,700	7,300	7,700	7,400	7,400	6,600	5,500	6,700	5,600	6,800	5,600	6,000	6,100	6,300	6,200	6,400	6,200	5,600	5,900	6,100
100	5,800	7,300	6,300	7,200	6,700	7,200	5,800	5,000	6,200	5,200	6,300	5,200	5,500	5,700	5,700	5,700	5,900	5,700	5,100	5,400	5,600
105	5,000	6,800	5,500	6,800	5,800	6,800	5,100	4,700	5,700	4,800	5,800	4,800	5,000	5,300	5,200	5,300	5,400	5,300	4,600	4,900	5,000
110	4,300	6,100	4,800	6,400	-	-	4,400	4,300	5,000	4,400	5,200	4,400	4,500	4,900	4,800	4,900	4,900	4,900	4,200	4,500	4,600
115	3,700	5,500	4,100	5,800	-	-	3,800	3,900	4,300	4,000	4,500	4,100	3,900	4,500	4,400	4,600	4,500	4,600	3,700	4,000	4,200
120	3,200	4,900	3,500	5,200	-	-	3,300	3,600	3,700	3,700	-	-	3,300	4,100	3,800	4,200	4,100	4,300	3,200	3,700	3,800
125	2,700	4,500	3,000	4,600	-	-	2,800	3,400	3,200	3,400	-	-	2,800	3,600	3,300	3,900	3,500	4,000	2,700	3,200	3,400
130	2,300	4,000	-	-	-	-	2,400	3,100	2,600	3,200	-	-	2,400	3,100	2,800	3,500	3,000	-	2,200	2,700	3,000
135	1,900	3,600	-	-	-	-	1,900	2,800	2,200	2,900	-	-	1,900	2,700	2,300	3,000	-	-	-	2,200	-
140	-	-	-	-	-	-	-	2,600	1,700	2,700	-	-	-	2,300	1,900	2,600	-	-	-	-	-
145	-	-	-	-	-	-	-	2,400	-	-	-	-	-	2,000	-	2,200	-	-	-	-	-
1)	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1, 2		

1) Telescopic mode

Operation

Fully extended – 360°

17,900 lb | 23‘7-1/2“ x 19’8-1/4” | 58.7‘ | 360°

	111.2‘						125.6‘						140.0‘						154.3‘		
	3.5°		25°		45°		3.5°		25°		45°		3.5°		25°		45°		3.5°	25°	45°
ft	lb																				
35	7,700	7,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40	7,700	7,000	-	-	-	-	6,900	6,300	-	-	-	-	6,200	5,900	-	-	-	-	-	-	-
45	7,700	7,000	-	-	-	-	6,900	6,300	-	-	-	-	6,200	5,900	-	-	-	-	-	-	-
50	7,700	7,000	-	-	-	-	6,900	6,300	-	-	-	-	6,200	5,900	-	-	-	-	5,600	-	-
55	7,700	7,000	6,500	6,300	-	-	6,900	6,300	-	-	-	-	6,200	5,900	-	-	-	-	5,600	-	-
60	7,700	7,000	6,500	6,300	-	-	6,900	6,300	-	-	-	-	6,200	5,900	-	-	-	-	5,600	-	-
65	7,700	7,000	6,500	6,300	-	-	6,900	6,300	6,800	6,300	-	-	6,200	5,900	6,000	5,900	-	-	5,600	-	-
70	7,700	7,000	6,500	6,300	5,300	4,800	6,900	6,300	6,600	6,300	-	-	6,200	5,900	6,000	5,900	-	-	5,600	5,600	-
75	7,700	7,000	6,400	6,300	5,100	4,800	6,900	6,300	6,400	6,200	5,100	4,800	6,200	5,900	6,000	5,900	-	-	5,600	5,600	-
80	7,700	7,000	6,200	6,100	5,000	4,800	6,900	6,300	6,200	6,000	5,000	4,800	6,200	5,900	6,000	5,900	4,800	4,800	5,600	5,600	-
85	7,700	7,000	5,900	5,800	4,800	4,800	6,900	6,300	6,000	5,800	4,900	4,800	6,200	5,900	5,900	5,800	4,800	4,800	5,600	5,600	4,800
90	7,500	7,000	5,700	5,600	4,700	4,700	6,900	5,700	5,800	5,500	4,700	4,700	6,200	5,900	5,800	5,700	4,700	4,700	5,600	5,600	4,800
95	7,000	6,900	5,500	5,400	4,600	4,500	6,500	5,300	5,600	5,200	4,600	4,600	6,100	5,800	5,600	5,400	4,600	4,600	5,600	5,500	4,700
100	6,500	6,700	5,300	5,200	4,500	4,400	6,000	4,800	5,400	4,900	4,500	4,500	5,500	5,300	5,500	5,200	4,500	4,500	5,200	5,400	4,500
105	5,800	6,400	5,100	5,000	4,400	4,300	5,500	4,400	5,200	4,700	4,400	4,300	5,000	4,900	5,300	4,900	4,400	4,400	4,700	5,100	4,400
110	5,200	6,100	4,900	4,900	4,300	4,200	5,000	4,100	5,000	4,300	4,300	4,200	4,600	4,500	5,000	4,700	4,300	4,300	4,300	4,800	4,300
115	4,500	5,800	4,800	4,700	4,200	4,200	4,500	3,700	4,900	4,000	4,200	4,000	4,200	4,200	4,600	4,300	4,200	4,200	3,900	4,400	4,300
120	4,000	5,400	4,700	4,600	4,100	4,100	3,900	3,500	4,500	3,700	4,100	3,800	3,700	3,900	4,200	4,000	4,200	4,000	3,400	3,900	4,100
125	3,500	5,000	4,200	4,500	4,100	4,100	3,400	3,200	4,200	3,400	4,100	3,500	3,200	3,600	3,800	3,700	4,000	3,800	2,900	3,600	3,800
130	3,000	4,500	3,600	4,300	4,000	4,000	2,900	2,900	3,700	3,100	4,000	3,200	2,700	3,300	3,500	3,500	3,700	3,500	2,500	3,300	3,500
135	2,600	4,100	3,200	4,300	-	-	2,500	2,700	3,200	2,800	3,500	3,000	2,300	3,000	3,100	3,200	3,400	3,300	2,100	2,900	3,200
140	2,200	3,700	2,700	4,000	-	-	2,100	2,400	2,800	2,600	3,000	2,700	1,900	2,600	2,600	3,000	3,100	3,000	-	2,500	2,800
145	1,900	3,300	-	3,600	-	-	1,800	2,200	2,300	2,400	-	-	-	2,300	2,200	2,800	2,600	2,800	-	2,100	2,600
150	1,500	3,000	-	3,200	-	-	-	2,100	1,900	2,200	-	-	-	2,000	1,900	2,500	2,200	2,600	-	-	2,100
155	-	2,700	-	-	-	-	-	1,900	-	2,000	-	-	-	1,700	-	2,200	-	2,400	-	-	-
160	-	2,400	-	-	-	-	-	1,700	-	1,800	-	-	-	-	-	1,800	-	-	-	-	-
1)	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2		1, 2	

1) Telescopic mode

Warning and Operating Instructions
Notes to Lifting Capacity

GENERAL

1. RATED LIFTING CAPACITIES apply only to the machine as originally manufactured and normally equipped by TADANO LTD. Modifications to the machine or use of optional equipment other than that specified can result in a reduction of capacity.
2. Hydraulic cranes can be hazardous if improperly operated or maintained. Operation and maintenance of this machine must be in compliance with this Operation and Maintenance Manual and any local regulations. Replacement manuals can be ordered from a TADANO distributor or dealer.
3. The operator and other personnel associated with this machine shall fully acquaint themselves with the applicable crane safety regulations and voluntary standards for the country where the crane will be operated.

SET UP

1. The rated lifting capacity tables provide the maximum allowable crane capacities and are based on the machine standing level on firm supporting surface under ideal conditions. Depending on the nature of the supporting surface, it may be necessary to have structural supports under the outrigger floats (or under the tires if applicable to your crane) to spread the loads to a larger surface area.
2. Outriggers must always be properly extended with both pins installed in each and the tires must not be in contact with the supporting surface before operating crane.

OPERATION

1. Rated lifting capacities have been tested to and meet minimum requirements of SAE standard J1063, Cantilevered Boom Crane Structures - Method of Test.
2. Rated lifting capacities do not exceed 85% of the tipping load with outriggers fully extended as determined by SAE standard J765, Crane Load Stability Test Code. Rated lifting capacities for partially extended outriggers are determined from the following formula: Rated Lifting Capacities = (tipping load - 0.1 x tip reaction) / 1.25.
3. Rated lifting capacities are based on actual load radius increased by boom deflection.
4. The weight of handling device such as hook blocks, slings, etc., must be included as part of the load and must be deducted from the lifting capacity.
5. Rated lifting capacities are based on freely suspended loads and make no allowance for such factors as the effects of wind, sudden stopping of loads, supporting surface conditions, outrigger stability, tire inflation pressures (if applicable to your crane), operating speeds, side loads, etc. Side pull on boom or jib is extremely dangerous. Such action can damage the boom, jib or slewing mechanism, and lead to overturning of the crane.
6. Rated lifting capacities do not account for wind on lifted load or boom. During boom lift, consider that the rated lifting capacity is reduced by 50% when the wind speed is 20 mph to 27 mph and is reduced by 70% when the wind speed is 27 mph to 31 mph. If the wind speed is 31 mph or over, stop operation. During jib lift, stop operation if the wind speed is 20 mph or over.
7. Never exceed the rated lifting capacity for a given load radius. Do not risk a tip over by attempting to exceed the rated lifting capacity for the machine configuration. Stop lifting and lower the load if any outrigger is not in contact with the ground.
8. Do not operate at boom lengths, radii, or boom angles, where no capacities are shown in the rated capacity lifting tables. Crane may overturn without any load on the hook.
9. When boom length is between values listed, refer to the rated lifting capacities of the next longer and next shorter booms for the same radius. Always use the lesser of the two rated lifting capacity values.
10. When the desired load radius for a lift is between two load radii listed in a lifting capacity table, always use the allowable capacity for the longer radius.
11. Load per line should not exceed 15,900 lb for main winch and auxiliary winch.
12. Check that the actual number of parts of line matches with LOAD MOMENT INDICATOR (AML-E2) before operation. Maximum lifting capacity is restricted by the number of parts of line of LOAD MOMENT INDICATOR (AML-E2). Limited capacity is as determined from the following formula: Single line pull for main winch 15,900 lb x number of parts of line.
13. The boom angle before loading should be greater to account for deflection. For rated lifting capacities, the loaded boom angle and the load radius is for reference only.
14. The 39.5‘ boom length capacities are based on boom fully retracted. If not fully retracted, less than 53.8‘ boom length, use the rated lifting capacities for the 53.8‘ boom length.
15. The ability to telescope loads is limited by several factors including but not limited to: hydraulic pressure, boom angle, boom length, and crane maintenance.
16. For lifting capacity of single top, deduct the weight of the load handling equipment from the rated lifting capacity of the boom. For the lifting capacity of single top, the net capacity shall not exceed 15,900 lb including the main boom hook mass attached to the boom.
17. When the base jib, top jib, or both jibs are removed, set the jib state switch to the DISMOUNTED position.
18. When erecting and stowing jib, always use ropes or straps to prevent jib from moving.
19. Use “ANTI-TWOBLOCK“ disable switch when erecting and stowing jib and when stowing hook block. While the switch is pushed, the hoist does not stop, even if an overwind condition occurs.
20. When lifting a load by using jib (auxiliary winch) and boom (main winch) simultaneously, do the following:
    – Enter the operation status as jib operation, not as boom operation.
    – Before starting operation, make sure that mass of load is within rated lifting capacity for jib.
21. Outriggers shall be fully extended 23‘ 7-1/2“ when installing or removing counterweight.

DEFINITIONS

1. Load Radius: The horizontal distance between the center of rotation and center of the hook block.
2. Loaded Boom Angle: The angle between the boom base section and the horizontal, after lifting the rated lifting capacity at the load radius.
3. Working Area: Area measured in a circular arc about the centerline of rotation.
4. Freely Suspended Load: Load hanging free with no direct external force applied except by the hoist line.
5. Side Load: Horizontal side force applied to the lifted load either on the ground or in the air.

Warning and Operating Instructions
Notes for Load Moment Indicator (AML-E2)

1. Set AML select keys in accordance with the actually operating crane conditions and don't fail to make sure, before crane operation, that the displays on front panel are correct.

2. When operating crane:
   – Set starter switch to "ON".
   – Press the outrigger state select key to register for the outrigger operation. If the display agrees with the actual state, press the set key to register. After the completion of the registration, the display returns to the crane operation status.
   – Press the counterweight state select key to register for the counterweight state. If the display agrees with the actual state, press the set key to register. After the completion of the registration, the display returns to the crane operation status.
   – Press the lift state select key to register the lift state to be used (single top/jib/boom).
   – Each time the lift state select key is pressed, the display changes. If the display agrees with the actual state, press the set key to register. After the completion of the registration, the display returns to the crane operation status.
   – When erecting and stowing jib, select the status of jib set (jib state indicative symbol lights up).

3. This machine is equipped with an automatic slewing stopping device (for the details, see operation and maintenance manual). But, operate very carefully because the automatic slewing stop does not work in the following cases.
   – When the "AML OVERRIDE" switch is set to "ON" and the "Override key switch" outside the cab is "ON".

4. During crane operation, make sure that the displays on front panel are in accordance with actual operating conditions.

5. The displayed values of LOAD MOMENT INDICATOR (AML-E2) are based on freely suspended loads and make no allowance for such factors as the effect of wind, sudden stopping of loads, supporting surface conditions, operating speed, side loads, etc.
   For safe operation, it is recommended when extending and lowering boom or slewing, lifting loads shall be appropriately reduced.

6. LOAD MOMENT INDICATOR (AML-E2) is intended as an aid to the operator. Under no condition should it be relied upon to replace use of capacity charts and operating instruction.
   Sole reliance upon LOAD MOMENT INDICATOR (AML-E2) aids in place of good operating practice can cause an accident.
   The operator must exercise caution to assure safety.

7. The lifting capacity differs depending on the outrigger extension width and slewing position.
   Work with the capacity corresponding to the outrigger extension width and slewing position.
   For the relationship among the outrigger extension width, slewing position and lifting capacities, refer to the working area charts.