

STERLING CRANE

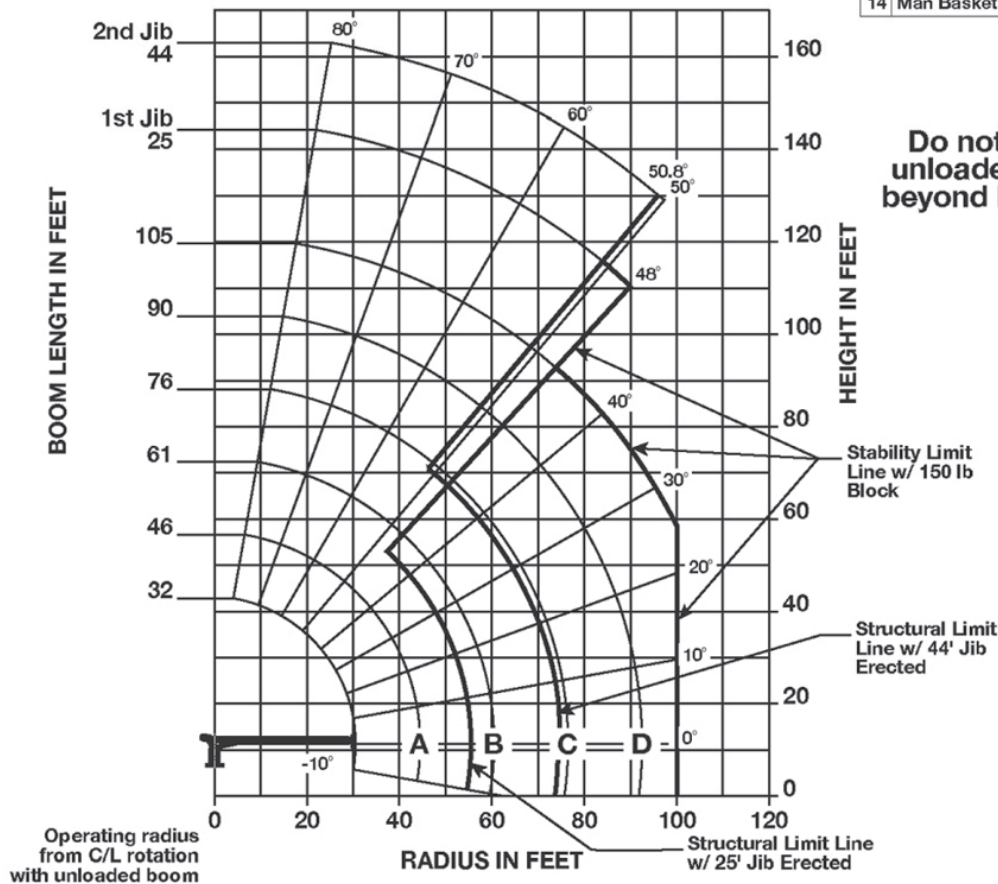


LIFTING CHARTS - Boom Trucks

NATIONAL MODEL 900H - 27 TON CAPACITY

9105H
105 ft BOOM
25 - 44 ft JIB
FULL SPAN OUTRIGGER 20 ft
FULL SPAN STABILIZER 18 ft 6 in

LMI OPERATING CODE	
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
13	Man Basket on 25 ft Tele Jib
14	Man Basket on 44 ft Tele Jib



SET-UP

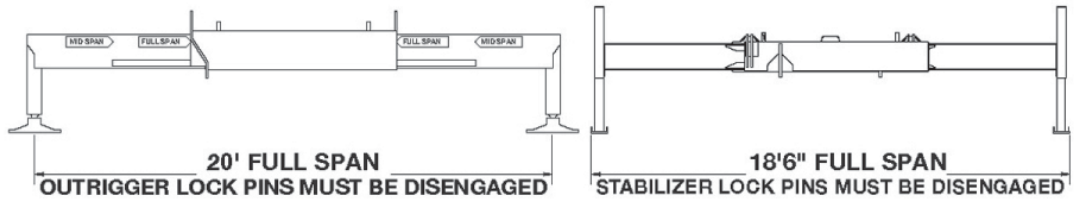
1. Fully extend and set outriggers and stabilizers to full span location, level crane and set optional front stabilizer, if equipped.

OPERATION

1. The 32 ft boom length capacities are based on boom fully retracted. If not fully retracted, do not exceed 32 ft boom length capacities.
2. Do not extend unloaded boom or jib beyond stability limit line on range chart as loss of stability may occur.
3. Load blocks and slings are considered to be a part of the load.
4. Operate with jib by radius when main boom is fully extended and by boom angle when main boom is partially extended. Do not exceed jib capacities at any partially extended boom length.
5. All jib loads must be lifted with single part reeving.

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9105H 105 ft BOOM 25 – 44 ft JIB FULL SPAN OUTRIGGER AND STABILIZER



32 ft – 105 ft BOOM RATED LOADS WITHOUT JIB

LOADED RADIUS (ft)	LOADED BOOM ANGLE (deg)	32 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	A 46 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	B 61 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	C 76 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	D 90 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	105 ft BOOM (lb)
5	77.2	54,000										
8	71.5	40,000	77.6	29,000								
10	67.6	34,000	75	27,000								
12	63.5	30,000	72.4	24,950	77.4	24,000						
14	59.4	24,000	69.7	22,850	75.4	22,000	78.6	19,000				
16	55	22,000	67	20,450	73.5	20,000	77.1	17,000				
20	45.4	16,500	61.3	16,950	69.4	16,000	73.9	14,500	77.5	13,000		
25	30.2	12,000	53.8	12,900	64.2	13,000	69.9	12,000	74.3	11,000	77.5	10,000
30			45.4	10,000	58.7	10,000	65.7	9,500	70.8	8,750	74.7	9,000
35			35.5	7,750	52.9	8,000	61.4	8,000	67.6	7,500	72.1	8,500
40			23.3	6,300	47.1	6,650	57.3	6,750	64	6,500	69.2	7,100
45					39.8	5,300	52.6	5,500	60.3	5,500	66.1	5,800
50					31.5	4,300	47.5	4,550	56.4	4,450	62.8	4,850
55					20.3	3,500	42	3,700	52.3	3,850	59.5	3,950
60							35.7	2,950	47.9	3,100	56	3,200
65							28.3	2,300	43.2	2,500	52.4	2,600
70							18.3	1,800	38	2,000	48.6	2,100
75									32.2	1,600	44.6	1,650
80									25	1,200	40.3	1,300
85									14.8	850	35.5	950
90											30.1	650
	0	8,000	0	4,500	0	2,500	0	1,300	0	500		

25 – 44 ft JIB RATED LOADS

LOADED RADIUS (ft)	LOADED BOOM ANGLE (deg)	25 ft JIB (lb)	LOADED BOOM ANGLE (deg)	44 ft JIB (lb)
40	73.9	4,400		
45	71.9	4,400	74.7	2,800
50	69.6	4,100	72.9	2,700
55	67.2	3,600	71.1	2,650
60	64.5	2,850	69.2	2,500
65	61.7	2,250	67.1	2,300
70	58.9	1,750	65.1	2,200
75	56	1,300	62.8	1,950
80	53.1	900	60.2	1,550
85	50	550	57.5	1,150
90			54.8	850
95			52	550

RATED LOAD REDUCTIONS WITH STOWED JIB

BOOM LENGTH (ft)	25 – 44 ft JIB STOWED
32	Reduce load 800 lb
46	Reduce load 600 lb
61	Reduce load 450 lb
76	Reduce load 350 lb
90	Reduce load 300 lb
105	Reduce load 250 lb

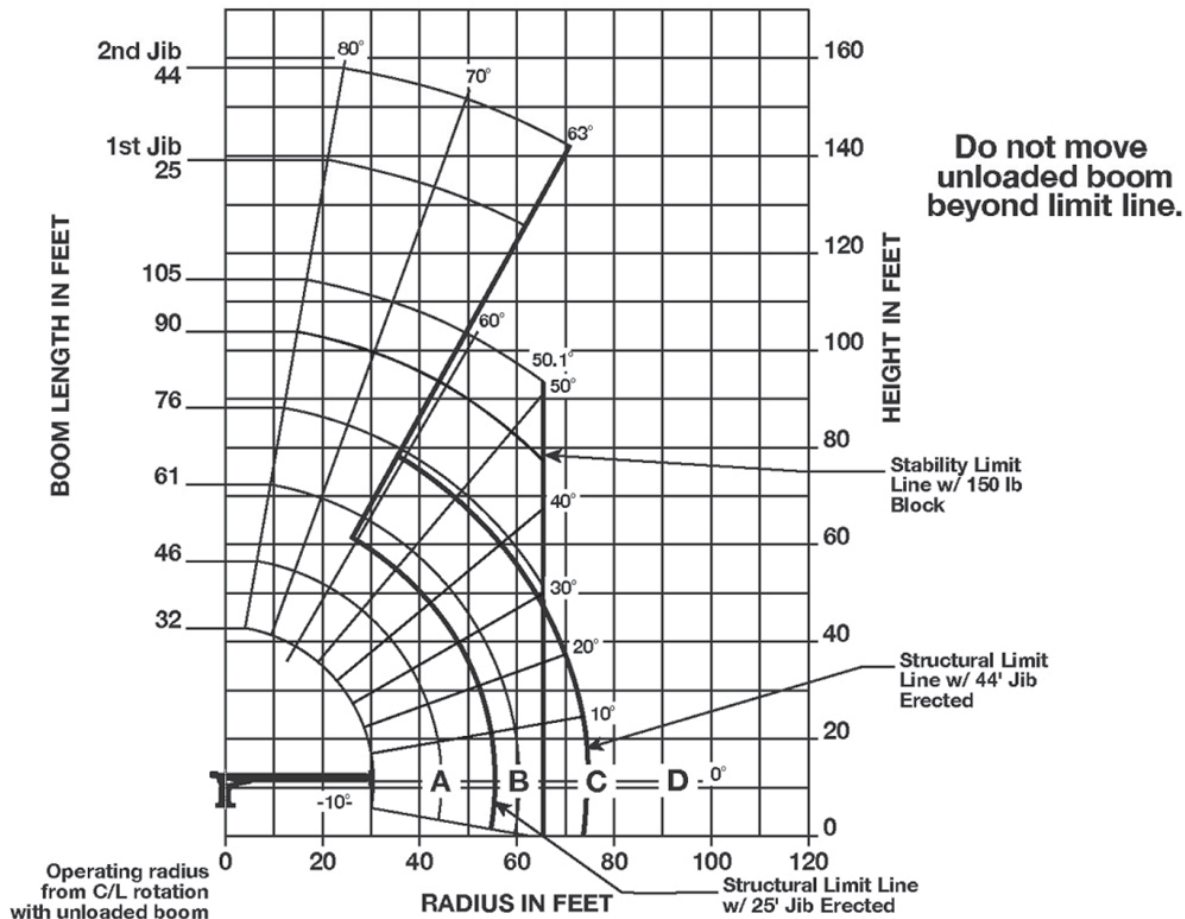
Note:

1. All capacities are in pounds, angles in degrees, and radii in feet.
2. Loaded boom angles are given as reference only.
3. Shaded areas are structurally limited capacities.
4. Handling of personnel is only permitted with full span extension of all outrigger and stabilizer beams.

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9105H
105 ft BOOM
25 - 44 ft JIB
MID SPAN OUTRIGGER 14 ft
MID SPAN STABILIZER 14 ft

LMI OPERATING CODE	
OPERATING MODE	
21	Main Boom - No Jib Stowed
22	Main Boom - Jib Stowed
23	25 ft Tele Jib
24	44 ft Tele Jib



SET-UP

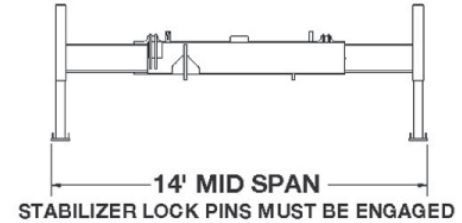
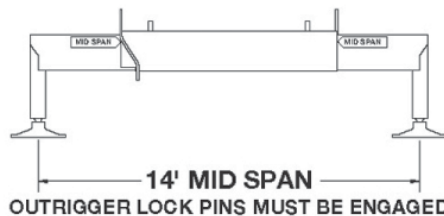
1. Engage mid span outrigger and stabilizer lock pins, extend and set outriggers and stabilizers to mid span location, level crane and set optional front stabilizer, if equipped.

OPERATION

1. The 32 ft boom length capacities are based on boom fully retracted. If not fully retracted, do not exceed 32 ft boom length capacities.
2. Do not extend unloaded boom or jib beyond stability limit line on range chart as loss of stability may occur.
3. Load blocks and slings are considered to be a part of the load.
4. Operate with jib by radius when main boom is fully extended and by boom angle when main boom is partially extended. Do not exceed jib capacities at any partially extended boom length.
5. All jib loads must be lifted with single part reeving.

STERLING CRANE

9105H 105 ft BOOM 25 – 44 ft JIB MID SPAN OUTRIGGER AND STABILIZER



32 ft – 105 ft BOOM RATED LOADS WITHOUT JIB

LOADED RADIUS (ft)	LOADED BOOM ANGLE (deg)	32 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	A 46 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	B 61 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	C 76 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	D 90 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	105 ft BOOM (lb)
5	77.2	54,000										
8	71.5	40,000	77.6	29,000								
10	67.6	34,000	75	27,000								
12	63.5	30,000	72.4	24,950	77.4	24,000						
14	59.4	24,000	69.7	22,850	75.4	22,000	78.6	19,000				
16	55	18,000	67	20,450	73.5	20,000	77.1	17,000				
20	45.4	12,500	61.3	13,150	69.3	13,600	73.9	13,800	77.5	13,000		
25	31.8	7,700	53.7	8,350	63.8	8,700	69.7	8,900	74	9,200	77.3	9,450
30			46.1	5,700	58.8	5,900	65.8	6,100	70.7	6,350	74.4	6,500
35			36.3	3,900	53	4,250	61.5	4,400	67.1	4,600	71.3	4,750
40			23.3	2,650	46.7	2,950	57	3,150	63.4	3,300	68.1	3,450
45					39.7	2,050	52.3	2,200	59.6	2,350	65	2,500
50					31.4	1,350	47.2	1,500	55.7	1,650	61.7	1,750
55					20.1	750	41.6	950	51.5	1,050	58.4	1,150
60							35.4	500	47.2	700	55	700
	0	5,200	0	1,950								

25 – 44 ft JIB RATED LOADS

LOADED RADIUS (ft)	LOADED BOOM ANGLE (deg)	25 ft JIB (lb)	LOADED BOOM ANGLE (deg)	44 ft JIB (lb)
40	73.3	3,300		
45	70.7	2,250		
50	68	1,450	72.5	2,250
55	65.4	850	70	1,550
60			67.5	1,000
65			65.1	550

RATED LOAD REDUCTIONS WITH STOWED JIB

BOOM LENGTH (ft)	25 – 44 ft JIB STOWED
32	Reduce load 800 lb
46	Reduce load 600 lb
61	Reduce load 450 lb
76	Reduce load 350 lb
90	Reduce load 300 lb
105	Reduce load 250 lb

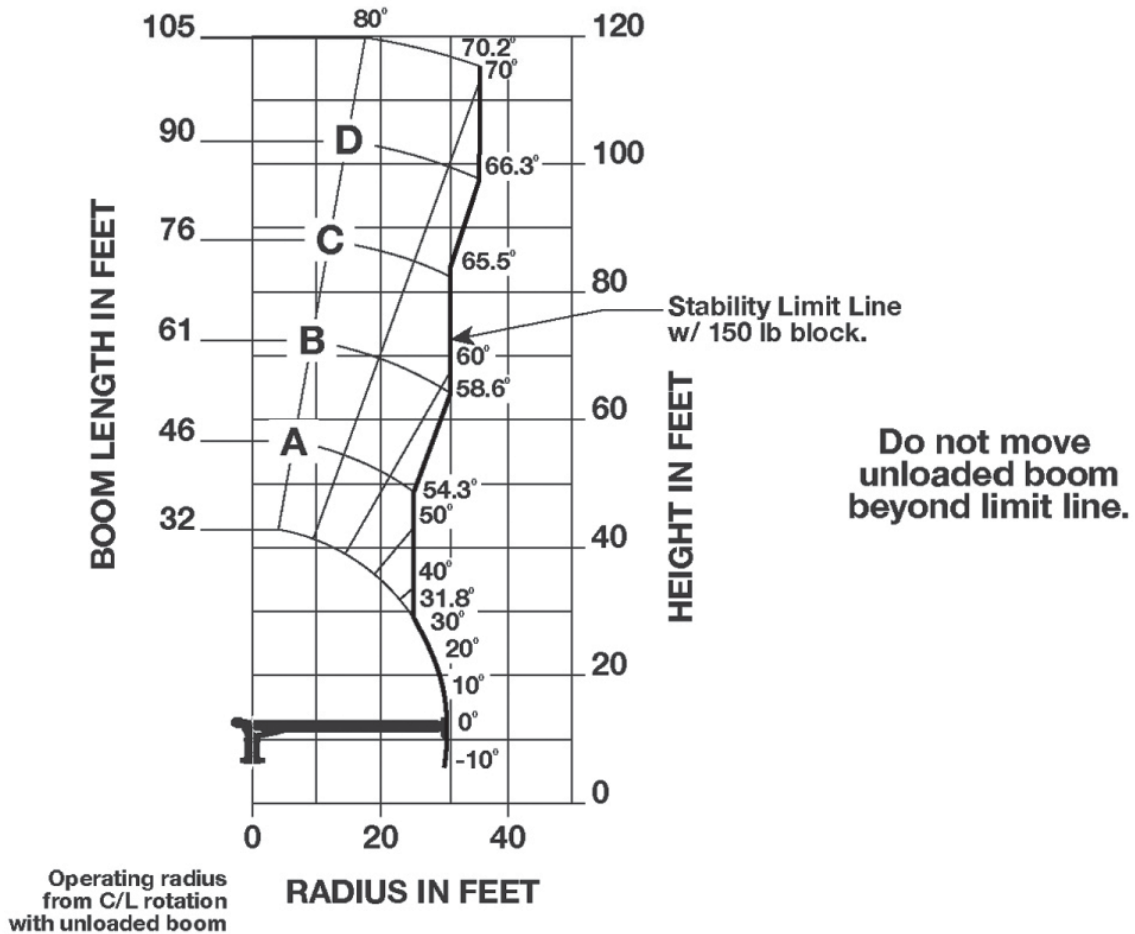
Note:

1. All capacities are in pounds, angles in degrees, and radii in feet.
2. Loaded boom angles are given as reference only.
3. Shaded areas are structurally limited capacities.
4. Handling of personnel is only permitted with full span extension of all outrigger and stabilizer beams.

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9105H
105 ft BOOM
NO JIB
RETRACTED OUTRIGGER 8 ft
RETRACTED STABILIZER 8 ft

LMI OPERATING CODE	
OPERATING MODE	
31	Main Boom
32	Main Boom - Jib Stowed



SET-UP

1. Set outriggers and stabilizers to retracted location, level crane and set optional front stabilizer, if equipped.

OPERATION

1. The 32 ft boom length capacities are based on boom fully retracted. If not fully retracted, do not exceed 32 ft boom length capacities.
2. Do not extend unloaded boom beyond stability limit line on range chart as loss of stability may occur.
3. Load blocks and slings are considered to be a part of the load.

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9105H 105 ft BOOM NO JIB RETRACTED OUTRIGGER AND STABILIZER



32 ft – 105 ft BOOM RATED LOADS WITHOUT JIB

LOADED RADIUS (ft)	LOADED BOOM ANGLE (deg)	32 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	A 48 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	B 61 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	C 76 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	D 90 ft BOOM (lb)	LOADED BOOM ANGLE (deg)	105 ft BOOM (lb)
5	77.2	54,000										
8	71.5	25,500	77.6	26,450								
10	67.6	15,950	74.9	12,990								
12	63.6	11,000	72.2	8,950	76.9	11,950						
14	59.4	7,950	70.1	6,450	74.9	8,900	78.2	9,100				
16	56	5,900	67.4	4,800	73.4	6,800	76.9	7,000				
20	46.6	3,450	61.8	2,750	69.3	4,250	73.7	4,450	76.8	4,560		
25	31.8	1,500	54.3	1,250	64.1	2,300	69.7	2,500	73.4	2,650	76.2	2,750
30					58.6	1,100	65.5	1,250	69.9	1,400	73.2	1,500
35									66.3	550	70.2	650

RATED LOAD REDUCTIONS WITH STOWED JIB

Note:

1. All capacities are in pounds, angles in degrees, and radii in feet.
2. Loaded boom angles are given as reference only.
3. Shaded areas are structurally limited capacities.
4. Handling of personnel is only permitted with full span extension of all outrigger and stabilizer beams.

BOOM LENGTH (ft)	25 – 44 ft JIB STOWED
32	Reduce load 800 lb
48	Reduce load 600 lb
61	Reduce load 450 lb
76	Reduce load 350 lb
90	Reduce load 300 lb
105	Reduce load 250 lb

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⚠ DANGER

GENERAL

1. This equipment can be hazardous if improperly maintained or operated. Read and comply with the Operator's Manual supplied with this machine for information on safety, operation and maintenance before operating this machine. If these manuals are missing, order replacements from National Crane through the distributor.
2. Rated loads shown on the capacity chart pertain to this machine as originally manufactured and equipped. Modifications to the machine or use of equipment that is not factory specified or approved can be hazardous. Refer to capacity deduction chart for weights which must be deducted from rated loads when accessories are attached to boom or loadline.

SET-UP

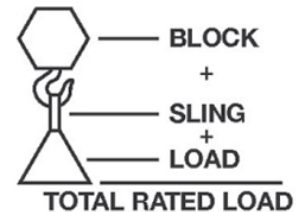
1. Inspect vehicle and crane including crane operation prior to use each day.
2. Load ratings shown on the appropriate charts are maximum allowable loads with the crane mounted on a factory approved truck and all outriggers at either full span, at mid span range, or retracted and set on a firm level surface so the crane is level and the tires are suspended. This machine is not rated for use without outriggers. Mid span must be pinned.
3. Depending on the nature of the supporting surface, structural supports under the outrigger floats may be necessary to spread the load to a larger bearing surface.
4. Always level the crane with the level indicator, located at the outrigger control station.

OPERATION

1. Operation of this equipment in excess of maximum load rating and disregard of instructions is hazardous. Always refer to the capacity chart for load and area limits before operating the crane. Rated loads at rated radius shall not be exceeded. Overloading this crane may cause structural collapse or instability.
2. Use the LMI / angle indicator as a reference only. When lifting maximum loads, measure radius and be certain of load weight.
3. Full extended outrigger rated loads do not exceed 85% of the tipping load as determined by SAE Crane Stability Test Code J765a when mounted on a factory recommended truck. Mid span and retracted outrigger stability loads are determined per SAE J1289 APR81. Structurally limited ratings on the capacity chart are shaded. Stability limited loads are not shaded. Machine will not always tip before structural damage occurs.

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4. Rated loads include the weight of the hook block, slings, and other lifting devices. Their weights must be subtracted from the listed rated load to determine the net load that can be lifted.
5. Rated loads must be reduced when lifting at the boom tip with a jib stowed. Refer to the chart labeled "Rated Load Reductions With Jib (lb)" for the reduction at each boom length.
6. Rated loads are based on freely suspended loads. Always position the boom tip directly over the load before lifting. No attempts shall be made to push down with the boom or move the load sideways in any direction by pulling or dragging the load.
7. The user shall operate at reduced ratings to allow for adverse job conditions such as soft or uneven ground, high winds or erratic operation which produce swinging (side) loads, experience of personnel, two machine lifts, or other hazardous conditions for safe operation.
8. Rated loads account for wind to 20 mph on the boom capacities and to 15 mph on jib capacities. Above these wind velocities, loads, and/or boom lengths must be appropriately reduced for safe operation.
9. Do not operate at any radii beyond stability limit line on range chart. At these positions, the machine can overturn without any load on the hook.
10. When the boom length or radius or both are between points listed on capacity chart, the smallest load shown at either the next larger radius or boom length shall be used.
11. Do not exceed jib capacities at any reduced boom length.
12. It is safe to telescope or retract any load listed if rating is not exceeded. Boom must be fully retracted against boom stops at all times when lifting minimum boom length capacity loads.
13. Always pay out loadline before extending boom to avoid damaging loadline or crane structure.
14. Loads lifted must be within safe winch capacity as well as safe crane capacity. Multiple part rope reeving must be used on loads exceeding winch single part rated pull. Jibs are rated for single part use only.
15. Do not operate the boom over personnel or allow them to walk or stand beneath the boom or load.
16. Do not allow personnel on carrier deck, or crane frame area when rotating crane.
17. Do not handle personnel on loadline unless the requirements of the applicable national, state, and local regulations and safety codes are met. Do not permit anyone to ride loads, hooks, slings or other rigging for any reason. Handling of personnel is only permitted with full extension of all outrigger beams. Use only National Crane approved baskets.



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18. Operate controls slowly and smoothly to avoid damage to crane or personnel.
19. Boom must be in carrying rack and outriggers fully retracted for travel.
20. Maintain a clearance of at least 10 feet between any part of the crane, loadline or load and any electrical line carrying up to 50,000 volts. 1 foot additional clearance is required for every additional 30,000 volts or less.

DEFINITIONS

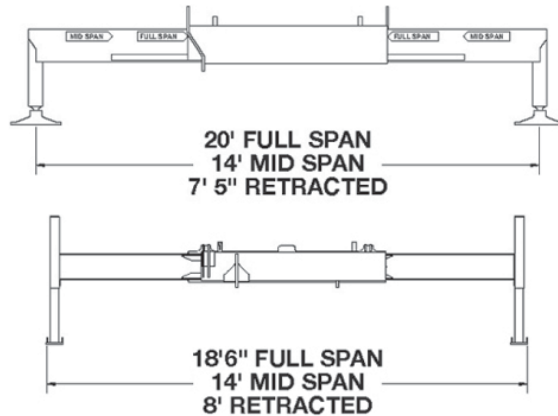
1. **Load radius**—Horizontal distance from the centerline of rotation before loading to the center of the vertical loadline or block with load applied.
2. **Loaded boom angle**—Loaded boom angle is the angle between the first section boom and the horizontal, after lifting the rated load at the rated radius. The boom angle before loading should be greater to account for deflections. The loaded boom angle combined with the boom length give only an approximation of the operating radius.
3. **Working area**—Area measured in a circular arc above the center line of rotation as shown on the Working Area Diagram.
4. **Freely suspended load**—Load hanging free with no direct external force applied except by the loadline.
5. **Side load**—Horizontal side force applied to the lifted load either on the ground or in the air.
6. **No load stability limit**—The stability limit radius shown on the range diagrams is the radius beyond which it is not permitted to position the boom plus block configuration because machine can overturn without any load on the hook.
7. **Structural length limit**—An area where the boom or the boom with jib deployed cannot be extended because of structural limitations.
8. **SAE - Society of Automotive Engineers**

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INFORMATIONAL DATA

OUTRIGGERS AND STABILIZERS

1. Outrigger spread from center to center of the outrigger floats retracted is 7' 5", at mid span is 14' and at full span is 20'.
2. Stabilizer spread from outside to outside of pads retracted is 8', at mid span is 14' and at full span is 18' 6".
3. No outrigger pad load exceeds 58,000 lb maximum at full span, 63,500 lb maximum at mid span, or 80,200 lb maximum at retracted.



WEIGHT REDUCTIONS FOR LOAD HANDLING DEVICES (See load chart for jib deductions)

Hookblocks are rated at maximum capacity for the block. Do not exceed rated cable pull with any block.

5 t	Downhaul weight	150 lb
12 t	1 sheave block	305 lb
19 t	2 sheave block	350 lb
30 t	3 sheave block	575 lb

NOTICE			1 Part Line	2 Part Line	3 Part Line	4 Part Line	5 Part Line	6 Part Line	7 Part Line
<ul style="list-style-type: none"> 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 high speed winch is 3,000 lb. 									
Maximum Boom Length at Maximum Elevation with Rigging Shown with Load Block at Ground Level			154 ft Boom & Jib	105 ft	90 ft	76 ft	61 ft	46 ft	32 ft
Winch	Cable Supplied	Average Breaking Strength	Lift and Speed	Lift and Speed	Lift and Speed	Lift and Speed	Lift and Speed	Lift and Speed	Lift and Speed
Low Speed Winch	9/16" diameter rotation resistant	38,500 lb	7,700 lb 160 fpm	15,400 lb 80 fpm	23,100 lb 53 fpm	30,800 lb 40 fpm	38,500 lb 32 fpm	46,200 lb 27 fpm	54,000 lb 23 fpm
High Speed Winch	9/16" diameter rotation resistant	38,500 lb	3,000 lb 310+ fpm	6,000 lb 155 fpm	9,000 lb 103 fpm	12,000 lb 78 fpm	15,000 lb 62 fpm	18,000 lb 52 fpm	21,000 lb 44 fpm

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. These are shown below:

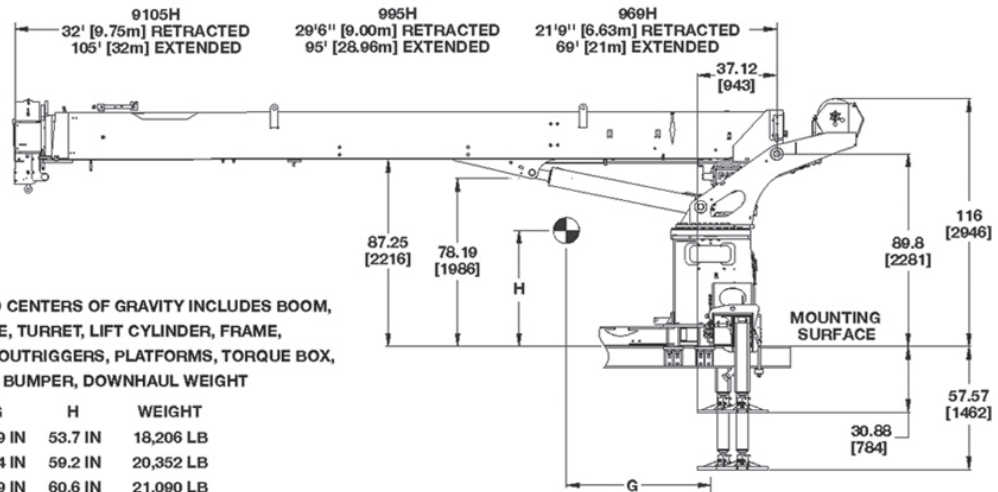
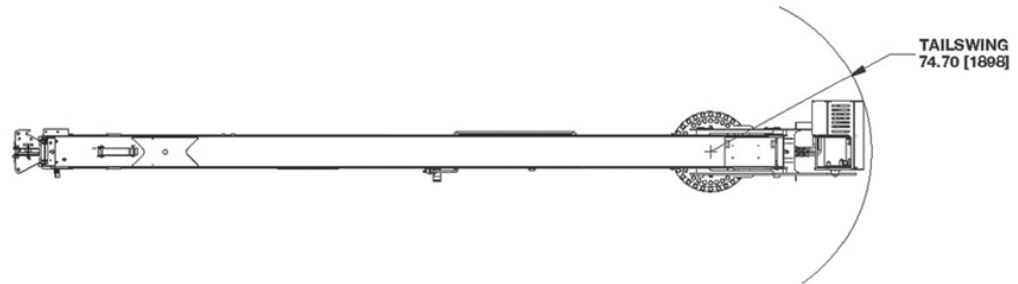
Winch
Standard planetary

4th Layer Drum Pull
7,700 lb (low speed)
(3,000 lb "burst of speed")

Allowable Cable Pull
7,700 lb

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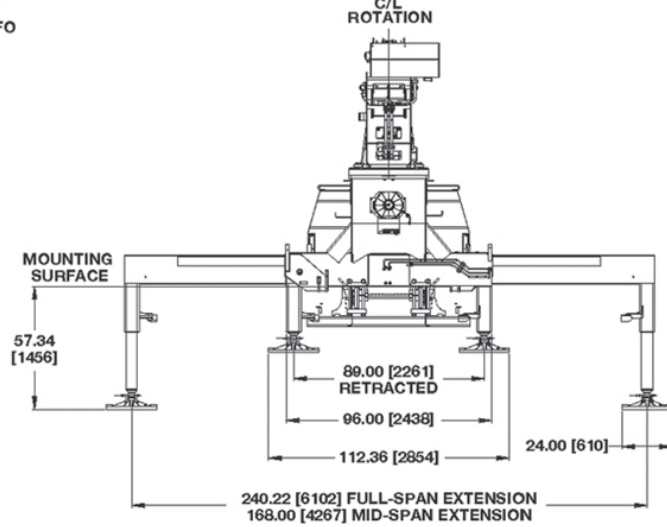
DIMENSIONAL SPECIFICATIONS



WEIGHT AND CENTERS OF GRAVITY INCLUDES BOOM, WINCH, ROPE, TURRET, LIFT CYLINDER, FRAME, CONTROLS, OUTRIGGERS, PLATFORMS, TORQUE BOX, BOOM REST, BUMPER, DOWNHAUL WEIGHT

	G	H	WEIGHT
969H	66.9 IN	53.7 IN	18,206 LB
995H	95.4 IN	59.2 IN	20,352 LB
9105H	104.9 IN	60.6 IN	21,090 LB

ABOVE WEIGHTS AND CENTERS OF GRAVITY DO NOT INCLUDE RESERVOIR, RSOD, JIB, PTO, PUMP, BED, SFO



NOTE: ALL DIMENSIONS ARE IN INCHES [mm] UNLESS