



## features

- 22 Ton (20 mton) Capacity
- 4-Section 101' (30,8 m) Proportional Boom
- 3-Section 77' (23,5m) Proportional Boom
- 29' (8,8 m) Fixed Jib
- 29' (8,8 m) to 52' (15,9) Telescopic Jib
- 139' 10" (42,6 m) Maximum Tip Height
- Self-Lubricating Slider Pads
- Continuous Rotation
- Retracted, Intermediate and Fully Extended Outrigger Charts are Standard
- Pilot Operated Controls
- 2-Speed Planetary Hoist with Grooved Drum and Negative Draft Flange
- Load Moment Indicator features Digital Display, CAN Bus Interface and Internal Boom Length Cable (101' boom only)
- Hydraulic Capacity Alert System (77' Boom only)
- Overload Shutdown
- Radio ATB
- Radio Load Cell Option
- Rugged Weatherproof Electrical
- System with Circuit Status LEDs
- System Pressure Gauge
- Optional Cab; Heater and Air Conditioner options
- Clamp-On Mounting
- Manitex UPTIME Comprehensive Support

# series 2202

## BOOM TRUCKS



# product guide

# series 2202

## GENERAL SPECIFICATIONS

### BOOM

Inverted T-cross section, 3 or 4-section telescoping type, extended and retracted proportionally by a double-acting hydraulic cylinder and cable-crowd system. Equipped with easily replaceable teflon-plugged nylatron wear pads for smooth operation.

**22101S** – 4-section 29'6" (9m) to 101' -6" (30,9m). 1-Section, 29' (8,8 m) jib

**2277S** – 3-section 29' (8.8 m) to 77' (23,5 m). 1-Section, 29' (8,8 m) or 2-Section 29' (8,8 m) -52' (15,9 m) jib options

**Quick Reeve Boom Point** – Three high-density nylon load sheaves mounted on heavy-duty roller bearings. Two removable pin-type rope guards.

**Boom Elevation** – Double-acting hydraulic cylinder. Working range from 9.5° below horizontal to 80.5° above.

**Load Hook** – 5-ton (4,5 mton) capacity hook with heavy-duty swivel and weight is provided for single-line operation.

### HOIST

Maximum theoretical line speed 300 fpm (91 mpm). Maximum theoretical bottom-layer line pull 11,500 lb (5 216 kg). Two-speed planetary reducer with wet multi-disc spring applied, pressure-released internal brake and grooved drum.

**Wire Rope** – 300' (91,4 m) of 9/16" (14,3 mm) diameter 6 X 25 EIPS IWRC.

### SWING SYSTEM

Externally mounted, double-reduction planetary gearbox driven by hydraulic motor. Maximum swing speed 1.5 rpm. Spring-applied hydraulically-released Parking Brake. Ball-bearing swing circle with external gear. Continuous rotation is standard. Manitex ACCUSwing control allows operator to adjust crane swing speed up to a maximum of 1.5 rpm (nominal).

### OUTRIGGERS

Out-and-down style outriggers, operated independently for precise leveling. Fully extended, intermediate extension and fully retracted positions. 12" (305 mm) diameter floats. Bubble level located near outrigger controls.

### MOUNTING

Lower frame is mounted to chassis by threaded rods and clamp plates. No welding, drilling, or bolting to truck frame is required.

**Rear Underride Protection** – Supplied on factory mounted cranes. Fabricated structure mounted at rear of carrier. Complies with Bureau of Motor Carrier Safety Standard 393.86.

**Lower Frame** – Torsion resistant, rigid 4-plate design with integrated outrigger and pedestal.

**Boom Rest** – Heavy-duty fabrication, removable.

### CONTROL SYSTEM

Single operator platform and seat mounted to turret. Four "pilot operated" single-axis crane controls provide precise metering and multifunction capability. Swing is further refined using Manitex ACCUSwing control to allow setting to individual operator preference. Controls are arranged in accordance with ANSI B30.5 standards. The operator station also includes engine start/stop, air foot throttle, signal horn, load moment indicator display, boom angle indicator, load chart and range diagram. Enclosed cab optional, heater and air conditioner options also available.

### HYDRAULICS

**Hydraulic System** – A 3-section pump direct-mounted to power take-off on truck transmission provides 32 gpm (123 lpm) to the hoist, 21 gpm (78 lpm) to the boom hoist and telescope circuit, and 10 gpm (38 lpm) to the swing and outrigger circuit. 70-gallon (265 liter) baffled hydraulic reservoir with strainer and 25-micron filter in the return line. Ball-type shutoff valve and strainer are provided in suction line. Use of SAE O-ring and face seal O-ring hydraulic fittings throughout system.

**Hydraulic Cylinders** – All load-holding cylinders are equipped with integral holding valves.

### WARNING SYSTEMS

**Hydraulic Capacity Alert System (HYCAS)** – For model 2277S; hydraulically senses boom hoist cylinder pressure, audio warning indicates overload condition and overload shutoff feature prevents continuing overload.

**Load Moment Indicator (LMI)** – For model 22101S; CAN bus system maximize expansion capabilities. Senses boom hoist cylinder pressure, boom length and boom angle. Audio-visual warning indicates overload conditions and overload shutoff feature prevents continuing overload. Operator can access all load conditions via display at the operator station. Internal boom length cable.

**Radio Anti-Two-Block System** – Audible warning and shutoff functions prevent hook from contacting boom point.

**Radio Load Cell** – Required option on HYCAS machines for jib operations, includes wireless transmitter and receiver/display. Screen displays weight of load on crane hook; intended as an operator aid, helps prevent against jib overloads.

**Back-Up Alarm** – Electronic audible motion alarm activated when truck transmission is in reverse gear.

### GENERAL

**Electrical** – State-of-the-art, weather-resistant components throughout. Hermetically sealed power in relays. Enclosure includes power in relays and circuit status LEDs. Designed to withstand high pressure washing and varying climates.

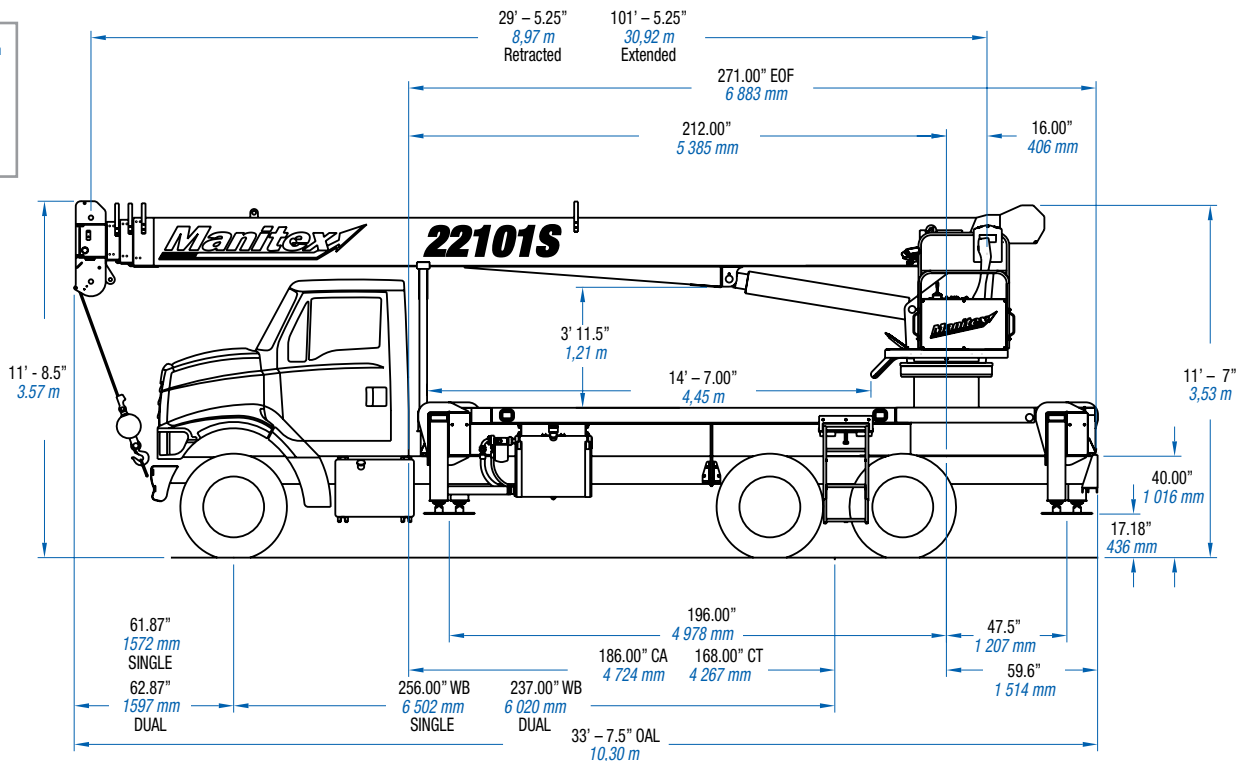
**Design/Welding** – Design conforms to ANSI B30.5. Welding conforms to AWS D1.1. Tested to SAE 1063 and SAE 765.

**Manuals** – Operator / maintenance and parts manuals depict correct crane operation, maintenance procedures and parts listing.

**Warranty** – 12-month warranty covers parts and labor resulting from defects in material and workmanship.

\* In order to ensure continuous improvement, specifications may change without notice.

OAH	Overall Height
CT	Cab to Tandem
CA	Cab to Axle
WB	Wheel Base
OAL	Overall Length
BBC	Bumper to Back of Cab
AF	Afterframe
EOF	End of Frame

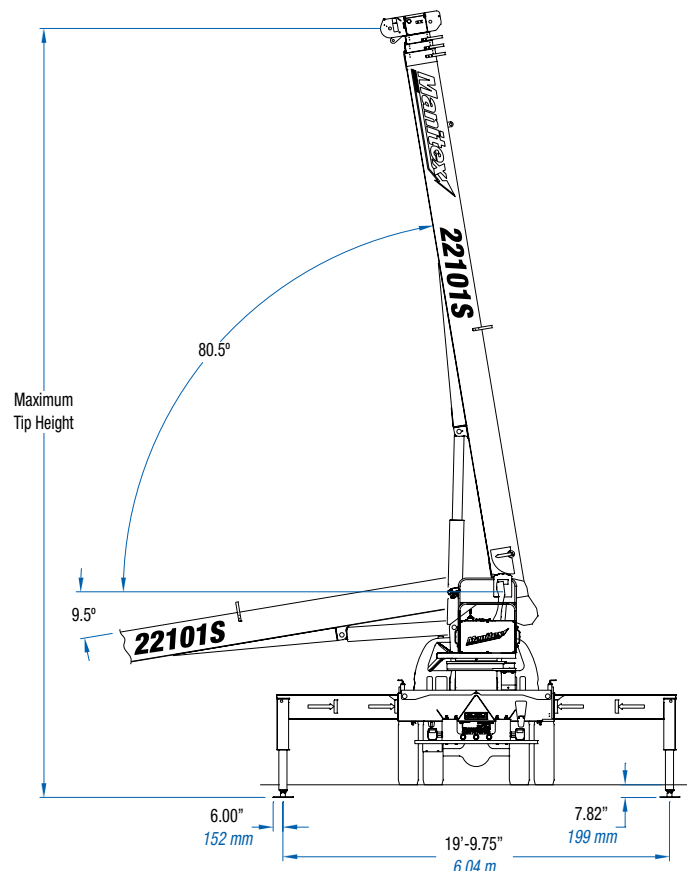


CHASSIS DATA	22101S SINGLE AXLE	22101S TANDEM AXLE	2277S TANDEM AXLE
Wheelbase (WB)	<b>256"</b> 6 502 mm	<b>237"</b> 6 020 mm	<b>237"</b> 6 020 mm
Cab to Axle (CA)	<b>186"</b> 4 724 mm	-	-
Cab to Tandem (CT)	-	<b>168"</b> 4 267 mm	<b>168"</b> 4 267 mm
Cab to End of Frame (EOF)	<b>271"</b> 6 883 mm	<b>271"</b> 6 883 mm	<b>271"</b> 6 883 mm
Frame Section Modulus at 180° Area of Operation	<b>15.9 in3</b> 110,000 psi 758 422 kPa	<b>15.9 in3</b> 110,000 psi 758 422 kPa	<b>15.9 in3</b> 110,000 psi 758 422 kPa
Frame Section Modulus * at 360° of Operation	<b>18.0 in3</b> 50,000 psi 344 750 kPa	<b>18.0 in3</b> 50,000 psi 344 750 kPa	<b>18.0 in3</b> 50,000 psi 344 750 kPa
Front Axle Gross Weight Rating	<b>CONSULT</b>  <b>FACTORY</b>	<b>12,000 lb</b> 5 443 kg	<b>12,000 lb</b> 5 443 kg
Rear Axle Gross Weight Rating		<b>34,000 lb</b> 15 422 kg	<b>34,000 lb</b> 15 422 kg
Minimum Truck Axle Weight - Front**		<b>6,800 lb</b> 3 084 kg	<b>5,750 lb</b> 2 608 kg
Minimum Truck Axle Weight - Back**		<b>7,400 lb</b> 3 357 kg	<b>6,750 lb</b> 3 062 kg
Nominal Frame Width	<b>34"</b> 864 mm	<b>34"</b> 864 mm	<b>34"</b> 864 mm

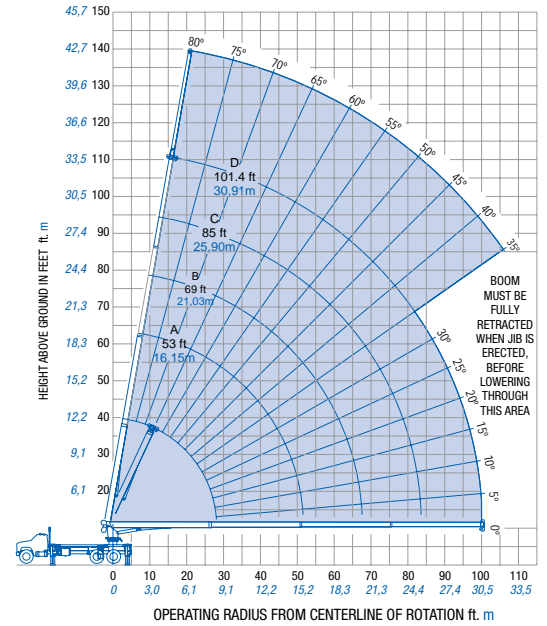
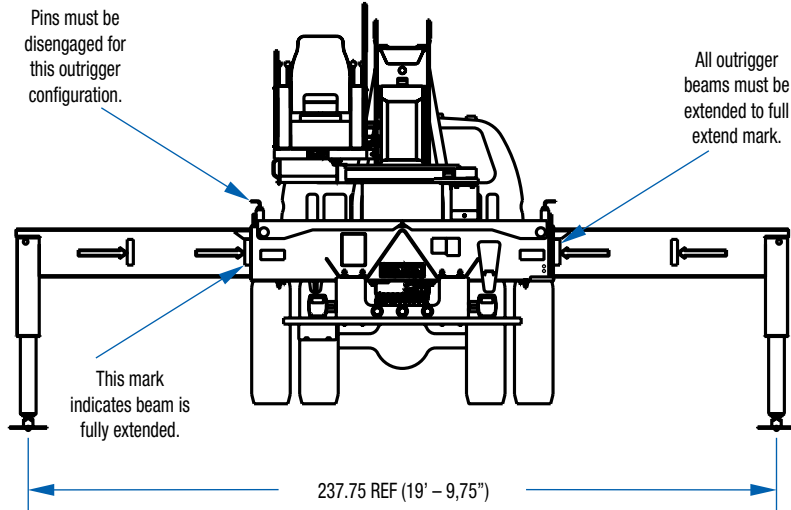
\*Frame section modulus at 360° area of operation requires front bumper stabilizer.  
\*\*Minimum chassis weight is required to meet 85% stability requirements.  
Chassis data is general - not for engineering. Some dimensions depend on truck selection.

MAXIMUM TIP HEIGHT (A)	22101S	2277S
Configuration	<b>Boom 101'</b> 30,8 m	<b>Boom 77'</b> 23,5 m
Extended Boom	<b>110' 8"</b> 33,7 m	<b>86' 4"</b> 26,3 m
Fixed Jib	<b>139' 10"</b> 42,6 m	<b>115' 6"</b> 35,2 m
Extended Telescopic Jib	-	<b>138'</b> 42,1 m

WEIGHTS	22101S	2277S
Crane Without Cab	<b>18,903 lb</b> 8 574 kg	<b>17,579 lb</b> 7 973 kg
Cab Alone	<b>575 lb</b> 261 kg	<b>575 lb</b> 261 kg
13' (4,0 m) Flat Bed	<b>1,200 lb</b> 544 kg	<b>1,200 lb</b> 544 kg
29' (8,8 m) Fixed Length Jib	<b>660 lb</b> 299 kg	<b>820 lb</b> 372 kg
29'-52' (8,8 m-15,9 m) Telescopic Jib	-	<b>1,285 lb</b> 583 kg



Use this chart only when ALL outriggers are fully extended.



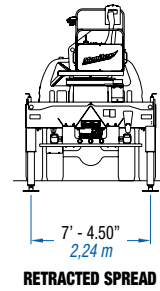
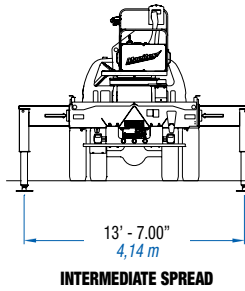
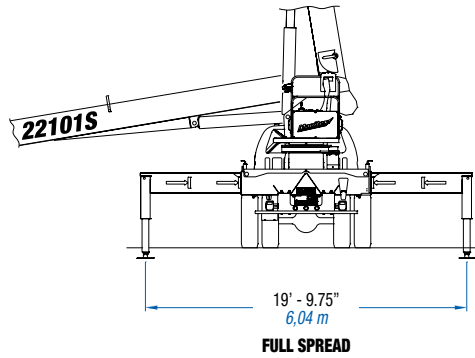
### FULLY EXTENDED OUTRIGGER SPREAD: MODEL 22101S

#### MAIN BOOM LOAD RATINGS

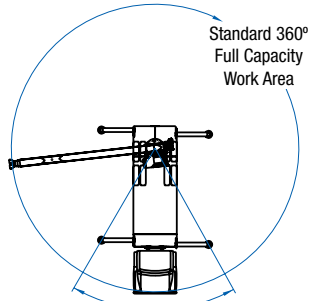
#### JIB

Operating Radius	Boom Length		A		B		C		D		Fixed Jib								
	29.4 Feet 8,96 Meters	53 Feet 16,15 Meters									29.4 Feet 8,96 Meters								
Feet	Meters	°	lb.	kg.	°	lb.	kg.	°	lb.	kg.	°	lb.	kg.						
5	1,52	80	44,000	19 958															
8	2,44	74	33,540	15 213															
10	3,05	70	28,140	12 764															
12	3,66	66	24,230	10 991	78	14,000	6 350												
14	4,27	61	20,460	9 280	76	14,000	6 350	80	14,000	6 350									
17	5,18	54	16,400	7 439	72	14,000	6 350	78	12,880	5 842									
20	6,10	46	13,520	6 133	69	13,700	6 214	75	11,430	5 185	79	8,920	4 046						
25	7,62	29	10,210	4 631	63	10,600	4 808	71	9,460	4 291	75	8,000	3 629	79	6,000	2 722			
30	9,14				56	8,390	3 806	66	8,210	3 724	72	7,070	3 207	76	5,500	2 495	80	3,000	1 361
35	10,66				49	6,790	3 080	61	6,890	3 125	68	6,130	2 781	73	4,980	2 259	78	2,840	1 288
40	12,19				41	5,590	2 536	56	5,700	2 585	65	5,320	2 413	70	4,490	2 037	76	2,620	1 188
45	13,71				31	4,640	2 105	51	4,760	2 159	61	4,640	2 105	67	4,000	1 814	73	2,420	1 098
50	15,24				17	3,880	1 760	45	4,000	1 814	57	4,070	1 846	64	3,580	1 624	71	2,230	1 012
55	16,76							38	3,380	1 533	52	3,450	1 565	61	3,200	1 451	69	2,020	916
60	18,28							30	2,860	1 297	47	2,930	1 329	57	2,850	1 293	67	1,840	835
65	19,81							19	2,410	1 093	42	2,490	1 129	54	2,520	1 143	64	1,670	757
70	21,33										36	2,090	948	50	2,130	966	62	1,520	689
75	22,86										29	1,740	789	45	1,790	812	59	1,380	626
80	24,38										20	1,440	653	41	1,500	680	56	1,230	558
85	25,90													36	1,240	562	53	1,080	490
90	27,43													30	1,020	463	50	950	431
95	28,96													22	820	372	47	830	376
100	30,48																44	720	327
105	32,00																40	570	259
110	33,53																36	430	195
			340 lbs 154 kg		190 lbs 86 kg		150 lbs 68 kg		120 lbs 54 kg		100 lbs 45 kg						DEDUCTIONS FOR STOWED JIB		

Meets ANSI B30.5 Requirements - Do not operate crane or accessories within 10' (3,05m) of live power lines.  
 NOTICE: This chart is for reference only and must not be used for lifting purposes. Consult factory for other boom options.



### AREA OF OPERATION



#### WARNING

The front tires must be in contact with the ground and the machine level when operating in this area.

### DEDUCTIONS

Auxiliary Block	<b>50 lb</b> <b>22,72 kg</b>
Load Block	<b>See block manufacturer nameplate</b>
Overhaul Ball	<b>See overhaul ball manufacturer nameplate</b>
Hose Reel	<b>160 lb</b> <b>72,57 kg</b>
Swing Around Jib (Stowed)	<b>See load rating chart</b>

### ALLOWABLE LINE PULL

1 Part Line	2 Part Line	3 Part Line	4 Part Line	5 Part Line	6 Part Line	<b>WARNING</b>	
							Anti-two-block system must be in good operating condition before operating crane.
<b>8,500 lb</b> <b>3 856 kg</b>	<b>17,000 lb</b> <b>7 711 kg</b>	<b>25,500 lb</b> <b>11 567 kg</b>	<b>34,000 lb</b> <b>15 422 kg</b>	<b>42,500 lb</b> <b>19 278 kg</b>	<b>44,000 lb</b> <b>19 958 kg</b>		Refer to the owner's manual.
<b>7,400 lb</b> <b>3 357 kg</b>	<b>14,800 lb</b> <b>6 713 kg</b>	<b>22,200 lb</b> <b>10 070 kg</b>	<b>29,600 lb</b> <b>13 426 kg</b>	<b>37,000 lb</b> <b>16 783 kg</b>	<b>44,000 lb</b> <b>19 958 kg</b>	Keep at least three wraps of load line on the drum at all times.	
						.5625" 6 x 25 IWRC (3.5:1 SF) - 29750 lb minimum breaking strength	
						.5625" rotation resistant (5.0:1 SF) - 37000 lb minimum breaking strength	

### BOOM AND JIB COMBINATIONS

2277S	77'	3 Section Boom	29' - 52'	2 - Section Jib
22101S	101'	4 Section Boom	29'	1 - Section Jib

**UPTime is the Manitex commitment to complete support of thousands of units working every day.**

## ***UPTime***

- Includes 24-7-365 parts and service assistance.
- Utilizes the efficiency of the Manitex Online Parts Search and Order System.
- Relies on Manitex's UPTrak support tracking system for performance analysis and resource allocation.
- Provides expert service technicians for troubleshooting and site visits.
- Mandates training; at our facility and yours. It includes coordinated support from all component suppliers.
- Involves every Manitex team member in the support of every Manitex customer.

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**UPTime** means reliability.

**UPTime** means utilization.

**UPTime** means profitability.



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MTX-2202-GUIDE-EN-V2-0608

# Load Rating Chart

***Model 22101S***

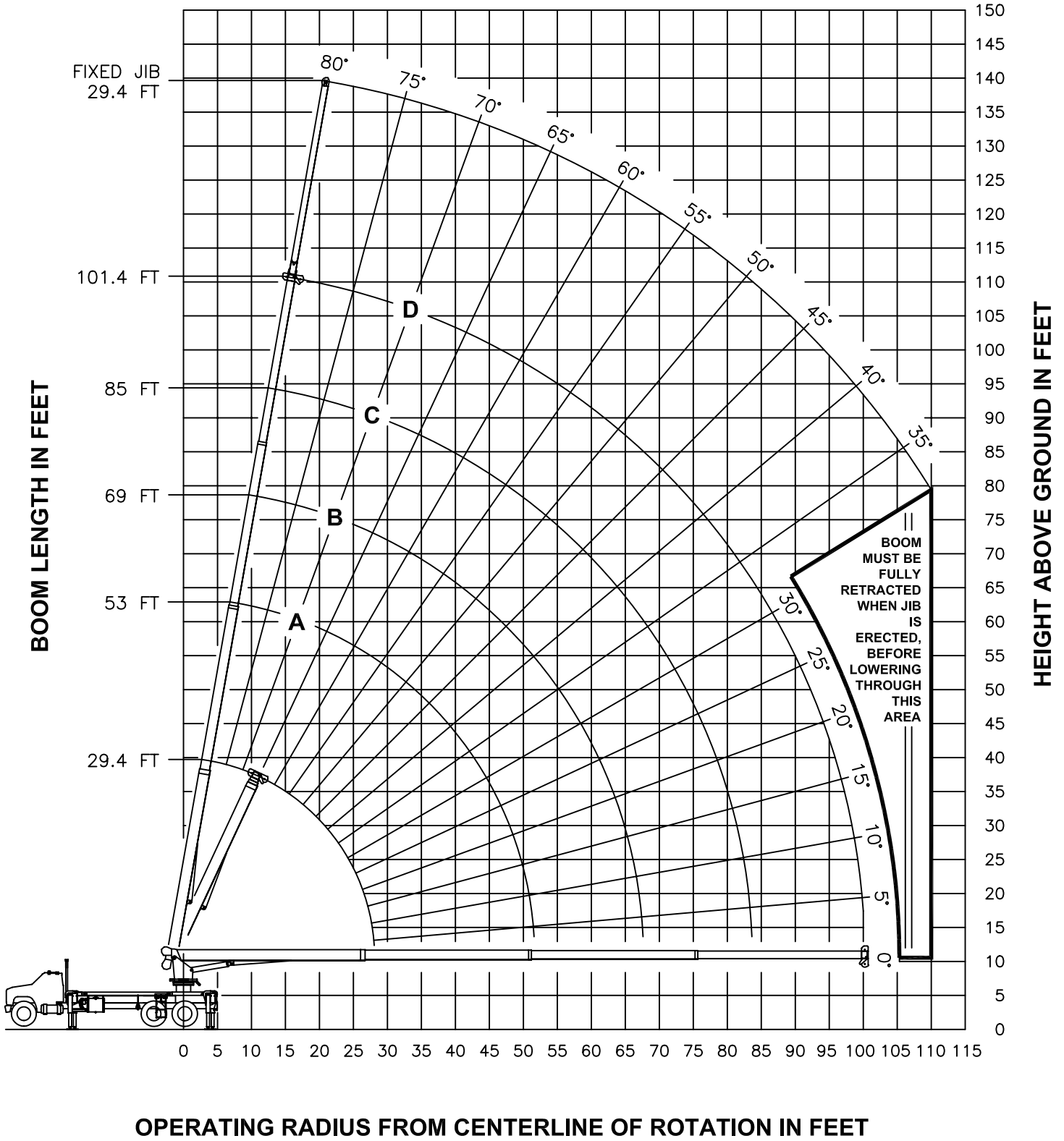



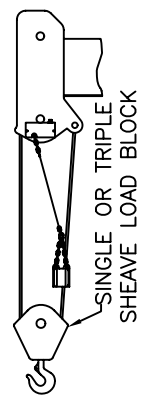
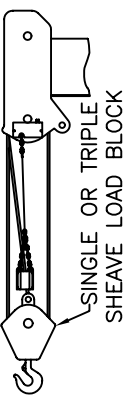
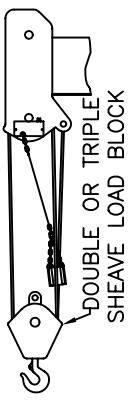


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**NOTE:** Additional copies of this Load Rating Chart can be purchased from your Manitex Distributor. When ordering, use the part number shown in the bottom left corner of this page.

# RANGE DIAGRAM - FULLY EXTENDED OUTRIGGER CONFIGURATION -

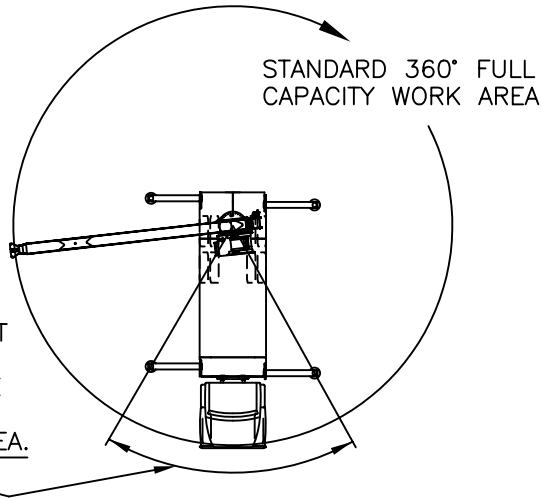


ALLOWABLE LINE PULL						<b>WARNING</b>
1 PART LINE	2 PART LINE	3 PART LINE	4 PART LINE	5 PART LINE	6 PART LINE	
						<p>ANTI-TWO-BLOCK SYSTEM MUST BE IN GOOD OPERATING CONDITION BEFORE OPERATING CRANE. REFER TO OWNER'S MANUAL.</p> <p>KEEP AT LEAST 3 WRAPS OF LOAD LINE ON DRUM AT ALL TIMES.</p>
8500 LBS	17000 LBS	25500 LBS	34000 LBS	42500 LBS	44000 LBS	
7400 LBS	14800 LBS	22200 LBS	29600 LBS	37000 LBS	44000 LBS	
						<p>9/16" - 6X25 IWRC (3.5:1 S.F.) 29750 LBS. BREAKING STRENGTH</p> <p>9/16" ROT RESISTANT (5.0:1 S.F.) 37000 LBS. BREAKING STRENGTH</p>

### AREA OF OPERATION

#### WARNING:

THE FRONT TIRES MUST BE IN CONTACT WITH THE GROUND, AND THE MACHINE LEVEL, WHEN OPERATING IN THIS AREA.



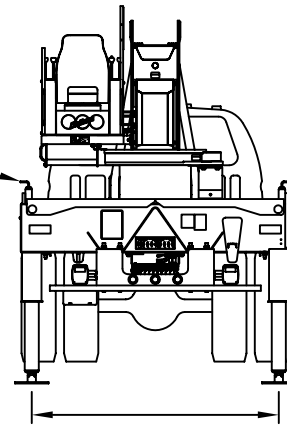
#### DEDUCTIONS FROM RATED LOADS FOR LOAD HANDLING DEVICES SUPPLIED BY MANITEX

AUXILIARY BLOCK — — — — — 50 LBS  
 OVERHAUL BALL — — — — — SEE OVERHAUL BALL MANUFACTURER NAMEPLATE  
 LOAD BLOCK — — — — — SEE BLOCK MANUFACTURER NAMEPLATE  
 HOSE REEL — — — — — 160 LBS  
 SWING AROUND JIB — — — — — SEE LOAD CHART

**USE THIS CHART  
ONLY WHEN ALL  
OUTRIGGERS ARE  
FULLY RETRACTED**

PINS MUST BE  
DISENGAGED FOR  
THIS OUTRIGGER  
CONFIGURATION

ALL OUTRIGGER  
BEAMS FULLY  
RETRACTED



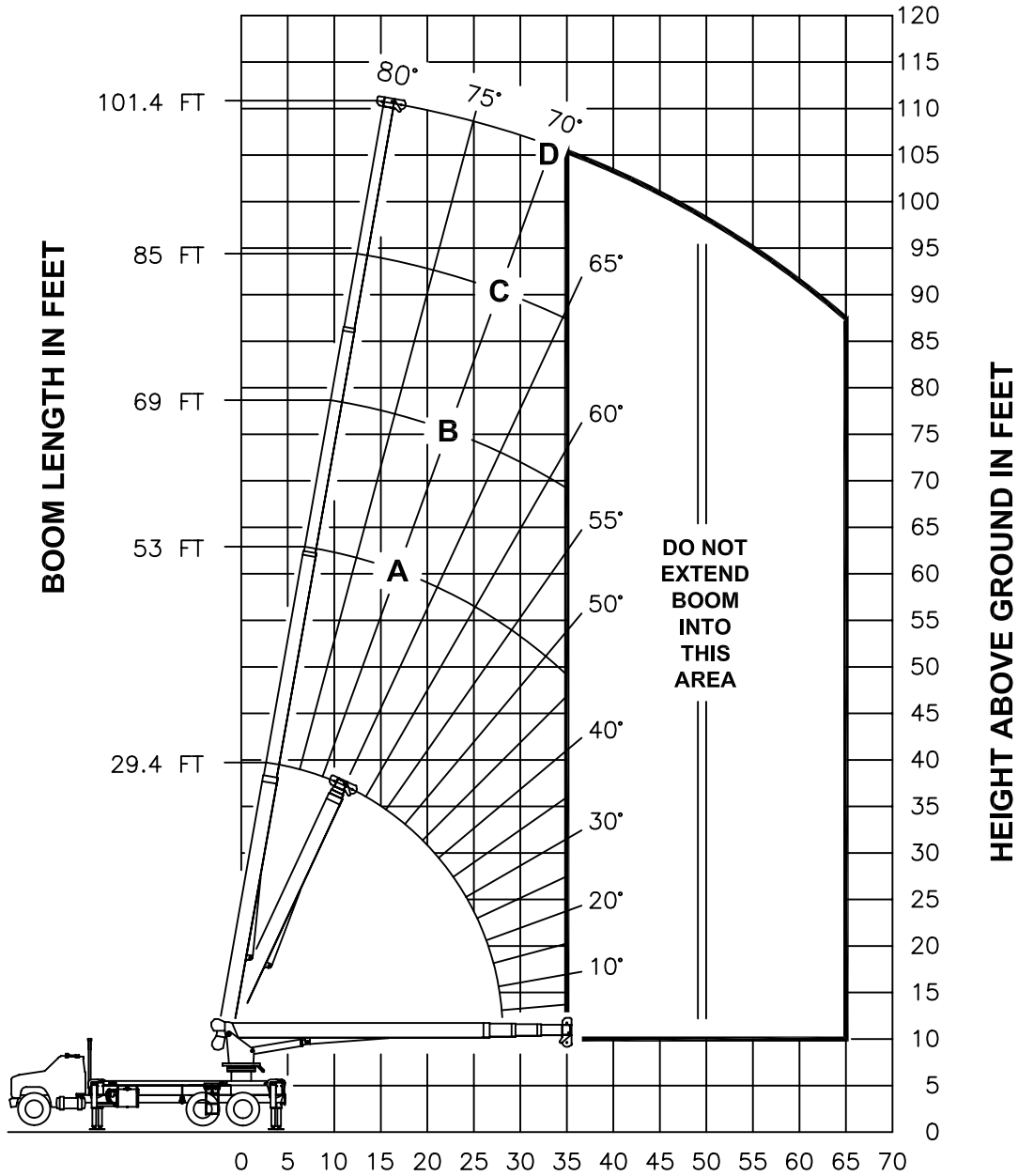
88.38 REF  
(7' 4-3/8" REF)

**- FULLY RETRACTED OUTRIGGER CONFIGURATION -**

MAIN BOOM LOAD RATINGS IN LBS												
LMI CODE #13												
O P E R A T I N G R A D I U S F T	LOADED BOOM ANGLE		BOOM LENGTH AND MARKER									
	°	FT	°	FT	A		B		C		D	
5	80	44000										
8	74	19630										
10	70	12510										
12	66	8810	78	9270								
14	61	6540	76	6970	80	7090						
17	54	4420	72	4830	78	4940						
20	46	3060	69	3470	75	3580	79	3640				
25	29	1640	63	2050	71	2160	75	2220	79	2260		
30			56	1170	66	1270	72	1330	76	1370		
35					61	670	68	730	73	770		
340 LBS.			190 LBS.		150 LBS.		120 LBS.		100 LBS.		DEDUCTIONS FOR STOWED JIB	

**NO JIBS ARE TO  
BE ERECTED IN  
THIS  
OUTRIGGER  
CONFIGURATION**

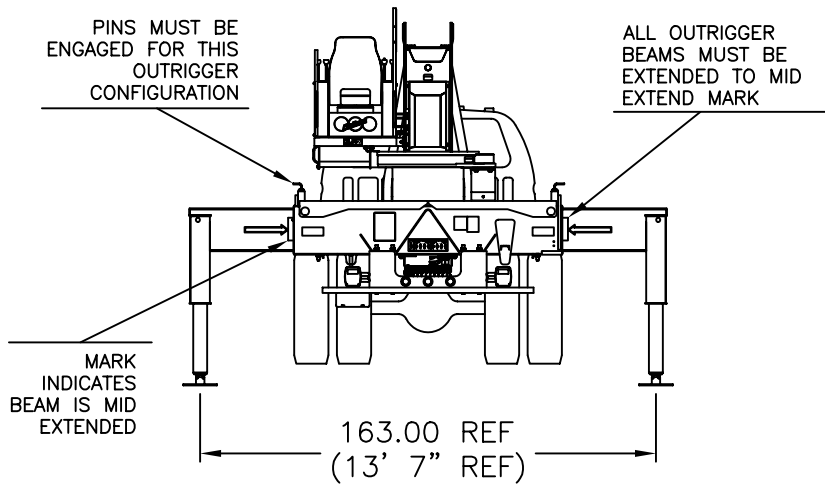
# RANGE DIAGRAM - FULLY RETRACTED OUTRIGGER CONFIGURATION -



**OPERATING RADIUS FROM CENTERLINE OF ROTATION IN FEET**

**NOTE : LIFTING PERSONNEL WITH CRANE IN THIS OUTRIGGER CONFIGURATION IS STRICTLY PROHIBITED. USE ONLY FULLY EXTENDED OUTRIGGER CONFIGURATION WHEN LIFTING PERSONNEL.**

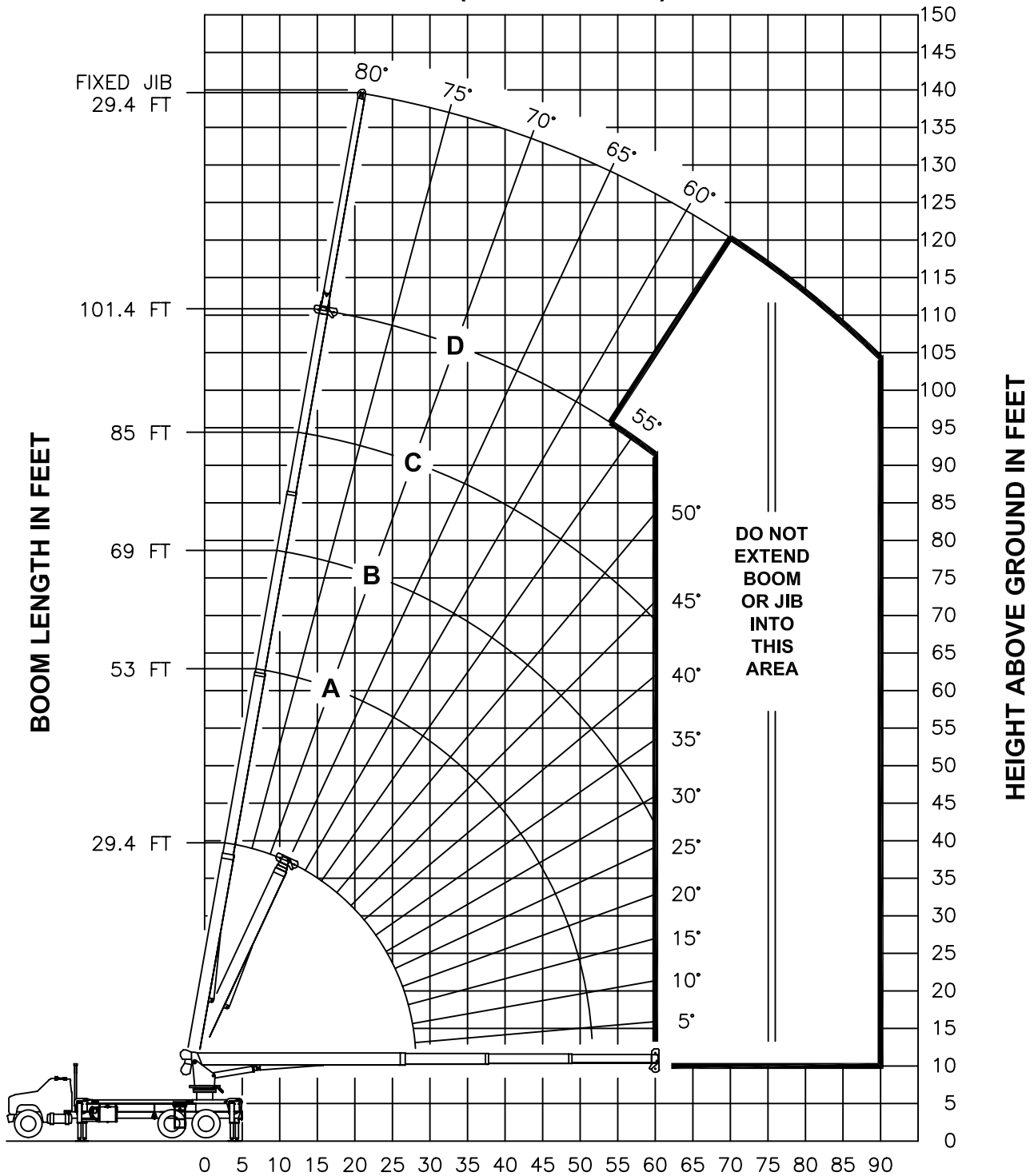
**USE THIS CHART ONLY  
WHEN ALL  
OUTRIGGERS ARE IN  
THE INTERMEDIATE  
POSITION**



**- INTERMEDIATE OUTRIGGER CONFIGURATION -  
(MID EXTEND)**

MAIN BOOM LOAD RATINGS IN LBS										JIB LOAD RATINGS IN LBS			
LMI CODE #9										LMI CODE #10			
OPERATING RADIUS FT	LOADED BOOM ANGLE BOOM LENGTH AND MARKER									OPERATING RADIUS FT	LOADED BOOM ANG LE	29.4 FT JIB FOR ALL BOOM LENGTHS  SEE WARNING NOTE 4  RATED LOAD IN POUNDS	
	∠	29.4 FT	∠	A	∠	B	∠	C	∠				D
	∠	29.4 FT	∠	53 FT	∠	69 FT	∠	85 FT	∠	101.4 FT		∠	
5	80	44000											
8	74	33540										8	
10	70	28140										10	
12	66	24230	78	14000								12	
14	61	20460	76	14000	80	14000						14	
17	54	14040	72	14000	78	12880						17	
20	46	10190	69	10690	75	10820	79	8920				20	
25	29	6560	63	7050	71	7170	75	7240	79	6000		25	
30			56	4970	66	5090	72	5160	76	5210	30	80	3000
35			49	3630	61	3750	68	3810	73	3860	35	78	2840
40			41	2690	56	2810	65	2870	70	2910	40	76	2620
45			31	1990	51	2110	61	2180	67	2220	45	73	2310
50			17	1450	45	1570	57	1640	64	1680	50	71	1770
55					38	1150	52	1220	61	1260	55	69	1350
60					30	800	47	870	57	910	60	67	1000
65											65	64	710
70											70	62	470
			340 LBS.	190 LBS.	150 LBS.	120 LBS.	100 LBS.	DEDUCTIONS FOR STOWED JIB					

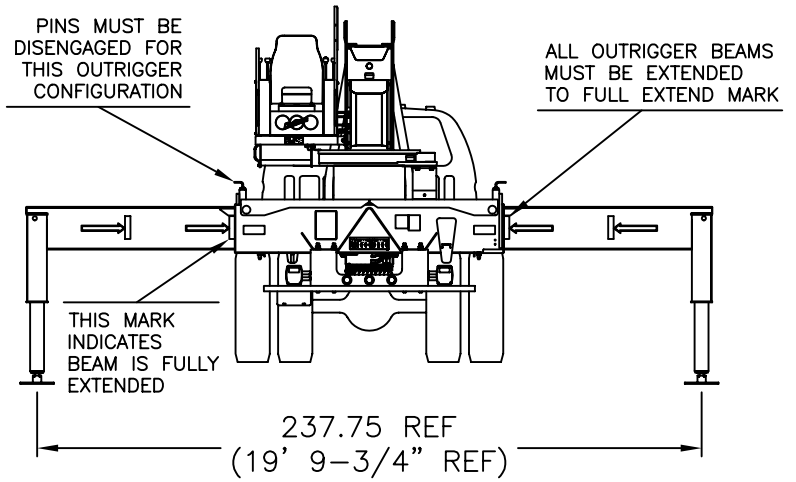
# RANGE DIAGRAM - INTERMEDIATE OUTRIGGER CONFIGURATION - (MID EXTEND)



**OPERATING RADIUS FROM CENTERLINE OF ROTATION IN FEET**

**NOTE :** LIFTING PERSONNEL WITH CRANE IN THIS OUTRIGGER CONFIGURATION IS STRICTLY PROHIBITED. USE ONLY FULLY EXTENDED OUTRIGGER CONFIGURATION WHEN LIFTING PERSONNEL.

**USE THIS CHART ONLY  
WHEN ALL  
OUTRIGGERS ARE  
FULLY EXTENDED**



**- FULLY EXTENDED OUTRIGGER CONFIGURATION -**

MAIN BOOM LOAD RATINGS IN LBS										JIB LOAD RATINGS IN LBS			
LMI CODE #1										LMI CODE #2			
OPERATING RADIUS FT	LOADED BOOM ANGLE		BOOM LENGTH AND MARKER								OPERATING RADIUS FT	BOOM ANGLE	29.4 FT JIB FOR ALL BOOM LENGTHS SEE WARNING NOTE 4
	∠	29.4 FT	∠	A	∠	B	∠	C	∠	D			
			53 FT		69 FT		85 FT		101.4 FT				
5	80	44000											
8	74	33540									8		
10	70	28140									10		
12	66	24230	78	14000							12		
14	61	20460	76	14000	80	14000					14		
17	54	16400	72	14000	78	12880					17		
20	46	13520	69	13700	75	11430	79	8920			20		
25	29	10210	63	10600	71	9460	75	8000	79	6000	25		
30			56	8390	66	8210	72	7070	76	5500	30	80	3000
35			49	6790	61	6890	68	6130	73	4980	35	78	2840
40			41	5590	56	5700	65	5320	70	4490	40	76	2620
45			31	4640	51	4760	61	4640	67	4000	45	73	2420
50			17	3880	45	4000	57	4070	64	3580	50	71	2230
55					38	3380	52	3450	61	3200	55	69	2020
60					30	2860	47	2930	57	2850	60	67	1840
65					19	2410	42	2490	54	2520	65	64	1670
70							36	2090	50	2130	70	62	1520
75							29	1740	45	1790	75	59	1380
80							20	1440	41	1500	80	56	1230
85									36	1240	85	53	1080
90									30	1020	90	50	950
95									22	820	95	47	830
100											100	44	720
105											105	40	570
110											110	36	430
		340 LBS.		190 LBS.		150 LBS.		120 LBS.		100 LBS.	DEDUCTIONS FOR STOWED JIB		

## LMI OPERATING CODES

SETTING	CRANE CONFIGURATION	OUTRIGGER CONFIGURATION
#1	— MAIN BOOM	FULLY EXTENDED
#2	— FIXED JIB	FULLY EXTENDED
#5	— PERSONNEL LIFTING PLATFORM ON MAIN BOOM	FULLY EXTENDED
#6	— PERSONNEL LIFTING PLATFORM ON FIXED JIB	FULLY EXTENDED
#9	— MAIN BOOM	INTERMEDIATE
#10	— FIXED JIB	INTERMEDIATE
#13	— MAIN BOOM	FULLY RETRACTED

### WARNING

1. THE OPERATOR MUST READ AND UNDERSTAND THE OWNER'S MANUAL BEFORE OPERATING THIS CRANE.
2. POSITIONING OR OPERATION OF CRANE BEYOND AREAS SHOWN ON THIS CHART IS NOT INTENDED OR APPROVED EXCEPT WHERE SPECIFIED IN OWNER'S MANUAL.
3. LOADED BOOM ANGLES AT SPECIFIED BOOM LENGTHS GIVE ONLY AN APPROXIMATION OF THE OPERATING RADIUS. THE BOOM ANGLE BEFORE LOADING SHOULD BE GREATER TO ACCOUNT FOR DEFLECTIONS. DO NOT EXCEED THE OPERATING RADIUS FOR RATED LOADS.
4. THE OPERATING RADIUS SHOWN IN THE JIB RATING CHART IS FOR FULLY EXTENDED BOOM ONLY. WHEN BOOM IS NOT FULLY EXTENDED, USE ONLY LOADED BOOM ANGLE TO DETERMINE LOAD RATING OF JIB.
5. FOR BOOM ANGLES NOT SHOWN ON JIB LOAD RATING CHART, USE RATING OF NEXT LOWER BOOM ANGLE.
6. FOR BOOM LENGTHS NOT SHOWN, USE RATING OF NEXT SHORTER OR LONGER BOOM LENGTH, WHICHEVER IS LESS. FOR RADII NOT SHOWN, USE RATING OF NEXT LONGER RADIUS.
7. CRANE LOAD RATINGS ON OUTRIGGERS ARE BASED ON FREELY SUSPENDED LOADS WITH THE MACHINE LEVELED AND STANDING ON A FIRM UNIFORM SUPPORTING SURFACE. NO ATTEMPT SHALL BE MADE TO MOVE A LOAD HORIZONTALLY ON THE GROUND IN ANY DIRECTION.


## **WARNING (CONTINUED)**

8. PRACTICAL WORKING LOADS DEPEND ON SUPPORTING SURFACE, WIND, AND OTHER FACTORS AFFECTING STABILITY SUCH AS HAZARDOUS SURROUNDINGS, EXPERIENCE OF PERSONNEL, AND PROPER HANDLING, ALL OF WHICH MUST BE TAKEN INTO ACCOUNT BY THE OPERATOR.
9. THE MAXIMUM LOAD WHICH MAY BE TELESCOPED IS LIMITED BY HYDRAULIC PRESSURE, BOOM ANGLE, AND BOOM LUBRICATION. IT IS SAFE TO ATTEMPT TO TELESCOPE ANY LOAD WITHIN THE LIMITS OF THE LOAD RATING CHART. BOOM MUST BE FULLY RETRACTED AGAINST BOOM STOPS AT ALL TIMES WHEN LIFTING MINIMUM BOOM LENGTH CAPACITY LOADS.
10. LIFTING OFF THE MAIN BOOM POINT WHILE THE SWING AROUND JIB IS ERECTED IS NOT INTENDED OR APPROVED.

## **INFORMATION**

1. DEDUCTIONS MUST BE MADE FROM RATED LOADS FOR STOWED JIB, OPTIONAL ATTACHMENTS, HOOKS, AND LOADBLOCKS (SEE DEDUCTION CHART). WEIGHTS OF SLINGS AND ALL OTHER LOAD HANDLING DEVICES SHALL BE CONSIDERED A PART OF THE LOAD.
2. LOAD RATINGS ABOVE THE HEAVY LINE ARE STRUCTURALLY LIMITED CAPACITIES. LOAD RATINGS BELOW THE HEAVY LINE ARE STABILITY LIMITED CAPACITIES AND DO NOT EXCEED 85% OF TIPPING.

## **DEFINITIONS**

1. OPERATING RADIUS IS THE HORIZONTAL DISTANCE FROM THE AXIS OF ROTATION TO THE CENTER OF THE VERTICAL HOIST LINE OR TACKLE WITH LOAD APPLIED.
2. LOADED BOOM ANGLE AS SHOWN IN THE COLUMN HEADED BY , IS THE INCLUDED ANGLE BETWEEN THE HORIZONTAL AND LONGITUDINAL AXES OF THE BOOM BASE AFTER LIFTING RATED LOAD AT RATED RADIUS.