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12/15/97 15:14:24

MANITOWOC ENGINEERING COMPANY
Shop Order Text For Serial No: 41917

MANITOWOC 4100W BASIC SPECIFICATIONS

TYPE: LIFTCRANE X DRAGLINE CLAMSHELL
MODEL: 4100W SERIES 1
S.O. NUMBER: 4132
SERIAL NO: 41917
DISTRIBUTOR: EQUIPCO
BUYER: LAQUILA
SHIP TO: LAQUILA
DATE SHIPPED: 12-19-97

MACHINE DATA

	HOIST	SWING
ENGINE DRIVE SPROCKET:	92124-2 29T	92053-2 21T
DRIVEN SPROCKET:	33040-2 145T	92052-2 74T
TRANSMISSION CHAIN:	1"P 4-STR 198P(#335216)	1"P 3-STR 160P(#335215)
TRANSMISSION RATIO:		
ENGINE SHAFT:	175666-2 41T	175667-2 37T
CONVERTER:	175666-2 41T	175666-2 41T
CHAIN:	3/4"P 6-STR 90P(#335083)	3/4"P 6-STR 84P(#335092)

DRUMS	LAGGING	WEDGE	ROPE SIZE
SINGLE FRONT: 180533-9	BARE	15836-2	1-1/8"
SINGLE REAR: 180533-9	48935-4 PLAIN LIFT	15836-2	1-1/8"
BOOM HOIST: 182834-9	502307-0 GR 7/8"	77698-2	7/8"
182835-9	502307-0 GR 7/8"	77698-2	7/8"

CRAWLER: LENGTH-26 FT 6 IN (#48384) TREAD-48" (#40246)

DRIVE CHAIN: 5-1/2"P 1-STR 62P (#335217)

COUNTERWEIGHT: 49487	TOTAL WEIGHT: 122,400#
INSIDE: 190744-9 BOX 4,650#	FILL 37,250# TOTAL 41,900#
CENTER: 49484-9 BOX 3,850#	FILL 37,650# TOTAL 41,500#
OUTSIDE: 190745-9 BOX 3,450#	FILL 35,550# TOTAL 39,000#
RIGHT SIDE:	
LEFT SIDE:	
CARBODY:	

POWER PLANT DATA:

ENGINE: CUMMINS N14-C360	SERIAL NUMBER: 11859451
TORQUE CONVERTER YES X NO	
ELECTRIC STARTING YES X NO	
GOVERNOR CONTROL YES X NO	
GOVERNED SPEED RPM-LOW IDLE HIGH IDLE O.S. GOV SPEED STALL	
FAN SUCTION X BLOWER X	

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MANITOWOC ENGINEERING COMPANY
Shop Order Text For Serial No: 41917

S.O. 4132

BOOM DATA

RIGGING ASSEMBLY #190693 BOOM TYPE #22C BOOM LENGTH: 180 FT

SECTION	PART #	LENGTH	PENDANT	LENGTH
BUTT:	48705-4	30 FT		
TOP:	65773-2	40 FT	(3) 276963	40' - 9 3/4" BASIC
INSERT:	33407-3	10 FT	(4) 276861	10' INSERT
INSERT:	*623580-0	20 FT	(4) 276862	20' INSERT
INSERT:	**623535-0	40 FT	(8) 276863	40' INSERT
INSERT:	**623545-0	40 FT		

*PER DRWG 33426
**PER DRWG 50609

JIB DATA

RIGGING ASSEMBLY	JIB TYPE	JIB LENGTH	FT	
SECTION	PART #	LENGTH	PENDANT	LENGTH
BUTT:				
TOP:				
INSERT:				
STRUT:				
JIB STOP PENDANT:				
JIB STOP PENDANT:				
BACKSTAY PENDANT:				
BACKSTAY PENDANT:				

COUNTERWEIGHT HANDLING PENDANTS: (2) 276891-0 12' - 2"

GANTRY: 190273-2 17 FT

WIRE ROPE PER CUSTOMER SPECIFICATIONS

LIFT LOAD LINE:
LIFT WHIP LINE:
CLAM CLOSING:
CLAM HOLDING:
DRAG LINE:
DRAG HOLDING:
AUXILIARY DRUM:
BOOM HOIST: 760' - 7/8" - 6X26 ALT LAY WS EEIPS IWRC - #719283

CAPACITY CHARTS

LIFTCRANE CAPACITIES: 6950-A
CLAMSHELL CAPACITIES:
DRAGLINE CAPACITIES:
JIB CAPACITIES:
OPERATING RANGE DIAGRAM:
RANGE DIAGRAM: 50807
LOAD LINE SPECIFICATIONS: 5345
DRUM & LAGGING CHART: 6105
BARGE LIFT CHART:
BARGE CLAM CHART:
BARGE DRAG CHART:

118 rows selected.

MANITOWOC 4100W BASIC SPECIFICATIONS
TO BE USED WITH TOWER ATTACHMENT S/N
1ST OPERATION - LIFTCRANE

TYPE: LIFTCRANE X DRAGLINE CLAMSHELL
 MODEL: 4100W SERIES 1
 S.O. NUMBER: 4119
 SERIAL NO: 419057
 DISTRIBUTOR: MANITOWOC FORSYTHE
 BUYER: LAQUILA INDUSTRIES INC -BROOKLYN NY
 SHIP TO: LAQUILA INDUSTRIES - BROOKLYN NY
 DATE ISSUED: 2-17-94 DATE SHIPPED: 4-4-94
 PAINTING: LETTERING:
 DOMESTIC
 ROUTE:

MACHINE DATA

	HOIST	SWING
ENGINE DRIVE SPROCKET:	92124-2 29T	92053-2 21T
DRIVEN SPROCKET:	33040-2 145T	92052-2 74T
TRANSMISSION CHAIN:	1"P 4-STR 198P(#335216)	1"P 3-STR 160P(#335215)
TRANSMISSION RATIO:		
ENGINE SHAFT:	24446-2 41T	24447-2 37T
CONVERTER:	24446-2 41T	24446-2 41T
CHAIN:	3/4"P 6-STR 90P(#335083)	3/4"P 6-STR 84P(#335092)

DRUMS	LAGGING	WEDGE	ROPE SIZE
SINGLE FRONT: 180533-2	48935-4	15836-2	1-1/8"
SINGLE REAR: 180533-2	48935-4 PLAIN LIFT	15836-2	1-1/8"
BOOM HOIST: 182834-4	502307-0 GR 7/8"	77698-2	7/8"
182835-4	502307-0 GR 7/8"	77698-2	7/8"

CRAWLER: LENGTH-26 FT 6 IN (#48384) TREAD-48" (#40246)

DRIVE CHAIN: 5-1/2"P 1-STR 62P (#335217)

COUNTERWEIGHT: 49487	TOTAL WEIGHT: 122,400#	
	BOX	FILL
INSIDE: 190744-2	4,650#	37,250#
CENTER: 49484-2	3,850#	37,650#
OUTSIDE: 190745-2	3,450#	35,550#
RIGHT SIDE:		TOTAL
LEFT SIDE:		41,900#
CARBODY:		41,500#
		39,000#

POWER PLANT DATA:

ENGINE: CUMMINS NTA 855-360	SERIAL NUMBER: 11719810
TORQUE CONVERTER YES X NO	
ELECTRIC STARTING YES X NO	
GOVERNOR CONTROL YES X NO	
GOVERNED SPEED RPM-LOW IDLE	HIGH IDLE O.S. GOV SPEED STALL
FAN SUCTION X BLOWER X	

BOOM DATA

RIGGING ASSEMBLY #190693

BOOM TYPE #22C

BOOM LENGTH: 240 FT

SECTION	PART #	LENGTH	PENDANT	LENGTH
BUTT:	48705-4	30 FT		
TOP:	65773-2	40 FT	(4) 276963	40' - 9 3/4" BASIC
INSERT:	(1) 33407-3	10 FT	(4) 276861	10' INSERT
INSERT:	(1) 33426-3	20 FT	(8) 276862	20' INSERT
INSERT:	(1) 623580-0	20 FT		
INSERT:	(1) 623526-0	40 FT	(12) 276863	40' INSERT
INSERT:	(1) 623545-0	40 FT		
INSERT:	(1) 623535-0	40 FT		

JIB DATA

RIGGING ASSEMBLY

JIB TYPE

JIB LENGTH

SECTION	PART #	LENGTH	PENDANT	LENGTH
BUTT:				
TOP:				
INSERT:				
STRUT:				
JIB STOP PENDANT:				
JIB STOP PENDANT:				
BACKSTAY PENDANT:				
BACKSTAY PENDANT:				

GANTRY: 190273-2 17 FT

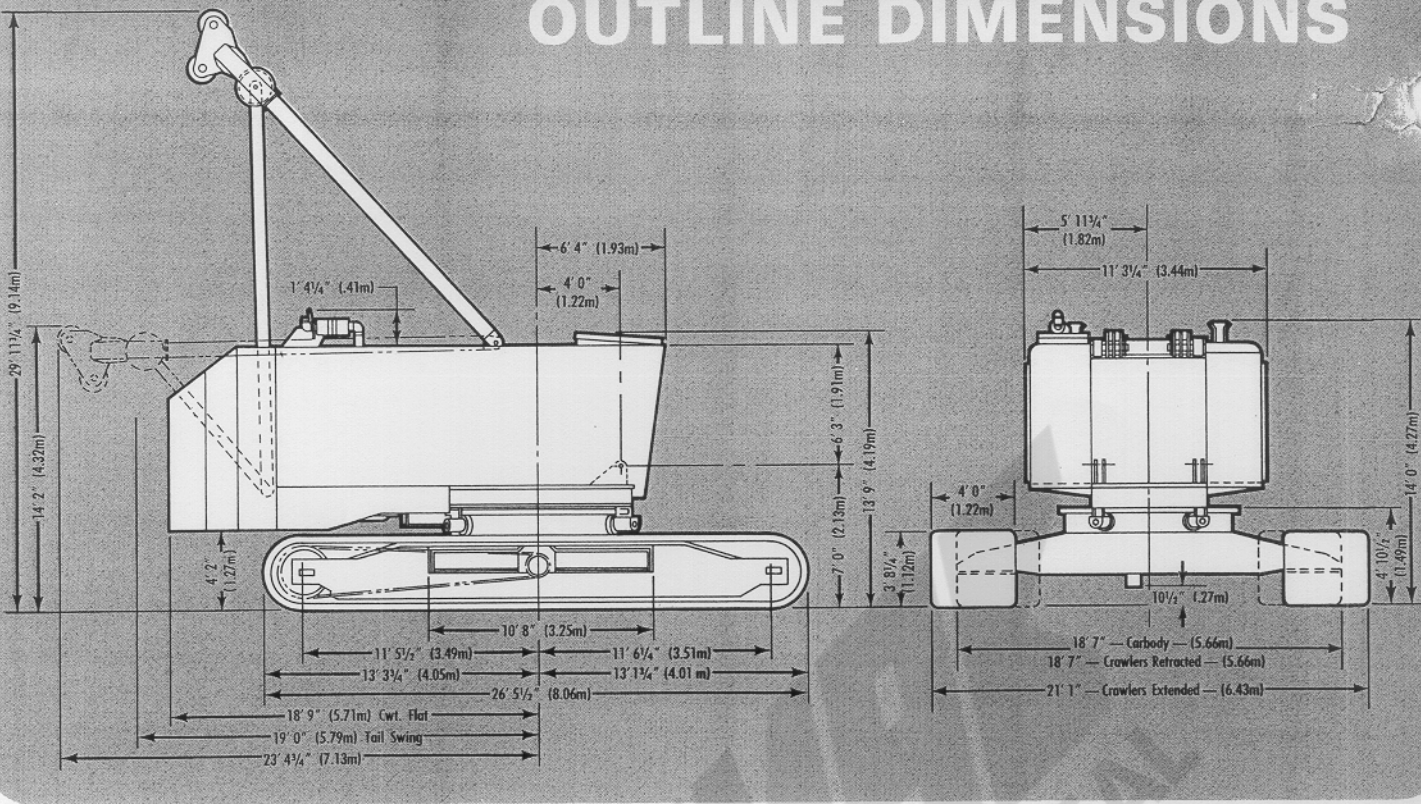
WIRE ROPE PER CUSTOMER SPECIFICATIONS

LIFT LOAD LINE:
 LIFT WHIP LINE:
 CLAM CLOSING:
 CLAM HOLDING:
 DRAG LINE:
 DRAG HOLDING:
 AUXILIARY DRUM:
 BOOM HOIST: 760' - 7/8" - 6X26 ALT LAY WS EEIPS IWRC - #719283

CAPACITY CHARTS

LIFTCRANE CAPACITIES: 6950-A
 CLAMSHELL CAPACITIES:
 DRAGLINE CAPACITIES:
 JIB CAPACITIES:
 OPERATING RANGE DIAGRAM:
 RANGE DIAGRAM:
 LOAD LINE SPECIFICATIONS: 5345
 DRUM & LAGGING CHART: 6105
 BARGE LIFT CHART:
 BARGE CLAM CHART:
 BARGE DRAG CHART:

OUTLINE DIMENSIONS



WEIGHTS

POUNDS*

POUNDS

LIFTCRANE, complete with 70' No. 22A Boom, gantry and backhitch, boom hoist rigging and pendants, hoist wire rope, 15-ton swivel-type hook and weight ball, basic upperworks package, counterweights, 26' 6" long crawlers (48" wide treads), extendible width from 18' 7" to 21' 1", and outside crawler drive chains..... 356,660

CRAWLERS, with crawler side frames, crawler treads, and outside crawler chains (each 36,400)... 72,800

CARBODY, with center pin, roller path, and travel mechanism, without crawlers..... 49,500

UPPERWORKS, complete with basic machinery, including drums, but not including gantry and backhitch, front end attachments or counterweights... 80,500

GANTRY AND BACKHITCH..... 7,800

SELF-REMOVING COUNTERWEIGHT (3-PC)

Inner..... 41,900
Middle..... 41,500
Outer..... 39,000

BOOM NO. 22A

BOOM BUTT: (less wire rope and pendants)..... 5,980
BOOM TOP: (equipped with lower boom point, sheaves, and pendants)..... 9,760
Add for upper boom point and sheave..... 1,460
Total..... 11,220

BOOM INSERTS:

Insert—10' (with pendants)..... 2,000
Insert—20' (with pendants)..... 3,100
Insert—40' (with pendants)..... 5,340

DRAGLINE FAIRLEAD—REVOLVING TYPE. 1,910

DRAGLINE FAIRLEAD—HINGED TYPE..... 7,420

*Weights are approximate and may vary between machines as a result of design changes and component variations.

POWER PLANTS

	Model	Cylinder	Bore	Stroke	Cubic Inch Displacement	Net HP @ RPM (at flywheel)
BASIC	Cummins NTA-855 Diesel	6	5.500"	6.000"	855	333 @ 2000
OPTIONAL	G. M. 12V-71N Diesel	12	4.250"	5.000"	852	360 @ 2000
	Caterpillar D343-TA Diesel	6	5.400"	6.500"	893	364 @ 2000

Air Compressor: 37.5 CFM.

Fuel Tank Capacity: 315 gallons.



LIFTCRANE CAPACITIES

MEETS ANSI B30.5 REQUIREMENTS EXCEPT WHERE NOTED WITH B

4100W 4100W SERIES-1 CRAWLER

**BOOM NO. 22C WITH OPEN THROAT TOP
26'6" CRAWLERS — 122,400 LB. COUNTERWEIGHT**

LIFTING CAPACITIES: Capacities for various boom lengths and operating radii may be based on per cent of tipping, strength of structural components, operating speeds and other factors.

Capacities are for freely suspended loads and do not exceed 75% of a static tipping load. Capacities based on structural competence are shown by shaded areas.

Capacities indicated by "B" represent boom positions which without load, provide less than required ANSI B30.5 backward stability.

Capacities are shown in pounds. Deduct 1200 pounds from capacities listed when single sheave upper boom point is attached and 1500 pounds when two sheave upper boom point is attached. To comply with B30.5 requirements, upper boom point cannot be used on the 260 ft. boom. Weight of jib (see chart A), all load blocks, hooks, weight ball, slings, hoist lines beneath boom and jib point sheaves, etc., is considered part of the main boom load. Boom is not to be lower beyond radii where combined weights are greater than rated capacity. Where no capacity is shown, operation is not intended or approved.

OPERATING CONDITIONS: Machine to operate in a level position on a firm surface with gantry in working position and be rigged in accordance with and under conditions referred to in rigging drawing No. 190693 and load line specification chart No. 5345.

Crane operator judgment must be used to allow for dynamic load effects of swinging, hoisting or lowering, travel, as well as adverse operating conditions & physical machine depreciation.

OPERATING RADIUS: Operating radius is the horizontal distance from the axis of rotation to the center of vertical hoist line or load block with the load freely suspended. Add 14" to boom point radius for radius of sheave when using single part hoist line.

Boom angle is the angle between horizontal and centerline of boom butt and inserts and is an indication of operating radius. In all cases, operating radius shall govern capacity.

BOOM POINT ELEVATION: Boom point elevation, in feet, is the vertical distance from ground level to centerline of boom point

shaft.

MACHINE EQUIPMENT: Machine equipped with 26'6" extendible crawlers, 48" treads, 17' retractable gantry, 12 part boom hoist reeving, four 1 3/8" boom pendants, 1st cwt. 41,900 lbs., 2nd cwt. 41,500 lbs., 3rd cwt. 39,000 lbs. Total counterweight 122,400 pounds.

HOIST REEVEING FOR MAIN LOAD BLOCK						
No. Parts of Line	1	2	3	4	5	6
Max. Load — Lbs.	32,500	65,000	97,500	130,000	162,500	195,000
No. Parts of Line	7	8	9	10	11	12
Max. Load — Lbs.	227,500	260,000	292,500	325,000	357,500	400,000

LOAD AND WHIP LINE SPECIFICATIONS	
LOAD LINE: 1-1/8" — 6x31 Warrington-Seale, Extra Improved Plow Steel, Regular Lay, IWRC. Minimum Breaking Strength 65 Ton. (Approx. Weight Per Ft. in Lbs. 2.34)	
WHIP LINE: 1-1/8" — 6x31 Warrington-Seale, Improved Plow Steel, Regular Lay, IWRC. Minimum Breaking Strength 56.5 Ton. Maximum Load — 28,300 Lbs. Per Line. (Approx. Weight Per Ft. in Lbs. 2.34)	

MAXIMUM BOOM AND JIB LENGTHS LIFTED UNASSISTED			
OVER FRONT OF BLOCKED CRAWLERS		OVER SIDE OF EXTENDED CRAWLERS	
Boom Length	Jib No. 123	Boom Length	Jib No. 123
260'	---	230'	---
250'	---	220'	30'
240'	40'	210'	60'
230'	60'		

OVER SIDE OF RETRACTED CRAWLERS		(A) DEDUCT FROM CAPACITIES WHEN JIB IS ATTACHED	
Boom Length	Jib No. 123	Jib Length	Jib No. 123
220'	---	30'	3,000 Lb.
210'	---	40'	3,600 Lb.
200'	50'	50'	4,200 Lb.
190'	60'	60'	4,900 Lb.

Load block, hook and weight ball on ground at start.

For jib capacities, consult jib chart.

Boom Lgth.: Feet	Oper. Rad.: Feet	Bm. Ang.: Deg.	Boom Point: Elev.	Capacity: Crawlers Retracted	Capacity: Crawlers Extended
16	80.1	76.0	392,000B	300,900	
17	79.3	75.8	349,600B	283,300	
18	78.5	75.6	315,400B	265,700	
19	77.6	75.4	287,100B	248,100	
20	76.8	75.1	263,400B	231,800	
22	75.1	74.6	225,900B	270,100	
24	73.4	74.1	197,500B	233,600	
26	71.7	73.5	175,300B	205,500	
28	69.9	72.8	157,500B	183,400	
30	68.2	72.0	142,800B	165,400	
32	66.4	71.2	130,500B	150,500	
34	64.6	70.2	120,100B	138,000	
36	62.8	69.3	111,100B	127,300	
38	60.9	68.2	103,400B	118,100	
40	59.1	67.0	96,600	110,000	
45	54.1	63.7	82,700	93,900	
50	48.9	59.8	72,100	81,600	
55	43.2	54.9	63,800	72,000	
60	36.9	49.0	57,000	64,300	
65	29.4	41.3	51,500	57,900	
70	19.5	30.3	46,800	52,600	
17	80.6	85.9	349,300B	331,800	
18	79.9	85.8	315,000B	304,000	
19	79.2	85.6	286,700B	276,200	
20	78.5	85.4	263,000B	259,400	
22	77.0	84.9	225,400B	269,700	
24	75.5	84.5	197,000B	233,100	
26	74.0	83.9	174,800B	205,100	
28	72.5	83.3	156,900B	182,900	
30	71.0	82.7	142,200B	164,900	
32	69.5	81.9	130,000B	150,000	
34	68.0	81.2	119,500B	137,400	
36	66.4	80.3	110,600	126,800	
38	64.8	79.4	102,800	117,500	
40	63.3	78.4	96,000	109,500	

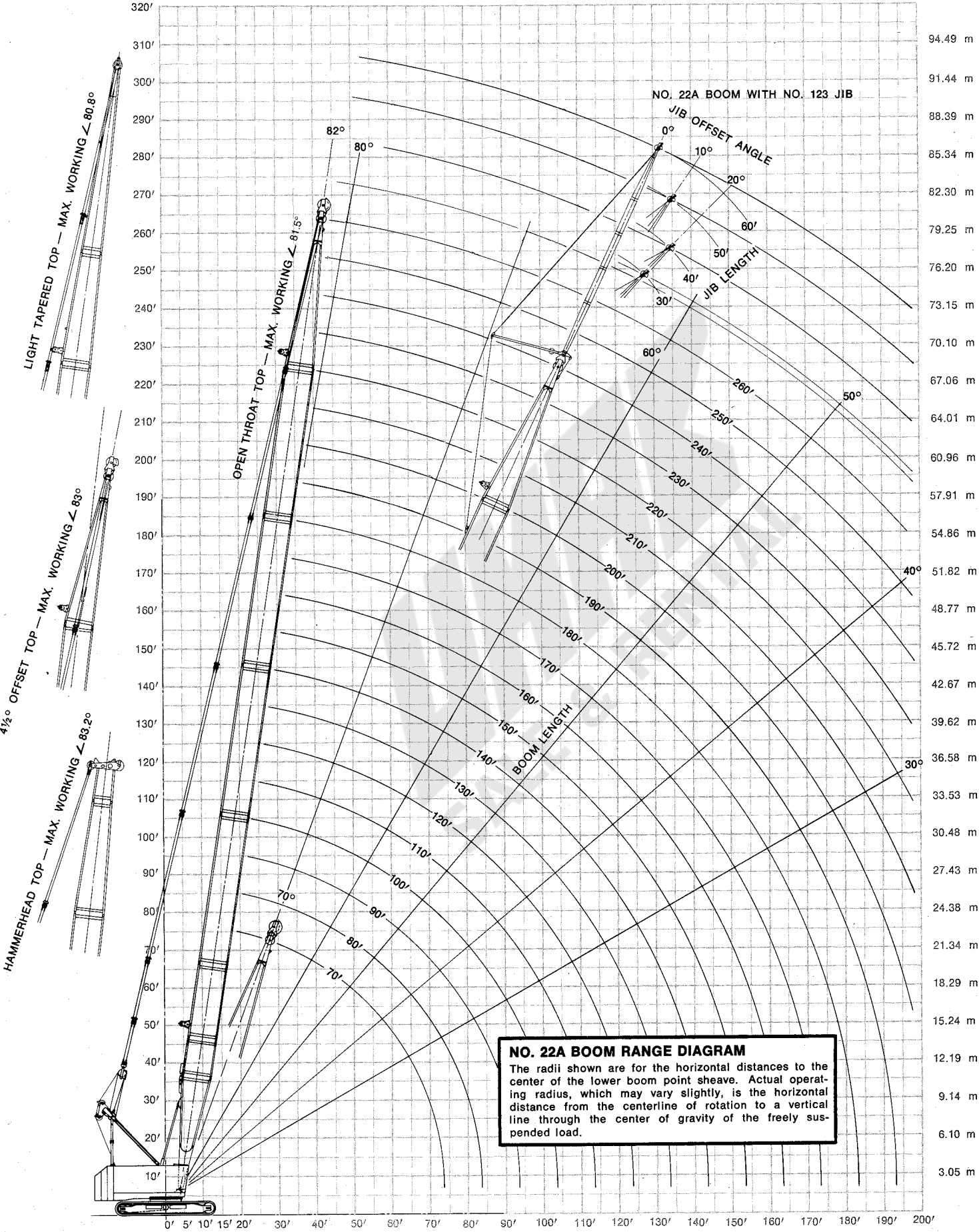
Boom Lgth.: Feet	Oper. Rad.: Feet	Bm. Ang.: Deg.	Boom Point: Elev.	Capacity: Crawlers Retracted	Capacity: Crawlers Extended
45	59.2	75.7	82,100	93,300	
50	54.9	72.5	71,500	81,000	
55	50.4	68.6	63,200	71,400	
60	45.6	64.1	56,400	63,700	
65	40.3	58.8	50,800	57,300	
70	34.4	52.2	46,100	52,000	
75	27.4	43.9	42,100	47,500	
80	18.2	32.0	38,700	43,600	
18	81.1	95.9	314,700B	355,400	
19	80.4	95.7	286,500B	346,900	
20	79.8	95.6	262,700B	319,200	
22	78.5	95.2	225,200B	269,500	
24	77.2	94.7	196,700B	232,900	
26	75.9	94.3	174,500B	204,800	
28	74.5	93.7	156,600B	182,600	
30	73.2	93.2	141,900B	164,600	
32	71.9	92.5	129,600B	149,700	
34	70.5	91.9	119,200	137,100	
36	69.2	91.1	110,200	126,400	
38	67.8	90.3	102,400	117,200	
40	66.4	89.5	95,600	109,200	
45	62.9	87.1	81,800	93,000	
50	59.3	84.1	71,200	80,700	
55	55.5	81.2	62,800	71,100	
60	51.5	77.5	56,000	63,300	
65	47.3	73.2	50,500	57,000	
70	42.8	68.2	45,800	51,600	
75	37.9	62.3	41,800	47,100	
80	32.4	55.2	38,300	43,200	
85	25.8	46.2	35,300	39,900	
90	17.1	33.5	32,700	36,900	

Boom Lgth.: Feet	Oper. Rad.: Feet	Bm. Ang.: Deg.	Boom Point: Elev.	Capacity: Crawlers Retracted	Capacity: Crawlers Extended
19	81.4	105.9	286,100B	331,400	
20	80.8	105.7	262,300B	318,900	
22	79.6	105.4	224,700B	269,200	
24	78.5	105.0	196,300B	232,500	
26	77.3	104.5	174,000B	204,400	
28	76.1	104.1	156,100B	182,200	
30	74.9	103.6	141,400	164,100	
32	73.7	103.0	129,100	149,200	
34	72.5	102.4	118,700	136,700	
36	71.3	101.7	109,700	125,900	
38	70.1	101.0	101,900	116,700	
40	68.9	100.3	95,100	108,700	
45	65.8	98.2	81,200	92,400	
50	62.6	95.8	70,600	80,100	
55	59.3	93.0	62,200	70,500	
60	55.9	89.8	55,500	62,800	
65	52.4	86.2	49,900	56,400	
70	48.7	82.1	45,200	51,100	
75	44.8	77.4	41,200	46,600	
80	40.5	72.0	37,700	42,700	
85	35.9	65.6	34,700	39,300	
90	30.7	58.0	32,100	36,300	
95	24.5	48.5	29,800	33,700	
100	16.3	35.0	27,700	31,400	

Capacities continued on reverse side.

WARNING! CHECK AMOUNT OF COUNTERWEIGHT ON MACHINE BEFORE USE OF THIS CHART.

3.05 m
6.10 m
9.14 m
12.19 m
15.24 m
18.29 m
21.34 m
24.38 m
27.43 m
30.48 m
33.53 m
36.58 m
39.62 m
42.67 m
45.72 m
48.77 m
51.82 m
54.86 m
57.91 m



NO. 22A BOOM RANGE DIAGRAM
 The radii shown are for the horizontal distances to the center of the lower boom point sheave. Actual operating radius, which may vary slightly, is the horizontal distance from the centerline of rotation to a vertical line through the center of gravity of the freely suspended load.

⊕ ROTATION

OPERATING RADIUS