

Manitex



TC220

22-Ton (20 mt) TELESCOPIC CRANE
TC220 SERIES PRODUCT GUIDE



















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










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KEY

	Operator aids
	Cab
	Heating / Air conditioning
	Controls
	Hoist speed
	1 - Main hoist 2 - Auxiliary winch 3 - Recovery winch
	Rope length
	Rope - standard/optional
	Rope diameter
	Permissible line pull
	Maximum line pull
	Slewing / Allowable slewing range
	Slewing gears
	Slewing brake
	Outriggers / Lifting on outriggers
	2-Person man basket
	Counterweight
	Radio remote control

	Hook block
	Distance from hook to head sheave pin
	Hook and ball
	Hydraulics
	Boom elevation angle
	Max. boom length with extension
	Boom with extension retracted
	Boom angle
	Telescoping mode
	Working radius
	Boom length
	Hydraulic actuated boom
	Full power mechanical synchronized
	Boom head / Hook block dimension
	Main boom with auxiliary head
	Tip height



THE TC220 SERIES TELESCOPIC CRANES

Versatile. Affordable. User friendly.

The TC220 series telescopic cranes are built to meet the wide-ranging needs of owner operators who may use it for residential construction one day and bridge work the next. No matter what the task, the 22-ton line of telescopic crane is designed to get you to the job and on the job quickly.

With it, you can:

- Travel to and between job sites at highway speed on a commercial chassis

Other features include:

- 22-ton capacity @ 5 ft. radius
- 3, 4-section proportional boom
- Optional telescopic jib
- 139'-10" (42,6m) maximum tip height (with optional jib)
- Optional Basic Cab
- Out-and-down outriggers

OUT & DOWN OUTRIGGER

Four Out & Down Outriggers with Audible Outrigger Motion Alarm sounds as outriggers are being deployed and indicator lights verify when they are fully extended.



TWO-SPEED PLANETARY HOIST

Increase productivity and minimize downtime. The two-speed planetary hoist lets you change line speed on the fly and minimize rope stacking.

LOAD MOMENT INDICATOR

The Load-moment indicator sounds a warning or shuts down the machine when lift limitations are about to be exceeded.

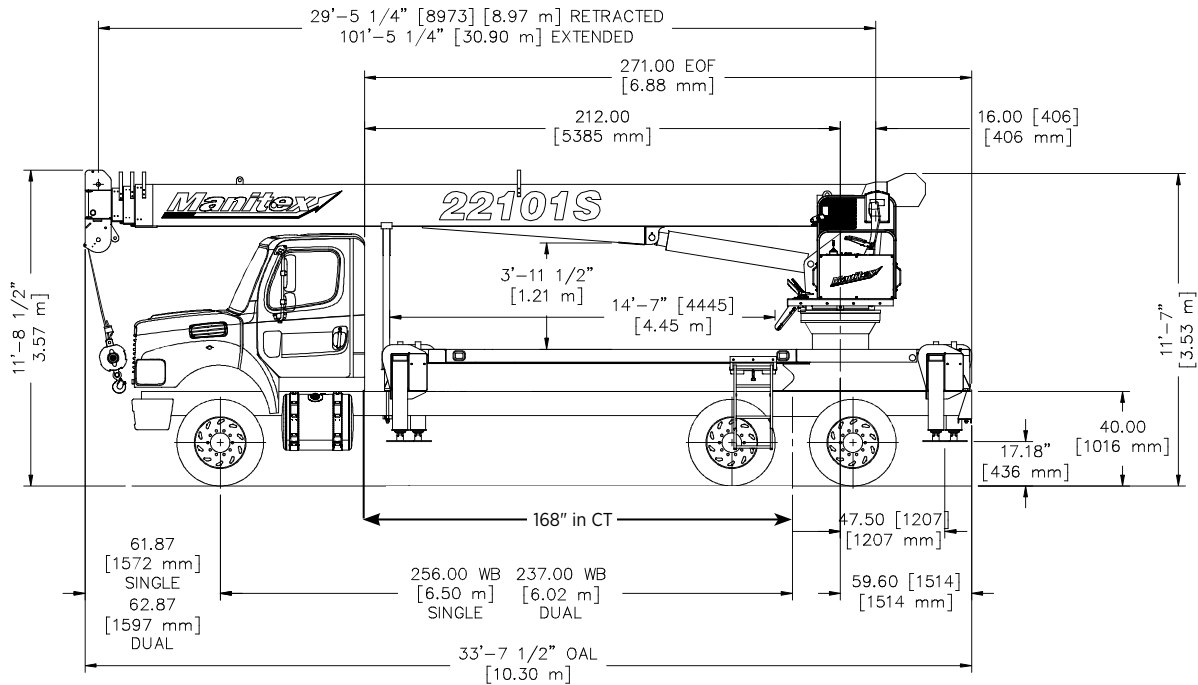
INCREASE PROFITABILITY

The versatile TC220 series is designed to help both owners and operators make the most of their investment.

- Travel to and between jobs at highway speed.
- Minimize maintenance costs with replaceable, self-lubricating boom slider pads and sealed, multi-disc wet brakes on the hoist and swing system.



TC220 SERIES CHASSIS DATA



CHASSIS DATA

S Models	22101S Single Axle	22101S Tandem Axle
Wheel Base (WB)	256 in. (6,502 mm)	237 in. (6,020 mm)
Cab to Axle (CA)	186 in. (4,724 mm)	-
Cab to Tandem (CT)	-	168 in. (4,267 mm)
Frame section modulus at 180° area of operation*	15.9 in ³ , 110,000 psi, 758,422 kPa	15.9 in ³ , 110,000 psi, 758,422 kPa
Cab to End of Frame (EOF)	271" (6,883 mm)	271" (6,883 mm)
Nominal Frame Width	34 in. (864 mm)	34 in. (864 mm)

* Frame selection modulus at 360° area of operation requires front bumper stabilizer.

TRUCK AXLE WEIGHTS

S Models	22101S Single Axle	22101S Tandem Axle
Front axle (FAWR)	Consult Factory	16,000 lbs. (7,257 kg)
Rear axle (RAWR)	Consult Factory	40,000 lbs. (18,143 kg)
Min. truck axle W - Front**	Consult Factory	6,800 lbs. (3,084 kg)
Min. truck axle W - Rear**	Consult Factory	7,400 lbs. (3,765 kg)

** Minimum chassis weight is required to meet 85% stability requirements. Chassis data is general - not for engineering. Some dimensions depend on truck selection.

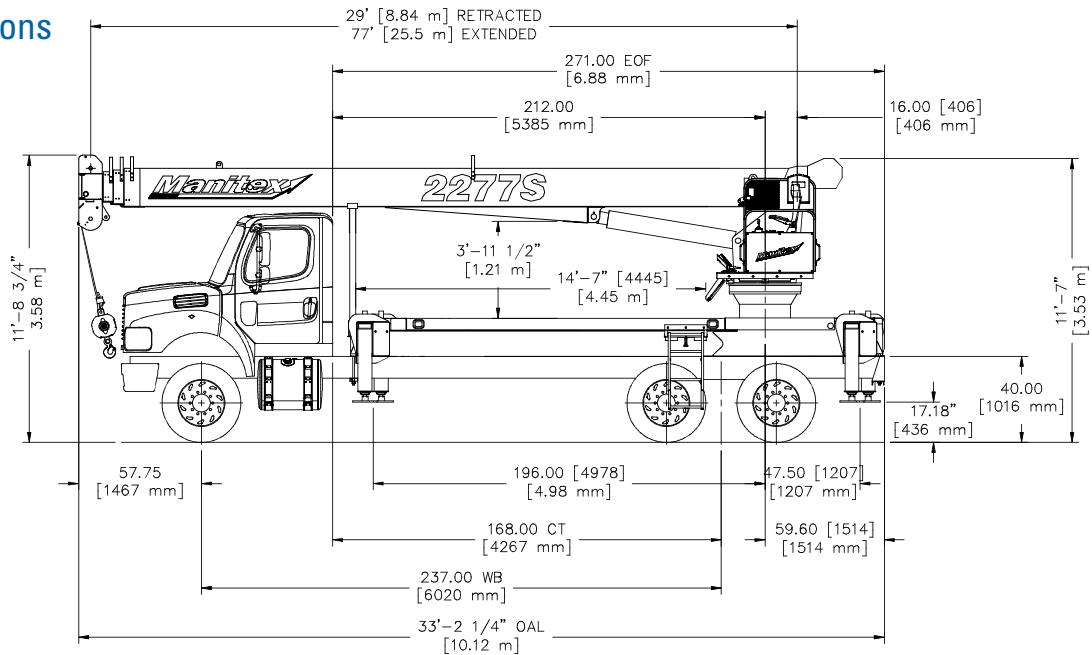
CRANE WEIGHTS

Model	22101S
Crane without cab	18,903 lb. (8,574 kg)
Cab	575 lb., (261 kg)
Flatbed 13 ft.	1,200 lb. (544 kg)
Jib Fixed	660 lb. (299 kg)

Data published herein is intended as a guide only. Crane operation is subject to machine specific load charts and information.

TC220 SERIES CHASSIS DATA: //

2277S Dimensions



CHASSIS DATA

2277S Tandem Axle	
Wheel Base (WB)	237 in. (5,020 mm)
Cab to Tandem (CT)	168 in. (4,267 mm)
Cab to End of Frame (EOF)	271 in. (6,883 mm)
Nominal frame width	34 in. (864 mm)
Frame section modulus	15.9 in ³ , 110,000 psi 758,422 kPa

TRUCK AXLE WEIGHT

Model	2277S Tandem Axle
Front axle (FAWR)	16,000 lbs. (7,257 kg)
Rear axle (RAWR)	40,000 lbs. (18,143 kg)
Min. truck axle weight - Front**	5,750 lbs. (2,608 kg)
Min. truck axle weight - Rear**	6,750 lbs. (3,062 kg)

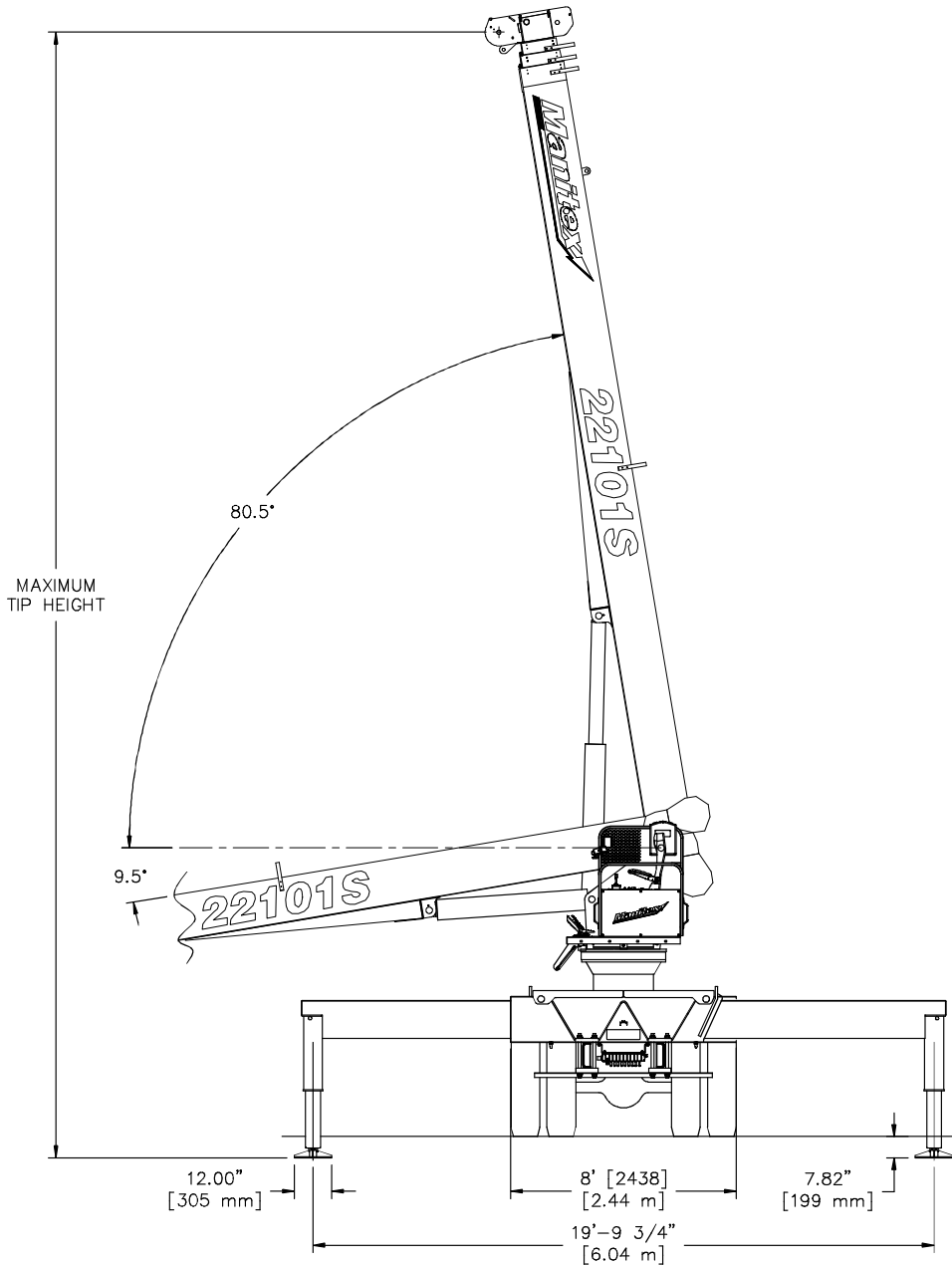
** Minimum chassis weight is required to meet 85% stability requirements. Chassis data is general - not for engineering. Some dimensions depend on truck selection.

CRANE WEIGHTS

Model	2277S
Crane without cab	17,579 lb. (7,973 kg)
Cab	575 lb., (261 kg)
Flatbed 13 ft.	1,200 lb. (544 kg)
Jib Fixed	660 lb. (299 kg)

OUTRIGGER EXTENSION

Full Extension



SUB FRAME

- Pedestal sub-frame and stabilizers are mounted to chassis by threaded rods and clamp plates
- Sub-frame: Torsion resistant, rigid 4-plate design mounted under crane full length of truck frame
- Rear under-ride protection: Standard on factory mounted cranes


ELECTRICAL SYSTEM

- 12-Volt Electrical System
- State-of-the-art, weather-resistant components throughout
- Hermetically sealed enclosure includes power in relays and circuit status LEDs

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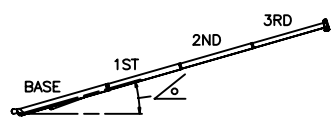
22101S LOAD CHART: Main Boom & Jib

Lifting Capacities 4 section Boom 29.4 ft. - 101.4 ft.

 19' 9 3/4" (6 m)

LMI Tandem Axle Load Chart
Full Outrigger Extension

Load Ratings in (lbs.) with Outriggers Fully Extended											Jib Load Ratings in (lbs.)		
LMI Code #1											Fixed Jib		
Loaded Boom Angle (ft.)	Boom length & Marker	A (lbs.)		B (lbs.)		C (lbs.)		D (lbs.)		Loaded Boom Angle (ft.)	LMI Code #2		
		29.4 ft.	53 ft.	69 ft.	85 ft.	101.4 ft.	Jib Length for All Boom Lengths See Warning Note: 4						
5	80	44,000								8			
8	74	33,540								10			
10	70	28,140								12			
12	66	24,230	78	14,000						15			
15	61	20,460	76	14,000	80	14,000				20			
20	54	16,400	72	14,000	78	12,880				25			
25	46	13,520	69	13,700	75	11,430	79	8,920		30			
30	29	10,210	63	10,600	71	9,460	75	8,000	79	6,000	25		
35			56	8,390	66	8,210	72	7,070	76	5,500	30	80	3,000
40			49	6,790	61	6,890	68	6,130	73	4,980	35	78	2,840
45			41	5,590	56	5,700	65	5,320	70	4,490	40	76	2,620
50			31	4,640	51	4,760	61	4,640	67	4,000	45	73	2,420
55			17	3,880	45	4,000	57	4,070	64	3,580	50	71	2,230
60					38	3,380	52	3,450	61	3,200	55	69	2,020
65					30	2,860	47	2,930	57	2,850	60	67	1,840
70					19	2,410	42	2,490	54	2,520	65	64	1,670
75							36	2,090	50	2,130	70	62	1,520
80							29	1,740	45	1,790	75	59	1,380
85							20	1,440	41	1,500	80	56	1,230
90									36	1,240	85	53	1,080
95									30	1,020	90	50	950
100									22	820	95	47	830
105											100	44	720
110											105	40	570
115											110	36	430
120											115		
		340 lbs.	190 lbs.	150 lbs.	120 lbs.	100 lbs.	Deductions for Stowed Jib						



↑ Structural
↓ Tipping

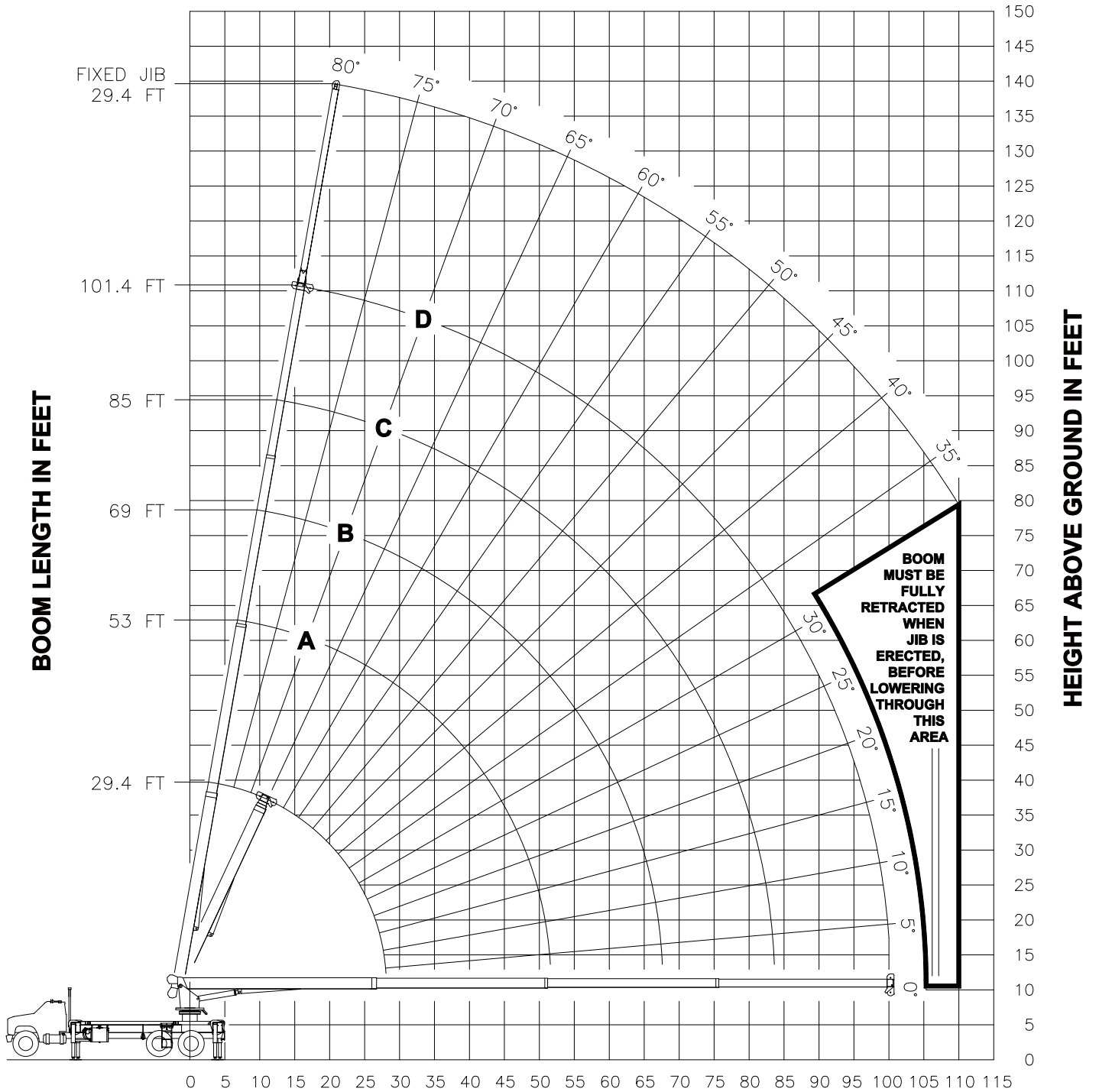
NOTES:

- Loads based on crane on outriggers
- All loads are based on 85% tipping
- Loads above heavy line are based on structural rating
- Loads below heavy line are based on tipping rating

Data published herein is intended as a guide only. Crane operation is subject to machine specific load charts and information.

22101S BOOM DIAGRAM


- FULLY EXTENDED OUTRIGGER CONFIGURATION -

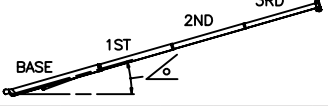


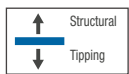
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2277S LOAD CHART: Main Boom & Jib

Lifting Capacities 3-Section Boom 29 ft. - 77 ft.
Full Outrigger Extension

 19' 9 3/4" (6 m)

Load Ratings in (lbs.) with Outriggers Fully Extended										Jib Load Ratings in (lbs.)					
LMI Code #1															
Loaded Boom Angle (ft.)	Boom length & Marker									Loaded Boom Angle (ft.)	Fixed Jib		Telescopic Jib		
		A (lbs.)		B (lbs.)		C (lbs.)		D (lbs.)			29 ft. Jib for All Boom Lengths	52 ft. Jib for All Boom Lengths			
		29 ft.	41 ft.	53 ft.	65 ft.	77 ft.					See Warning Note: 4	See Warning Note: 4			
5	80	44,000													
8	74	29,600													
10	69	24,870	76	22,000						10					
12	65	21,510	73	20,160	78	16,490				12					
14	60	18,960	70	17,710	75	14,390	79	13,860		14					
17	53	16,080	66	15,010	72	12,070	76	11,580	79	11,500					
20	45	13,830	61	13,010	69	10,390	73	9,930	77	9,560					
25	27	10,490	52	10,600	63	8,410	69	8,000	73	7,670	79	4,820			
30			42	8,770	56	7,010	64	6,660	69	6,350	30	77	4,270	80	3,000
35			30	7,120	49	5,930	59	5,650	65	5,390	35	74	3,790	78	2,900
40					41	5,030	53	4,860	61	4,640	40	71	3,330	76	2,640
45					31	4,170	47	4,210	56	4,030	45	68	2,900	74	2,410
50					17	3,070	40	3,630	51	3,530	50	65	2,540	71	2,200
55							33	3,070	46	3,080	55	62	2,220	69	2,020
60							22	2,410	40	2,680	60	59	1,940	67	1,840
65									34	2,280	65	55	1,660	64	1,670
70									25	1,840	70	51	1,400	61	1,510
75									13	1,220	75	47	1,170	58	1,350
80											80	43	960	55	1,200
85											85	39	760	52	1,060
90											90	34	560	49	940
95														46	790
100														43	650
105														39	510
110															
115															
	680 lbs.	480 lbs.	370 lbs.	300 lbs.	260 lbs.	Deductions for Stowed Jib									



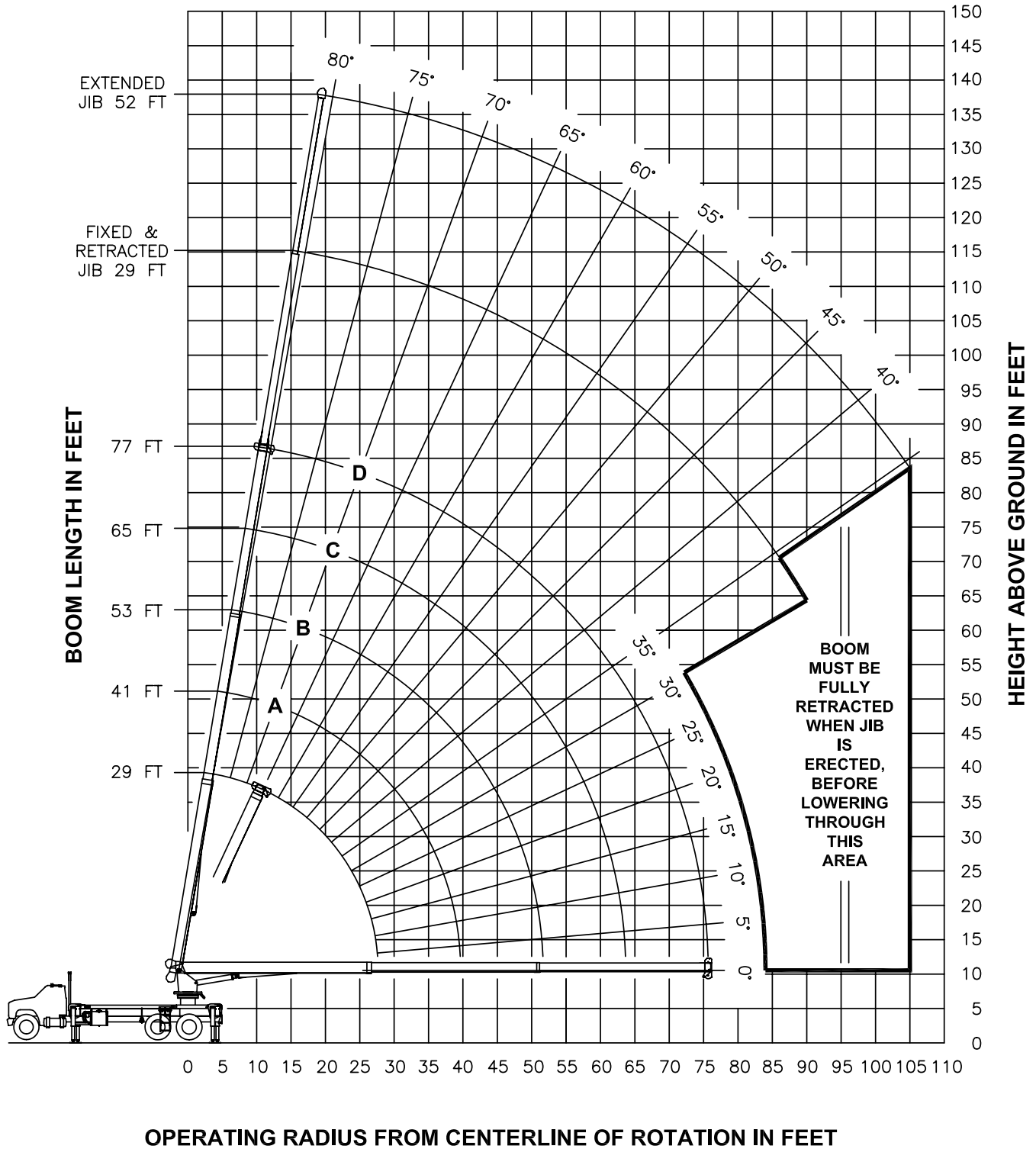
NOTES:

- Loads based on crane on outriggers
- All loads are based on 85% tipping
- Loads above heavy line are based on structural rating
- Loads below heavy line are based on tipping rating

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2277S BOOM DIAGRAM

RANGE DIAGRAM

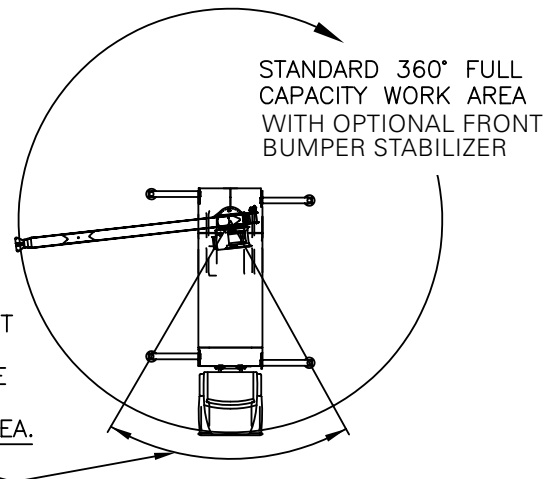


Data published herein is intended as a guide only. Crane operation is subject to machine specific load charts and information.

AREA OF OPERATION

In order to take advantage of full 360° rotation, the optional front bumper stabilizer must be set in accordance to the manual before working in this area and machine must be level.

If a front bumper stabilizer was not supplied, then the front tires must be in contact with the ground before working in this area.



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. (22.7 kg)
Overhaul ball	See overhaul ball mfr. nameplate
Load blocks	See load block mfr. nameplate
Hose reel	160 lbs. (72.6 kg)
Swing around jib (stowed)	See load chart

WARNING: Lifting off the main boom point while the jib is erected is not intended nor approved.

REEVING DIAGRAM

ALLOWABLE LINE PULL						WARNING
1 PART LINE	2 PART LINE	3 PART LINE	4 PART LINE	5 PART LINE	6 PART LINE	
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>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>
						<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>

Data published herein is intended as a guide only. Crane operation is subject to machine specific load charts and information.

LMI OPERATING CODES ////////////////////////////////////

Code	Crane Configuration	Outrigger Configuration	Area of Operation
#1	Main Boom	Fully Extended	Full 360°
#2	Fixed Jib	Fully Extended	Full 360
#5	Personnel lifting platform on main boom	Fully Extended	Full 360°
#6	Personnel lifting platform on fixed jib	Fully Extended	Full 360°
#9	Main Boom	Mid Extension	Full 360°
#10	Fixed Jib	Mid Extension	Full 360°
#13	Main Boom	Fully Retracted	Full 360°

Warning

1. The operator must read and understand the owner’s manual before operating the crane.
2. Positioning or operation of crane beyond areas shown on these charts 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.
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 load blocks (See deduction chart on page 8). Weights of slings and all other load handling devices shall be considered a part of the load.
2. Load ratings above the blue line are structurally limited capacities. Load ratings below the blue 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 head by \angle is the included angle between the horizontal and longitudinal axes of the boom base after lifting rated load at rated radius.

TECHNICAL DESCRIPTIONS

Boom



- Boom lengths: Proportional boom
- 3-section 77 ft. (23,5 m)
 - 4-section 101 ft. (30,8 m)
 - 3-Sheave quick reeve boom point
 - 1-Idler, 2-Load

Self lubricating slider pad



Max. tip height 2277S: 86' -4" (26,3 m)
 Max. tip height 22101S: 110'5" (33,7 m)



Boom angle (min/max): -6° / 80°

Rotation



Ball-bearing swing circle with external gear
 Double-reduction planetary gearbox driven by hydraulic motor



Slewing brake: Spring-applied pressure released automatic brake



Slewing speed: 1.5 - 2 rpm. (nominal)
 Boom rotation: 360° continuous

Outriggers



- Outriggers: Out-and-down style
 FBS - Front Bumper Stabilizer (optional)
 Outrigger monitoring system (for verification only)
 Outrigger motion alarm
 Full extension
- Center to center: 19'-9 3/4" (6 m)
- Full retraction
- Center to center: 7'-4" (2,2 m)

Operator aids



- 22101S is Radio LMI with crane function cut-offs for overload protection and Radio anti-two block system
- 2277S is Externally Wired LMI with crane function cut-offs for overload protection
- 22101S is Radio anti-two block system

Hoist, Rope and Hook



Maximum theoretical line speed:
 300 fpm (91 mpm)



Maximum theoretical bottom-layer line pull:
 11,500 lb (5,216 kg)

Rating: Permissible 8,500 lbs (3,855 kg)



Main winch cable diameter: 9/16" (14,3 mm).
 6 x 25 EIPS IWRC Wire Rope
 Optional Rotation Resistant Rope 9/16 in.



Line length: 300 ft. (91,4m)



Main winch: Gear Motor with burst of speed high spurt (activated electrically)



Overhaul ball: 5T (4.5 mt) capacity hook with heavy-duty swivel and weight is provided for single line operation.

Hydraulics



- 8-bolt direct mounted PTO and SAEB or SAE BB output (factory mounted units only)
 3 -section gear pump, Counter Clockwise Standard, SAE BB input (standard).
 Hydraulic reservoir capacity:
 70 gal. (265 L)
 Pump sections @ 2000 rpm with 100 psi
- 32.4 GPM (123 LPM)
 - 20.6 GPM (78 LPM)
 - 8 GPM (38 LPM)

Ride Around Operator Station Controls



Standard features:
 Ride-around Operator Station with Open Seat.



- Controls:
- DS85 –Hirschman display unit
 - Four Single axis pilot oil control joy sticks
 - Outrigger controls located at rear of truck

OPTIONS

Boom

Max. Tip Height



2277S

- Max. tip height: 86'-4" (26,3m)

22101S

- Max tip height: 110.5 ft (33,7 m)

Jibs

2277S, 22101S

- 1-section fixed jib: 30.5 ft. (9,3 m)
- 2-Section telescopic jib 29'-52' (8,8 m - 15,8 m) for 77' boom only

Max. Tip Height with Extension



2277S

- Max tip height with extension: 138'-3" (42,1 m)
- Max tip height with extension retracted: 115' - 6" (35,2 m)

22101S

- Max. tip height with extension: 139'-7' (42,5 m)

Bulkhead

24 in. (607 mm) bulkhead

Hook Block



Auxiliary lower sheave block for 2-8 part lines
Load blocks 1-3, 1-6, 2-6 part lines

Hydraulics



Hose reel – boom mounted.
Front Bumper Stabilizer (FBS)
Hydraulic oil cooler

Cab



Optional Cab available

- Air Conditioner
- Heater

2-person Basket



Consult Manitex for specific application and rating

- 2-person Steel Gravity Levelled Basket with Friction Brake
- 2-person Steel Gravity Levelled Basket with Hydraulic Brake and Manual Rotation

Tool Boxes & Flatbed

Tool Boxes

- 24 in. L x 18 in. W x 18 in. H (610 mm L x 457 mm W x 457 mm H)
- 48 in. L x 24 in. W x 24 in. H (1,219 mm L x 610 mm W x 610 mm H)

Flatbeds

- 13' (4 m) Steel Flatbed
- 13' (4 m) Wood Flatbed

Manitex



TTC220

22-Ton (20 mt) TELESCOPIC CRANE
TC220 SERIES PRODUCT GUIDE

UPTIME

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

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