

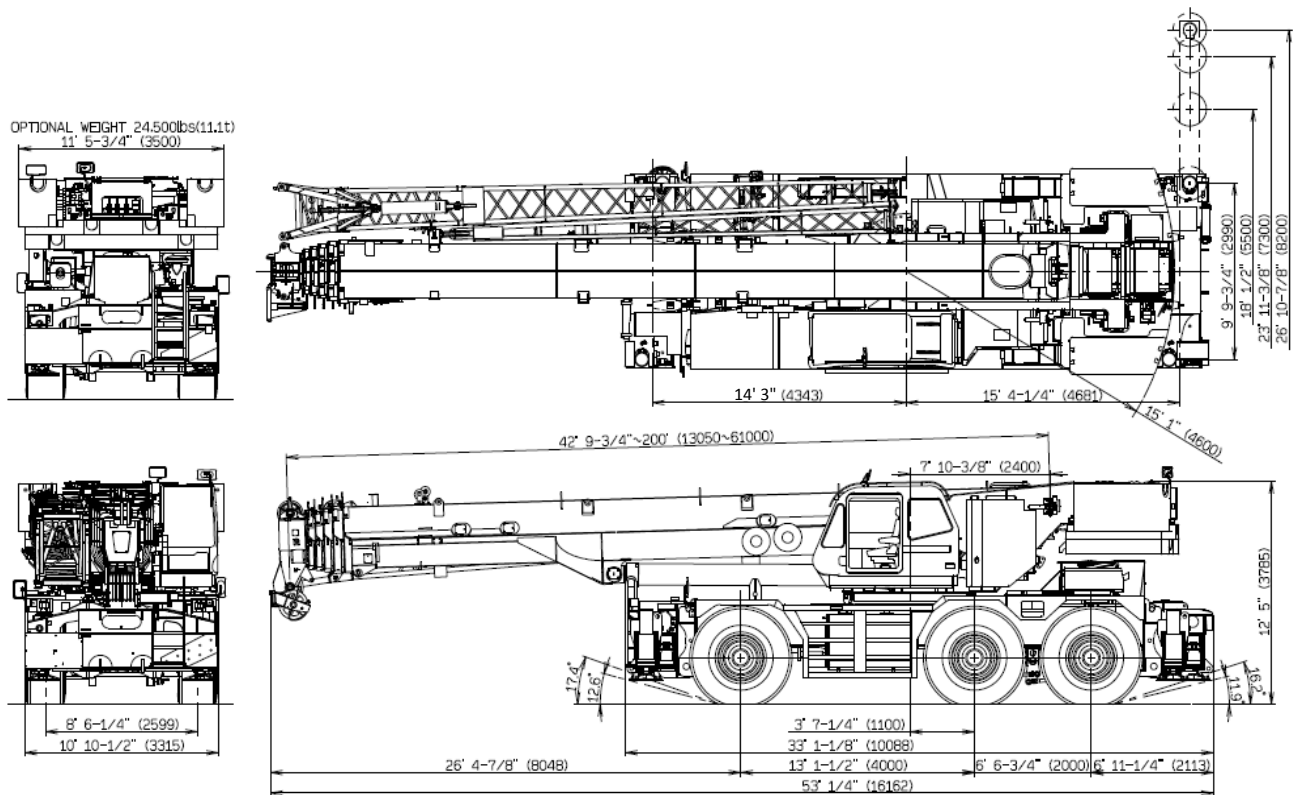


GR-1600XL

160 Ton Capacity (145 Metric Tons)

HYDRAULIC ROUGH TERRAIN CRANE

DIMENSIONS



Note : Dimension is with boom angle at -1.5 degree.

GENERAL DIMENSIONS (26.5 R25 Tires)

	Feet	Meters
Turning radius		
6 wheel steer	32' 6"	9.9
2 wheel steer	48' 11"	14.9
Tail swing of counterweight	15' 1"	4.6

Provisional

Specifications are subject to change without notice.

CRANE SPECIFICATIONS

BOOM

Six section boom, single cylinder telescoping with pinning system, 42.8'~200' (13.05m~61.0m), of round box construction with seven sheaves, 15-3/4" (0.40m) root diameter, at boom head. Two easily removable wire rope guards, rope dead end provided on both sides of boom head. Boom telescope sections are supported by wear pads both vertically and horizontally. Extension speed 157.3' in 430 seconds.

BOOM ELEVATION - By a double acting hydraulic cylinder with holding valve. Elevation -1.5° ~ 81.5° , combination controls for hand or foot operation. Automatic speed reduction and soft stop function.

JIB - Two stage bi-fold lattice type with 0° , 20° or 40° offset (tilt type). Single sheave, 17-5/16" (0.44m) root diameter, at the head of both jib sections. Stored alongside base boom section. Jib length is 33.8' (10.3m) or 59.1' (18.0m). Assistant cylinders for mounting and stowing, controlled at right side of superstructure. Self stowing jib mounting pins.

AUXILIARY LIFTING SHEAVE (SINGLE TOP)

Single sheave, 17-5/16" (0.44m) root diameter. Mounted to main boom head for single line work (stowable).

ANTI-TWO BLOCK - Pendant type over-winding cut out device with audio-visual (FAILURE lamp/BUZZER) warning system.

SWING

Hydraulic axial piston motor through planetary swing speed reducer. Continuous 360° full circle swing on ball bearing turn table at 1.3min^{-1} {rpm}. Equipped with manually locked/released swing brake. A 360° positive swing lock for pick and carry and travel modes, manually engaged in cab. Twin swing system: Free swing or lock swing controlled by selector switch on front console.

HOIST

MAIN HOIST - Variable speed type with grooved drum driven by hydraulic axial piston motor through speed reducer. Power load lowering and raising. Equipped with automatic brake (neutral brake) and counterbalance valve. Controlled independently of auxiliary hoist. Equipped with cable follower and drum rotation indicator.

DRUM - Grooved 15" (0.382m) root diameter x 29-1/4" (0.742m) wide. Wire rope: 1050' of 3/4" diameter rope (320m of 19mm). Drum capacity: 1293' (394m) 7 layers. Maximum single line pull: 1st layer 21,800 lbs (9,900kg). Maximum permissible line pull (wire strength): 15,900 lbs (7,200kg).

AUXILIARY HOIST - Variable speed type with grooved drum driven by hydraulic axial piston motor through speed reducer. Power load lowering and raising. Equipped with automatic brake (neutral brake) and counterbalance valve. Controlled independently of main hoist. Equipped with cable follower and drum rotation indicator.

DRUM - Grooved 15" (0.382m) root diameter x 29-1/4" (0.742m) wide. Wire rope: 738' of 3/4" diameter rope (225m of 19mm). Drum capacity: 1293' (394m) 7 layers. Maximum single line pull: 1st layer 21,800 lbs (9,900kg). Maximum permissible line pull (wire strength): 15,900 lbs (7,200kg).

WIRE ROPE - Non-rotating 3/4" (19mm) 7x35 class.

HOOK BLOCKS

Weighted hook ball with swivel and safety latch.

COUNTERWEIGHT

Self-removable 40,100 lbs (18,200 kg) counterweight (standard). Additional 24,450 lbs (11,100 kg) counterweight (optional).

HYDRAULIC SYSTEM

PUMPS - Powered by carrier engine. Pump disconnect for crane is engaged/disengaged by rotary switch from operator's cab.

CONTROL VALVES - Multiple valves actuated by pilot pressure with integral pressure relief valves.

RESERVOIR - 202 gallon (763 lit.) capacity. External sight level gauge.

OIL COOLER - Air cooled fan type.

CAB AND CONTROLS

Both crane and drive operations can be performed from one cab mounted on rotating superstructure.

Left side, 1 man type, tilting cab, steel construction with sliding door access and safety glass windows opening at side. Door window is powered control. Windshield glass window and roof glass window are shatter-resistant. Tilt-telescoping steering wheel. Adjustable control lever stands for swing, boom elevating, boom telescoping, auxiliary hoist and main hoist. Control lever stands can change neutral positions and tilt for easy access to cab. 3 way adjustable operator's seat with high back, headrest and armrest. Engine throttle knob. Foot operated controls: boom elevating, boom telescoping, service brake and engine throttle. Hot water cab heater and air conditioning.

Dash-mounted engine start/stop, monitor lamps, cigarette lighter, drive selector switch, parking brake switch, steering mode select switch, power window switch, pump engaged/disengaged switch, swing brake switch, telescoping/auxiliary hoist select switch, outrigger controls, free swing / lock swing selector switch, eco mode switch, high speed hoist (main/aux) switch and ashtray.

Instruments - Torque converter oil temperature, engine water temperature, air pressure, fuel, speedometer, tachometer, hour meter and odometer / tripmeter. Hydraulic oil pressure is monitored and displayed on the AML-C display panel.

Tadano electronic LOAD MOMENT INDICATOR system (AML-C) including:

- Control lever lockout function
- Boom position indicator
- Outrigger state indicator
- Boom angle / boom length / jib offset angle / jib length / load radius / rated lifting capacities / actual loads read out
- Ratio of actual load moment to rated load moment indication
- Automatic Speed Reduction and Soft Stop function on boom elevation and swing
- Working condition register switch
- Load radius / boom angle / tip height / swing range preset function
- External warning lamp
- Tare function
- Fuel consumption monitor

- Main hoist / auxiliary hoist select
- Drum rotation indicator (audible and visible type) main and auxiliary hoist

TADANO AML-C monitors outrigger extended length and automatically programs the corresponding "RATED LIFTING CAPACITIES" table

Operator's right hand console includes transmission gear selector and sight level bubble. Upper console includes working light switch, roof washer and wiper switch emergency outrigger set up key switch, jib equipped/removed select switch, eco mode switch, and air conditioning control switch. Swing lock lever.

NOTE: Each crane motion speed is based on unladen conditions.

CARRIER SPECIFICATIONS

TYPE - Rear engine, left hand steering, driving axle 2-way selected type by manual switch, 6x2 1st axle drive, 6x4 1st and 3rd axle drive.

FRAME - High tensile steel, all welded mono-box construction.

TRANSMISSION - Electronically controlled full automatic transmission. Torque converter driving full powershift with driving axle selector. 5 forward and 2 reverse speeds, constant mesh.

- 2 speeds - high range - 2 wheel drive; 4 wheel drive
- 3 speeds - low range - 4 wheel drive

TRAVEL SPEED - 9.32 mph (15 km/h) *with counterweight
2.49 mph (4 km/h) *without counterweight

AXLE

- 1st axle - Full floating type, steering and driving axle with planetary reduction.
- 2nd axle -Steering axle
- 3rd axle - Full floating type, steering and driving axle with planetary reduction.

STEERING- Hydraulic power steering controlled by steering wheel. Four steering modes available: 2 wheel front, 4 wheel rear, 6 wheel coordinated and 6 wheel crab. Emergency steering device.

ENGINE

Model	Mitsubishi 6M60
Type	Direct injection diesel
No. of cylinders	6
Combustion	4 cycle, turbo charged and after cooled
BoreXStroke, in.(mm)	4.646 x 4.528 (118 x 115)
Displacement, cu. in (liters)	460 (7.54)
Air inlet heater	24 volt preheat
Air cleaner	Dry type, replaceable element
Oil filter	Full flow with replaceable element
Fuel filter	Full flow with replaceable element
Fuel tank, gal.(liters)	79.2 (300), right side of carrier
Cooling	Liquid pressurized, recirculating by-pass

SUSPENSION

- 1st axle - Rigid mounted to frame.
- 2nd axle -Hydraulic cylinders
- 3rd axle - Hydraulic cylinders

BRAKE SYSTEMS - Service: Air over hydraulic disc brakes on all 6 wheels. Parking/Emergency: Spring applied-air released brake acting on input shaft of 1st and 3rd axles. Auxiliary: Electro-pneumatic operated exhaust brake.

TIRES - 26.5 R25

OUTRIGGERS - Four hydraulic, beam and jack outriggers. Vertical jack cylinders equipped with integral holding valve. Each outrigger beam and jack is controlled independently from cab. Sight bubble located in superstructure cab. Four outrigger extension lengths are provided with corresponding "RATED LIFTING CAPACITIES" for crane duty in confined areas. Removable Outrigger boxes for transportation.

- Min. Extension 9' 9-3/4" (2.99m) center to center
- Mid. Extension 18' 1/2" (5.5m) center to center
- Mid. Extension 23' 11-3/8" (7.3m) center to center
- Max. Extension 26' 10-3/4" (8.2m) center to center
- Float size(Diameter) 1' 10- 1/2" (0.57m)

Radiator	Fin and tube core, thermostat controlled
Fan, in.(mm)	Suction type, 6-blade, 23.6 (600) dia.
Starting	24 volt
Charging	24 volt system, negative ground
Battery	2-120 amp. Hour
Compressor, air, CFM(l /min)	29 CFM (830) at 2,600rpm
Horsepower (kW)	Gross 267 (200) at 2,600rpm
Torque, Max. ft-lb (Nm)	579 (785) at 1,400rpm
Capacity, gal.(liters)	
Cooling water	3.4 (13)
Lubrication	3.4 - 4.0 (13 - 15)

STANDARD EQUIPMENT

- Six section boom, single cylinder telescoping with pinning system 42.8'~200' (13.05 m~61.0 m)
- 33.8' or 59.1' (10.3 m or 18.0 m) bi-fold lattice jib (tilt type) with 0°, 20° or 40° pinned offsets.
- Auxiliary lifting sheave (single top) stowable
- Variable speed main hoist with grooved drum, cable follower and 1050' of 3/4" cable.
- Variable speed auxiliary hoist with grooved drum, cable follower and 738' of 3/4" cable.
- Drum rotation indicator (audible, visible and thumper type) main and auxiliary hoist
- Anti-Two block device (overwind cutout)
- Tadano electronic load moment indicator system (AML-C)
- Outrigger extension length detector
- Tadano twin swing system and 360° positive swing lock
- Tilting cab
- Self centering finger control levers with pilot control
- Control pedals for boom elevating and boom telescoping
- 3 way adjustable cloth seat with armrests, high back and seat belt
- Tilt-telescoping steering wheel
- Tinted safety glass and sun visor
- Front windshield wiper and washer
- Roof window wiper and washer
- Power window (cab door)
- Rear view mirrors (right and left side)
- Mirror for main and auxiliary hoists
- Cigarette lighter and ashtray
- Cab floor mat
- Pump disconnect in operator's cab
- Hydraulic oil cooler
- Hot water cab heater and air conditioner
- Positive control
- Work lights
- Mitsubishi 6M60-TLA3B turbo charged after cooled engine (267HP) with exhaust brake
- Independently controlled outriggers
- Four outrigger extension positions
- Electronic controlled automatic transmission driven by torque converter
- 6 X 4 X 6 drive/steer
- 26.5 R25 tires
- Disc brakes
- Air dryer
- Water separator with filter (high filtration)
- Engine over-run alarm
- Back-up alarm
- Low oil pressure/high water temp. warning device (visual)
- Rear steer centering light
- Air cleaner dust indicator
- Tire inflation kit
- 24 volt electric system
- Hook ball with swivel
- Weighted hook storage compartment
- Hook block tie down (front bumper)
- Towing hooks-Front and rear
- Lifting eyes
- Halogen head lamp
- Telematics (machine data logging and monitoring system) with HELLO-NET via internet
- Fuel consumption monitor
- Eco mode system
- Self-removable 40,100 lbs (18,200 kg) counterweight
- Self-removable outrigger boxes
- Emergency steering assist
- Anemometer
- Aircraft obstruction light

OPTIONAL EQUIPMENT

- 33.8' or 59.1' (10.3 m or 18.0 m) bi-fold lattice jib (tilt type) with 5° - 40° hydraulically offsetable.
- Additional 24,450 lbs (11,100 kg) counterweight
- Boom assist disassembling device
- Over-unwinding prevention

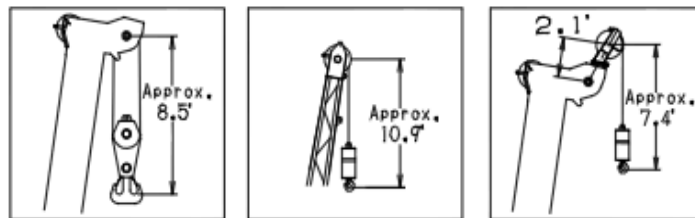
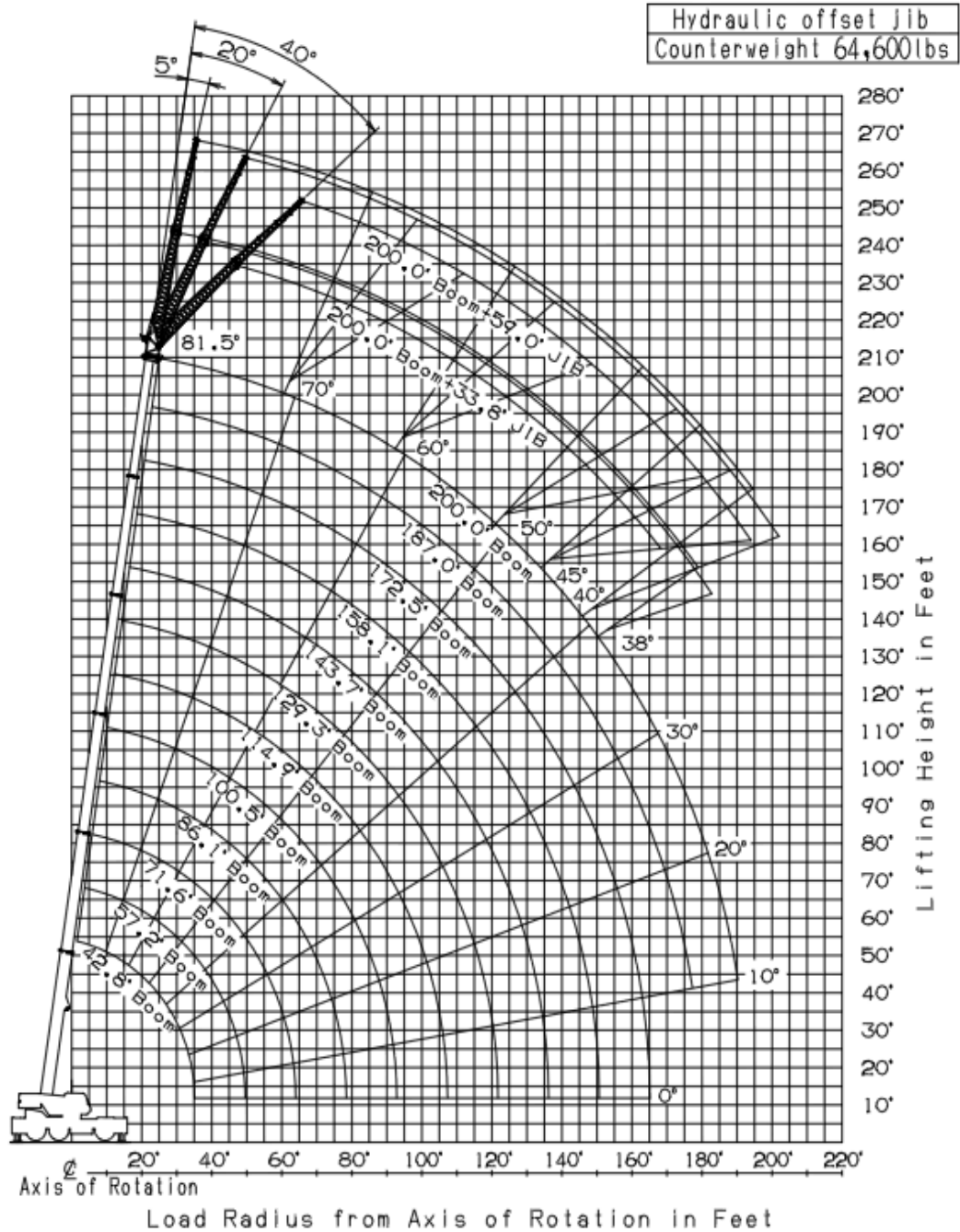
Weight distribution chart

(calculated)

	GVW	
	Pounds	Kilograms
Base machine (inc. 2 staged fly jib, Auxiliary winch and Hook block)	134,700	61,100
Remove:		
2 staged fly jib	-3,520	-1,600
Auxiliary winch	-2,650	-1,200
Hook block	-1,980	-900
Front & Rear outriggers	-19,400	-8,800
6 section boom	-34,400	-15,600
Add:		
40,100 lbs (18,200 kg) counterweight (std.)	40,100	18,200
24,450 lbs (11,100 kg) counterweight (opt.)	24,450	11,100

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GR-1600XL WORKING RANGE CHART



NOTE: 1. Boom and 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.

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GR-1600XL RATED LIFTING CAPACITIES (IN POUNDS)

ON OUTRIGGERS FULLY EXTENDED 26' 10-3/4" (8.2m) SPREAD COUNTERWEIGHT 64,550 lbs (29,300 kg) 360° ROTATION												
A B	42.8' (13.05m)	57.2' (17.4m)	71.6' (21.8m)	86.1' (26.2m)	100.5' (30.6m)	114.9' (35.0m)	129.3' (39.4m)	143.7' (43.8m)	158.1' (48.2m)	172.5' (52.6m)	187.0' (57.0m)	200' (61.0m)
8'	** 320,000	200,000	174,200									
10'	241,800	200,000	174,200									
12'	218,000	200,000	174,200	145,500								
15'	187,100	182,800	174,200	145,500	111,800							
20'	148,300	148,800	145,500	138,700	106,300	84,700						
25'	121,500	122,400	122,800	120,800	106,300	77,600	66,400					
30'	101,000	102,500	102,700	102,100	97,700	77,600	61,100	52,700				
35'	48,700	95,100	85,300	84,700	86,200	74,700	54,900	48,900	41,700	33,100		
45'		64,200	62,400	64,200	63,300	63,500	46,700	43,000	37,700	33,100	26,500	22,900
50'			54,700	56,200	55,600	57,100	43,900	39,200	35,500	32,000	26,500	22,900
60'			45,400	44,300	46,100	45,200	38,800	33,500	31,100	28,400	26,000	22,900
65'				41,000	41,400	40,300	36,600	31,100	28,900	26,900	24,700	22,700
75'				32,600	33,500	32,600	33,100	27,100	24,900	24,000	22,300	20,500
80'					30,200	29,500	30,400	25,400	23,600	22,500	21,200	19,600
90'					23,600	26,000	24,700	22,500	21,200	19,800	19,200	17,600
95'						23,800	22,500	21,400	20,100	18,700	18,100	16,500
105'						18,500	18,700	19,000	18,100	17,000	16,300	14,800
110'							17,200	17,900	16,800	16,300	15,700	14,100
120'							12,800	15,200	14,100	15,000	13,900	12,600
125'								14,100	13,400	13,700	12,800	11,900
130'								13,000	12,800	12,600	11,700	11,200
140'									11,500	10,800	9,700	9,700
145'									10,600	9,900	9,000	9,000
155'										8,400	7,500	7,500
160'										7,900	6,800	6,600
170'											5,500	5,500
175'											4,900	4,900
180'												4,400
185'												3,700

** Over front only and with additional lifting equipment

A :Boom length in feet

B :Load radius in feet

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GR-1600XL RATED LIFTING CAPACITIES (IN POUNDS)

0°, 20° or 40° pinned offsets

ON OUTRIGGERS FULLY EXTENDED 26' 10-3/4" (8.2m) SPREAD COUNTERWEIGHT 64,550 lbs (29,300 kg) 360° ROTATION													
C	33.8' (10.3m) Jib						C	59.1' (18.0m) Jib					
	200' (61.0m) boom			114.9' (35.0m) boom				200' (61.0m) boom			114.9' (35.0m) boom		
	0°	20°	40°	0°	20°	40°		0°	20°	40°	0°	20°	40°
81.5	12,100	12,100	11,400		23,400	16,100	81.5	8,200	8,200	7,100	14,100	11,900	8,200
81	12,100	12,100	11,200		23,100	15,900	81	8,200	8,200	7,100	14,100	11,700	8,200
80	12,100	11,900	10,800		22,500	15,700	80	8,200	8,200	6,800	14,100	11,500	7,900
79	12,100	11,700	10,500		22,000	15,400	79	8,200	8,200	6,800	14,100	11,200	7,900
78	12,100	11,200	10,300		21,400	15,200	78	8,200	7,900	6,600	14,100	11,000	7,900
77	12,100	10,800	9,900		20,900	15,200	77	8,200	7,700	6,600	14,100	10,600	7,700
76	12,100	10,600	9,700		20,500	15,000	76	8,200	7,500	6,600	14,100	10,400	7,700
75	11,700	10,400	9,400	31,000	20,100	14,800	75	8,200	7,300	6,400	14,100	10,100	7,700
73	11,000	9,700	9,000	29,100	19,200	14,300	73	8,200	6,800	6,400	14,100	9,900	7,500
70	9,900	9,000	8,300	26,900	18,100	13,900	70	7,500	6,400	6,000	13,900	9,300	7,300
68	9,500	8,600	7,900	25,600	17,400	13,700	68	7,300	6,200	5,700	13,200	9,000	7,100
65	8,800	7,900	7,400	23,800	16,800	13,400	65	6,600	5,700	5,300	12,300	8,600	7,100
63	8,200	7,700	7,200	22,900	16,300	13,200	63	6,400	5,500	5,300	11,700	8,400	7,100
60	7,500	7,100	6,800	21,800	15,700	13,000	60	5,700	5,300	4,900	11,000	7,900	6,800
58	7,100	6,600	6,300	21,200	15,200	12,800	58	5,500	4,900	4,900	10,600	7,900	6,800
55	6,600	6,200	5,900	20,100	14,800	12,800	55	5,100	4,600	4,400	10,100	7,500	6,800
53	6,200	6,000	5,700	19,200	14,300	12,600	53	4,600	4,200	4,000	9,700	7,500	6,600
50	5,500	5,300	5,000	18,300	14,100	12,600	50	4,000	3,500	3,500	9,300	7,300	6,600
48	5,100	4,900	4,800	17,600	13,900	12,600	48	3,500	3,300	3,300	9,000	7,300	6,600
45	4,600	4,400	4,400	17,000	13,400	12,300	45	3,100	2,900	2,600	8,600	7,100	6,600
43	4,200	4,200		16,500	13,400		43	2,900	2,400		8,400	7,100	
40	3,700	3,500		15,900	13,200		40	2,200	2,000		8,200	6,800	
38	3,300	3,100		15,400	13,000		38	2,000			7,900	6,800	

C :Loaded boom angle (°)

5° - 40° hydraulically offsetable (optional)

ON OUTRIGGERS FULLY EXTENDED 26' 10-3/4" (8.2m) SPREAD COUNTERWEIGHT 64,550 lbs (29,300 kg) 360° ROTATION													
C	33.8' (10.3m) Jib						C	59.1' (18.0m) Jib					
	200' (61.0m) boom			114.9' (35.0m) boom				200' (61.0m) boom			114.9' (35.0m) boom		
	5°	20°	40°	5°	20°	40°		5°	20°	40°	5°	20°	40°
81.5	12,100	12,100	11,200		23,400	16,100	81.5	8,200	8,200	7,100	14,100	11,900	8,200
81	12,100	12,100	11,000		23,100	15,900	81	8,200	8,200	7,100	14,100	11,700	8,200
80	12,100	11,900	10,800		22,500	15,700	80	8,200	8,200	6,800	14,100	11,500	7,900
79	12,100	11,500	10,400		22,000	15,400	79	8,200	8,200	6,800	14,100	11,200	7,900
78	12,100	11,000	10,100		21,400	15,200	78	8,200	7,900	6,600	14,100	11,000	7,900
77	11,900	10,800	9,900		20,900	15,200	77	8,200	7,700	6,600	14,100	10,600	7,700
76	11,500	10,400	9,700		20,500	15,000	76	8,200	7,500	6,600	14,100	10,400	7,700
75	11,000	10,100	9,300	28,200	20,100	14,800	75	8,200	7,300	6,400	14,100	10,100	7,700
73	10,600	9,700	8,800	26,900	19,200	14,300	73	7,700	6,800	6,200	13,200	9,900	7,500
70	9,500	8,800	8,400	24,900	18,100	13,900	70	7,100	6,400	5,700	12,300	9,300	7,300
68	9,000	8,400	7,900	23,800	17,400	13,700	68	6,800	6,000	5,500	11,700	9,000	7,100
65	8,400	7,900	7,500	22,300	16,800	13,400	65	6,200	5,700	5,300	11,000	8,600	7,100
63	7,900	7,500	7,300	21,200	16,300	13,200	63	6,000	5,500	5,100	10,600	8,400	7,100
60	7,300	6,800	6,600	19,800	15,700	13,000	60	5,500	5,100	4,900	10,100	7,900	6,800
58	6,800	6,600	6,400	19,200	15,200	12,800	58	5,100	4,900	4,600	9,700	7,900	6,800
55	6,200	6,000	6,000	18,100	14,800	12,600	55	4,600	4,400	4,200	9,300	7,500	6,800
53	6,000	5,700	5,500	17,400	14,300	12,600	53	4,200	4,000	3,700	9,000	7,500	6,600
50	5,300	5,100	4,900	16,800	14,100	12,600	50	3,700	3,500	3,300	8,600	7,300	6,600
48	4,900	4,600	4,600	16,300	13,900	12,300	48	3,300	3,100	3,100	8,400	7,300	6,600
45	4,400	4,200	4,200	15,700	13,400	12,300	45	2,900	2,600	2,400	8,200	7,100	6,600
43	4,000	4,000		15,400	13,400		43	2,600	2,400		7,900	7,100	
40	3,500	3,300		15,000	13,200		40	2,000	1,800		7,700	6,800	
38	3,100	2,900		14,600	13,000		38				7,500	6,800	

C :Loaded boom angle (°)

Provisional

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Form No. TAC provisional (2)