



LIFTING CHARTS - Crawler Cranes

LINK-BELT MODEL 218HSL - 110 TON CAPACITY

Upper Structure

Frame

All welded steel frame with precision machined surfaces for mating parts.

Turntable Bearing

- Inner race with internal swing gear is bolted to lower frame.
- Outer race bolted to upper frame; inner race with internal swing gears bolted to lower frame.

Engine

Engine

Full pressure lubrication, oil filter, air cleaner, hour meter, throttle, and electric control shutdown.

Isuzu AH-6HK1X	
Number of cylinders	6
Bore and stroke	4.53 x 4.92 in (115 x 125mm)
Piston displacement	475 in ³ (7.8L)
Engine rpm at full load speed	2,000 rpm
Hi-idle rpm	2,050 rpm
Gross engine hp	287 hp (214kw)
Peak torque	838 ft lb (1 125joule) @ 1,500 rpm
Electrical system	24 volt
Fuel tank capacity	110 gal (415L)
Batteries	2-12 volt
Approximate fuel consumption	gal/hr (L/hr)
100% hp	14.40 (54.51)
75% hp	11.53 (43.65)
50% hp	8.28 (31.34)
25% hp	4.20 (15.90)

Fuel Tank

Equipped with fuel sight level gauges, flame arrester, and self-closing cap with locking eye for padlock.

Hydraulic System

Hydraulic Pumps

The pump arrangement is designed to provide hydraulically powered functions allowing positive, precise control with independent or simultaneous operation of all crane functions.

- Two variable displacement pumps operating at 4,551 psi (320kg/cm²) and 74 gal/min (280L/min) powers load hoist drums, boom hoist drum, optional third drum, optional fourth drum, and travel.
- One variable displacement pump operating at 4,623 psi (325kg/cm²) and 42.3 gal/min (160L/min) powers the swing motors.
- One fixed displacement gear type pump operating at 2,985 psi (210kg/cm²) and 15.9 gal/min (60L/min) powers the lower jacks, counterweight removal, quickdraw, side frame retract, and hoist brake cooling.
- One fixed displacement gear type pump operating at 1,422 psi (100kg/cm²) and 10.8 gal/min (41L/min) powers the pilot control system, clutches, brakes, and pump controls.
- One fixed displacement gear type pump operating at 1,420 psi (100kg/cm²) and 8.4 gal/min (32L/min) powers the optional tagline winch.

Hydraulic Reservoir

119 gal (450L), equipped with sight level gauge. Diffusers built in for deaeration.

Filtration

Ten micron, full flow, line filter in the control circuit. All oil is filtered prior to entering the reservoir.

Counterbalance Valves

All hoist motors are equipped with counterbalance valves to provide positive load lowering and prevent accidental load drop if the hydraulic pressure is suddenly lost.

Load Hoist Drums

Each drum contains an axial piston, variable speed hydraulic motor with individual automatic winch motor brakes. Power flow is directed through a patented, semi-outboard mounted, "wet" style multi-disc brake. The brake is mounted on the "output" side of the planetary, which greatly reduces drag associated with most "wet" style brakes in free-fall mode.

- Power up/down & free-fall operation modes
- Automatic brake mode (spring applied, hydraulically released, wet type brake)
- Drum lagging grooved for wire rope
- Drum pawl controlled manually
- Electronic drum rotation indicators
- Mounted on anti-friction bearings
- 21.81 in (0.55m) root diameter
- 37.81 in (0.96m) flange diameter
- 25.25 in (0.64m) width

The free-fall operation mode is designed to prevent load lowering even if the free-fall switch is accidentally activated.

The automatic brake mode meets all OSHA requirements for personnel handling.

Optional Front-Mounted Third Hoist Drum

The hydraulic winch is pinned to the front of the upper frame and is used in conjunction with a fleeting sheave and 3-sheave idler assembly to run the wire rope over the boom top section.

- Power up/down for luffer applications where a second load line is needed
- Controlled free spooling capability for pile driving applications or auxiliary hoist line for luffer applications.
- 12.75 in (0.32m) root diameter
- 22.75 in (0.58m) flange diameter
- 17 in (0.43m) width
- Mounted on anti-friction bearings
- 0.75 in (19mm) grooved lagging

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Optional Rear–Mounted Fourth Hoist Drum

Drum contains an axial piston, variable speed hydraulic motor with individual automatic winch motor brakes. Power flow is directed through a patented, semi–outboard mounted, “wet” style multi–disc brake.

- Power up/down & free–fall operation modes
- Automatic brake mode (spring applied, hydraulically released, wet type brake)
- Drum lagging grooved for wire rope
- Drum pawl controlled manually
- Electronic drum rotation indicators
- Mounted on anti–friction bearings
- 21.50 in (0.54m) root diameter
- 40.94 in (1.04m) flange diameter
- 24.63 in (0.62m) width
- Pins to rear of upper frame
- Plumbing and valving standard with main unit

The free–fall operation mode is designed to prevent load lowering even if the free–fall switch is accidentally activated.

The automatic brake mode meets all OSHA requirements for personnel handling.

Boom Hoist Drum

Contains a pilot controlled, bi–directional, axial piston motor and a planetary gear reduction unit to provide positive control under all load conditions.

- Spring applied, hydraulically released, disc type brake controlled automatically
- 0.78 in (20mm) grooved lagging
- Drum pawl controlled automatically
- Mounted on anti–friction bearings
- 18.35 in (0.47m) root diameter
- 30.40 in (0.77m) flange diameter
- 11.16 in (0.28m) width

Swing System

Pilot controlled bi–directional axial piston motors and planetary gear reduction units to provide positive control under all load conditions.

- Spring applied, hydraulically released, 360° multi–plate brake
- Free swing mode when lever is in neutral position
- Four position positive house lock
- Two–speed swing
- Audio/Visual swing alarm
- Maximum swing speed is 2.5 rpm

Counterweight

Consists of a four–piece design that can be easily lowered to the ground using the removal cylinders.

- “A” upper counterweight consists of one, 25,260 lb (11 458kg) base slab
- “B” upper counterweight consists of two, 9,370 lb (4 250kg) wing weight
- “C” upper counterweight consists of two, 9,410 lb (4 268kg) wing weight
- Two side frame counterweights – 11,100 lb (5 035kg) each

Total combined counterweight, :ABC: plus side frame counterweights is 85,020 lb (38 564kg).

Operator Cab

Fully enclosed modular steel compartment is independently mounted and padded to protect against vibration and noise.

- All tinted/tempered safety glass
- Folding hinge entry door and sliding front glass window
- 19,000 BTU hot water heater
- 18,600 BTU air conditioner
- Door and window locks
- Circulating fan
- Sun visor
- Cloth seat
- Defroster
- Windshield wipers and washer
- Dry chemical fire extinguisher
- Engine instrumentation panel (voltmeter, engine oil pressure, engine water temperature, fuel level, hydraulic oil temperature, hour meter, and service monitor system)
- Electronic drum rotation indicators for front and rear hoist drums
- Six way adjustable seat
- Hand and foot throttle
- Fully adjustable single axis controls
- Swing lever with swing brake and horn located on handle
- Bubble type level
- Ergonomic gauge layout
- Controls shut off lever
- Control stand is adjustable for operator comfort.

Rated Capacity Limiter System

The HSL rated capacity limiter system is a boom hoist load cell system. This system provides the operator with useful geometrical data, to include:

- Main Boom Length
- Main Boom Angle
- Jib Length
- Jib Angle
- Operating Mode
- Load Radius
- Boom Tip Height
- Audible Alarm
- Pre–Warning Light
- Overload Light
- Load On Hook
- Function kick–outs including over load
- Operator settable stops (ramped stops)
- Anti–Two Block Indicator
- Boom hoist dead end load cell (no lineriders)

Boom Hoist System

Designed to lift off maximum boom or maximum boom plus jib unassisted. Operates up to a maximum boom angle of 80° for conventional boom and 90° for luffing boom. Boom hoist limit system limits maximum boom angle operation.

- Pin–on bail frame
- 12–part reeving with 20mm (0.787 in) wire rope
- 22 ft (6.71m) live mast
- Two 1.25 in (32mm) pendants
- Tubular boom backstops (telescopic type)
- Sheaves contain sealed anti–friction bearings
- Boom speed from 10° – 70° is 69 seconds with no load. Speed was determined using 100 ft (30.48m) of tube boom.

Machinery Cab

Hinged doors (four on right side, three on left side) for machinery access. Storage/rigging box located on operator’s side of upper house. Equipped with rooftop access ladder and skid resistant finish on roof.

Catwalks

Standard on right and left sides. Catwalks are removable for reduced travel width.

Lower Structure

Carbody

Lower Frame

All welded high strength steel [65,000 psi (448.16MPa) yield] box construction frame with precision machined surfaces for turntable bearing and rotating joint.

- 9 ft 11 in (3.02m) overall width
- 11 ft 11 in (3.60m) overall length

Side Frames

Side Frames

All welded, precision machined, steel frames can be hydraulically extended and retracted by a hydraulic cylinder mounted in the lower frame.

- 14 ft 2 in (4.32m) extended gauge
- 9 ft (2.74m) retracted gauge
- 20 ft 6 in (6.25m) overall length
- 36 in (0.90m) wide track shoes
- Sealed (oil filled) drive planetaries
- Compact travel drives
- Automatic hydraulic track adjustment system – optional

Track Rollers

- Ten sealed (oil filled) track rollers per side frame
- Heat treated, mounted on oil filled anti-friction bearings

Tracks

Heat treated, self-cleaning, multiple hinged track shoes joined by one-piece full floating pins; 53 shoes per side frame

Take Up Idlers

Cast steel, heat treated, self-cleaning, mounted on aluminum/bronze bushings. Lubricated through idler shaft.

- **Track Tension Adjustment** – Idler wheel adjusted by means of hydraulic cylinder and hand pump. Idler wheel shaft held in position with shims after adjustment is made.

Travel and Steering

Travel and Steering

Each side frame contains a pilot controlled, bi-directional, axial piston motor and a planetary gear reduction unit to provide positive control under all load conditions.

- Individual control provides smooth, precise maneuverability including full counter-rotation.
- Spring applied, hydraulically released disc type brake controlled automatically
- Maximum travel speed is 1.2 mph (1.93km/h).
- Designed to 30% gradeability

Optional – Jack System

System contains four hydraulic cylinders individually pinned on swing out beams.

- Individual controls are mounted on carbody.
- Minimum height of carbody when resting on pontoons is 16 in (0.41m).
- Maximum height of carbody when resting on pontoons is 42 in (1.07m).

Attachment and Options

Conventional Tubular Boom 40–230 ft (12.19–70.10m)

Basic Boom

40 ft (12.19m) two-piece design that utilizes a 20 ft (6.10m) base section and a 20 ft (6.10m) open throat top section with in-line connecting pins on 60 in (1.52m) wide and 50 in (1.27m) deep centers.

- Boom foot on 55.12 in (1.40m) centers
- 3 in (7.62cm) diameter chords
- Lugs on base section for self assembly
- Deflector roller on top section
- Permanent skid pads mounted on top section to protect head machinery

- Four, 21.53 in, (54.69cm) root diameter polyamide sheaves mounted on sealed anti-friction bearings
- Tip extension and jib connecting lugs on top section
- Mechanical boom angle indicator

Tube Boom Extensions

The following table provides the lengths available and the suggested quantity to obtain maximum boom in 10 ft (3.05m) increments. Midpoint pendant connections are required at 100 ft (30.48m) for boom lengths of 210 ft (64.01m), 220 ft (67.06m), and 230 ft (70.10m).

- Polyamide wear blocks on top of each extension

Tube Boom Extensions		Quantity For Max Boom
ft	m	
10	3.05	1
20	6.10	2
30	9.14	2
40	12.19	2

- Maximum tip height of 233 ft 11 in (71.30m)
- Boom connecting pins storage on each extension

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Angle Boom 45 – 155 ft (13.72 – 47.24m)

Basic Angle Boom

45 ft (13.72m) two-piece design that utilizes a 20 ft (6.10m) base section and a 25 ft (7.62m) top section with in-line connecting pins on 60 in (1.52m) wide and 54 in (1.37m) deep centers.

- Boom foot on 55.12 in (1.40m) centers
- 4 in x 4 in x 0.5 in (10.16cm x 10.16cm x 1.27cm) angle chords
- Lugs on base section for self assembly
- Deflector roller on top section
- Rigid sheave guards
- Tip extension and jib connecting lugs on top section
- Three, 24.75 in (62.87cm) root diameter lift sheaves mounted on sealed anti-friction bearings with rope guards

Angle Boom Extensions

The following table provides the lengths available and the suggested quantity to obtain maximum boom in 10 ft (3.05m) increments. Midpoint pendant connections are not required.

Angle Boom Extensions		Quantity For Max Boom
ft	m	
10	3.05	1
20	6.10	2
30	9.14	2

- Appropriate length pendants
- Maximum angle boom tip height of 160.51 ft (48.92m).

Tubular Jib 30 – 75 ft (9.14 – 22.86m)

Basic Tube Jib

30 ft (9.14m) two-piece design that utilizes a 15 ft (4.57m) base section and a 15 ft (4.57m) top section with in-line connecting pins on 32 in (0.81m) wide and 24 in (0.61m) deep centers.

- 2 in (50.8mm) diameter tubular chords
- One 18.50 in (0.47m) root diameter steel sheave mounted on sealed anti-friction bearings
- 15 ft (4.57m) jib extensions provide jib lengths of 45 ft (13.72m), 60 ft (18.29m), and 75 ft (22.86m).

- Jib offset angles at 5°, 15°, and 25°
- The maximum tip height of boom + jib [200 ft + 75 ft (60.96 + 22.86m)] is 278.6 ft (84.92m).

Luffing Boom 80 – 140 ft (24.38 – 42.67m)

- Common base and extensions as open throat boom (“HP” only)
- 5 ft (1.52m) luffing extension required for bail anchor
- Working angles of 90°, 85°, 80°, 75°, 70°, and 65°
- Working lengths of 80 ft (24.38m) to 140 ft (42.67m)

Luffing Boom Extensions

The following table provides the lengths available and the suggested quantity to obtain the maximum luffing boom in 10 ft (3.05m) increments. Midpoint pendants are not required.

Luffing Boom Extensions		Quantity For Max Boom
ft	m	
10	3.05	1
20	6.10	2
30	9.14	1
40	12.19	1

Note: “HP” type boom must be used.

- Rear hoist drum becomes luffing jib hoist
- Optional third drum provides second working hoist line, if required.
- Designed for self-assembly
- Luffing jib hoist bridle and bail can remain reeved for crane transport
- Job site mobility with attachment
- Rolled out or rolled under erection methods
- Compact transport module

Auxiliary Tip Extension 5 ft (1.5m)

Designed to use in place of jib to provide clearance between working hoist lines. The extension is equipped with two nylon 18 in (45.72cm) root diameter sheaves mounted on sealed anti-friction bearings. Maximum capacity is 18.5 Ton (16.78mt).

Luffing Jib 50 – 140 ft (15.24 – 42.67m)

Basic Luffing Jib

50 ft (15.24m) four-piece design utilizes a 5 ft (1.52m) luffing boom top section, 20 ft (6.10m) luffing jib base section, 20 ft (6.10m) luffing jib top section, and 10 ft (3.05m) jib extension with in-line connecting pins. Jib extensions are 48 in (1.22m) wide and 39 in (0.99m) deep at the centers.

- 25 Ton (22.68mt) maximum capacity
- Working lengths of 50 ft (15.24m) to 140 ft (42.67m)
- Lugs on base section to attach fan-post transport links
- Two steel 22.50 in (0.57m) diameter luffing jib head sheaves
- Two polyamide 21.25 in (0.54m) diameter luffing boom auxiliary head sheaves
- Pin-on nose wheel
- Eight-part luffing jib hoist
- 1.25 in (31.75mm) diameter type “N” pendants
- Anemometer with in-cab display

Luffing Jib Extensions

The following table provides the lengths available and the suggested quantity to obtain the maximum luffing jib in 10 ft (3.05m) increments. Midpoint pendants are not required.

Luffing Jib Extensions		Quantity For Max Luffing Jib
ft	m	
10	3.05	1
20	6.10	1
30	9.14	2

- Deflector roller on top of each extension
- Appropriate length pendants
- Maximum luffing jib tip height of 283 ft (86.26m)

Load Hoist Performance

Front or Rear Drum – 26mm Wire Rope

Rope Layer	Maximum Line Pull		No Load Line Speed		Full Load Line Speed		Pitch Diameter		Layer		Total	
	lb	kg	ft/min	m/min	ft/min	m/min	in	mm	ft	m	ft	m
1	44,565	20 214	348	106	72	22	22.8	580	137.5	41.9	137.5	41.9
2	40,898	18 551	380	116	79	24	24.9	632	148.0	45.1	285.5	87.0
3	37,789	17 141	411	125	85	26	26.9	684	158.5	48.3	444.0	135.3
4	35,119	15 930	442	135	92	28	29.0	736	169.0	51.5	612.9	186.8
5	32,801	14 879	473	144	98	30	31.0	788	179.5	54.7	792.4	241.5
6	30,771	13 958	505	154	105	32	33.1	840	190.0	57.9	982.4	299.4
7	28,977	13 144	536	163	111	34	35.1	892	200.4	61.1	1 182.8	360.5

Boom Hoist Drum – 20mm Wire Rope

Rope Layer	Maximum Line Pull		No Load Line Speed		Full Load Line Speed		Pitch Diameter		Layer		Total	
	lb	kg	ft/min	m/min	ft/min	m/min	in	mm	ft	m	ft	m
1	34,311	15 563	152	46	32	10	19.1	486	65.1	19.8	65.1	19.8
2	31,702	14 380	165	50	34	10	20.7	526	69.7	21.2	134.8	41.1
3	29,462	13 364	177	54	37	11	22.3	566	74.2	22.6	209.0	63.7
4	27,517	12 482	190	58	39	12	23.9	606	78.8	24.0	287.8	87.7
5	25,813	11 709	203	62	42	13	25.4	646	83.4	25.4	371.2	113.1
6	24,308	11 026	215	66	45	14	27.0	686	87.9	26.8	459.1	139.9
7	22,969	10 418	228	69	47	14	28.6	726	92.5	28.2	551.6	168.1

Rear Mounted Fourth Drum – 26mm Wire Rope

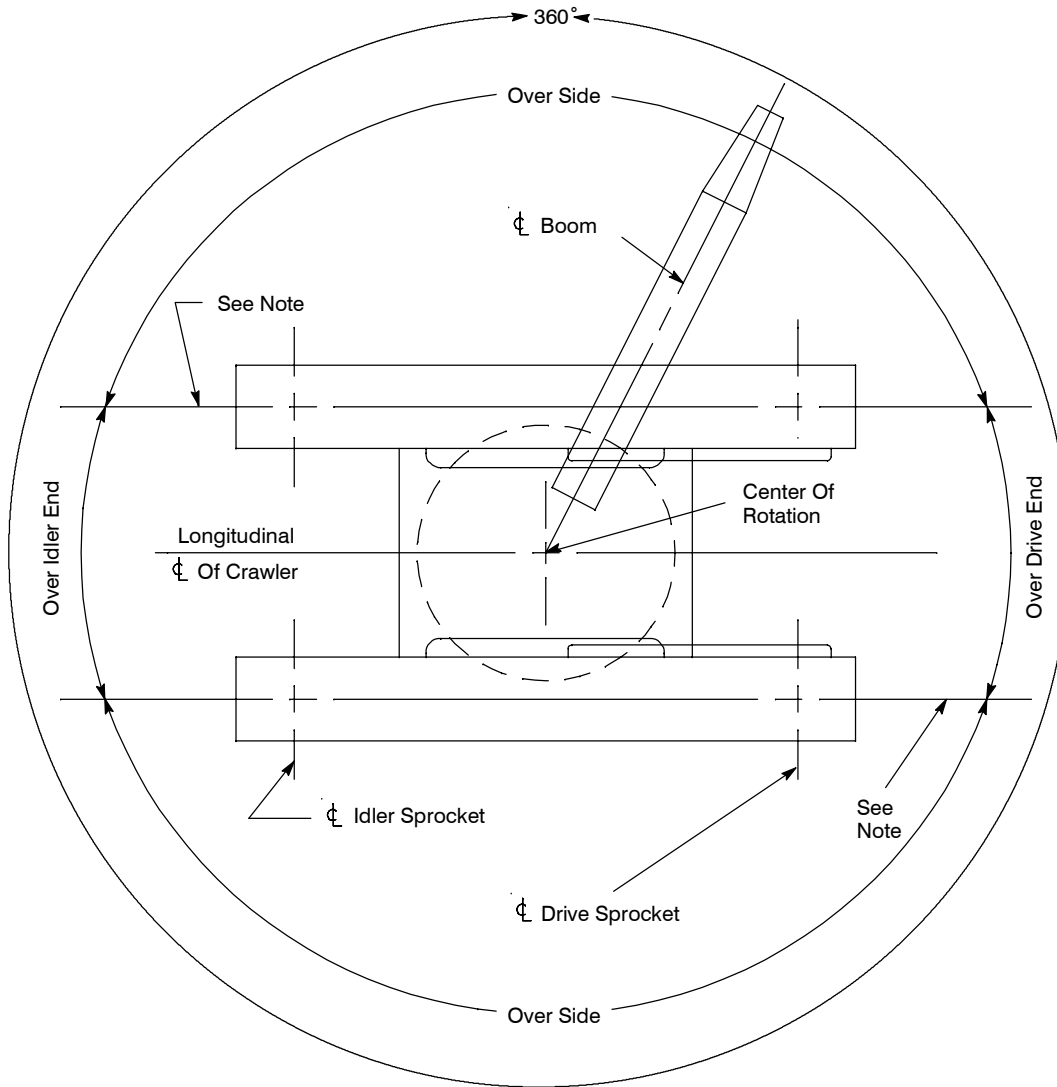
Rope Layer	Maximum Line Pull		No Load Line Speed		Full Load Line Speed		Pitch Diameter		Layer		Total	
	lb	kg	ft/min	m/min	ft/min	m/min	in	mm	ft	m	ft	m
1	44,565	20 214	241	74	50	15	22.8	580	119.6	36.4	119.6	36.4
2	40,898	18 551	263	80	55	17	24.9	632	128.7	39.2	248.2	75.7
3	37,789	17 141	285	87	59	18	26.9	684	137.8	42.0	386.1	117.7
4	35,119	15 930	306	93	64	19	29.0	736	146.9	44.8	533.0	162.5
5	32,801	14 879	328	100	68	21	31.0	788	156.1	47.6	689.0	210.0

Front Mounted Third Drum – 3/4" (19mm) Wire Rope

Rope Layer	Maximum Line Pull		No Load Line Speed		Full Load Line Speed		Pitch Diameter		Layer		Total	
	lb	kg	ft/min	m/min	ft/min	m/min	in	mm	ft	m	ft	m
1	23,000	10 433	160	48.8	102	31.1	13.5	343	80	24.4	80	24.4
2	20,700	9 390	178	54.3	114	34.7	15	381	89	27.1	169	51.5
3	18,820	8 537	196	59.7	125	38.1	16.5	419	98	29.9	267	81.4
4	17,250	7 825	214	65.2	137	41.8	18	457	107	32.6	374	114.0
5	15,925	7 224	232	70.7	148	45.1	19.5	495	116	35.4	490	149.4
6	14,785	6 706	249	75.9	160	48.8	21	533	124	37.8	614	187.1

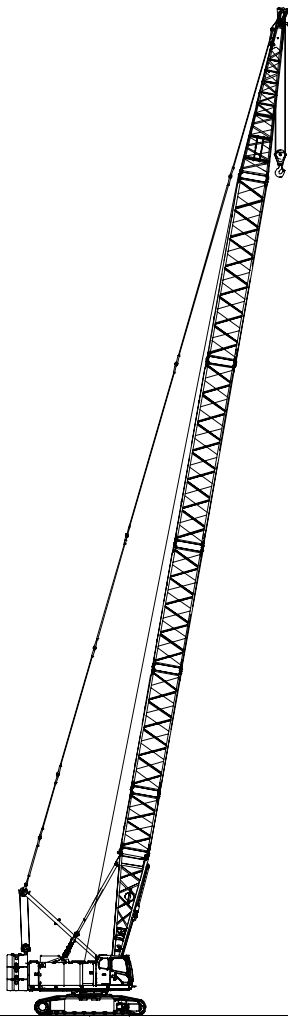
Wire Rope Application	Diameter		Type	Max. Permissible Load		Wire Rope Descriptions
	in	mm		lb	kg	
Boom Hoist	--	20	DB	18,500	8 391	6 X 26 (6 X 19 Class), Warrington Seale, E.I.P.S., Preformed, Right Regular Lay, I.W.R.C.
Front Drum	--	26	DB	30,900	14 016	6 X 26 (6 X 19 Class), Warrington Seale, E.I.P.S., Preformed, Right Regular Lay, I.W.R.C.
Fourth Drum (Optional)	--	26	RB	23,800	10 796	18 X 19 Rotation Resistant Compacted Strand – High Strength – Preformed, Right Regular Lay
Rear Drum	--	26	RB	23,800	10 796	18 X 19 Rotation Resistant Compacted Strand – High Strength – Preformed, Right Regular Lay
Third Drum (Optional)	3/4	19	DB	16,800	7 620	6 X 26 (6 X 19 Class), Warrington Seale, E.I.P.S., Preformed, Right Regular Lay, I.W.R.C.

Working Areas

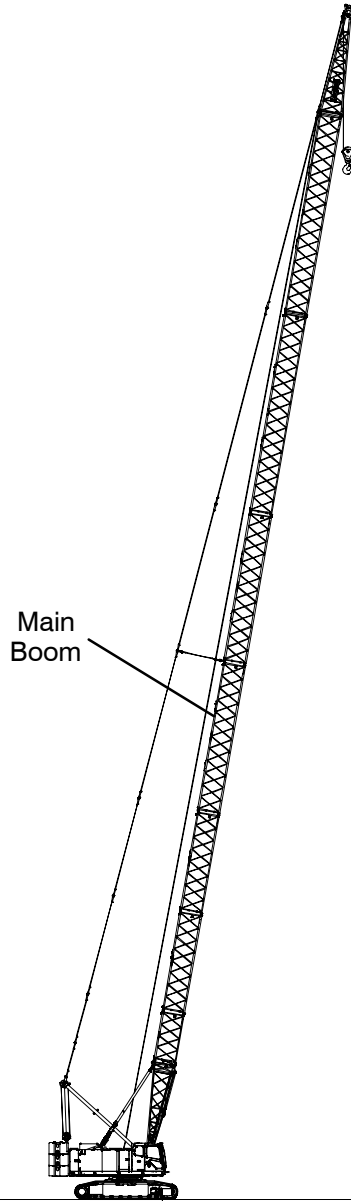


Note: These Lines Determine The Limiting Position Of Any Load For Operation Within Working Areas Indicated.

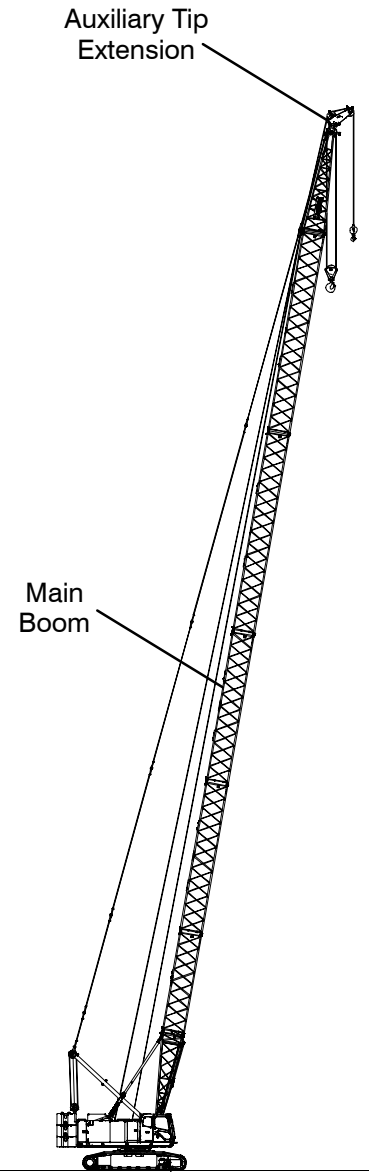
Attachments



**45–155 ft (13.72–14.74m)
Main Angle Boom**

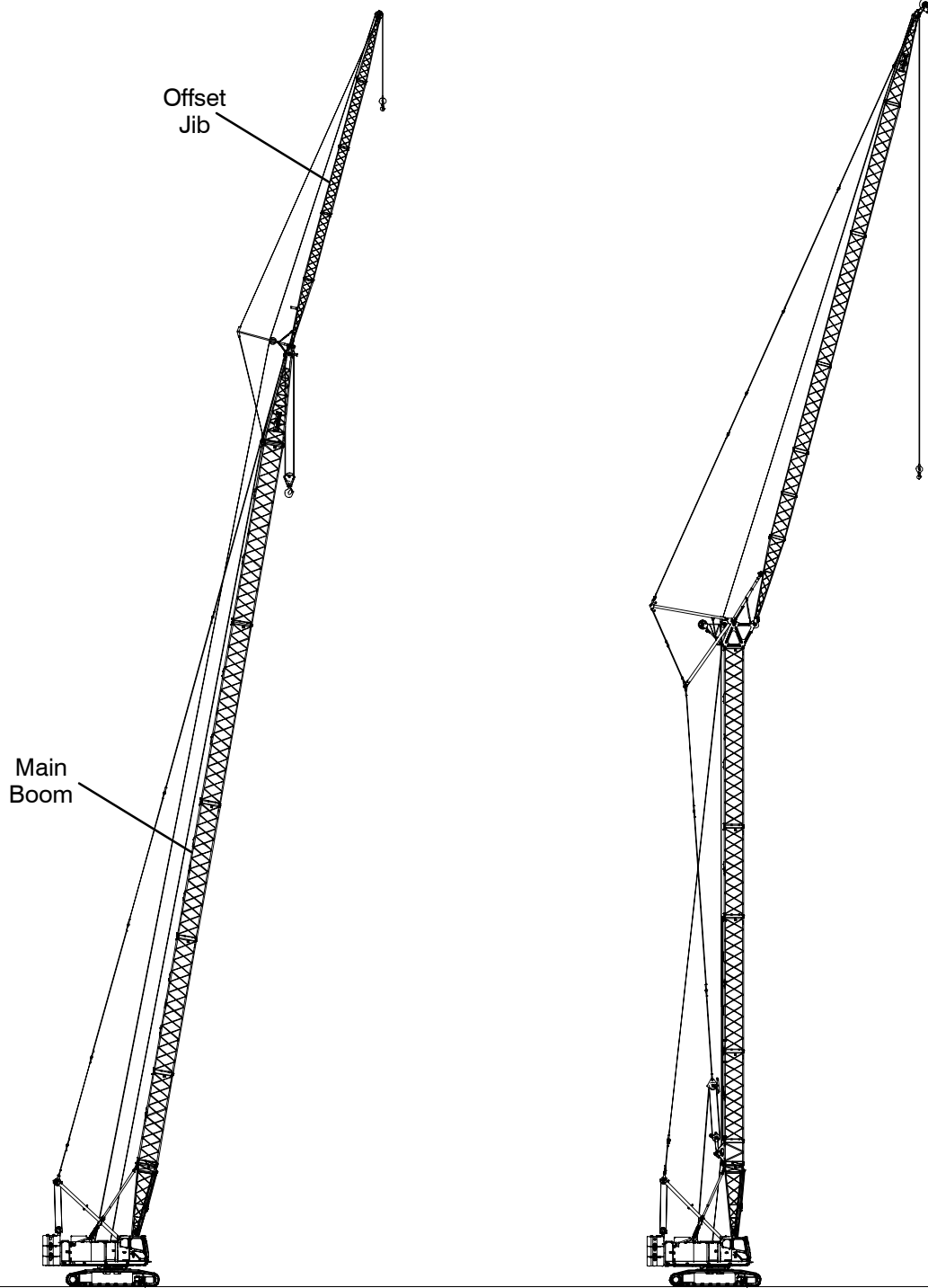


**40–230 ft (12.19–70.10m)
Main Tube Boom**



**40–200 ft (12.19–60.96m)
Main Tube Boom With
5 ft (1.5m) Tip Extension**

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**40–200 ft (12.19–60.96m) Main
Tube Boom With 30–75 ft
(9.14–22.86m) Offset Jib**

**80–140 ft (24.38–42.67m)
Luffing Boom + 50–140 ft
(15.24–42.67m) Luffing Jib**