



LIFTING CHARTS - Crawler Cranes

LINK-BELT MODEL 238H5 - 150 TON CAPACITY

Upper Structure

Frame

All welded and precision machined surfaces.

Turntable Bearing

- With integral swing gear. 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 in 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	284 hp (212kw)
Peak torque	830 ft lb (1 125joule) @ 1,500 rpm
Electrical system	24 volt
Fuel tank capacity	77 gal (291.5L)
Batteries	2-12 volt
Approximate fuel consumption	gal/hr (L/hr)
100% hp	14.4 (54.51)
75% hp	11.7 (44.29)
50% hp	8.4 (31.80)
25% hp	4.2 (15.89)

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 4,480 psi (315kg/cm²) and 74 gal/min (280L/min) powers load hoist drums, boom hoist drum, optional third drum, and travel.
- Two fixed displacement gear type pumps operating at 3,340 psi (235kg/cm²) and 21 gal/min (80L/min) powers the swing motor, lower jacks, and counterweight removal.
- One fixed displacement gear type pump operating at 1,991 psi (140kg/cm²) and 8.4 gal/min (31.8L/min) powers the fan for the oil cooler.
- One fixed displacement gear type pump operating at 1,138 psi (80kg/cm²) and 10.7 gal/min (40.6L/min) powers the remote control valves.

Remote Oil Cooler

Oil cooler, located behind the operator's cab, has a hydraulically driven, thermostatically controlled fan to control oil temperature.

Pump Control "Fine Inching" Mode

Special pump setting, selectable from the operator's cab, that allows very slow movements of load hoist drums, boom hoist drum, and travel for precision work.

Hydraulic Reservoir

42 gal (159.0L), 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 a pilot controlled, bi-directional, axial piston motor and a planetary gear reduction unit to provide positive control under all load conditions.

- Power up/down & free-fall operation modes
- Automatic brake mode (spring applied, hydraulically released, band type brake)
- Grooved lagging
- Drum pawl controlled manually
- Electronic drum rotation indicators
- Mounted on anti-friction bearings
- 16.76 in (42.57cm) root diameter
- 33.80 in (85.85cm) flange diameter
- 22.62 in (57.45cm) 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.

Drum Clutches

Hydraulic two shoe clutch design that uses a 20 in (50.80cm) diameter x 5 in (12.70cm) wide shoe that expands internally to provide load control. Swept area is 314.16 in² (2 026.83cm²).

Optional Front-Mounted Third Hoist Drum

Mounts in the boom base section 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
- 18.75 in (47.63cm) root diameter
- 27 in (68.58cm) flange diameter
- 24 in (60.96cm) width
- Mounted on anti-friction bearings

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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
- Grooved lagging
- Drum pawl controlled automatically
- Mounted on anti-friction bearings
- 14.99 in (38.07cm) root diameter
- 30.71 in (78.00cm) flange diameter
- 11.55 in (29.34cm) 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 2.18 rpm

Counterweight

Consists of a five-piece design that can be easily lowered to the ground using the hydraulic counterweight removal cylinders.

- “A” upper counterweight consists of one, 14,000 lb (6 350kg) base slab and two, 13,000 lb (5 897kg) wing weights.
- “B” upper counterweight consists of two, 13,000 lb (5 897kg) wing weights.
- “C” upper counterweight consists of two, 13,000 lb (5 897kg) wing weights.
- Two side frame counterweights – 24,000 lb (10 886kg) each.

Total combined counterweight, “ABC” plus side frames counterweights, is 140,000 lb (63 504kg).

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
- Right hand control stand is adjustable by electric motor for operator comfort.

Rated Capacity Limiter System

The 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 and maximum luffing attachment unassisted. Operates up to a maximum boom angle of 80°. Boom hoist limit system limits maximum boom angle operation.

- Pin-on bail frame
- 10-part reeving with 7/8 in (22mm) wire rope
- Bridle assembly
- 26 ft (7.92m) live mast
- Tubular boom backstops (telescopic type)
- Sheaves contain sealed anti-friction bearings
- Boom speed from 10° – 70° is 90 seconds with no load. Speed was determined using 100 ft (30.48m) of tube boom.

Machinery Cab

Hinged doors (one on right side, two on left side) for machinery access. 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 [100,000 psi (689.48MPa) yield] box construction frame with precision machined surfaces for turntable bearing and rotating joint.

- 17 ft (5.18m) overall width
- 11 ft 9.75 in (3.60m) overall length

Side Frames

Side Frames

All welded, precision machined and removable. Carbody cross axles positioned by dowels and held in place with adjustable wedge packs.

- 15 ft 6 in (4.72m) gauge
- 25 ft 0.75 in (7.64m) overall length
- 44 in (1.12m) wide track shoes
- Sealed (oil filled) drive planetaries
- Compact travel drives
- Slide rails on top of each side frame

Track Rollers

- Eleven 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; 44 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 0.78 mph (1.25km/h).
- Designed to 30% gradeability

Jack System

System contains four hydraulic cylinders individually pinned on the carbody.

- Standard; four ground controlled, power hydraulic jacks, pinned to the lower carbody frame, used to raise the crane to facilitate removal and installation of the crawler side frames.
- Individual controls are mounted on carbody.
- Minimum height of carbody when resting on pontoons is 21.50 in (54.61cm).
- Maximum height of carbody when resting on pontoons is 37.50 in (0.95m).

Attachment and Options

Conventional Tubular Boom 50–260 ft (15.24–79.25m)

Basic Boom

50 ft (15.24m) two-piece design that utilizes a 20 ft (6.10m) base section and a 30 ft (9.14m) open throat top section with in-line connecting pins on 70 in (1.78m) wide and 62 in (1.57m) deep centers.

- Boom foot on 55 in (1.40m) centers
- 4 in (10.16cm) diameter chords
- Lugs on base section to attach carrying links
- Skywalk platform
- Deflector roller on top section
- Permanent skid pads mounted on top section to protect head machinery

- Six, 20.50 in (52.07cm) root diameter steel 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 110 ft (33.5m) for boom lengths of 250 ft (76.2m) and 260 ft (79.2m).

- Polyamide wear blocks on top of each extension
- Appropriate length bar pendants stored on extension

Tube Boom Extensions		Quantity For Max Boom
ft	m	
10	3.05	2*
20	6.10	2
30	9.14	1
40	12.19	3

* Assumes one 10 ft (3.05m) extension is the self-assembly section.

- Maximum tip height of 262 ft 11 in (80.14m)
- Boom connecting pins storage on each extension

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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) for tube boom.
- Jib offset angles at 5°, 15°, and 25°
- The maximum tip height of tube boom + jib [230 ft + 75 ft (70.10 + 22.86m)] is 308 ft (93.88m).
- Can be used as fixed jib on luffing jib

Luffing Boom 85–165 ft (25.91–50.29m)

- Common base and extensions as open throat boom (“FD” boom only)
- 10 ft (3.05m) luffing extension required for bail anchor
- Working angles of 90°, 85°, 80°, 75°, 70°, and 65°
- Working lengths of 85 ft (25.91m) to 165 ft (50.29m)

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	1
30	9.14	1
40	12.19	2

* 10 ft (3.05m) extension is the self-assembly section. Required for luffer operation.

Note: “FD” 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 80–160 ft (24.38–48.77m)

Basic Luffing Jib

80 ft (24.38m) five-piece design utilizes a 5 ft (1.52m) luffing boom top section, 20 ft (6.10m) luffing jib base section, 10 ft (3.05m) jib extension, 30 ft (6.10m) extension, and 20 ft (6.10m) top section with in-line connecting pins. Jib extensions are 44 in (1.12m) wide and 54 in (1.37m) deep at the centers.

- 27 Ton (24.50mt) maximum capacity
- Working lengths of 80 ft (24.38m) to 160 ft (48.77m)
- Top section includes mounting lugs for all attachment options
- Lugs on base section to attach fan-post transport links
- Two steel 18 in (45.72cm) diameter luffing jib head sheaves
- Two polyamide 21.25 in (53.98cm) diameter luffing boom auxiliary head sheaves
- Pin-on nose wheel
- Eight-part luffing jib hoist
- 1.25 in (31.75mm) diameter type “N” pendants

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	
20	6.10	1
30	9.14	2

Notes:

These extensions, combined with extensions included in basic luffing jib, make up all jib lengths to 160 ft (48.77m).

40 ft (12.19m) of extensions included in basic jib. Extensions and pendants common with the LS-138H, LS-138H II, 138 HYLAB 5, LS-208H, and LS-208H II.

- Deflector roller on top of each extension
- Appropriate length pendants
- Maximum luffing jib tip height of 326 ft (99.36m)

Fixed Jib 30 ft (9.14m)

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
- Fixed jib offset angle is 5°

Working Weights

Based on basic crane including Mitsubishi 6D24–TLA2L diesel engine, turntable bearing, independent hydraulic powered drums, boom hoist limiting device, independent hydraulic swing and travel, counterweight, swing brake, drum rotation indicators, and crawler lower with 44 in (1.12m) wide track shoes, sealed track rollers, catwalks, hydraulic boom foot pin removal, plus the following:	Cwt “A”	Cwt “AB”	Cwt “ABC” + “A” Lower Cwt	
	lb (kg)	lb (kg)	lb (kg)	
Lifting crane – includes 50 ft (15.24m) basic tubular boom, 26 ft (7.92m) live mast, 950 ft (289.56m) of 7/8 in (22mm) diameter wire rope, 500 ft (152.40m) of 7/8 in (22mm) diameter boom hoist rope, 125 Ton (113.4mt) hook block, and basic pendants.	187,717 (85 148)	213,717 (96 942)	287,717 (130 508)	
Ground Bearing Pressure	psi	7.81	8.91	12.05
	kg/cm ²	0.55	0.63	0.85

Transport Weights

Base Crane: Rigid boom backstops, 77 gal (291L) of fuel, catwalks (both sides), 26 ft (7.92m) live mast, bail, boom hoist rope, boom base section, 10 ft (3.05m) self-assembly section, 950 ft (289.56m) of type “DB” front hoist rope, and 600 ft (182.88m) of type “RB” rear hoist rope.

Item Description	Gross Weight		Transport Loads						
	lb	(kg)	#1	#2	#3	#4	#5	#6	#7
Base Crane	71,097	32 250	1						
Add Side Frame with Wedge Packs – Two Required	34,649	15 717		1	1				
Add “A” Base Counterweight	14,000	6 350				1			
Add “A” Wing Counterweight – Two Required	13,000	5 897						1	1
Add “B” Wing Counterweight – Two Required	13,000	5 897						1	1
Add “C” Wing Counterweight – Two Required	13,000	5 897						1	1
Add “A” Lower Counterweight – Two Required	24,000	10 886				1	1		
Add Hydraulic Third Drum without Rope	2,000	907							
Add 30 ft (9.14m) Top Section	4,742	2 151							1
Add 10 ft (3.05m) Extension w/Pins and Pendants	1,056	479					1		
Add 20 ft (6.10m) Extension w/Pins and Pendants	1,778	807					1		
Add 30 ft (9.14m) Extension w/Pins and Pendants	2,482	1 126				1			
Add 40 ft (12.19m) Extension w/Pins and Pendants	3,177	1 441		1	1			1	
Add 30 ft (9.14m) Jib	1,710	775					1		
Add 15 ft (4.57m) Jib Extension w/Pins and Pendants	330	150					3		
Add 5 ft (1.52m) Auxiliary Tip Extension	671	304							
Add 15 Ton (13.6mt) Hook Ball (Non-swivel)	748	339			1				
Add 15 Ton (13.6mt) Hook Ball (Swivel)	767	348							
Add 125 Ton (113.4mt) Six-sheave Hook Block	2,580	1 170		1					
Remove 10 ft (3.05m) Self-Assembly Section	-3,735	1 694							
Remove 20 ft (6.10m) Base Section	-3,350	1 520							
Remove Main Hoist Rope	-1,349	-612							
Remove Rear Drum Auxiliary Wire Rope	-900	-408							
Remove 50 gal (189L) of Fuel	-362	-164							
Approximate Total Shipping Weight	lb		71,097	41,155	39,325	40,482	29,495	42,177	43,742
	kg		32 250	18 668	17 838	18 362	13 379	19 131	19 841

Notes:

Estimated weights vary by +/- 2%. Numbers in the load columns (numbers 1 – 7) represent quantities.

Estimated transport loads assume the load out consist of 240 ft (73.15m) of boom and 75 ft (22.86m) of jib and full counterweight.

Support loads were targeted at 45,000 lb (20 412kg), 8.5 ft (2.59m) wide, and 48 ft (14.63m) long trailer. This may vary depending on state laws, empty truck/trailer weights, and style of trailer.

Load Hoist Performance

Front Drum – 7/8 in (22mm) 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	40,036	18 160	277	84.4	126	38.4	17.6	447	111	33.8	111	33.8
2	36,396	16 509	305	93.0	139	42.4	19.4	493	121	36.9	232	70.7
3	33,363	15 133	332	101.2	151	46.0	21.2	538	131	39.9	363	110.6
4	30,797	13 970	360	109.7	164	50.0	22.9	582	141	43.0	503	153.3
5	28,597	12 972	388	118.3	177	53.9	24.7	627	151	46.0	654	199.3
6	26,690	12 107	416	126.8	189	57.6	26.5	673	161	49.1	815	248.4
7	25,022	11 350	443	135.0	202	61.6	28.2	716	171	52.1	986	300.5
8	---	---	---	---	---	---	29.9	759	181	55.2	1,167	355.7

Rear Drum – 7/8 in (22mm) 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	24,709	11 208	449	136.9	183	55.8	17.6	447	111	33.8	111	33.8
2	22,463	10 189	494	150.6	202	61.6	19.4	493	121	36.9	232	70.7
3	20,591	9 340	539	164.3	220	67.1	21.2	538	131	39.9	363	110.6
4	19,007	8 622	584	178.0	238	72.5	22.9	582	141	43.0	503	153.3
5	17,649	8 006	628	191.4	257	78.3	24.7	627	151	46.0	654	199.3
6	16,473	7 472	673	205.1	275	83.8	26.5	673	161	49.1	815	248.4
7	15,443	7 005	718	218.8	293	89.3	28.2	716	171	52.1	986	300.5
8	---	---	---	---	---	---	29.9	760	181	55.2	1,167	355.7

Boom Hoist Drum – 7/8 in (22mm) Wire Rope

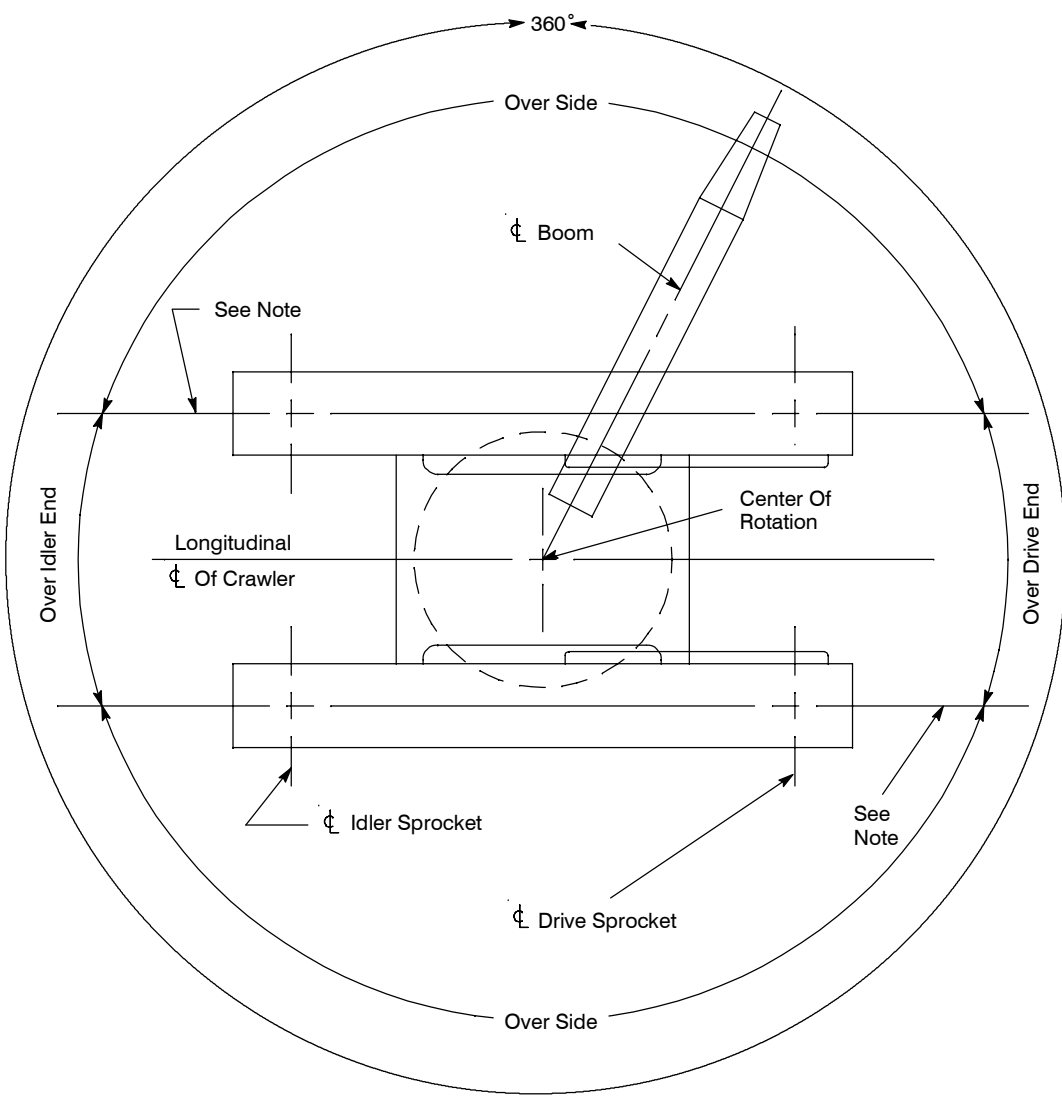
Rope Layer	Maximum Line Pull		No Load Line Speed		Full Load Line Speed		Pitch Diameter		Layer		Total	
	lb	kg	ft/min	m/min	ft/min	m/min	in	mm	ft	m	ft	m
1	38,496	17 462	132	40.2	116	35.4	15.9	404	50	15.2	50	15.2
2	34,647	15 716	146	44.5	129	39.3	17.6	447	55	16.8	105	32.0
3	31,497	14 287	161	49.1	142	43.3	19.4	493	60	18.3	165	50.3
4	28,872	13 096	176	53.6	155	47.2	21.2	538	65	19.8	229	69.8
5	26,651	12 089	190	57.9	168	51.2	22.9	582	70	21.3	299	91.1
6	24,748	11 226	205	62.5	181	55.2	24.7	627	75	22.9	374	114.0
7	23,098	10 477	220	67.1	194	59.1	26.5	673	80	24.4	454	138.4

Third Drum – 7/8 in (22mm) 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	20,555	9 324	272	82.9	242	73.8	20.5	521	134	40.8	134	40.8
2	18,933	8 588	295	89.9	263	80.2	22.2	564	145	44.2	279	85.0
3	17,552	7 962	318	96.9	284	86.6	24.0	610	156	47.5	435	132.6
4	16,359	7 420	341	103.9	304	92.7	25.7	653	168	51.2	603	183.8
5	15,318	6 948	365	111.3	325	99.1	27.5	699	179	54.6	782	238.4

Wire Rope Application	Diameter		Type	Max. Permissible Load		Wire Rope Descriptions
	in	mm		lb	kg	
Boom Hoist	7/8	22	FC	28,900	13 109	6 Strand, Compacted Strand, Swaged, Preformed, I.W.R.C., Right Lay, Regular Lay
Front Hoist	7/8	22	DB	22,700	10 297	6 X 26 (6 X 19 Class), Warrington Seale, E.I.P.S., Preformed, Right Regular Lay, I.W.R.C.
Third Drum (Optional)	7/8	22	RB	17,520	7 947	19 X 19 Rotation Resistant Compacted Strand – High Strength – Preformed, Right Regular Lay
Rear Drum	7/8	22	RB	17,520	7 947	19 X 19 Rotation Resistant Compacted Strand – High Strength – Preformed, Right Regular Lay

Working Areas



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

Attachments

