

Material Handling Machine

LH 150 Industry

Litronic®

Operating Weight:
286,600 – 485,000 lb

Engine:
536 HP / 400 kW (SAE J1349)
543 HP / 400 kW (ISO 9249)

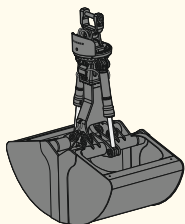
Stage Tier 4f
Electro

Max. System Performance:
661 kW

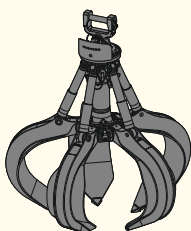


LIEBHERR

The Perfect Solution for Every Application



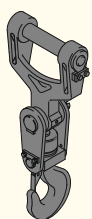
Shells for loose material



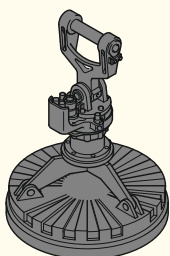
Multi-tine grab



Wood grab

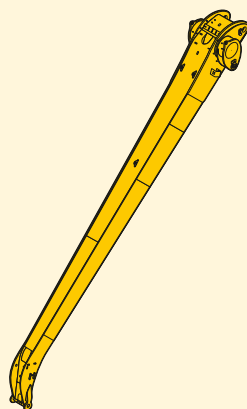


Load hook

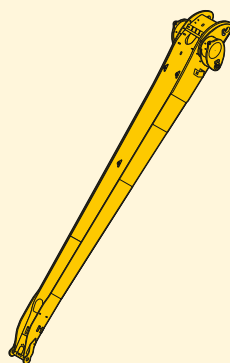


Magnet devices

Working Tools

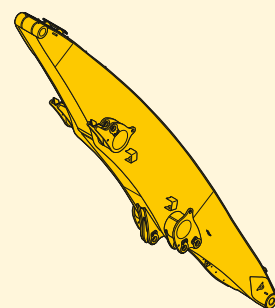


Angled stick

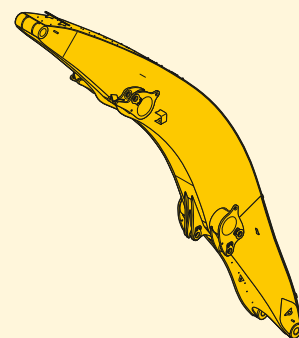


Straight stick

Sticks



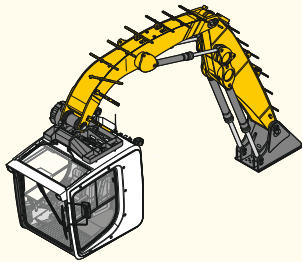
Straight boom



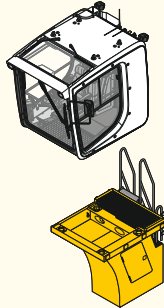
Angled boom

Booms

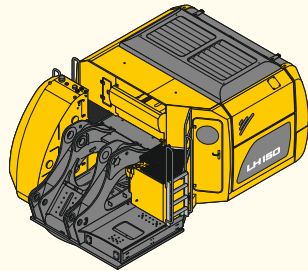
Cab Elevations



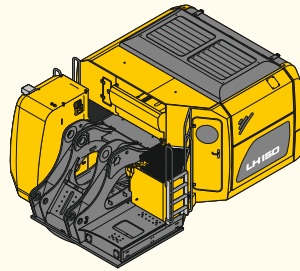
Hydraulic cab elevation



Rigid cab elevation



Diesel engine



Electric motor

Uppercarriage

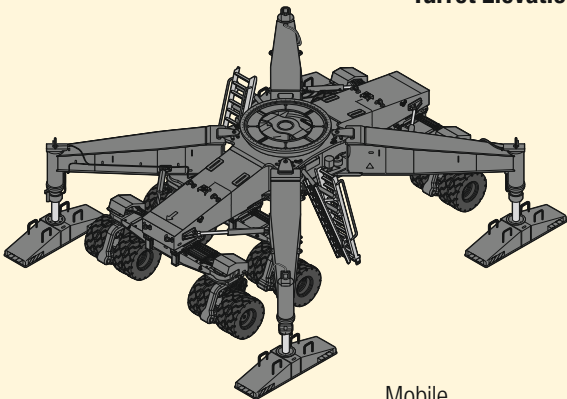


Turret 6'7"

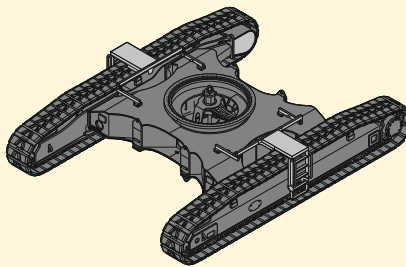


Turret 3'11"

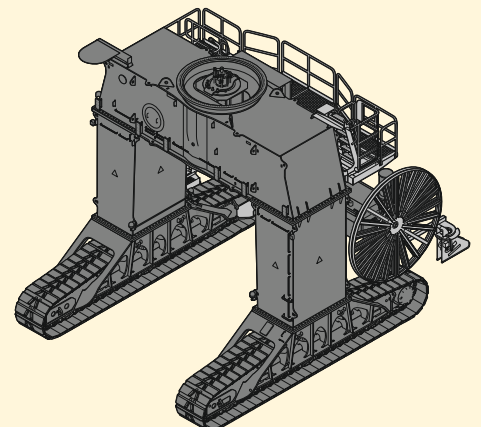
Turret Elevations



Mobile



Crawler



Gantry (Crawler and Rail-mounted)

Undercarriage

Technical Data



Diesel Engine

Rating	
per SAE J1349	536 HP (400 kW) at 1,700 rpm
per ISO 9249	543 HP (400 kW) at 1,700 rpm
Model	Liebherr D9508
Type	8 cylinder V-engine
Bore/Stroke	5.0/6.2 in
Displacement	986.1 in ³
Engine operation	4-stroke diesel Common-Rail turbo-charged and after-cooled reduced emissions
Air cleaner	dry-type air cleaner with pre-cleaner, primary and safety elements
Engine idling	sensor controlled
Electrical system	
Voltage	24 V
Batteries	4 x 180 Ah/12 V
Alternator	three-phase current 28 V/180 A
Stage Tier 4f	
Harmful emissions values	in accordance with EPA/CARB-40CFR stage Tier 4f
Emission control	Liebherr SCR technology
Fuel tank	740 gal
Urea tank	48 gal



Electric Motor

Rating	543 HP (400 kW) at 1,700 rpm
Model	Liebherr KGF1391
Type	three-phase squirrel cage motor electric motor auxiliary equipment (air-conditioning compressor, alternator 24 V)
Electrical system energy supply	Liebherr control cabinets uppercarriage and undercarriage with access protection, drive components heated and ventilated Liebherr frequency converter fed drive system heavy-duty version
Supply voltage	
Low voltage	380 – 690 V
High voltage	2.14 – 20 kV
Frequency	50/60 Hz
Engine idling	sensor controlled
Electrical system	battery-assisted control system, lighting, diagnostics system
Voltage	24 V
Batteries	2 x 180 Ah/12 V
Alternator	three-phase current 28 V/140 A



Cooling System

Diesel engine	water-cooled cooling system, consisting of a cooling unit for water and charge air and a 2 nd cooler for hydraulic oil, each with an infinitely variable, thermostatically controlled fan drive system
Electric motor	air-cooled cooling system for hydraulic oil with an infinitely variable, thermostatically controlled fan drive system frequency converter water-cooled



Hydraulic Controls

Power distribution	via control valves with integrated safety valves, simultaneous actuation of chassis and attachment. Swing drive separately in closed circuit.
Servo circuit	
Attachment and swing	with electro-hydraulic pilot control and proportional joystick levers
Chassis	with electro-hydraulic pilot control and an additional proportional joystick lever
Additional functions	
Proportional control	proportionally acting transmitters on the joysticks for additional hydraulic functions



Hydraulic System

Hydraulic pump	
for attachment and travel drive	4 Liebherr axial piston variable displacement pumps
Max. flow	4 x 73 gpm
Max. pressure	5,076 psi
for swing drive	reversible axial piston variable displacement pump, closed-loop circuit
Max. flow	120 gpm
Max. pressure	3,771 psi
Hydraulic pump regulation and control	Positive Control multi-circuit hydraulic system for independent and demand controlled dosing via the hydraulic pumps; sensor-controlled
Hydraulic tank	328 gal
Hydraulic system	489 – 502 gal (depending on undercarriage version)
Hydraulic oil filter	3 main return filters with integrated partial micro filtration (5 µm), 1 high pressure filter for each main pump
MODE selection	adjustment of engine and hydraulic performance via a mode pre-selector to match application, e.g. for especially economical and environmentally friendly operation or for maximum material handling and heavy-duty jobs
S (Sensitive)	mode for precision work and lifting through very sensitive movements
E (ECO)	mode for especially economical and environmentally friendly operation
P (Power)	mode for high performance with low fuel consumption
P+ (Power-Plus)	mode for highest performance and for very heavy duty applications, suitable for continuous operation

Swing Drive

Drive	Liebherr compact planetary reduction gear with Liebherr axial piston motor in a closed system with integrated brake valve
Swing ring	Liebherr, sealed race ball bearing swing ring, internal teeth
Swing speed	0 – 5.5 rpm stepless
Swing torque	191,766 lbf ft
Holding brake	wet multi-disc (spring applied, pressure released)

Operator's Cab

Cab	spacious operator cabin with profiled design, excellent view on working area, access from behind, fixed front, roof and base panel made of bullet proof glass, front screen with electrical heating, shock-absorbing suspension, sounddamping insulating, sliding window on left side, sun shadings, folding seat for instructor
Operator's seat	
Comfort	air cushioned operator's seat with headrest, lap belt, seat heater, adjustable seat cushion inclination and length, lockable horizontal suspension, automatic weight adjustment, adjustable suspension stiffness, pneumatic lumbar vertebrae support and passive seat climatisation with active coal
Option	
Premium	in addition to operator's seat comfort: active electronic weight adjustment (automatic readjustment), pneumatic low frequency suspension and active seat climatisation with active coal and ventilator
Control system	joysticks with arm consoles and swivel seat
Operation and displays	large high-resolution operating unit, self-explanatory, color display with touchscreen, video-compatible, numerous setting, control and monitoring options, e.g. air conditioning control, fuel consumption respectively energy consumption, machine and tool parameters
Air-conditioning	
Diesel engine	automatic air-conditioning, recirculated air function, fast de-icing and demisting at the press of a button, air vents can be operated via a menu; recirculated air and fresh air filters can be easily replaced and are accessible from the outside; heating-cooling unit, designed for extreme outside temperatures, sensors for solar radiation, inside and outside temperatures
Electric motor	in addition to diesel engine: air-conditioned cab via weekly timer

Attachment

Type	high-strength steel plates at highly stressed points for the toughest requirements. Complex and stable mountings of attachment and cylinders
Hydraulic cylinders	Liebherr cylinders with special seal system as well as shock absorption
Energy recovering cylinder	Liebherr gas cylinder with special sealing and control system
Bearings	sealed, low maintenance

Undercarriage

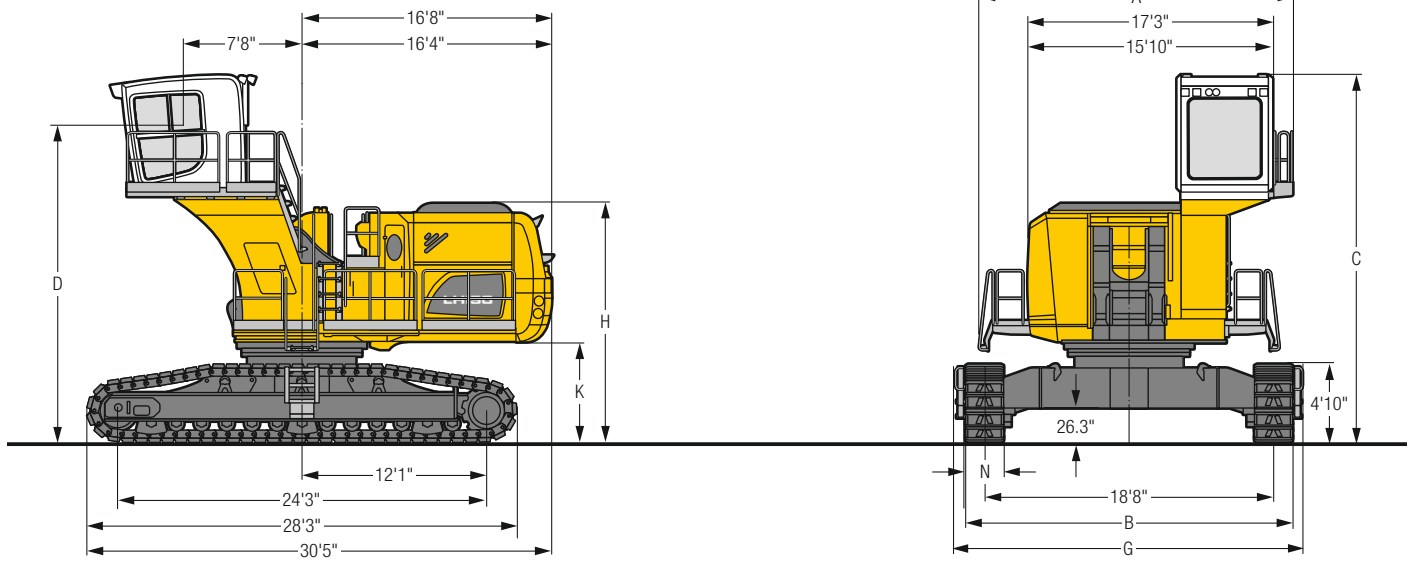
Mobile	
Drive	one axle drive per drive axle with Liebherr axial piston motor and functional brake valve on both sides
Travel speed	0 – 4.8 mph stepless 0 – 2.6 mph stepless (creeper speed)
Axles	wheelsets with suspended 88,185 lb axles, with slewing drive rotating around the vertical axis, hydraulic cylinder for leveling
Position of wheelsets	6 steering axles, 2 powered and braked, for leveling and axle load distribution, interconnected by hydraulic
Option	8 steering axles, 2 powered and braked
Steering programs	front wheel, rear wheel and all-wheel steering, move to the side in crab steering possible, turning on the spot
Service brake	two circuit travel brake system with accumulator
Holding brake	wet multi-disc (spring applied, pressure released)
Stabilization	x-shaped 4 point support with 4 folding arms, one vertically positioned support cylinder per folding arm, support plates with ball-and-socket joint, removable
Crawler	
Drive	Liebherr compact planetary reduction gear with Liebherr axial piston motor per side of undercarriage
Travel speed	0 – 2.4 mph stepless 0 – 1.1 mph stepless (creeper speed)
Brake	functional brake valves on both sides
Holding brake	wet multi-disc (spring applied, pressure released)
Track pads	flat
Tracks	sealed and greased
Rail-mounted Gantry	
Chassis	rail travel drive designed for the respective load per undercarriage corner
Drive	compact planetary reduction gear with axial piston motor per rail travel drive
Brake	functional brake valves on both sides
Holding brake	per rail travel drive wet multi-disc (spring applied, pressure released)
Option	
Storm brakes	different designs

Complete Machine

Lubrication	Liebherr central lubrication system for uppercarriage and attachment, automatically
Mobile	Liebherr central lubrication system for undercarriage, automatically
Steps system	undercarriage ascent via ladders and platforms uppercarriage with platform left and right and cross-over possibility parts hot-dip galvanized, nonskid surface
Noise emission	
ISO 6396	L_{pA} (inside cab) = 70 dB(A)
2000/14/EC	L_{WA} (surround noise) = 108 dB(A)

LH 150 C - Dimensions

Industry

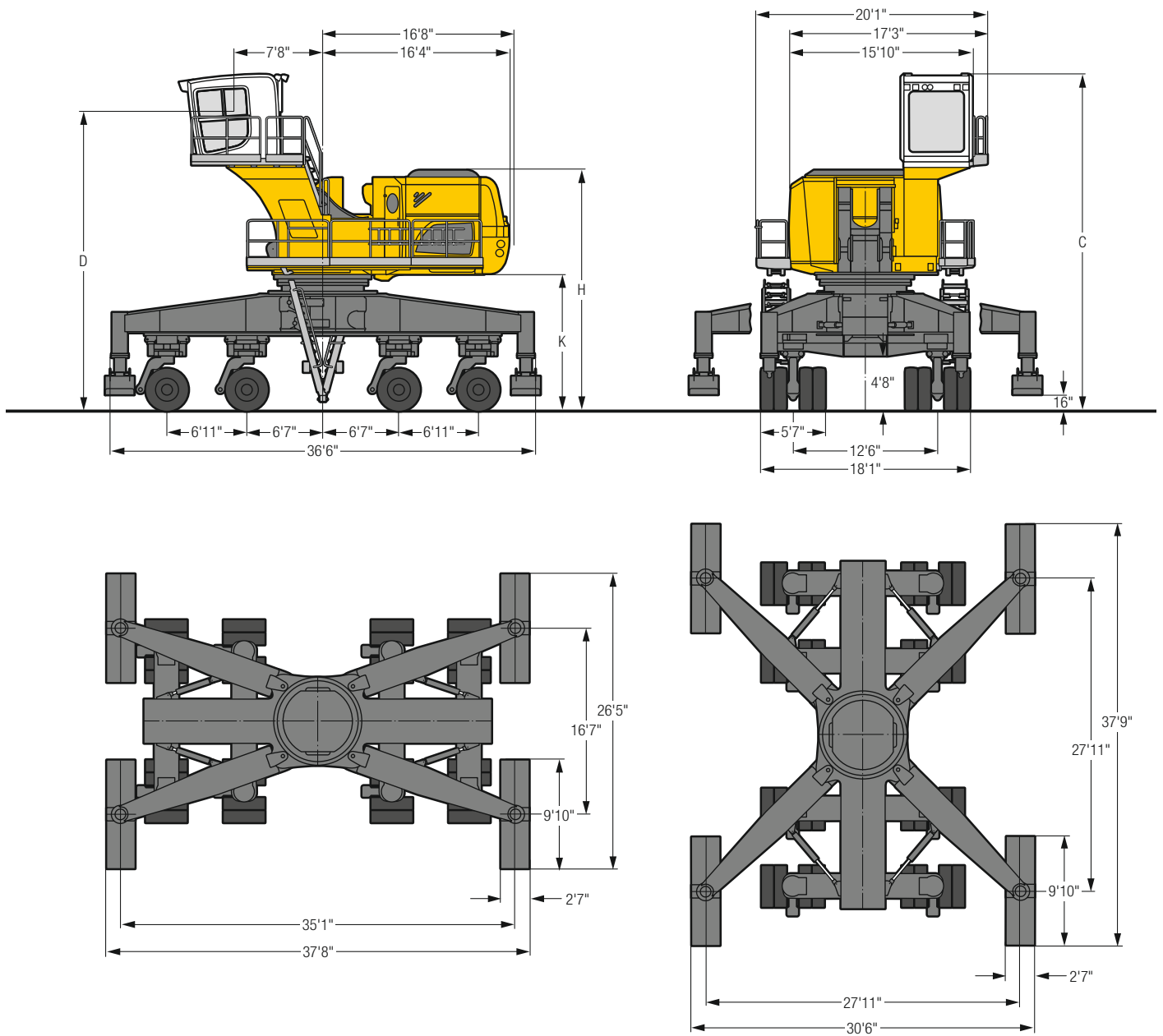


Increase type	LFC 250
without turret	ft in
A	21' 4"
C	23'10"
D	20' 6"
H	15' 6"
K	6' 5"
N	2' 6" 3' 3"
B	21' 2" 22'
G	22'10" 23' 8"

Increase type	LFC 250
Turret 6'7"	ft in
A	24'5"
C	30'5"
D	27'1"
H	22'1"
K	13'
N	2' 6" 3'3"
B	21' 2" 22'
G	22'10" 23'8"

LH 150 M - Dimensions

Industry

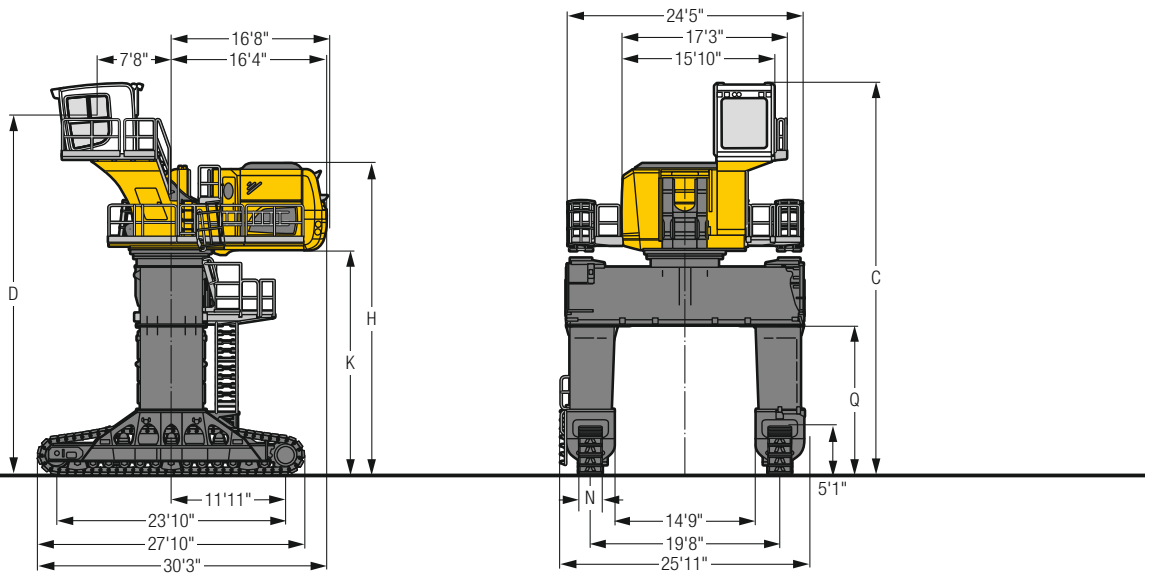


Increase type	LFC 250
without turret	ft in
C	29' 1"
D	25' 10"
H	20' 9"
K	11' 8"

Increase type	LFC 250
Turret 6'7"	ft in
C	35' 7"
D	32' 4"
H	27' 4"
K	18' 3"

LH 150 C Gantry - Dimensions

Industry

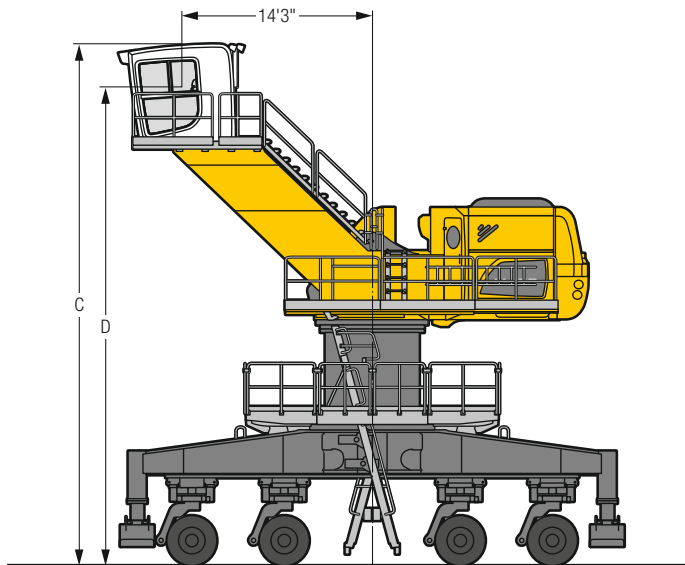


Increase type	LFC 250
Gantry 15'5"	ft in
C	40'8"
D	37'5"
H	32'4"
K	23'4"
N	2'6" 3'3"
Q	15'5"

Increase type	LFC 250
Gantry 18'1"	ft in
C	43' 4"
D	40'
H	35'
K	25'11"
N	2'6" 3' 3"
Q	18' 1"

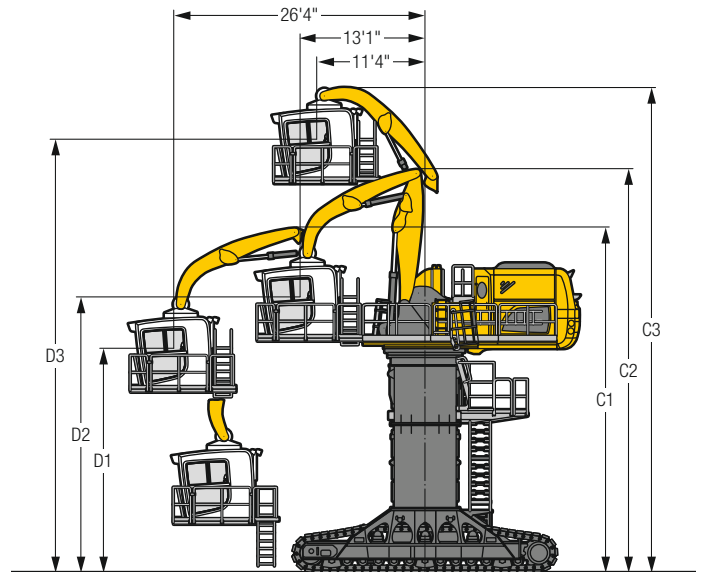
Choice of Cab Elevation

Cab Elevation LFC (Rigid Elevation)



Increase type		LFC 350	
LH 150 C			
Height		without turret	Turret 6'7"
C	ft in	27' 2"	33' 8"
D	ft in	23' 10"	30' 4"
LH 150 M			
Height		without turret	Turret 6'7"
C	ft in	32' 5"	38' 11"
D	ft in	29' 1"	35' 8"
LH 150 C			
Height		with gantry 15'5"	with gantry 18'1"
C	ft in	44'	46' 7"
D	ft in	40' 8"	43' 4"

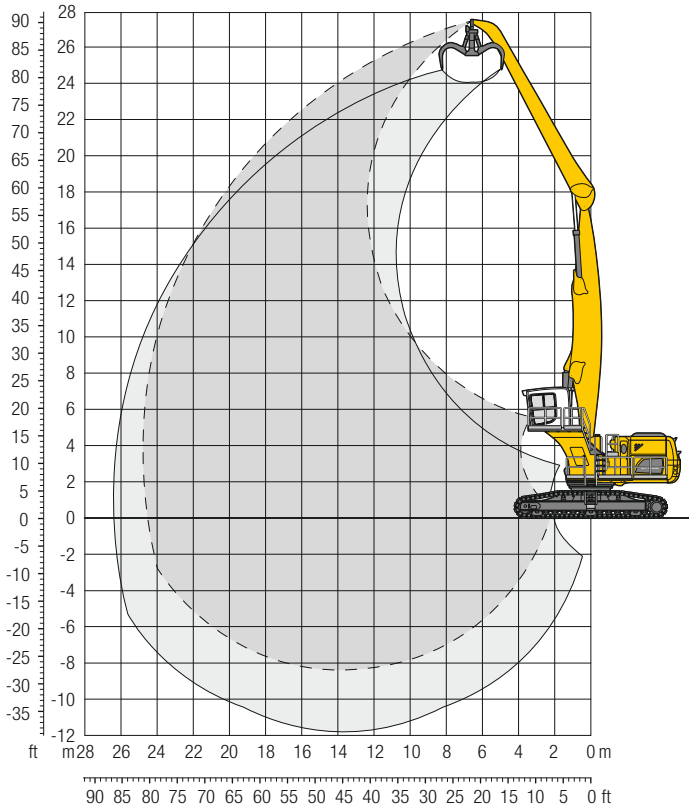
Cab Lift (Hydraulic Elevation)



Increase type		LHC-D 1090 T			
Height		LH 150 C Turret 6' 7"	LH 150 M Turret 6' 7"	LH 150 C Gantry 15'5"	LH 150 C Gantry 18' 1"
C1	ft in	25' 8"	30' 11"	36'	38' 7"
C2	ft in	31' 10"	37' 1"	42' 2"	44' 9"
C3	ft in	40' 5"	45' 8"	50' 9"	53' 4"
D1	ft in	13' 1"	18' 4"	23' 5"	26'
D2	ft in	18' 5"	23' 8"	28' 9"	31' 4"
D3	ft in	35'	40' 2"	45' 3"	47' 11"

LH 150 C - Attachment GA25

Industry – Kinematic 2A

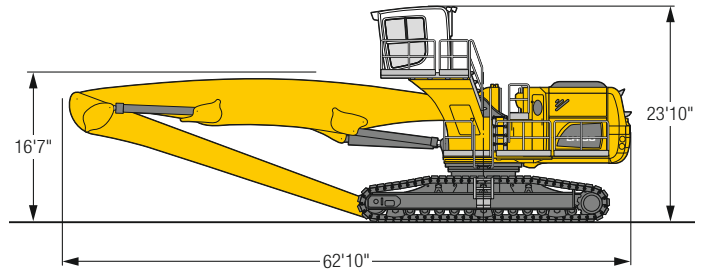


Operating Weight and Ground Pressure

The operating weight includes the basic machine with rigid cab elevation, straight boom 44'3", angled stick 39'4" and grab model GMM 120-5/3.92 yd³ semi-closed tines.

Weight	305,100 lb
Pad width	30"
Ground pressure	on request

Dimensions



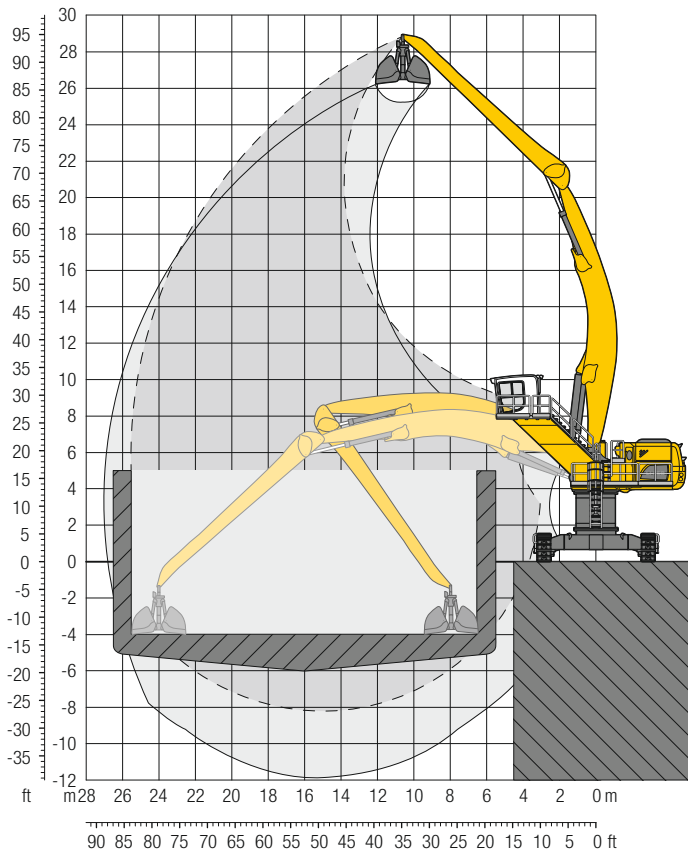
ft	Under-carriage	20 ft	25 ft	30 ft	35 ft	40 ft	45 ft	50 ft	55 ft	60 ft	65 ft	70 ft	75 ft	80 ft	85 ft	90 ft	ft in			
90	EW																37,6" 37,6" 22' 6"			
85	EW				35,7" 35,7"	29,8" 29,8"											28,8" 28,8" 35' 8"			
80	EW				35,6" 35,6"	31,0" 31,0"											24,9" 24,9" 44' 7"			
75	EW					35,0" 35,0"	30,9" 30,9"	25,0" 25,0"									22,5" 22,5" 51' 6"			
70	EW					37,2" 37,2"	34,3" 34,3"	30,3" 30,3"	24,5" 24,5"								21,0" 21,0" 57' 1"			
65	EW					38,7" 38,7"	35,3" 35,3"	32,2" 32,2"	29,4" 29,4"	23,1" 23,1"							19,8" 19,8" 61'10"			
60	EW						35,0" 35,0"	32,0" 32,0"	29,5" 29,5"	27,4" 27,4"	20,6" 20,6"						19,0" 19,0" 65'10"			
55	EW						34,9" 34,9"	31,9" 31,9"	29,4" 29,4"	27,2" 27,2"	25,4" 25,4"						18,4" 18,4" 69' 2"			
50	EW						35,0" 35,0"	31,9" 31,9"	29,3" 29,3"	27,2" 27,2"	25,3" 25,3"	22,2" 22,2"					18,0" 18,0" 72'			
45	EW						39,0" 39,0"	35,2" 35,2"	32,0" 32,0"	29,4" 29,4"	27,2" 27,2"	25,3" 25,3"	23,5" 23,5"				17,7" 17,7" 74' 6"			
40	EW						39,4" 39,4"	35,5" 35,5"	32,2" 32,2"	29,5" 29,5"	27,3" 27,3"	25,3" 25,3"	23,5" 23,5"	21,0" 21,0"			17,5" 17,5" 76' 6"			
35	EW							45,0" 45,0"	39,9" 39,9"	35,9" 35,9"	32,5" 32,5"	29,8" 29,8"	27,4" 27,4"	25,4" 25,4"	23,5" 23,5"	21,8" 21,8"	17,5" 17,5" 78' 1"			
30	EW							46,0" 46,0"	40,6" 40,6"	36,4" 36,4"	32,9" 32,9"	30,0" 30,0"	27,6" 27,6"	25,5" 25,5"	23,6" 23,6"	21,8" 21,8"	17,5" 17,5" 79' 5"			
25	EW								47,1" 47,1"	53,5" 53,5"	47,1" 47,1"	41,4" 41,4"	36,9" 36,9"	33,3" 33,3"	30,3" 30,3"	27,8" 27,8"	25,6" 25,6"	23,6" 23,6"	21,7" 21,7"	18,6" 18,6"
20	EW	54,9" 54,9"	64,5" 64,5"	56,4" 56,4"	48,3" 48,3"	42,3" 42,3"	37,5" 37,5"	33,7" 33,7"	30,6" 30,6"	28,0" 28,0"	25,7" 25,7"	23,6" 23,6"	21,6" 21,6"	19,4" 19,4"			17,7" 17,7"	81'		
15	EW	88,9" 88,9"	70,3" 70,3"	58,1" 58,1"	49,5" 49,5"	43,1" 43,1"	38,1" 38,1"	34,1" 34,1"	30,9" 30,9"	28,1" 28,1"	25,7" 25,7"	23,5" 23,5"	21,4" 21,4"	19,0" 19,0"			18,0" 18,0"	81' 4"		
10	EW	74,5" 74,5"	72,7" 72,7"	59,7" 59,7"	50,6" 50,6"	43,8" 43,8"	38,6" 38,6"	34,5" 34,5"	31,1" 31,1"	28,2" 28,2"	25,7" 25,7"	23,4" 23,4"	21,1" 21,1"	18,4" 18,4"			17,4" 17,4"	81' 4"		
5	EW	29,7" 29,7"	74,3" 74,3"	60,8" 60,8"	51,4" 51,4"	44,4" 44,4"	39,0" 39,0"	34,7" 34,7"	31,1" 31,1"	28,1" 28,1"	25,5" 25,5"	23,0" 23,0"	20,6" 20,6"	17,5" 17,5"			16,6" 16,6"	81'		
0	EW	22,9" 22,9"	46,5" 46,5"	61,2" 61,2"	51,7" 51,7"	44,6" 44,6"	39,1" 39,1"	34,6" 34,6"	31,0" 31,0"	27,9" 27,9"	25,1" 25,1"	22,5" 22,5"	19,7" 19,7"	16,0" 16,0"			15,5" 15,5"	80' 5"		
-5	EW	21,9" 21,9"	37,9" 37,9"	60,5" 60,5"	51,2" 51,2"	44,2" 44,2"	38,7" 38,7"	34,2" 34,2"	30,5" 30,5"	27,3" 27,3"	24,4" 24,4"	21,5" 21,5"	18,3" 18,3"				14,3" 14,3"	79' 6"		
-10	EW	23,0" 23,0"	35,6" 35,6"	58,4" 58,4"	49,8" 49,8"	43,1" 43,1"	37,8" 37,8"	33,3" 33,3"	29,6" 29,6"	26,2" 26,2"	23,1" 23,1"	20,0" 20,0"	16,2" 16,2"				13,4" 13,4"	77'10"		
-15	EW	25,0" 25,0"	35,7" 35,7"	54,6" 54,6"	47,2" 47,2"	41,1" 41,1"	36,0" 36,0"	31,7" 31,7"	28,0" 28,0"	24,6" 24,6"	21,2" 21,2"	17,7" 17,7"					14,3" 14,3"	73'10"		
-20	EW		37,0" 37,0"	49,0" 49,0"	43,0" 43,0"	37,8" 37,8"	33,2" 33,2"	29,2" 29,2"	25,5" 25,5"	22,0" 22,0"	18,4" 18,4"						15,8" 15,8"	68' 2"		
-25	EW				37,0" 37,0"	32,9" 32,9"	29,0" 29,0"	25,4" 25,4"	21,8" 21,8"								18,9" 18,9"	59' 1"		

Height Can be slewed through 360° In longitudinal position of undercarriage Max. reach * Limited by hydr. capacity

The lift capacities on the stick end without attachment are stated in lb x 1,000 and can be slewed through 360° on a firm, level supporting surface. Capacities are valid for 30" wide flat pads. Indicated loads based on the ISO 10567 standard and do not exceed 75% of tipping or 87% of hydraulic capacity. The lift capacity values indicated are attained at the corresponding operating temperature. This operating temperature is ensured by continuous movement of the boom. Weights of fitted working tools (grabs, load hooks, etc.) and load accommodation equipment are to be deducted from the lift capacity values. The lift capacity of the unit is limited by its stability, the lifting capability of the hydraulic elements, or the maximum permissible lifting capacity of the load hook.

LH 150 C HR - Attachment AG26

Industry – Kinematic 2D

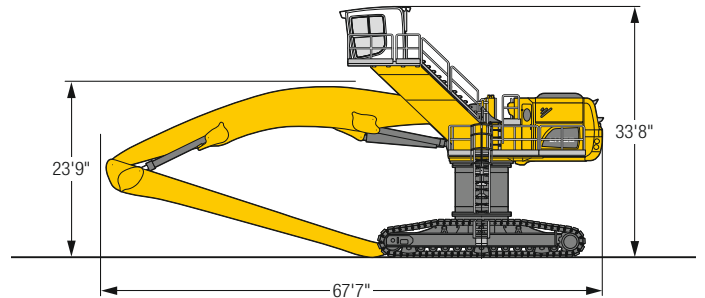


Operating Weight and Ground Pressure

The operating weight includes the basic machine with turret 6'7", rigid cab elevation, angled boom 49'3", straight stick 39'4" and grab model GMZ 120/7.85 yd³ shells for loose material.

Weight	325,400 lb
Pad width	30"
Ground pressure	on request

Dimensions



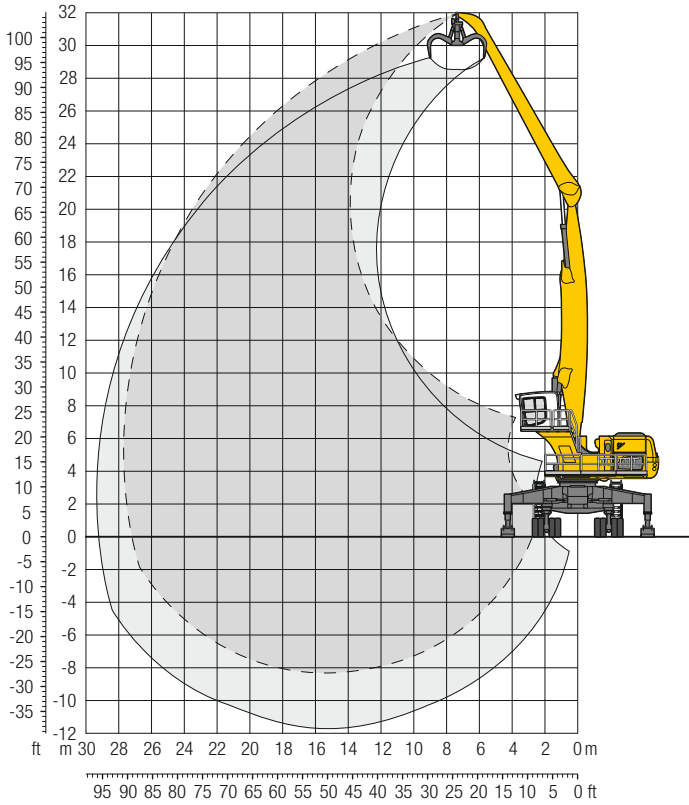
ft	Under-carriage	20 ft	25 ft	30 ft	35 ft	40 ft	45 ft	50 ft	55 ft	60 ft	65 ft	70 ft	75 ft	80 ft	85 ft	90 ft	ft in					
		EW	EW	EW	EW	EW	EW	EW	EW	EW	EW	EW	EW	EW	EW	EW						
90	EW					26,7*	26,7*										22,8* 22,8* 43'10"					
85	EW						27,3*	27,3*	22,3*	22,3*							21,0* 21,0* 51' 1"					
80	EW						30,0*	30,0*	27,2*	27,2*	22,4*	22,4*					19,8* 19,8* 57' 1"					
75	EW						29,7*	29,7*	27,0*	27,0*	24,7*	24,7*	21,7*	21,7*			18,9* 18,9* 62'					
70	EW							26,8*	26,8*	24,6*	24,6*	22,7*	22,7*	20,2*	20,2*		18,3* 18,3* 66' 4"					
65	EW							26,8*	26,8*	24,5*	24,5*	22,6*	22,6*	21,0*	21,0*		17,9* 17,9* 69'11"					
60	EW						29,6*	29,6*	26,8*	26,8*	24,5*	24,5*	22,6*	22,6*	20,9*	20,9*	19,5* 19,5*	17,6* 17,6* 73'				
55	EW						29,8*	29,8*	27,0*	27,0*	24,6*	24,6*	22,6*	22,6*	20,9*	20,9*	19,5* 19,5*	17,5* 17,5* 75' 7"				
50	EW						30,0*	30,0*	27,1*	27,1*	24,7*	24,7*	22,7*	22,7*	21,0*	21,0*	19,6* 19,6*	18,3* 18,3*				
45	EW					34,0*	34,0*	30,4*	30,4*	27,4*	27,4*	24,9*	24,9*	22,9*	22,9*	21,1*	21,1*	19,6* 19,6*	18,3* 18,3*			
40	EW					39,4*	39,4*	34,6*	34,6*	30,8*	30,8*	27,7*	27,7*	25,1*	25,1*	23,0*	23,0*	21,2* 21,2*	19,7* 19,7*	18,4* 18,4*	17,2* 17,2*	
35	EW			47,0*	47,0*	40,3*	40,3*	35,2*	35,2*	31,2*	31,2*	28,0*	28,0*	25,4*	25,4*	23,2*	23,2*	21,4* 21,4*	19,8* 19,8*	18,5* 18,5*	17,3* 17,3*	
30	EW	73,5*	73,5*	58,4*	58,4*	48,3*	48,3*	41,2*	41,2*	35,9*	35,9*	31,7*	31,7*	28,4*	28,4*	25,7*	25,7*	23,5* 23,5*	21,6* 21,6*	20,0* 20,0*	18,6* 18,6*	17,3* 17,3*
25	EW	76,9*	76,9*	60,4*	60,4*	49,7*	49,7*	42,2*	42,2*	36,6*	36,6*	32,2*	32,2*	28,8*	28,8*	26,0*	26,0*	23,7* 23,7*	21,8* 21,8*	20,1* 20,1*	18,7* 18,7*	17,3* 17,3*
20	EW	45,0*	45,0*	62,5*	62,5*	51,1*	51,1*	43,1*	43,1*	37,3*	37,3*	32,8*	32,8*	29,2*	29,2*	26,4*	26,4*	24,0* 24,0*	22,0* 22,0*	20,2* 20,2*	18,7* 18,7*	17,3* 17,3*
15	EW	23,1*	23,1*	51,7*	51,7*	52,3*	52,3*	44,0*	44,0*	38,0*	38,0*	33,3*	33,3*	29,6*	29,6*	26,7*	26,7*	24,2* 24,2*	22,1* 22,1*	20,3* 20,3*	18,8* 18,8*	17,3* 17,3*
10	EW	18,5*	18,5*	34,6*	34,6*	53,3*	53,3*	44,8*	44,8*	38,6*	38,6*	33,8*	33,8*	30,0*	30,0*	26,9*	26,9*	24,4* 24,4*	22,3* 22,3*	20,4* 20,4*	18,7* 18,7*	17,1* 17,1*
5	EW	18,0*	18,0*	29,3*	29,3*	49,5*	49,5*	45,3*	45,3*	39,0*	39,0*	34,1*	34,1*	30,2*	30,2*	27,1*	27,1*	24,5* 24,5*	22,3* 22,3*	20,3* 20,3*	18,6* 18,6*	16,8* 16,8*
0	EW	18,9*	18,9*	27,8*	27,8*	42,7*	42,7*	45,4*	45,4*	39,1*	39,1*	34,2*	34,2*	30,3*	30,3*	27,1*	27,1*	24,5* 24,5*	22,2* 22,2*	20,1* 20,1*	18,2* 18,2*	16,3* 16,3*
-5	EW	20,5*	20,5*	28,0*	28,0*	40,0*	40,0*	44,8*	44,8*	38,8*	38,8*	34,0*	34,0*	30,1*	30,1*	26,9*	26,9*	24,2* 24,2*	21,8* 21,8*	19,7* 19,7*	17,6* 17,6*	15,3* 15,3*
-10	EW	22,3*	22,3*	28,9*	28,9*	39,3*	39,3*	43,6*	43,6*	37,9*	37,9*	33,3*	33,3*	29,5*	29,5*	26,4*	26,4*	23,6* 23,6*	21,2* 21,2*	18,9* 18,9*	16,6* 16,6*	
-15	EW			30,3*	30,3*	39,7*	39,7*	41,4*	41,4*	36,3*	36,3*	32,1*	32,1*	28,5*	28,5*	25,4*	25,4*	22,6* 22,6*	20,1* 20,1*	17,6* 17,6*	14,9* 14,9*	
-20	EW					40,8*	40,8*	38,2*	38,2*	33,9*	33,9*	30,0*	30,0*	26,7*	26,7*	23,7*	23,7*	21,0* 21,0*	18,4* 18,4*	15,6* 15,6*		
-25	EW					30,3*	30,3*	27,1*	27,1*	24,1*	24,1*	21,2*	21,2*	18,5*	18,5*			17,6* 17,6*	15,3* 15,3*			

Height Can be slewed through 360° In longitudinal position of undercarriage Max. reach * Limited by hydr. capacity

The lift capacities on the stick end without attachment are stated in lb x 1,000 and can be slewed through 360° on a firm, level supporting surface. Capacities are valid for 30" wide flat pads. Indicated loads based on the ISO 10567 standard and do not exceed 75% of tipping or 87% of hydraulic capacity. The lift capacity values indicated are attained at the corresponding operating temperature. This operating temperature is ensured by continuous movement of the boom. Weights of fitted working tools (grabs, load hooks, etc.) and load accommodation equipment are to be deducted from the lift capacity values. The lift capacity of the unit is limited by its stability, the lifting capability of the hydraulic elements, or the maximum permissible lifting capacity of the load hook.

LH 150 M - Attachment GA28

Industry – Kinematic 2A

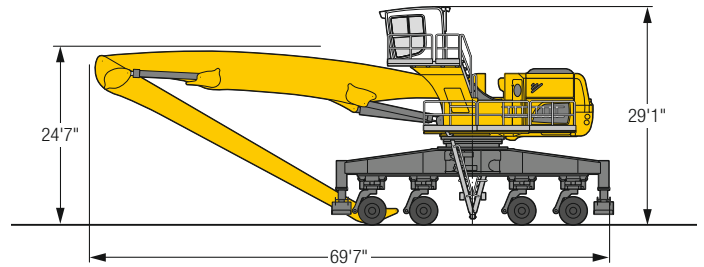


Operating Weight

The operating weight includes the basic machine with 4 point outriggers, rigid cab elevation, 32 solid tires, straight boom 49'3", angled stick 44'3" and grab model GMM 120-5/3.92 yd³ semi-closed tines.

Weight 326,700 lb

Dimensions



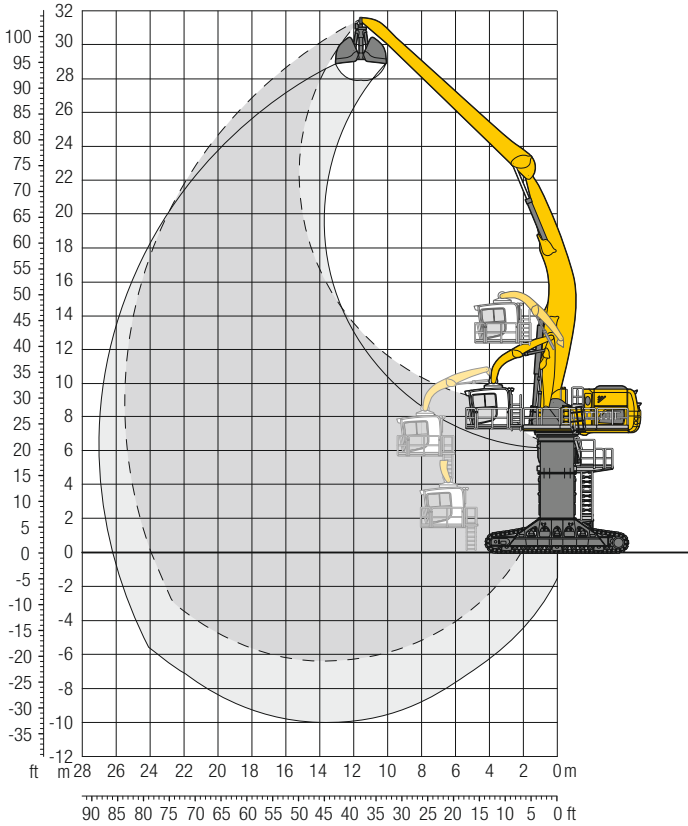
ft	Under-carriage	20 ft	25 ft	30 ft	35 ft	40 ft	45 ft	50 ft	55 ft	60 ft	65 ft	70 ft	75 ft	80 ft	85 ft	90 ft	ft in
105	4 pt. outr. down		32.8* 32.8*														31.9* 31.9* 25'10"
100	4 pt. outr. down				29.0* 29.0*												24.8* 24.8* 39' 1"
95	4 pt. outr. down					29.3* 29.3*	25.1* 25.1*										21.4* 21.4* 48' 4"
90	4 pt. outr. down					31.8* 31.8*	29.0* 29.0*	25.3* 25.3*	20.0* 20.0*								19.3* 19.3* 55' 6"
85	4 pt. outr. down						31.1* 31.1*	28.5* 28.5*	25.0* 25.0*	20.0* 20.0*							17.9* 17.9* 61' 6"
80	4 pt. outr. down						32.5* 32.5*	29.9* 29.9*	27.0* 27.0*	24.3* 24.3*	19.1* 19.1*						16.8* 16.8* 66' 7"
75	4 pt. outr. down						33.3* 33.3*	29.8* 29.8*	26.9* 26.9*	24.5* 24.5*	22.4* 22.4*	17.5* 17.5*					16.1* 16.1* 70'11"
70	4 pt. outr. down							29.7* 29.7*	26.8* 26.8*	24.4* 24.4*	22.3* 22.3*	20.5* 20.5*					15.5* 15.5* 74' 8"
65	4 pt. outr. down							29.6* 29.6*	26.8* 26.8*	24.3* 24.3*	22.2* 22.2*	20.4* 20.4*	18.8* 18.8*				15.0* 15.0* 77'11"
60	4 pt. outr. down						33.1* 33.1*	29.6* 29.6*	26.7* 26.7*	24.3* 24.3*	22.2* 22.2*	20.4* 20.4*	18.7* 18.7*	16.0* 16.0*			14.7* 14.7* 80' 8"
55	4 pt. outr. down						33.1* 33.1*	29.6* 29.6*	26.7* 26.7*	24.3* 24.3*	22.2* 22.2*	20.3* 20.3*	18.7* 18.7*	17.2* 17.2*			14.5* 14.5* 83' 1"
50	4 pt. outr. down						33.2* 33.2*	29.7* 29.7*	26.8* 26.8*	24.3* 24.3*	22.2* 22.2*	20.3* 20.3*	18.7* 18.7*	17.2* 17.2*	14.7* 14.7*		14.3* 14.3* 85' 2"
45	4 pt. outr. down					37.8* 37.8*	33.4* 33.4*	29.8* 29.8*	26.8* 26.8*	24.3* 24.3*	22.2* 22.2*	20.3* 20.3*	18.6* 18.6*	17.1* 17.1*	15.6* 15.6*		14.2* 14.2* 86'11"
40	4 pt. outr. down					38.1* 38.1*	33.6* 33.6*	29.9* 29.9*	26.9* 26.9*	24.4* 24.4*	22.2* 22.2*	20.3* 20.3*	18.6* 18.6*	17.1* 17.1*	15.6* 15.6*		14.2* 14.2* 88' 4"
35	4 pt. outr. down				43.0* 43.0*	38.4* 38.4*	33.7* 33.7*	30.0* 30.0*	27.0* 27.0*	24.4* 24.4*	22.2* 22.2*	20.3* 20.3*	18.6* 18.6*	17.0* 17.0*	15.5* 15.5*		13.9* 13.9* 89' 5"
30	4 pt. outr. down		39.8* 39.8*	46.5* 46.5*	44.7* 44.7*	38.7* 38.7*	33.9* 33.9*	30.1* 30.1*	27.0* 27.0*	24.4* 24.4*	22.2* 22.2*	20.2* 20.2*	18.5* 18.5*	16.9* 16.9*	15.3* 15.3*	13.5* 13.5*	13.4* 13.4* 90' 2"
25	4 pt. outr. down	50.9* 50.9*	59.8* 59.8*	53.4* 53.4*	45.1* 45.1*	38.9* 38.9*	34.1* 34.1*	30.2* 30.2*	27.1* 27.1*	24.4* 24.4*	22.2* 22.2*	20.2* 20.2*	18.4* 18.4*	16.8* 16.8*	15.1* 15.1*	13.2* 13.2*	12.9* 12.9* 90' 8"
20	4 pt. outr. down	84.1* 84.1*	65.9* 65.9*	53.9* 53.9*	45.5* 45.5*	39.1* 39.1*	34.2* 34.2*	30.3* 30.3*	27.1* 27.1*	24.4* 24.4*	22.1* 22.1*	20.1* 20.1*	18.3* 18.3*	16.6* 16.6*	14.9* 14.9*	12.8* 12.8*	12.3* 12.3* 90'11"
15	4 pt. outr. down	35.7* 35.7*	66.5* 66.5*	54.3* 54.3*	45.7* 45.7*	39.3* 39.3*	34.3* 34.3*	30.3* 30.3*	27.1* 27.1*	24.3* 24.3*	22.0* 22.0*	19.9* 19.9*	18.1* 18.1*	16.3* 16.3*	14.5* 14.5*	12.2* 12.2*	11.6* 11.6* 90'10"
10	4 pt. outr. down	18.2* 18.2*	44.3* 44.3*	54.3* 54.3*	45.7* 45.7*	39.2* 39.2*	34.2* 34.2*	30.2* 30.2*	26.9* 26.9*	24.2* 24.2*	21.8* 21.8*	19.7* 19.7*	17.7* 17.7*	15.9* 15.9*	13.9* 13.9*	11.3* 11.3*	10.9* 10.9* 90' 6"
5	4 pt. outr. down	15.0* 15.0*	29.7* 29.7*	53.8* 53.8*	45.4* 45.4*	39.0* 39.0*	34.0* 34.0*	30.0* 30.0*	26.7* 26.7*	23.9* 23.9*	21.4* 21.4*	19.3* 19.3*	17.3* 17.3*	15.3* 15.3*	13.1* 13.1*		10.0* 10.0* 89'11"
0	4 pt. outr. down	14.9* 14.9*	25.5* 25.5*	45.0* 45.0*	44.5* 44.5*	38.3* 38.3*	33.4* 33.4*	29.5* 29.5*	26.2* 26.2*	23.4* 23.4*	20.9* 20.9*	18.7* 18.7*	16.6* 16.6*	14.4* 14.4*	11.9* 11.9*		9.0* 9.0* 89'
-5	4 pt. outr. down	16.1* 16.1*	24.7* 24.7*	39.2* 39.2*	43.0* 43.0*	37.2* 37.2*	32.5* 32.5*	28.6* 28.6*	25.4* 25.4*	22.6* 22.6*	20.1* 20.1*	17.8* 17.8*	15.5* 15.5*	13.2* 13.2*	10.2* 10.2*		7.8* 7.8* 87'10"
-10	4 pt. outr. down	17.8* 17.8*	25.2* 25.2*	37.1* 37.1*	40.6* 40.6*	35.3* 35.3*	31.0* 31.0*	27.3* 27.3*	24.2* 24.2*	21.4* 21.4*	18.9* 18.9*	16.5* 16.5*	14.1* 14.1*	11.4* 11.4*			8.3* 8.3* 84' 5"
-15	4 pt. outr. down		26.5* 26.5*	37.0* 37.0*	37.0* 37.0*	32.6* 32.6*	28.7* 28.7*	25.4* 25.4*	22.4* 22.4*	19.7* 19.7*	17.1* 17.1*	14.6* 14.6*	12.0* 12.0*				9.0* 9.0* 79' 8"
-20	4 pt. outr. down			35.6* 35.6*	32.1* 32.1*	28.7* 28.7*	25.5* 25.5*	22.6* 22.6*	19.8* 19.8*	17.3* 17.3*	14.7* 14.7*	12.1* 12.1*					10.3* 10.3* 73' 1"
-25	4 pt. outr. down					23.6* 23.6*	21.2* 21.2*	18.8* 18.8*	16.4* 16.4*	13.9* 13.9*							13.1* 13.1* 61' 6"

Height Can be slewed through 360° In longitudinal position of undercarriage Max. reach * Limited by hydr. capacity

The lift capacities on the stick end without attachment are stated in lb x 1,000 and are valid on a firm, level supporting surface with blocked oscillating axle. These capacities can be slewed through 360° with the undercarriage in the transverse position. Capacities in the longitudinal position of the undercarriage (+/- 15°) are specified over the rigid axle with the stabilizers down. Indicated loads based on the ISO 10567 standard and do not exceed 75% of tipping or 87% of hydraulic capacity. The lift capacity values indicated are attained at the corresponding operating temperature. This operating temperature is ensured by continuous movement of the boom. Weights of fitted working tools (grabs, load hooks, etc.) and load accommodation equipment are to be deducted from the lift capacity values. The lift capacity of the unit is limited by its stability, the lifting capability of the hydraulic elements, or the maximum permissible lifting capacity of the load hook.

LH 150 C Gantry - Attachment AG26

Industry – Kinematic 2D

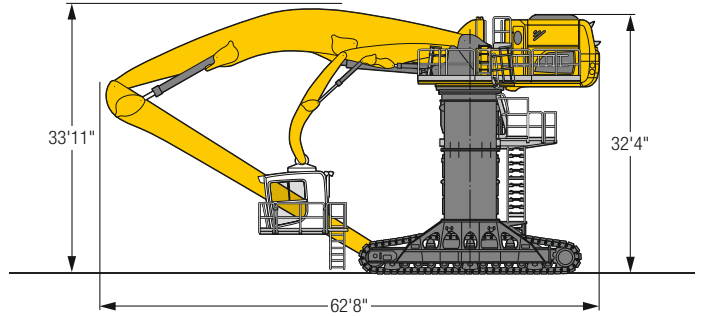


Operating Weight and Ground Pressure

The operating weight includes the basic machine with hydr. cab elevation, angled boom 44'3", straight stick 44'3" and grab model GMZ 120/7.85 yd³ shells for loose material.

Weight	378,500 lb
Pad width	30"
Ground pressure	on request

Dimensions

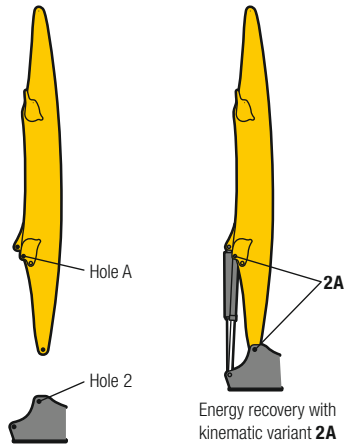


ft	Under-carriage	20 ft	25 ft	30 ft	35 ft	40 ft	45 ft	50 ft	55 ft	60 ft	65 ft	70 ft	75 ft	80 ft	85 ft	90 ft	ft in		
100	Gantry																20,4" 20,4" 44"		
95	Gantry						24,5" 24,5"	20,0" 20,0"									18,5" 18,5" 51' 4"		
90	Gantry							24,3" 24,3"	19,9" 19,9"								17,3" 17,3" 57' 2"		
85	Gantry							26,8" 26,8"	23,8" 23,8"	19,1" 19,1"							16,5" 16,5" 62' 2"		
80	Gantry							26,5" 26,5"	24,6" 24,6"	22,8" 22,8"	17,7" 17,7"						15,9" 15,9" 66' 4"		
75	Gantry							26,4" 26,4"	24,5" 24,5"	22,9" 22,9"	21,4" 21,4"						15,5" 15,5" 69" 11"		
70	Gantry							26,3" 26,3"	24,4" 24,4"	22,8" 22,8"	21,4" 21,4"	19,2" 19,2"					15,2" 15,2" 73"		
65	Gantry							26,4" 26,4"	24,5" 24,5"	22,8" 22,8"	21,4" 21,4"	20,2" 20,2"	15,9" 15,9"				15,0" 15,0" 75' 7"		
60	Gantry							26,7" 26,7"	24,7" 24,7"	22,9" 22,9"	21,5" 21,5"	20,3" 20,3"	19,1" 19,1"				14,9" 14,9" 77" 10"		
55	Gantry							27,0" 27,0"	24,9" 24,9"	23,1" 23,1"	21,6" 21,6"	20,3" 20,3"	19,2" 19,2"				14,9" 14,9" 79' 7"		
50	Gantry						30,0" 30,0"	27,4" 27,4"	25,2" 25,2"	23,4" 23,4"	21,8" 21,8"	20,5" 20,5"	19,3" 19,3"	16,8" 16,8"			14,9" 14,9" 81' 1"		
45	Gantry							33,9" 33,9"	30,6" 30,6"	27,9" 27,9"	25,6" 25,6"	23,7" 23,7"	22,1" 22,1"	20,7" 20,7"	19,4" 19,4"	18,4" 18,4"	15,1" 15,1" 82' 2"		
40	Gantry								39,4" 39,4"	34,9" 34,9"	31,4" 31,4"	28,5" 28,5"	26,1" 26,1"	24,0" 24,0"	22,3" 22,3"	20,9" 20,9"	19,6" 19,6"	18,5" 18,5"	
35	Gantry									39,4" 39,4"	34,9" 34,9"	31,4" 31,4"	28,5" 28,5"	26,1" 26,1"	24,0" 24,0"	22,3" 22,3"	20,9" 20,9"	19,6" 19,6"	18,5" 18,5"
30	Gantry	74,7" 74,7"	59,6" 59,6"	49,6" 49,6"	42,5" 42,5"	37,2" 37,2"	33,1" 33,1"	29,8" 29,8"	27,1" 27,1"	24,9" 24,9"	23,0" 23,0"	21,4" 21,4"	19,9" 19,9"	18,6" 18,6"			16,0" 16,0" 83' 8"		
25	Gantry	80,1" 80,1"	63,0" 63,0"	51,9" 51,9"	44,1" 44,1"	38,4" 38,4"	34,0" 34,0"	30,5" 30,5"	27,6" 27,6"	25,3" 25,3"	23,3" 23,3"	21,6" 21,6"	20,1" 20,1"	18,7" 18,7"			16,4" 16,4" 83' 7"		
20	Gantry	66,5" 66,5"	65,9" 65,9"	53,9" 53,9"	45,6" 45,6"	39,5" 39,5"	34,8" 34,8"	31,1" 31,1"	28,2" 28,2"	25,7" 25,7"	23,6" 23,6"	21,8" 21,8"	20,2" 20,2"	18,6" 18,6"			17,0" 17,0" 83' 2"		
15	Gantry	38,3" 38,3"	68,3" 68,3"	55,7" 55,7"	46,9" 46,9"	40,5" 40,5"	35,6" 35,6"	31,7" 31,7"	28,6" 28,6"	26,0" 26,0"	23,8" 23,8"	21,9" 21,9"	20,2" 20,2"	18,4" 18,4"			17,4" 17,4" 82' 6"		
10	Gantry	31,3" 31,3"	52,4" 52,4"	57,0" 57,0"	48,0" 48,0"	41,3" 41,3"	36,2" 36,2"	32,2" 32,2"	29,0" 29,0"	26,3" 26,3"	23,9" 23,9"	21,9" 21,9"	20,0" 20,0"	18,0" 18,0"			17,3" 17,3" 81' 6"		
5	Gantry	29,3" 29,3"	44,1" 44,1"	57,6" 57,6"	48,6" 48,6"	41,8" 41,8"	36,6" 36,6"	32,5" 32,5"	29,1" 29,1"	26,3" 26,3"	23,9" 23,9"	21,7" 21,7"	19,6" 19,6"	17,2" 17,2"			17,1" 17,1" 80' 1"		
0	Gantry	29,0" 29,0"	40,8" 40,8"	57,4" 57,4"	48,5" 48,5"	41,8" 41,8"	36,6" 36,6"	32,5" 32,5"	29,0" 29,0"	26,1" 26,1"	23,5" 23,5"	21,2" 21,2"	18,7" 18,7"				16,8" 16,8" 78' 5"		
-5	Gantry	29,7" 29,7"	39,7" 39,7"	56,2" 56,2"	47,7" 47,7"	41,3" 41,3"	36,1" 36,1"	32,0" 32,0"	28,5" 28,5"	25,5" 25,5"	22,8" 22,8"	20,1" 20,1"	17,2" 17,2"				16,2" 16,2" 76' 5"		
-10	Gantry	30,7" 30,7"	39,8" 39,8"	53,6" 53,6"	45,9" 45,9"	39,8" 39,8"	34,9" 34,9"	30,9" 30,9"	27,4" 27,4"	24,3" 24,3"	21,3" 21,3"	18,3" 18,3"					15,6" 15,6" 73' 8"		
-15	Gantry		40,6" 40,6"	49,4" 49,4"	42,8" 42,8"	37,3" 37,3"	32,8" 32,8"	28,9" 28,9"	25,4" 25,4"	22,2" 22,2"	18,9" 18,9"						17,7" 17,7" 66' 8"		
-20	Gantry					33,4" 33,4"	29,3" 29,3"	25,7" 25,7"									23,2" 23,2" 53' 7"		

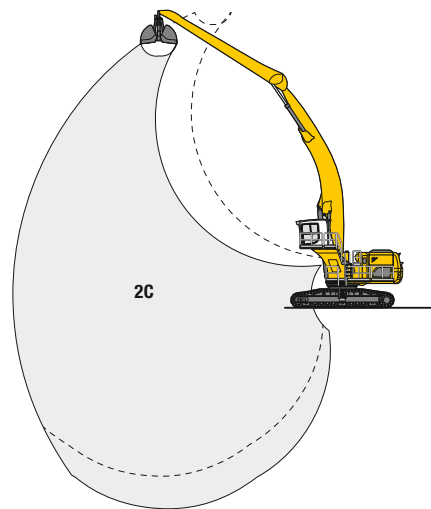
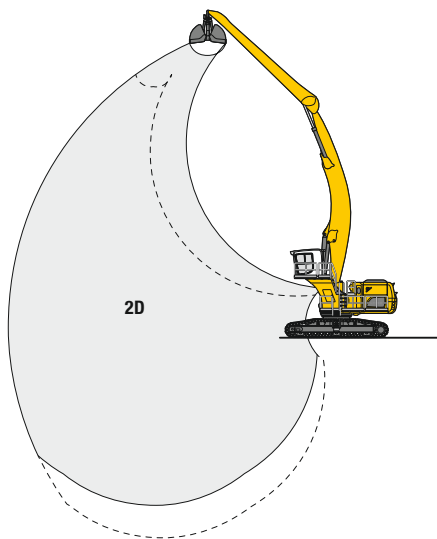
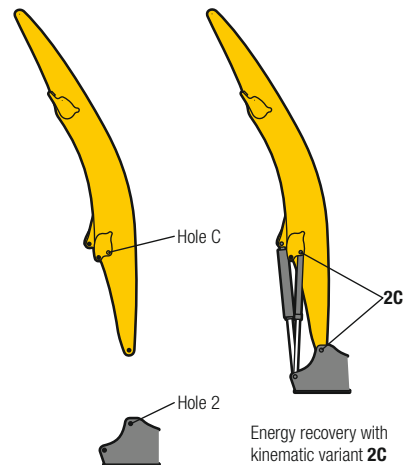
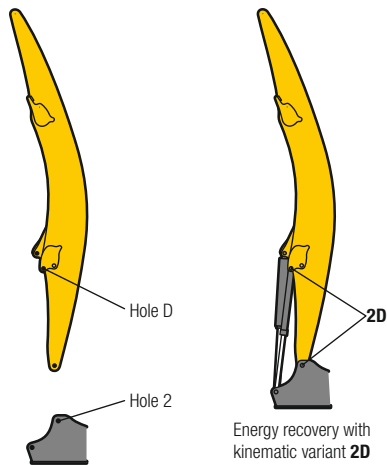
Height Can be slewed through 360° In longitudinal position of undercarriage Max. reach * Limited by hydr. capacity

The lift capacities on the stick end without attachment are stated in lb x 1,000 and can be slewed through 360° on a firm, level supporting surface. Capacities are valid for 30" wide flat pads. Indicated loads based on the ISO 10567 standard and do not exceed 75% of tipping or 87% of hydraulic capacity. The lift capacity values indicated are attained at the corresponding operating temperature. This operating temperature is ensured by continuous movement of the boom. Weights of fitted working tools (grabs, load hooks, etc.) and load accommodation equipment are to be deducted from the lift capacity values. The lift capacity of the unit is limited by its stability, the lifting capability of the hydraulic elements, or the maximum permissible lifting capacity of the load hook.

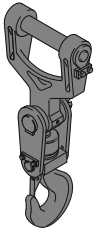
Kinematic Variant 2A



Kinematic Variant 2D/2C

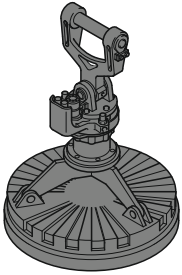


Altered range curve with additional reach depth, e.g. for unloading from ships



Load Hook with Suspension

Max. load	lb	55,115
Weight	lb	562



Magnet Devices/Lifting Magnets

Generator	kW	30
Electromagnets with suspension		
Power	kW	22
Diameter of magnet	ft in	6'3"
Weight	lb	11,220

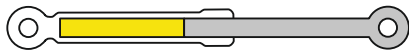
Liebherr ERC-System

Efficiency
as standard



ERC System – More performance, less consumption

Lowering the equipment stores energy in the ERC system. This stored energy is then made available to the machine to provide additional engine power. When the equipment is raised the stored energy is released and is reflected in powerful, homogeneous operating cycles. The result is a clear saving on fuel – and, at the same time, even greater performance.



1. Attachment fitting raised /
Energy released

B



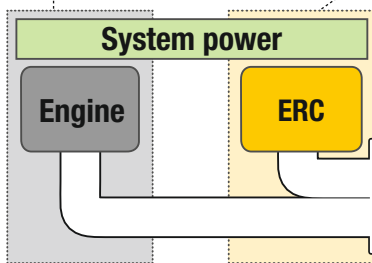
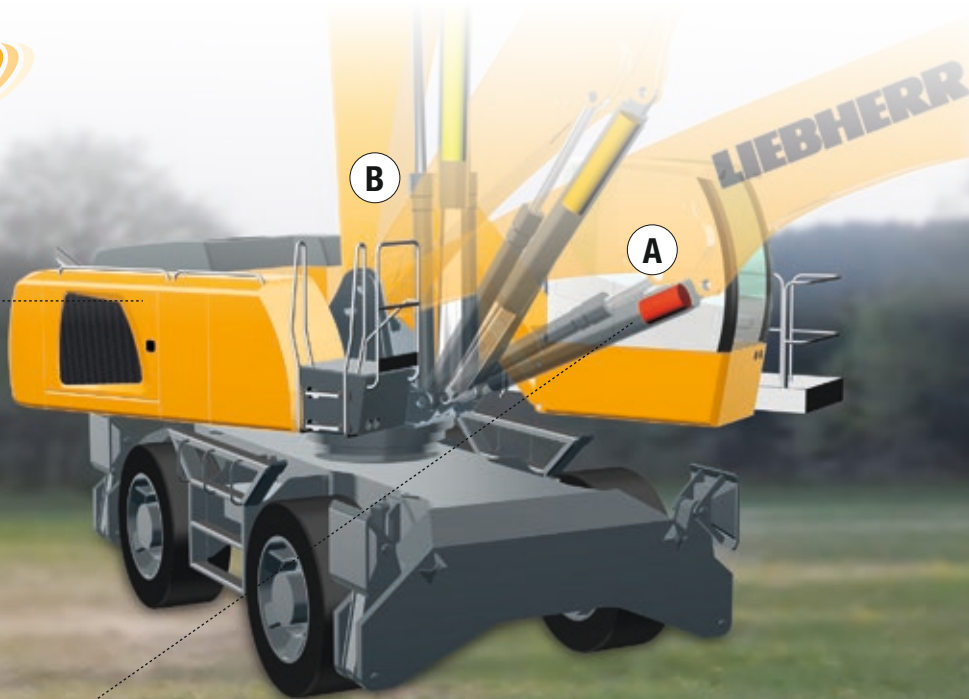
2. Lower attachment fitting / Store energy
4. Raise attachment fitting / Release energy



3. Attachment fitting lowered /
Energy stored

A

ERC

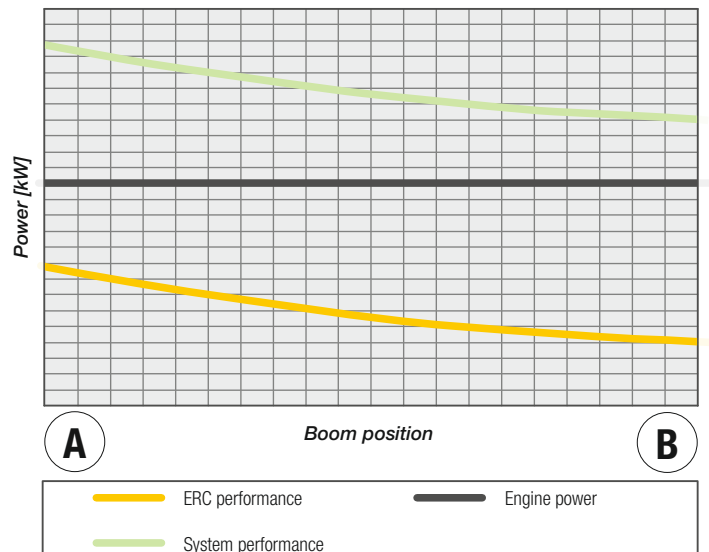


- increased overall power
- fuel savings of up to 30 %
- lower running costs
- reduced pollutant and noise emissions


System power


The energy recovery cylinder is a storage system which is independent of the diesel engine. The system performance of material handling machines fitted with the ERC system is composed of the installed engine power and the energy recovery cylinder. When the equipment is raised, energy from the ERC system is supplied in addition to the power from the diesel engine.


ERC-System




Equipment

 Undercarriage	150 C	150 C HR	150 M	150 M HR	150 C Gantry
6 steering axles, 2 powered and braked			•	•	
8 steering axles, 2 powered and braked			+	+	
Support plates, variants			•	+	
Axle load monitoring			•	•	
Working lights on undercarriage, LED			•	•	•
Track pads, variants	+	+			+
Individual control outriggers			•	•	
Three-piece chain guide	•	•			•
Outrigger monitoring system			•	•	
Tires, variants			+	+	
Warning beacons			•	•	

 Uppercarriage	150 C	150 C HR	150 M	150 M HR	150 C Gantry
Refuelling system, variants	+	+	+	+	+
Generator	+	+	+	+	+
Main battery switch for electrical system	•	•	•	•	•
Engine hood, hydraulic operable	•	•	•	•	•
Walk-in engine bay	•	•	•	•	•
Warning beacon on uppercarriage, LED	+	+	+	+	+
Side hood on the right, hydraulic operable	•	•	•	•	•
Tool equipment, extended	•	•	•	•	•


 Hydraulic System	150 C	150 C HR	150 M	150 M HR	150 C Gantry
Shut-off valve between hydraulic tank and pump(s)	•	•	•	•	•
Pressure test fittings	•	•	•	•	•
Accumulator for controlled lowering of the attachment with the engine shut down	•	•	•	•	•
Electronic pump regulation	•	•	•	•	•
Hydraulic oil filter with integrated microfilter	•	•	•	•	•
Liebherr hydraulic oil from -4 °F to +104 °F	•	•	•	•	•
Liebherr hydraulic oil, biologically degradable	+	+	+	+	+
Liebherr hydraulic oil, specially for warm or cold regions	+	+	+	+	+
Magnetic rod in hydraulic tank	•	•	•	•	•
Bypass filter	+	+	+	+	+
Preheating hydraulic oil	+	+	+	+	+


 Engine	150 C	150 C HR	150 M	150 M HR	150 C Gantry
Air pre-filter with dust discharge	+	+	+	+	+
Preheating fuel	+	+	+	+	+
Preheating coolant	+	+	+	+	+
Preheating engine oil	+	+	+	+	+


 Cooling System	150 C	150 C HR	150 M	150 M HR	150 C Gantry
Reversible fan drive, fully automatic	+	+	+	+	+

• = Standard, + = Option
 * = optionally extendable after one year

Options and/or special attachments, supplied by vendors other than Liebherr, are only to be installed with the knowledge and approval of Liebherr in order to retain warranty.

 Operator's Cab	150 C	150 C HR	150 M	150 M HR	150 C Gantry
Cab lights rear, LED	•	•	•	•	•
Cab lights front, LED (under rain cover)	•	•	•	•	•
Armrest adjustable	•	•	•	•	•
Circular bubble level	•	•	•	•	•
Driver profile, personalized (max. 5 drivers)	•	•	•	•	•
Operator's seat Comfort	•	•	•	•	•
Operator's seat Premium	+	+	+	+	+
Driving alarm (acoustic signal is emitted during travel, can be switched ON/OFF)	+	+	+	+	+
Fire extinguisher	•	•	•	•	•
Cab elevation, hydraulic with double parallelogram (LHC-D)	+	+	+	+	+
Cab elevation, rigid (LFC)	•	•	•	•	•
Automatic air conditioning	•	•	•	•	•
Electric cooler	•	•	•	•	•
LIDAT Plus (extended Liebherr data transfer system)*	•	•	•	•	•
Bullet proof glass (front, roof and bottom window)	•	•	•	•	•
Proportional control	•	•	•	•	•
Radio Comfort, control via display with handsfree set	+	+	+	+	+
Preparation for radio installation	•	•	•	•	•
Warning beacon on cab, LED	+	+	+	+	+
Top guard	+	+	+	+	+
Front guard	+	+	+	+	+
Auxiliary heating, adjustable (week time switch)	•	•	•	•	•
Flashing light (xenon)	+	+	+	+	+

 Attachment	150 C	150 C HR	150 M	150 M HR	150 C Gantry
Boom lights, 2 pieces, LED	•	•	•	•	•
Stick lights, 4 pieces, LED	•	•	•	•	•
Boom shutoff (retract/extend), electronically	•	•	•	•	•
AutoLift	+	+	+	+	+
Pressure warning mechanism hoist cylinder	•	•	•	•	•
ERC system	•	•	•	•	•
Boom cylinder cushioning	•	•	•	•	•
Industrial stick with quick coupling	+	+	+	+	+
Stick camera (with separate monitor), bottom side, with protection	+	+	+	+	+
Load torque limitation	+	+	+	+	+
Liebherr multi coupling system	+	+	+	+	+
Pipe fracture safety valves hoist cylinders	•	•	•	•	•
Pipe fracture safety valve stick cylinder	•	•	•	•	•
Protection for piston rod, energy recovering cylinder	+	+	+	+	+
Protection for bottom side of stick	+	+	+	+	+
Stick shutoff (retract/extend), electronically	•	•	•	•	•
Retract stick without pressure	•	•	•	•	•
Overload warning device	+	+	+	+	+

 Complete Machine	150 C	150 C HR	150 M	150 M HR	150 C Gantry
Special coating, variants	+	+	+	+	+
Monitoring					
Rear view monitoring with camera	•	•	•	•	•
Side view monitoring with camera	+	+	+	+	+

