

Crawler Excavator

R 970 SME

Litronic®



Operating Weight with
Backhoe Attachment:
173,870 – 177,030 lb

Operating Weight with
Shovel Attachment:
174,390 – 178,570 lb

Motor:
443 HP / 330 kW SAE J1349
449 HP / 330 kW ISO 9249

Bucket Capacity:
5.25 – 6.55 yd³

Shovel Capacity:
4.60 – 6.55 yd³

Emission standard:
Stage Tier 4f

LIEBHERR

Crawler excavator R 970 SME Litronic Super Mass Excavation

Resized attachments

- Reinforced welded structure
- Larger kinematics components
- Integrated protection under the dipper stick as standard
- Extra protection available (below the boom, cylinders of boom and bucket)

Increased productivity

- HD bucket, up to 6.55 yd³ for density of 3,034 lbs/yd³
- Digging and breakout forces increased to over 15%

Robust undercarriage

- Fitted with excavator components from the next size up machine
- Track pads with 2 chamfered ribs for improved manoeuvrability on rough terrain
- Cast sprocket wheel with double tooth segment for longer life
- Dual-pivot carrier rollers for increased reliability and long-term durability
- Reinforced protection of travel drive for increased resistance against wear on hard and abrasive rock





Silent and comfortable cab

- To date, the largest and quietest cab in its category
- Mounted on visco-elastic elements to absorb vibrations
- Impact-resistant front window and roof window
- Pneumatic suspension seat, heated, multidirectional (air-conditioned optional)
- Large colour touch screen with high resolution display
- Elevated cab for improved visibility of loading area

Accessible and protected uppercarriage

- Left and right walkways as standard and large walkways with optional guardrails
- Platform with access to engine and hydraulic compartments for ergonomic and safe servicing
- Refined design for extended visibility
- New engine which conforms to Stage Tier 4 final standards
- Heavy counterweight for enhanced stability and better performance

Attachments with no compromises

- Cast steel elements
- Parallel kinematics for powerful and constant penetration
- Bucket cylinders positioned under the attachments for better protection
- Safety valves for hose ruptures of boom cylinders

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Technical Data



Engine

Rating	
per SAE J1349	443 HP (330 kW) at 1,800 rpm
per ISO 9249	449 HP (330 kW) at 1,800 rpm
Torque	2,028 lbf ft at 1,100 rpm
Model	Liebherr D9508 A7 SCR
Type	8 cylinder V engine
Bore/Stroke	5.0/6.2 in
Displacement	986 in ³
Engine operation	4-stroke diesel
	Common-Rail
Exhaust gas treatment	SCR system (Selective Catalytic Reduction)
	emission standard Tier 4 final / stage IV
Cooling system	water-cooled and integrated motor oil cooler, after-cooled and fuel cooled
Air cleaner	dry-type air cleaner with pre-cleaner, primary and safety elements
Fuel tank	301 gal
Urea tank	48 gal
Electrical system	
Voltage	24 V
Batteries	2 x 180 Ah/12 V
Starter	24 V/7.8 kW
Alternator	three-phase current 28 V/140 A
Engine idling	sensor controlled
Motor management	connection to the integrated excavator system controlling via CAN-BUS to the economical utilisation of the service that is available



Hydraulic Controls

Power distribution	via control valves in single block with integrated safety valves
Flow summation	to boom and stick
Closed-loop circuit	for uppercarriage swing drive
Servo circuit	electro-hydraulic control
Attachment and swing	proportional via joystick levers
Travel	– proportional via foot pedals or removable hand levers – speed pre-selection
Additional functions	via foot pedals or joystick toggle switch



Hydraulic System

Hydraulic pump	
for attachment and travel drive	two Liebherr variable flow, swashplate pumps
Max. flow	2 x 108 gpm
Max. pressure	5,076 psi
for swing drive	reversible, variable flow, swashplate pump, closed-loop circuit
Max. flow	65 gpm
Max. pressure	5,366 psi
Pump regulation	electro-hydraulic with electronic engine speed sensing regulation, flow compensation, automatic oil flow optimizer
Hydraulic tank	100 gal
Hydraulic system	196 gal
Hydraulic oil filter	2 full flow filters in return line with integrated fine filter area (5 µm)
Cooling system	compact cooler for water cooler, after-cooler, fuel cooler and transmission pump oil, sandwiched with cooler for oil and condenser of air-conditioning with hydrostatically controlled fan drives
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 digging performance and heavy-duty jobs
RPM adjustment	stepless adjustment of engine output via RPM at each selected mode
Tool Control	10 preadjustable pump flows and pressures for add-on tools



Swing Drive

Drive	Liebherr swashplate motor with integrated brake valves
Transmission	Liebherr compact planetary reduction gear
Swing ring	Liebherr, sealed race ball bearing swing ring, internal teeth
Swing speed	0 – 5.6 rpm stepless
Swing torque	171,852 lbf ft
Holding brake	wet multi-disc (spring applied, pressure released)



Operator's Cab

Cab	work headlights integrated in the ceiling, a door with a side window (can be opened on both sides), large stowing and depositing possibilities, shock-absorbing suspension, sounddamping insulating, tinted laminated safety glass, separate window shades for the sunroof window and windscreen, 12 V plug, storage bins, lunchbox, cup holder
Operator's seat	Liebherr-Comfort seat, airsprung with automatic weight adjustment, vertical and horizontal seat damping including consoles and joysticks. Seat and armrests adjustable separately and in combination, seat heating as standard
Control system	arm consoles, swinging with the seat
Operation and displays	large high resolution color display with selfexplanatory operation via touchscreen, video, versatile adjusting, control and monitoring facilities, e.g. climate control, implement and tool parameters
Air-conditioning	standard automatic air-conditioning, ambient air function, fast de-icing and demisting at the press of a button, air vents can be operated via a menu. Ambient 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



Undercarriage

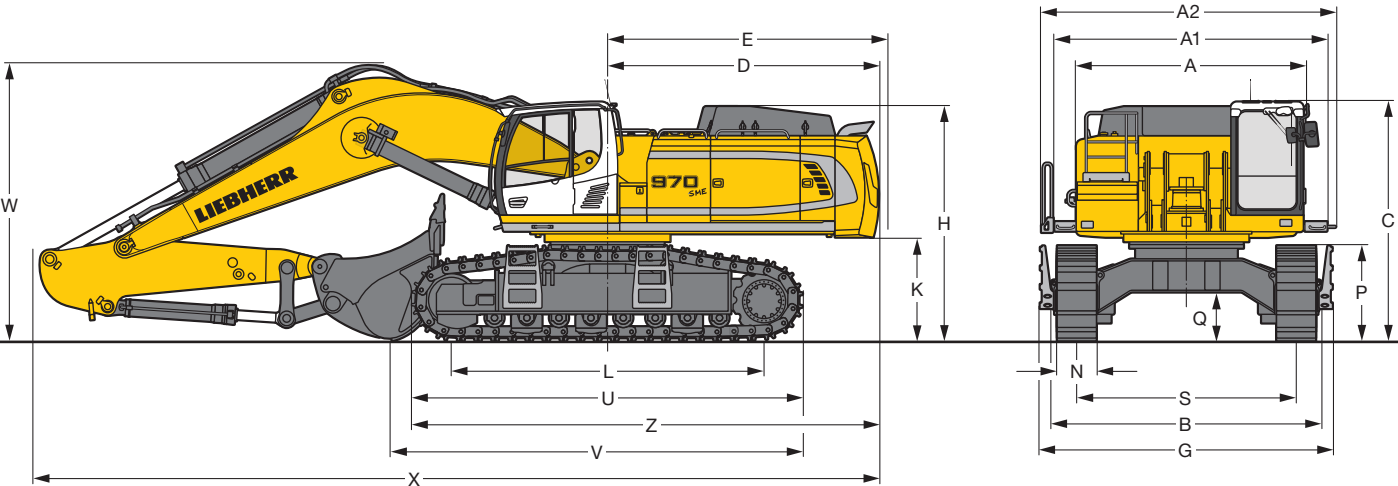
S-HD	gauge 11'
Drive	Liebherr swashplate motors with integrated brake valves on both sides
Transmission	Liebherr planetary reduction gears
Travel speed	low range – 1.4 mph high range – 2.2 mph
Net drawbar pull on crawler	127,692 lbf
Track components	D9G, maintenance-free
Track rollers/Carrier rollers	8/2
Tracks	sealed and greased
Track pads	double grouser
Holding brake	wet multi-disc (spring applied, pressure released)
Brake valves	outside the travel motor
Lashing eyes	integrated



Attachment

Type	combination of resistant steel plates and cast steel components
Hydraulic cylinders	Liebherr cylinders with special seal-system, shock protection
Bearings	sealed, low maintenance
Lubrication	automatic central lubrication system (except link and tilt geometry)
Hydraulic connections	pipes and hoses equipped with SAE split-flange connections
Bucket	standard equipped with Liebherr tooth system

Dimensions

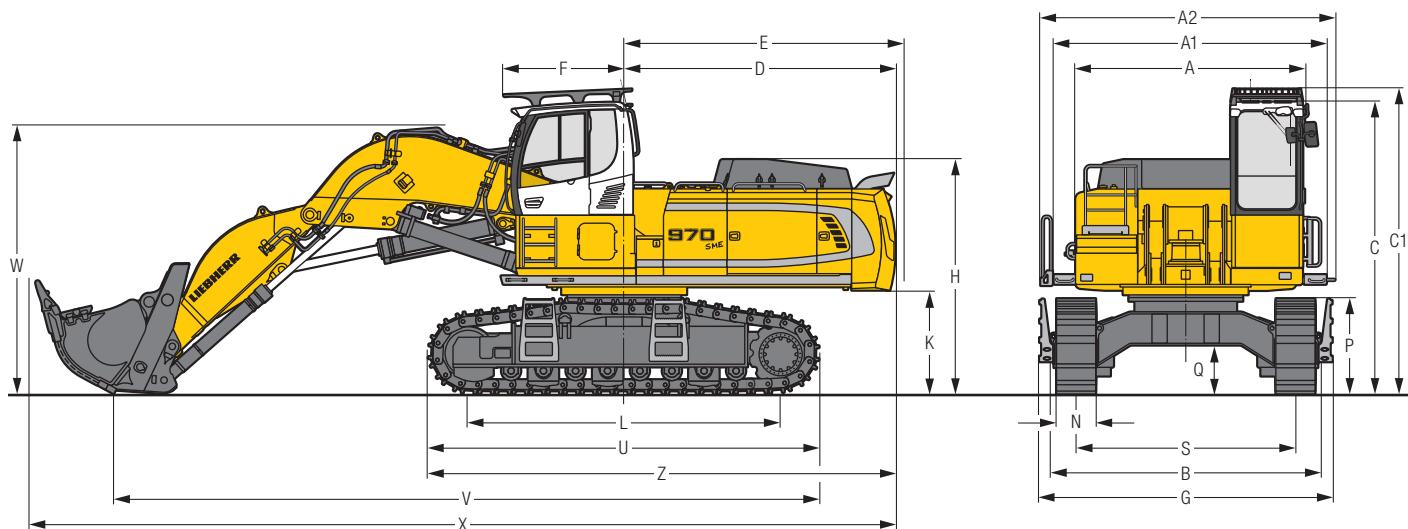


	ft in
A	11' 6"
A1	13' 8"
A2	14' 9"
C	12'/12' 8"*
D	13' 7"
E	14'
H	11' 9"
K	5' 2"
L	15' 8"
P	4' 9"
Q	2' 5"
S	11'
U	19' 7"
N	20" 24" 30"
B	13' 7" 13' 7" 13' 7"
G	14' 8" 14' 8" 14' 8"
Z	23' 7"

* with FOPS top guard

Mono boom SME 23'	
Stick length SME 8'6"	
	ft in
V	37' 9"
W	13' 9"
X	42'

Mono boom SME 23'	
Stick length SME 9'10"	
	ft in
V	20' 8"
W	13'11"
X	42' 4"

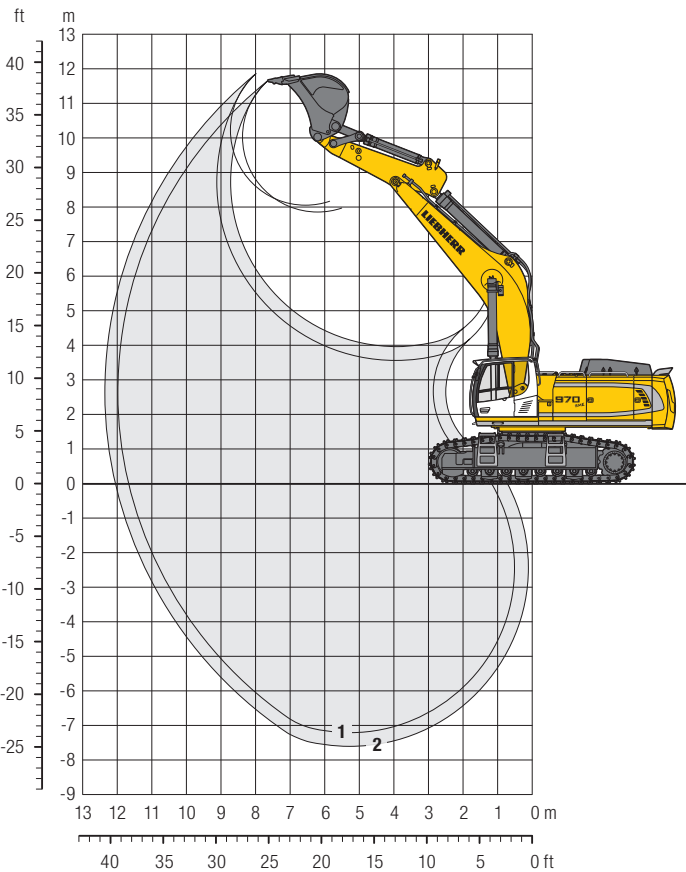


	ft	in
A	11'	6"
A1	13'	8"
A2	14'	9"
C	14'	8"
C1	15'	3"
D	13'	7"
E	14'	
F	6'	
H	11'	9"
K	5'	2"
L	15'	8"

	ft in		
P	4' 9"		
Q	2' 5"		
S	11'		
U	19' 7"		
N	20"	24"	30"
B	13' 7"	13' 7"	13' 7"
G	14' 8"	14' 8"	14' 8"
Z	23' 7"		
V	35' 3"		
W	13' 5"		
X	43' 4"		

Backhoe Bucket

with Mono Boom SME 23'



Digging Envelope

		1	2
Stick length	ft in	8'6" SME	9'10" SME
Max. digging depth	ft in	23'7"	24'11"
Max. reach at ground level	ft in	38'3"	39' 6"
Max. dumping height	ft in	25'9"	26' 5"
Max. teeth height	ft in	38'3"	38'11"

Digging Forces

		1	2
Digging force ISO	lbf	80,480	73,740
	lb	80,470	73,630
Breakout force ISO	lbf	88,120	88,120
	lb	88,180	88,180

Operating Weight and Ground Pressure

The operating weight includes the basic machine with mono boom SME 23', stick SME 8'6" and HD bucket 5.88 yd³ (11,020 lb).

Undercarriage		S-HD		
Pad width	in	20"	24"	30"
Weight	lb	173,060	174,610	177,030
Ground pressure	psi	21.9	18.5	14.9

Buckets Machine stability per ISO 10567* (75% of tipping capacity)

				S-HD-Undercarriage SME-Attachment	
				Stick length (ft in)	
				8'6"	9'10"
HD ¹⁾	Cutting width in	Capacity ISO 7451 yd ³	Weight lb		
	85"	5.88	10.470	▲	▲
HDV ²⁾	91"	6.54	11.240	▲	■
	85"	5.23	11.460	▲	▲
HDV ²⁾	85"	5.88	12.020	▲	▲
	91"	6.54	12.790	▲	■

* Indicated loads are based on ISO 10567 max. stick length, lifted 360° on firm

¹⁾ HD bucket with teeth Z 90 (appropriate for materials above classification 6, according to VOB, Section C, DIN 18300)

²⁾ HDV bucket with teeth Z 90 (appropriate for materials above classification 6, according to VOB, Section C, DIN 18300)

Other backhoes available on request

Max. material weight ▲ = ≤ 3,371 lb/yd³, ■ = ≤ 3,034 lb/yd³

Lift Capacities

with Mono Boom SME 23'

Stick SME 8'6"

ft	Under-carriage	10 ft	15 ft	20 ft	25 ft	30 ft	ft in
30	S-HD						30,1* 30,1* 23' 7"
25	S-HD				32,0* 32,0*		28,1* 28,1* 27' 6"
20	S-HD		50,2* 50,2*	39,0* 39,0*	33,5* 33,5*	28,5* 28,5*	27,5* 27,5* 30' 1"
15	S-HD			44,8* 44,8*	36,2* 36,2*	31,8* 31,8*	27,8* 27,8* 31' 7"
10	S-HD			50,1* 50,1*	39,0* 39,0*	33,0* 33,0*	29,0* 29,0* 32' 2"
5	S-HD			52,9* 52,9*	41,0* 41,0*	32,7 33,8*	30,0 31,2* 32'
0	S-HD		57,6* 57,6*	52,8* 52,8*	41,3* 41,3*	32,4 33,4*	31,2 32,0* 30'11"
- 5	S-HD	59,2* 59,2*	63,4* 63,4*	50,0* 50,0*	39,4* 39,4*		32,2* 32,2* 28'11"
-10	S-HD	65,2* 65,2*	55,1* 55,1*	44,0* 44,0*	33,7* 33,7*		31,7* 31,7* 25'10"
-15	S-HD		40,6* 40,6*	31,1* 31,1*			28,6* 28,6* 20'11"

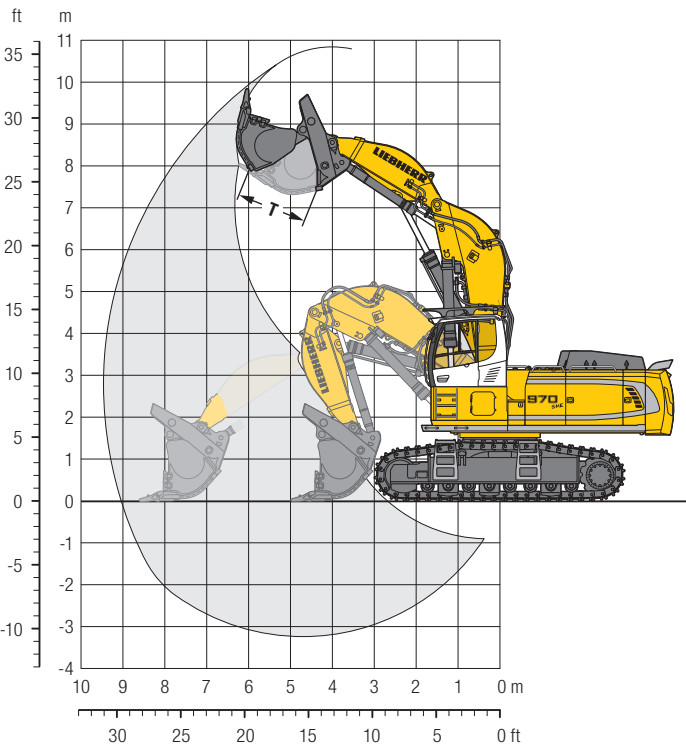
Stick SME 9'10"

ft	Under-carriage	10 ft	15 ft	20 ft	25 ft	30 ft	ft in
30	S-HD				28,5* 28,5*		25,3* 25,3* 25' 4"
25	S-HD				30,2* 30,2*		23,7* 23,7* 28'11"
20	S-HD			36,8* 36,8*	31,9* 31,9*	29,4* 29,4*	23,2* 23,2* 31' 5"
15	S-HD		60,3* 60,3*	42,6* 42,6*	34,8* 34,8*	30,5* 30,5*	23,4* 23,4* 32'10"
10	S-HD			48,3* 48,3*	37,8* 37,8*	32,0* 32,0*	24,4* 24,4* 33' 5"
5	S-HD		36,5* 36,5*	51,8* 51,8*	40,0* 40,0*	32,5 33,1*	26,1* 26,1* 33' 2"
0	S-HD		62,0* 62,0*	52,5* 52,5*	40,9* 40,9*	32,0 33,2*	29,0* 29,0* 32' 2"
- 5	S-HD	57,1* 57,1*	65,8* 65,8*	50,5* 50,5*	39,7* 39,7*	31,3* 31,3*	30,7* 30,7* 30' 4"
-10	S-HD	73,3* 73,3*	58,0* 58,0*	45,4* 45,4*	35,4* 35,4*		30,5* 30,5* 27' 4"
-15	S-HD		45,2* 45,2*	35,2* 35,2*			28,6* 28,6* 22'10"

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

The load values are quoted in lb x 1,000 at stick end (without bucket), and may be swung 360° on firm and even ground. Adjacent values are valid for the undercarriage when in the longitudinal position. Capacities are valid for 30" wide track pads. Indicated loads are based on ISO 10567 standard and do not exceed 75% of tipping or 87% of hydraulic capacity (indicated via *). Without bucket cylinder, link and lever the lift capacities will increase by 2,690 lb. Lifting capacity of the excavator is limited by machine stability and hydraulic capacity.

Front Shovel



Digging Envelope

Max. reach at ground level	29' 8"
Max. dumping height	23'11"
Max. crowd length	11'10"
Bucket opening width T	5' 5"
Max. crowd force	112,400 lbf/112,440 lb
Max. crowd force at ground level	92,170 lbf/ 92,150 lb
Max. breakout force	83,180 lbf/ 83,110 lb

Operating Weight and Ground Pressure

The operating weight includes the basic machine with cab elevation 2'7", shovel attachment SME and front shovel 5.88 yd³ (15,870 lb), level II.

Undercarriage		S-HD		
Pad width	in	20"	24"	30"
Weight	lb	174,390	176,150	178,570
Ground pressure	psi	22.0	18.6	15.1

Front Shovels

				S-HD-Undercarriage
				Shovel Attachment
Cutting width	Capacity ISO 7451	Weight	Wear kit level	
in	yd³	lb		
93"	4.58	14.550	II	▲
93"	4.58	16.200	III	▲
102"	5.23	14.330	I	▲
102"	5.23	15.430	II	▲
102"	5.23	17.420	III	▲
102"	5.88	14.770	I	▲
102"	5.88	15.870	II	■
102"	5.88	17.200	III	■
102"	6.54	14.990	I	■
102"	6.54	16.540	II	▲

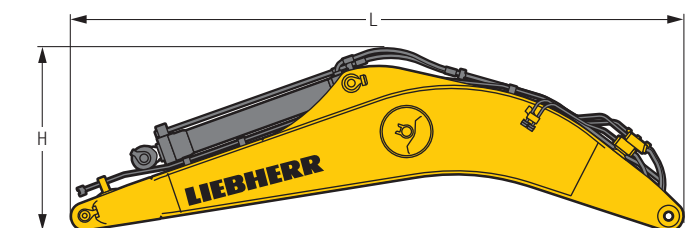
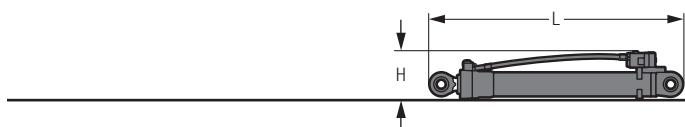
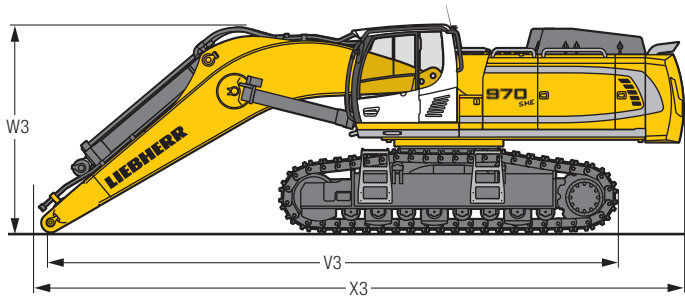
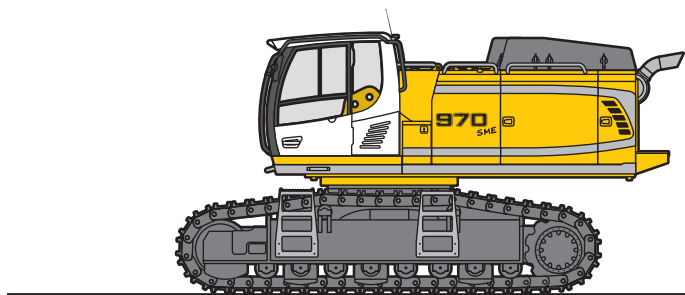
Level I: For non-abrasive materials, such as limestone without flint inclusion, shot material or easily breakable rock, i.e., deteriorated rock, soft limestone, shale, etc.

Level II: For pre-blasted heavy rock, or deteriorated, cracked material (classification 3 to 4, according to DIN 18300)

Level III: For highly-abrasive materials such as rock with a high silica content, sandstone etc.

Max. material weight ▲ = ≤ 3,371 lb/yd³, ■ = ≤ 3,034 lb/yd³, ▲ = ≤ 2,781 lb/yd³

Dimensions and Weights



Basic Machine

Track pads	in	20"	24"	30"
Weight with backhoe attachment and S-HD-undercarriage without counterweight	lb	101,850	103,510	105,930
Weight with shovel attachment and S-HD-undercarriage without counterweight	lb	101,850	103,510	105,930

Basic Machine

V3	ft in	33'
W3	ft in	12'
X3	ft in	37'7"

Cab Elevation

L Length	ft in	6'2"
H Height	ft in	3'1"
Width	ft in	4'6"
Weight	lb	1,320

Counterweight

L Length	ft in	2'6"
H Height	ft in	5'1"
Width	ft in	11'
Weight	lb	31,970

Upper Protection Screen

L Length	ft in	6'5"
H Height	ft in	7"
Width	ft in	3'8"
Weight	lb	165

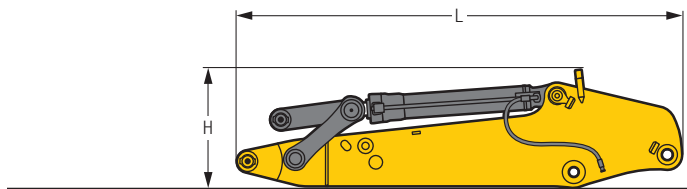
Hoist Cylinders (two)

L Length	ft in	8'8"
H Height	ft in	1'7"
Width	ft in	1'2"
Weight	lb	2 x 1,650

Mono Boom with Stick Cylinder

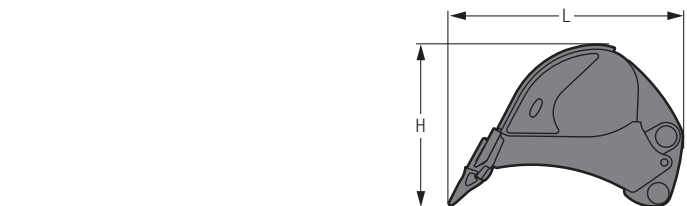
Stick length	ft in	23'
L Length	ft in	24'1"
H Height	ft in	7'5"
Width	ft in	4'9"
Weight	lb	16,200

Dimensions and Weights



Stick with Bucket Cylinder

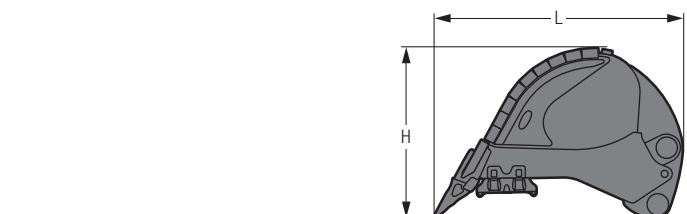
Stick length	ft in	8'6"	9'10"
L Length	ft in	13'1"	14'5"
H Height	ft in	4'5"	4'5"
Width	ft in	3'1"	3'1"
Weight	lb	8,600	9,150



Backhoe Buckets

HD

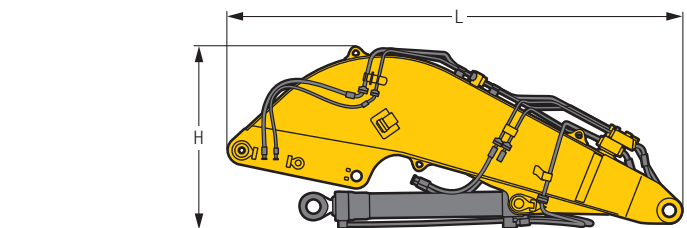
Cutting width	in	95"	100"
Capacity	yd ³	5.88	6.54
L Length	ft in	8'	8'
H Height	ft in	5'7"	5'7"
Width	ft in	8'	8'6"
Weight	lb	11,020	11,910



Backhoe Buckets

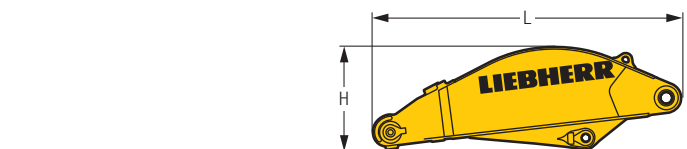
HDV

Cutting width	in	85"	85"	95"
Capacity	yd ³	5.23	5.88	6.54
L Length	ft in	8'	8' 6"	8' 6"
H Height	ft in	5'7"	5'11"	5'11"
Width	ft in	7'3"	7' 3"	8'
Weight	lb	11,460	11,910	12,020



Shovel Boom

L Length	ft in	15'7"
H Height	ft in	6'5"
Width	ft in	6'3"
Weight without crowd cylinder	lb	11,130
Weight crowd cylinder	lb	1,430



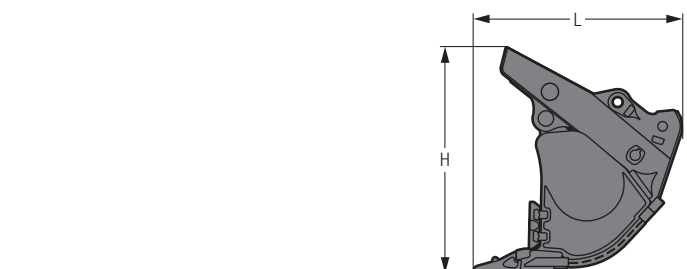
Shovel Stick

L Length	ft in	10' 8"
H Height	ft in	3' 7"
Width	ft in	4'11"
Weight	lb	5,510



Shovel Bucket Cylinders (two)

L Length	ft in	8'4"
H Height	ft in	1'2"
Width	ft in	1'8"
Weight	lb	2 x 880



Front Shovels

Cutting width	in	102"	102"	102"
Capacity	yd ³	5.23	5.88	6.54
L Length	ft in	7' 3"	7' 3"	7'7"
H Height	ft in	7'10"	7'10"	8'2"
Width	ft in	8' 8"	8' 8"	8'8"
Weight				
Level I	lb	—	14,770	14,990
Level II	lb	—	15,870	16,540
Level III	lb	17,420	17,200	—

Standard Equipment

Undercarriage

Lashing eyelets
Sprocket double-toothed with dirt ejector
Supporting rollers with double bearings
Track guides (three pieces per track frame)
Track pads, chamfered
Track rollers, lifetime-lubricated
Tracks, sealed and greased
Travel gear support, reinforced

Uppercarriage

Engine hood with two-part gas spring opening
Fuel tank cap lockable with padlock
Handrails
Heavy counterweight
Internal platform with access to engine and hydraulic compartments
Manual main switch
Sound insulation
Storage box, lockable
Swing brake lock, maintenance-free
Tool set 29 pieces
Uppercarriage headlights (halogen) with protection
Walkway, both-sided



Hydraulic System

Dedicated swing circuit
Filter with integrated fine filter area
Liebherr hydraulic oil
Positive Control system
Pressure storage for controlled lowering of equipment with engine turned off
Pressure test ports for hydraulic
Shut-off valve between hydraulic tank and pumps
Work mode selector



Engine

Common-Rail injection system
Conform with stage Tier 4f emission standard
Engine idling, automatic, sensor-controlled
Fixed geometry turbo charger
Fuel filter and water separator
Intercooler
Liebherr SCR system (Selective Catalytic Reduction)
Oil level monitoring on touchscreen
Stepless adjustable engine speed
Urea tank level monitoring on touchscreen



Operator's Cab

7" colour multifunction display with touchscreen
Air conditioning, automatic
Cigarette lighter and ashtray
Coat hook
Cup holder
Fuel consumption indicator
Headlights (two pieces, Halogen)
Hydraulic suspension
Impact-resistant front window
Impact-resistant roof window
Interior light
LiDAT Plus (Liebherr data transfer system) *
Mechanical hour meters, readable from outside the cab
Operator seat "Comfort" with horizontal and vertical damping
Preparation for radio installation
Rain hood over front window opening
Rearview mirrors
Rear view monitoring camera
Rear window emergency exit
Retractable seat belt 2"
Roll-down sun blind
Rotation/boom lift priority adjustable on display
Rubber floor mat
Sliding windows in cab door
Storage bin
Storage space
Tinted windows
Wiper/washer



Attachment

Boom oil-recirculation
Bottom protection for stick
Headlights on boom (right and left, Halogen)
Liebherr central lubrication system, fully-automatic (except connecting link for bucket kinematics)
Load valve for stick cylinder (on distributor)
Safety check valves on hoist cylinders
Stick oil-recirculation

Non-exhaustive list, please contact us for further information.

* optionally extendable after one year

Options

Undercarriage

Continuous track guide
Cover and base protection plates
Factory special painting
Protection plate for wrecking ball operation
Steps, wide version
Track guides (four pieces per track frame)
Travel drive protection

Uppercarriage

Additional right-hand rearview mirror
Cab elevation
Camera for side area monitoring
Diesel refuelling pump (electric)
Electric socket for external start-up aid (24 V)
Electric socket for urea filling station (24 V)
Factory special painting
Fan drive, reversible
Fine filter protection grid for radiator
Lubrication line protection (swing ring)
SkyView 360° camera
Storage box with extended tool set 40 pieces (incl. toolbox)
Swing drive protection
Walkway, wide version with guard rail
Wiggins quick-coupling for fuel

Hydraulic System

Hydraulic bypass fine filter
Liebherr hydraulic oil, adapted for extreme climate conditions
Liebherr hydraulic oil, biodegradable
Preheating for hydraulic oil

Engine

Air pre-filter with dust trap
Automatic engine shut-down on idle (adjustable)
Engine compartment lighting
Liebherr particle filter
Preheating for fuel, coolant and engine oil
Wiggins quick coupling for engine oil

Operator's Cab

Additional front and/or rear cab headlights (Halogen or LED)
Adjustable intensity headlights (LED)
Amber beacon
Auxiliary heater (programmable timer)
Electric cool box (12 V)
Electronic immobilizer
Emergency stop button in cab
Factory special painting
Falling objects protection structure (FOPS)
Fire extinguisher
First-aid kit
Follow me home headlights
Footrest
Front guard protection structure (FGPS) pivotable
Front headlights (two pieces, LED)
Handrest for joysticks
Integral protection guard
Lighting for cabin access
Lower part windshield wiper
Operator seat "Comfort" with four-point harness
Operator seat "Premium" with integrated ventilation
Radio "Comfort"
Roof window wiper
Sun visor
Sunshield on cab roof
Travel alarm

Attachment

Bottom protection for boom
Bucket cylinder protection
Cylinders check valve
Eyelet on boom and stick
Factory special painting
Headlight on boom (LED)
Hoist cylinders float position
Hoist cylinders protection
Liebherr bucket range
Liebherr tooth system
Load valve for bucket cylinder
Overload warning device
Safety check valves for stick cylinder

Non-exhaustive list, please contact us for further information.

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.

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