

Crawler Excavator

R 970 SME

Litronic®

Motor:

320 kW / 435 HP

Stage IIIA / Tier 3

Operating weight:

Backhoe: 78,500 – 80,300 kg

Shovel: 79,100 – 81,000 kg

Bucket Capacity:

Backhoe: 4.00 – 5.00 m³

Shovel: 4.00 – 5.00 m³



LIEBHERR

Crawler excavator R 970 SME

Super Mass Excavation

Resized attachments

- Reinforced welded structure
- Larger kinematics components
- Integrated bottom stick protection as standard
- Additional protection available (bottom the boom, boom and bucket cylinders)

Increased productivity

- HD bucket, up to 5 m³ for density of 1.8 t/m³
- Digging and breakout forces increased to over 15 %

Robust undercarriage

- Fitted with excavator components from the next size up machine
- Track pads with double grouser chamfered for improved manoeuvrability on rough terrain
- Cast sprocket wheel with double tooth segment for longer life
- Double sided bearings on 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 (option)

Accessible and protected uppercarriage

- Left and right walkways as standard and large walkways with guardrails in option
- Platform with access to engine and hydraulic compartments for ergonomic and safe servicing
- Refined design for extended visibility
- Conform with Stage IIIA/Tier 3 emission standard
- Heavy counterweight for enhanced stability and better performance

Crawler excavator R 970 SME Shovel Super Mass Excavation

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

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





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Technical Data

Engine

Rating per ISO 9249	330 kW (449 HP) at 1,800 RPM
Torque	2,750 Nm at 1,100 RPM
Model	Liebherr D9508
Type	8 cylinder V engine
Bore / Stroke	128 / 157 mm
Displacement	16.16 l
Engine operation	4-stroke diesel Common-Rail
Exhaust gas treatment	emission standard stage IIIA/Tier 3
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	1,140 l
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	– with proportionally functioning foot pedals or adjusted with plugable levers – speed pre-selection
Additional functions	via foot pedals or joystick toggle switch

Hydraulic System

Hydraulic pump	two Liebherr variable flow, swashplate pumps
for attachment and travel drive	
Max. flow	2 x 410 l/min.
Max. pressure	350 bar
for swing drive	reversible, variable flow, swashplate pump, closed-loop circuit
Max. flow	245 l/min.
Max. pressure	370 bar
Pump regulation	electro-hydraulic with electronic engine speed sensing regulation, pressure compensation, flow compensation, high flow
Hydraulic tank	435 l
Hydraulic system	920 l
Hydraulic oil filter	2 full flow filters in return line with integrated fine filter area (5 µm)
Cooling system	cooler for water cooler, after-cooler and transmission pump oil and cooler for fuel, 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 valve
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	233 kNm
Holding brake	wet multi-disc (spring applied, pressure released)



Operator's Cab

Cab	work headlights integrated in the ceiling, a door with a sliding 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, cigarette lighter and 12 V plug, storage bins, lunchbox, cup holder
Operator's seat	Liebherr-Comfort seat, airsprung with automatic weight adjustment, vertical and longitudinal 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 colour 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 fully controlled on the display, 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 outside and standing on the ground. Heating-cooling unit, designed for extreme outside temperatures, sensors for solar radiation, inside and outside temperatures



Undercarriage

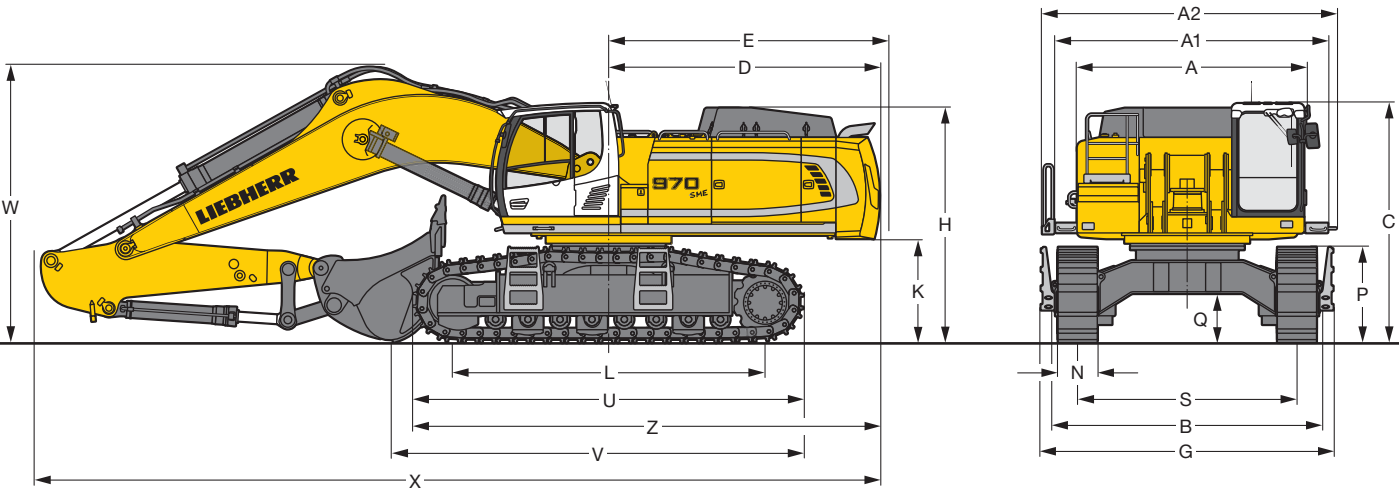
S-HD	gauge 3,350 mm
Drive	Liebherr swashplate motors with integrated brake valves on both sides
Transmission	Liebherr compact planetary reduction gear
Travel speed	low range – 2.2 km/h high range – 3.5 km/h
Net drawbar pull on crawler	568 kN
Track components	D9G, maintenance-free
Track rollers / Carrier 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

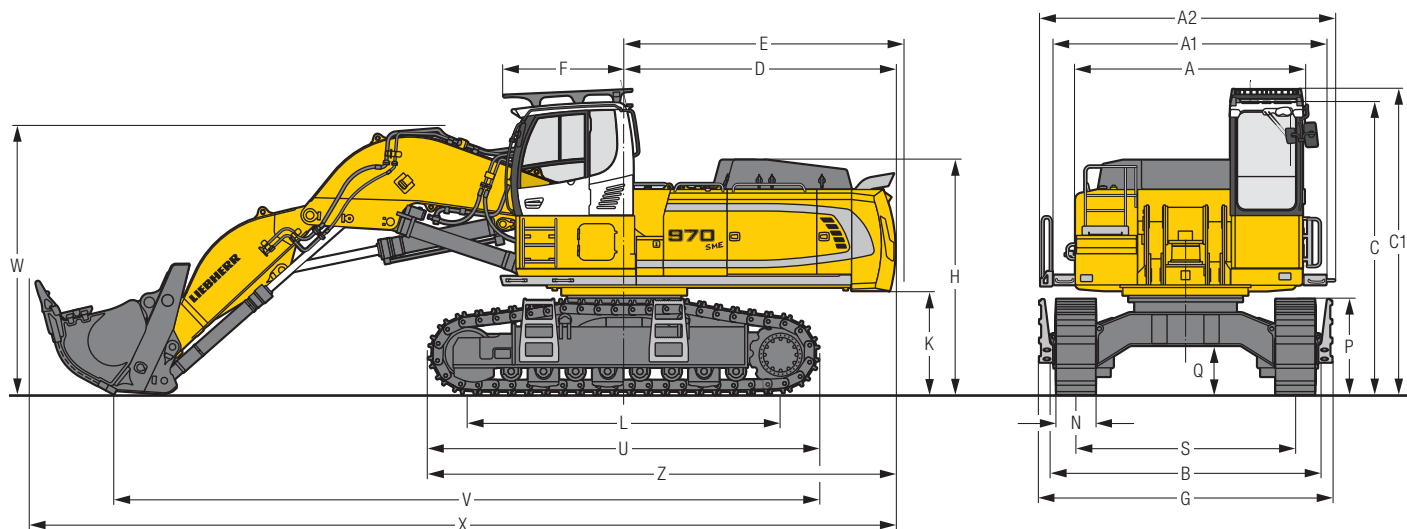


	mm		
A	3,515		
A1	4,160		
A2	4,495		
C	3,665/3,860*		
D	4,135		
E	4,270		
H	3,585		
K	1,585		
L	4,770		
P	1,460		
Q	745		
S	3,350		
U	5,960		
N	500	600	750
B	4,130	4,130	4,130
G	4,460	4,460	4,460
Z	7,200		

* with FOPS top guard

Mono boom SME 7.00 m		mm
Stick length SME 2.60 m		
V		11,500
W		4,200
X		12,800

Mono boom SME 7.00 m	
Stick length SME 3.00 m	mm
V	6,300
W	4,250
X	12,900

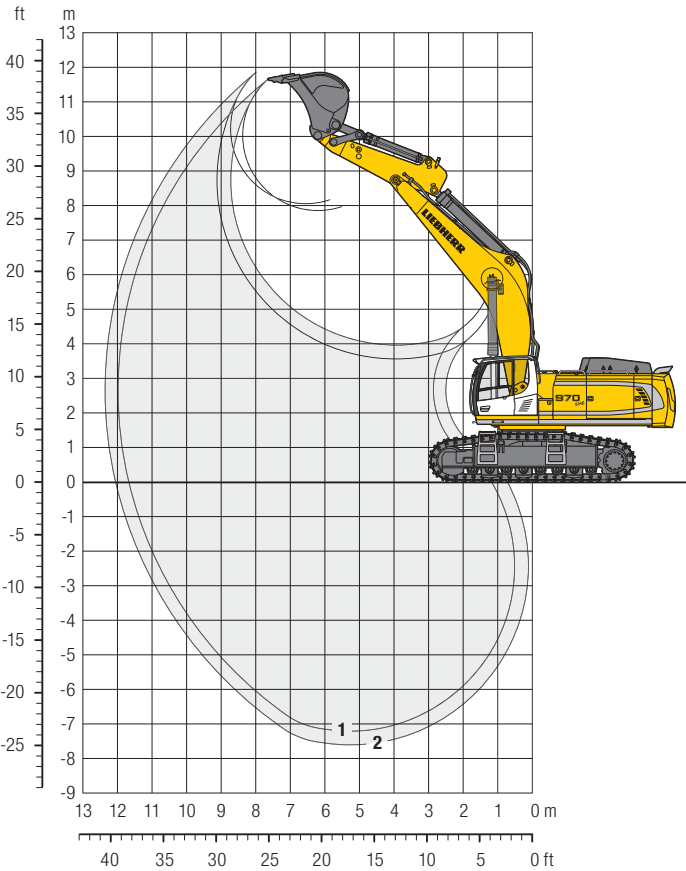


	mm
A	3,515
A1	4,160
A2	4,495
C	4,465
C1	4,660
D	4,135
E	4,270
F	1,835
H	3,585
K	1,585
L	4,770

	mm
P	1,460
Q	745
S	3,350
U	5,960
N	500 600 750
B	4,130 4,130 4,130
G	4,460 4,460 4,460
Z	7,200
V	10,750
W	4,100
X	13,200

Backhoe Bucket

with Mono Boom SME 7.00 m



Digging Envelope

		1	2
Stick length	m	2.60	3.00
		SME	SME
Max. digging depth	m	7.20	7.60
Max. reach at ground level	m	11.65	12.05
Max. dumping height	m	7.85	8.05
Max. teeth height	m	11.65	11.85

Digging Forces

		1	2
Digging force ISO	kN	358	328
	t	36.5	33.4
Breakout force ISO	kN	392	392
	t	40.0	40.0

Operating Weight and Ground Pressure

The operating weight includes the basic machine with mono boom SME 7.00 m, stick SME 2.60 m and HD bucket 4.50 m³ (5,000 kg).

Undercarriage		S-HD		
Pad width	mm	500	600	750
Weight	kg	78,500	79,200	80,300
Ground pressure	kg/cm²	1.54	1.30	1.05

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

				S-HD-Undercarriage SME-Attachment	
				Stick length (m)	
				2.60	3.00
HD ¹⁾	Cutting width mm	Capacity ISO 7451 m³	Weight kg		
	2,150	4.50	4,750	▲	▲
HDV ²⁾	2,300	5.00	5,100	▲	■
	2,150	4.00	5,200	▲	▲
HDV ²⁾	2,150	4.50	5,450	▲	▲
	2,300	5.00	5,800	▲	■


* Indicated loads are based on ISO 10567, at maximum reach, and may be swung 360° on firm and even ground
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 buckets available upon request

Max. material weight ▲ = ≤ 2.0 t/m³, ■ = ≤ 1.8 t/m³


Lift Capacities

with Mono Boom SME 7.00 m

Stick SME 2.60 m

↓ m	Under-carriage	3.0 m		4.5 m		6.0 m		7.5 m		9.0 m				m
9.0	S-HD											13.5*	13.5*	7.3
7.5	S-HD							14.6*	14.6*			12.7*	12.7*	8.5
6.0	S-HD			23.5*	23.5*	18.1*	18.1*	15.4*	15.4*	14.1*	14.1*	12.5*	12.5*	9.2
4.5	S-HD					20.8*	20.8*	16.7*	16.7*	14.6*	14.6*	12.6*	12.6*	9.6
3.0	S-HD					23.3*	23.3*	18.0*	18.0*	15.2*	15.2*	13.2*	13.2*	9.8
1.5	S-HD					24.5*	24.5*	18.9*	18.9*	15.0	15.6*	13.4	14.2*	9.7
0	S-HD			24.6*	24.6*	24.3*	24.3*	18.9	19.1*	14.8	15.5*	14.0	14.5*	9.4
-1.5	S-HD	26.2*	26.2*	29.1*	29.1*	23.1*	23.1*	18.2*	18.2*			14.6*	14.6*	8.8
-3.0	S-HD	29.8*	29.8*	25.4*	25.4*	20.4*	20.4*	15.8*	15.8*			14.4*	14.4*	7.9
-4.5	S-HD			19.0*	19.0*	14.8*	14.8*					13.1*	13.1*	6.5

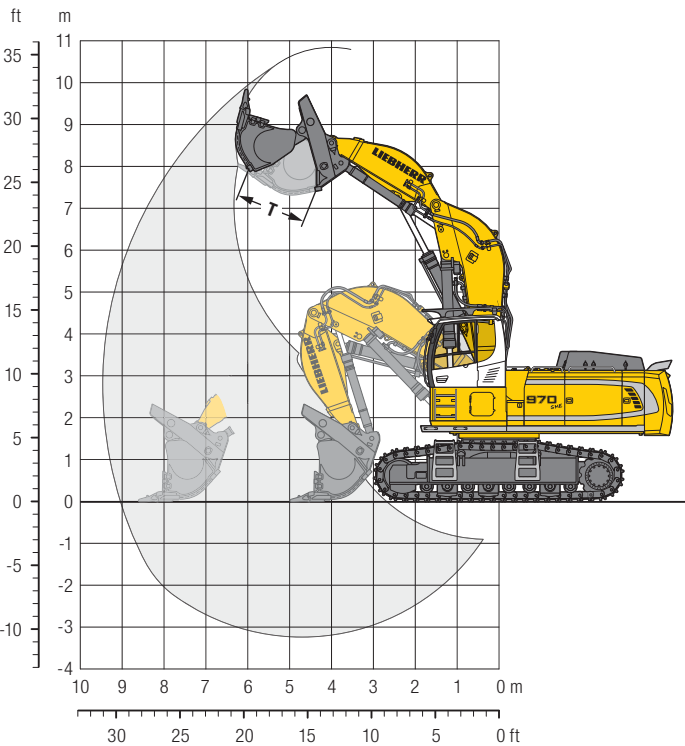
Stick SME 3.00 m

↓ m	Under-carriage	3.0 m		4.5 m		6.0 m		7.5 m		9.0 m				m
9.0	S-HD							13.8*	13.8*			11.4*	11.4*	7.8
7.5	S-HD							13.8*	13.8*			10.7*	10.7*	8.9
6.0	S-HD					17.0*	17.0*	14.7*	14.7*	13.4*	13.4*	10.5*	10.5*	9.6
4.5	S-HD			28.4*	28.4*	19.8*	19.8*	16.0*	16.0*	14.0*	14.0*	10.6*	10.6*	10.0
3.0	S-HD					22.4*	22.4*	17.5*	17.5*	14.7*	14.7*	11.1*	11.1*	10.2
1.5	S-HD					24.0*	24.0*	18.5*	18.5*	14.9	15.3*	11.8*	11.8*	10.1
0	S-HD			26.9*	26.9*	24.2*	24.2*	18.7	18.9*	14.6	15.4*	13.1	13.1*	9.8
-1.5	S-HD	25.4*	25.4*	30.2*	30.2*	23.3*	23.3*	18.3*	18.3*	14.6*	14.6*	13.9*	13.9*	9.2
-3.0	S-HD	33.6*	33.6*	26.8*	26.8*	21.0*	21.0*	16.5*	16.5*			13.9*	13.9*	8.4
-4.5	S-HD			21.1*	21.1*	16.6*	16.6*					13.1*	13.1*	7.0

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

The load values are quoted in tons (t) 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 600 mm 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 1,220 kg. Lifting capacity of the excavator is limited by machine stability and hydraulic capacity. According to European Standard, EN 474-5: In the European Union excavators have to be equipped with an overload warning device, a load diagram and automatic safety check valves on hoist cylinders and stick cylinder(s), when they are used for lifting operations which require the use of lifting accessories.

Front Shovel



Digging Envelope

Max. reach at ground level	9.05 m
Max. dumping height	7.30 m
Max. crowd length	3.60 m
Bucket opening width T	1,650 mm
Max. crowd force	500 kN/51.0 t
Max. crowd force at ground level	410 kN/41.8 t
Max. breakout force	370 kN/37.7 t

Operating Weight and Ground Pressure

The operating weight includes the basic machine with cab elevation 800 mm, shovel attachment SME and front shovel 4.50 m³ (7,200 kg), level II.

Undercarriage	S-HD		
Pad width	mm	500	600
Weight	kg	79,100	79,900
Ground pressure	kg/cm ²	1.55	1.31

Front Shovels

Cutting width	Capacity ISO 7451	Weight	Wear kit level	S-HD-Undercarriage
mm	m ³	kg		Shovel Attachment
2,600	4.00	6,500	I	▲
2,600	4.00	7,000	II	▲
2,600	4.00	7,900	III	▲
2,600	4.50	6,700	I	▲
2,600	4.50	7,200	II	■
2,600	4.50	7,800	III	■
2,600	5.00	6,800	I	■
2,600	5.00	7,500	II	▲

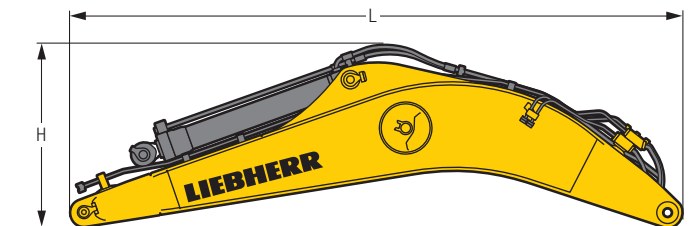
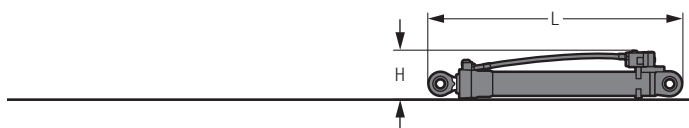
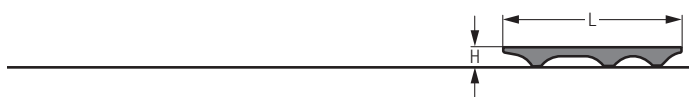
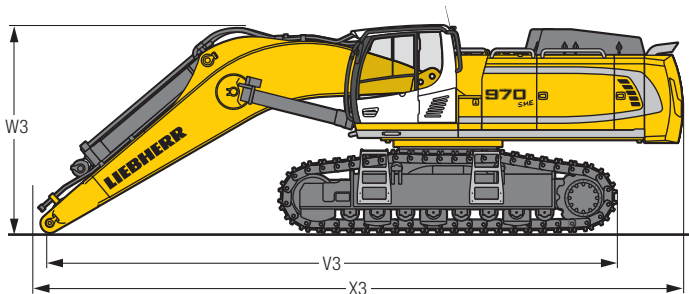
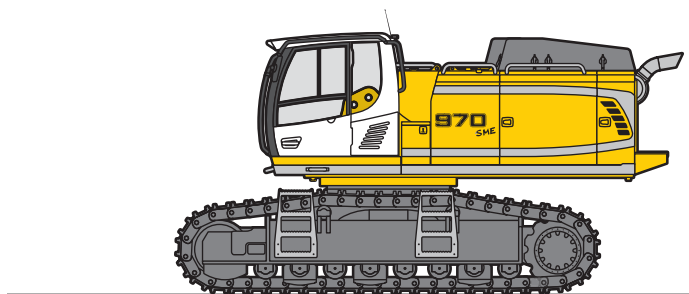
Level I: For non-abrasive materials, such as limestone without flint inclusion, shot material or easily breakable rock, i.e., deteriorated rock, soft limestone, shale, etc.

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 ▲ = ≤ 2.0 t/m³, ■ = ≤ 1.8 t/m³, ▲ = ≤ 1.65 t/m³

Dimensions and Weights



Basic Machine

Track pads	mm	500	600	750
Weight with S-HD-undercarriage	kg	46,200	46,950	48,050

Machine without Stick

V3	mm	10,050
W3	mm	3,650
X3	mm	11,450

Cab Elevation

800 mm

L Length	mm	1,890
H Height	mm	930
Width	mm	1,370
Weight	kg	600

Counterweight

L Length	mm	770
H Height	mm	1,550
Width	mm	3,360
Weight	kg	14,500

Upper Protection Screen

L Length	mm	1,960
H Height	mm	190
Width	mm	1,110
Weight	kg	75

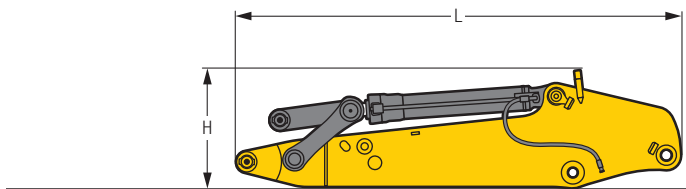
Hoist Cylinders (two)

L Length	mm	2,650
H Height	mm	490
Width	mm	360
Weight	kg	2 x 750

Mono Boom with Stick Cylinder

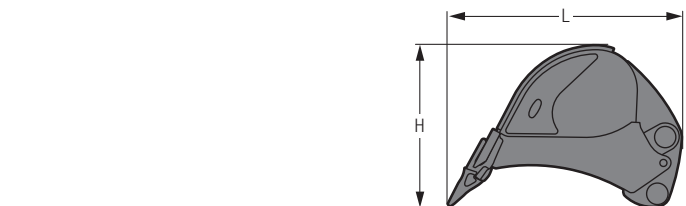
Stick length	m	7.00
L Length	mm	7,350
H Height	mm	2,250
Width	mm	1,450
Weight	kg	7,350

Dimensions and Weights



Stick with Bucket Cylinder

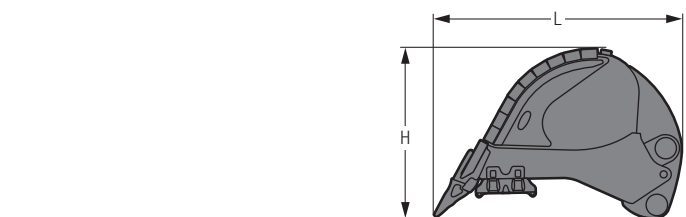
Stick length	m	2,60	3,00
L Length	mm	4,000	4,400
H Height	mm	1,350	1,350
Width	mm	950	950
Weight	kg	3,900	4,150



Backhoe Buckets

HD

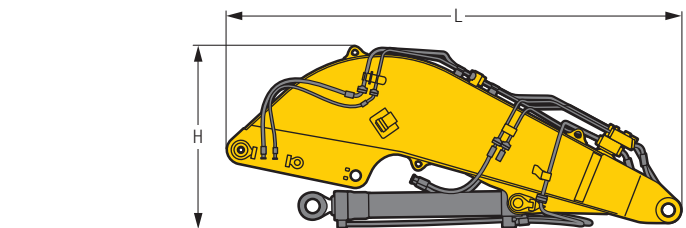
Cutting width	mm	2,150	2,300
Capacity	m³	4.50	5.00
L Length	mm	2,450	2,450
H Height	mm	1,700	1,700
Width	mm	2,450	2,600
Weight	kg	4,750	5,100



Backhoe Buckets

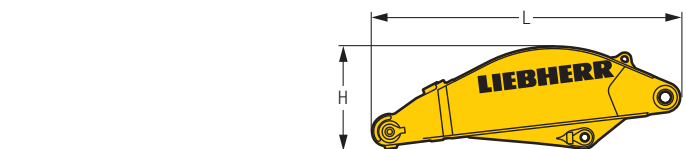
HDV

Cutting width	mm	2,150	2,150	2,300
Capacity	m³	4.00	4.50	5.00
L Length	mm	2,450	2,600	2,600
H Height	mm	1,700	1,800	1,800
Width	mm	2,200	2,200	2,450
Weight	kg	5,200	5,450	5,800



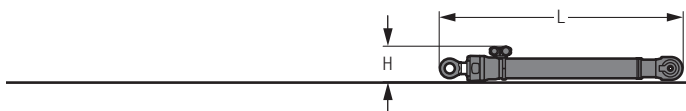
Shovel Boom

L Length	mm	4,750
H Height	mm	1,950
Width	mm	1,900
Weight without crowd cylinder	kg	5,050
Weight crowd cylinder	kg	650



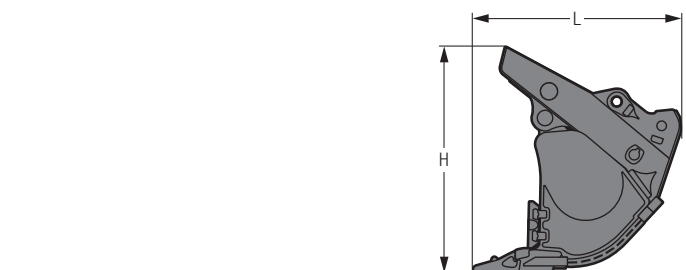
Shovel Stick

L Length	mm	3,250
H Height	mm	1,100
Width	mm	1,500
Weight	kg	2,500



Shovel Bucket Cylinders (two)

L Length	mm	2,550
H Height	mm	350
Width	mm	500
Weight	kg	2 x 400



Front Shovels

Cutting width	mm	2,600	2,600	2,600
Capacity	m³	4.00	4.50	5.00
L Length	mm	2,200	2,200	2,300
H Height	mm	2,400	2,400	2,500
Width	mm	2,650	2,650	2,650
Weight				
Level I	kg	6,500	6,700	6,800
Level II	kg	7,000	7,200	7,500
Level III	kg	7,900	7,800	—

Standard Equipment

Undercarriage

Chain guide 3 pieces
Lashing eyelets
Track rollers, lifetime-lubricated
Tracks, sealed and greased

Uppercarriage

Counterweight 14,5 t
Engine hood with two-part gas spring opening
Extended tool kit
Fuel tank cap lockable with padlock
Handrails
Non slip surfaces
Sound insulation
Storage space, lockable
Swing brake lock, maintenance-free
Walkway, both-sided

Hydraulic System

Filter with integrated fine filter area
Liebherr hydraulic oil
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 IIIA/Tier 3 emission standard
Dry-type air cleaner with pre-cleaner, main and safety elements
Engine cold starting aid
Engine idling, automatic, sensor-controlled
Fuel filter and water separator
Intercooler
Turbo charger

Operator's Cab

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

Attachment

Bottom protection for stick
Headlights on boom, halogen, 2 pieces
Liebherr central lubrication system, fully-automatic (except connecting link for bucket kinematics)
ReGeneration plus
Safety check valves for hoist cylinders
Safety check valves for stick cylinder

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

* optionally extendable after one year

Options

Undercarriage

Chain guide 4 pieces
Chain guide full length
Protection plate for wrecking ball operation
Reinforced cover and base plate for undercarriage centre section
Travel drive protection
Travel gear support, reinforced

Uppercarriage

Cab elevation
Engine compartment lighting
Headlights with protection
Rock protection (swing gear and lubrication pipes)
Tank refilling pump fuel
Walkway, wide version with guard rail

Hydraulic System

Bypass filter for hydraulic oil
Liebherr hydraulic oil, adapted for extreme climate conditions
Preheating for hydraulic oil (240 V)

Engine

Automatic engine shut-down after idling
Preheating for fuel, coolant and engine oil (240 V)

Operator's Cab

Acoustic travel alarm deactivatable
Additional headlights cab, front and/or rear, halogen or LED, 2 pieces
Amber beacon on cabin
Auxiliary heater (programmable)
Bottom windscreen wiper
Camera for side area monitoring
Cool box (12 V)
Electronic immobilizer
Emergency stop button in cab
Falling objects protection structure FOPS
Fire extinguisher
Footrest
Front guard protection structure FGPS swivelable
Headlights on cab, front, LED, 2 pieces
Liebherr proportional control (mini-joysticks 2 axis)
Operator seat Premium with integrated ventilation
Radio Comfort
Roof window wiper
Sun visor

Attachment

Headlights on boom, LED, 2 pieces
High pressure circuit
Medium pressure circuit
Liebherr automatic lubrication system for connecting link
Liebherr bucket range
Liebherr quick coupler, hydraulic or mechanical
Liebherr tooth system
Overload warning device
Protection for piston rod, bucket cylinder
Protection for piston rod, crowd cylinder
Protection for piston rods, hoist cylinder
Security for hoist cylinders

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.