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# R 950 Litronic

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## LIEBHERR

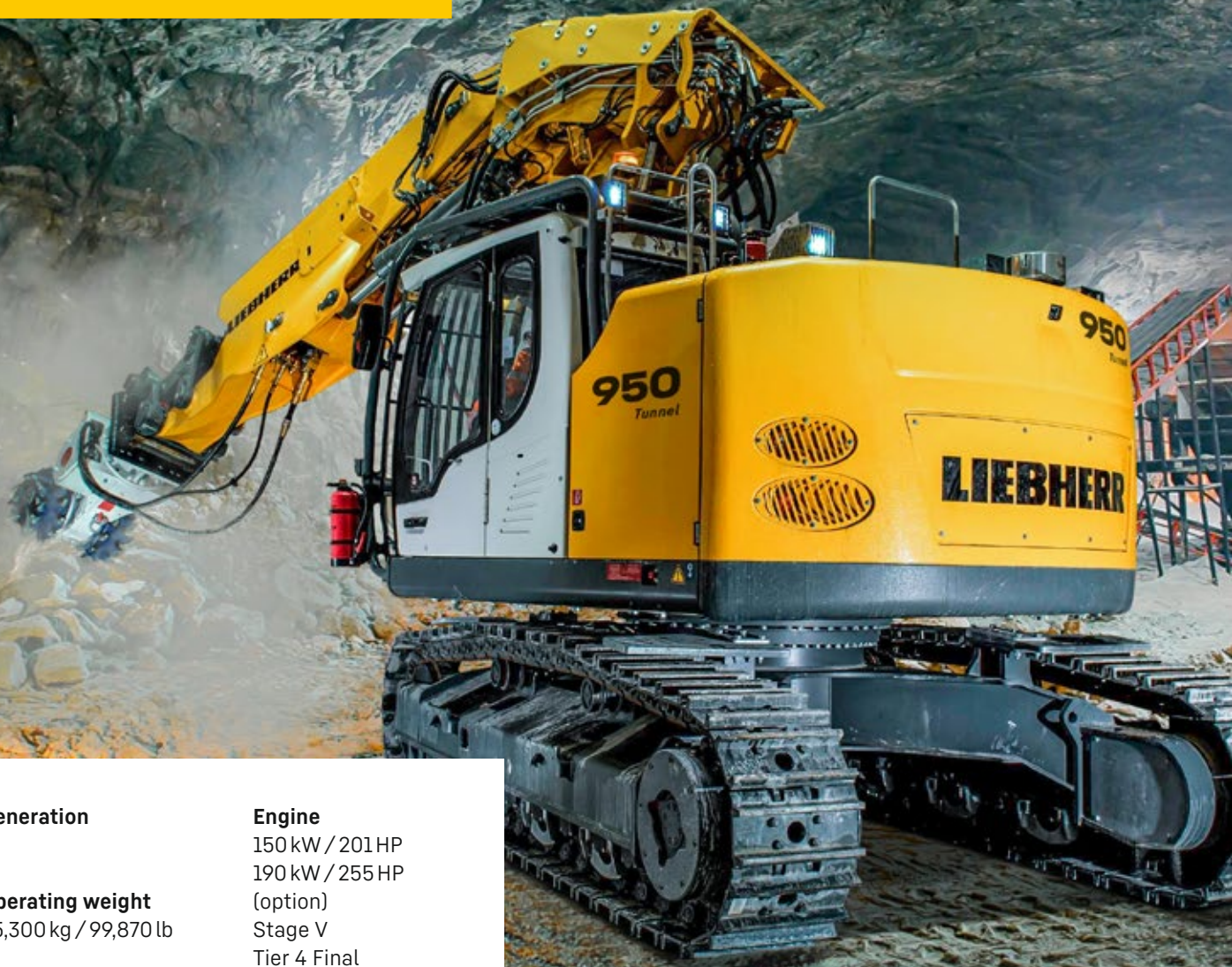
Tunneling excavator

**Generation**  
6

**Operating weight**  
45,300 kg / 99,870 lb

**Tunnel height**  
5,00–8,00 m /  
16'5"–26'3" ft in

**Engine**  
150 kW / 201HP  
190 kW / 255HP  
(option)  
Stage V  
Tier 4 Final  
Non-regulated only  
for select markets





# The R 950 Tunnel excavator

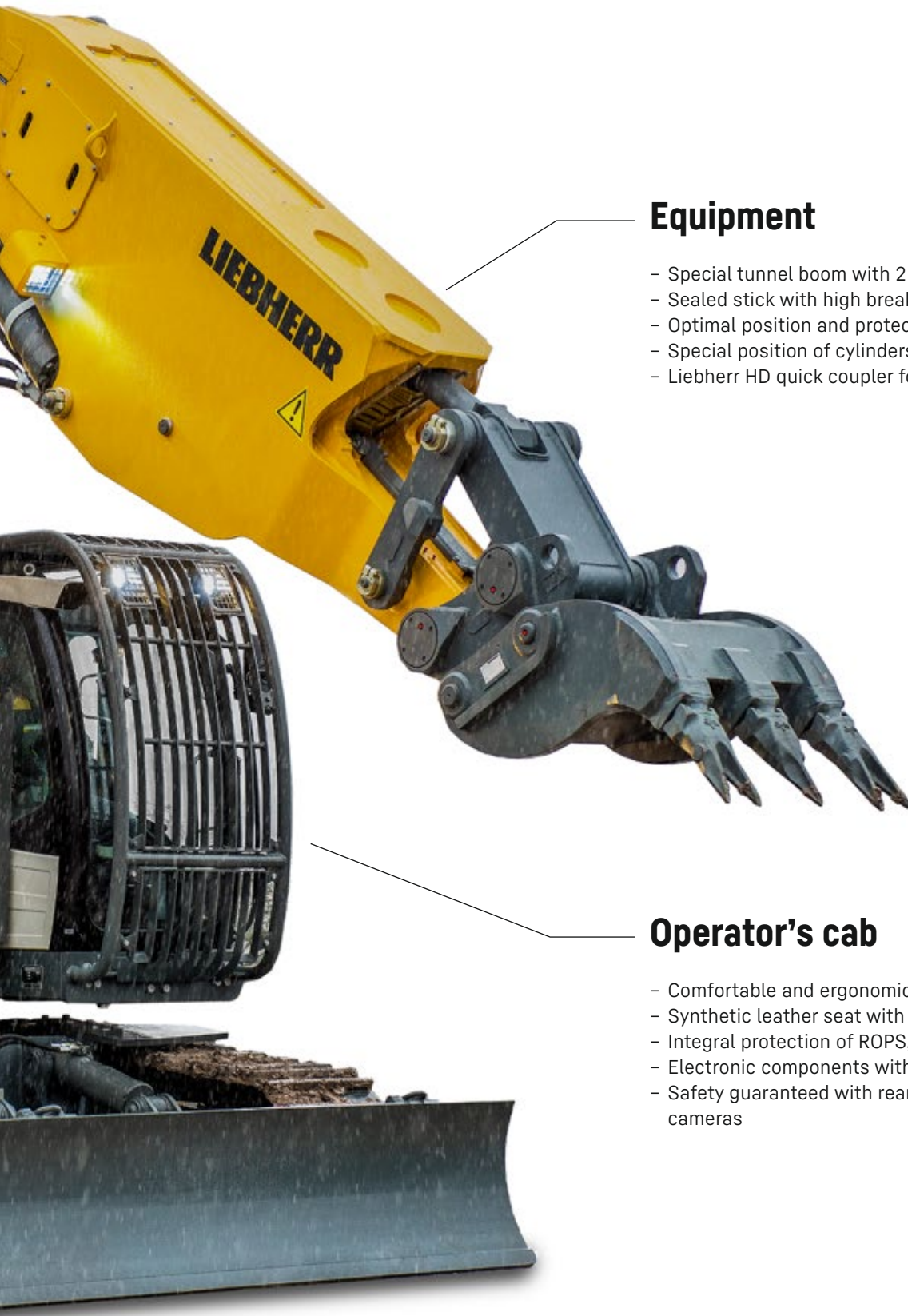
## Tunneling specificities

- Special short tail uppercarriage
- Travel alarm
- Working LED headlights with protections
- Increased power and special hydraulic system for optimal use of cutting heads

## Undercarriage

- Dozer blade with cylinder protection
- 4 deflector blades
- Travel drive protection
- 4 track guides at each track frame





## Equipment

- Special tunnel boom with 2 x 45° tilting bear
- Sealed stick with high breakout force
- Optimal position and protection of hoses and pipes
- Special position of cylinders to be better protected
- Liebherr HD quick coupler for a easy tool changing

## Operator's cab

- Comfortable and ergonomic cab
- Synthetic leather seat with headrest for easy cleaning
- Integral protection of ROPS, FOPS and FGPS
- Electronic components with protection
- Safety guaranteed with rear and lateral surveillance cameras

# Technical data



## Engine

<b>Rating</b>	
per SAE J1349	201 HP (150 kW) at 1,800 rpm
per ISO 9249	204 HP (150 kW) at 1,800 rpm
Cutting head application	258 HP (190 kW) at 1,800 rpm
<b>Torque</b>	150 kW: 1,054 Nm at 1,350 rpm / <b>777 lbf ft at 1,350 rpm</b> 190 kW: 1,337 Nm at 1,350 rpm / <b>986 lbf ft at 1,350 rpm</b>
<b>Model</b>	Liebherr D944 A7-25 (Stage V) or Liebherr D944 A7-24 (Tier 4 Final) or Liebherr D944 A7-20 (non-regulated only for select markets)
<b>Type</b>	4 cylinder in-line
Bore	130 mm / <b>5.1 in</b>
Stroke	150 mm / <b>5.9 in</b>
Displacement	8 l / <b>488 in³</b>
<b>Engine operation</b>	4-stroke diesel Common-Rail, monoturbo
<b>Exhaust gas treatment</b>	DOC + SCR Filter (Stage V) or DOC + FAP (option) + SCR (Tier 4 Final) or without EGR (non-regulated only for select markets)
Option	Liebherr particle filter
<b>Cooling system</b>	Water-cooled and integrated motor oil cooler, after-cooled and fuel cooled
<b>Air cleaner</b>	Dry-type air cleaner with pre-cleaner, primary and safety elements
<b>Fuel tank</b>	450 l / <b>119 gal</b>
<b>Urea tank</b>	46 l / <b>12 gal</b>
<b>Electrical system</b>	
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
<b>Motor management</b>	Connection to the integrated excavator system controlling via CAN-BUS to the economical utilisation of the service that is available



## Hydraulic controls

<b>Power distribution</b>	Via control valves with integrated safety valves
<b>Servo circuit</b>	Electro-hydraulic control
Equipment and swing	Proportional via joystick levers
Travel	- Proportional control via foot pedals or removable levers - Speed pre-selection
<b>Additional functions</b>	Proportional regulation via foot pedals or mini-joystick



## Hydraulic system

<b>Hydraulic system</b>	Positive Control hydraulic system. Demand-based, double independent pump flows Features high system dynamics and sensitivity provided by integrated system controlling
<b>Hydraulic pump</b>	Liebherr, variable displacement, swashplate double pump
For equipment and travel drive	
Max. flow	2 x 238 l/min. / <b>2 x 63 gpm</b>
Cutting head application	2 x 238 l/min. + 1 x 80 l/min. / <b>2 x 63 gpm + 1 x 21 gpm</b>
Max. pressure	350 bar / <b>5,076 psi</b>
<b>Pump management</b>	Electronic pump management via the integrated system controlling (CAN-BUS) synchronous to the control block. Open circuit for the rotation
<b>Hydraulic tank</b>	290 l / <b>77 gal</b>
<b>Hydraulic system</b>	520 l / <b>137 gal</b>
<b>Hydraulic oil filter</b>	1 full flow filter (10 µm / <b>1,250 mesh</b> ) in return line
<b>Cooling system</b>	Compact cooler, consisting of a water cooler, with hydraulic oil cooler, gearbox oil cooler, fuel cooler and after-cooler cores and hydrostatically driven fan
<b>MODE selection</b>	Adjustment of engine and hydraulic performance via a mode pre-selector to match application
<b>RPM adjustment</b>	Stepless adjustment of engine output via RPM at each selected mode
<b>Tool Control</b>	20 pre-adjustable pump flows and pressures for add-on attachments

## Swing drive

<b>Drive</b>	Liebherr swashplate motor, shockless and antireaction
<b>Transmission</b>	Liebherr compact planetary reduction gears
<b>Swing ring</b>	Liebherr, sealed race ball bearing swing ring, internal teeth
<b>Swing speed</b>	0-12.5 rpm stepless
<b>Swing torque</b>	85 kNm / <b>62,693 lbf ft</b>
<b>Holding brake</b>	Wet multi-disc (spring applied, pressure released)

## Cab

<b>Cab</b>	According to guidelines for tunnel application FOPS, ROPS, FGPS plus Polycarbonate windows on equipment side and rear
<b>Operator's seat</b>	Seat with synthetic leather seat cover, airsprung with automatic weight adjustment, vertical and horizontal seat damping including consoles and joysticks. Seat and armrests adjustable separately and in combination
<b>Arm consoles</b>	Oscillating consoles with seat, tiltable console left
<b>Operation and displays</b>	Large high-resolution color display with intuitive operation via touchscreen, video, versatile adjusting, control and monitoring facilities, e.g. implement and attachment parameters
<b>Noise emission</b>	
ISO 6396	71 dB(A) = $L_{pA}$ (inside cab)
2000/14/EC	105 dB(A) = $L_{WA}$ (surround noise)

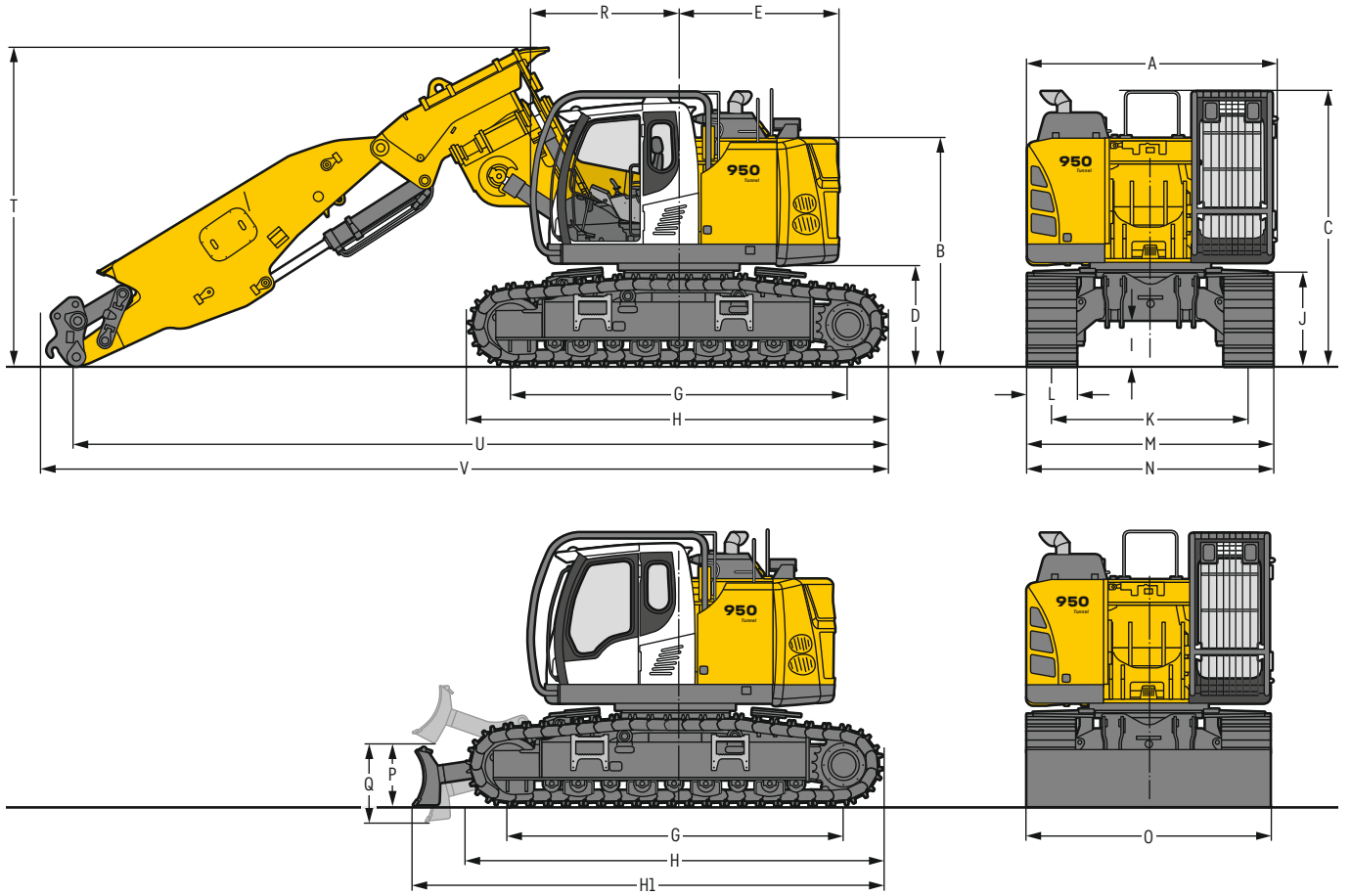
## Undercarriage

<b>NLC</b>	Gauge 2,390 mm / <b>7'10"</b>
<b>Drive</b>	Liebherr swashplate motor
<b>Transmission</b>	Liebherr compact planetary reduction gear
<b>Maximum travel speed</b>	2.7 km/h / <b>1.7 mph</b> low range 4.5 km/h / <b>2.8 mph</b> high range
<b>Drawbar pull on crawler</b>	280 kN / <b>62,947 lbf</b>
<b>Track components</b>	D7G, maintenance-free
<b>Track rollers / Carrier rollers</b>	9 / 2
<b>Tracks</b>	Sealed and greased
<b>Track pads</b>	Double or triple grouser
<b>Holding brake</b>	Wet multi-disc (spring applied, pressure released)
<b>Brake valves</b>	Integrated into travel motor
<b>Lashing eyes</b>	Integrated

## Equipment

<b>Type</b>	Combination of resistant steel plates and cast steel components
<b>Hydraulic cylinders</b>	Liebherr cylinders with seal and guidance systems
<b>Bearings</b>	Sealed, low maintenance
<b>Lubrication</b>	Fully automatic Liebherr central lubrication system (except bucket tilt linkage)
<b>Hydraulic connections</b>	Pipes and hoses equipped with SAE split-flange connections
<b>Basic boom</b>	3.50 m / <b>11'6"</b> with 2 x 45° tilting bear
<b>Stick</b>	4.50 m / <b>14'9"</b> with integrated bucket tilt cylinder
<b>Bucket</b>	HD ripper bucket with cutting width 900 mm / <b>2'11"</b>

# Dimensions



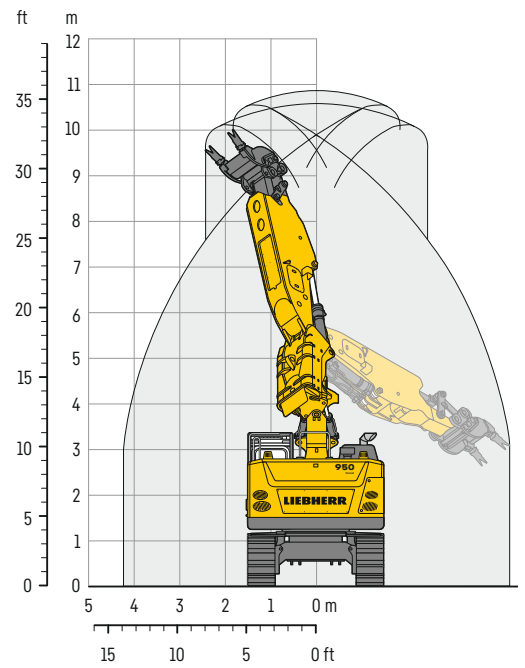
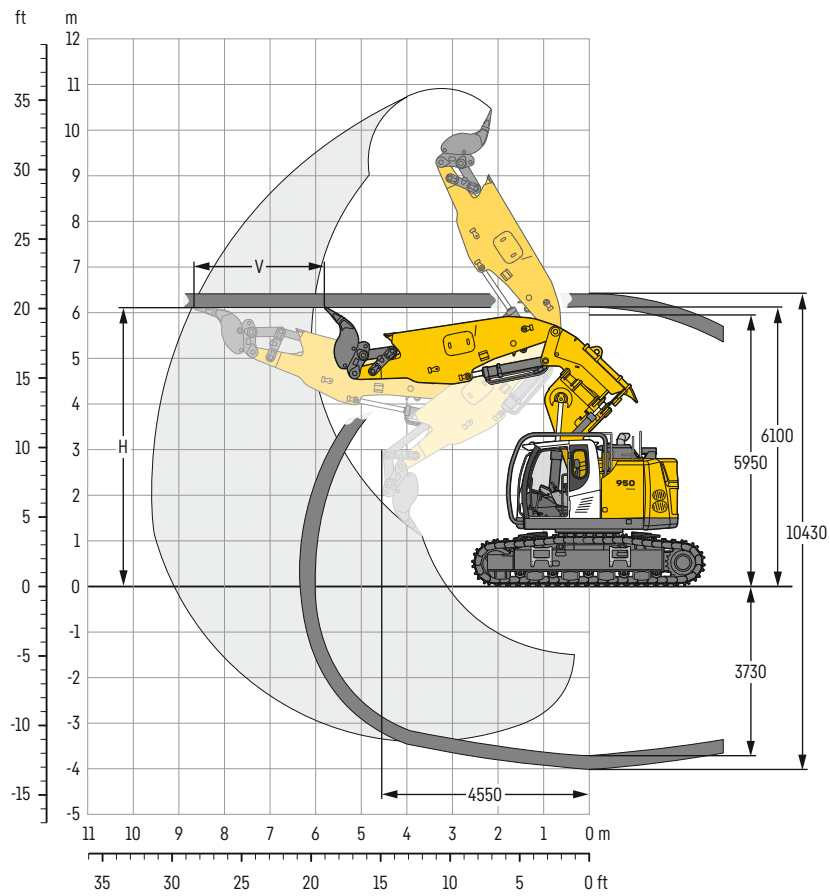
		<b>NLC</b>	<b>mm / ft in</b>	
<b>A</b>	Uppercarriage width		3,050 / <b>10'</b>	
<b>B</b>	Uppercarriage height		2,785 / <b>9' 2"</b>	
<b>C</b>	Cab height		3,390 / <b>11' 1"</b>	
<b>D</b>	Counterweight ground clearance		1,235 / <b>4' 1"</b>	
<b>E</b>	Rear-end length		1,975 / <b>6' 6"</b>	
<b>G</b>	Wheelbase		4,108 / <b>13' 6"</b>	
<b>H</b>	Undercarriage length		5,100 / <b>16' 9"</b>	
<b>H1</b>	Undercarriage length with blade		5,750 / <b>18'10"</b>	
<b>I</b>	Undercarriage ground clearance		565 / <b>1'10"</b>	
<b>J</b>	Track height		1,125 / <b>3' 8"</b>	
<b>K</b>	Track gauge		2,390 / <b>7'10"</b>	
<b>L</b>	Track pad width		500 / <b>20"</b>	600 / <b>24"</b>
<b>M</b>	Width over tracks		3,000 / <b>9'10"</b>	3,000 / <b>9'10"</b>
<b>N</b>	Width over steps		2,975 / <b>9' 9"</b>	2,975 / <b>9' 9"</b>
<b>O</b>	Blade width		3,000 / <b>9'10"</b>	3,000 / <b>9'10"</b>
<b>P</b>	Max. blade height		725 / <b>2' 5"</b>	
<b>Q</b>	Max. blade depth		930 / <b>3' 1"</b>	

		<b>Stick length</b>	<b>Boom 3.50m / 11'6" with 2 x 45° tilting bear and stick with quick coupler</b>
		<b>m / ft in</b>	<b>mm / ft in</b>
<b>R</b>	Front swing radius	4.50 / <b>14'9"</b>	1,810 / <b>5'11"</b>
<b>T</b>	Boom height	4.50 / <b>14'9"</b>	3,900 / <b>12'10"</b>
<b>U</b>	Length on ground	4.50 / <b>14'9"</b>	9,900 / <b>32' 6"</b>
<b>V</b>	Overall length	4.50 / <b>14'9"</b>	10,300 / <b>33'10"</b>
	Bucket		0.18m <sup>3</sup> / <b>0.24yd<sup>3</sup></b>



# Tunneling excavator

with boom 3.50 m / 11'6", 2 x 45° tilting bear and stick 4.50 m / 14'9"





## Digging envelope

Basic boom bolted in position II of upper carriage

Tunnel height H m / ft in	Advance V m / ft in
5.00 / 16'5"	1.40 / 4'7"
5.50 / 18'1"	1.90 / 6'3"
6.10 / 20'	2.85 / 9'4"
6.50 / 21'4"	2.80 / 9'2"
7.00 / 23'	2.60 / 8'6"
7.50 / 24'7"	2.45 / 8'
8.00 / 26'3"	2.30 / 7'7"

## Forces

without quick coupler		
Stick digging force (ISO 6015)	kN / lbf	207 / 46,535
Bucket digging force (ISO 6015)	kN / lbf	322 / 72,389
Stick digging force (SAE J1179)	kN / lbf	188 / 42,264
Bucket digging force (SAE J1179)	kN / lbf	243 / 54,629

## Operating weight and ground pressure

The operating weight includes the basic machine with boom 3.50 m / 11'6", 2 x 45° tilting bear, stick 4.50 m / 14'9", quick coupler SWA 66 and bucket 0.18 m<sup>3</sup> / 0.24 yd<sup>3</sup> (700 kg / 1,543 lb).

Undercarriage	without blade	
Pad width	mm / in	500 / 20"    600 / 24"
Weight	kg / lb	43,200 / 95,240    43,800 / 96,560
Ground pressure	kg/cm <sup>2</sup> / psi	0.97 / 13.8    0.82 / 11.7
Undercarriage	with blade	
Pad width	mm / in	500 / 20"    600 / 24"
Weight	kg / lb	44,700 / 98,550    45,300 / 99,870
Ground pressure	kg/cm <sup>2</sup> / psi	1.00 / 14.2    0.85 / 12.1

# Serial equipment

## Undercarriage

- 4 deflectors
- 4 track guide at each track frame
- Accessory for emergency towing
- Chain kit, reinforced (D7G)
- Idler protection
- Lashing eyelets
- Lifetime-lubricated track rollers
- Sprocket with dirt ejector
- Tracks sealed and greased
- Travel gear protection
- Two-stage travel motors

## Uppercarriage

- Alternator 140A
- Automatic swing brake
- Back-up alarm
- Camera for side area monitoring
- Electrical device shut off
- Engine hood with lift help and mechanical locking
- Fire extinguisher
- Handrails, non slip surfaces
- Headlights LED (front) and LED+ (counterweight)
- Liebherr full-automatic central lubrication system (except connecting link for bucket kinematics)
- Maintenance-free HD-batteries
- Rear view monitoring camera
- Sound insulation
- Tool kit

## Hydraulic system

- Hydraulic tank shut-off valve and pumps
- Stepless work mode selector

## Engine

- After-cooled
- Air pre-filter with dust trap
- Common-Rail system injection
- Conform with Stage V emission standard
- Fuel filter and water separator
- Liebherr particle filter
- SCR exhaust gas after-treatment system
- Sensor controlled automatic engine idling
- Turbo charger

## Cab

- Closed cab with windshield wiper and air conditioning
- Emergency exit rear window
- Fire extinguisher
- Safety cab structure according to guidelines FOPS, ROPS, FGPS
- Seat with synthetic leather seat cover with adjustable head restraints
- Working lights LED (front)

## Equipment

- High pressure circuit for additional tools
- Hoist cylinder control stop
- Lifting hook on boom to lift the complete excavator
- Protection for hoist cylinder
- ReGeneration plus
- Stick, sealed version
- Working lights LED on boom and stick

# Options

## Undercarriage

Dozer blade 3,000 mm with cylinder protection

## Uppercarriage

Customized colors

Cutting head application with additional pump and increased power (190 kW)

Diesel refuelling pump (electrical)

Headlight LED+ (front) and additional LED (engine compartment)

Reversible fan

## Hydraulic system

Biodegradable hydraulic oil

Bypass filter for continuous hydraulic filtration

Filter for high pressure circuit

## Engine

Automatic engine shut-down on idle (adjustable)

## Cab

Working lights LED+ (front) and additional LED (rear)

## Equipment

Liebherr buckets

Middle pressure circuit for tool rotation

Quick couplers for tools

Quick coupler SWA 66 HD hydraulic or mechanical

Working lights LED+ on boom and stick

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

# The Liebherr Group



## Global and independent: more than 70 years of success

Liebherr was founded in 1949. With the development of the world's first mobile tower crane, Hans Liebherr laid the foundations of a successful family business which today comprises more than 140 companies on all continent and employs nearly 50,000 people. The parent company of the Group is Liebherr-International AG in Bulle (Switzerland), whose associates are exclusively members of the Liebherr family.

## Technology leadership and pioneering spirit

Liebherr regards itself as a pioneer. This spirit has enabled the company to make a decisive contribution to the technological history of many industries. Today, employees around the world still share the courage of the company founder to take new paths. They are all united by a passion for technology and fascinating products and the determination to perform outstanding work for their customers.

## Widely diversified product portfolio

Not only is Liebherr one of the biggest construction equipment manufacturers in the world, it also provides high-quality, user-oriented products and services in a wide range of other areas. The product portfolio includes the segments earthmoving, material handling technology, deep foundation machines, mining, mobile and crawler cranes, tower cranes, concrete technology, maritime cranes, aerospace and transportation systems, gear technology and automation systems, refrigeration and freezing, components and hotels.

## Customized solutions and maximum customer benefit

Liebherr solutions are characterized by maximum precision, outstanding implementation and exceptional longevity. Its mastery of key technologies enables the company to offer its customers customized solutions. For Liebherr, customer focus does not end with the product; it also encompasses a wide range of services that make a real difference.

[www.liebherr.us](http://www.liebherr.us)

## WARNING

Breathing diesel engine exhaust exposes you to chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

- Always start and operate the engine in a well-ventilated area.
- If in an enclosed area, vent the exhaust to the outside.
- Do not modify or tamper with exhaust system.
- Do not idle the engine except as necessary.

For more information go to [www.P65warnings.ca.gov/diesel](http://www.P65warnings.ca.gov/diesel).

## WARNING

This product can expose you to chemicals including lead and lead compounds, which are known to the State of California to cause cancer and birth defects or other reproductive harm.

For more information go to [www.P65warnings.ca.gov](http://www.P65warnings.ca.gov).

## Liebherr USA, Co.

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