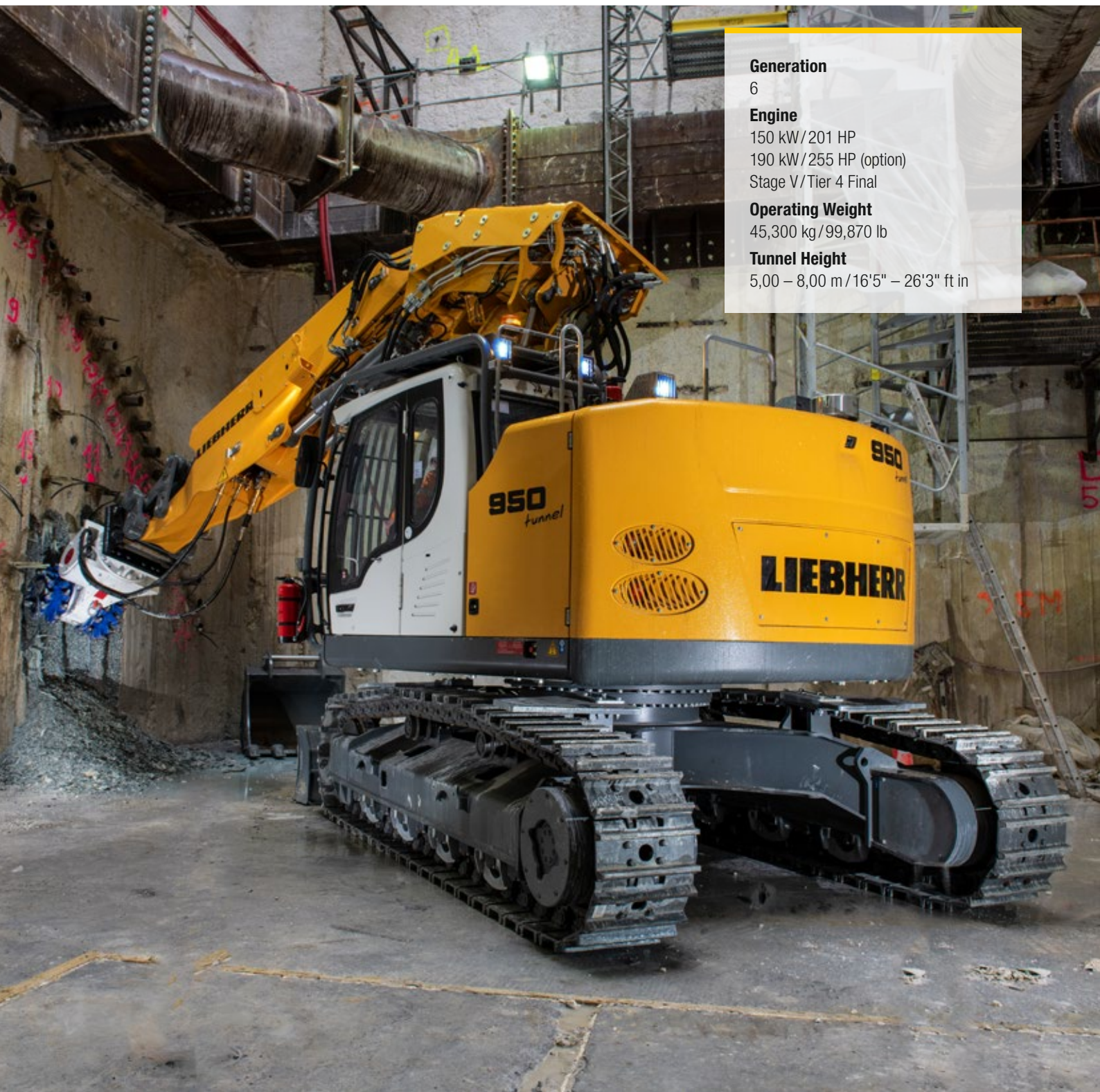


# Product Information Tunneling Excavator

## R 950

Litronic®



### Generation

6

### Engine

150 kW / 201 HP

190 kW / 255 HP (option)

Stage V / Tier 4 Final

### Operating Weight

45,300 kg / 99,870 lb

### Tunnel Height

5,00 – 8,00 m / 16'5" – 26'3" ft in

# LIEBHERR

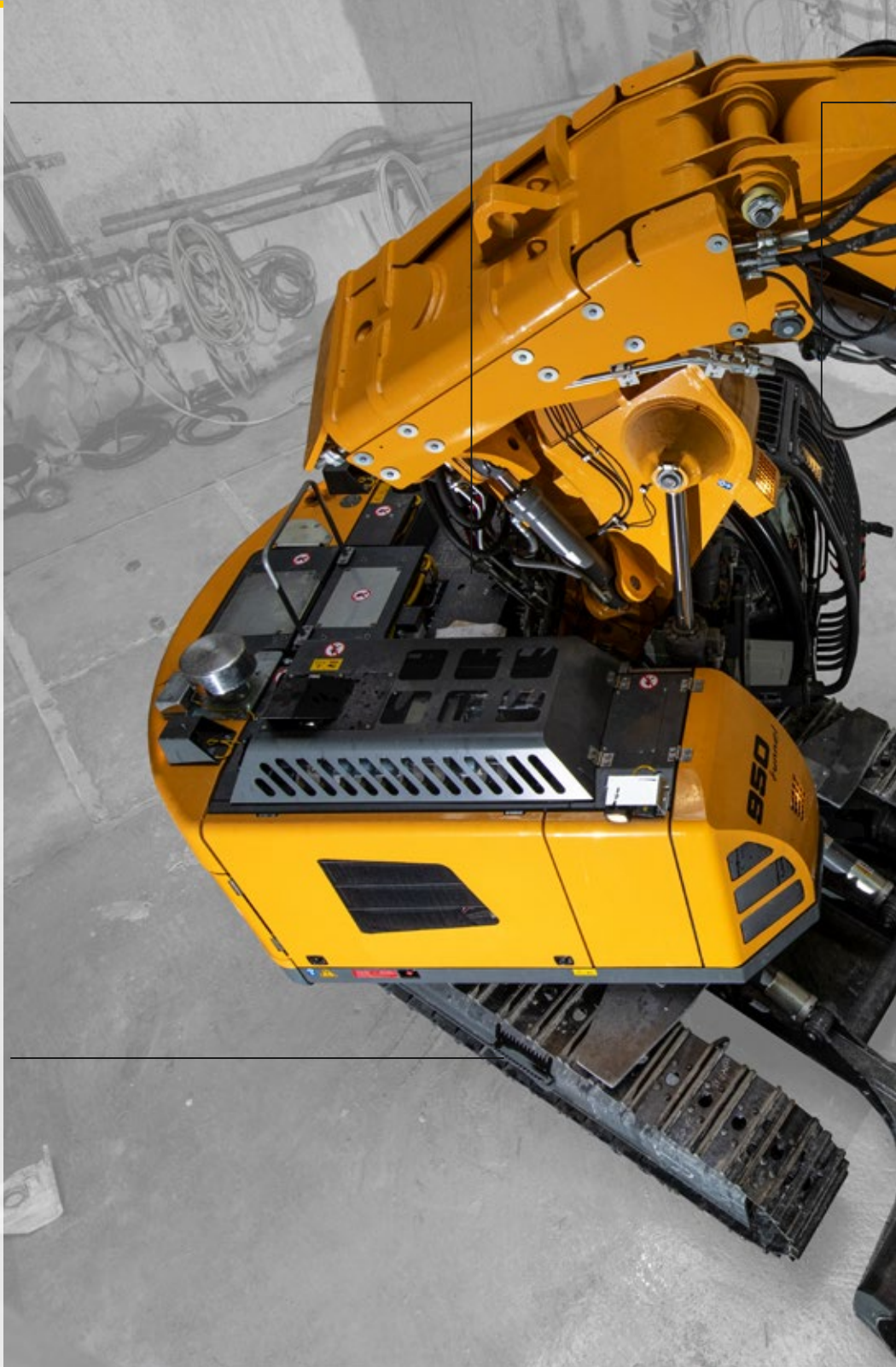
# The R 950 Tunnel Excavator

## 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





### **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

### **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

# Technical Data



## Engine

<b>Rating</b>	
per SAE J1349	201 HP (150 kW) at 1,800 rpm
per ISO 9249	201 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)
<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 in<sup>3</sup></b>
<b>Engine operation</b>	4-stroke diesel Common-Rail, monoturbo
<b>Exhaust gas treatment</b>	DOC + FAP + SCR (Stage V) or DOC + FAP (option) + SCR (Tier 4 Final)
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>	
For equipment and travel drive	Liebherr, variable displacement, swashplate double pump
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 preadjustable pump flows and pressures for add-on attachments



## Swing Drive

<b>Drive</b>	Liebherr swashplate motor, shockless and anti-reaction
<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)



## Operator's 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	$L_{pA}$ (inside cab) = 69 dB(A)
2000/14/EC	$L_{WA}$ (surround noise) = 105 dB(A)



## Undercarriage

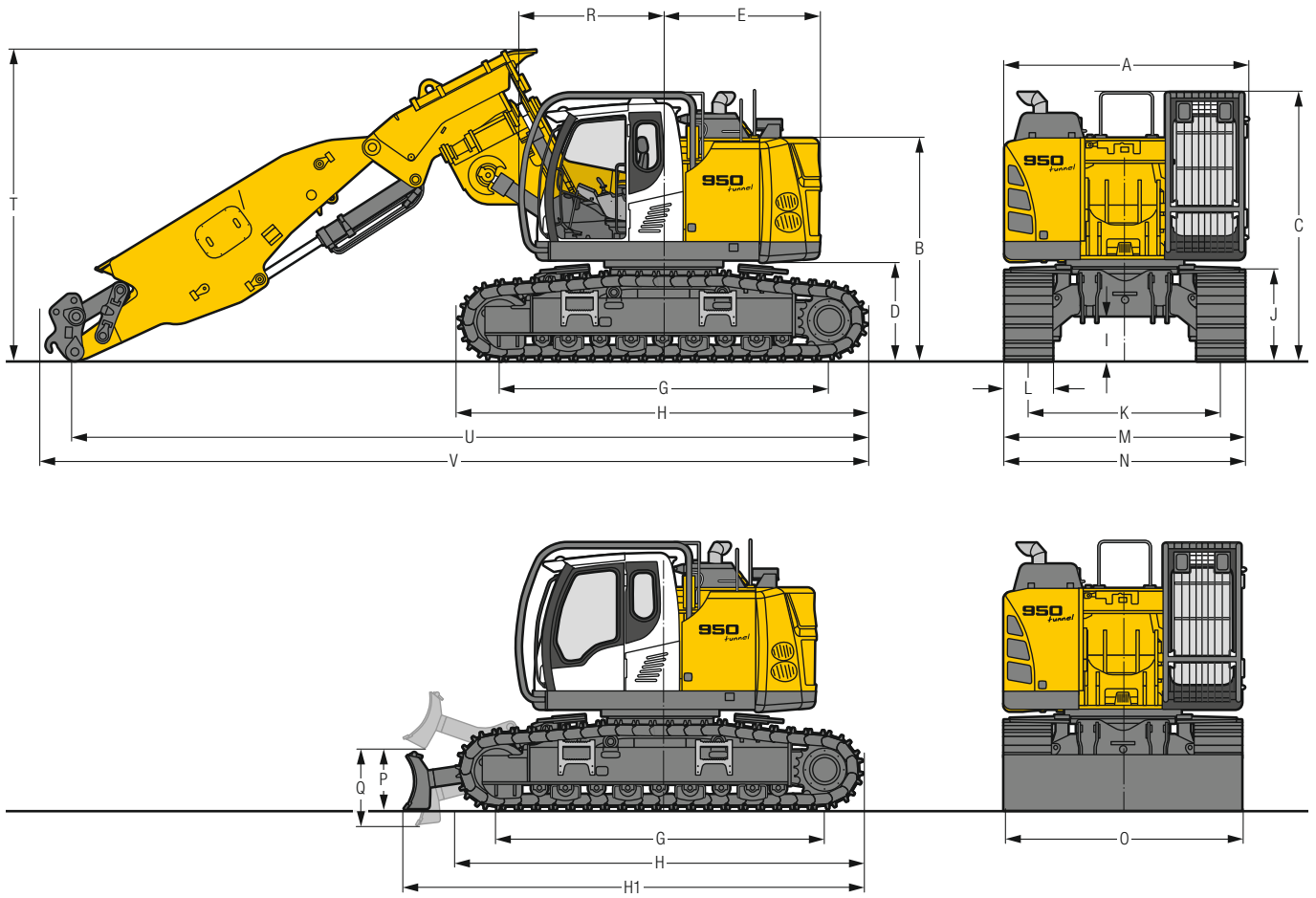
<b>NLC</b>	Gauge 2,390 mm / <b>7'10"</b>
<b>Drive</b>	Liebherr swashplate motor
<b>Transmission</b>	Liebherr compact planetary reduction gear
<b>Maximum travel speed</b>	Low range 2.7 km/h / <b>1.7 mph</b> High range 4.5 km/h / <b>2.8 mph</b>
<b>Drawbar pull on crawler</b>	280 kN / <b>62,947 lbf</b>
<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>35"</b>

# Dimensions

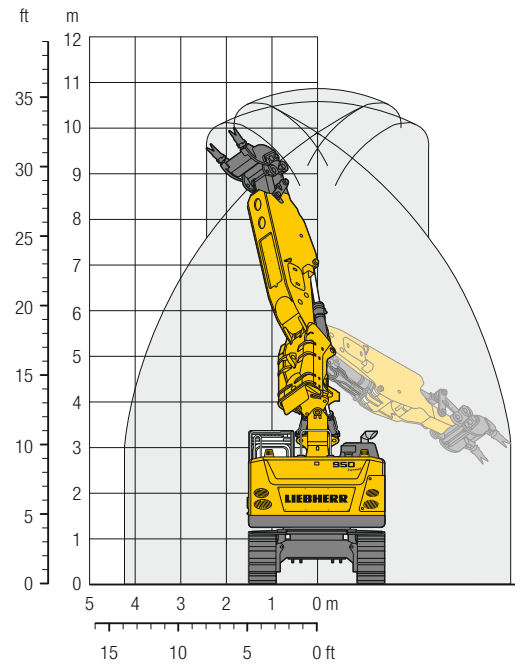
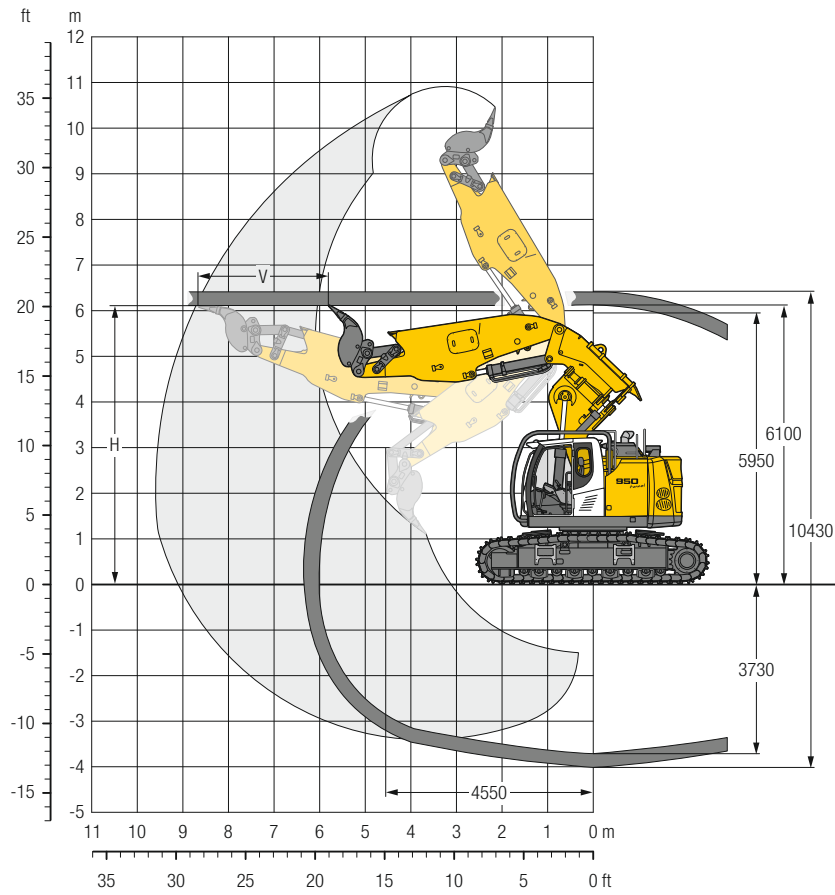


		mm/ft in
<b>A</b>	Uppercarriage width	3,050/10'
<b>B</b>	Uppercarriage height	2,785/ 9' 2"
<b>C</b>	Cab height	3,390/11' 1"
<b>D</b>	Counterweight ground clearance	1,235/ 4' 1"
<b>E</b>	Rear-end length	1,975/ 6' 6"
<b>G</b>	Wheelbase	4,108/13' 6"
<b>H</b>	Undercarriage length	5,100/16' 9"
<b>H1</b>	Undercarriage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

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

# 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"

## Digging Forces

without quick coupler	
Max. Digging force (ISO 6015)	kN/lbf 207/46,535
Max. Breakout force (ISO 6015)	kN/lbf 322/72,389
Max. Digging force (SAE J1179)	kN/lbf 188/42,264
Max. Breakout 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 m³/0.24 yd³ (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/cm²/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/cm²/psi	1.00/14.2 0.85/12.1

# Standard 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 140 A
- 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 on uppercarriage and counterweight (LED) with protection
- 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

## Operator's Cab

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

## 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)

Headlights on uppercarriage and counterweight (LED+) with protection

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)

## Operator's Cab

Additional headlights (front, rear) LED+

## Equipment

Headlights on boom and stick LED+

Liebherr buckets

Middle pressure circuit for tool rotation

Quick couplers for tools

Quick coupler SWA 66 HD hydraulic or mechanical

Options and/or special equipments, 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 of Companies



## Diverse Product Range

The Liebherr Group is one of the largest construction equipment manufacturers in the world. Liebherr's quality products and services hold a high reputation in many industries. The wide range includes domestic appliances, aerospace and transportation systems, machine tools and maritime cranes.

## Exceptional Customer Benefit

Every product line provides a complete range of models in many different versions. With both their technical excellence and superior quality, Liebherr products offer customers the highest benefits in practical applications.

## State-of-the-art Technology

Liebherr attributes great importance to the product areas of core technology and components, in order to achieve its consistent, top-quality products. Important modules and components are developed and manufactured in-house, for instance, the entire drive and control technology for the construction equipment and mining trucks.

## Worldwide and Family-Owned

Hans Liebherr founded the Liebherr family company in 1949. Since that time, the enterprise has steadily grown to a group of more than 130 companies with more than 48,000 employees located on all continents. The corporate headquarters of the Group is Liebherr-International AG in Bulle, Switzerland. The Liebherr family is the sole owner of the company.

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

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