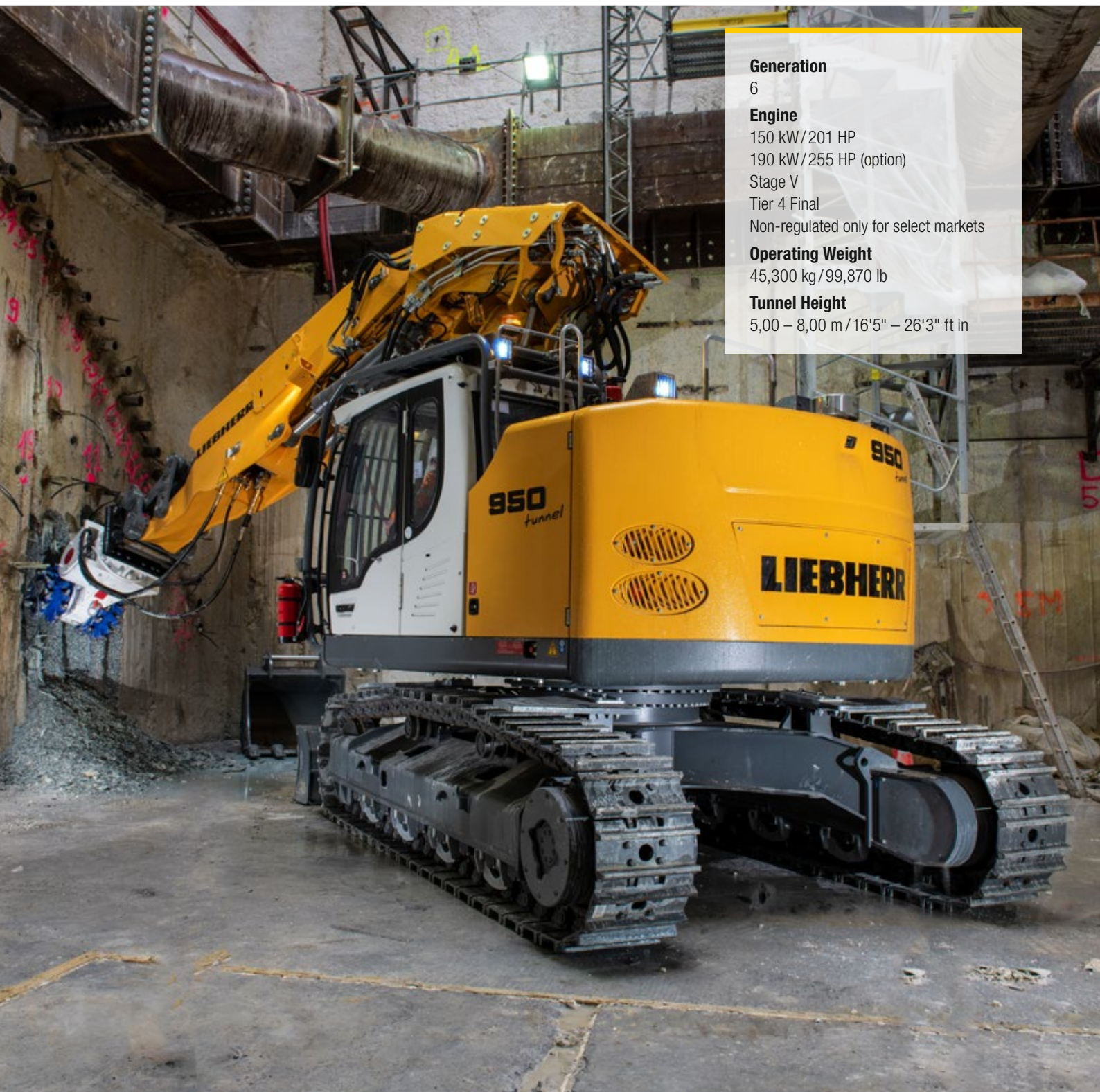


Product Information Tunneling Excavator

R 950

Litronic®



Generation

6

Engine

150 kW / 201 HP

190 kW / 255 HP (option)

Stage V

Tier 4 Final

Non-regulated only for select markets

Operating Weight

45,300 kg / 99,870 lb

Tunnel Height

5,00 – 8,00 m / 16'5" – 26'3" ft in

LIEBHERR

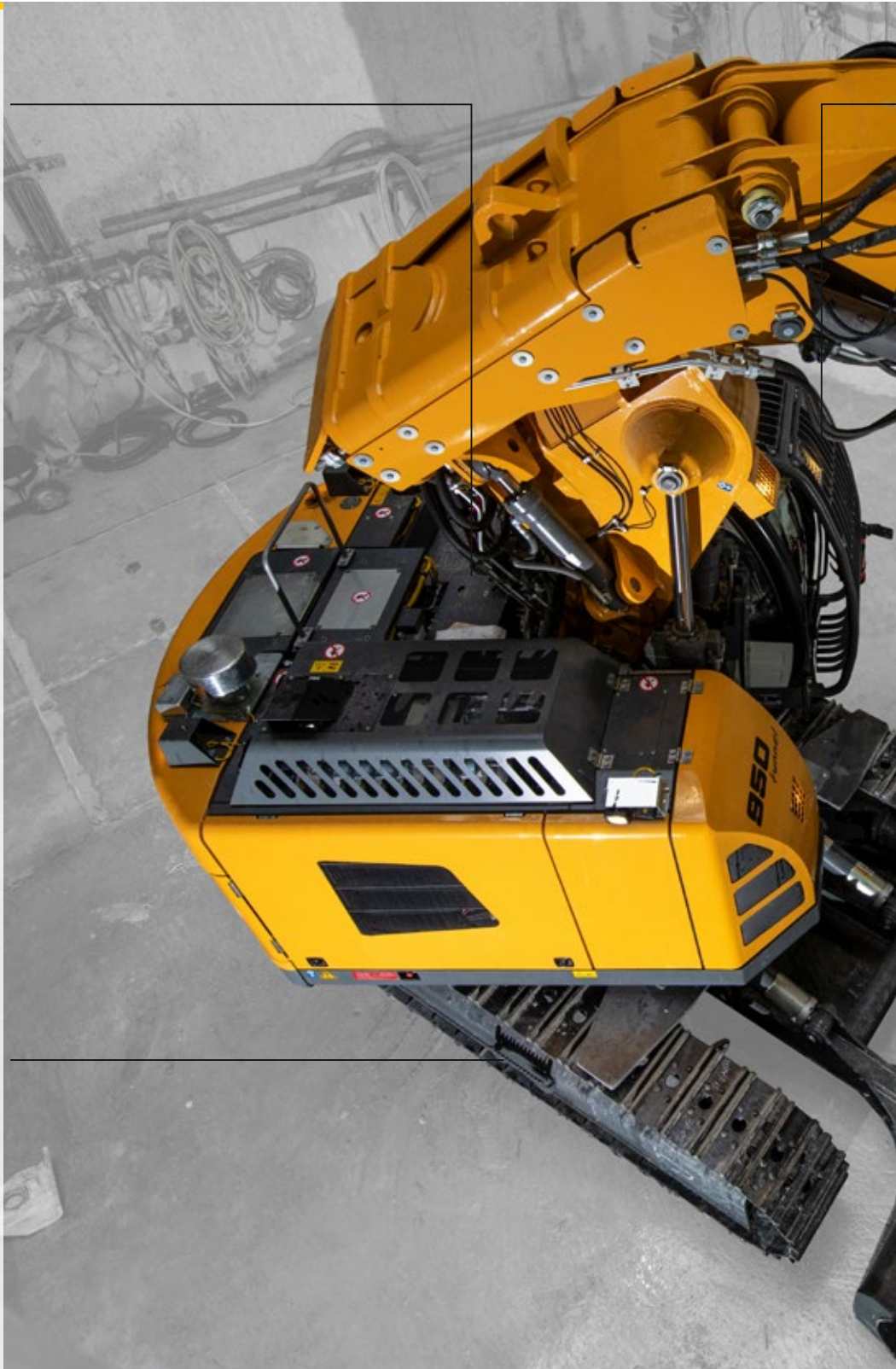
The R 950 Tunnel Excavator

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

Rating	
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
Torque	
	150 kW: 1,054 Nm at 1,350 rpm / 777 lbf ft at 1,350 rpm
	190 kW: 1,337 Nm at 1,350 rpm / 986 lbf ft at 1,350 rpm
Model	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)
Type	4 cylinder in-line
Bore	130 mm / 5.1 in
Stroke	150 mm / 5.9 in
Displacement	8 l / 488 in³
Engine operation	4-stroke diesel Common-Rail, monoturbo
Exhaust gas treatment	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
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	450 l / 119 gal
Urea tank	46 l / 12 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 with integrated safety valves
Servo circuit	Electro-hydraulic control
Equipment and swing	Proportional via joystick levers
Travel	- Proportional control via foot pedals or removable levers - Speed pre-selection
Additional functions	Proportional regulation via foot pedals or mini-joystick



Hydraulic System

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



Swing Drive

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



Operator's Cab

Cab	According to guidelines for tunnel application FOPS, ROPS, FGPS plus Polycarbonate windows on equipment side and rear
Operator's seat	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
Arm consoles	Oscillating consoles with seat, tiltable console left
Operation and displays	Large high resolution color display with intuitive operation via touchscreen, video, versatile adjusting, control and monitoring facilities, e.g. implement and attachment parameters
Noise emission	
ISO 6396	L_{pA} (inside cab) = 71 dB(A)
2000/14/EC	L_{WA} (surround noise) = 105 dB(A)



Undercarriage

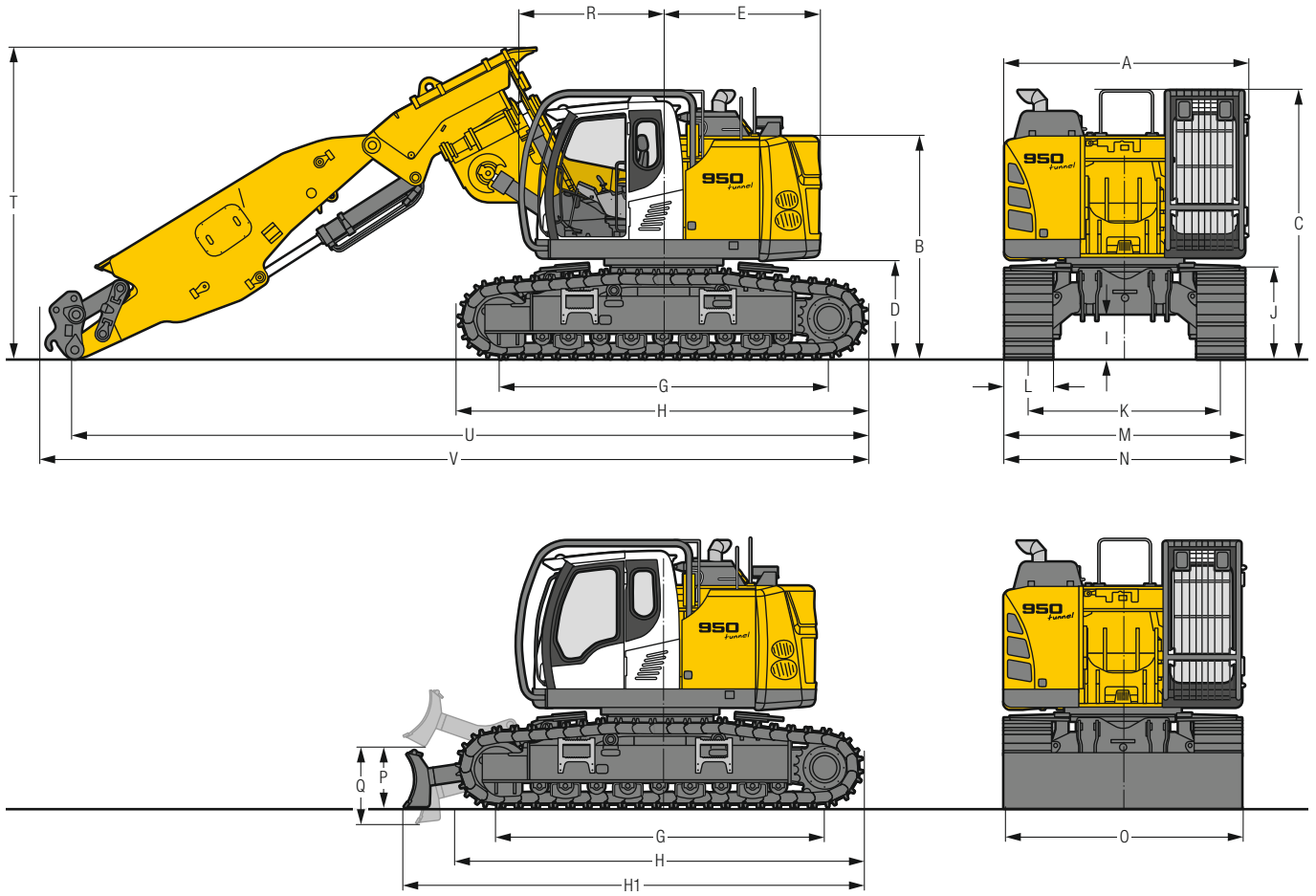
NLC	Gauge 2,390 mm / 7'10"
Drive	Liebherr swashplate motor
Transmission	Liebherr compact planetary reduction gear
Maximum travel speed	Low range 2.7 km/h / 1.7 mph High range 4.5 km/h / 2.8 mph
Drawbar pull on crawler	280 kN / 62,947 lbf
Track components	D7G, maintenance-free
Track rollers/Carrier rollers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



Equipment

Type	Combination of resistant steel plates and cast steel components
Hydraulic cylinders	Liebherr cylinders with seal and guidance systems
Bearings	Sealed, low maintenance
Lubrication	Fully automatic Liebherr central lubrication system (except bucket tilt linkage)
Hydraulic connections	Pipes and hoses equipped with SAE split-flange connections
Basic boom	3.50 m / 11'6" with 2 x 45° tilting bear
Stick	4.50 m / 14'9" with integrated bucket tilt cylinder
Bucket	HD ripper bucket with cutting width 900 mm / 35"

Dimensions

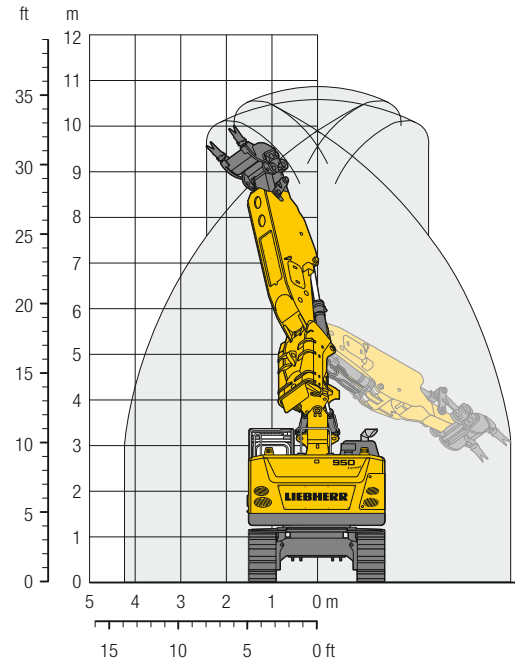
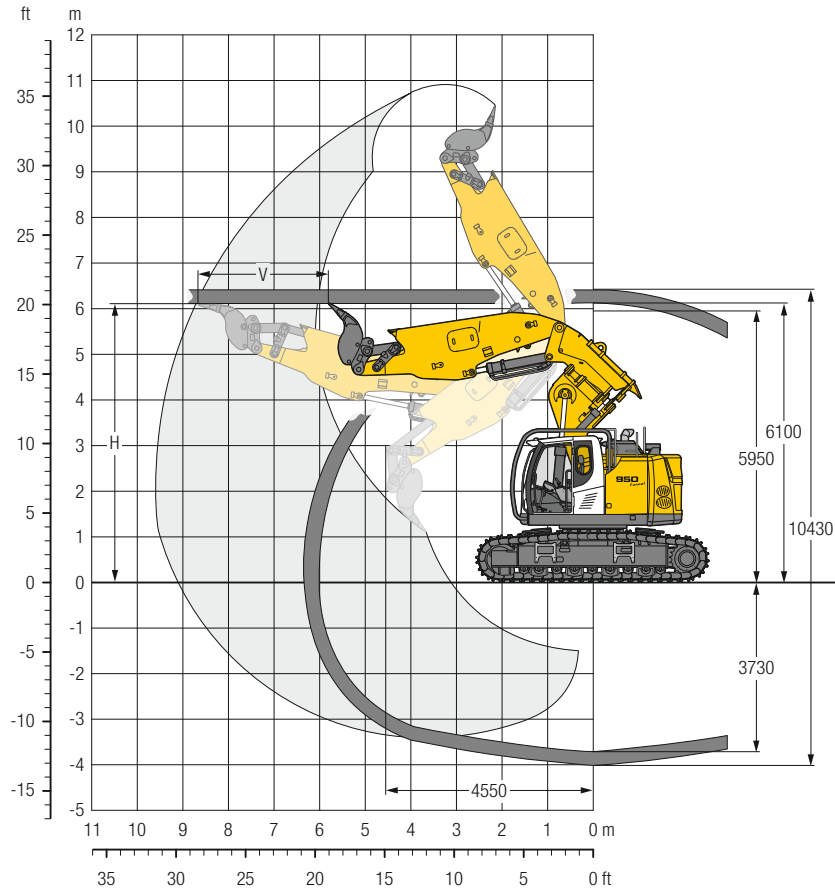


		mm/ft in
A	Uppercarriage width	3,050/10'
B	Uppercarriage height	2,785/ 9' 2"
C	Cab height	3,390/11' 1"
D	Counterweight ground clearance	1,235/ 4' 1"
E	Rear-end length	1,975/ 6' 6"
G	Wheelbase	4,108/13' 6"
H	Undercarriage length	5,100/16' 9"
H1	Undercarriage length with blade	5,750/18'10"
I	Undercarriage ground clearance	565/ 1'10"
J	Track height	1,125/ 3' 8"
K	Track gauge	2,390/ 7'10"
L	Track pad width	500/ 20" 600/ 24"
M	Width over tracks	3,000/9'10" 3,000/ 9'10"
N	Width over steps	2,975/9' 9" 2,975/ 9' 9"
O	Blade width	3,000/9'10" 3,000/ 9'10"
P	Max. blade height	725/ 2' 5"
Q	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
R	Front swing radius	4.50/14'9"	1,810/ 5'11"
T	Boom height	4.50/14'9"	3,900/12'10"
U	Length on ground	4.50/14'9"	9,900/32' 6"
V	Overall length	4.50/14'9"	10,300/33'10"
	Bucket		0.18 m ³ /0.24 yd ³

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 140 companies with nearly 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

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.

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.