


Tunneling Excavator

R 924compact

Operating Weight:	33 000 – 34 500 kg
Engine Output:	129 kW / 175 HP
Tunnel Height:	4,75 – 7,50 m
Emission standard:	Stage IIIA / Tier 3



LIEBHERR



Equipment

- Special tunnel boom with 2 x 45° tilting mechanism
- Optimal disposition and protection of hoses and pipes
- Liebherr quick coupler for a simpler tool changing
- Special position of cylinders to be better protected

Undercarriage

- Dozer blade with cylinder protection
- Deflector blades
- Travel drive protection
- 3 track guides at each track frame

Tunneling version

Operator's cab

- Adjustable seat with synthetic leather seat cover, easy to clean
- Good visibility in height
- Integrated FOPS protection and FGPS in the front
- Electronic components with protection (display and keyboard)

Tunneling specificities

- Uppercarriage with steel structure
- Back-up warner
- Working headlights with protection
- Hydraulic system optimized for the cutting head application



Technical Data



Engine

Rating per ISO 9249	129 kW (175 HP) at 1,800 RPM
Model	Liebherr D 934 S
Type	4 cylinder in-line
Bore/Stroke	122/136 mm
Displacement	6.36 l
Engine operation	4-stroke diesel unit pump system turbo-charged after-cooled reduced emissions
Cooling	water-cooled and integrated motor oil cooler
Air cleaner	dry-type air cleaner with pre-cleaner, primary and safety elements
Fuel tank	345 l
Electrical system	
Voltage	24 V
Batteries	2 x 135 Ah/12 V
Starter	24 V/7.8 kW
Alternator	three phase current 24 V/100 A
Engine idling	sensor controlled



Hydraulic System

Hydraulic pump	Positive Control Classic, regulation with Liebherr variable flow swash plate double pump, proportional controller hydraulically steered
Max. flow	2 x 214 l/min.
Max. pressure	350 bar
Pump regulation	electro-hydraulic with electronic engine speed sensing regulation, pressure compensation, flow compensation, automatic oil flow optimizer, swing circuit with priority and torque control
Hydraulic tank	147 l
Hydraulic system	max. 360 l
Hydraulic oil filter	1 full flow filter (20 µm) in return line with integrated fine filter area (5 µm) and an additional leakage filter
Hydraulic oil cooler	compact cooler, consisting of a water and fuel cooler, sandwiched with hydraulic oil cooler and after-cooler cores and hydrostatically driven fan
MODE selection	adjustment of machine performance and the hydraulics via a mode selector to match application
ECO	for especially economical and environmentally friendly operation
POWER	for maximum digging power and heavy duty jobs
LIFT	for lifting
FINE	for precision work and lifting through very sensitive movements
Super-Finish	adjustable working speed for grading
RPM adjustment	stepless adjustment of engine output via the rpm at each selected mode
Tool Control	ten preadjustable pump flows and pressures for add on tools



Hydraulic Controls

Power distribution	via monoblock control valve with integrated safety valves
Servo circuit	
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 for milling cutter/hammer, 2 x 45° rotator and dozer blade



Swing Drive

Drive by	Liebherr swash plate motor
Transmission	Liebherr compact planetary reduction gear
Swing ring	Liebherr, sealed single race ball bearing swing ring, internal teeth
Swing speed	0 – 12.7 RPM stepless
Swing torque	70.2 kNm
Holding brake	wet multi-disc (spring applied, pressure released)
Option	pedal controlled positioning brake



Operator's Cab

Cab	according to guidelines for tunnel application: FOPS, FGPS plus Polycarbonate windows on attachment side
Operator's seat	shock absorbing suspension, adjustable to operator's weight, 6-way adjustable seat
Joysticks	integrated into adjustable seat consoles
Monitoring	menu driven query of current operating conditions via the LCD display. Automatic monitoring, display, warning (acoustical and optical signal) and saving machine malfunction data, for example, engine overheating, low engine oil pressure or low hydraulic oil level
Noise emission	
2000/14/EC	L _{WA} (surround noise) = 102 dB(A)



Undercarriage

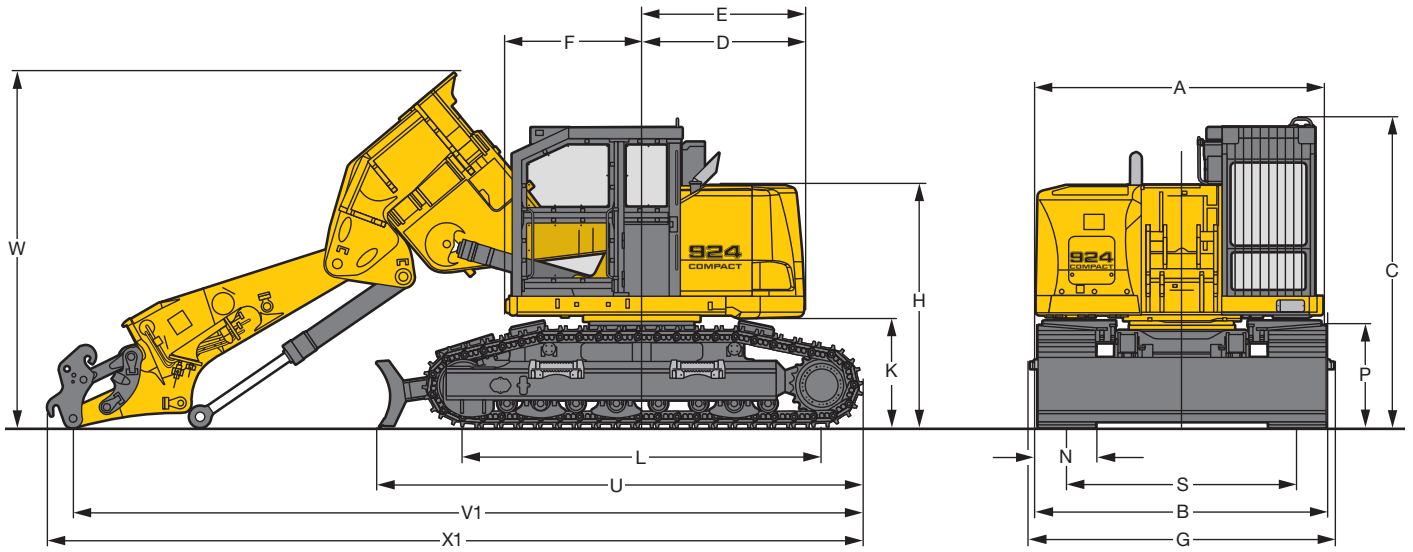
HD-SL	heavy duty, wide gauge and longer crawler length
Drive	Liebherr swash plate motors with integrated brake valves on both sides
Transmission	Liebherr planetary reduction gears
Travel speed	low range – 3.2 km/h high range – 5.3 km/h
Net drawbar pull on crawler	208 kN
Track components	D 6 C, maintenance-free
Track rollers/Carrier rollers	8/2
Track pads	double or triple grouser
Tracks	sealed and greased
Digging locks	wet multi-discs (spring applied, pressure released)
Brake valves	integrated into travel motor



Attachment

Type	combination of resistant steel plates and cast steel components
Hydraulic cylinders	Liebherr cylinders with special seal-system, shock absorbed
Pivots	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	3.03 m or 3.30 m with 2 x 45° rotator
Stick	3.20 m or 4.20 m with integrated bucket tilt cylinder
Bucket	HD ripper bucket with cutting width 700 mm

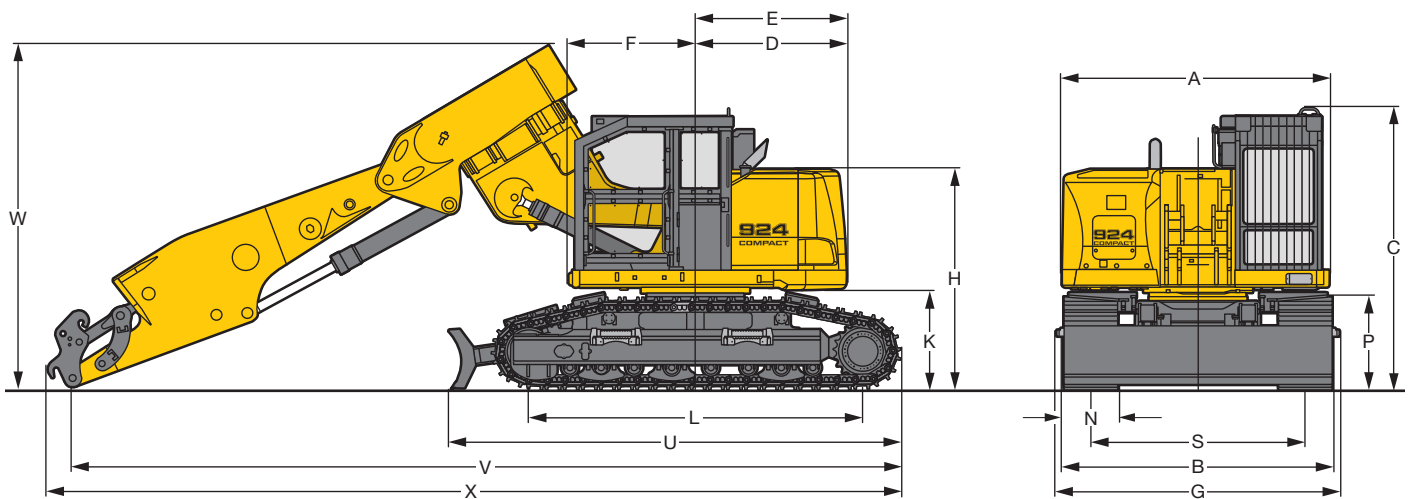
Dimensions



	mm
A	2,990
C	3,230
D	1,690
E	1,690
F	1,415
H	2,525
K	1,145
L	3,750
P	1,065
S	2,400
U	5,070
N	600
B	3,000
G	3,160

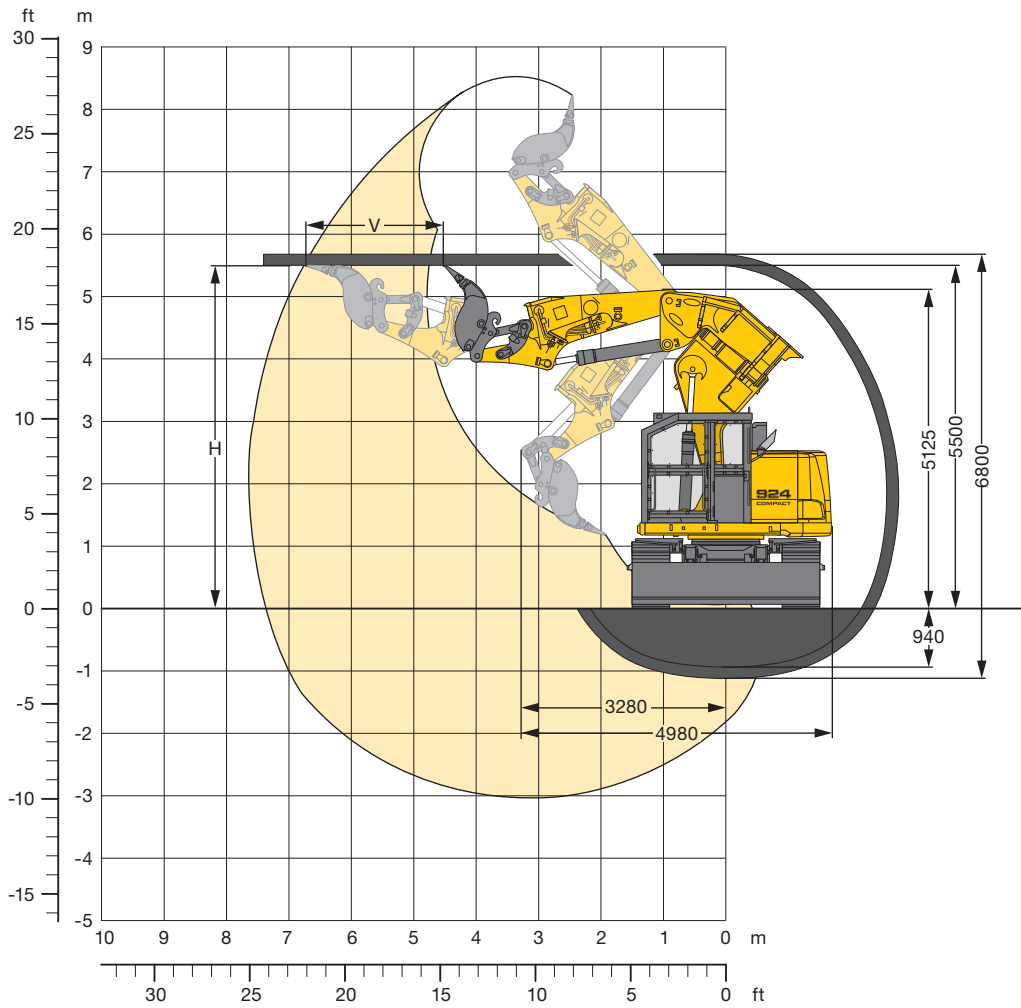
Boom 3.03 m with 2 x 45° Rotator and Stick 3.20 m		mm
V		8,080
V1		8,240
W		3,860
W1		3,710
X		8,360
X1		8,510

Boom 3.30 m with 2 x 45° Rotator and Stick 4.20 m		mm
V		9,300
W		4,000
X		9,600



Tunneling Excavator

with Boom 3.03 m, 2 x 45° Rotator and Stick 3.20 m



Digging Envelope

Basic boom bolted in position II of upper carriage

Tunnel height H m	Advance V m
4.75	1.20
5.00	2.05
5.50	2.25
6.00	2.10

Operating Weight and Ground Pressure

Operating weight includes basic machine with boom 3.03 m, 2 x 45° rotator, stick 3.20 m, quick coupler 48 and bucket 0.16 m³ (700 kg).

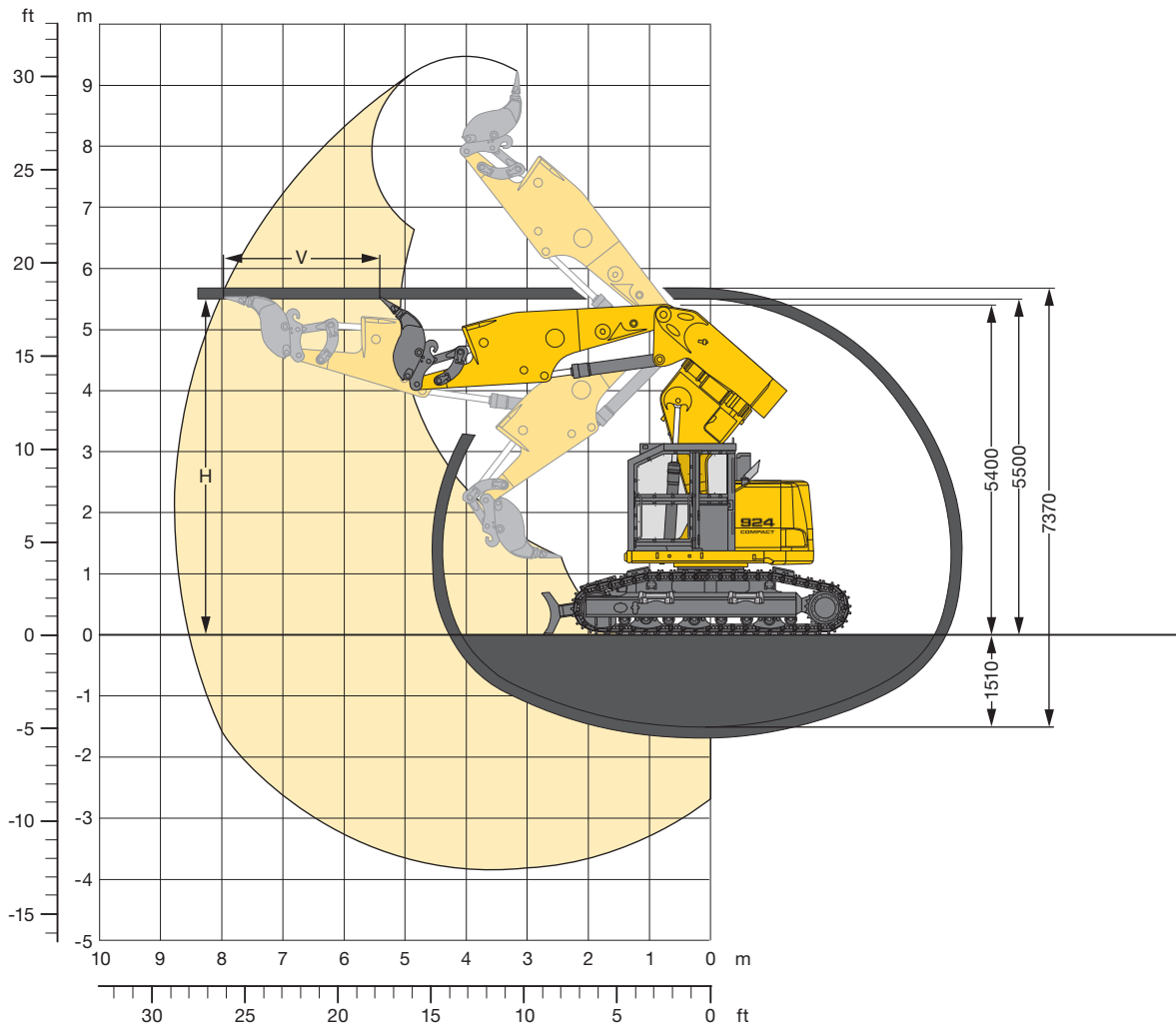
Undercarriage	HD-SL
Pad width	600
Weight	33,000
Ground pressure	0.68

Digging Forces without Quick Coupler

Max. digging force ISO	kN	142
	t	14.5
Max. breakout force ISO	kN	145
	t	14.8

Tunneling Excavator

with Boom 3.30 m, 2 x 45° Rotator and Stick 4.20 m



Digging Envelope

Basic boom bolted in position II of upper carriage

Tunnel height H m	Advance V m
5.50	2.50
6.00	2.40
6.50	2.20
7.00	2.10
7.50	1.90

Operating Weight and Ground Pressure

Operating weight includes basic machine with boom 3.30 m, 2 x 45° rotator, stick 4.20 m, quick coupler 48 and bucket 0.16 m³ (700 kg).

Undercarriage	HD-SL
Pad width	600 mm
Weight	34,500 kg
Ground pressure	0.71 kg/cm ²

Digging Forces without Quick Coupler

Max. digging force ISO	kN	116
	t	11.8
Max. breakout force ISO	kN	144
	t	14.7

Equipment



Undercarriage

3 track guide at each track frame	•
Double grouser pads 600 mm	•
Dozer blade with cylinder protection	•
Idler protection	•
Lifetime lubricated track rollers	•
Mud guards	•
Reinforced base-plate center-piece	•
Tracks sealed and greased	•
Travel gear protection	•
Two-stage travel motors	•



Uppercarriage

Alternator 100 A	•
Back-up alarm	•
Electrical device shut off	•
Engine hood with lift help and mechanical locking	•
Fire extinguisher	•
Handrails, non slip surfaces	•
Maintenance-free HD-batteries	•
Maintenance-free swing brake lock	•
Protection grid on radiator fan	•
Radiator protection grid	•
Sound insulation	•
Tool kit	•
Upper carriage protection	•
Customized colors	+
Electric fuel tank filler pump	+
Foot pedal swing positioning brake	+



Hydraulic System

Additional hydraulic circuits	•
Control kit for emergency towing	•
Electronic pump regulation	•
Filter with integrated fine filter area (5 µm)	•
Flow compensation	•
Hydraulic tank shut-off valve	•
Liebherr Positive Control	•
Pressure compensation	•
Pressure storage for controlled lowering of attachments with engine turned off	•
Pressure test ports	•
Stepless work mode selector	•
Tool Control	•
Bio-degradable hydr. oil	+
Filter for secondary circuit	+
Hydraulic control for rotary drive	+



Engine

After-cooled	•
Air filter with pre-cleaner main- and safety element	•
Conform with stage IIIA /Tier 3 emission standard	•
Fuel water separator	•
Laminated radiator	•
Sensor controlled engine idling	•
Turbo-charged	•
Unit pump system	•
Liebherr particle filter	+



Operator's Cab

6-way adjustable operator seat with synthetic leather seat cover	•
Additional flood lights	•
Additional lights on cab roof (rear)	•
Cab for tunneling application	•
Display cover	•
Emergency exit rear window	•
Fire extinguisher	•
Multi-function display	•
Polycarbonate window at attachment side and rear window	•
Seat belt	•
Structural design according to guidelines: FOPS, FGPS	•
Structural design according to guidelines: ROPS	+
Totally enclosed cab (additional door and window) with windshield wiper	+



Attachment

12 t lifting hook with safety link on bucket or on quick coupler	•
Automatic lubrication system (except bucket tilt linkage)	•
Cylinders with shock absorber	•
Hydraulic lines for additional tools	•
Hydraulic lines protection	•
Mechanical quick coupler	•
Piston rod cover for hoist cylinder	•
ReGeneration plus	•
SAE split flanges on all high pressure lines	•
Sealed pivots /shaft seal between bucket and stick	•
Work light on boom and stick	•
Customized colors	+
High pressure circuit	+
Liebherr line of buckets	+
Quick disconnect hose couplers for additional tools	+
Special application buckets	+

• = Standard, + = Option

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.