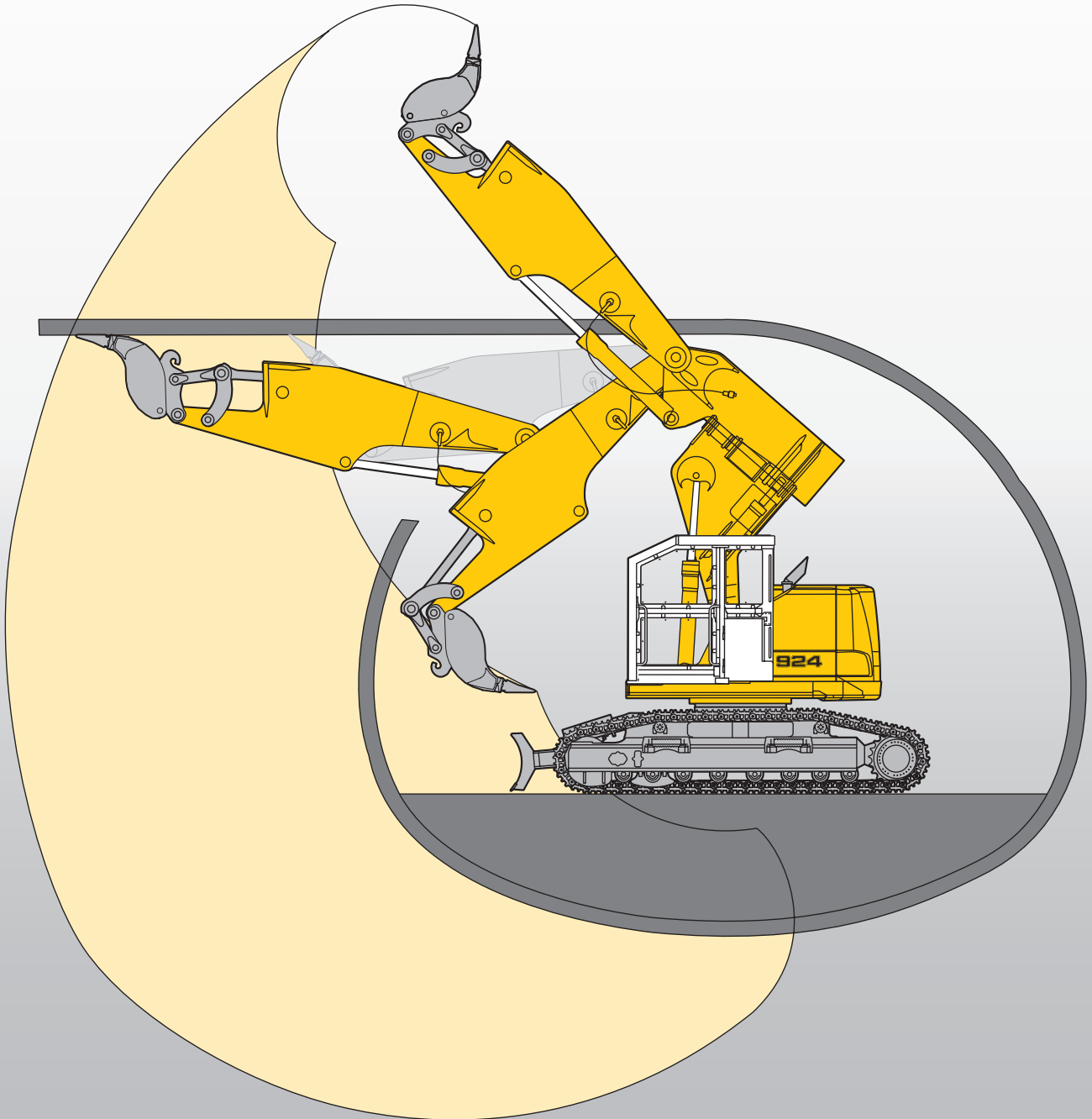


Tunneling Excavator

R 924_{COMPACT}

Operating Weight: 31,900 – 32,440 kg
Engine Output: 130 kW / 176 HP



LIEBHERR

Technical Data



Engine

Rating per ISO 9249	130 kW (176 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-Finisht	adjustable working speed for grading
RPM adjustment	stepless adjustment of engine output via the rpm at each selected mode
Liebherr 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	74 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 integrated into adjustable seat consoles
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

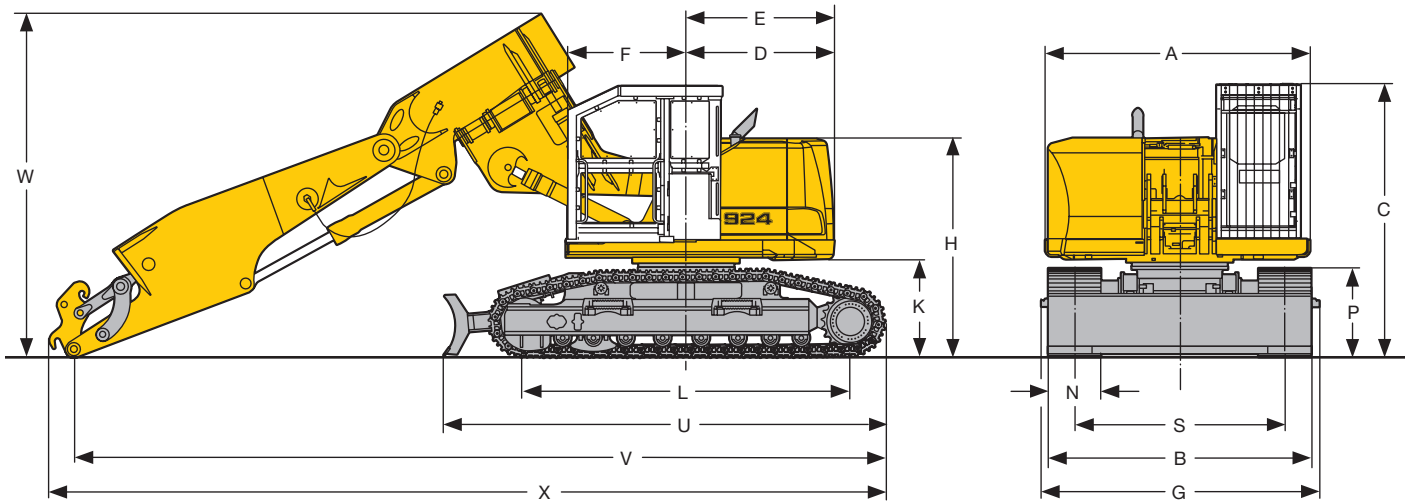
HD-SL	heavy duty, wide gauge and longer crawler length
Drive	Liebherr swash plate motors with integrated brake valves on both sides
Transmission	Liebherr planetary reduction gears
Travel speed	low range – 3.2 km/h high range – 5.3 km/h
Drawbar pull max.	260 kN
Track components	D 6 C, maintenance-free
Track rollers/Carrier rollers	8/2
Tracks	sealed and greased
Track pads	double grouser
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	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



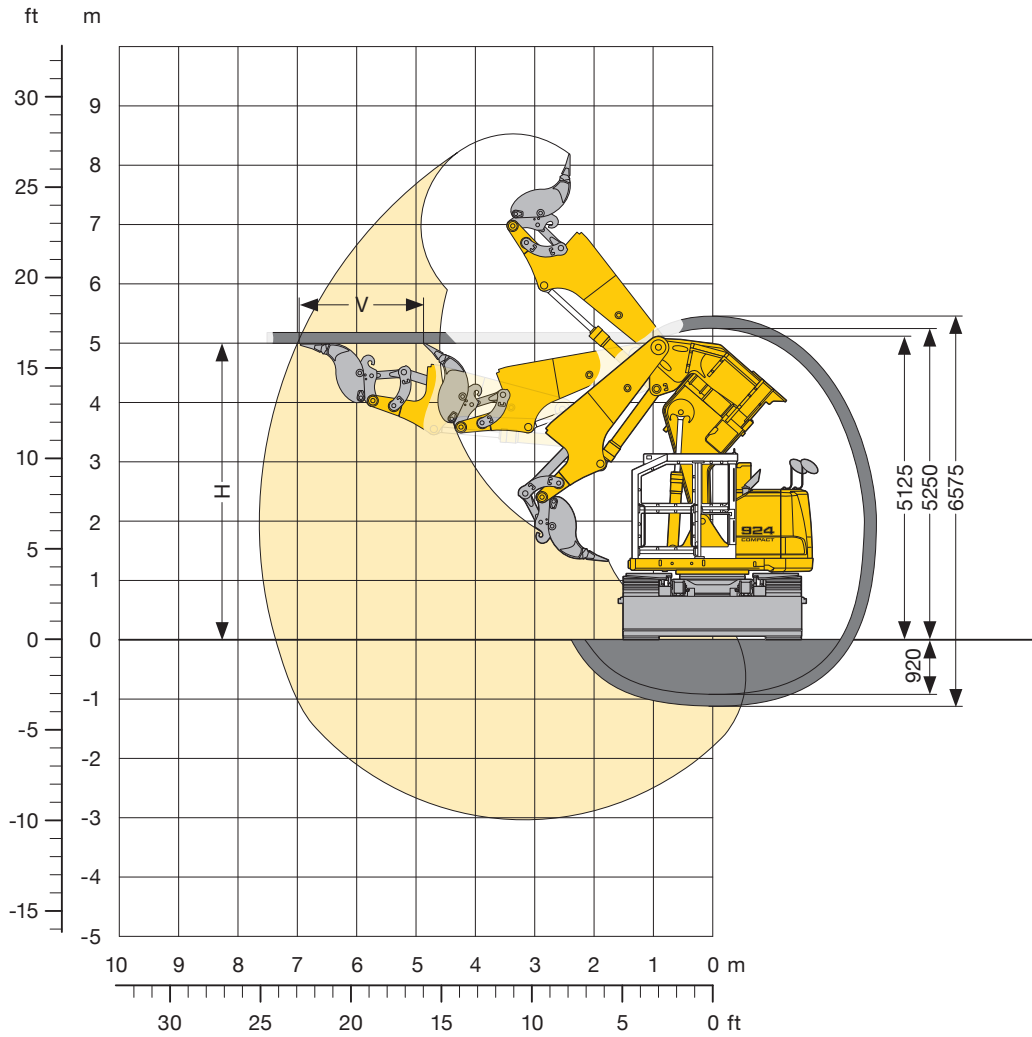
	mm
A	2,990
C	3,151
D	1,695
E	1,695
F	1,416
H	2,526
K	1,146
L	3,748
P	1,063
S	2,400
U	5,070
N	600
B	3,000
G	3,160

Stick 3.20 m	mm
V	8,080
W	3,860
X	8,360

Stick 4.20 m	mm
V	9,250
W	3,950
X	9,550

Tunneling Excavator

with 45° Boom Rotator and Stick 3.20 m



Digging Envelope

Basic boom bolted in position II of upper carriage

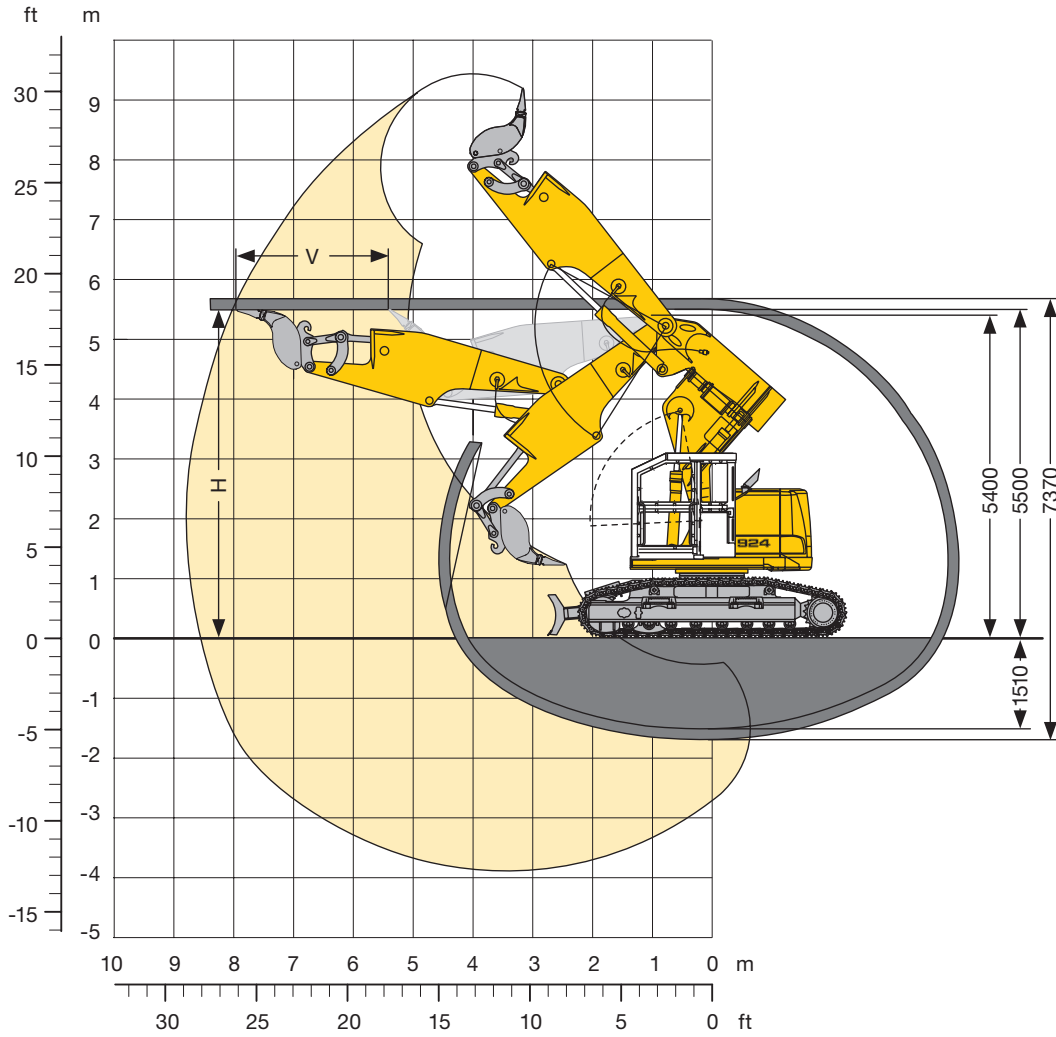
Tunnel height H m	Advance V m
4.75	1.25
5.00	2.10
5.50	2.30
6.00	2.15

Max. digging force: 110 kN/11.2 t

Max. breakout force: 140 kN/14.3 t

Tunneling Excavator

with 45° Boom 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

Max. digging force: 95 kN/ 9.7 t

Max. breakout force: 143 kN/14.6 t

Equipment



Undercarriage

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



Uppercarriage

Engine hood with lift help and mechanical locking	•
Handrails, non slip surfaces	•
Maintenance-free swing brake lock	•
Maintenance-free HD-batteries	•
Sound insulation	•
Alternator 100 A	•
Upper carriage protection	•
Back-up alarm	•
Electric fuel tank filler pump	+
Foot pedal swing positioning brake	+
Customized colors	+



Hydraulics

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



Engine

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



Operator's Cab

Cab for tunneling application	•
Structural design according to guidelines: FOPS, FGPS	•
Polycarbonate window at attachment side and rear window	•
6-way adjustable operator seat	•
Emergency exit rear window	•
Fire extinguisher	•
Display cover	•
Additional flood lights	•
Additional lights on cab roof (rear)	•
Storage room	•
Multi-function display	•
Seat belt	•



Attachment

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

• = 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 to retain warranty.

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