Product Information Tunneling Excavator

R 950

Litronic

- **Generation**: 6
- **Engine**: 150 kW / 201 HP
  190 kW / 265 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
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 easy tool changing
## Technical Data

### Engine

<table>
<thead>
<tr>
<th>Rating</th>
<th>201 HP (150 kW) at 1,800 rpm per SAE J1349</th>
</tr>
</thead>
<tbody>
<tr>
<td>per ISO 9249</td>
<td>201 HP (150 kW) at 1,800 rpm</td>
</tr>
<tr>
<td>Torque</td>
<td>150 kW: 1,054 Nm at 1,350 rpm / 777 lbf ft at 1,350 rpm</td>
</tr>
<tr>
<td></td>
<td>190 kW: 1,337 Nm at 1,350 rpm / 986 lbf ft at 1,350 rpm</td>
</tr>
<tr>
<td>Model</td>
<td>Liebherr D944 A7-25 (Stage V) or Liebherr D944 A7-24 (Tier 4 Final)</td>
</tr>
<tr>
<td>Type</td>
<td>4 cylinder in-line</td>
</tr>
<tr>
<td>Bore</td>
<td>130 mm / 5.1 in</td>
</tr>
<tr>
<td>Stroke</td>
<td>150 mm / 5.9 in</td>
</tr>
<tr>
<td>Displacement</td>
<td>817 / 488 in²</td>
</tr>
<tr>
<td>Engine operation</td>
<td>4-stroke diesel</td>
</tr>
<tr>
<td>Exhaust gas treatment</td>
<td>DOC + FAP + SCR (Stage V) or DOC + FAP (option) + SCR (Tier 4 Final)</td>
</tr>
<tr>
<td>Option</td>
<td>Liebherr particle filter</td>
</tr>
<tr>
<td>Cooling system</td>
<td>Water-cooled and integrated motor oil cooler, after-cooled and fuel cooled</td>
</tr>
<tr>
<td>Air cleaner</td>
<td>Dry-type air cleaner with pre-cleaner, primary and safety elements</td>
</tr>
<tr>
<td>Fuel tank</td>
<td>450 l / 119 gal</td>
</tr>
<tr>
<td>Urea tank</td>
<td>461 / 12 gal</td>
</tr>
<tr>
<td>Electrical system</td>
<td>Voltage: 24 V</td>
</tr>
<tr>
<td></td>
<td>Batteries: 2 x 180 Ah / 12 V</td>
</tr>
<tr>
<td></td>
<td>Starter: 24 V / 7.8 kW</td>
</tr>
<tr>
<td></td>
<td>Alternator: Three-phase current 28 V / 140 A</td>
</tr>
<tr>
<td></td>
<td>Engine idling: Sensor controlled</td>
</tr>
<tr>
<td>Motor management</td>
<td>Connection to the integrated excavator system controlling via CAN-BUS to the economical utilisation of the service that is available</td>
</tr>
</tbody>
</table>

### 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

- **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 preadjustable pump flows and pressures for add-on attachments

### 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
- **Additional functions**: Proportional regulation via foot pedals or mini-joystick

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4 R 950 Tunnel Litronic
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)

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/Crane rollers
- 9 / 2

Tracks
- Sealed and greased

Holding brake
- Wet multi-disc (spring applied, pressure released)

Brake valves
- Integrated into travel motor

Lashing eyes
- Integrated

Operator's Cab

According to guidelines for tunnel application FOPS, ROPS, FGPS plus Polycarbonate windows on equipment side and rear

Cab
- 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

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
  - Lₜₐₓ (inside cab) = 69 dB(A)
  - Lₚₑₚₑₜ (surround noise) = 105 dB(A)

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
<table>
<thead>
<tr>
<th></th>
<th></th>
<th>mm/ft in</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Upper carriage width</td>
<td>3.050 / 10'</td>
</tr>
<tr>
<td>B</td>
<td>Upper carriage height</td>
<td>2.785 / 9' 2&quot;</td>
</tr>
<tr>
<td>C</td>
<td>Cab height</td>
<td>3.390 / 11' 1&quot;</td>
</tr>
<tr>
<td>D</td>
<td>Countermass ground clearance</td>
<td>1.235 / 4' 1&quot;</td>
</tr>
<tr>
<td>E</td>
<td>Rear-end length</td>
<td>1.975 / 6' 6&quot;</td>
</tr>
<tr>
<td>G</td>
<td>Wheelbase</td>
<td>4.108 / 13' 6&quot;</td>
</tr>
<tr>
<td>H</td>
<td>Undercarriage length</td>
<td>5.100 / 16' 9&quot;</td>
</tr>
<tr>
<td>I</td>
<td>Undercarriage length with blade</td>
<td>5.750 / 18' 10&quot;</td>
</tr>
<tr>
<td>J</td>
<td>Undercarriage ground clearance</td>
<td>565 / 11'0&quot;</td>
</tr>
<tr>
<td>K</td>
<td>Track height</td>
<td>1.125 / 3' 8&quot;</td>
</tr>
<tr>
<td>L</td>
<td>Track gauge</td>
<td>2.390 / 7'10&quot;</td>
</tr>
<tr>
<td>M</td>
<td>Track pad width</td>
<td>500 / 20&quot;</td>
</tr>
<tr>
<td>N</td>
<td>Width over tracks</td>
<td>3.000 / 9'10&quot;</td>
</tr>
<tr>
<td>O</td>
<td>Width over steps</td>
<td>2.975 / 9' 9&quot;</td>
</tr>
<tr>
<td>P</td>
<td>Blade width</td>
<td>3.000 / 9'10&quot;</td>
</tr>
</tbody>
</table>

### Stick length

- **R** Front swing radius: 4.50 / 14'9"
- **T** Boom height: 4.50 / 14'9"
- **U** Length on ground: 4.50 / 14'9"
- **V** Overall length: 4.50 / 14'9"

### Boom 3.50 m / 11'6"

- **R** with two 45° tilting bear and stick with quick coupler
- **T** Width over tracks: 3.000 / 9'10"
- **U** Width over steps: 2.975 / 9' 9"
- **V** Blade width: 3.000 / 9'10"

### Bucket

- **R** Overall length: 0.18 m / 0.24 yd³

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>mm/ft in</th>
</tr>
</thead>
<tbody>
<tr>
<td>R</td>
<td>Front swing radius</td>
<td>1.810 / 5'11&quot;</td>
</tr>
<tr>
<td>T</td>
<td>Boom height</td>
<td>3.900 / 12'10&quot;</td>
</tr>
<tr>
<td>U</td>
<td>Length on ground</td>
<td>9.900 / 32' 6&quot;</td>
</tr>
<tr>
<td>V</td>
<td>Overall length</td>
<td>10.380 / 33'10&quot;</td>
</tr>
</tbody>
</table>

**Bucket**: 0.18 m³ / 0.24 yd³

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**R 950 Tunnel Litronic**
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

<table>
<thead>
<tr>
<th>Tunnel height H</th>
<th>Advance V</th>
</tr>
</thead>
<tbody>
<tr>
<td>m / ft / in</td>
<td>m / ft / in</td>
</tr>
<tr>
<td>5.00 / 16'6&quot;</td>
<td>1.40 / 4'7&quot;</td>
</tr>
<tr>
<td>5.50 / 18'1&quot;</td>
<td>1.90 / 6'3&quot;</td>
</tr>
<tr>
<td>6.10 / 20'</td>
<td>2.65 / 8'4&quot;</td>
</tr>
<tr>
<td>6.50 / 21'4&quot;</td>
<td>2.80 / 9'2&quot;</td>
</tr>
<tr>
<td>7.00 / 23'</td>
<td>2.60 / 8'6&quot;</td>
</tr>
<tr>
<td>7.50 / 24'7&quot;</td>
<td>2.45 / 8&quot;</td>
</tr>
<tr>
<td>8.00 / 26'3&quot;</td>
<td>2.30 / 7'7&quot;</td>
</tr>
</tbody>
</table>

### Digging Forces

- **without quick coupler**
  - Max. Digging force (ISO 6015) 207 / 46,535 kN / lbf
  - Max. Breakout force (ISO 6015) 322 / 72,389 kN / lbf
  - Max. Digging force (SAE J1179) 188 / 42,264 kN / lbf
  - Max. Breakout force (SAE J1179) 243 / 54,629 kN / lbf

### 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).

#### Without Blade

<table>
<thead>
<tr>
<th>Undercarriage</th>
<th>Pad width mm / in</th>
<th>Weight kg / lb</th>
<th>Ground pressure kg/cm² / psi</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>500 / 20&quot;</td>
<td>43,200 / 95,240</td>
<td>0.97 / 13.8</td>
</tr>
<tr>
<td></td>
<td>600 / 24&quot;</td>
<td>43,800 / 96,580</td>
<td>0.82 / 11.7</td>
</tr>
</tbody>
</table>

#### With Blade

<table>
<thead>
<tr>
<th>Undercarriage</th>
<th>Pad width mm / in</th>
<th>Weight kg / lb</th>
<th>Ground pressure kg/cm² / psi</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>500 / 20&quot;</td>
<td>44,700 / 98,550</td>
<td>1.00 / 14.2</td>
</tr>
<tr>
<td></td>
<td>600 / 24&quot;</td>
<td>45,300 / 99,870</td>
<td>0.85 / 12.1</td>
</tr>
</tbody>
</table>
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

**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

**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
## Options

### Undercarriage
- Dozer blade 3,000 mm with cylinder protection

### Engine
- Automatic engine shut-down on idle (adjustable)

### 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

### 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

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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.
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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.

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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.

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