Piling and drilling rig

LRB 18

Litronic

LIEBHERR
Concept and characteristics

LRB 18

The robust universal machine for a wide variety of applications:
- Vibrator slim design
- Pre-drill
- Ring vibrator
- Hydraulic hammer
- Double rotary drilling
- Continuous flight auger drilling
- Soil mixing

The solid undercarriage offers excellent stability and low ground bearing pressure, and the uppercarriage, with its small swing radius, enables operation in restricted space.

Parallel kinematics with a large working area allow to fold the leader back. The rigid leader absorbs high torque and is fitted with a rope crowd system for high pull forces. Rapid mounting or changing of attachments is provided through the quick change system.

The powerful Liebherr diesel engine is low in emission and economical thanks to SCR technology. For additional reduction of fuel consumption and noise emission the Eco-Silent Mode is available as an option.

The Litronic control with assistance systems supports the operator:
- Joystick control for all machine functions
- Leader inclination memory
- Centrifugal governor for vibrator
- Cruise Control for the drilling process etc.

The PDE process data recording system creates the basis for a complete documentation of the working processes carried out. Using the PDR evaluation software this documentation is given the desired form.

Sophisticated solutions provide safe operation and maintenance of the machine:
- Cab design for optimum visibility
- Acoustic and optic warnings
- Safety rails on top of the uppercarriage
- Rear and side view cameras etc.
**Dimensions and weights**

**LRB 18 standard**

- **Leader length LRB 18**: 15 m
- **Max. pull**: 200 kN
- **Max. torque**: 120 kNm
- **Working radius machine**: Centre of rotation — front edge leader — 2.51 — 4.72 m
- **Stepless rig inclination adjustment**: ± 3.5°
- **Forward inclination**: 9.5°
- **Backward inclination**: 18.4°
- **Vertical leader adjustment above ground level (depending on radius)**: 5.5 m
- **Leader swing range**: ± 90°

**LRB 18 – Operating weight and ground pressure**

- **Telescopic undercarriage with 700 mm 3-web grousers**: 52 t – 0.89 kg/cm²

The operating weight includes the basic machine LRB 18 with vibrator slim design LV 20.

Weights can vary depending on the final configuration of the machine.

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**LRB 18 with rear support unit**

- **Leader length LRB 18**: 15 m
- **Max. pull**: 200 kN
- **Max. torque**: 120 kNm
- **Working radius machine**: Centre of rotation — front edge leader — 2.51 — 4.72 m
- **Stepless rig inclination adjustment**: ± 3.5°
- **Forward inclination**: 9.5°
- **Backward inclination**: 18.4°
- **Vertical leader adjustment above ground level (depending on radius) without auger guide**: 5.5 m
- **Vertical leader adjustment above ground level (depending on radius) with auger guide**: 5.1 m
- **Leader swing range**: ± 90°

**LRB 18 – Operating weight and ground pressure**

- **Telescopic undercarriage with 700 mm 3-web grousers**: 52.2 t – 0.90 kg/cm²

The operating weight includes the basic machine LRB 18 with rear support unit and DBA 90. Weights can vary depending on the final configuration of the machine.
Transport dimensions and weights

**LRB 18**

![Diagram of LRB 18]

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**Transport weight**

<table>
<thead>
<tr>
<th>Configuration</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Without attachment, with telescopic undercarriage and 6.4 t counterweight</td>
<td>47.4 t</td>
</tr>
<tr>
<td>Without attachment and counterweight, with telescopic undercarriage</td>
<td>41.0 t</td>
</tr>
</tbody>
</table>

Weights can vary with the final configuration of the machine. The figures in this brochure may include options which are not within the standard scope of supply of the machine.

*) The transport height with mounted concrete supply line is 3500 mm (large pipe bend dismounted, small pipe bend turned to the side).

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**Transport weight with rear support unit**

<table>
<thead>
<tr>
<th>Configuration</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Without attachment and 5 t counterweight, with telescopic undercarriage and rear support unit</td>
<td>42.8 t</td>
</tr>
</tbody>
</table>

Weights can vary with the final configuration of the machine. The figures in this brochure may include options which are not within the standard scope of supply of the machine.

*) The transport height with mounted concrete supply line is 3500 mm (large pipe bend dismounted, small pipe bend turned to the side).

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**Counterweight with rear support unit**

| Counterweight | 5 t |

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**Counterweight without rear support unit**

| Counterweight | 6.4 t |
Technical description

**Engine**
- Engine type: Liebherr D 946 A7–04
- Power rating according to ISO 9249: 390 kW (523 hp) at 1700 rpm
- Fuel tank: 700 l capacity with continuous level indicator and reserve warning
- Engine complies with 97/68 EC Stage IV and NRMM exhaust certification EPA/CARB Tier 4f.

**Control**
The control system – developed and manufactured by Liebherr – is designed to withstand extreme temperatures and the many heavy-duty construction tasks for which this machine has been designed. Complete machine operating data are displayed on a high resolution monitor screen. A GSM/GPRS telematics module allows for remote inquiry of machine data and operational conditions. To ensure clarity of the information on display, different levels of data are shown in enlarged lettering and symbols.

Control and monitoring of the sensors are also handled by this high technology system. Error indications are automatically displayed on the monitor in clear text. The machine is equipped with proportional control for all movements, which can be carried out simultaneously.

Two joysticks are required for operation. Pedal control can be changed to hand control.

Option:
- PDE®: Process data recording

**Hydraulic system**
The main pumps are operated by a distributor gearbox. Axial piston variable displacement pumps work in open circuits, supplying oil only on demand. Hydraulic pressure peaks are absorbed by the integrated automatic pressure compensation, which relieves the pumps and saves fuel.

- Pumps for working tools: 2x 350 l/min
- Separate pumps for kinematics: 2x 180 l/min
- Hydraulic oil tank: 800 l
- Max. working pressure: 350 bar

No auxiliary power packs are required as application specific hydraulics supply power to all components.

A system of electronically monitored pressure and return filters cleans the hydraulic oil. Any clogging is displayed in the cabin. The use of synthetic environmentally friendly oil is also possible.

**Crawlers**
- Propulsion through axial piston motor, hydraulically released spring loaded multi-disc brake, maintenance-free crawler tracks, hydraulic chain tensioning device.
- Drive speed: 0 – 2.3 km/h
- Track force: 459 kN
- Width of 3-web grousers: 700 mm

**Swing**
- Consists of single row ball bearing, fixed axial piston hydraulic motor, spring loaded and hydraulically released multi-disc holding brake, planetary gearbox and pinion.
- Swing speed from 0 – 3.3 rpm is continuously variable.

**Auxiliary winch**
- Line pull effective (3rd layer): 50 kN
- Rope diameter: 17 mm
- Rope speed: 0-54 m/min

The winch is noted for compact, easily mounted design. Propulsion is via a maintenance-free planetary gearbox in oil bath. Load support by the hydraulic system; additional safety factor by a spring–loaded, multi–disc holding brake.

**Rope crowd system**
- Crowd force push/pull: 150/200 kN
- Line pull (nominal load): 100 kN
- Rope diameter: 18/20 mm

The ropes are actuated by a powerful hydraulic cylinder.

**Noise emission**
- Noise emissions correspond with 2000/14/EC directive.
- Guaranteed average sound pressure level $L_{PA}$ in the cabin: 77.1 dB(A)
- Guaranteed sound power level $L_{WA}$: 110 dB(A)
- Vibration transmitted to the hand-arm system of the machine operator: < 2.5 m/s²
- Vibration transmitted to the whole body of the machine operator: < 0.5 m/s²

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**Vibrator slim design**

LV 20

Max. pile length 17.2 m

Vibrating of a single pile between two other piles

Display for vibrating

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**Technical data**

- Static moment at 2300 rpm: 0 – 20 kNm
- Max. speed: 2300 rpm
- Max. centrifugal force: 1160 kN
- Max. peak-to-peak amplitude with clamp: 12.9 mm
- Total weight with clamp: 4600 kg
- Dynamic weight with clamp: 3100 kg
Pre-drill

BA 45

Max. drilling depth 17.2 m

Display for continuous flight auger drilling

Technical data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rotary drive – torque</td>
<td>0 – 45 kNm</td>
</tr>
<tr>
<td>Rotary drive – speed</td>
<td>0 – 95 rpm</td>
</tr>
<tr>
<td>Max. drilling diameter*</td>
<td>500 mm</td>
</tr>
</tbody>
</table>

*) Other drilling diameters on request
## Ring vibrator

20 VMR

Max. pipe length 27 m

### Concrete supply system

### Display for vibrating

### Technical data

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Static moment</td>
<td>0 – 20 kNm</td>
</tr>
<tr>
<td>Max. speed</td>
<td>2300 rpm</td>
</tr>
<tr>
<td>Max. centrifugal force</td>
<td>1160 kN</td>
</tr>
<tr>
<td>Diameter</td>
<td>356 – 508 mm</td>
</tr>
<tr>
<td>Total weight</td>
<td>7400 kg</td>
</tr>
</tbody>
</table>

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Hydraulic hammer
H 6

Max. pile length 16.9 m

Display for impact driving

Technical data

| Drop weight (3000 kg add. weight 3x 1000 kg) | max. 6000 kg |
| Max. rated energy | 72 kNm |
| Blow rate max. energy | 50 blows/min |
| Max. blow rate | 150 blows/min |
| Basic hammer weight with 6000 kg drop weight | 9000 kg |

Technical data H6

| Hammer type | H 6 |
| Drop weight | 3000 kg |
| Max. rated energy | 36 kNm |
| Blow rate - blows/min | 50-150 |
| Hammer weight incl. pile helmet and dolly | 6150 kg |

Various drive cap sizes available on request max. 640 mm diameter.
Double rotary drilling
DBA 90

Max. drilling depth 17.6 m

Technical data

| Rotary drive I - torque       | 0 – 90 kNm |
| Rotary drive I - speed        | 0 – 21 rpm |
| Rotary drive II - torque      | 0 – 68 kNm |
| Rotary drive II - speed       | 0 – 28 rpm |
| Max. drilling diameter        | 620 mm     |
Continuous flight auger drilling
BA 120

Max. drilling depth 16.3 m with auger cleaner, without Kelly extension
Max. drilling depth 20.3 m with auger cleaner and Kelly extension

<table>
<thead>
<tr>
<th>Technical data</th>
<th>1st gear</th>
<th>2nd gear</th>
<th>Kelly extension</th>
<th>Max. drilling diameter*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drilling drive – torque</td>
<td>0 – 120 kNm</td>
<td>0 – 60 kNm</td>
<td>4 m</td>
<td>600 mm</td>
</tr>
<tr>
<td>Drilling drive – speed</td>
<td>0 – 30 rpm</td>
<td>0 – 60 rpm</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*) Other drilling diameters on request
Soil mixing equipment
3MA 35*

Max. drilling depth 17.2 m.
The mixing depth can vary depending on the mixing tool.

Technical data
- Drilling drive – torque
  - 1st gear: 0 – 35 kNm
  - 2nd gear: 0 – 17.5 kNm

- Drilling drive – speed
  - 1st gear: 0 – 47 rpm
  - 2nd gear: 0 – 95 rpm

*) Single, twin and triple mixing equipment available.
  Twin and triple mixing equipment available for longitudinal or transverse mounting.

Set-up for operation on dams

Display for soil mixing
Full displacement drilling

BA 120

Max. drilling depth 17 m without Kelly extension
Max. drilling depth 21 m with Kelly extension

**Technical data**

<table>
<thead>
<tr>
<th>Drilling drive – torque</th>
<th>1st gear</th>
<th>0 – 120 kNm</th>
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<td>Max. drilling diameter*</td>
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*) Other drilling diameters on request
**Process data recording system - PDE®** *(additional equipment)*

The Liebherr process data recording system PDE® constantly records the relevant process data during the working process.

Depending on the application the recorded and processed data are displayed on the PDE® touchscreen in the operator’s cab, e.g. in the form of an online cast-in-place pile.

At the same time the PDE® is operated using this touchscreen. The operator can enter various details (e.g. jobsite name, pile number, etc.) and start and stop recordings. A recording of every start-stop cycle carried out in the PDE® is established on a CompactFlash memory card.

The PDE® can be configured in a number of ways, e.g. for the connection of external sensors and/or for the generation of a simple protocol as graphic file.

**Process data reporting - PDR** *(additional equipment)*

Comprehensive data evaluation and generation of reports on a PC is possible using the software PDR.

**Recordings management** - The recordings generated by the PDE® system can be imported and managed in PDR. The data can be imported directly from the CompactFlash card or via the Liebherr telematics system LiDAT. Certain recordings, e.g. for a particular day or jobsite, can be found using filter functions.

**Viewing data** - The data in each record is displayed tabularly. Combining several recordings provides results, for example, regarding the total concrete consumption or the average depth. Furthermore, a diagram editor is available for quick analysis.

**Generating reports** - A vital element of PDR is the report generator, which allows for the generation of individual reports. These can be printed out directly or stored as pdf files. In the process the size, colour, line thickness or even the desired logo can be configured. Moreover, the reports can be displayed in different languages, e.g. in English and in the national language.