

Piling and drilling rig

**LRB 16**  
Litronic®

enUS

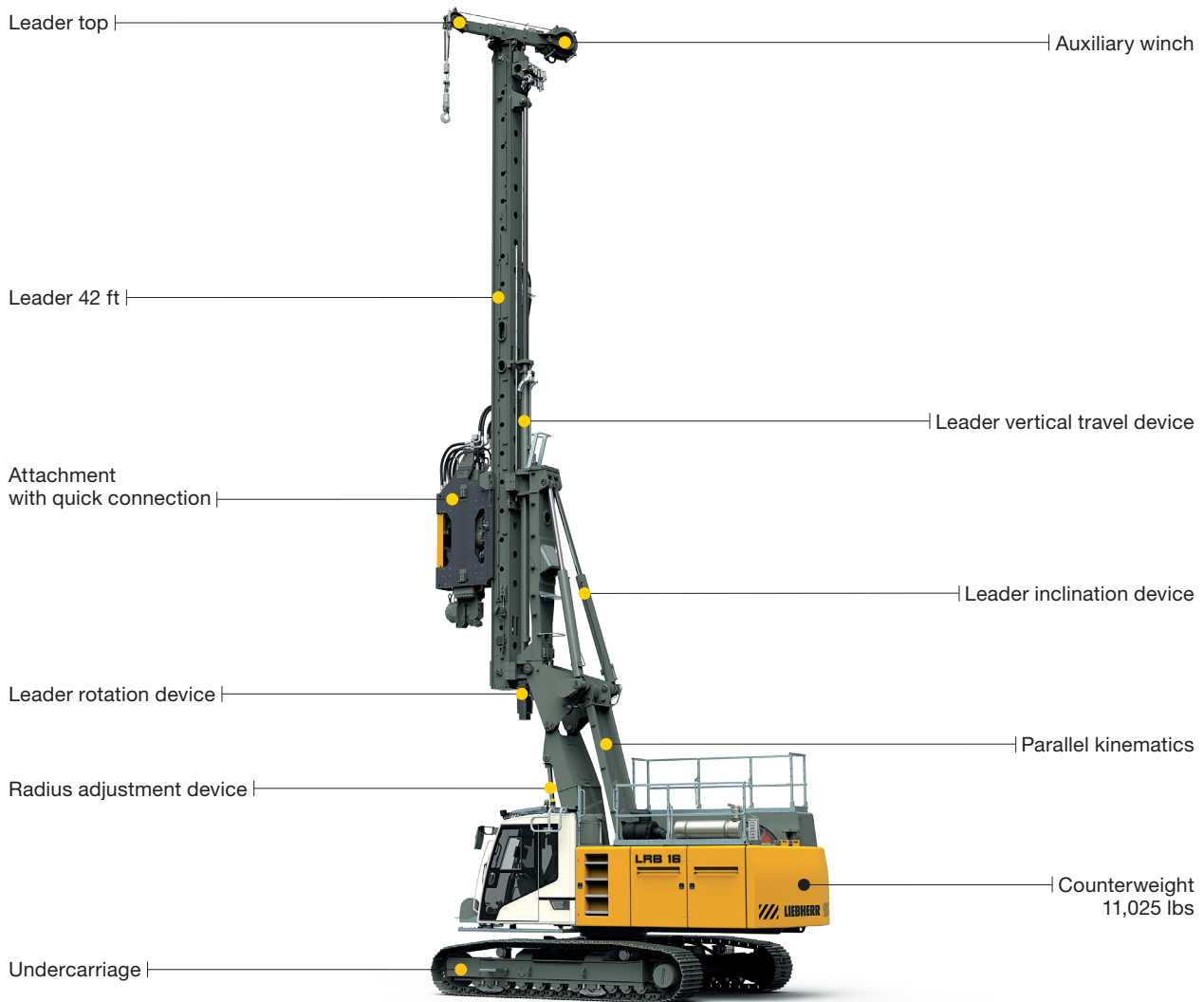
LRB 2501.06



**LIEBHERR**

# Concept and characteristics

LRB 16



## The robust universal machine for a wide variety of applications:

- Vibrator slim design
- Pre-drill
- Ring vibrator
- Hydraulic hammer
- Double rotary drilling
- Kelly 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.

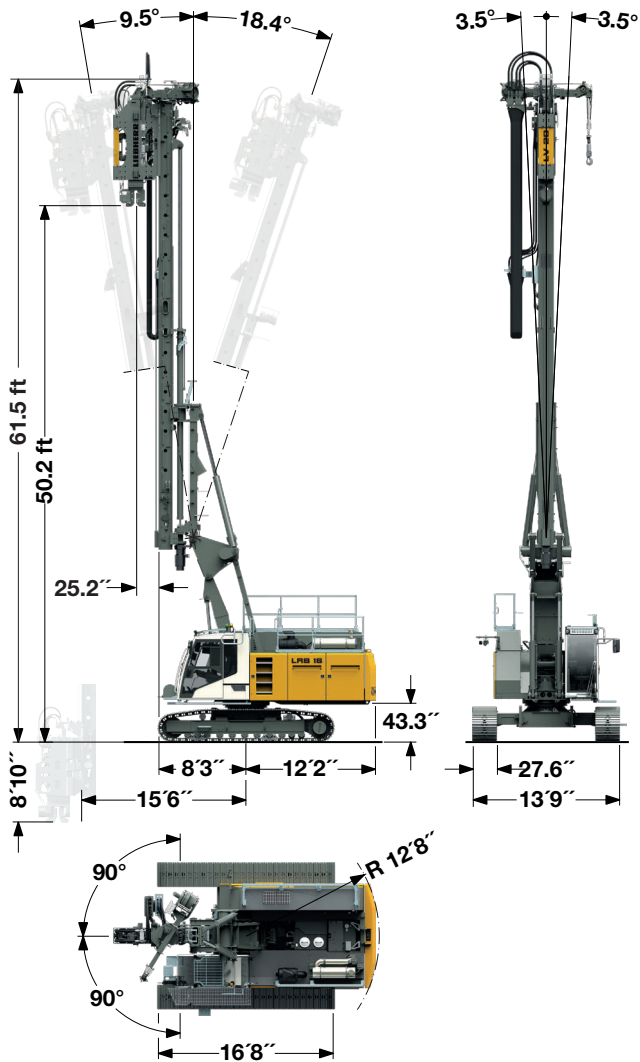
The PDE process data recording system creates the basis for a complete documentation of the working processes carried out. Using the PDR evaluation software this documentation is given the desired form.

Sophisticated solutions provide safe operation and maintenance of the machine:

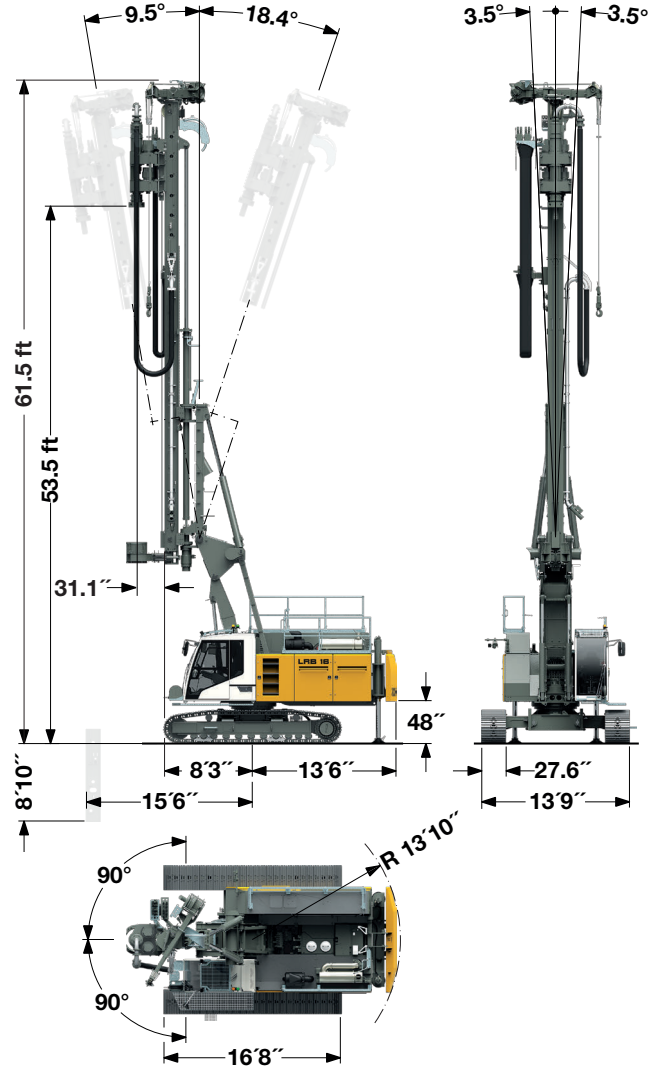
- Cab design for optimum visibility
- Acoustic and optic warnings
- Safety rails on top of the uppercarriage
- Rear and side view cameras etc.

# Dimensions and weights

## LRB 16 standard



## LRB 16 with rear support unit



### Technical data (standard)

|   |               |
|---|---------------|
| Leader length LRB 16  | 42 ft         |
| Max. pull   | 44,960 lbf    |
| Max. torque   | 88,510 lbf-ft |
| Working radius machine  |               |
| Centre of rotation – front edge leader                              | 8.2 – 15.5 ft |
| Stepless rig inclination adjustment                                 |               |
| Lateral inclination   | ± 3.5°        |
| Forward inclination   | 9.5°          |
| Backward inclination  | 18.4°         |
| Vertical leader adjustment above ground level (depending on radius) |               |
| Leader swing range  | 18 ft         |
|   | ± 90°         |

### LRB 16 – Operating weight and ground pressure

|   |                         |
|---|-------------------------|
| Telescopic undercarriage with 27.6 inch 3-web grousers                                  | 110,230 lbs – 12.23 PSI |
| The operating weight includes the basic machine LRB 16 with vibrator slim design LV 20. |                         |
| Weights can vary depending on the final configuration of the machine.                   |                         |

### Technical data (with rear support unit)

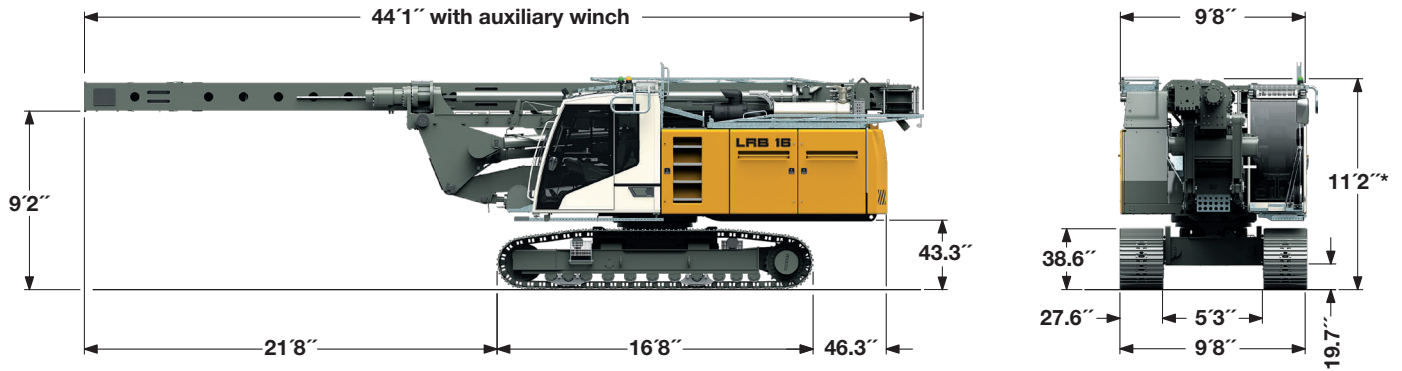
|   |               |
|---|---------------|
| Leader length LRB 16  | 42 ft         |
| Max. pull   | 44,960 lbf    |
| Max. torque   | 88,510 lbf-ft |
| Working radius machine  |               |
| Centre of rotation – front edge leader  | 8.2 – 15.5 ft |
| Stepless rig inclination adjustment   |               |
| Lateral inclination   | ± 3.5°        |
| Forward inclination   | 9.5°          |
| Backward inclination  | 18.4°         |
| Vertical leader adjustment above ground level (depending on radius) without auger guide |               |
| Leader swing range  | 18 ft         |
|   | ± 90°         |
| Vertical leader adjustment above ground level (depending on radius) with auger guide    |               |
|   | 16.7 ft       |
|   | ± 90°         |

### LRB 16 – Operating weight and ground pressure

|   |                         |
|---|-------------------------|
| Telescopic undercarriage with 27.6 inch 3-web grousers  | 113,760 lbs – 12.65 PSI |
| The operating weight includes the basic machine LRB 16 with rear support unit and DBA 90. Weights can vary depending on the final configuration of the machine. |                         |

# Transport dimensions and weights

LRB 16



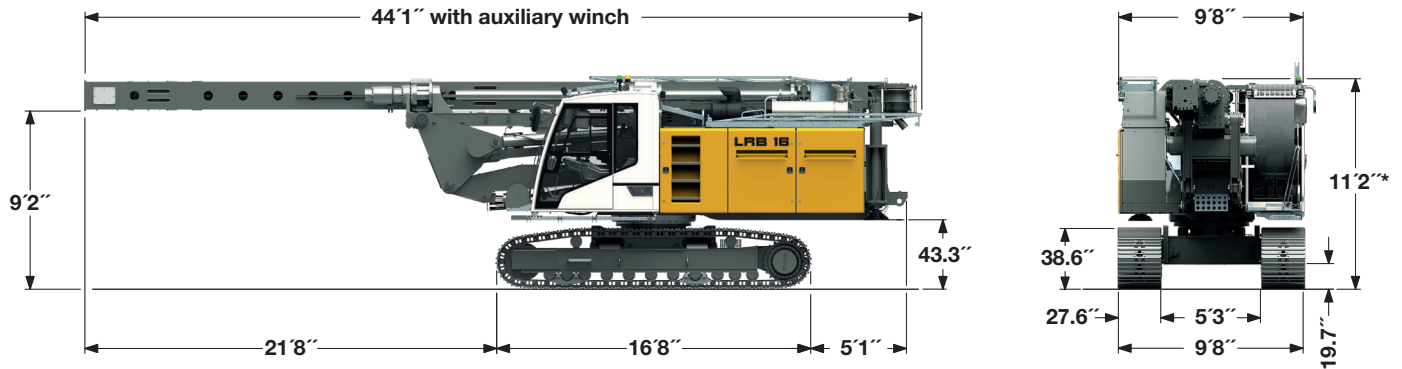
## Transport weight

Without attachment,  
with telescopic undercarriage and counterweight — 100,090 lbs

Without attachment and counterweight,  
with telescopic undercarriage — 89,070 lbs

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 11.5 ft (large pipe bend dismantled, small pipe bend turned to the side).

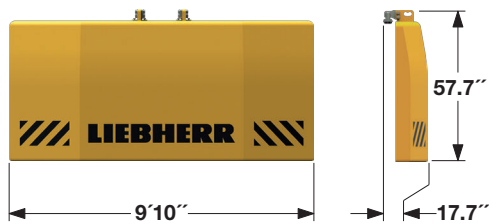


## Transport weight with rear support unit

Without attachment and counterweight  
with telescopic undercarriage and rear support unit — 93,035 lbs

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 11.5 ft (large pipe bend dismantled, small pipe bend turned to the side).



## Counterweight

Counterweight — 11,025 lbs

# 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 ————— 185 gal capacity with continuous level  
indicator and reserve warning  
Engine complies with 97/68 EC Stage IV and NRMM exhaust certification  
EPA/CARB Tier 4f.



## 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 92.5 gal/min  
Separate pumps for kinematics ————— 2x 74.6 gal/min  
Hydraulic oil tank ————— 211 gal  
Max. working pressure ————— 5,076 PSI

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 – 1.4 mph  
Track force ————— 103,187 lbf  
Width of 3-web grousers ————— 27.6 inch



## 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.



## 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



## Auxiliary winch

Line pull effective (3<sup>rd</sup> layer) ————— 11,240 lbf  
Rope diameter ————— 17 mm  
Rope speed ————— 0-177 ft/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 ————— 33,720/44,960 lbf  
Line pull (nominal load) ————— 22,480 lbf  
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 ————— < 8.20 ft/s<sup>2</sup>

Vibration transmitted to the whole body of the machine operator ————— < 1.64 ft/s<sup>2</sup>

# Vibrator slim design

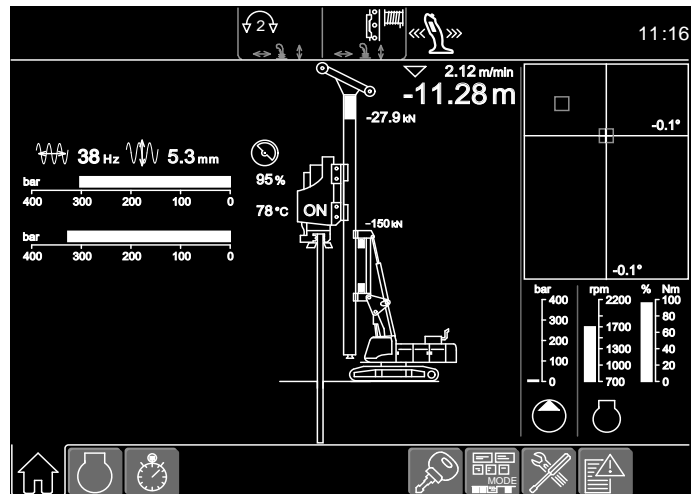
LV 20



Max. pile length 49.9 ft



Vibrating of a single pile between two other piles



Display for vibrating

## Technical data

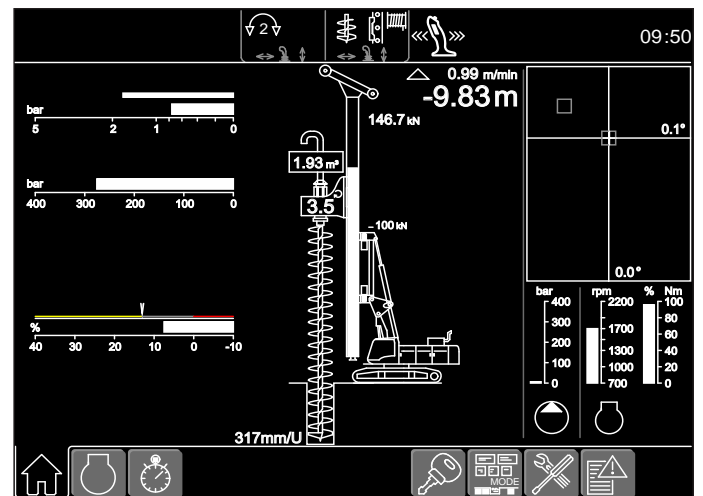
|  |                  |
|--|------------------|
| Static moment at 2300 rpm              | 0 – 144.7 lbf-ft |
| Max. speed                             | 2300 rpm         |
| Max. centrifugal force                 | 260,780 lbf      |
| Max. peak-to-peak amplitude with clamp | 0.51 inch        |
| Total weight with clamp                | 10,140 lbs       |
| Dynamic weight with clamp              | 6,835 lbs        |

# Pre-drill

BA 45



Max. drilling depth 49.9 ft



Display for continuous flight auger drilling

## Technical data

|                         |                   |
|-------------------------|-------------------|
| Drilling drive – torque | 0 - 33,190 lbf-ft |
| Drilling drive – speed  | 0 - 95 rpm        |
| Max. drilling diameter* | 19.7 inch         |

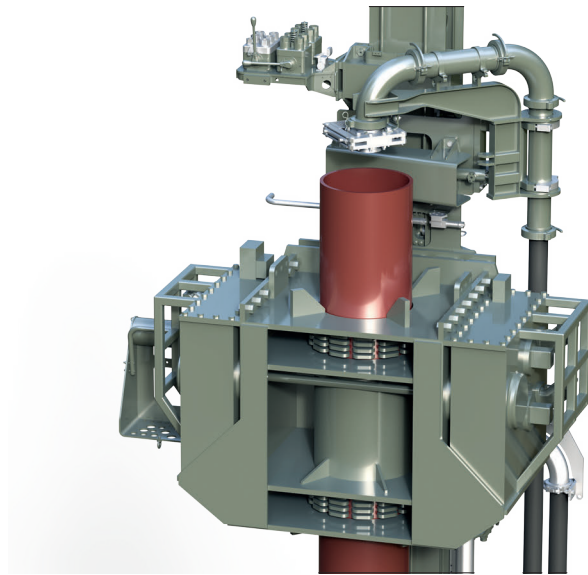
\*) Other drilling diameters on request

# Ring vibrator

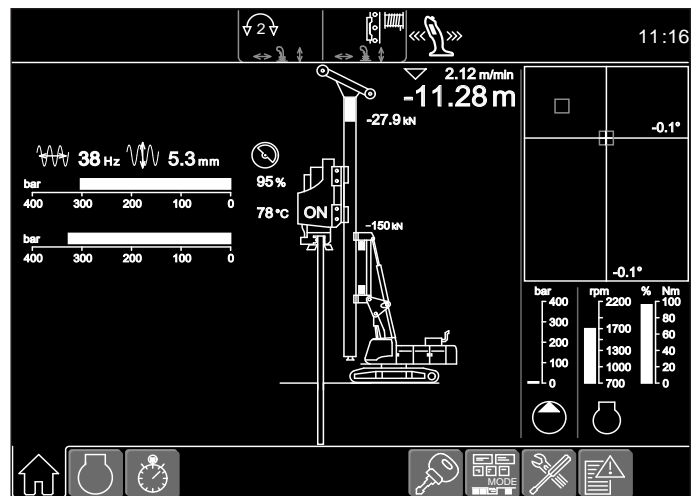
20 VMR



Max. pipe length 82 ft



Concrete supply system



Display for vibrating

## Technical data

|                        |                  |
|------------------------|------------------|
| Static moment          | 0 – 144.7 lbf-ft |
| Max. speed             | 2300 rpm         |
| Max. centrifugal force | 26,780 lbf       |
| Diameter               | 14 – 20 inch     |
| Total weight           | 16,315 lbs       |

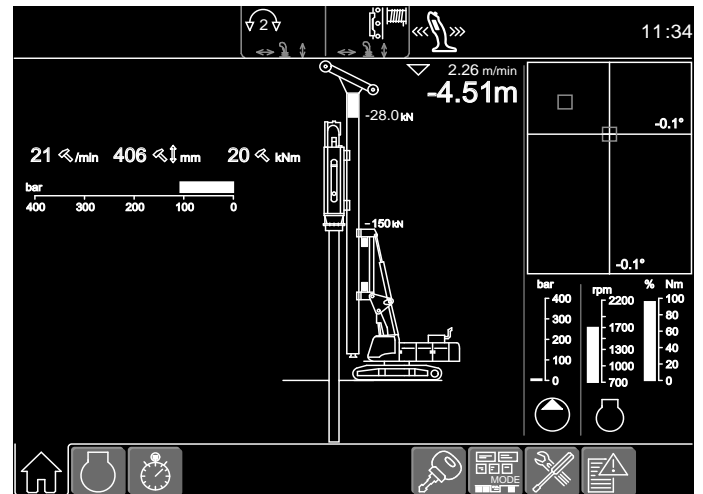


# Hydraulic hammer

H 6



Max. pile length 47.2 ft



Display for impact driving

## Technical data

|   |                 |
|---|-----------------|
| Drop weight<br>(6,614 lbs add. weight 3x 2,205 lbs) | max. 13,230 lbs |
| Max. rated energy                                   | 53,105 lbf-ft   |
| Blow rate max. energy                               | 50 blows/min    |
| Max. blow rate                                      | 150 blows/min   |
| Basic hammer weight with 13,230 lbs drop weight     | 19,842 lbs      |

## Technical data H 6

| Hammer type                               | H 6           | H 6           | H 6           | H 6           |
|---|---------------|---------------|---------------|---------------|
| Drop weight                               | 6,615 lbs     | 8,820 lbs     | 11,025 lbs    | 13,230 lbs    |
| Max. rated energy                         | 26,552 lbf-ft | 35,403 lbf-ft | 44,254 lbf-ft | 53,105 lbf-ft |
| Blow rate - blows/min                     | 50-150        | 50-150        | 50-150        | 40-150        |
| Hammer weight incl. pile helmet and dolly | 13,560 lbs    | 15,765 lbs    | 17,970 lbs    | 20175 lbs     |

Various pile helmet sizes available on request (max. diameter 25.2 inch).

# Double rotary drilling

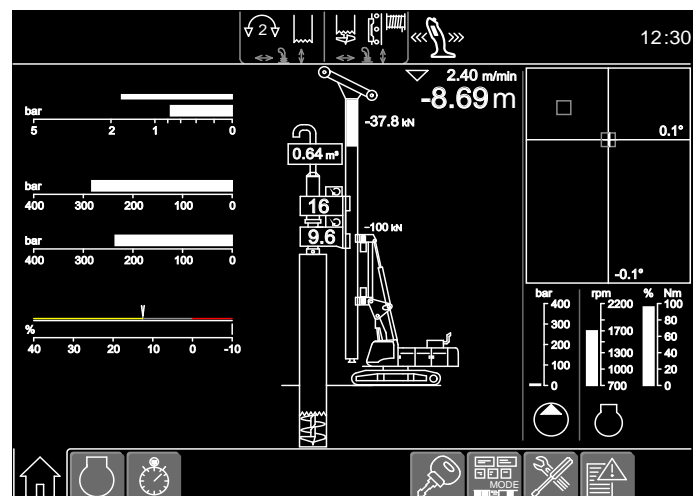
DBA 90



Max. drilling depth 51.2 ft



Rear support unit



Display for double rotary drilling

## Technical data

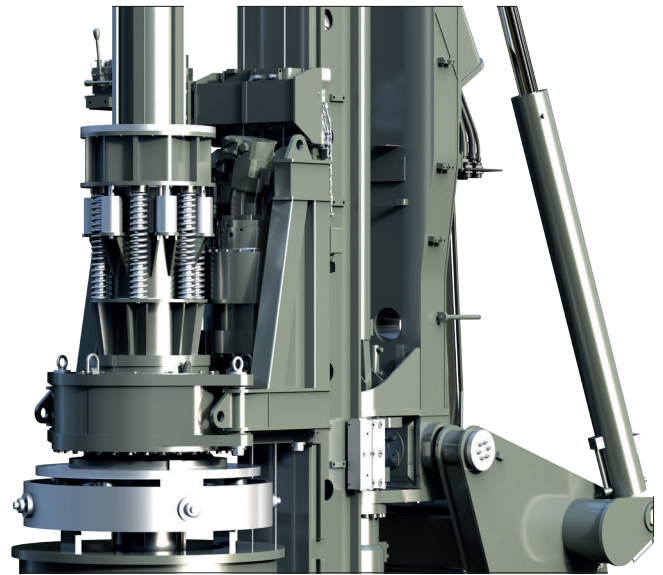
|                          |                   |
|--------------------------|-------------------|
| Rotary drive I - torque  | 0 – 66,380 lbf-ft |
| Rotary drive I - speed   | 0 – 21 rpm        |
| Rotary drive II - torque | 0 – 50,154 lbf-ft |
| Rotary drive II - speed  | 0 – 28 rpm        |
| Max. drilling diameter   | 24.4 inch         |

# Kelly drilling

BA 120 and Kelly bar MD 12/3/20



LRB 16



Shock absorber for Kelly bar



Display for Kelly drilling

## Technical data

|                         |                      |                   |
|-------------------------|----------------------|-------------------|
| Drilling drive – torque | 1 <sup>st</sup> gear | 0 – 88,510 lbf-ft |
| Drilling drive – speed  | 1 <sup>st</sup> gear | 0 – 27 rpm        |
| Drilling drive – torque | 2 <sup>nd</sup> gear | 0 – 44,255 lbf-ft |
| Drilling drive – speed  | 2 <sup>nd</sup> gear | 0 – 54 rpm        |

## Technical data Kelly winch

|                       |                |
|-----------------------|----------------|
| Line pull (effective) | 24,730 lbf     |
| Winch speed           | 0 – 246 ft/min |

\*) Other Kelly bars on request

## Technical data Kelly bar

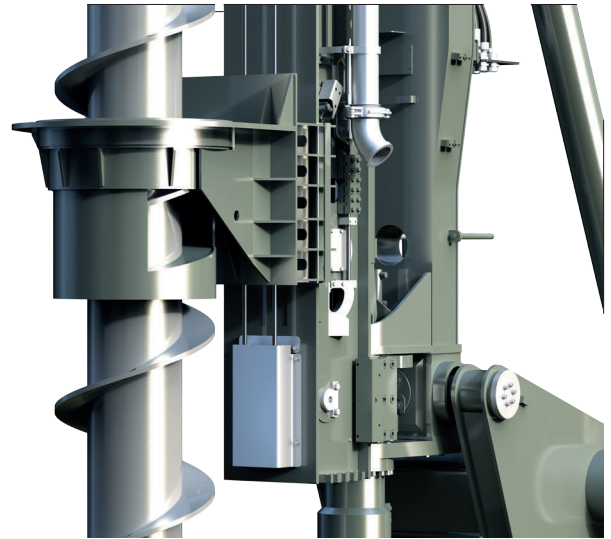
|                    |           |
|--------------------|-----------|
| Diameter           | 12 inch   |
| Number of sections | 3         |
| Extended length    | 67.3 ft   |
| Retracted length   | 27.9 ft   |
| Drive stub         | 8 inch    |
| Weight             | 7,055 lbs |

## Performance data

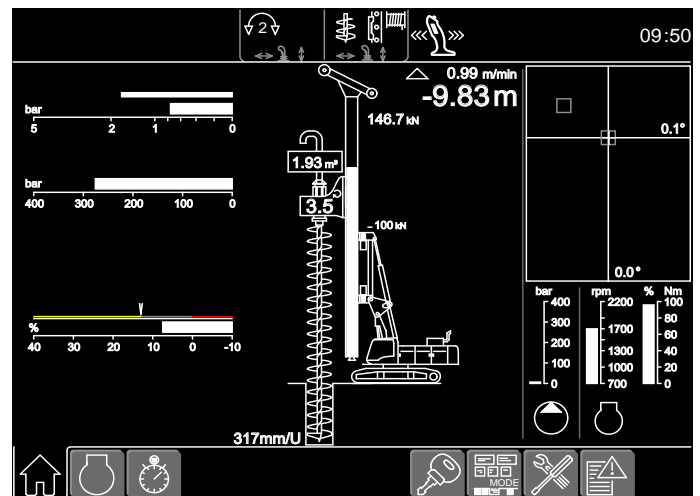
|  |                   |
|--|-------------------|
| Max. drilling diameter                       | 47.2 inch cased   |
| Max. drilling diameter                       | 55.1 inch uncased |
| Max. drilling depth with tool length 6.2 ft* | 67.0 ft           |
| Max. clearance below drilling tool (6.2 ft)  | 19.7 ft           |

# Continuous flight auger drilling

BA 120



Auger with hydraulic auger cleaner



Display for continuous flight auger drilling

Max. drilling depth 46.9 ft with auger cleaner, without Kelly extension  
 Max. drilling depth 60.0 ft with auger cleaner and Kelly extension

## Technical data

|                         |                      |                   |
|-------------------------|----------------------|-------------------|
| Drilling drive – torque | 1 <sup>st</sup> gear | 0 – 88,510 lbf-ft |
| Drilling drive – speed  | 1 <sup>st</sup> gear | 0 – 27 rpm        |
| Drilling drive – torque | 2 <sup>nd</sup> gear | 0 – 44,255 lbf-ft |
| Drilling drive – speed  | 2 <sup>nd</sup> gear | 0 – 54 rpm        |
| Kelly extension         |                      | 13.1 ft           |
| Max. drilling diameter* |                      | 23.6 inch         |

\*) Other drilling diameters on request

# Soil mixing equipment

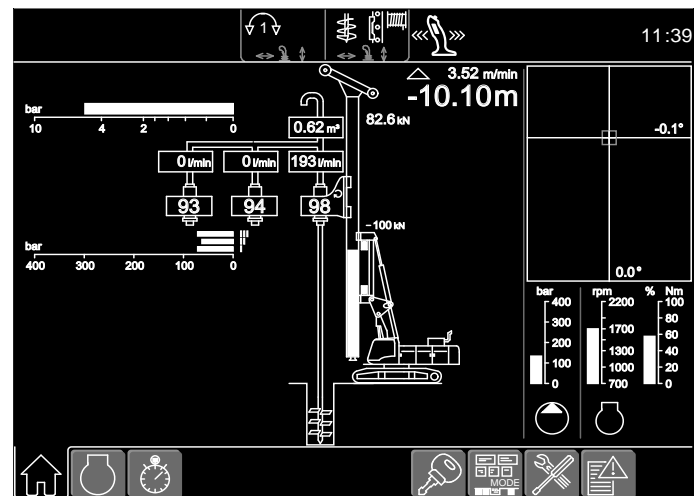
3MA 35\*



Max. drilling depth 48.9 ft  
The max. mixing depth can vary depending on the mixing tool.



Set-up for operation on dams



Display for soil mixing

## Technical data

|                         |                      |                   |
|-------------------------|----------------------|-------------------|
| Drilling drive – torque | 1 <sup>st</sup> gear | 0 – 25,815 lbf-ft |
| Drilling drive – speed  | 1 <sup>st</sup> gear | 0 – 55 rpm        |
| Drilling drive – torque | 2 <sup>nd</sup> gear | 0 – 12,910 lbf-ft |
| Drilling drive – speed  | 2 <sup>nd</sup> gear | 0 – 110 rpm       |

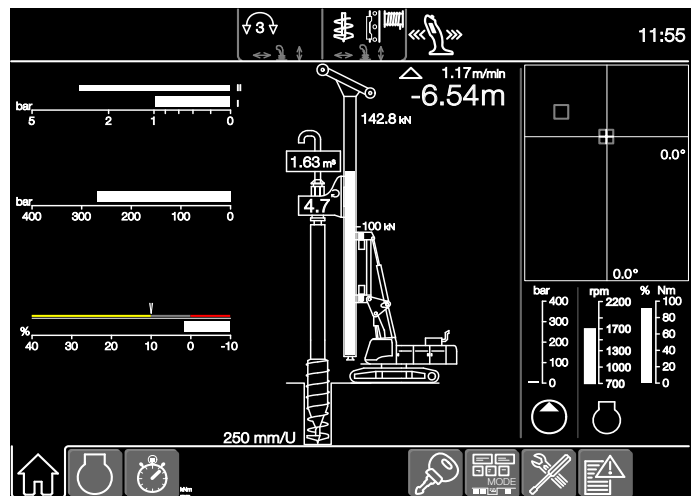
\*) Single, twin and triple mixing equipment available.  
Twin and triple mixing equipment available for longitudinal or transverse mounting.

# Full displacement drilling

BA 120



Max. drilling depth 49.2 ft without Kelly extension  
 Max. drilling depth 62.3 ft with Kelly extension



Display for full displacement drilling

## Technical data

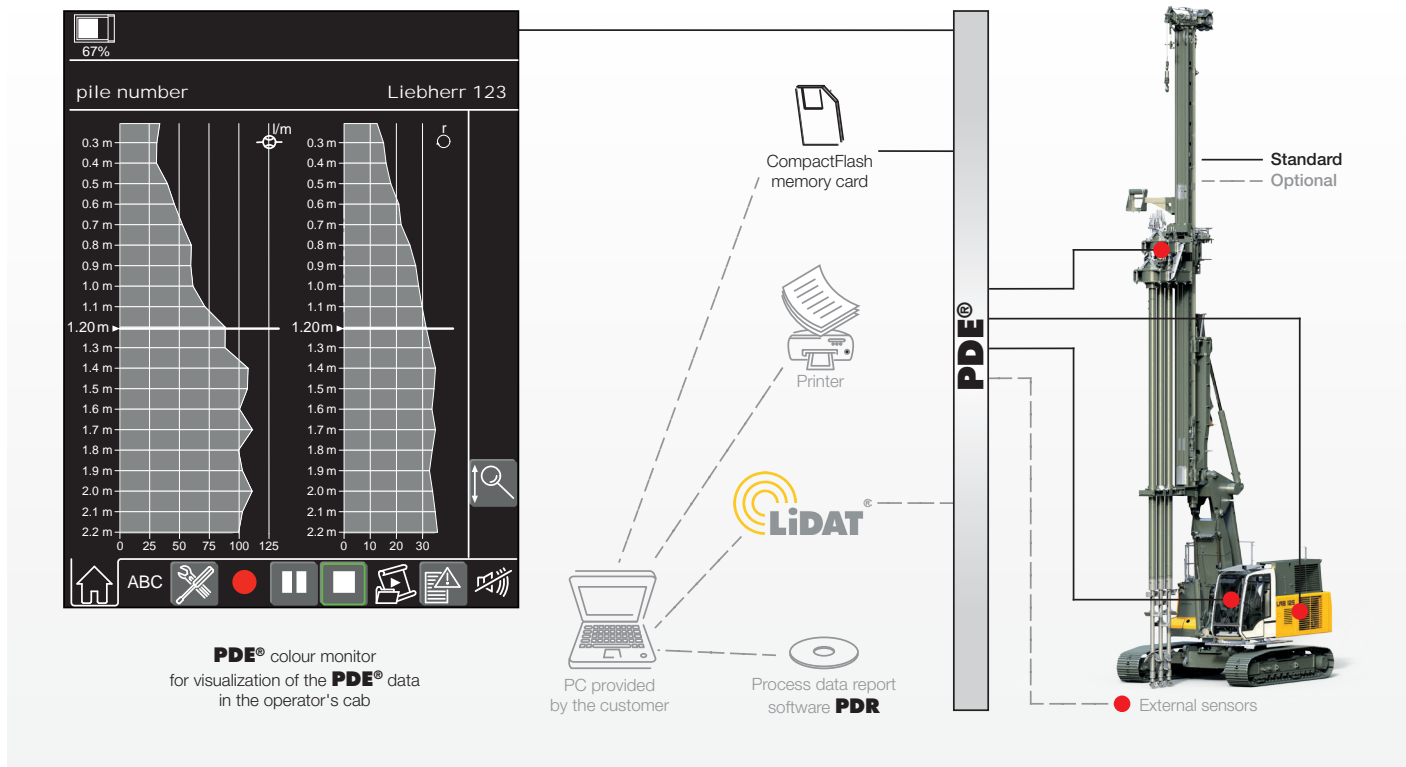
|                         |                      |                   |
|-------------------------|----------------------|-------------------|
| Drilling drive – torque | 1 <sup>st</sup> gear | 0 – 88,510 lbf-ft |
| Drilling drive – speed  | 1 <sup>st</sup> gear | 0 – 27 rpm        |
| Drilling drive – torque | 2 <sup>nd</sup> gear | 0 – 44,255 lbf-ft |
| Drilling drive – speed  | 2 <sup>nd</sup> gear | 0 – 54 rpm        |
| Kelly extension         |                      | 13.1 ft           |
| Max. drilling diameter* |                      | 23.6 inch         |

\*) 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.

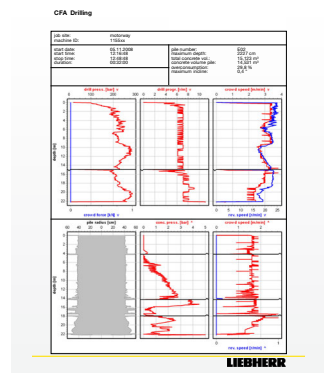
# Process data reporting - PDR (additional equipment)

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.



## Liebherr-Werk Nenzing GmbH

Dr. Hans Liebherr Str. 1, 6710 Nenzing/Austria  
 Tel.: +43 50809 41-473, Fax: +43 50809 41-499  
 crawler.crane@liebherr.com, www.liebherr.com  
 facebook.com/LiebherrConstruction