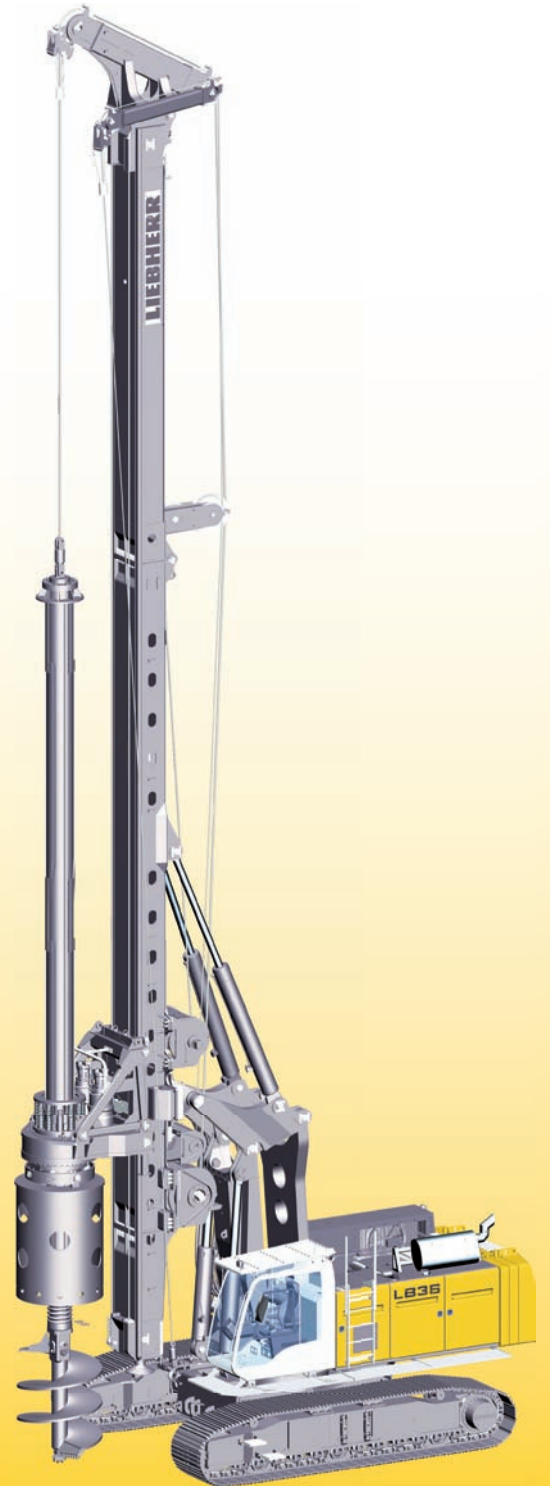


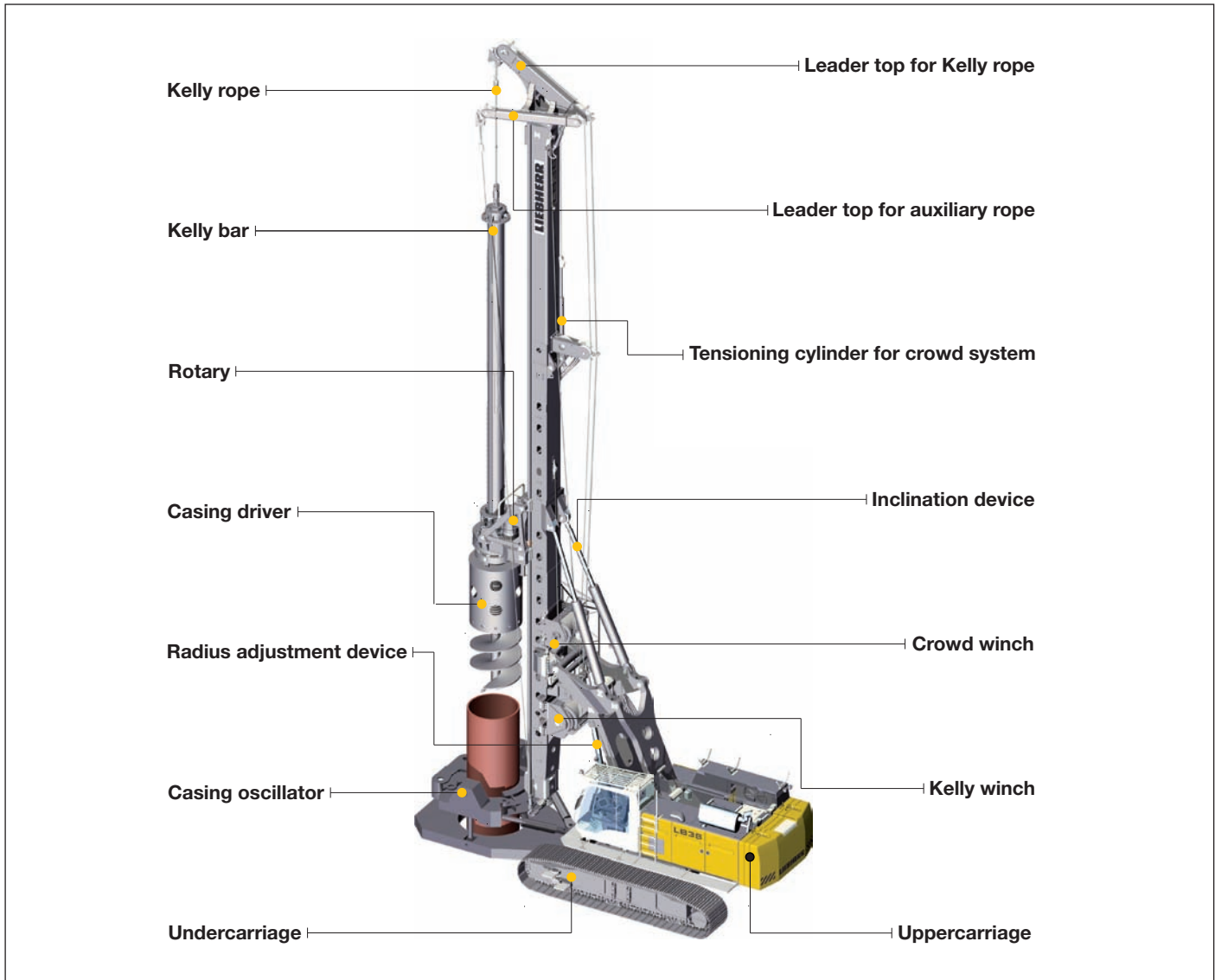
Technical data
Drilling rig

LB 36
Litronic®



LIEBHERR

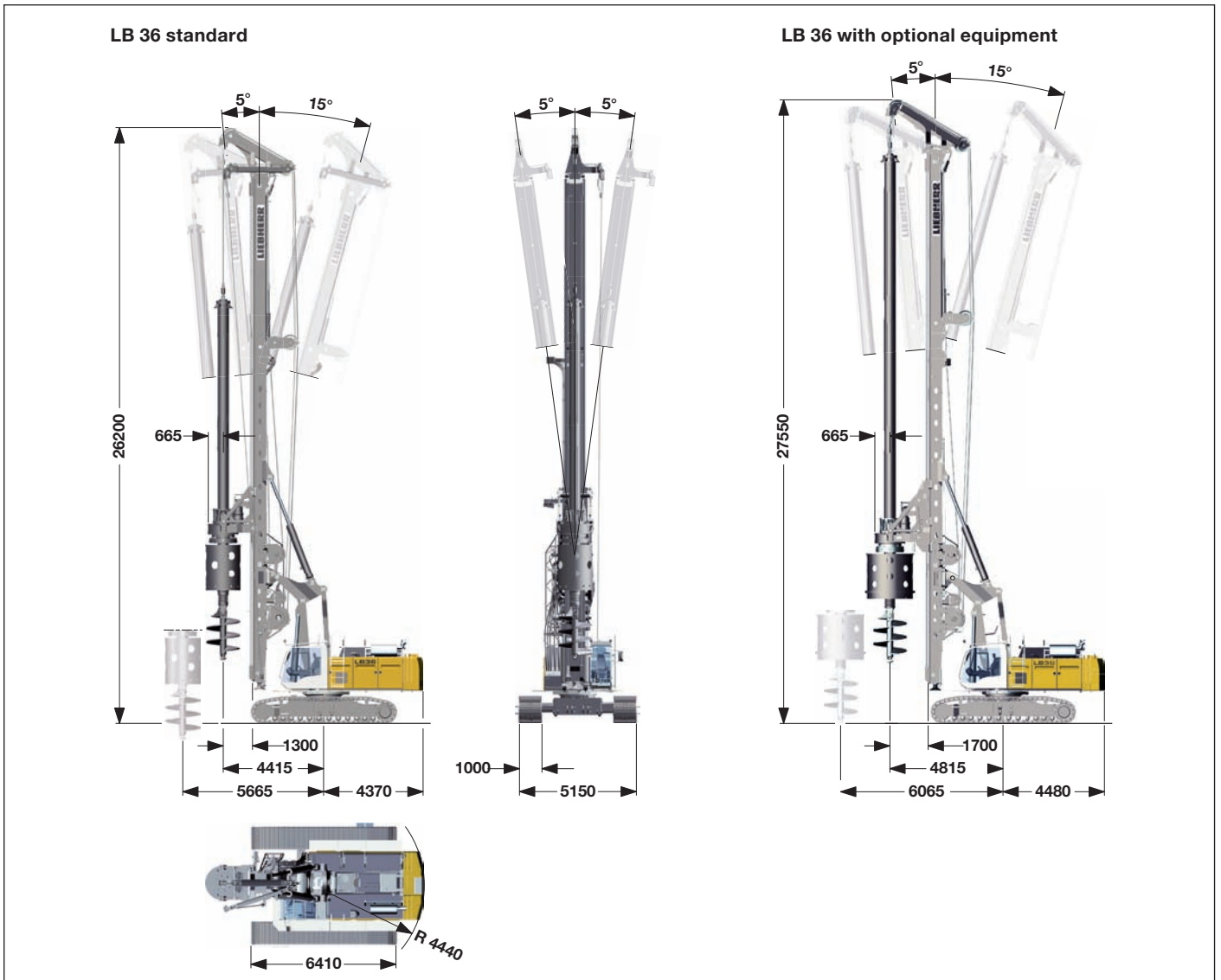
Concept and characteristics



- High engine output with automatic engine speed control
- Controlled entirely from cab
- Sturdy and solid rig design
- Solid parallel kinematics on the basic machine
- High pull and push forces
- High torque
- Completely self-rigging (no auxiliary machines required)
- Large range of working tools (all common drilling works can be performed)
- Stepless leader inclination 5° forward - 15° backward depending on type of equipment
- Automatic vertical alignment
- High alignment forces
- Simultaneous control of several movements via Load-sensing multi-circuit hydraulics
- Quick assembly of rotary possible through quick connection
- Equipment design according to latest European regulations and standards
- All components designed to fulfill the special requirements of a drilling rig
- High manufacturing quality through quality control by PDE®-system

Dimensions

Basic machine LB 36



Technical data

Total height	(27.55 m*)	26.2 m
Max. pull, leader on ground		400 kN
Max. torque		366 kNm
Stepless leader inclination		
Lateral inclination		± 5°
Forward inclination		5°
Backward inclination		15°

Operating weight

Total weight	with 900 mm 3-web shoes	(119.5 t*)	114.3 t
	with 1000 mm 3-web shoes	(120.2 t*)	115.0 t

The operating weight includes the basic machine (with rotary and Kelly bar MD 36/3/30) and 20.5 t (22.5 t*) counterweight.

*) With optional equipment.

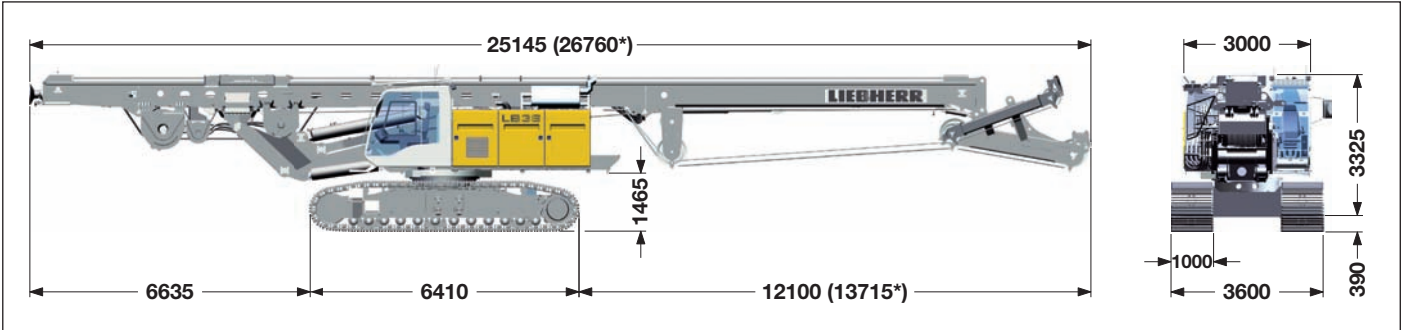
Transport dimensions and weights

Transport with leader

includes the basic machine (ready for operation) with leader, without working tools (such as rotary, Kelly bar etc.) and without counterweight.

Dimensions and weights

Weight complete without counterweight — (80 t*) 78.5 t

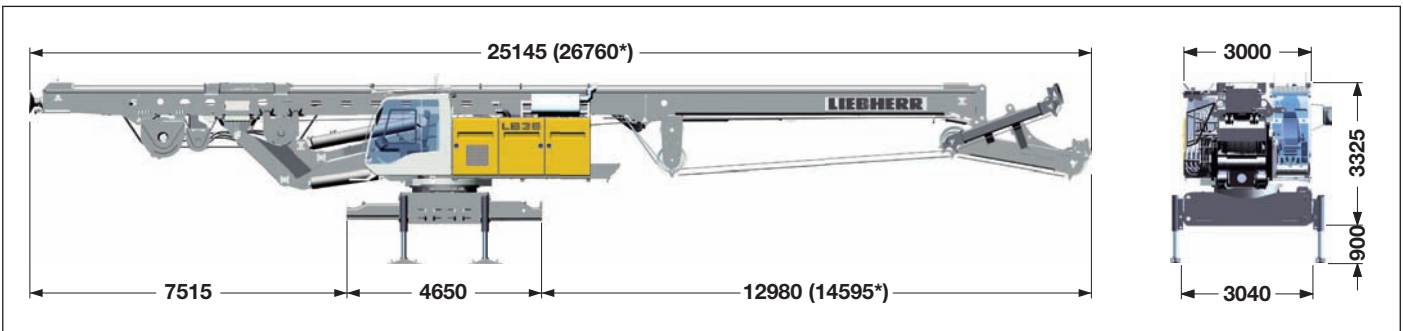


Transport with leader - without crawlers

includes the basic machine with jack-up system (ready for operation) with leader, without crawlers, without working tools (such as rotary, Kelly bar etc.) and without counterweight.

Dimensions and weights

Weight complete without counterweight — (61 t*) 59.5 t



Transport leader

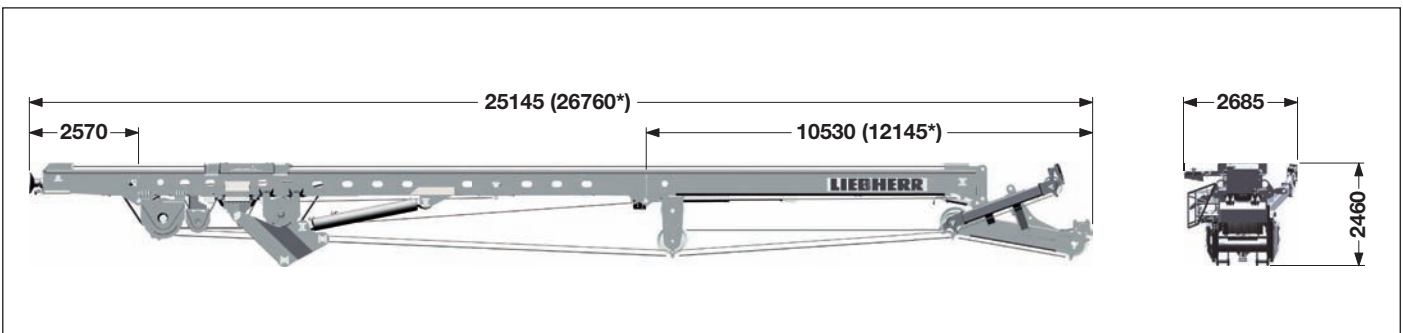
includes the leader without working tools (such as rotary, Kelly bar etc.).

Dimensions and weights

Weight complete — (28 t*) 26.5 t

Lower part of the leader — (1.8 t*) 1.8 t

Upper part of the leader with leader top — (6 t*) 4.9 t



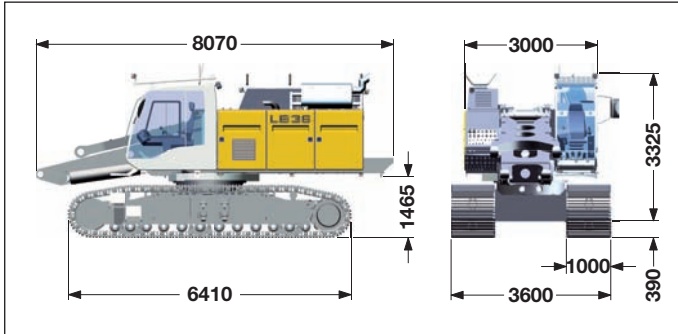
*) With optional equipment.

Transport dimensions and weights

Transport basic machine

ready for operation, without counterweight.

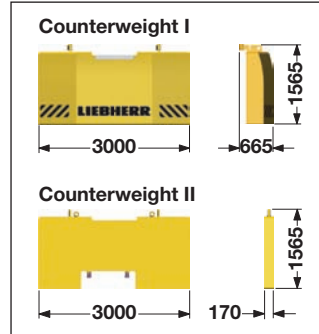
Transport weight (without jack-up system) ————— 52 t



Counterweight (Standard)

Counterweight I ——— 10.2 t

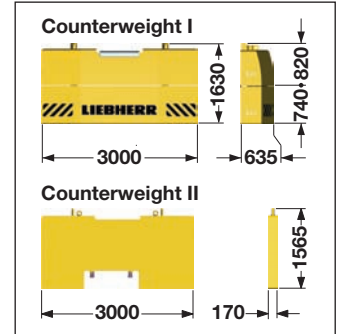
Counterweight II – 2x — 5.2 t



Counterweight (Optional)

Counterweight I – — 2x 6.0 t

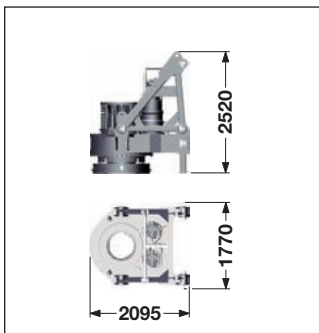
Counterweight II – 2x — 5.2 t



Rotary (Standard)

Transport weight

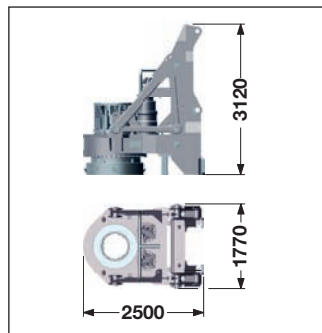
BA 360 ————— 9 t



Rotary (Optional)

Transport weight

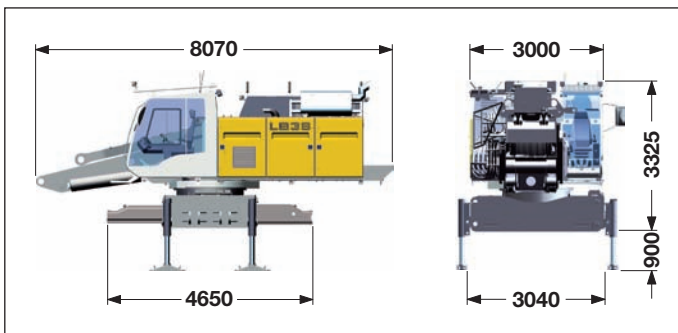
BA 360 ————— 10.8 t



Transport basic machine - without crawlers

ready for operation, without counterweight

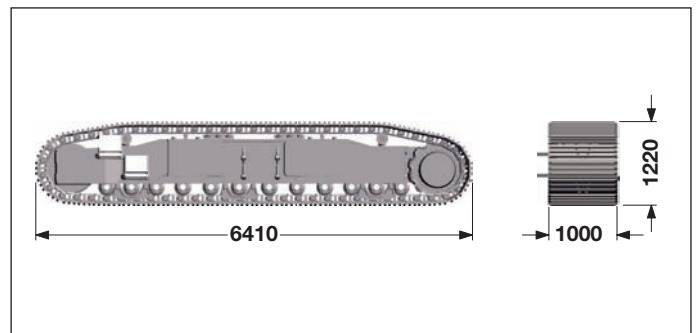
Transport weight (with jack-up system) ————— 33 t



Transport crawler

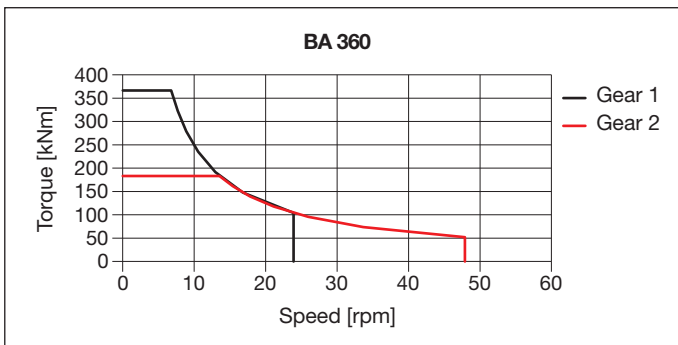
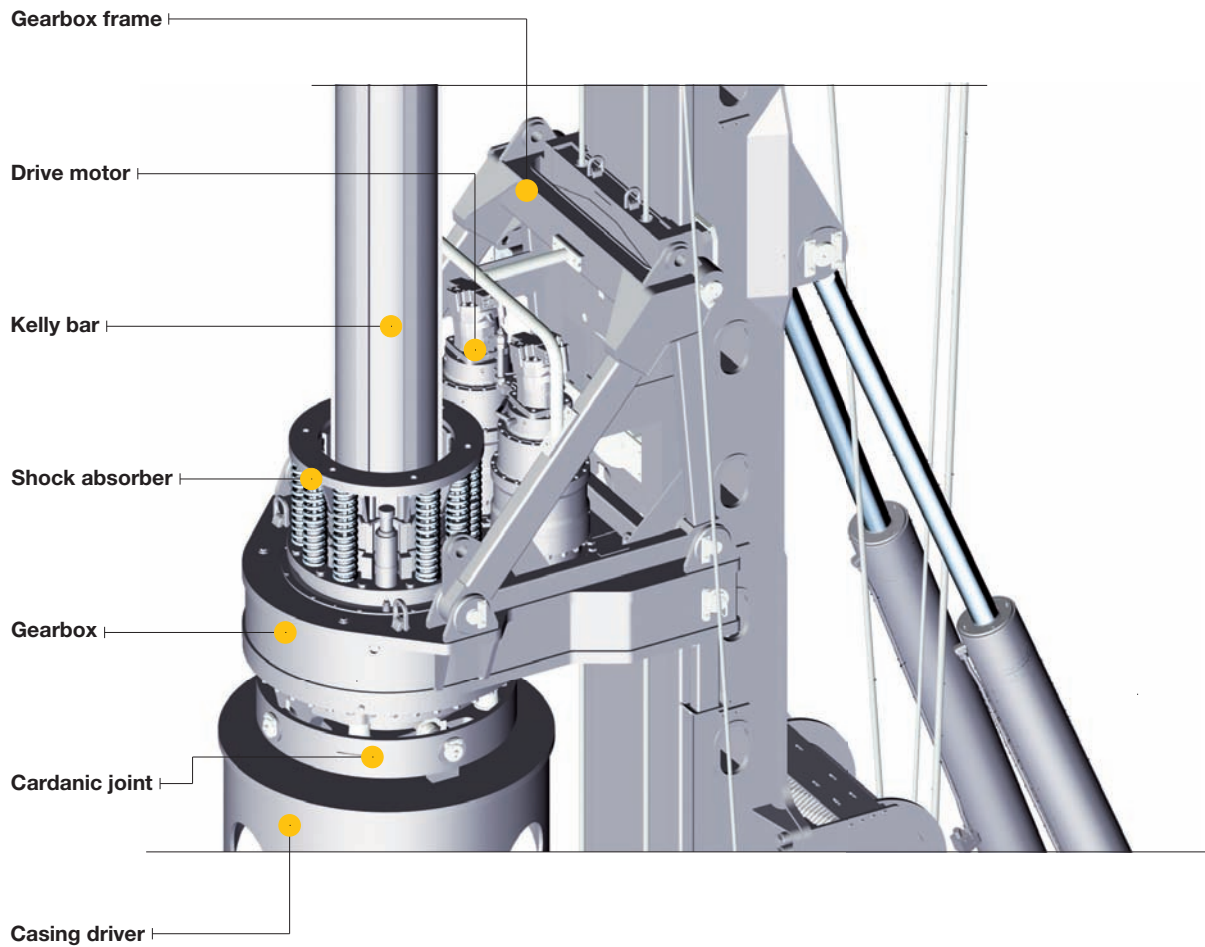
Crawler left ————— 10.1 t

Crawler right ————— 10.1 t



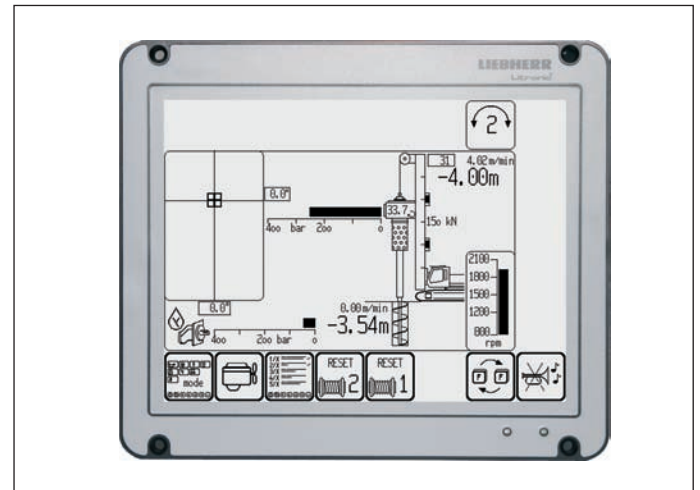
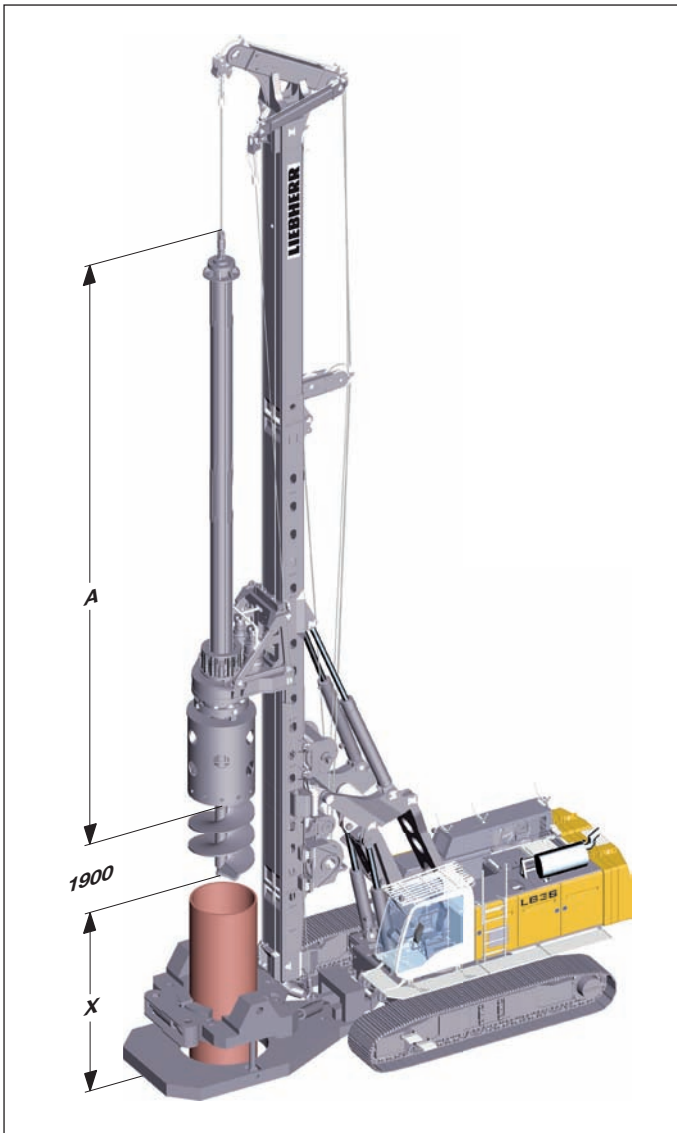
Weights can vary with the final configuration of the machine. The figures in this brochure may include options which are not within the standard scope of supply of the machine.

Rotary BA 360 with shock absorber



- 2-stage-gear drive for flexible adaptation to soil conditions
- Due to stepless speed control via joystick optimum and precise alignment and rock drilling is possible even at low speed levels; it is not required to preselect an operating mode
- Kelly shock absorber and rubber bearing relieve the material and reduce noise emission
- Thanks to the Kelly shock absorber the Kelly bar is guided at greater length
- Various drive adapters provide compatibility with other systems

Kelly drilling



Display for Kelly drilling

Technical data

Drilling drive - torque	1 st gear	366 kNm
Drilling drive - speed	1 st gear	24 rpm
Drilling drive - torque	2 nd gear	183 kNm
Drilling drive - speed	2 nd gear	48 rpm

Performance data

Max. drilling diameter*	2300 mm uncased
Max. drilling diameter*	2000 mm cased

*) Other drilling diameters available on request.

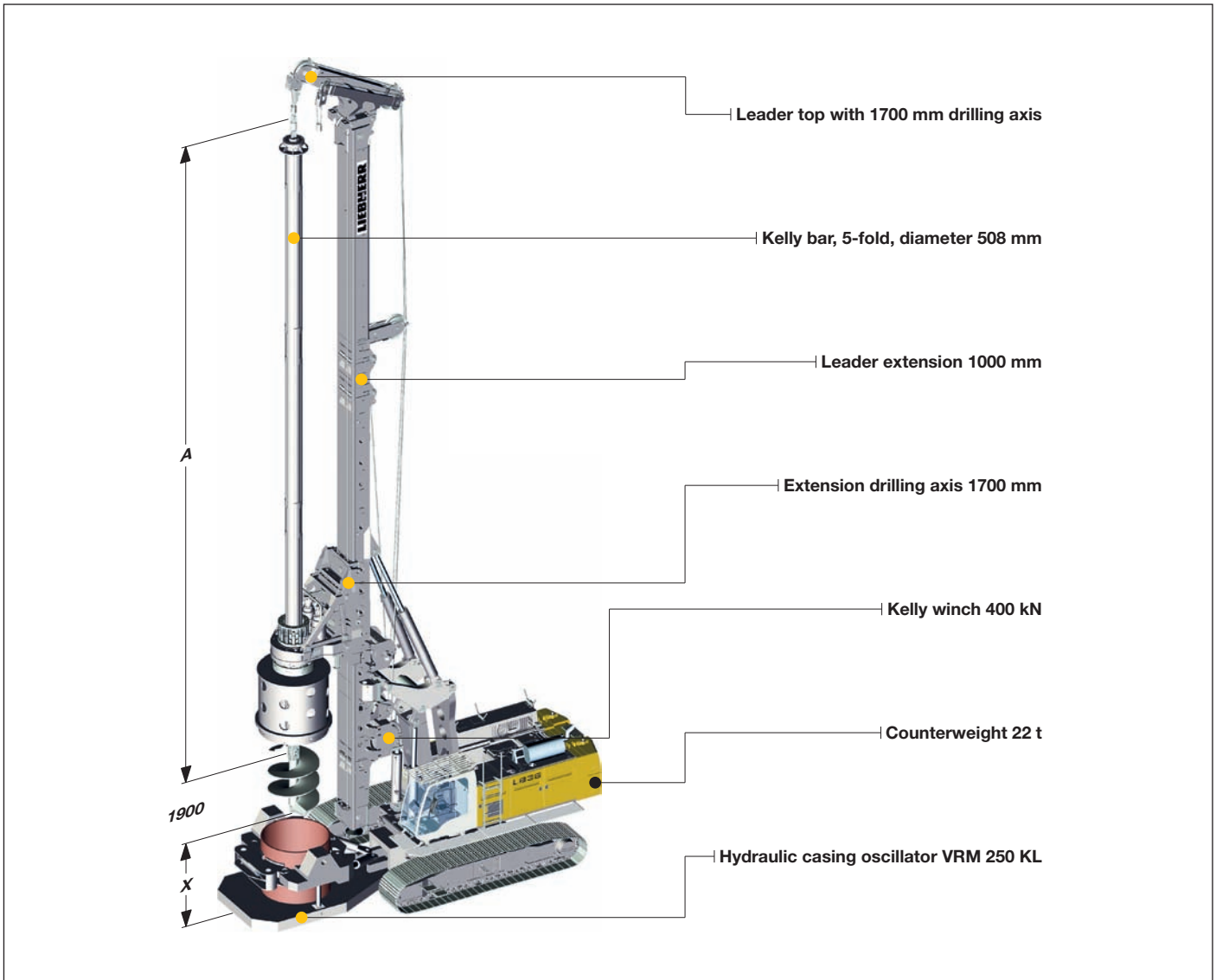
Kelly bars

	A	X	Drilling depth	Weight	Kelly Ø
	(mm)	(mm)	(m)	(t)	(mm)
MD 36/3/30	11900	9800	28.0	7.6	470
MD 36/3/36	13900	7800	34.0	8.8	470
MD 36/4/42	12950	8700	40.0	10.3	470
MD 36/4/48	14450	7200	46.0	11.5	470
MD 36/4/54	15950	5700	52.0	12.7	470
MD 36/4/60	17450	4200	58.0	13.9	470
MD 36/4/66	18950	2700	64.0	15.1	470

Other Kelly bars available on request.

When using a casing oscillator, value X has to be reduced by 1600 mm.

Kelly drilling with optional equipment



Technical data

Drilling drive - torque	1 st gear	366 kNm
Drilling drive - speed	1 st gear	24 rpm
Drilling drive - torque	2 nd gear	183 kNm
Drilling drive - speed	2 nd gear	48 rpm

Performance data

Max. drilling diameter*	3000 mm uncased
Max. drilling diameter*	2500 mm cased

*) Other drilling diameters available on request.

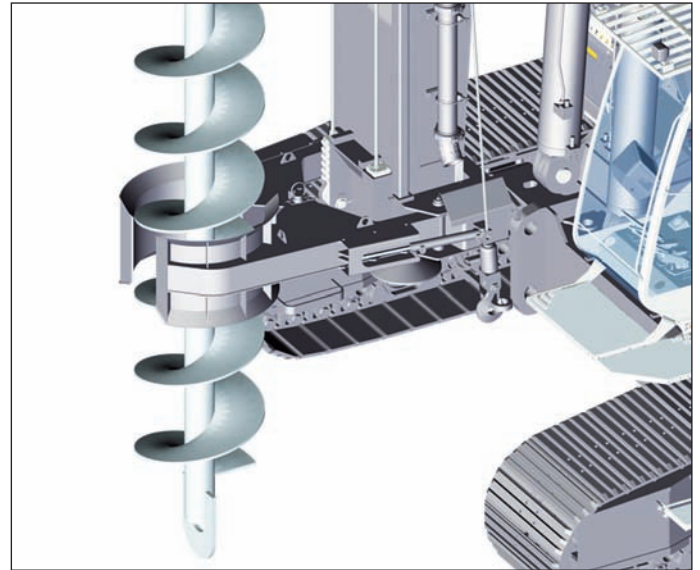
Other Kelly bars available on request.

When using a casing oscillator, value X has to be reduced by 1600 mm.

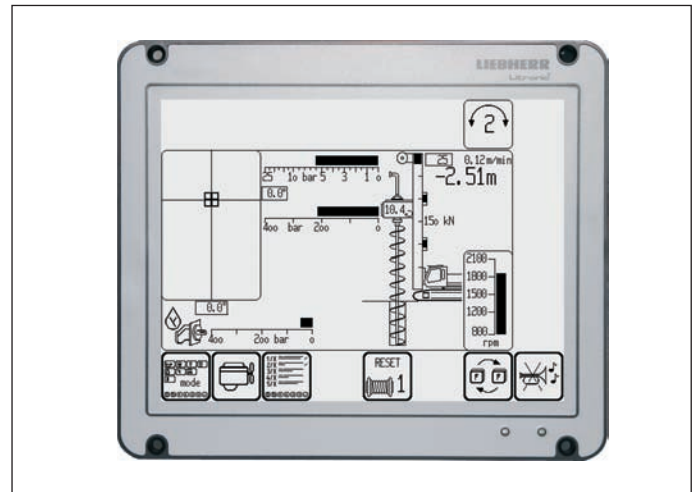
Kelly bars

	A	X	Drilling depth	Weight	Kelly Ø
	(mm)	(mm)	(m)	(t)	(mm)
MD 36/3/30	11900	11100	28.0	7.6	470
MD 36/3/36	13900	9100	34.0	8.8	470
MD 36/4/42	12950	10000	40.0	10.3	470
MD 36/4/48	14450	8500	46.0	11.5	470
MD 36/4/54	15950	7000	52.0	12.7	470
MD 36/4/60	17450	5500	58.0	13.9	470
MD 36/4/66	18950	4000	64.0	15.1	470
MD 36/4/72	20450	2500	70.0	16.3	470
MD 28/5/78	18150	4800	76.0	14.0	508
MD 28/5/84	19350	3600	82.0	15.0	508
MD 28/5/90	20550	2400	88.0	16.0	508

Continuous flight auger drilling



Auger with auger guide



Display for continuous flight auger drilling

Technical data

Drilling drive - torque	1 st gear	366 kNm
Drilling drive - speed	1 st gear	24 rpm
Drilling drive - torque	2 nd gear	183 kNm
Drilling drive - speed	2 nd gear	48 rpm

Performance data

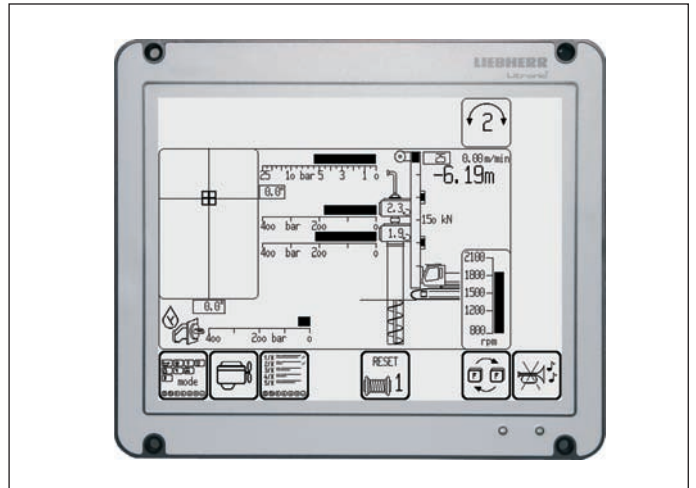
Drilling depth with auger cleaner*	16.9 m
Drilling depth without auger cleaner*	17.3 m
Drilling depth with 8 m Kelly extension, without auger cleaner	25.3 m
Max. pull force (crowd winch and Kelly winch)	1000 kN
Max. push force (weight of rotary and auger to be added)	200 kN
Max. drilling diameter**	1200 mm

*) Without Kelly extension

**) Other drilling diameters available on request.

Double rotary drilling

Model DBA 200



Display for double rotary drilling

Technical data

Drilling drive I - torque	1 st gear	195 kNm
Drilling drive I - speed	1 st gear	9 rpm
Drilling drive I - torque	2 nd gear	97 kNm
Drilling drive I - speed	2 nd gear	18 rpm
Drilling drive II - torque	1 st gear	103 kNm
Drilling drive II - speed	1 st gear	17 rpm
Drilling drive II - torque	2 nd gear	51 kNm
Drilling drive II - speed	2 nd gear	34 rpm
Max. drilling diameter*		620 mm
Max. drilling depth		17.8 m
Max. pull force		900 kN

*) Other drilling diameters available on request.

Technical description



Engine

Power rating according to ISO 9249, 350 kW (469 hp) at 1900 rpm

Engine type _____ Liebherr D 846 L A7

Fuel tank _____ 700 l capacity with continuous level indicator and reserve warning

Engine complies with NRMM exhaust certification EPA/CARB Tier 3 and 97/68 EC Stage III A.



Hydraulic system

The main pumps are operated by a distributor gearbox. Axial piston displacement pumps work in open circuits supplying oil only when needed (flow control on demand). The hydraulic pressure peaks are absorbed by the integrated automatic pressure compensation, which relieves the pump and saves fuel.

Pumps for working tools _____ 2x 350 l/min

Separate pump for kinematics _____ 180 l/min

Hydraulic oil tank _____ 800 l

Max. working pressure _____ 350 bar

The cleaning of the hydraulic oils occurs via an electronically monitored pressure and return filter. Any clogging is shown on the monitor in the cab. The use of synthetic environmentally friendly oil is also possible.



Crawlers

The track width of the undercarriage is changed hydraulically. Propulsion through axial piston motor, hydraulically released spring loaded multi-disc brake, maintenance free crawler tracks, hydraulic chain tensioning device.

Drive speed of telescopic undercarriage _____ 0 – 1.34 km/h

Track force _____ 745 kN

Width of 3-web track shoes _____ 900 mm

Transport width _____ 3500 mm

Option:

Width of 3-web track shoes _____ 1000 mm

Transport width _____ 3600 mm

2 speed hydraulic motor for higher travel speed



Swing

Consists of triple-row roller bearing with external teeth and one swing drive, fixed axial piston hydraulic motors, spring loaded and hydraulically released multi-disc holding brake, planetary gearbox and pinion. Selector for 3 speed ranges to increase swing precision. Swing speed from 0 – 3.5 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. A GSM modem allows for remote inquiry of machine data and error indications. 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.

Options:

- PDE®: Process data recording
- GSM modem



Kelly winch with freewheeling

Line pull effective (2nd layer) _____ 300 kN

Rope diameter _____ 34 mm

Line speed _____ 0-71 m/min

Option:

Line pull effective (2nd layer) _____ 400 kN

Rope diameter _____ 38 mm

Line speed _____ 0-59 m/min



Auxiliary winch

Line pull effective (1st layer) _____ 100 kN

Rope diameter _____ 20 mm

Line speed _____ 0-89 m/min



Rope crowd system

Crowd force (push/pull) _____ 400/400 kN

Line pull (effective) _____ 200 kN

Rope diameter _____ 28 mm

Travel of working tool _____ 18.5 m

Line speed _____ 0-70 m/min

The winches are 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. All line pull values are effective values. The efficiency factor of approx. 25% has already been deducted.

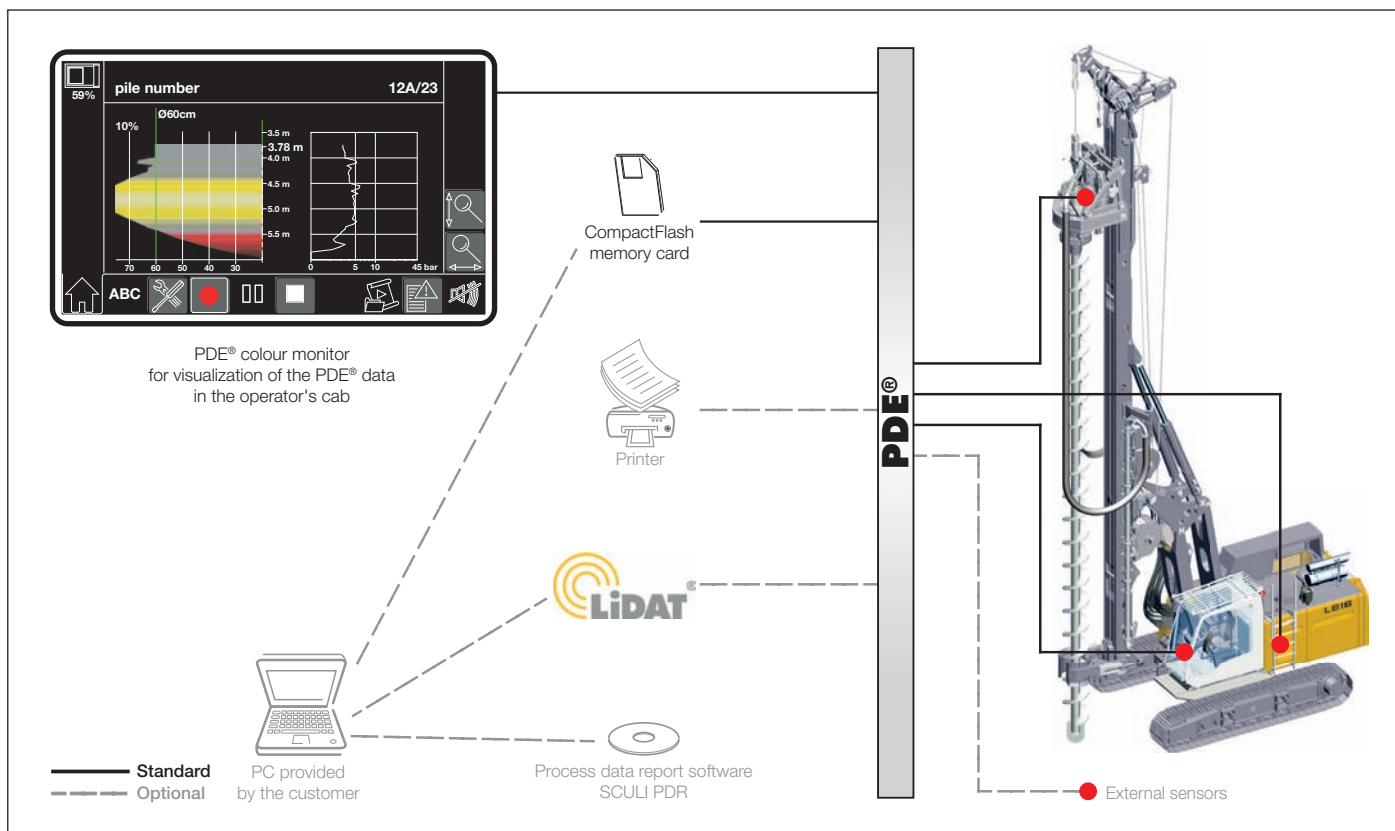


Noise emission

Noise emissions correspond with 2000/14/EC directive on noise emission by equipment used outdoors.

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, for the generation of a simple protocol as graphic file and/or for a printout directly in the operator's cab.

Process data reporting - PDR (additional equipment)

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

Recordings management - The recordings generated by the PDE® system can be imported and managed in SCULI 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 SCULI 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.

