Drilling Rig

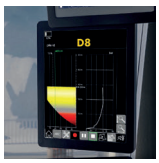
LB 20.1

EN

LB 2001.07

LIEBHERR

Concept and characteristics

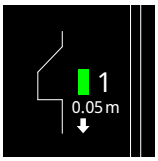


PDE®
Process Data Recording

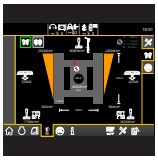
MyJobsite

LIPOS®
Positioning System

LiDAT®
Data Transmission



Kelly Visualization



Ground Pressure Visualization

Radio remote control

Concrete pump

The robust universal machine for a wide variety of applications:

- Kelly drilling
- Continuous flight auger drilling
- Full displacement drilling
- Double rotary drilling
- Soil mixing

Assistance systems:

- Cruise Control for all main functions
- Joystick control for all machine functions
- Automatic shake-off function for working tools
- Kelly Visualization
- Ground Pressure Visualization
- Radio remote control
- Radio remote control for concrete pump
- Drilling assistant (single-pass process)
- Leader inclination memory
- Display of auger filling level
- Kelly winch with freewheeling and with slack rope monitoring and prevention

Technical description

Diesel engine

Power rating according to ISO 9249	230 kW (308 hp) at 1700 rpm
Engine type	Liebherr D 944 A7-05
Fuel tank capacity	470 l with continuous level indicator and reserve warning
Exhaust certification	EU 2016/1628 Stage V EPA/CARB Tier 4f ECE-R.96 Power Band H non-certified emission standard

Hydraulic system

Hydraulic pumps	
for attachments	2x 272 l
for kinematics	130 l
Hydraulic oil tank capacity	500 l
Max. working pressure	385 bar
Hydraulic oil	electronic monitoring of all filters use of synthetic environmentally friendly oil possible

Crawlers

Drive system	with fixed axial piston hydraulic motors
Crawler side frames	maintenance-free, with hydraulic chain tensioning device
Brake	hydraulically released, spring–loaded multi–disc holding brake
Drive speed	0-1.8 km/h
Track force	463 kN
Grousers	Width 600 mm (option 800 mm)

Swing gear

Drive system	with fixed axial piston hydraulic motors, planetary gearbox, pinion
Swing ring	single row ball bearing with internal teeth and one swing drive
Brake	hydraulically released, spring–loaded multi–disc holding brake
Swing speed	0-3.3 rpm continuously variable

Kelly winch with freewheeling

Line pull effective	160 kN (2nd layer)
Rope diameter	24 mm
Rope speed	0-75 m/min

Kelly winch with freewheeling for Ultra Low Head

Line pull effective	110 kN (3rd layer)
Rope diameter	20 mm
Rope speed	0-91 m/min

Auxiliary winch

Line pull effective	50 kN (1st layer)
Rope diameter	14 mm
Rope speed	0-85 m/min

Crowd system

Crowd winch	
Crowd force	200/200 kN (push/pull)
Line pull effective	100 kN
Travel with standard leader between mechanical limit stops	12.1 m
Rope speed	0-90 m/min
Crowd cylinder for Ultra Low Head	
Crowd force	207/207 kN (push/pull)
Travel	2.8 m
Feed rate	16.5/13 m/min

Noise emission / vibration

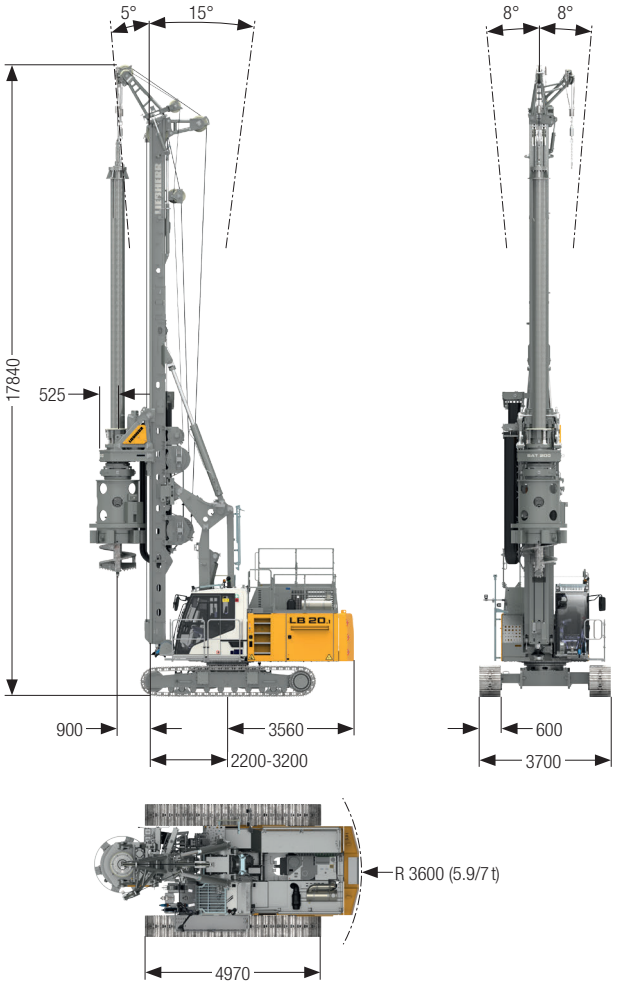
Noise emission	according to 2000/14/EC directive	
Emission sound pressure level L_{PA}	71.0 dB(A)	(in the cabin)
Guaranteed sound power level L_{WA}	105 dB(A)	(of the machine)
Vibration transmitted to the machine operator	< 2.5 m/s²	(to the hand-arm system)
	< 0.5 m/s²	(to the whole body)
Eco-Silent Mode (option)		
Guaranteed sound power level L_{WA}	-2 dB(A)	(of the machine)

Remarks:

- Illustrations showing the types of application (e.g. Kelly drilling, continuous flight auger drilling etc.) are examples only.
- 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.

Dimensions

Standard

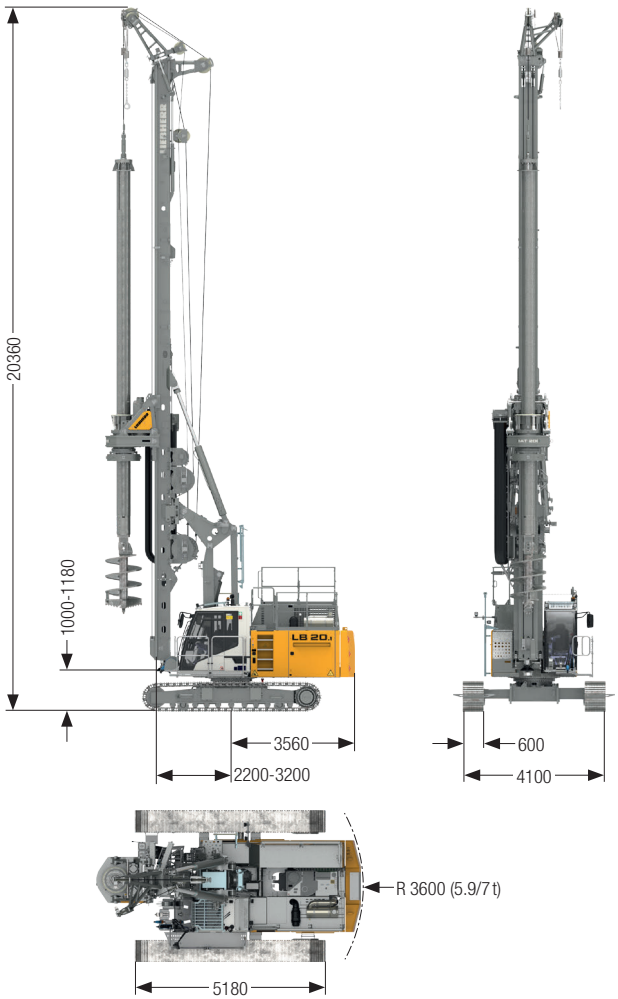


Operating weight

Total weight with undercarriage type 155	t	55.5

The operating weight includes the basic machine LB 20.1 with rotary, Kelly bar 20/3/24, 5.9 t counterweight and equipment for casing oscillator.

XL version

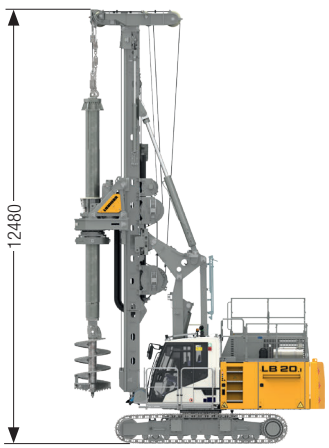


Operating weight

Total weight with undercarriage type 185	t	58.4

The operating weight includes the basic machine LB 20.1 with rotary, Kelly bar 20/4/36 and 7 t counterweight. Equipment for casing oscillator not included.

Low Head

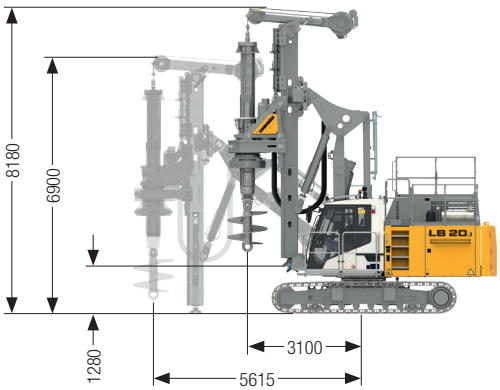


Operating weight

Total weight with undercarriage type 155	t	52.6

The operating weight includes the basic machine LB 20.1 with rotary, Kelly bar 20/3/15 and 5.9 t counterweight. Equipment for casing oscillator not included.

Ultra Low Head

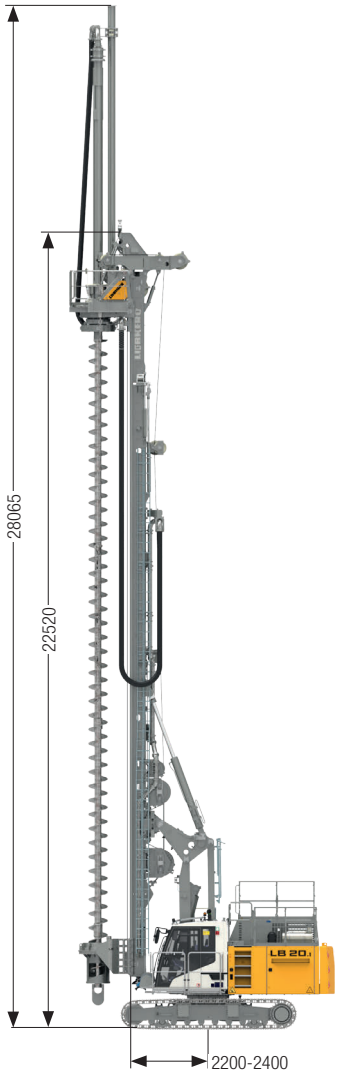


Operating weight

Total weight with undercarriage type 155	t	46.9

The operating weight includes the basic machine LB 20.1 with rotary, Kelly bar 16/3/18 and 5.9 t counterweight. Equipment for casing oscillator not included.

Single-Pass

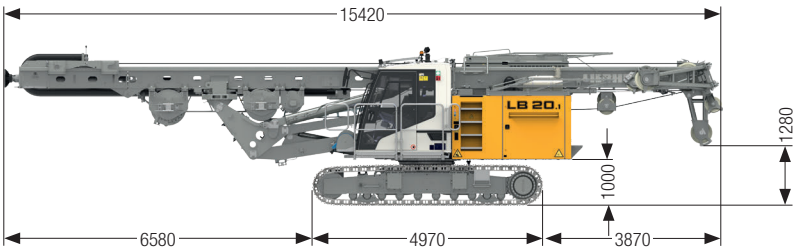


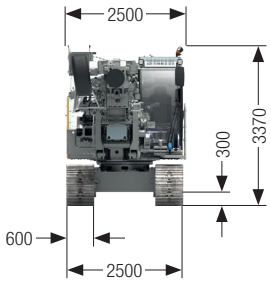
Operating weight

Total weight with undercarriage type 155	t	57.8

The operating weight includes the basic machine LB 20.1 with rotary, 6 m Kelly extension, drill rod 18 m, auger cleaner Ø 550 mm and 5.9 t counterweight. Equipment for casing oscillator not included.

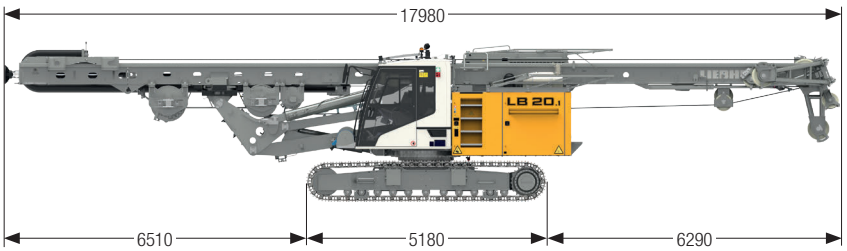
Transport dimensions and weights

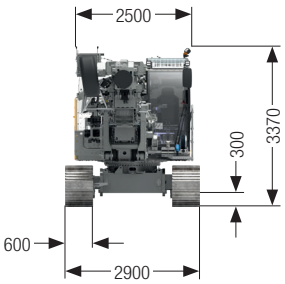




Standard

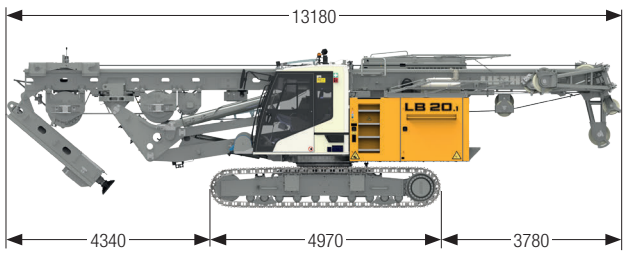
includes the basic machine with undercarriage type 155 (fully tanked and ready for operation) with leader, without attachments (such as rotary, Kelly bar etc.), without counterweight and without adapter for casing oscillator	t	38.0





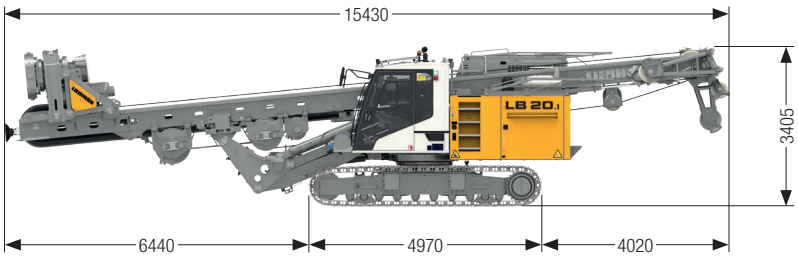
XL version

includes the basic machine with undercarriage type 185 (fully tanked and ready for operation) with leader, without counterweight, without BAT and without adapter for casing oscillator	t	38.7



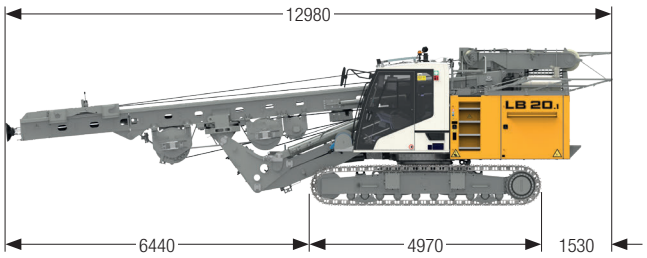
Leader lower part folded

includes the basic machine (fully tanked and ready for operation) with leader, without attachments (such as rotary, Kelly bar etc.), without counterweight and without adapter for casing oscillator	t	38.0



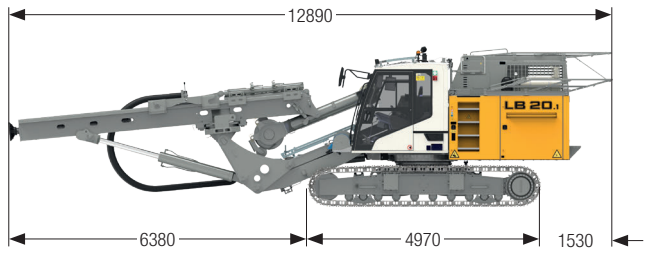
Standard with BAT

includes the basic machine (fully tanked and ready for operation) with leader, without attachments (such as Kelly bar etc.), without counterweight and without adapter for casing oscillator	t	43.0



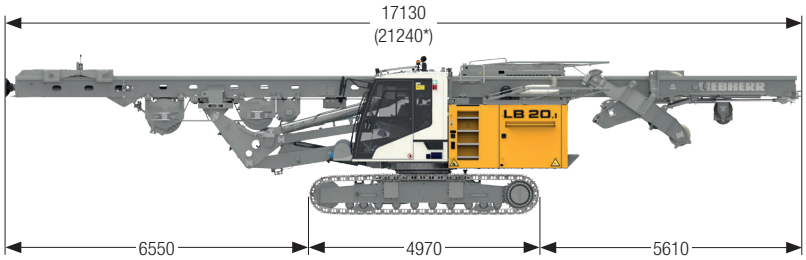
Low Head

includes the basic machine (fully tanked and ready for operation) with leader, without attachments (such as rotary, Kelly bar etc.), without counterweight and without adapter for casing oscillator	t	35.7



Ultra Low Head

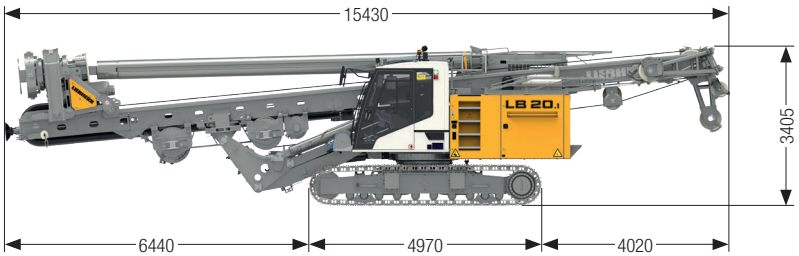
includes the basic machine (fully tanked and ready for operation) with leader, without attachments (such as rotary, Kelly bar etc.), without counterweight and without adapter for casing oscillator	t	32.3



Single-Pass

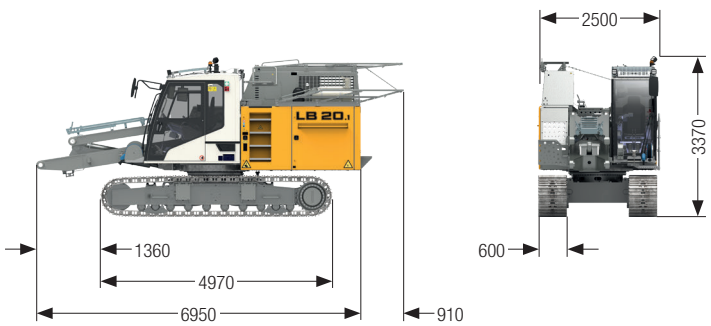
includes the basic machine (fully tanked and ready for operation) with leader, without attachments (such as rotary, Kelly bar etc.), without counterweight and without adapter for casing oscillator	t	39.3

* Transport length leader not folded



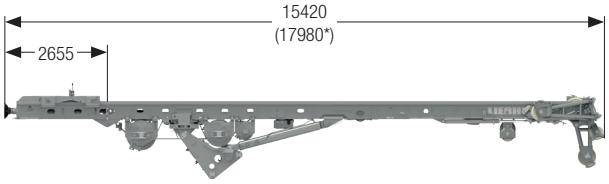
Standard with Kelly bar

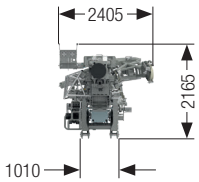
includes the basic machine (fully tanked and ready for operation) with leader and Kelly bar 20/3/21, without counterweight and without adapter for casing oscillator	t	47.2



Basic machine

with crawler side frames, without counterweight and without adapter for casing oscillator	t	24.8





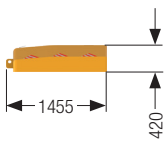
Leader versions

Standard leader	t	13.2
XL leader	t	13.9
Low Head	t	12.2
Ultra Low Head	t	7.5
Single-Pass	t	14.5

* Transport length XL leader

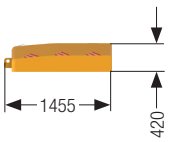
Options

Adapter for casing oscillator	t	0.7
Concrete supply line	t	0.6



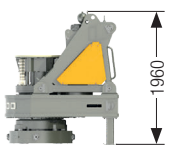
Rear counterweight

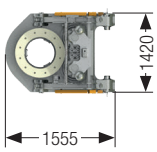
Weight	t	5.9



Rear counterweight

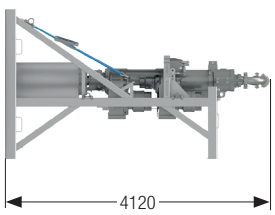
Weight	t	7.0

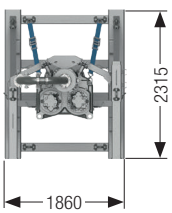




BAT 200

Transport weight	t	5.0



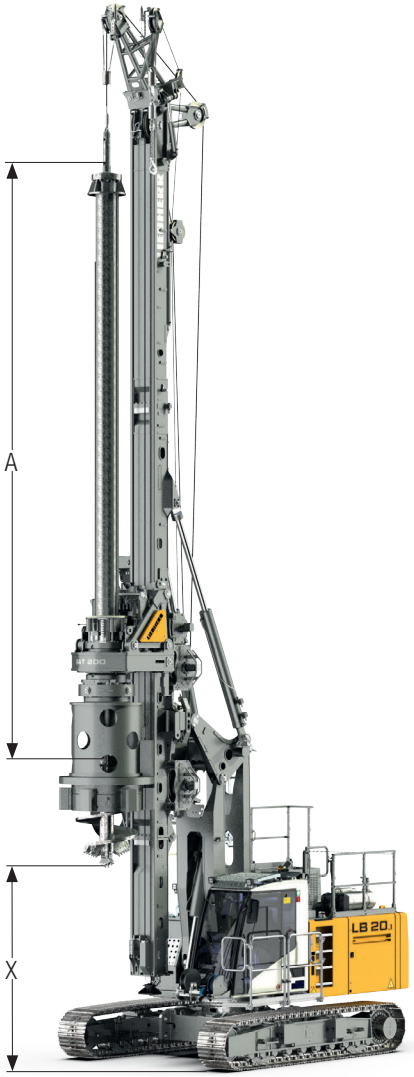


DBA 90

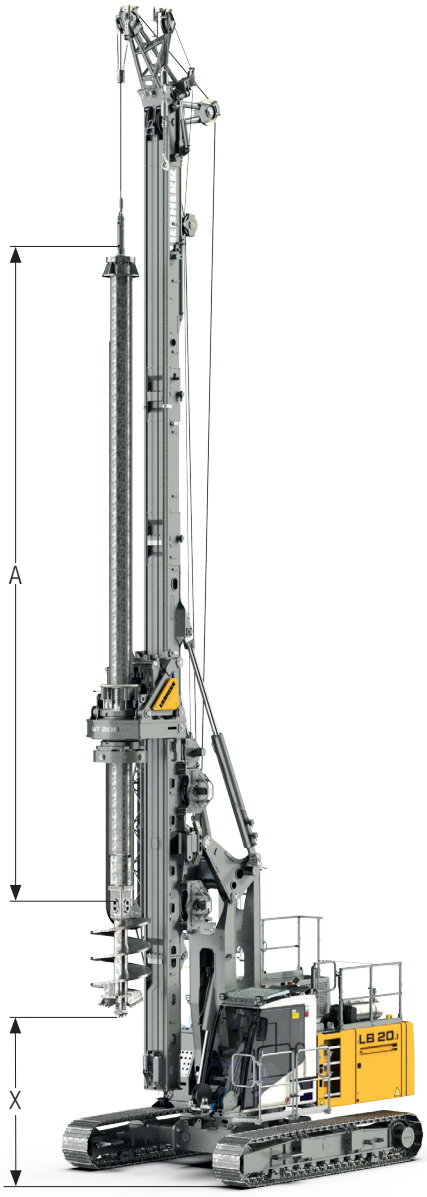
Transport weight	t	5.7

Kelly drilling

Standard



XL version



Performance data

Rotary drive - torque	kNm	198
Rotary drive - speed	rpm	52
Max. drilling diameter cased*	mm	1200
Max. drilling diameter uncased	mm	1500

Above applications are sample illustrations. Other drilling diameters available on request.

* Depends on the design of the casing driver.

Drilling depths

Technical data Kelly bars

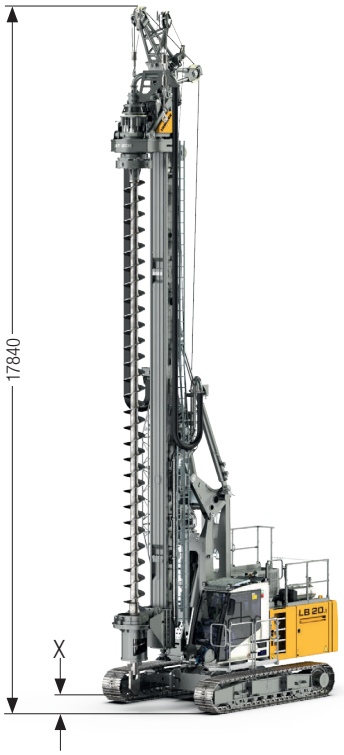
Kelly bars			Drilling depths							
			Ultra Low Head		Low Head		Standard		XL version	
Model	**Length A** [mm]	**Weight** [t]	**X** [m]	**Depth** [m]	**X** [m]	**Depth** [m]	**X** [m]	**Depth** [m]	**X** [m]	**Depth** [m]
16/3/10	4900	2.3	1.2[1]	8.8[1]	-	-	-	-	-	-
16/4/13	4765	2.7	1.3	11.7	-	-	-	-	-	-
20/3/15	6970	3.2	-	-	1.1	13.8	6.5	13.8	9.0	13.8
20/3/18	7800	3.5	-	-	0.3[1]	16.8[1]	5.7	16.8	8.2	16.8
20/2/18	10500	3.6	-	-	-	-	3.0	16.8	5.5	16.8
20/3/21	8950	4.0	-	-	-	-	4.5	19.8	7.0	19.8
20/3/24	9950	4.4	-	-	-	-	3.5	22.8	6.0	22.8
20/3/27	10800	4.6	-	-	-	-	2.7	25.8	5.2	25.8
20/3/30	11800	4.9	-	-	-	-	1.7	28.8	4.2	28.8
20/3/33	12800	5.2	-	-	-	-	0.7[1]	31.8[1]	3.2	31.8
20/4/36	11265	6.2	-	-	-	-	2.2	34.8	4.7	34.8
20/4/42	12855	6.9	-	-	-	-	0.6[1]	40.9[1]	3.1	40.9
20/4/48	14200	8.2	-	-	-	-	-	-	1.7	46.8

[1] Installation only possible using auxiliary equipment

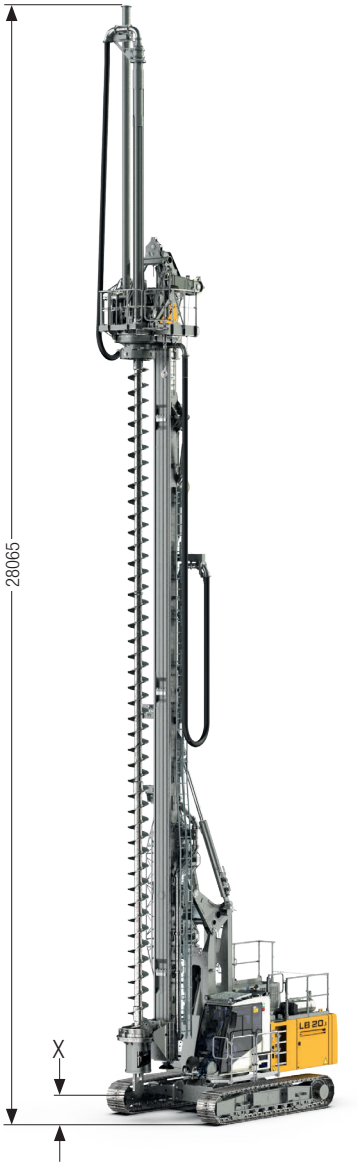
Other Kelly bars available on request
When using a casing oscillator, value X must be reduced by 1200 mm.
When using a Kelly bar guide, value X has to be reduced by 550 mm.
Length of drilling tool 1900 mm
Length of drilling tool Ultra Low Head 1200 mm

Continuous flight auger drilling

Standard



Single-Pass



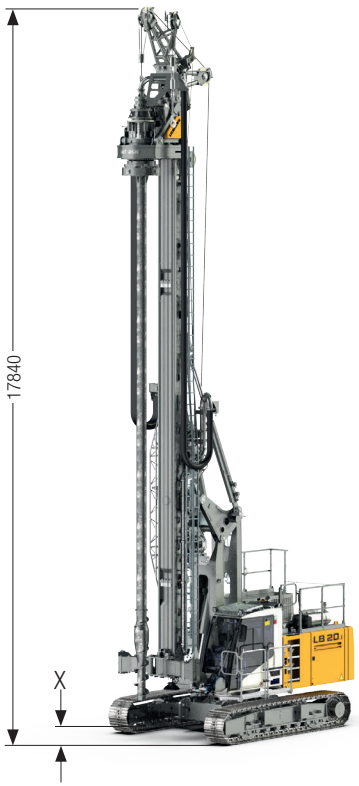
Performance data

Rotary drive - torque	kNm	180			
Rotary drive - speed	rpm	52			
Max. drilling diameter*	mm	800			
		Low Head	Standard	XL version	Single-Pass
Drilling depth without Kelly extension	m	6.6	10.6	13.1	15.6
Drilling depth with 6 m Kelly extension	m	-	-	-	21.6
Max. pull force	kN	360	360	360	520

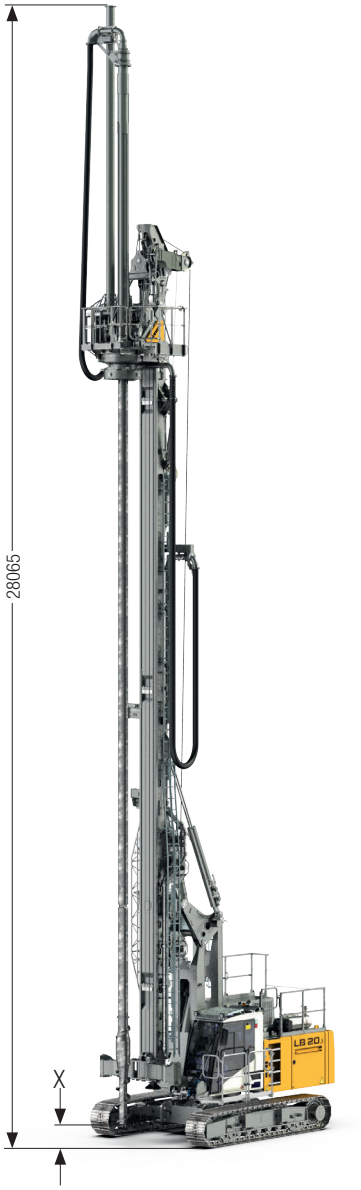
Above drilling depths take into account that an auger cleaner is used and the cardan joint has been removed.
Above drilling depths are valid for the use of standard tools and for an X value of 445 mm (see above illustration).
* Other drilling diameters available on request

Full displacement drilling

Standard



Single-Pass



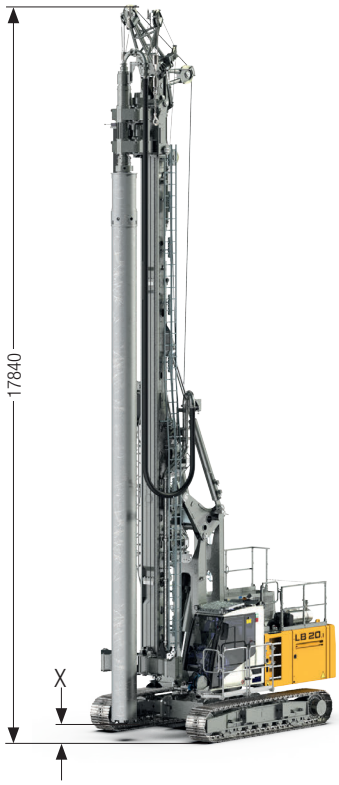
Performance data

Rotary drive - torque	kNm	180			
Rotary drive - speed	rpm	52			
Max. drilling diameter*	mm	500			
		Low Head	Standard	XL version	Single-Pass
Drilling depth without Kelly extension	m	6.9	10.9	13.4	15.5
Drilling depth with 6 m Kelly extension	m	-	-	-	21.5
Max. pull force	kN	360	360	360	520

Above drilling depths take into account that an auger cleaner is used and the cardan joint has been removed.
Above drilling depths are valid for the use of standard tools and for an X value of 1045 mm (see above illustration).
* Other drilling diameters available on request

Double rotary drilling

DBA 90



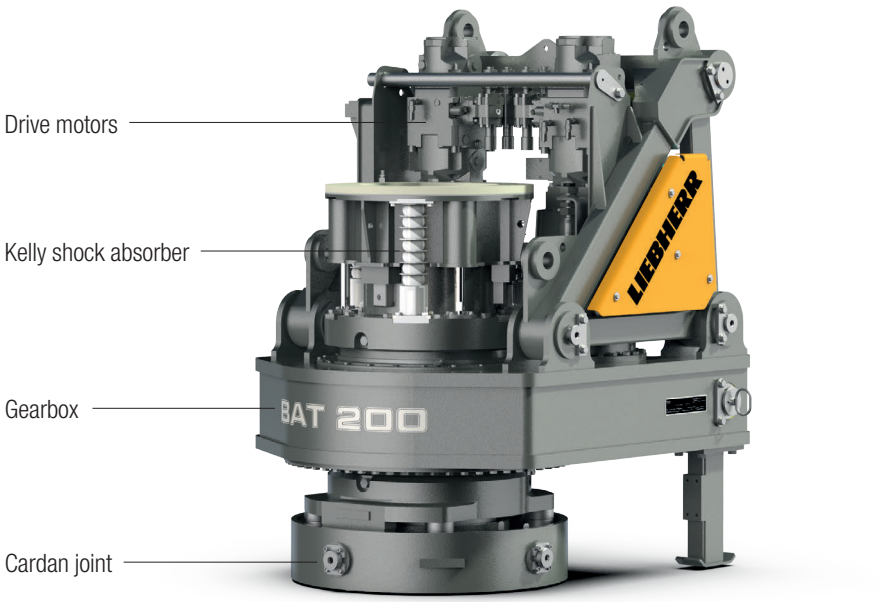
Performance data

Rotary drive I - torque	kNm	0-90		
Rotary drive I - speed	rpm	0-32		
Rotary drive II - torque	kNm	0-68		
Rotary drive II - speed	rpm	0-44		
Max. drilling diameter*	mm	508		
		Low Head	Standard	XL version
Drilling depth	m	7.5	11.5	14.0
Max. pull force	kN	360	360	360

Above drilling depths are valid for the use of standard tools and for an X value of 480 mm (see above illustration). Due to differences in the max. admissible load capacities, the combinations of drilling depth and drilling diameter may be limited.

* Other drilling diameters available on request

BAT 200

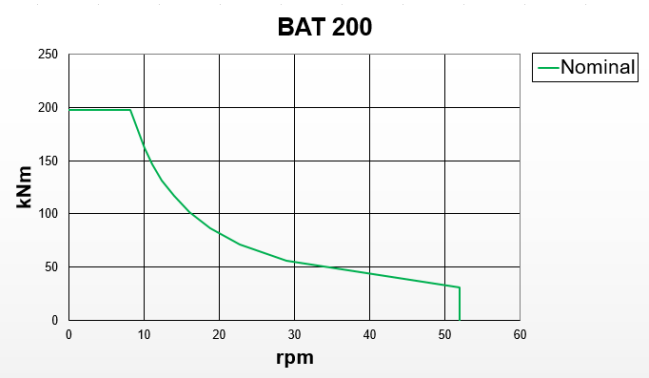


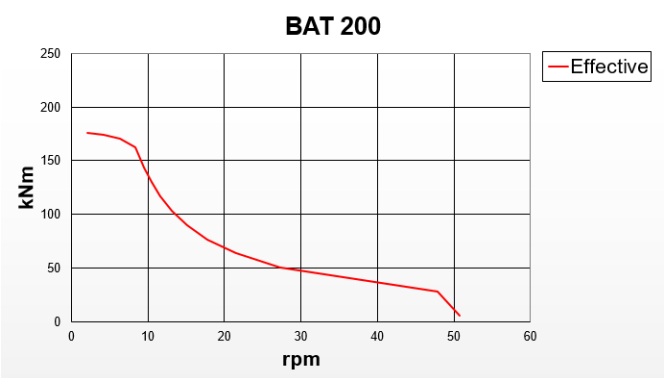
Kelly shock absorber:
- Newly developed Kelly shock absorber for highest demands
- Possibility of adjusting the strength of the Kelly shock absorber for different Kelly bar weights

Automatic gearbox for best operating comfort:
- No stopping required to change gears
- No interruption of the drilling process
- Continuous optimization of speed

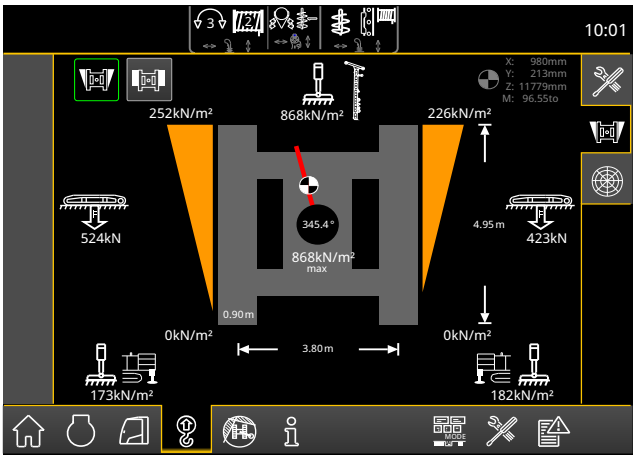
Highest availability through easy set-up:
- No mechanical shift gearbox
- Low maintenance requirements

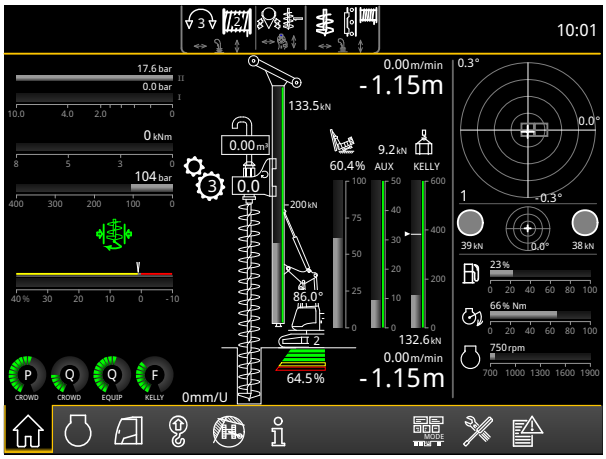
Flexibility through modular design:
- Exchangeable cardan joint for other casing drivers
- Exchangeable drive adapters for use of other Kelly bars
- Quickly exchangeable equipment for other methods of operation





Ground Pressure Visualization

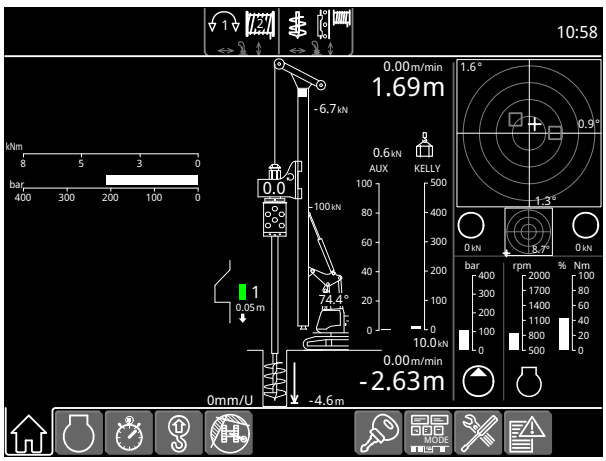




Features:
- The actual ground pressure is calculated in real time
- The maximum admissible ground pressure can be individually predefined
- The utilization is continuously calculated and displayed on the monitor in the operator's cab
- Audible and visual warnings when the predefined values are approached

Your benefits:
- Increased safety on the jobsite due to consideration of prevailing ground conditions
- Higher operator comfort thanks to clearly displayed information and warning signals
- Prevention of critical or stressful situations before they occur
- User-friendly and intuitive handling in the operator's cab

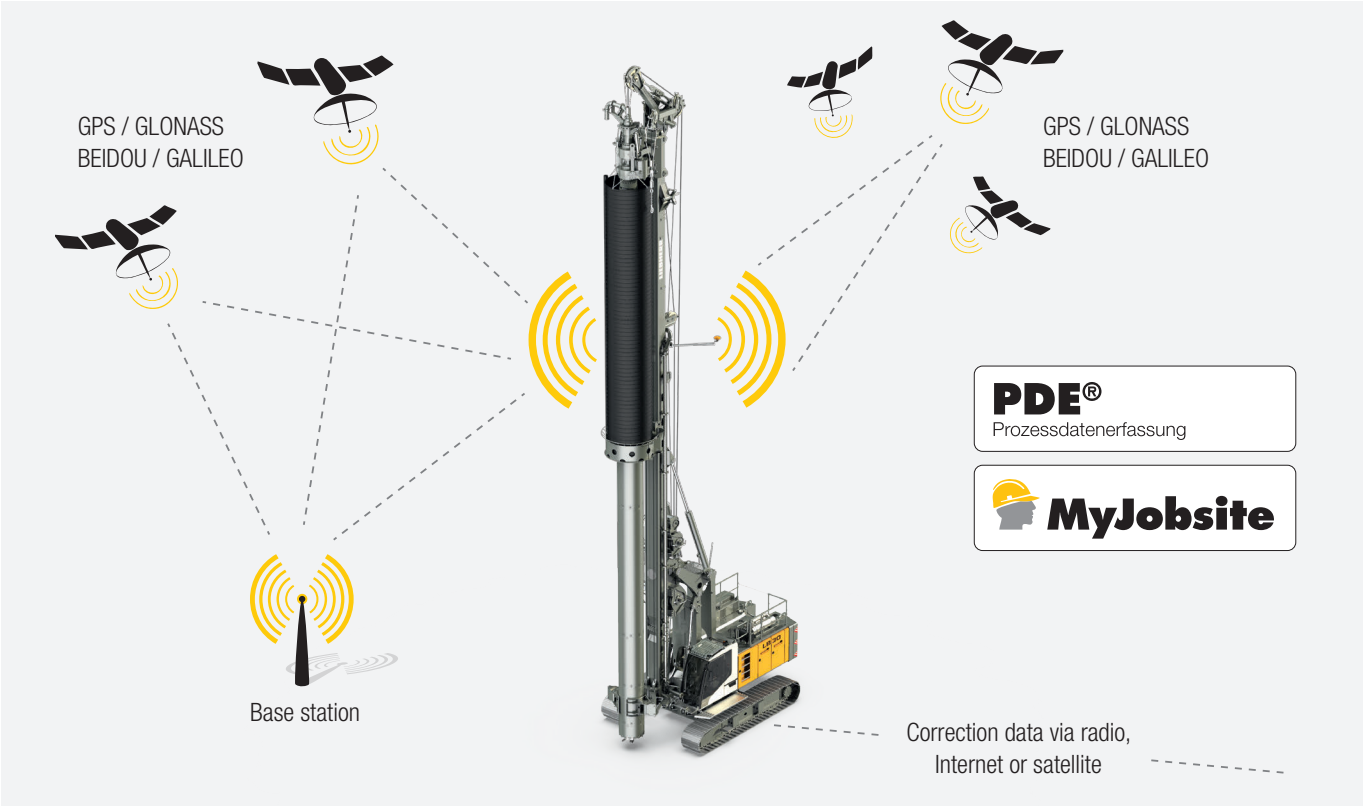
Kelly Visualization



Your benefits:
- Time saving: the operator no longer needs to search for the interlocking recesses
- Higher availability: the machine needs less repair and maintenance work
- More safety: correct locking prevents damage to the Kelly bar
- Cost reduction: smooth operation results in higher performance and less wear

LIPOS®

Liebherr Positioning System



DGNSS – Differential Global Navigation Satellite System

Via pre-installed components, LIPOS® enables the direct integration of machine control systems from Trimble or Leica in the process data recording PDE® and reporting of Liebherr deep foundation machines. These systems are based on modern DGNSS technology (Differential Global Navigation Satellite System) and so achieve the best possible conditions for a precise and efficient positioning of Liebherr machines and their attachment tools.

Further info

- Intelligent mounting bracket design for the antennae on the leader for optimum signal quality
- Pinpoint precision of the drilling and piling work in accordance with a digital drilling plan
- Recording of the drilling points and work processes through the process data recording system PDE®
- Automatic transmission of the data to MyJobsite for visualisation and analysis
- Generation of comprehensive and understandable jobsite reports

The positioning system LIPOS® is fully integrated in the existing IT solutions from Liebherr and compatible with a wide variety of deep foundation machines. The preparation for Trimble or Leica, as well as the machine-based complete system* from Trimble is obtainable from Liebherr.

* without correction data solution (e.g. base station, VRS, or similar), measuring devices and Cloud solutions of other manufacturers

The Liebherr Group of Companies

Wide Product Range
The Liebherr Group is one of the largest construction equipment manufacturers in the world. Liebherr's high-value products and services enjoy a high reputation in many other fields. 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 acknowledged quality, Liebherr products offer a maximum of customer benefits in practical applications.

State-of-the-art Technology
To provide consistent, top quality products, Liebherr attaches great importance to each product area, its components and core technologies. Important modules and components are developed and manufactured in-house, for instance the entire drive and control technology for construction equipment.

Worldwide and Independent
Hans Liebherr founded the Liebherr family company in 1949. Since then, the family business has steadily grown to a group of more than 130 companies with nearly 44,000 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.

www.liebherr.com

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