

**Technical data**  
**Rotary drilling rig**

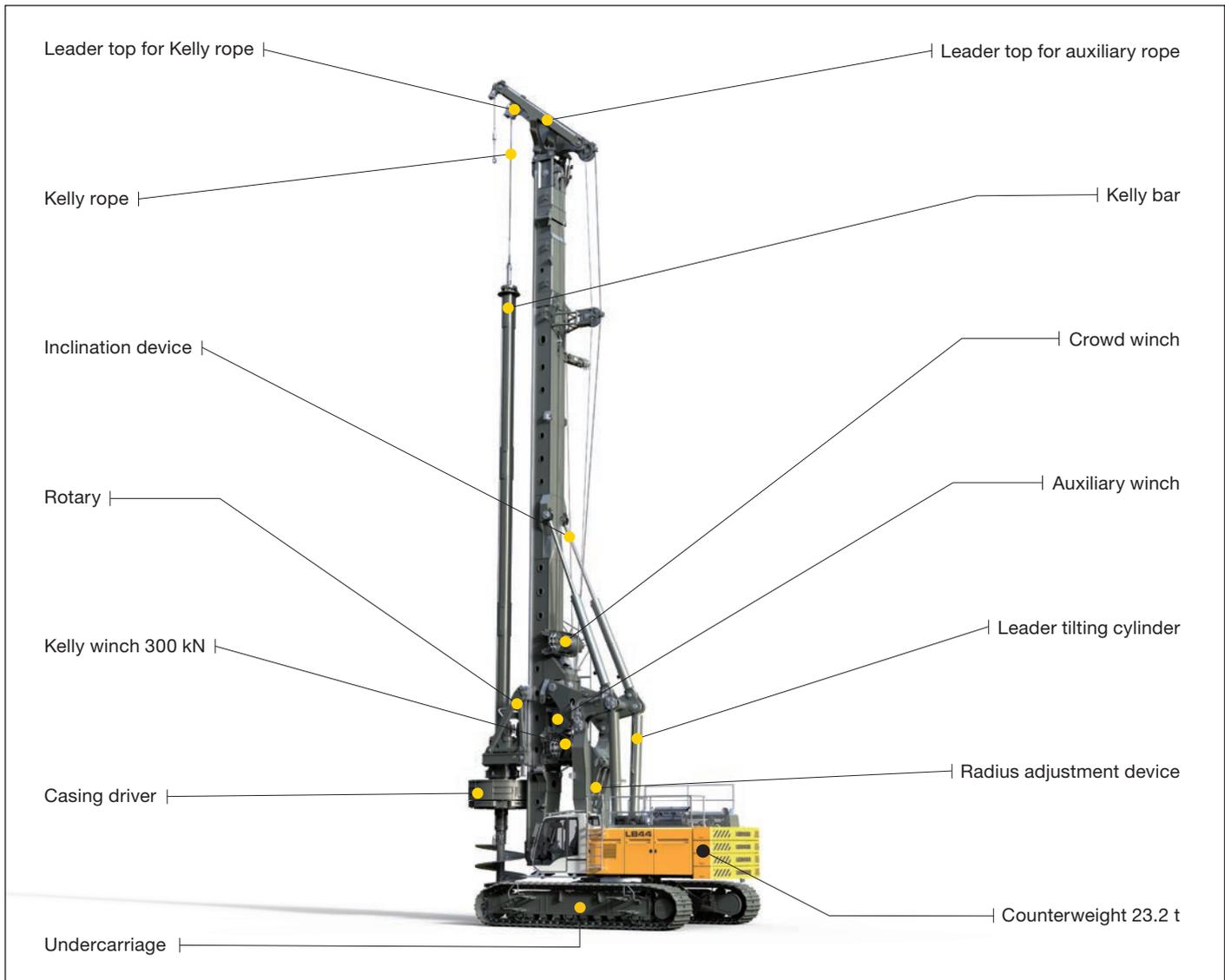
**LB44-510**  
Litronic®



**LIEBHERR**

# Concept and characteristics

## LB 44



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

- Kelly drilling
- Auger drilling
- Full displacement drilling
- Double rotary drilling

The solid undercarriage offers excellent stability and low ground bearing pressure.

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 and, as an option, forward.

The rigid leader absorbs high torque and is fitted with a rope crowd system for high pull forces.

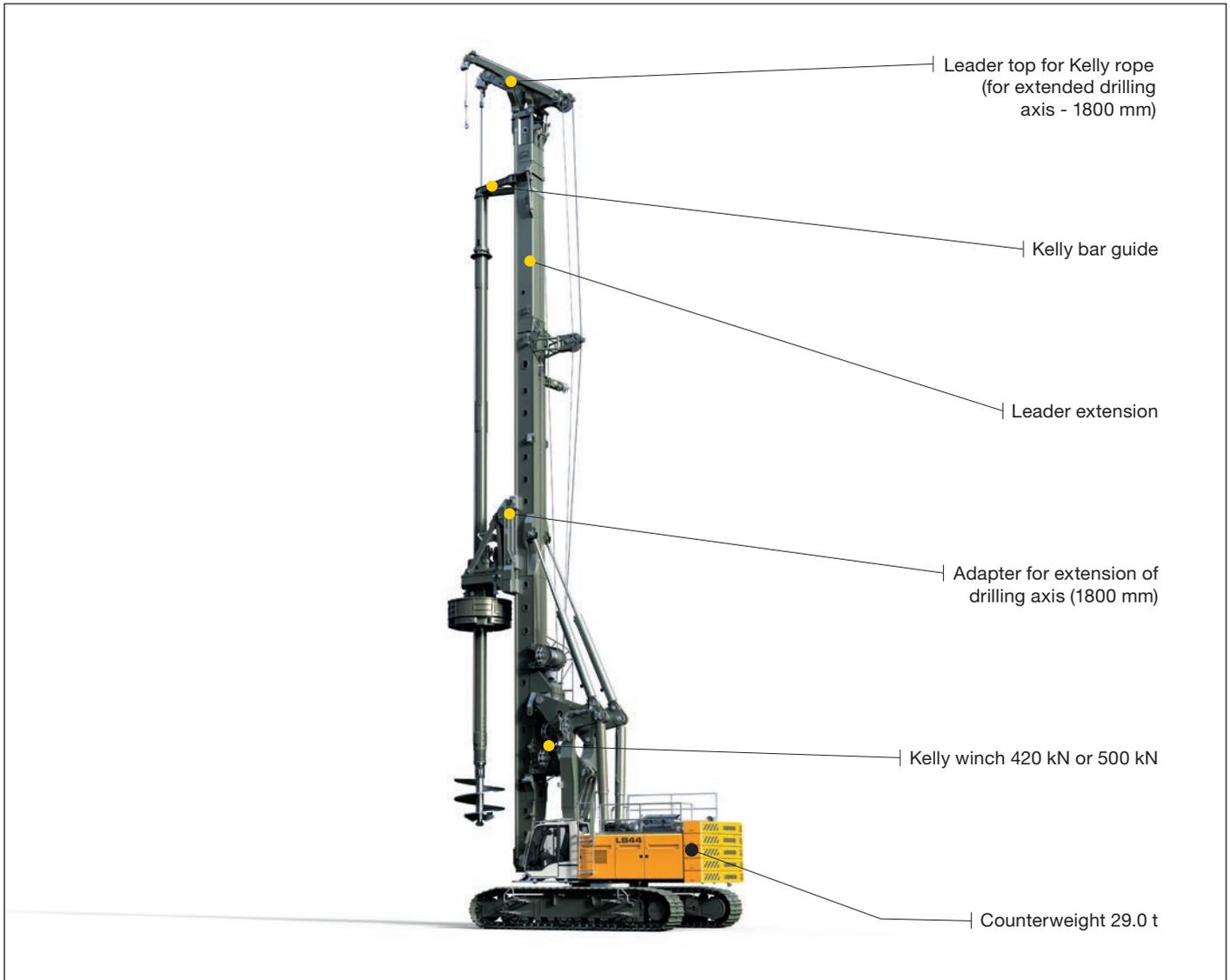
All winches are mounted on the leader, which provides a direct view of the main winch from the operator's cab.

The rotary drive of the BAT series combines exceptional torque with optimum operating comfort.

The powerful Liebherr diesel engine is low in emission and economical through SCR technology.

# Concept and characteristics

## LB 44 with optional equipment



The Litronic control with assistance systems supports the operator:

- Cruise Control for the drilling process
- Joystick control for all machine functions
- Automatic shake-off function for working tools
- Leader inclination memory etc.

Sophisticated solutions provide safe operation and maintenance of the machine.

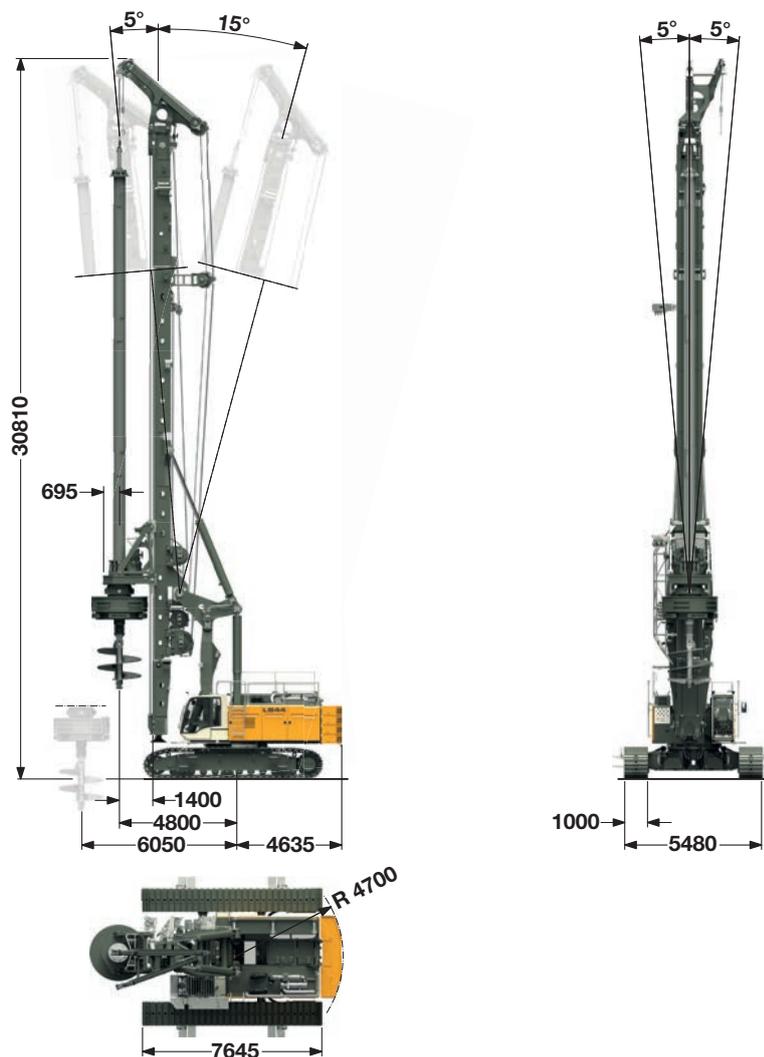
- Cab design for optimum visibility
- Acoustic and optic warning
- Walkways on the uppercarriage
- Safety rails on top of the uppercarriage
- Rear and side view cameras etc.

Liebherr Kelly bars feature strongly overlapping elements resulting in less wear.

Precise and robust Liebherr casings and drilling tools provide excellent drilling performance.

# Dimensions

## Basic machine LB 44



### Technical data LB 44

Total height	30.81 m
Max. pull, leader on ground	560 kN
Continuous rig inclination adjustment	
Lateral inclination	± 5°
Forward inclination	5°
Backward inclination	15°

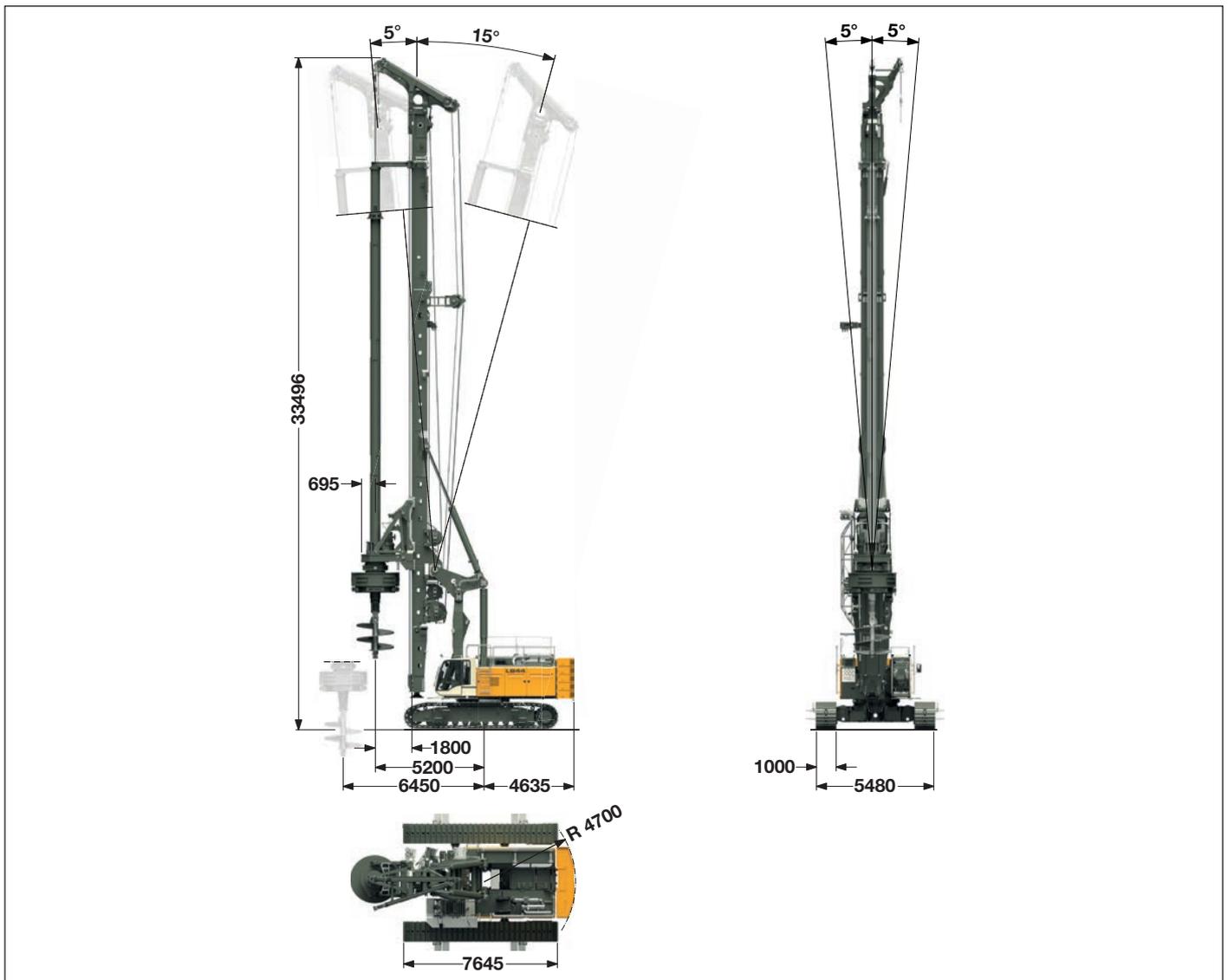
### Operating weight LB 44

Total weight with 1000 mm 2-web shoes	155.0 t
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The operating weight includes the basic machine LB 44 (with rotary and Kelly bar MD 36/3/30) and 23.2 t counterweight, without equipment for casing oscillator.

# Dimensions

## Basic machine LB 44 with optional equipment



### Technical data LB 44 with optional equipment

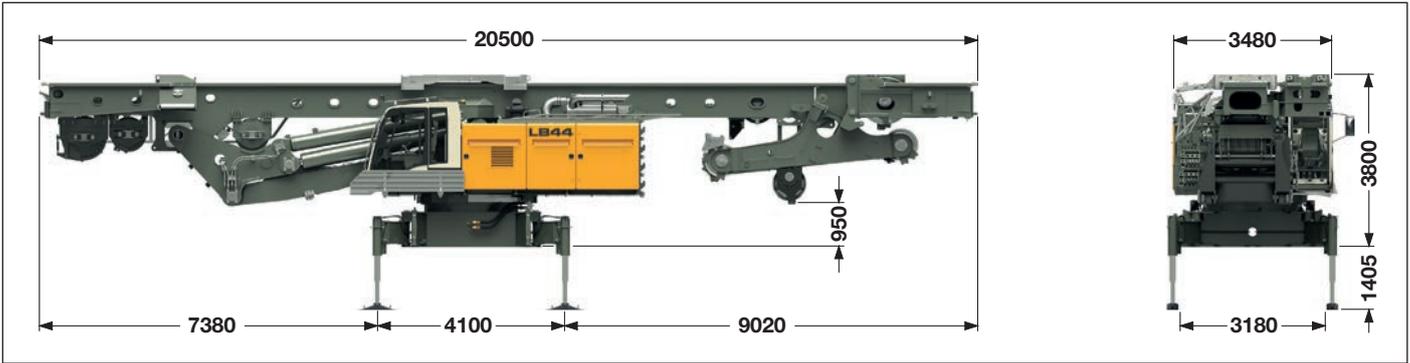
Total height	33.496 m
Max. pull, leader on ground	560 kN
Continuous rig inclination adjustment	
Lateral inclination	± 5°
Forward inclination	5°
Backward inclination	15°

### Operating weight LB 44 with optional equipment

Total weight with 1000 mm 2-web shoes — 173.0 t

The operating weight includes the basic machine LB 44 (with rotary and Kelly bar MD 36/4/72) and 29.0 t counterweight, without equipment for casing oscillator.

# Transport dimensions and weights

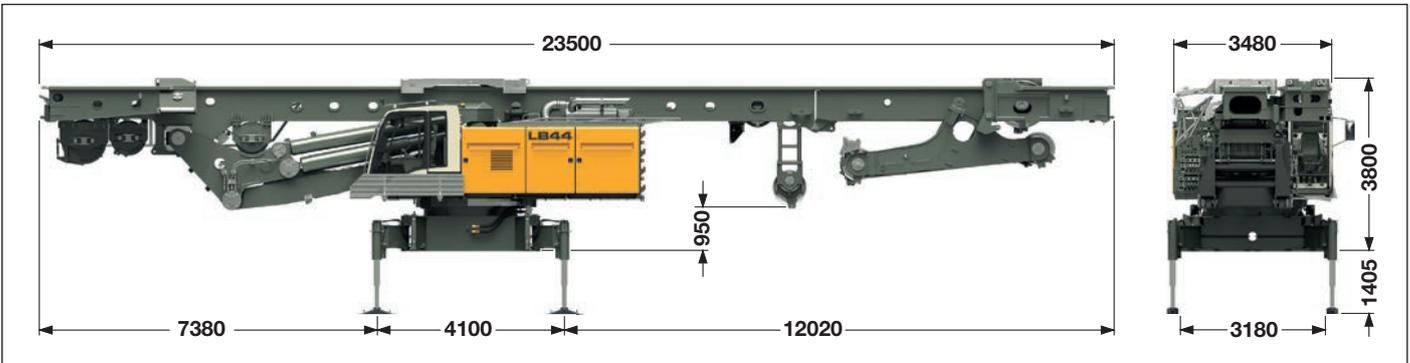


## Transport standard

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

## Dimensions and weights

Length	20.5 m
Weight	82.5 t



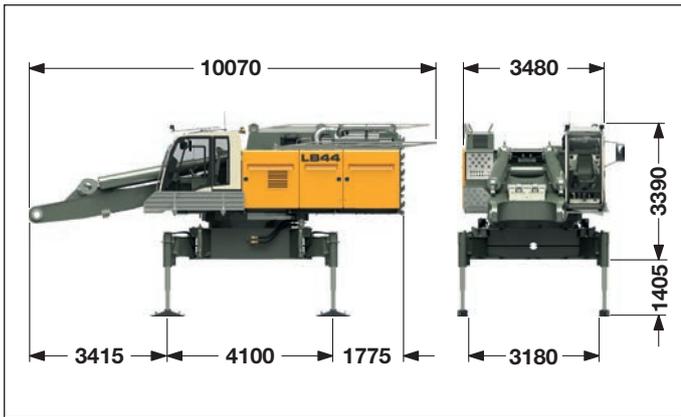
## Transport with optional equipment

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

## Dimensions and weights

Length	23.5 m
Weight	83.5 t

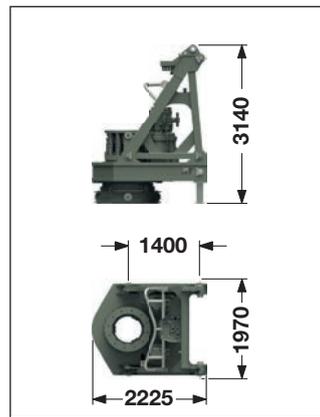
# Transport dimensions and weights



## Transport basic machine

ready for operation, without crawlers and without counterweight.

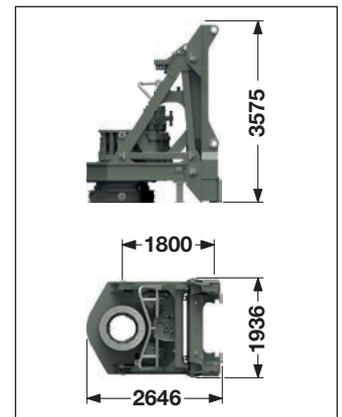
Transport weight ————— 41.0 t



## Rotary standard

Transport weight

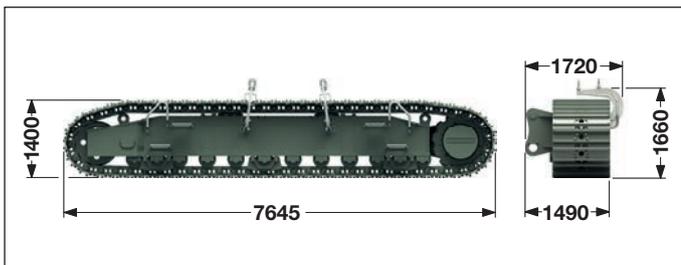
BAT 510 ————— 10.5 t



## Rotary with optional equipment

Transport weight

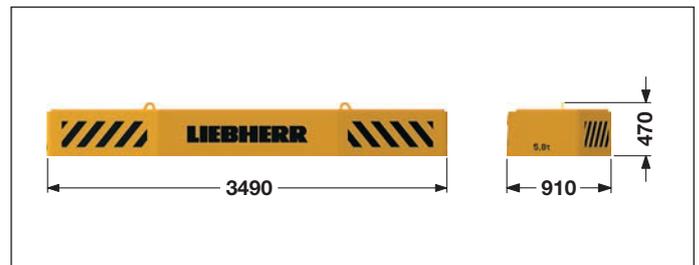
BAT 510 ————— 12.5 t



## Crawlers

Crawler left ————— 16.4 t

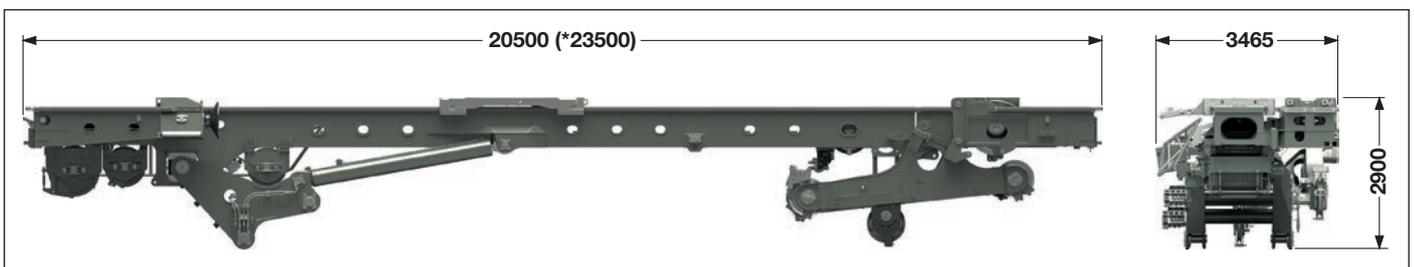
Crawler right ————— 16.4 t



## Counterweight

Counterweight LB 44 standard ————— 4x 5.8 t = 23.2 t

Counterweight LB 44 with optional equipment — 5x 5.8 t = 29.0 t



## Transport leader

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

\*) Dimensions for rigs with optional equipment

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 and weights

Length ————— (\*23.5) 20.5 m

Weight complete ————— 42.0 t

Weight complete with optional equipment ————— 43.0 t

# Rotary BAT 510 with shock absorber



## Rotary BAT 510

### Automatic gearbox for best operating comfort

- No stopping required to change gears
- No interruption of the drilling process
- Automatic torque adjustment
- Continuous optimization of speed
- Four electronically adjustable speed ranges

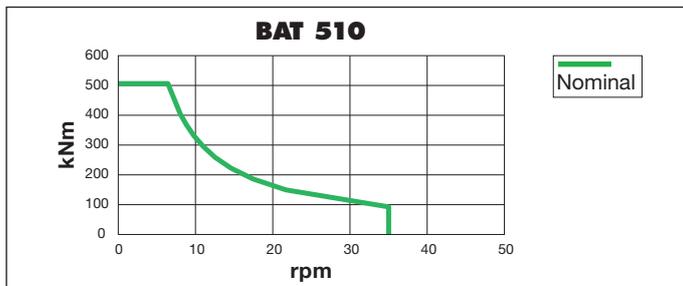
### Highest availability through easy set-up

- No mechanical shift gearbox
- Higher availability thanks to less moving parts
- Less maintenance required

- No pressure lubrication necessary
- No interferences through defective lubrication pump
- Simplified hydraulics
- Lower risk of hydraulics leakages

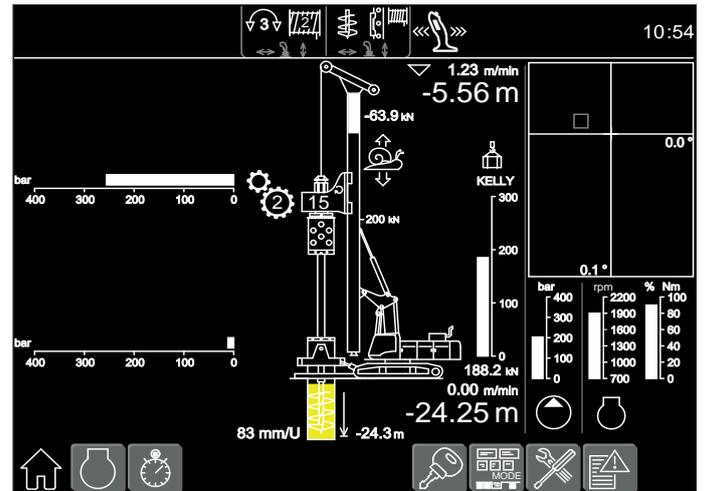
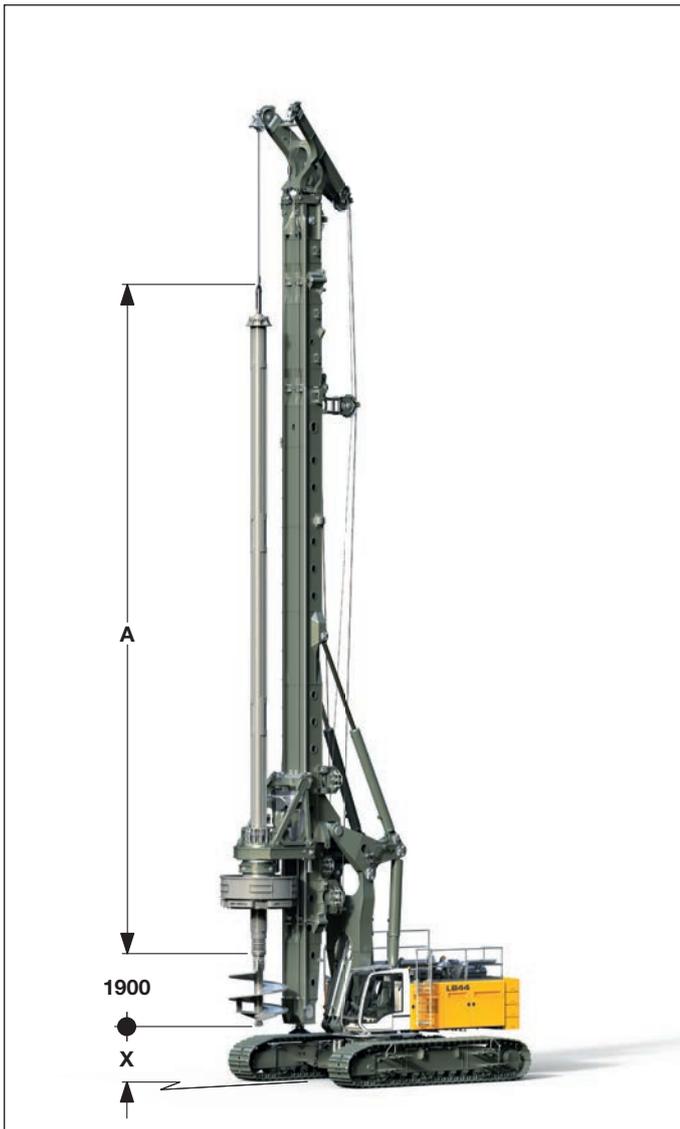
### Flexibility through modular design

- Exchangeable drive adapters for use of other Kelly bars
- Exchangeable cardan joint for other casing drivers
- Quickly exchangeable equipment for other methods of operation



# Kelly drilling

## LB 44



Display for Kelly drilling

### Kelly bars MD 36

	A	X	Drilling depth	Weight	Kelly Ø
	(mm)	(mm)	(m)	(t)	(mm)
MD 36/3/30	11900	13300	28.1	7.6	470
MD 36/3/36	13900	11300	34.1	8.8	470
MD 36/4/42	12950	12200	40.2	10.3	470
MD 36/4/48	14450	10700	46.2	11.5	470
MD 36/4/54	15950	9200	52.2	12.7	470
MD 36/4/60	17450	7700	58.2	13.9	470
MD 36/4/66	18950	6200	64.2	15.1	470
MD 36/4/72	20450	4700	70.2	16.3	470
MD 36/4/78	21950	3200	76.2	17.5	470
MD 36/4/84	23450	1700	82.2	18.7	470

### Technical data

Rotary drive - torque \_\_\_\_\_ 510 kNm  
 Rotary drive - speed \_\_\_\_\_ 35 rpm

### Performance data

Max. drilling diameter\* \_\_\_\_\_ 2500 mm uncased  
 Max. drilling diameter\* \_\_\_\_\_ 2000 mm cased

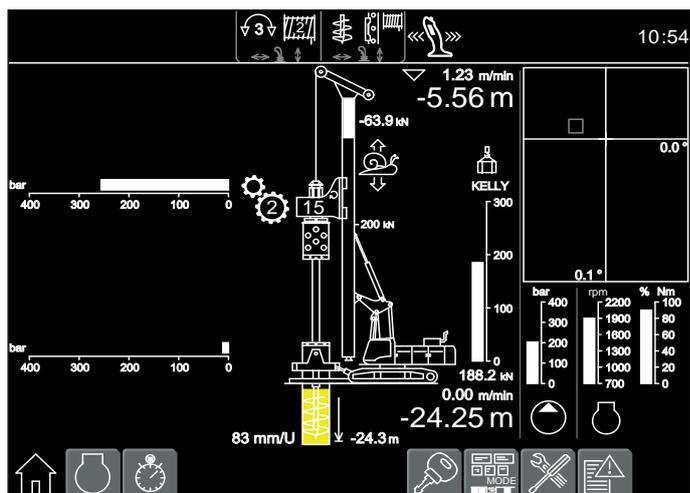
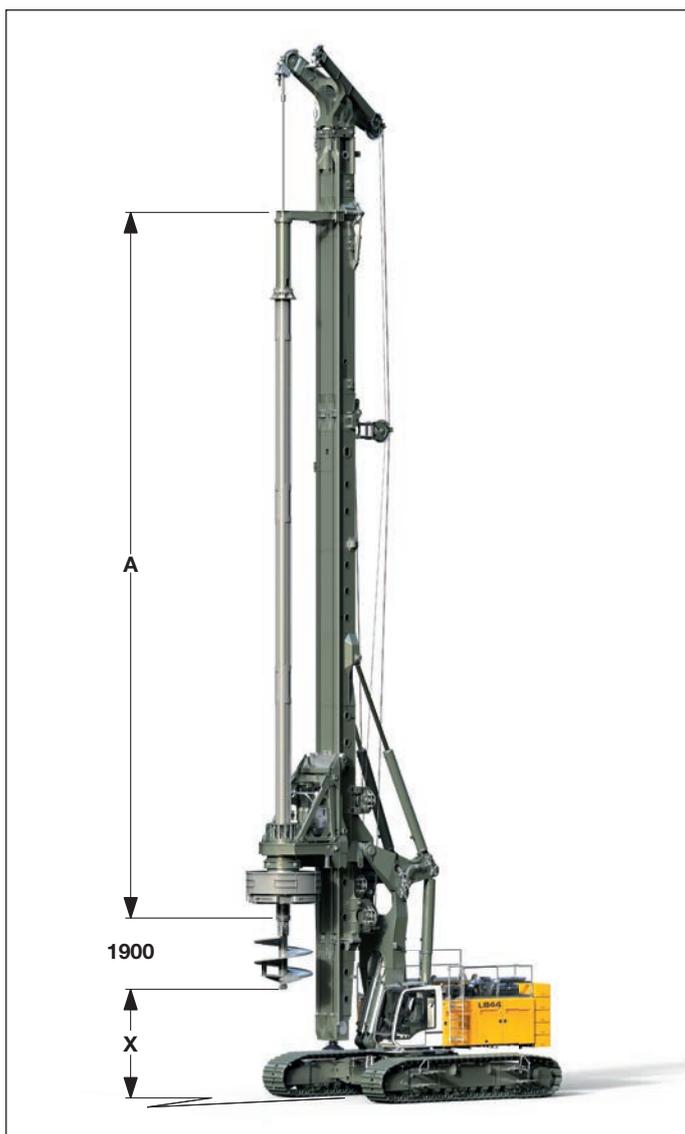
\*) Other drilling diameters available on request  
 Other Kelly bars available on request  
 When using a casing oscillator, value X has to be reduced by 1500 mm.

### Kelly bars MD 45

	A	X	Drilling depth	Weight	Kelly Ø
	(mm)	(mm)	(m)	(t)	(mm)
MD 45/3/30	12200	13000	28.2	10.1	559
MD 45/3/36	14200	11000	34.2	11.5	559
MD 45/4/42	13250	11900	40.2	13.8	559
MD 45/4/48	14750	10400	46.2	15.4	559
MD 45/4/54	16250	8900	52.2	17.0	559
MD 45/4/60	17750	7400	58.2	18.6	559
MD 45/4/66	19250	5900	64.2	20.2	559
MD 45/4/72	20750	4400	70.2	21.8	559
MD 45/4/78	22250	2900	76.2	23.4	559

# Kelly drilling

## LB 44 with optional equipment



Display for Kelly drilling

### Kelly bars MD 36

	A	X	Drilling depth	Weight	Kelly Ø
	(mm)	(mm)	(m)	(t)	(m)
MD 36/3/30	11900	16500	28.6	7.6	470
MD 36/3/36	13900	14500	34.6	8.8	470
MD 36/4/42	12950	15500	40.7	10.3	470
MD 36/4/48	14450	14000	46.7	11.5	470
MD 36/4/54	15950	12500	52.7	12.7	470
MD 36/4/60	17450	11000	58.7	13.9	470
MD 36/4/66	18950	9500	64.7	15.1	470
MD 36/4/72	20450	8000	70.7	16.3	470
MD 36/4/78	21950	6500	76.7	17.5	470
MD 36/4/84	23450	5000	82.7	18.7	470
MD 36/4/90	24950	3500	88.7	19.9	470
MD 36/4/96	26450	2000	92.0	21.1	470

### Technical data

Rotary drive - torque \_\_\_\_\_ 510 kNm

Rotary drive - speed \_\_\_\_\_ 35 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 1850 mm.

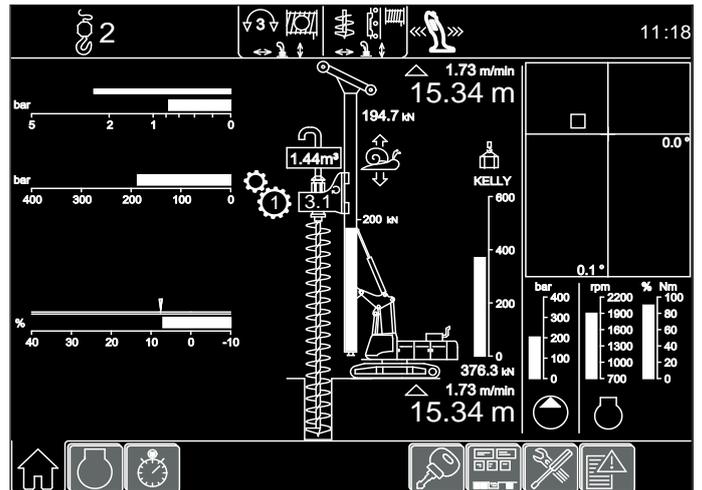
### Kelly bars MD 45

	A	X	Drilling depth	Weight	Kelly Ø
	(mm)	(mm)	(m)	(t)	(mm)
MD 45/3/30	12200	16.2	28.7	10.1	559
MD 45/3/36	14200	14.2	34.7	11.5	559
MD 45/4/42	13250	15.2	40.7	13.8	559
MD 45/4/48	14750	13.7	46.7	15.4	559
MD 45/4/54	16250	12.2	52.7	17.0	559
MD 45/4/60	17750	10.7	58.7	18.6	559
MD 45/4/66	19250	9.2	64.7	20.2	559
MD 45/4/72	20750	7.7	70.7	21.8	559
MD 45/4/78	22250	6.2	76.7	23.4	559
MD 45/4/84	23750	4.7	82.7	25.0	559
MD 45/4/90	25250	3.2	88.7	26.6	559
MD 45/4/96	26750	1.7	92.0	28.2	559

# Continuous flight auger drilling



Auger with auger guide



Display for continuous flight auger drilling

## Technical data

Rotary drive - torque	510 kNm
Rotary drive - speed	35 rpm

## Performance data

Drilling depth with auger cleaner*	19.5 m
Drilling depth without auger cleaner*	20.0 m
Drilling depth with 10 m Kelly extension without auger cleaner	30.0 m
Max. pull force (crowd winch and Kelly winch)	1240 kN
Max. push force (weight of rotary and auger to be added)	200 kN
Max. drilling diameter**	1400 mm

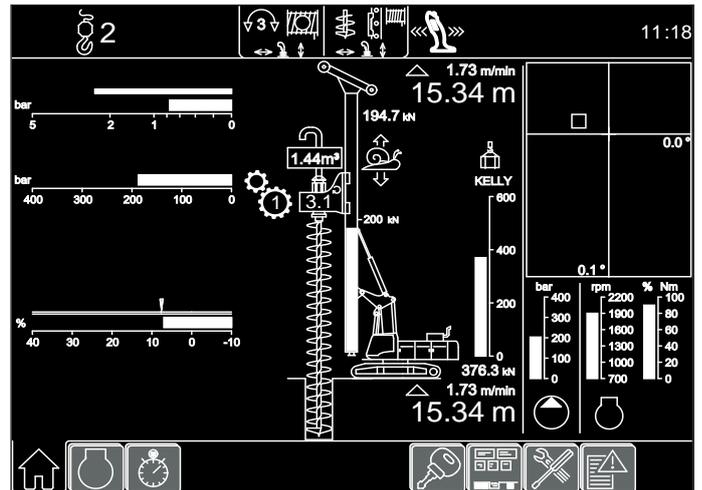
\*) Without Kelly extension and without leader extension

\*\*) Other drilling diameters available on request

# Full displacement drilling



Full displacement tool with auger guide



Display for full displacement drilling

## Technical data

Rotary drive - torque	510 kNm
Rotary drive - speed	35 rpm

## Performance data

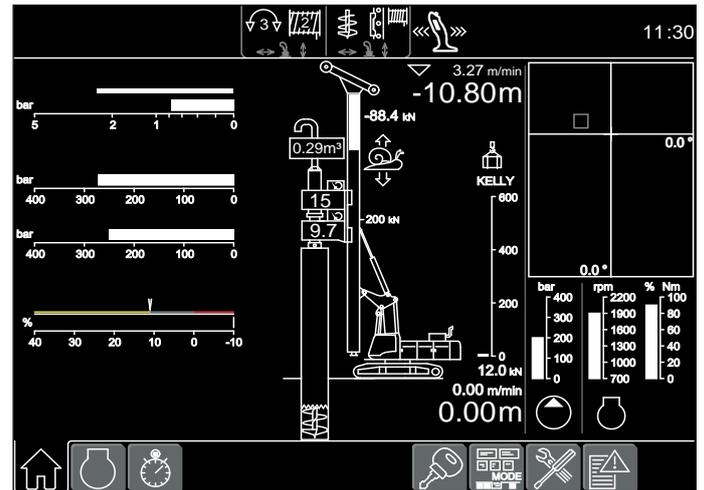
Drilling depth*	20.0 m
Drilling depth with optional equipment	23.0 m
Drilling depth with 10 m Kelly extension	30.0 m
Drilling depth with 10 m Kelly extension and optional equipment	33.0 m
Max. pull force (crowd winch and Kelly winch)	1240 kN
Max. push force (weight of rotary and drilling tool to be added)	200 kN
Max. drilling diameter**	600 mm

\*) Without Kelly extension

\*\*) Other drilling diameters available on request

# Double rotary drilling

## Model DBA 300



Display for double rotary drilling

### Technical data

Rotary drive I - torque	1 <sup>st</sup> gear	300 kNm
Rotary drive I - speed	1 <sup>st</sup> gear	8 rpm
Rotary drive I - torque	2 <sup>nd</sup> gear	128 kNm
Rotary drive I - speed	2 <sup>nd</sup> gear	18 rpm
Rotary drive II - torque	1 <sup>st</sup> gear	150 kNm
Rotary drive II - speed	1 <sup>st</sup> gear	17 rpm
Rotary drive II - torque	2 <sup>nd</sup> gear	72 kNm
Rotary drive II - speed	2 <sup>nd</sup> gear	35 rpm
Max. drilling diameter*		900 mm
Max. drilling depth**		20.0 m
Max. drilling depth with optional equipment		23.0 m
Max. pull force		900 kN

\*) Other drilling diameters available on request

\*\*) Other drilling depths available on request

# Technical description



## Engine

Power rating according to ISO 9249, 505 kW (677 hp) at 1700 rpm  
Engine type \_\_\_\_\_ Liebherr D 9508 A7 SCR  
Fuel tank \_\_\_\_\_ 1000 l capacity with continuous level indicator and reserve warning  
Engine complies with NRMM exhaust certification EPA/CARB Tier 4i and 97/68 EC Stage III B.



## 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 485 l/min  
Separate pump for kinematics \_\_\_\_\_ 215 l/min  
Hydraulic oil tank \_\_\_\_\_ 1400 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 display in the cab.  
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 – 1.45 km/h  
Track force \_\_\_\_\_ 1165 kN  
Width of 2-web grousers \_\_\_\_\_ 1000 mm



## Swing

Consists of triple-row roller bearing with external teeth and two swing drives, fixed axial piston hydraulic motor, 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 – 2 rpm is continuously variable.



## Noise emission

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



## 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



## Kelly winch with freewheeling

Line pull effective (1<sup>st</sup> layer) \_\_\_\_\_ 300 kN  
Rope diameter \_\_\_\_\_ 34 mm  
Line speed \_\_\_\_\_ 0-71 m/min

Option:  
Line pull effective (1<sup>st</sup> layer) \_\_\_\_\_ 420 kN  
Rope diameter \_\_\_\_\_ 38 mm  
Line speed \_\_\_\_\_ 0-65 m/min

Line pull effective (1<sup>st</sup> layer) \_\_\_\_\_ 500 kN  
Rope diameter \_\_\_\_\_ 42 mm  
Line speed \_\_\_\_\_ 0-55 m/min



## Auxiliary winch

Line pull effective (1<sup>st</sup> layer) \_\_\_\_\_ 140 kN  
Rope diameter \_\_\_\_\_ 22 mm  
Line speed \_\_\_\_\_ 0-69 m/min



## Rope crowd system

Crowd force push/pull \_\_\_\_\_ 560/560 kN  
Line pull (effective) \_\_\_\_\_ 280 kN  
Rope diameter \_\_\_\_\_ 30 mm  
Travel \_\_\_\_\_ 20.0 m  
Travel with optional equipment \_\_\_\_\_ 23.0 m  
Line speed \_\_\_\_\_ 0-68 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.



# Leader kinematics



Standard: Leader can be folded back.



Option: Leader can be folded forward (and back).

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