Drilling Rig

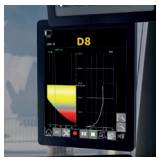
LB 35

EN

LB 2004.07

LIEBHERR

Concept and characteristics

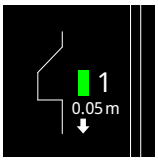


PDE®
Process Data Recording

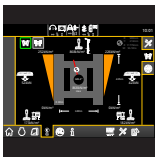
MyJobsite

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
- Down-the-hole 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 slack rope monitoring and prevention

Technical description

Diesel engine

Power rating according to ISO 9249	390 kW (523 hp) at 1700 rpm
Engine type	Liebherr D 946 A7-05
Fuel tank capacity	700 l with continuous level indicator and reserve warning
Exhaust certification	EU 2016/1628 Stage V EPA/CARB Tier 4f Power Band H non-certified emission standard

Hydraulic system

Hydraulic pumps	
for attachments	2x 350 l
for kinematics	180 l
Hydraulic oil tank capacity	800 l
Max. working pressure	385 bar
Hydraulic oil	electronic monitoring of alle filters use of synthetic environmentally friendly oil

Crawlers

Drive system	with fixed axial piston hydraulic motors
Crawler side frames	maintenance-free, with hydraulic chain tensioning device
Brake	spring loaded and hydraulically released multi–disc holding brake
Drive speed	0-1.35 km/h
Track force	647 kN
Grousers	width 900 mm (option 800 mm)

Swing gear

Drive system	with fixed axial piston hydraulic motors, planetary gearbox, pinion
Swing ring	triple-row roller bearing with external teeth and 2 swing drives
Brake	hydraulically released, spring–loaded multi–disc holding brake
Swing speed	0-2.4 rpm continuously variable

Kelly winch with freewheeling

Line pull effective	300 kN (1st layer)
Rope diameter	34 mm
Rope speed	0-76 m/min

Auxiliary winch

Line pull effective	100 kN (1st layer)
Rope diameter	20 mm
Rope speed	0-89 m/min

Crowd system

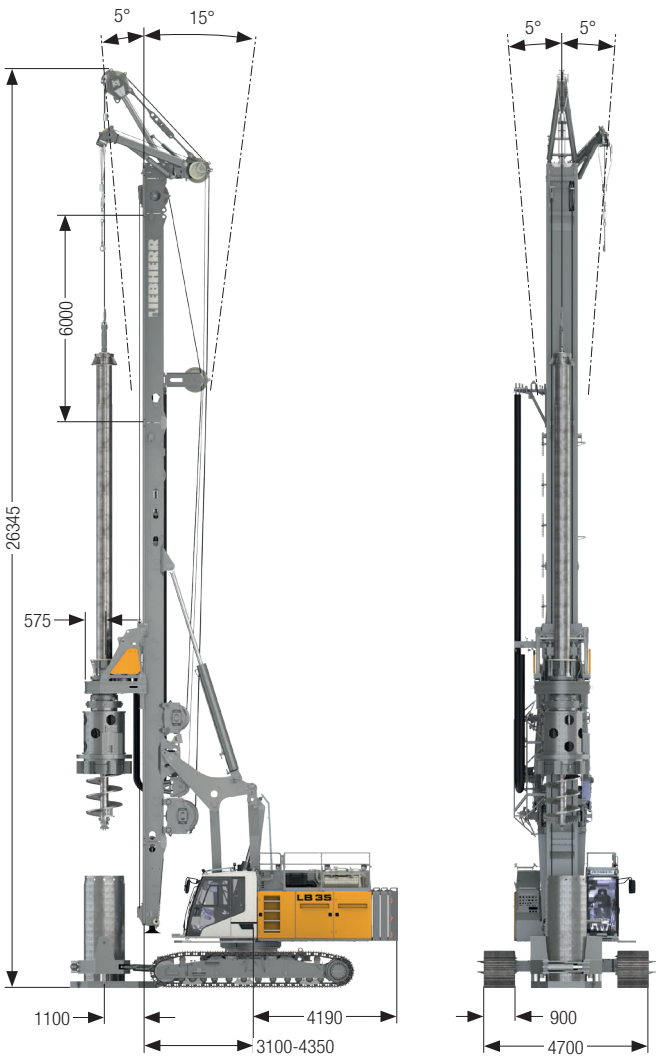
Crowd winch	
Crowd force	400/400 kN (push/pull)
Line pull effective	200 kN
Travel with standard leader between mechanical limit stops	17.9 m
Rope speed	0-70 m/min

Remarks:

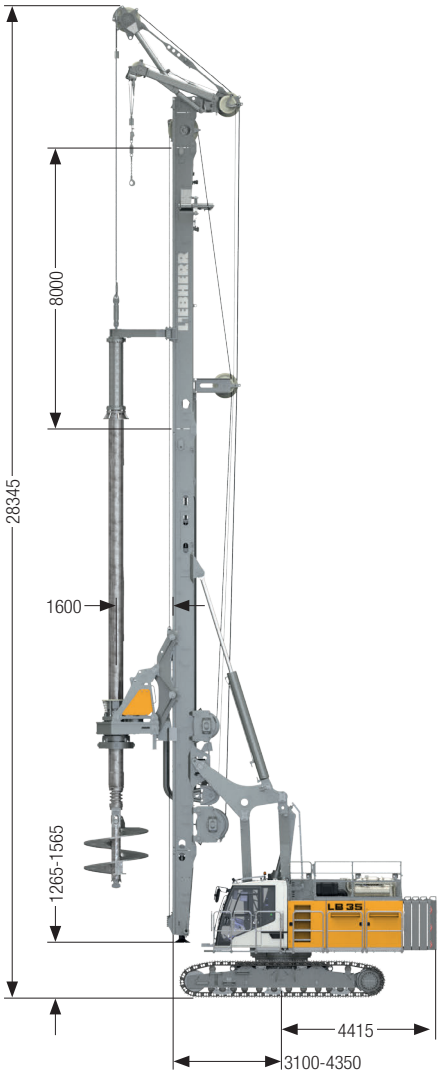
- Illustrations showing the types of application (e.g. Kelly drilling, continuous flight auger drilling etc.) are examples only.
- Weights can vary with the final configuration of the machine. The figures in this brochure may include options which are not within the standard scope of supply of the machine.

Dimensions

Standard leader



Folding leader



Operating weight

Total weight with 800 mm 3-web grousers	t	99.1
Total weight with 900 mm 3-web grousers	t	100.1

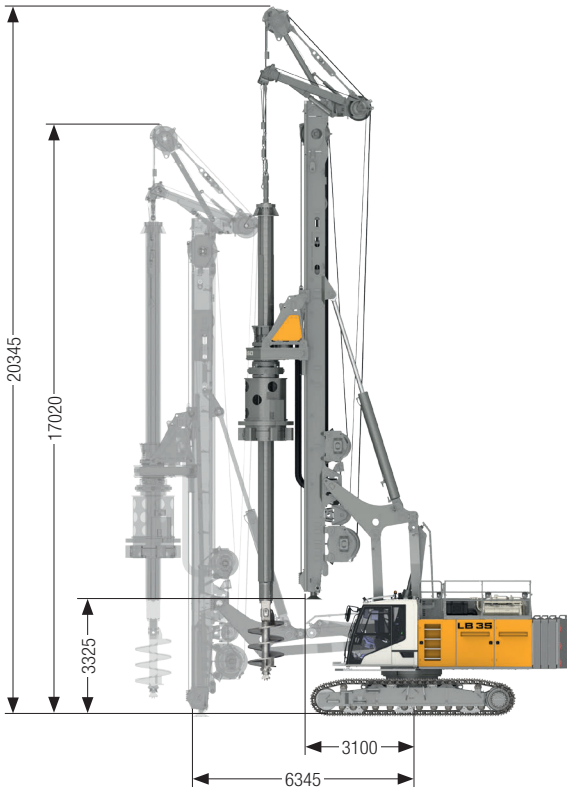
The operating weight includes the basic machine LB 35 with rotary, Kelly bar 28/3/30, 15 t counterweight and equipment for casing oscillator.

Operating weight

Total weight with 800 mm 3-web grousers	t	110.5
Total weight with 900 mm 3-web grousers	t	111.5

The operating weight includes the basic machine LB 35 with rotary, Kelly bar 28/4/54 and 20 t counterweight. Equipment for casing oscillator not included.

Low Head

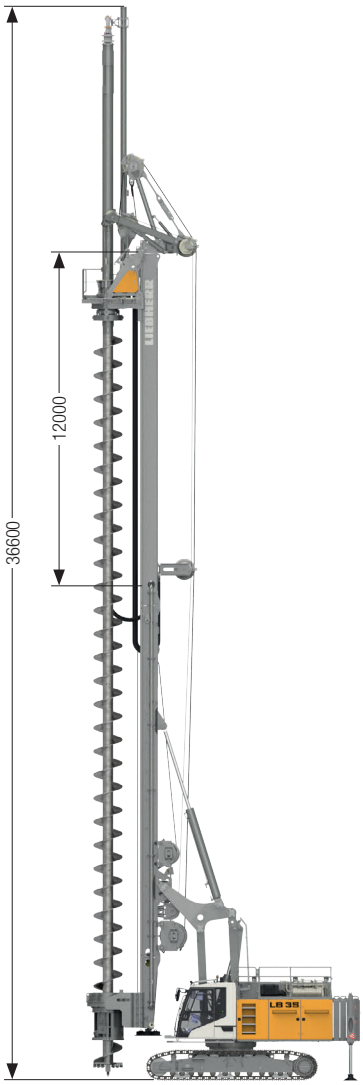


Operating weight

Total weight with 800 mm 3-web grousers	t	95.2
Total weight with 900 mm 3-web grousers	t	96.2

The operating weight includes the basic machine LB 35 with rotary, Kelly bar 28/3/30 and 15 t counterweight. Equipment for casing oscillator not included. The line pull of the Kelly winch is reduced to 250 kN when working at a radius exceeding 4350 mm.

Single-Pass

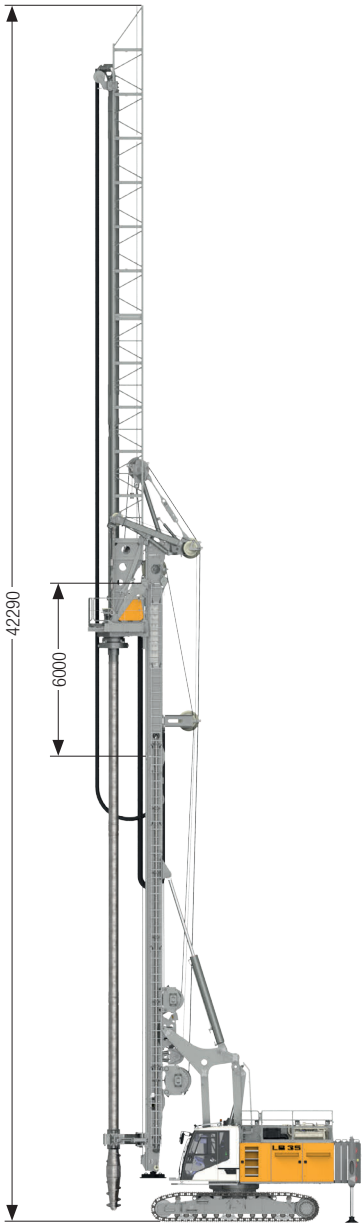


Operating weight

Total weight with 800 mm 3-web grousers	t	108.3
Total weight with 900 mm 3-web grousers	t	109.3

The operating weight includes the basic machine LB 35 with rotary, 8 m Kelly extension, drill rod 25 m, auger cleaner Ø 800 mm and 18 t counterweight.
Equipment for casing oscillator not included.

Lattice boom extension



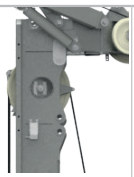
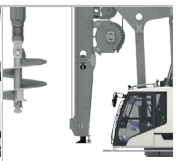
Operating weight

Total weight with 800 mm 3-web grousers	t	110.3
Total weight with 900 mm 3-web grousers	t	111.3

The operating weight includes the basic machine LB 35 with rotary, 18 m Kelly extension, drill rod 19 m and 18 t counterweight.
Equipment for casing oscillator not included.

Combined applications

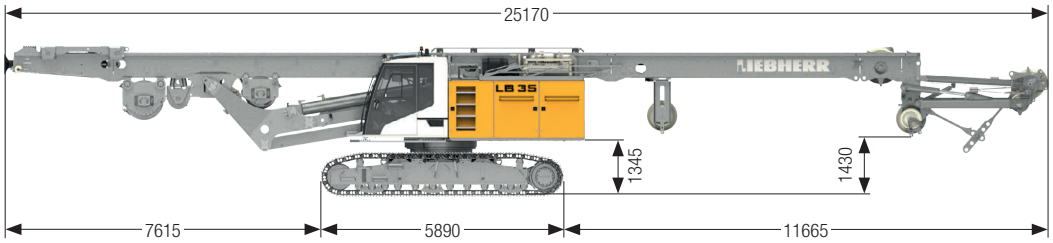
Combined applications

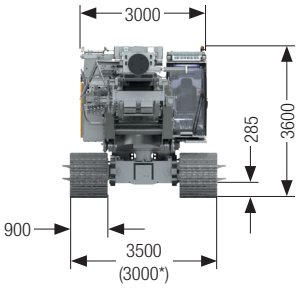
	 Long crowd distance	 Short crowd distance	 Drilling axis 1100 mm*	 Drilling axis 1600 mm*	 Lattice boom extension	 Short leader lower part	 Standard leader lower part
 **Standard leader**	Kelly CFA FDD CCFA DTH WSM	Kelly	Kelly CFA FDD CCFA DTH WSM	Kelly	FDD WSM (BAT)	Kelly WSM	Kelly CFA FDD CCFA DTH WSM
 **Folding leader**	Kelly CFA FDD CCFA DTH WSM	Kelly	Kelly CFA FDD CCFA DTH WSM	Kelly		Kelly WSM	Kelly CFA FDD CCFA DTH WSM
 **Low Head**	Kelly CFA FDD CCFA DTH WSM		Kelly CFA FDD CCFA DTH WSM	Kelly		Kelly WSM	Kelly CFA FDD CCFA DTH WSM
 **Single-Pass**	CFA FDD WSM		CFA FDD WSM			WSM	CFA FDD WSM

* Distance from drilling axis to front edge of leader

Kelly	Kelly drilling
CFA	Continuous flight auger drilling
FDD	Full displacement drilling
CCFA	Double rotary drilling
DTH	Down-the-hole drilling
WSM	Wet soil mixing

Transport dimensions and weights

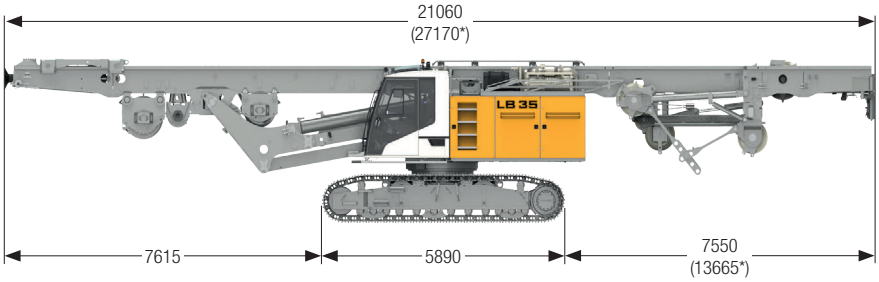




Standard leader (6 m leader upper part)

includes the basic machine (fully tanked and ready for operation) with leader, without attachments (such as rotary, Kelly bar etc.), without counterweight and without casing oscillator	t	69.0

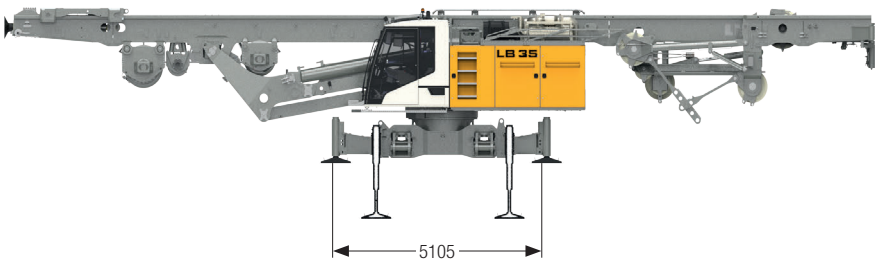
* Optional transport width with 700 mm grousers non-detachable crawlers. With this option, the tranport weight is reduced by 2.2 t compared to the version with standard undercarriage

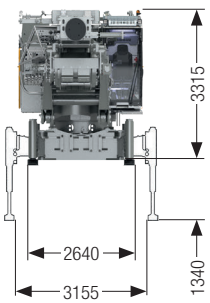


Folding leader (8 m leader upper part)

includes the basic machine (fully tanked and ready for operation) with leader, without attachments (such as rotary, Kelly bar etc.), without counterweight and without casing oscillator	t	70.2

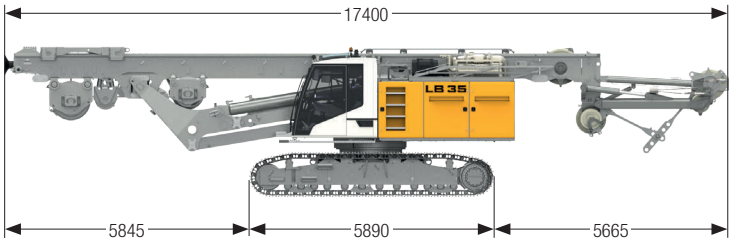
* Transport length leader not folded





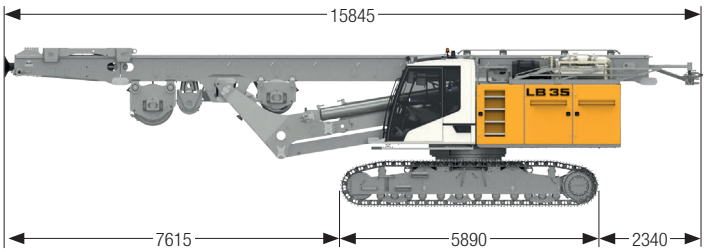
Folding leader without crawler side frames

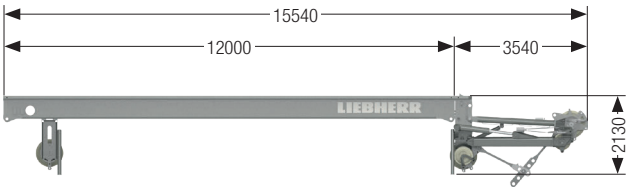
includes the basic machine (fully tanked and ready for operation) with leader, jack-up system and adapter for casing oscillator, without attachments (such as rotary, Kelly bar etc.), without counterweight and without crawler side frames	t	59.2



Low Head

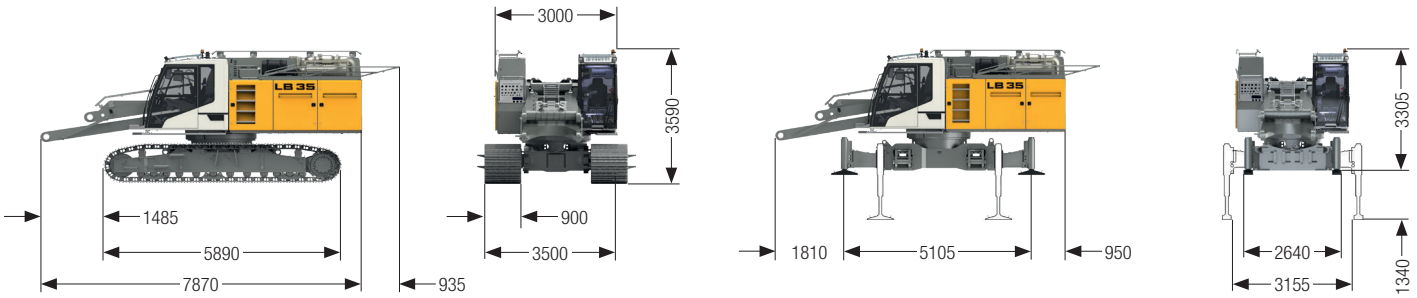
includes the basic machine (fully tanked and ready for operation) with leader, without attachments (such as rotary, Kelly bar etc.), without counterweight and without casing oscillator	t	66.3





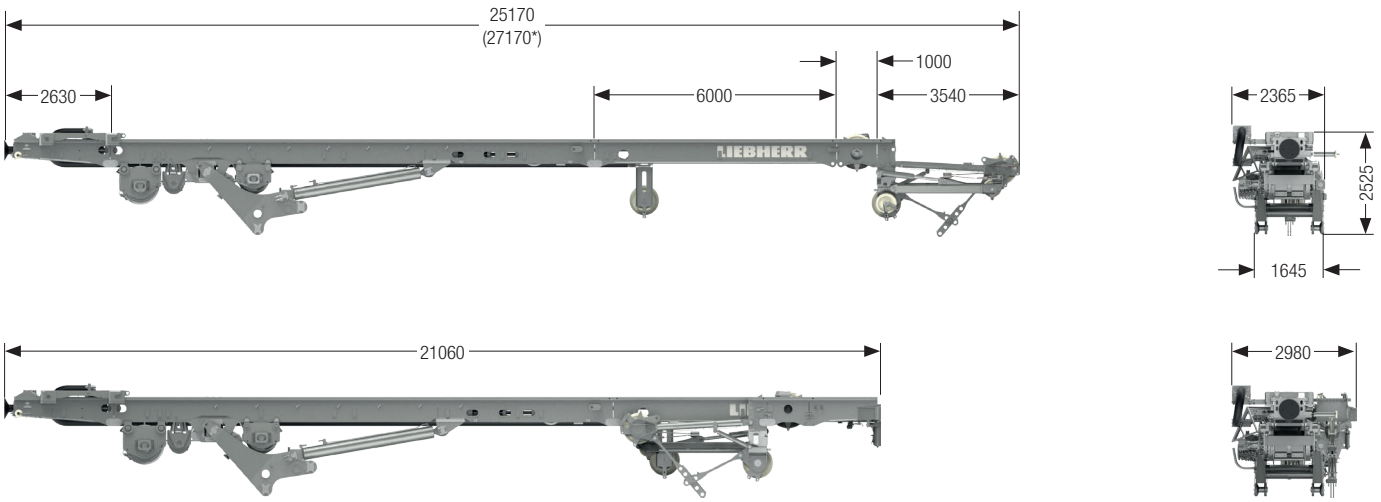
Single-Pass

Single-Pass without 12 m leader extension and leader top includes the basic machine (fully tanked and ready for operation) with leader, without attachment (such as rotary, Kelly bar etc.), without counterweight and without casing oscillator	t	64.1
12 m leader extension with leader top	t	5.7



Carrier machine versions

without jack-up system, counterweight and adapter for casing oscillator	t	43.1
with jack-up system and adapter for casing oscillator, without counterweight and crawler side frames	t	32.2



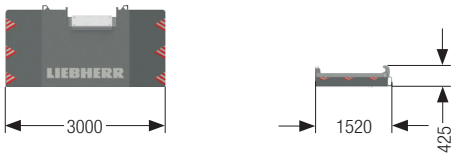
Leader versions

Standard leader	t	25.9
Folding leader	t	27.1
Standard leader lower part incl. support cylinder	t	1.5
6 m leader extension	t	2.3
8 m leader extension	t	3.4
12 m leader extension	t	3.8
Leader top	t	1.9
1 m leader extension with pulley support	t	0.8
Short leader lower part	t	0.5

* Transport length folding leader

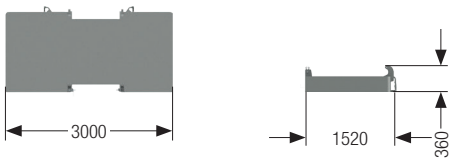
Options

Jack-up system	t	2.5
Adapter for casing oscillator	t	1.2
Concrete supply line	t	0.5
All round platform with railings	t	0.2



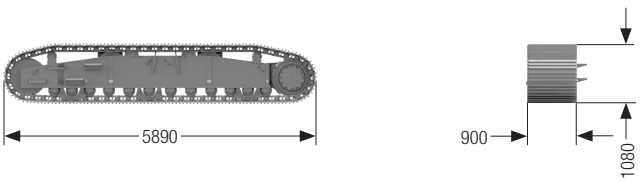
Rear counterweight

Weight	t	5



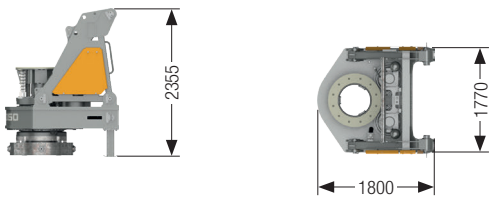
Intermediate counterweight

Weight	t	5



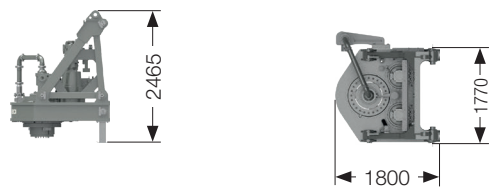
Crawler side frame

Left / right	t	7.4



BAT 350

Transport weight	t	6.9

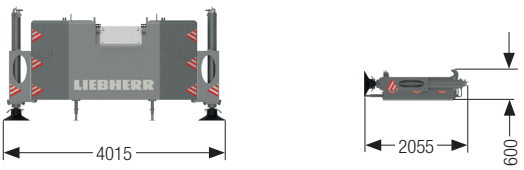


MAT 120

Transport weight	t	6

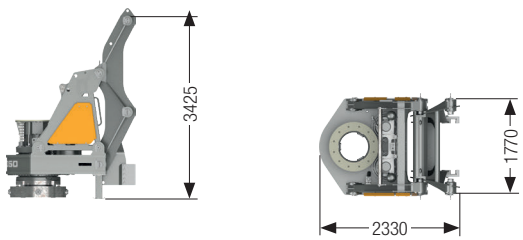
Rear counterweight

Weight	t	8



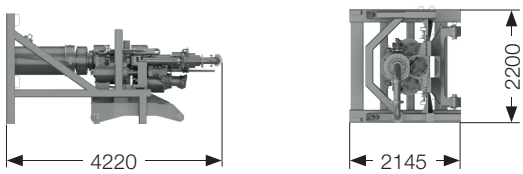
Rear counterweight with rear support unit

Weight	t	8



BAT 350 with adapter for drilling axis 1600 mm

Transport weight	t	8.3

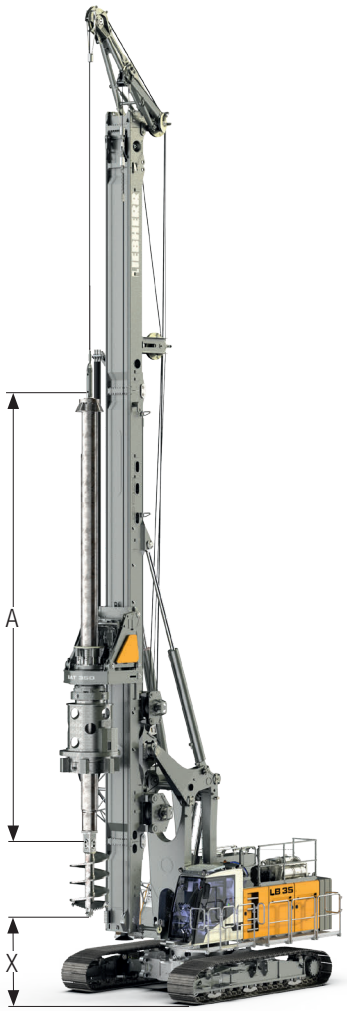


DBA 200

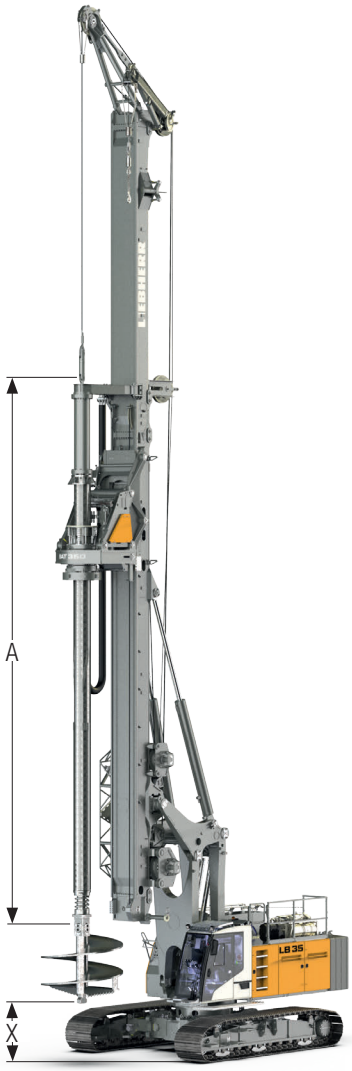
Transport weight	t	8.7

Kelly drilling

Standard leader



Folding leader (large drilling axis)



Performance data

Rotary drive - torque	kNm	347	
Rotary drive - speed	rpm	46	
		Drilling axis 1100 mm	Drilling axis 1600 mm
Max. drilling diameter cased*	mm	1500	2500
Max. drilling diameter uncased	mm	1900	2900
Max. drilling diameter uncased with short leader lower part	mm	3400	4100

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											
			Low Head				Standard leader				Folding leader			
Model	Length	Weight	X [m]		Depth [m]		X [m]		Depth [m]		X [m]		Depth [m]	
	[mm]	[t]	1100	1600	1100	1600	1100	1600	1100	1600	1100	1600	1100	1600
28/3/24	9880	5.3	5.8	5.8	22.4	22.9	11.8	11.8	22.4	22.9	13.8	13.8	22.4	22.9
28/3/27	10880	5.8	4.8	4.8	25.4	25.9	10.8	10.8	25.4	25.9	12.8	12.8	25.4	25.9
28/3/30	12040	6.4	3.7	3.7	28.4	28.9	9.7	9.7	28.4	28.9	11.7	11.7	28.4	28.9
28/3/33	12880	6.7	2.8[1]	2.8	31.4[1]	31.9	8.8	8.8	31.4	31.9	10.8	10.8	31.4	31.9
28/3/36	14040	7.3	1.8[1]	1.8[1]	34.4[1]	34.9[1]	7.8	7.8	34.4	34.9	9.8	9.8	34.4	34.9
28/4/36	11450	7.7	4.2	4.2	34.5	35.0	10.2	10.2	34.5	35.0	12.2	12.2	34.5	35.0
28/4/42	12950	8.7	2.7[1]	2.7	40.5[1]	41.0	8.7	8.7	40.5	41.0	10.7	10.7	40.5	41.0
28/4/48	14450	9.6	1.2[1/2]	1.2[1]	46.5[1/2]	47.0[1]	7.2	7.2	46.5	47.0	9.2	9.2	46.5	47.0
28/4/54	15950	10.6	-	-	-	-	5.7	5.7	52.5	53.0	7.7	7.7	52.5	53.0
28/4/60	17450	11.6	-	-	-	-	4.2	4.2	58.5	59.0	6.2	6.2	58.5	59.0
28/4/66	18950	11.7	-	-	-	-	2.7[1]	2.7	64.5[1]	65.0	4.7	4.7	64.5	65.0
28/4/72	20450	12.5	-	-	-	-	1.2[1/2]	1.2[1]	70.5[1/2]	71.0[1]	3.2[1]	3.2	70.5[1]	71.0
28/4/78	22100	13.7	-	-	-	-	-	-	-	-	1.6[1/2]	1.6[1]	77.0[1/2]	77.5[1]

[1] When using a short leader lower part an assist crane is required for installation

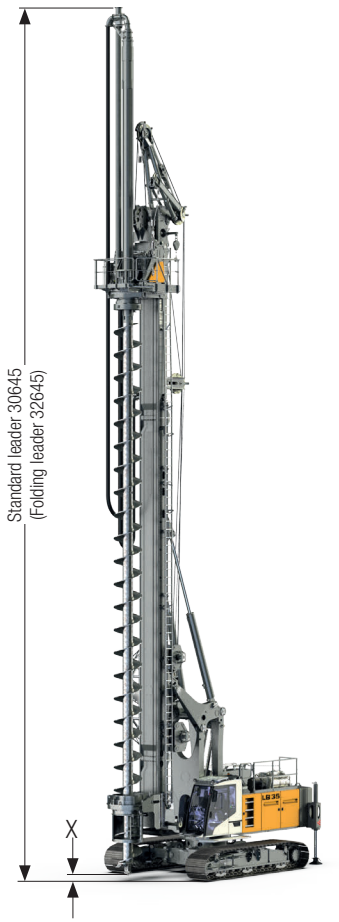
[2] Installation only possible with assist crane

Drilling axis 1100 | Drilling axis 1600

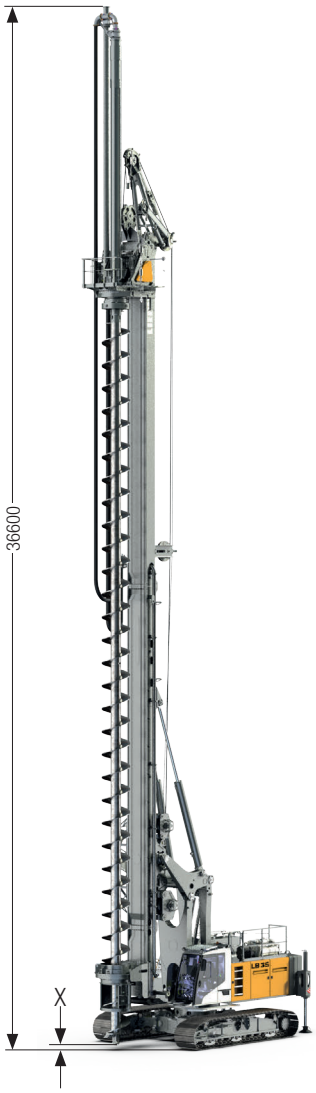
Other Kelly bars available on request.
When using a casing oscillator, value X has to be reduced by 1500 mm.
When using a Kelly bar guide, value X has to be reduced by 1100 mm.
When using a short leader lower part the drilling depth is reduced by 1770 mm for a drilling axis of 1100 mm, and by 2365 mm for a drilling axis of 1600 mm.
Length of drilling tool 1900 mm

Continuous flight auger drilling

Standard leader



Single-Pass



Performance data

Rotary drive - torque	kNm	320			
Rotary drive - speed	rpm	46			
Max. drilling diameter*	mm	1000			
		Low Head	Standard leader	Folding leader	Single-Pass
Drilling depth without Kelly extension	m	10.8	16.8	18.8	22.8
Drilling depth with 8 m Kelly extension	m	18.8	24.8	26.8	30.8
Max. pull force	kN	1000	1000	1000	600

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 170 mm (125 mm with Single-Pass) - see above illustration.
* Other drilling diameters available on request

Full displacement drilling

Folding leader

Lattice boom extension

Performance data

Rotary drive - torque	kNm	320			
Rotary drive - speed	rpm	46			
Max. drilling diameter*	mm	600			
		Low Head	Standard leader	Folding leader	Single-Pass
Drilling depth without Kelly extension	m	11.5	17.5	19.5	23.5
Drilling depth with 8 m Kelly extension	m	19.5	25.5	27.5	31.5
Drilling depth with 18 m lattice boom extension	m	-	35.5	-	-
Max. pull force	kN	1000	1000	1000	600

Above drilling depths are valid for the use of standard tools and for an X value of 390 mm (345 mm with Single-Pass) - see above illustration.

* Other drilling diameters available on request

Double rotary drilling

DBA 200

Performance data

Rotary drive I - torque	kNm	0-210		
Rotary drive I - speed	rpm	0-17		
Rotary drive II - torque	kNm	0-105		
Rotary drive II - speed	rpm	0-37		
Max. drilling diameter*	mm	750		
		Low Head	Standard leader	Folding leader
Drilling depth **	m	10.9	16.9	18.9
Max. pull force	kN	700	700	700

Above drilling depths are valid for the use of standard tools and for an X value of 850 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

** When using a protective hose, the maximum drilling depth has to be reduced by 840 mm.

Soil mixing

MAT 120 / BAT 350

Performance data MAT 120

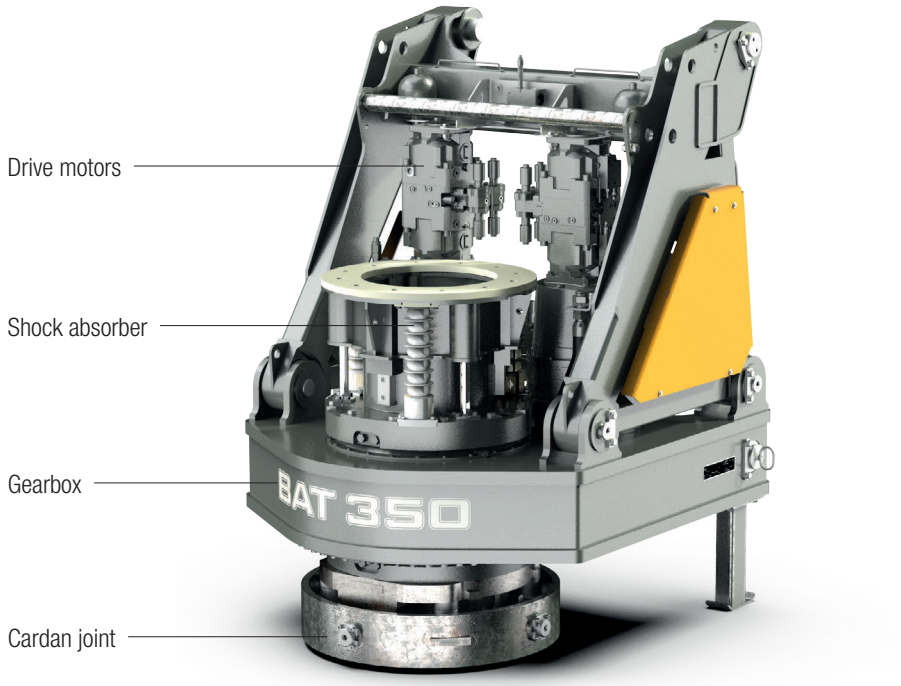
Rotary drive - torque	kNm	115			
Rotary drive - speed	rpm	100			
Max. mixing diameter*	mm	1500			
		Low Head	Standard leader	Folding leader	Single-Pass
Mixing depth	m	10.8	16.8	18.8	23.6
Max. pull force	kN	400	400	400	600

Performance data BAT 350

Rotary drive - torque	kNm	320			
Rotary drive - speed	rpm	46			
Max. mixing diameter*	mm	1900			
		Low Head	Standard leader	Folding leader	Single-Pass
Mixing depth	m	11.3	17.3	19.3	23.3
Mixing depth with 8 m Kelly extension	m	19.3	25.3	27.3	31.3
Mixing depth with 18 m lattice boom extension	m	-	35.3	-	-
Max. pull force	kN	1000	1000	1000	600

Above mixing depths are valid for the use of standard tools and for an X value of 1030 mm for MAT 120, and 500 mm for BAT 350 (see above illustration).
* Other drilling diameters available on request

BAT 350

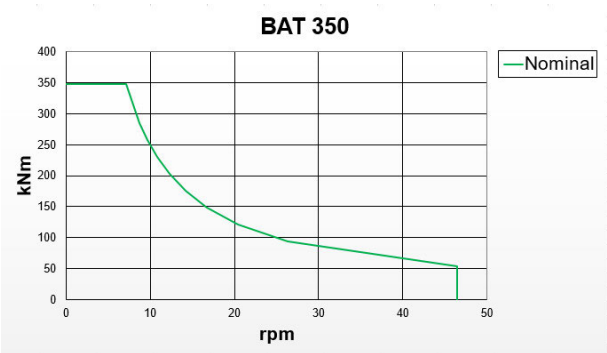


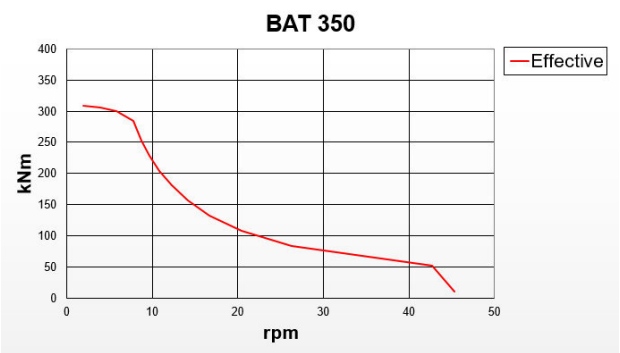
Kelly shock absorber:
- Newly developed Kelly shock absorber for highest demands
- Possibility of adjusting the strength of the Kelly shock absorber for different Kelly bar weights

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

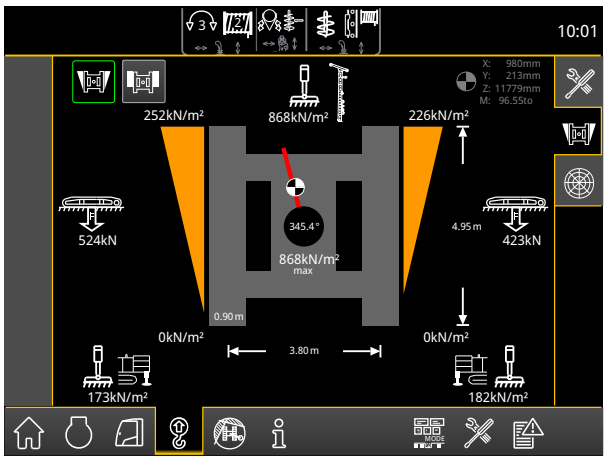
Highest availability through easy set-up:
- No mechanical shift gearbox
- Low maintenance requirements

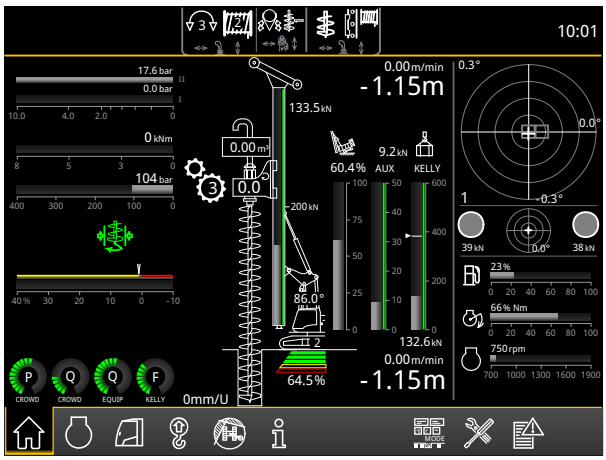
Flexibility through modular design:
- Exchangeable cardan joint for other casing drivers
- Exchangeable drive adapters for use of other Kelly bars
- Quickly exchangeable equipment for other methods of operation





Ground Pressure Visualization





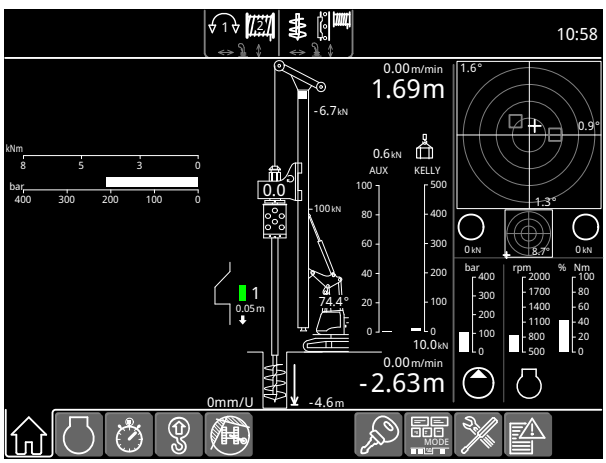
Features:

- 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

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.

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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.

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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.

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