

Drilling Rig

# LB 35

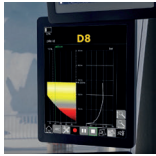
EN-US

LB 2004.07

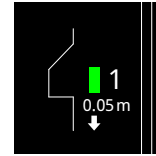


# LIEBHERR

# Concept and characteristics



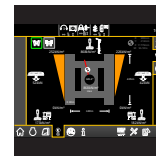
**PDE**<sup>®</sup>  
Process Data Recording



Kelly  
Visualization



**MyJobsite**



Ground  
Pressure  
Visualization



**LIPOS**<sup>®</sup>  
Positioning System



Radio remote  
control



**LiDAT**<sup>®</sup>  
Data Transmission



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

<b>Power rating according to ISO 9249</b>	390 kW (523 hp) at 1700 rpm
<b>Engine type</b>	Liebherr D 946 A7-05
<b>Fuel tank capacity</b>	185 gal with continuous level indicator and reserve warning
<b>Exhaust certification</b>	EU 2016/1628 Stage V EPA/CARB Tier 4f Power Band H non-certified emission standard



## Hydraulic system

<b>Hydraulic pumps</b>	
for attachments	2x 92 gal
for kinematics	48 gal
<b>Hydraulic oil tank capacity</b>	211 gal
<b>Max. working pressure</b>	5,584 PSI
<b>Hydraulic oil</b>	electronic monitoring of alle filters use of synthetic environmentally friendly oil



## Crawlers

<b>Drive system</b>	with fixed axial piston hydraulic motors
<b>Crawler side frames</b>	maintenance-free, with hydraulic chain tensioning device
<b>Brake</b>	spring loaded and hydraulically released multi-disc holding brake
<b>Drive speed</b>	0-0.84 mph
<b>Track force</b>	145,451 lbf
<b>Grousers</b>	width 35.4 inch (option 31.5 inch)



## Swing gear

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



## Kelly winch with freewheeling

Line pull effective	67,443 lbf (1 <sup>st</sup> layer)
Rope diameter	34 mm
Rope speed	0-249 ft/min



## Auxiliary winch

Line pull effective	22,481 lbf (1 <sup>st</sup> layer)
Rope diameter	20 mm
Rope speed	0-292 ft/min



## Crowd system

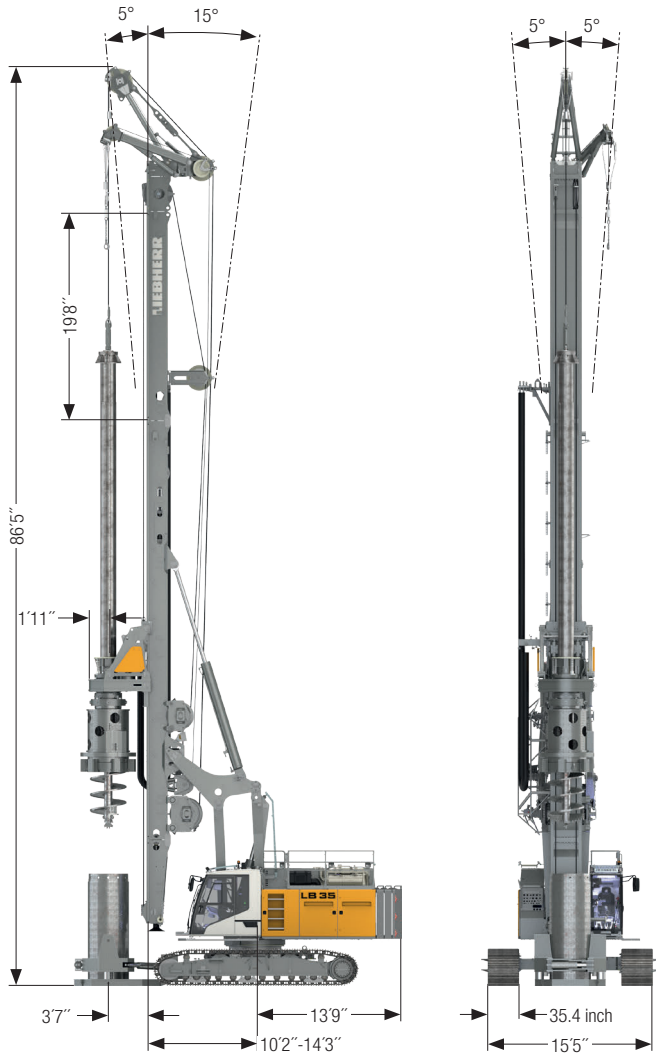
<b>Crowd winch</b>	
Crowd force	89,924/89,924 lbf (push/pull)
Line pull effective	44,962 ft
Travel with standard leader between mechanical limit stops	58.7 ft
Rope speed	0-230 ft/min

### Remarks:

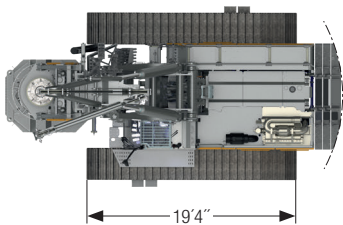
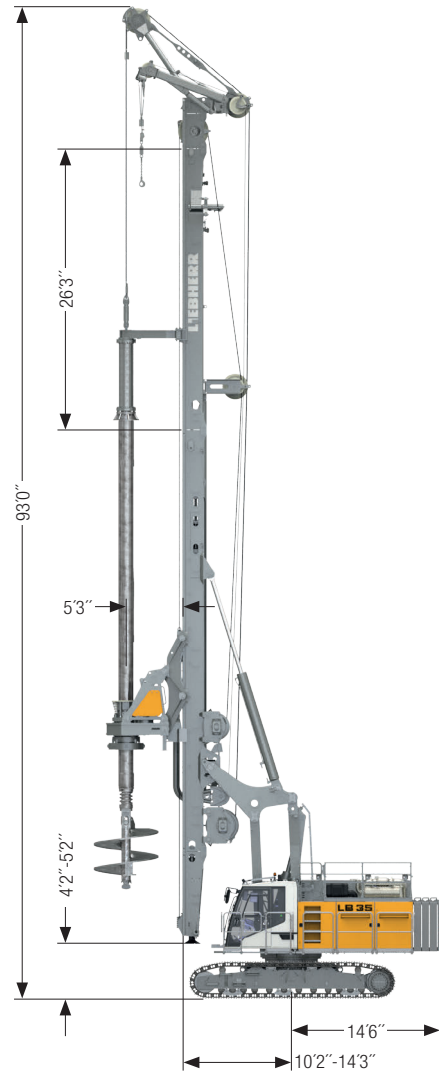
- Illustrations showing the types of application (e.g. Kelly drilling, continuous flight auger drilling etc.) are examples only.
- Weights can vary with the final configuration of the machine. The figures in this brochure may include options which are not within the standard scope of supply of the machine.

# Dimensions

## Standard leader



## Folding leader



- R 14'0" (33,069 lbs)
- R 14'7" (39,683 lbs)
- R 14'9" (44,092 lbs)
- R 15'44" (39,683 lbs incl. rear support unit)

### Operating weight

Total weight with 31.5 inch 3-web grousers	lbs	218,478
Total weight with 35.4 inch 3-web grousers	lbs	220,683

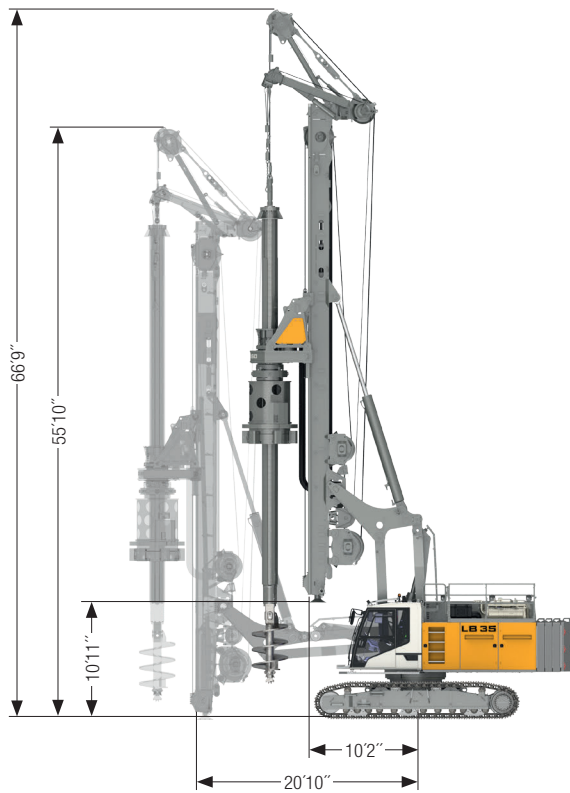
The operating weight includes the basic machine LB 35 with rotary, Kelly bar 28/3/30, 33,069 lbs counterweight and equipment for casing oscillator.

### Operating weight

Total weight with 31.5 inch 3-web grousers	lbs	243,611
Total weight with 35.4 inch 3-web grousers	lbs	245,815

The operating weight includes the basic machine LB 35 with rotary, Kelly bar 28/4/54 and 44,092 lbs counterweight. Equipment for casing oscillator not included.

# Low Head

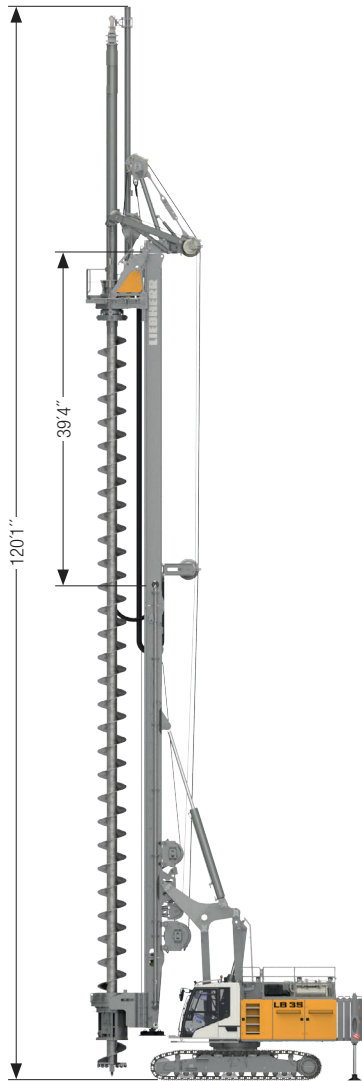


## Operating weight

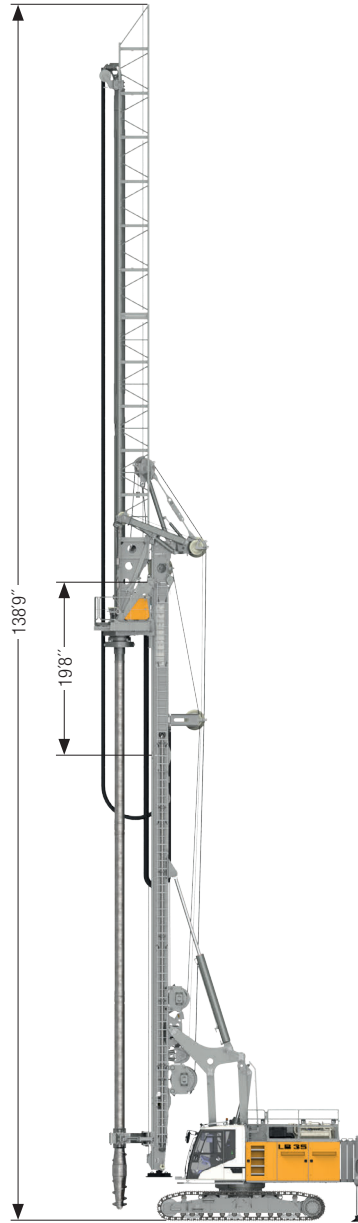
Total weight with 31.5 inch 3-web grousers	lbs	209,880
Total weight with 35.4 inch 3-web grousers	lbs	212,085

The operating weight includes the basic machine LB 35 with rotary, Kelly bar 28/3/30 and 33,069 lbs counterweight. Equipment for casing oscillator not included. The line pull of the Kelly winch is reduced to 56,202 lbf when working at a radius exceeding 14.3 ft.

## Single-Pass



## Lattice boom extension



### Operating weight

Total weight with 31.5 inch 3-web grousers	lbs	238,761
Total weight with 35.4 inch 3-web grousers	lbs	240,965

The operating weight includes the basic machine LB 35 with rotary, 26.2 ft Kelly extension, drill rod 82.0 ft, auger cleaner Ø 2.6 ft and 39,683 lbs counterweight. Equipment for casing oscillator not included.






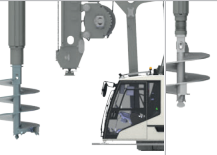





### Operating weight

Total weight with 31.5 inch 3-web grousers	lbs	243,170
Total weight with 35.4 inch 3-web grousers	lbs	245,374

The operating weight includes the basic machine LB 35 with rotary, 59 ft Kelly extension, drill rod 62.3 ft and 39,683 lbs counterweight. Equipment for casing oscillator not included.

# Combined applications

## Combined applications

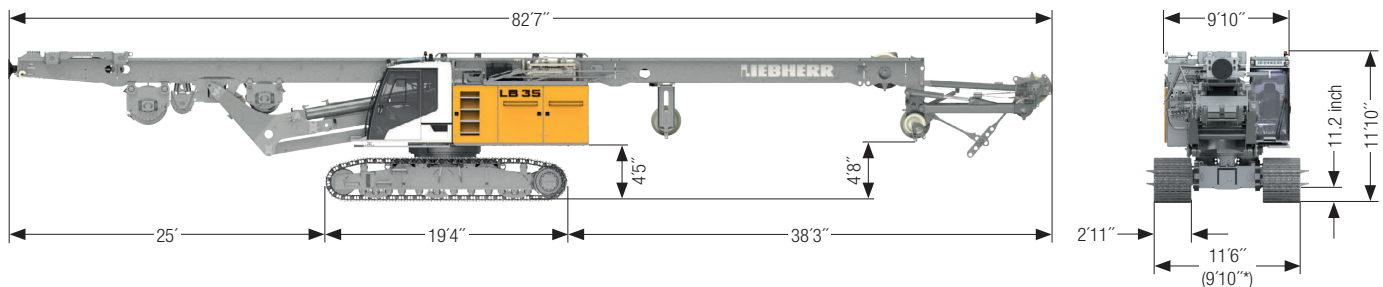
	 Long crowd distance	 Short crowd distance	 Drilling axis 3.6ft*	 Drilling axis 5.2ft*	 Lattice boom extension	 Short leader lower part	 Standard leader lower part
 Standard leader	Kelly CFA FDD CCFA DTH WSM	Kelly	Kelly CFA FDD CCFA DTH WSM	Kelly	FDD WSM (BAT)	Kelly WSM	Kelly CFA FDD CCFA DTH WSM
 Folding 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



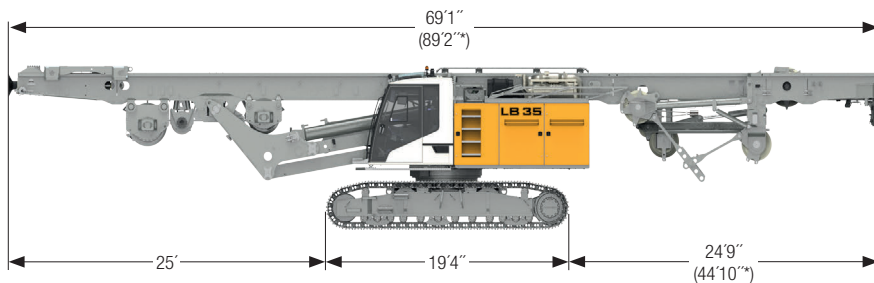
# Transport dimensions and weights



## Standard leader (19.7 ft 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	lbs	152,119
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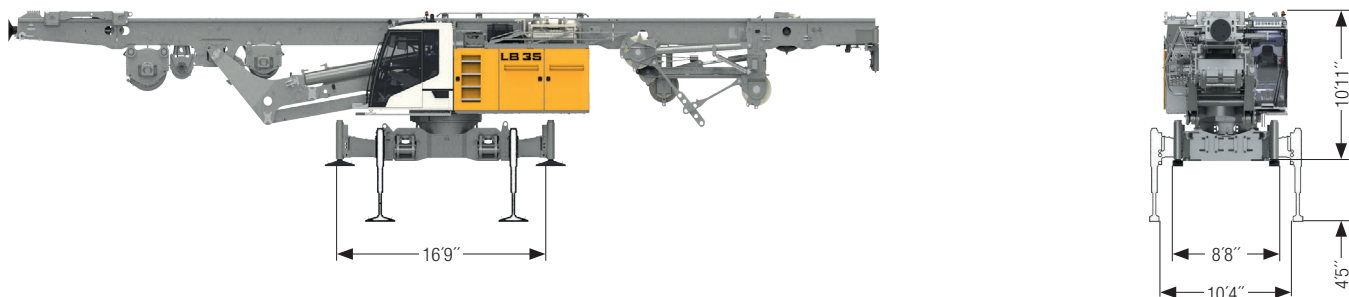
\* Optional transport width with 2.3 ft grousers non-detachable crawlers. With this option, the transport weight is reduced by 4,850 lbs compared to the version with standard undercarriage



## Folding leader (26.2 ft 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	lbs	154,764
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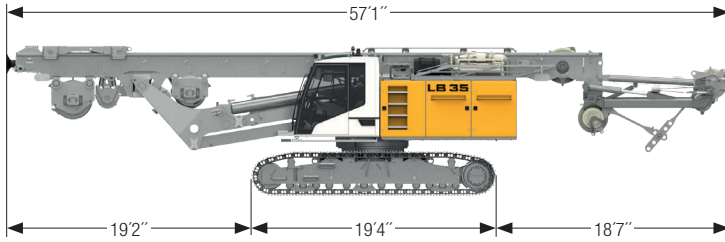
\* Transport length leader not folded



## 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	lbs	130,514
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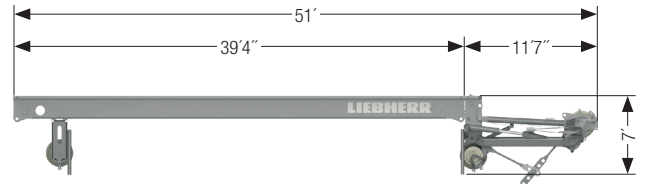
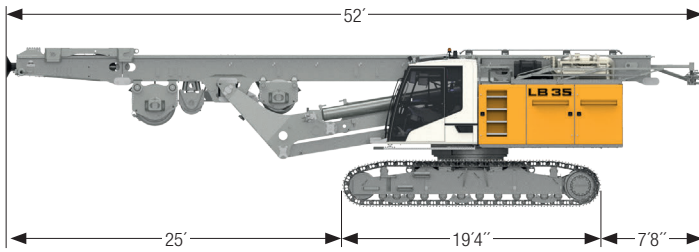




**Low Head**

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

lbs 146,166



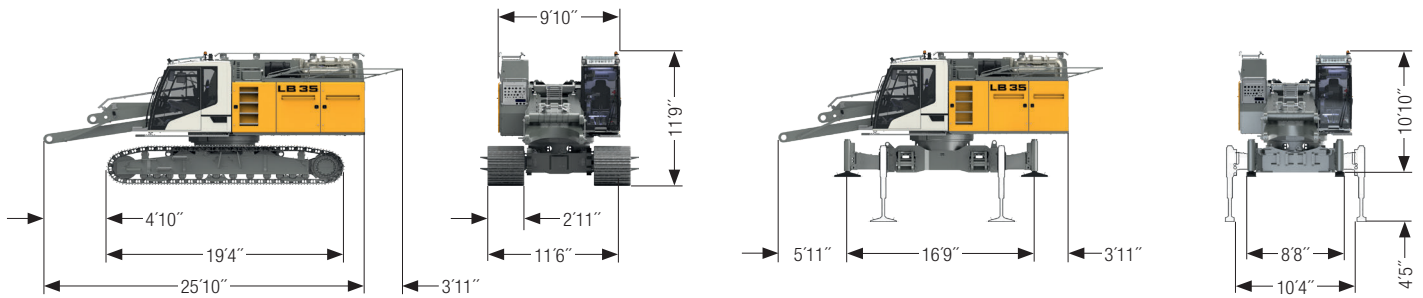
**Single-Pass**

Single-Pass without 39.4 ft 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

lbs 141,316

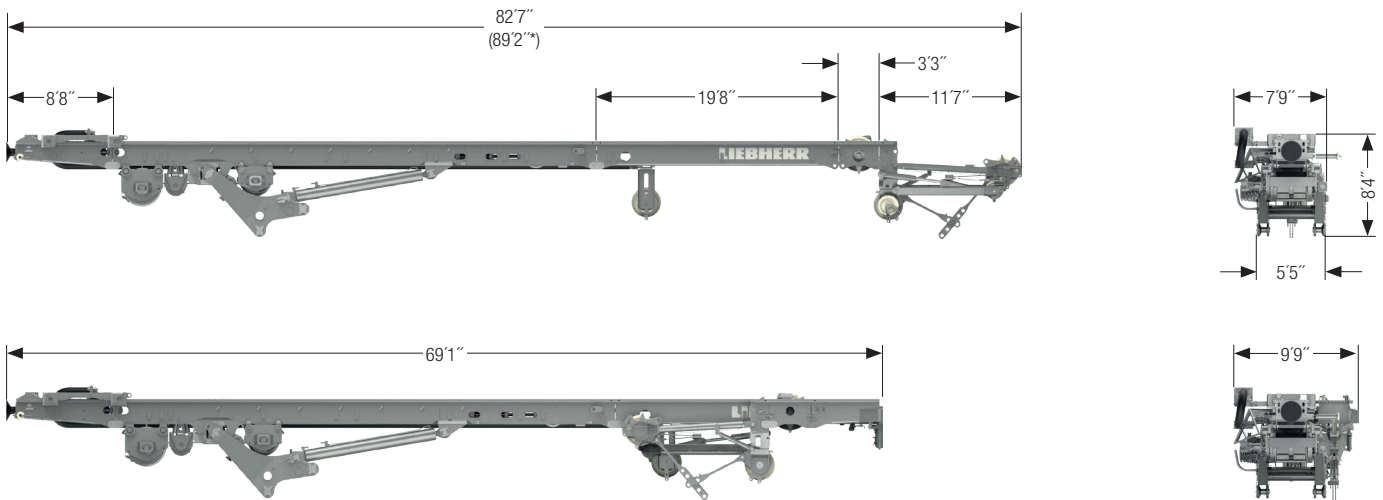
39.4 ft leader extension with leader top

lbs 12,566



### Carrier machine versions

without jack-up system, counterweight and adapter for casing oscillator	lbs	95,019
with jack-up system and adapter for casing oscillator, without counterweight and crawler side frames	lbs	70,989



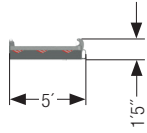
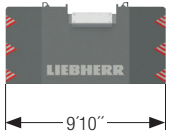
### Leader versions

Standard leader	lbs	57,100
Folding leader	lbs	59,745
Standard leader lower part incl. support cylinder	lbs	3,306
19.7 ft leader extension	lbs	5,070
26.2 ft leader extension	lbs	7,495
39.4 ft leader extension	lbs	8,377
Leader top	lbs	4,188
3.3 ft leader extension with pulley support	lbs	1,763
Short leader lower part	lbs	1,102

\* Transport length folding leader

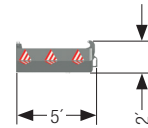
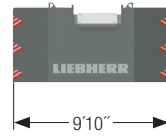
### Options

Jack-up system	lbs	4,850
Adapter for casing oscillator	lbs	2,646
Concrete supply line	lbs	1,102
All round platform with railings	lbs	440



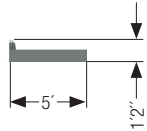
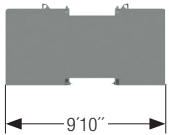
### Rear counterweight

Weight lbs 11,023



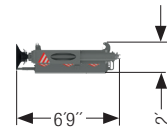
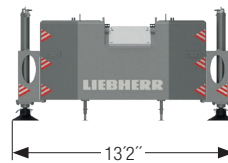
### Rear counterweight

Weight lbs 17,636



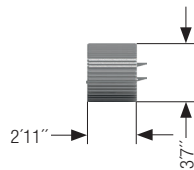
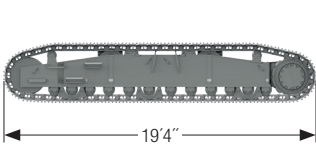
### Intermediate counterweight

Weight lbs 11,023



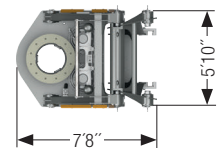
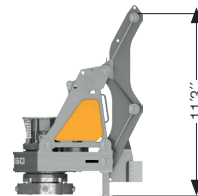
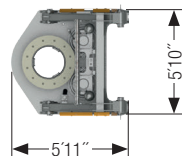
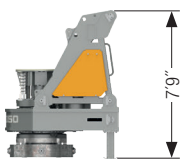
### Rear counterweight with rear support unit

Weight lbs 17,636



### Crawler side frame

Left / right lbs 16,314

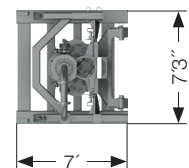
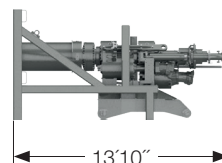
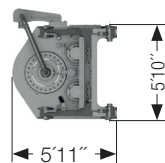
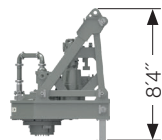


### BAT 350

Transport weight lbs 15,212

### BAT 350 with adapter for drilling axis 5.2 ft

Transport weight lbs 18,298



### MAT 120

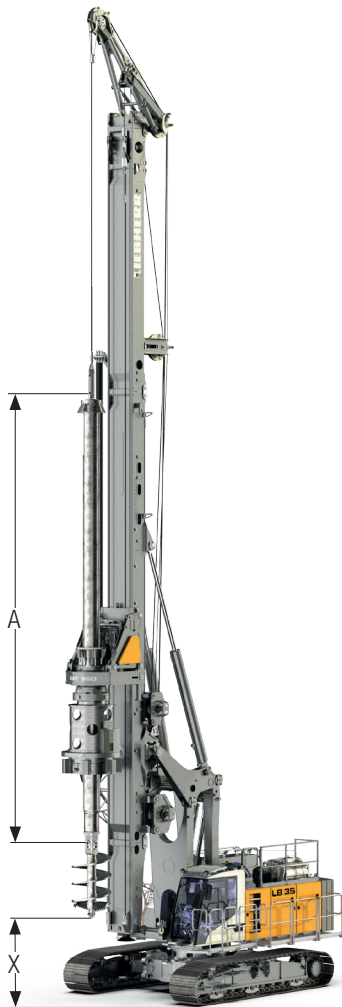
Transport weight lbs 13,227

### DBA 200

Transport weight lbs 19,180

# Kelly drilling

## Standard leader



## Folding leader (large drilling axis)



### Performance data

Rotary drive - torque	lbf-ft	255,934	
Rotary drive - speed	rpm	46	
		Drilling axis 3.6 ft	Drilling axis 5.2 ft
Max. drilling diameter cased*	ft	4.9	8.2
Max. drilling diameter uncased	ft	6.2	9.5
Max. drilling diameter uncased with short leader lower part	ft	11.1	13.5

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											
Model	Length [ft]	Weight [lbs]	Low Head				Standard leader				Folding leader			
			X [ft]		Depth [ft]		X [ft]		Depth [ft]		X [ft]		Depth [ft]	
			3.6	5.2	3.6	5.2	3.6	5.2	3.6	5.2	3.6	5.2	3.6	5.2
28/3/24	32.4	11,685	19.0	19.0	73.5	75.1	38.7	38.7	73.5	75.1	45.3	45.3	73.5	75.1
28/3/27	35.6	12,787	15.7	15.7	83.3	85.0	35.4	35.4	83.3	85.0	42.0	42.0	83.3	85.0
28/3/30	39.5	14,110	12.1	12.1	93.2	94.8	31.8	31.8	93.2	94.8	38.4	38.4	93.2	94.8
28/3/33	42.2	14,771	9.2 <sup>1</sup>	9.2 <sup>1</sup>	103.0 <sup>1</sup>	104.7	28.9	28.9	103.0	104.7	35.4	35.4	103.0	104.7
28/3/36	46.0	16,094	5.9 <sup>1</sup>	5.9 <sup>1</sup>	112.9 <sup>1</sup>	114.5 <sup>1</sup>	25.6	25.6	112.9	114.5	32.2	32.2	112.9	114.5
28/4/36	37.6	16,976	13.8	13.8	113.2	114.8	33.5	33.5	113.2	114.8	40.0	40.0	113.2	114.8
28/4/42	42.5	19,180	8.9 <sup>1</sup>	8.9	132.9 <sup>1</sup>	134.5	28.5	28.5	132.9	134.5	35.1	35.1	132.9	134.5
28/4/48	47.4	21,164	3.9 <sup>1/2</sup>	3.9 <sup>1</sup>	152.6 <sup>1/2</sup>	154.2 <sup>1</sup>	23.6	23.6	152.6	154.2	30.2	30.2	152.6	154.2
28/4/54	52.3	23,369	-	-	-	-	18.7	18.7	172.2	173.9	25.3	25.3	172.2	173.9
28/4/60	57.3	25,574	-	-	-	-	13.8	13.8	191.9	193.6	20.3	20.3	191.9	193.6
28/4/66	62.2	25,794	-	-	-	-	8.9 <sup>1</sup>	8.9	211.6 <sup>1</sup>	213.3	15.4	15.4	211.6	213.3
28/4/72	67.1	27,558	-	-	-	-	3.9 <sup>1/2</sup>	3.9 <sup>1</sup>	231.3 <sup>1/2</sup>	232.9 <sup>1</sup>	10.5 <sup>1</sup>	10.5	231.3 <sup>1</sup>	232.9
28/4/78	72.5	30,203	-	-	-	-	-	-	-	-	5.2 <sup>1/2</sup>	5.2 <sup>1</sup>	252.6 <sup>1/2</sup>	254.3 <sup>1</sup>

<sup>1</sup> When using a short leader lower part an assist crane is required for installation

<sup>2</sup> Installation only possible with assist crane

Drilling axis 3.6

Drilling axis 5.2

Other Kelly bars available on request.

When using a casing oscillator, value X has to be reduced by 4.9 ft.

When using a Kelly bar guide, value X has to be reduced by 3.6 ft.

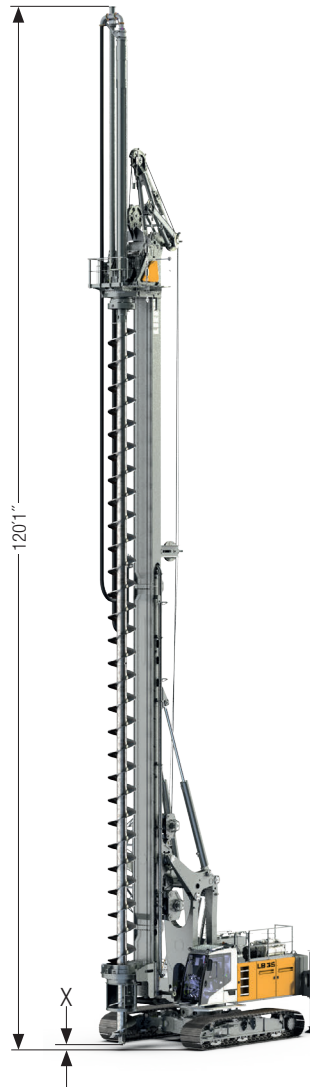
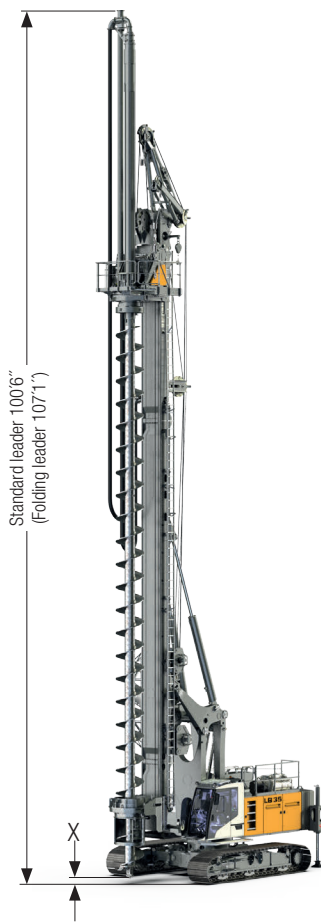
When using a short leader lower part the drilling depth is reduced by 5.8 ft for a drilling axis of 3.6 ft, and by 7.8 ft for a drilling axis of 5.2 ft.

Length of drilling tool 6.2 ft

# Continuous flight auger drilling

Standard leader

Single-Pass



## Performance data

Rotary drive - torque	lbf-ft	236,020			
Rotary drive - speed	rpm	46			
Max. drilling diameter*	ft	3.3			
		Low Head	Standard leader	Folding leader	Single-Pass
Drilling depth without Kelly extension	ft	35.4	55.1	61.7	74.8
Drilling depth with 26.2 ft Kelly extension	ft	61.7	81.4	87.9	101.0
Max. pull force	lbf	224,808	224,808	224,808	134,885

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 0.6 ft (0.4 ft 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	lbf-ft	236,020			
Rotary drive - speed	rpm	46			
Max. drilling diameter*	ft	2.0			
		Low Head	Standard leader	Folding leader	Single-Pass
Drilling depth without Kelly extension	ft	37.7	57.4	64.0	77.1
Drilling depth with 26.2 ft Kelly extension	ft	64.0	83.7	90.2	103.3
Drilling depth with 59.0 ft lattice boom extension	ft	-	116.5	-	-
Max. pull force	lbf	224,808	224,808	224,808	134,885

Above drilling depths are valid for the use of standard tools and for an X value of 1.3 ft (1.1 ft with Single-Pass) - see above illustration.

\* Other drilling diameters available on request



# Double rotary drilling

DBA 200



## Performance data

Rotary drive I - torque	lbf-ft	0-154,888		
Rotary drive I - speed	rpm	0-17		
Rotary drive II - torque	lbf-ft	0-77,444		
Rotary drive II - speed	rpm	0-37		
Max. drilling diameter*	ft	2.5		
		Low Head	Standard leader	Folding leader
Drilling depth **	ft	35.8	55.4	62.0
Max. pull force	lbf	157,366	157,366	157,366

Above drilling depths are valid for the use of standard tools and for an X value of 2.8 ft (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 2.8 ft.

# Soil mixing

## MAT 120 / BAT 350



### Performance data MAT 120

Rotary drive - torque	lbf-ft	84,819			
Rotary drive - speed	rpm	100			
Max. mixing diameter*	ft	4.9			
		Low Head	Standard leader	Folding leader	Single-Pass
Mixing depth	ft	35.4	55.1	61.7	77.4
Max. pull force	lbf	89,923	89,923	89,923	134,885

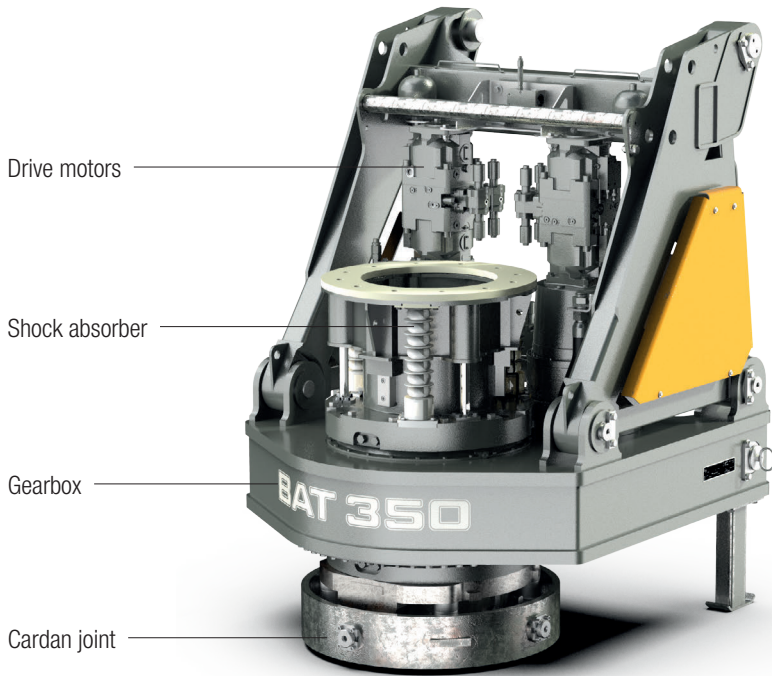
### Performance data BAT 350

Rotary drive - torque	lbf-ft	236,020			
Rotary drive - speed	rpm	46			
Max. mixing diameter*	ft	6.2			
		Low Head	Standard leader	Folding leader	Single-Pass
Mixing depth	ft	37.1	56.8	63.3	76.4
Mixing depth with 26.2 ft Kelly extension	ft	63.3	83.0	89.6	102.7
Mixing depth with 59.0 ft lattice boom extension	ft	-	115.8	-	-
Max. pull force	lbf	224,808	224,808	224,808	134,885

Above mixing depths are valid for the use of standard tools and for an X value of 3.4 ft for MAT 120, and 1.6 ft 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:

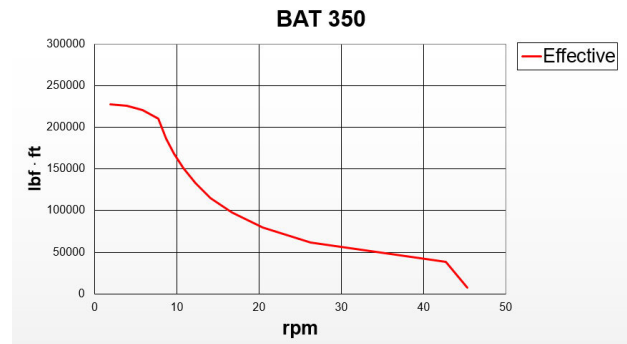
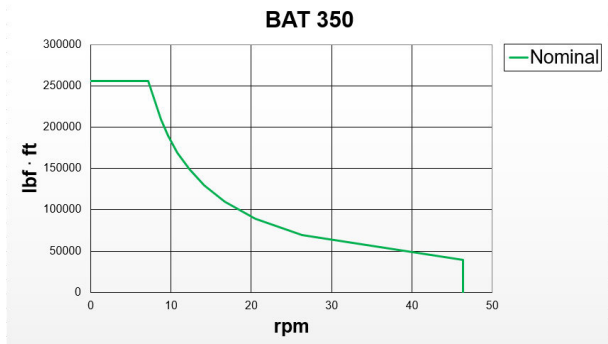
- No stopping required to change gears
- No interruption of the drilling process
- Continuous optimization of speed

## Highest availability through easy set-up:

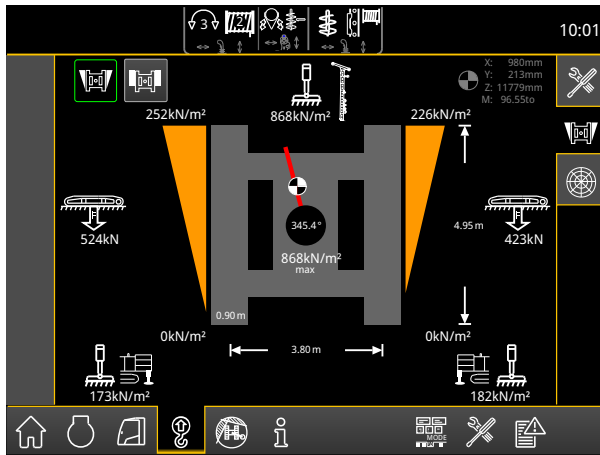
- No mechanical shift gearbox
- Low maintenance requirements

## 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

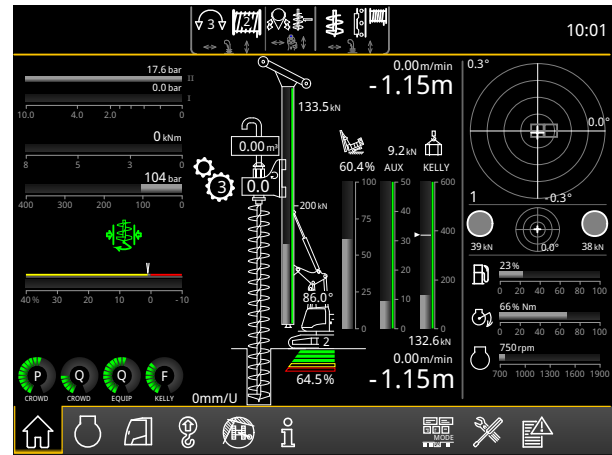


# Ground Pressure Visualization



## Features:

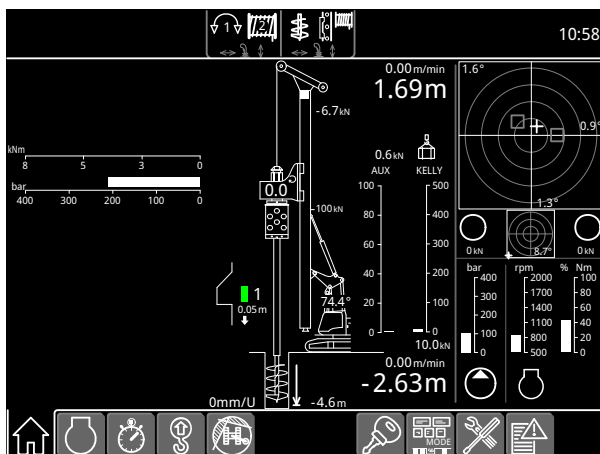
- The actual ground pressure is calculated in real time
- The maximum admissible ground pressure can be individually predefined
- The utilization is continuously calculated and displayed on the monitor in the operator's cab
- Audible and visual warnings when the predefined values are approached



## 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

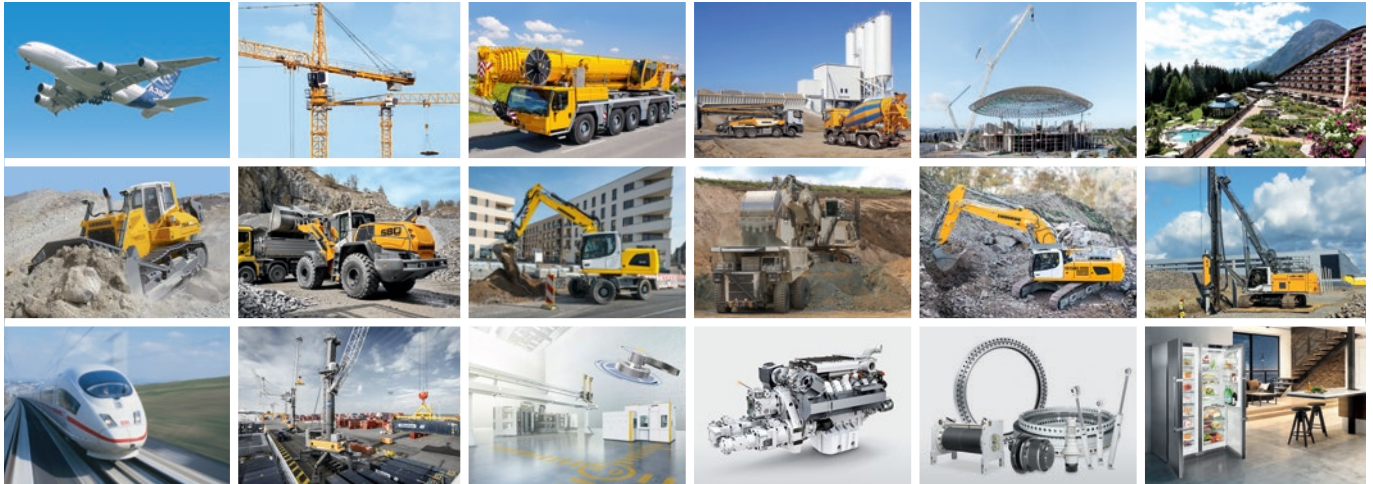


## Your benefits:

- 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

all measurements displayed on this page are metric

# 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.

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