

EN-US

LB 45.1

LB 2005.08
www.liebherr.com

LIEBHERR

Drilling rigs

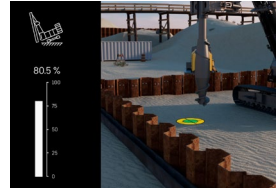


Assistance systems



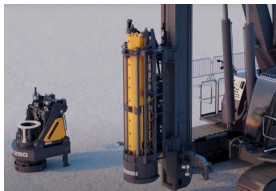
Remote-controlled assembly and disassembly

The remote control facilitates the safe assembly and disassembly of the machine. The operator can change position and thus has a better view of collision points.



Ground pressure visualisation

Changes in the leader position or swinging the uppercarriage lead to a shift in the centre of gravity. Centres of gravity, load moments and ground pressure distribution under the crawler are calculated in real time.



Attachment recognition

The basic machine's control system detects attachments, records their operating hours and optimises oil quantities and pressures. Operating parameters and faults are recorded and can be recalled via LiDAT.



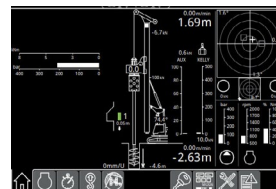
Automatic leader adjustment

The operator can save the leader inclination. At the touch of a button, the leader can be set to the desired inclination at the piling or drilling point for each new working step. This saves time and ensures precise results.



Drilling assistant for single-pass method

The rope crowd system, rotary drive and the amount of flowing concrete are optimally matched during drilling and subsequent extraction.



Assistance systems for Kelly drilling

- Automatic shake-off function for working tools
- Kelly visualisation
- Auger filling level display for drilling tools
- Kelly winch with freewheeling and with slack rope monitoring and prevention
- Crowd booster

Technical description



Diesel engine

Power rating according to ISO 9249	450 kW (603 hp) at 1700 rpm
Engine type	Liebherr D 966 A7-05
Fuel tank capacity	165 gal with continuous level indicator and reserve warning
Exhaust certification	EU 2016/1628 Stage V EPA/CARB Tier 4f non-certified emission standard



Hydraulic system

Hydraulic oil tank capacity	203 gal
Max. working pressure	5,584 PSI
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	0-0.99 mph
Track force	164,785 lbf
Grousers	Width 39.4 inch (option 35.4 inch)



Swing gear

Drive system	with fixed axial piston hydraulic motors, planetary gearbox, pinion
Swing ring	Roller bearing with external teeth
Brake	hydraulically released, spring-loaded multi-disc holding brake
Swing speed	0-2.4 rpm continuously variable



Kelly winch with freewheeling

Line pull effective	94,419 lbf (1st layer)
Rope diameter	38 mm
Rope speed	0-213 ft/min



Auxiliary winch

Line pull effective	22,480 lbf (1st layer)
Rope diameter	20 mm
Rope speed	0-292 ft/min



Crowd system

Crowd force	89,924/89,924 lbf (push/pull)
Line pull effective	44,962 lbf (1st layer)
Rope diameter	28 mm
Travel with standard leader between mechanical limit stops	58.4 ft
Rope speed	0-230 ft/min



Noise measurement data and vibration

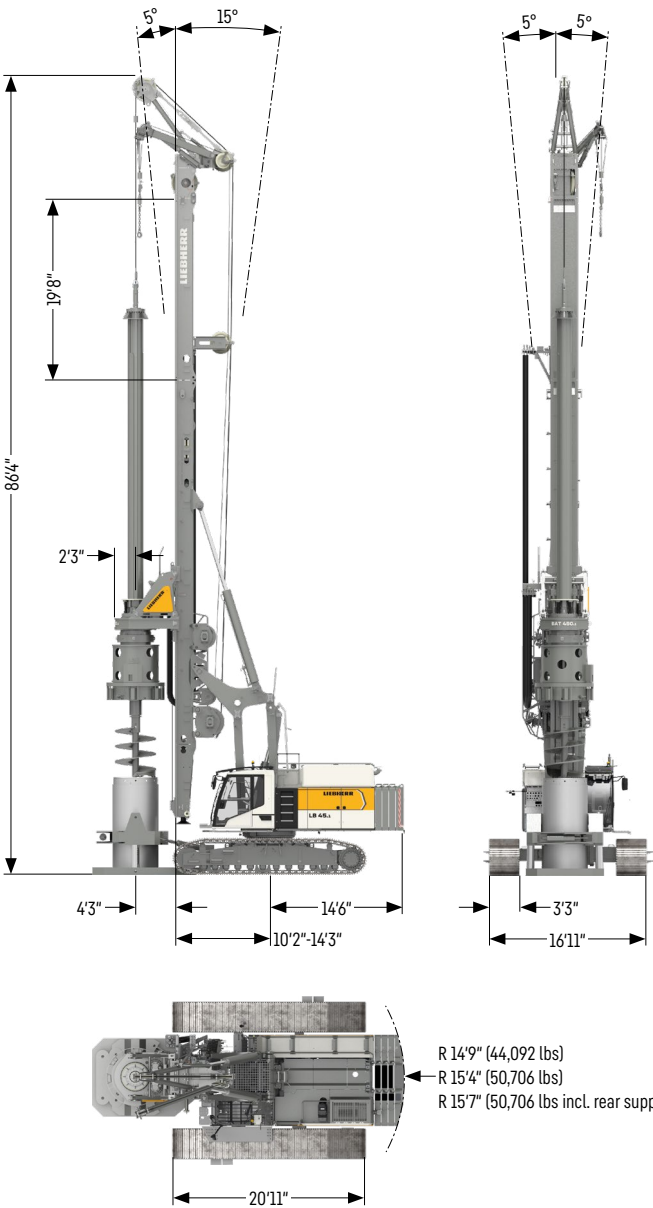
Noise emission	according to 2000/14/EC directive	
Emission sound pressure level L_{PA}	82.1 dB(A)	(in the cabin)
Guaranteed sound power level L_{WA}	111.0 dB(A)	(of the machine)
Vibration transmitted to the machine operator	< 8.2 ft/s ²	(to the hand-arm system)
	< 1.6 ft/s ²	(to the whole body)
Eco-silent mode (option)		
Guaranteed sound power level L_{WA}	-1 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 and transport dimensions 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

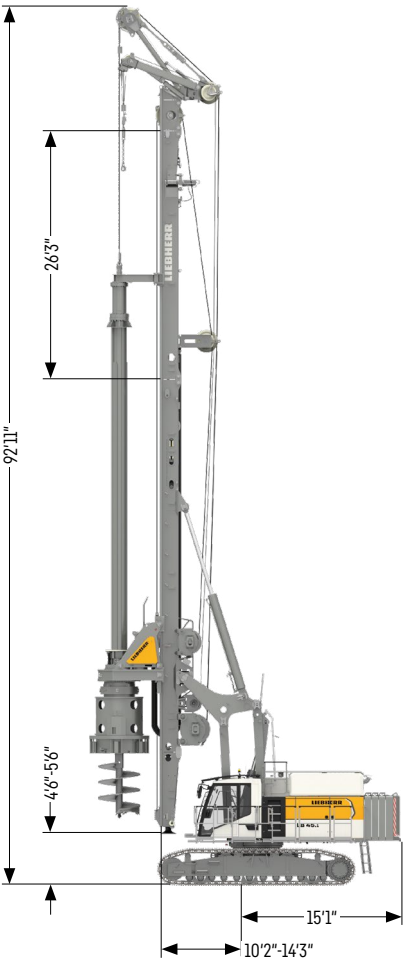
Standard



Operating weights

Total weight with 35.4 inch 3-web grousers	lbs	254,634
Total weight with 39.4 inch 3-web grousers	lbs	256,177
The operating weight includes the basic machine LB 45.1 with rotary and Kelly bar 36/3/36, 44,092 lbs counterweight and equipment for casing oscillator.		

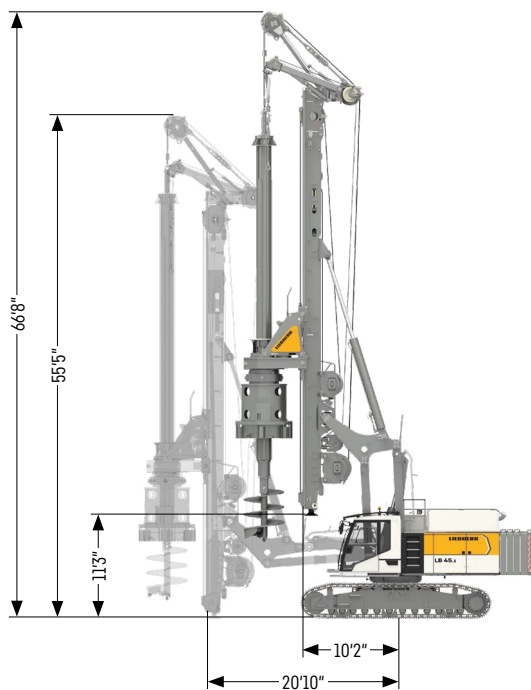
Folding leader



Operating weights

Total weight with 35.4 inch 3-web grousers	lbs	270,728
Total weight with 39.4 inch 3-web grousers	lbs	272,271
The operating weight includes the basic machine LB 45.1 with rotary, Kelly bar 36/4/48 and 50,706 lbs counterweight. Equipment for casing oscillator not included.		

Low Head

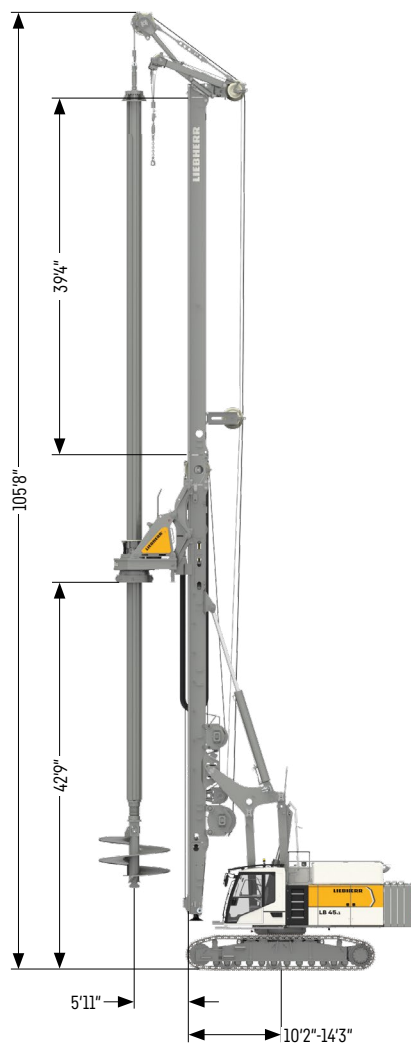


Operating weights

Total weight with 35.4 inch 3-web grousers	lbs 247,579
Total weight with 39.4 inch 3-web grousers	lbs 249,122

The operating weight includes the basic machine LB 45.1 with rotary, Kelly bar 36/4/30 and 50,706 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.

Kelly Only

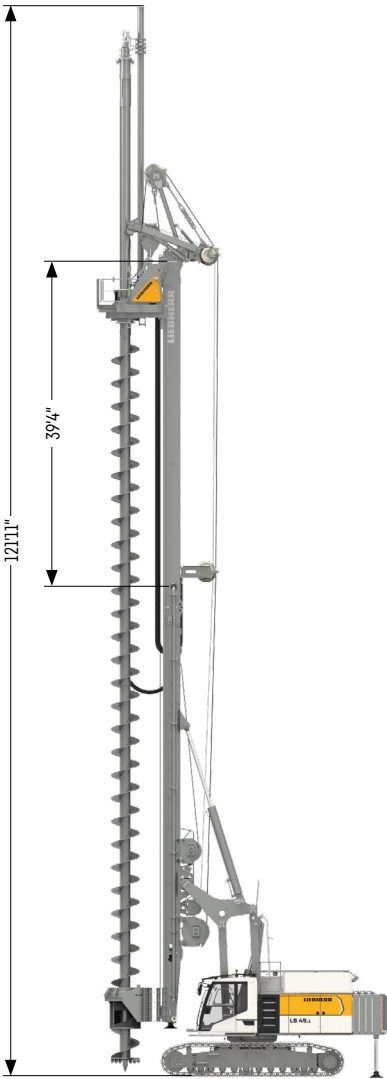


Operating weights

Total weight with 35.4 inch 3-web grousers	lbs 292,112
Total weight with 39.4 inch 3-web grousers	lbs 293,656

The operating weight includes the basic machine LB 45.1 with rotary, drilling axis extension 5.9 ft, Kelly bar 36/4/93 and 50,706 lbs counterweight. Equipment for casing oscillator not included.

Single-pass



Operating weights

Total weight with 35.4 inch 3-web grousers	lbs 279,767
Total weight with 39.4 inch 3-web grousers	lbs 281,310

The operating weight includes the basic machine LB 45.1 with rotary, 39.4 ft Kelly extension, auger ø 3.3 ft 82.0 ft, auger cleaner ø 3.3 ft and 50,706 lbs counterweight. Equipment for casing oscillator not included.

Lattice boom extension



Operating weights

Total weight with 35.4 inch 3-web grousers	lbs 284,396
Total weight with 39.4 inch 3-web grousers	lbs 285,940

The operating weight includes the basic machine LB 45.1 with rotary, 59.1 ft Kelly extension, drill rod 68.9 ft and 50,706 lbs counterweight. Equipment for casing oscillator not included.

Combined applications

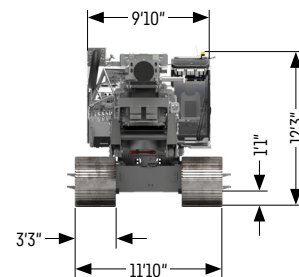
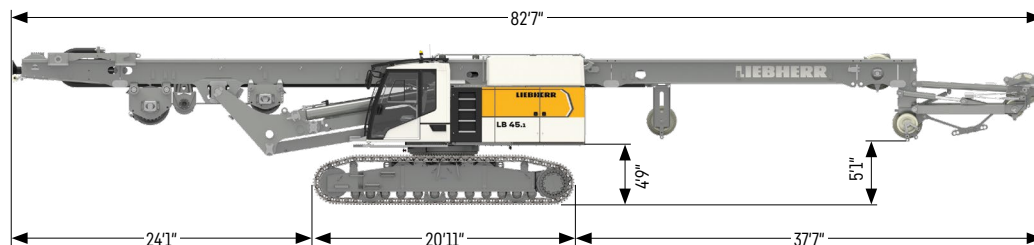
Combined applications

							
 Standard leader	Kelly CFA FDD CCFA DTH WSM	Kelly	Kelly CFA FDD CCFA DTH WSM	Kelly	FDD	Kelly WSM	Kelly CFA FDD CCFA DTH WSM
 Folding leader	Kelly CFA FDD CCFA DTH WSM	Kelly	Kelly CFA FDD CCFA DTH WSM	Kelly	FDD	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
 Kelly Only		Kelly	Kelly	Kelly		Kelly	Kelly
 Single-pass	CFA FDD WSM CCFA DTH		CFA FDD WSM CCFA DTH			WSM	CFA FDD WSM CCFA DTH

* Distance from drilling axis to front edge of leader

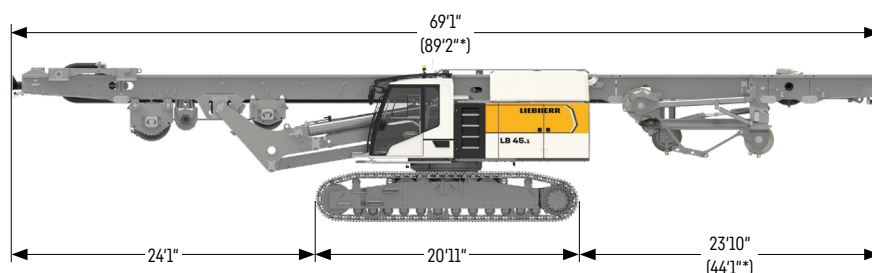
Kelly	Kelly drilling
CFA	Continuous flight auger drilling
FDD	Full displacement drilling
CCFA	Double rotary drilling
DTH	Down-the-hole drilling
WSM	Soil mixing

Transport dimensions and weights



Standard leader (19.7 ft leader upper part)

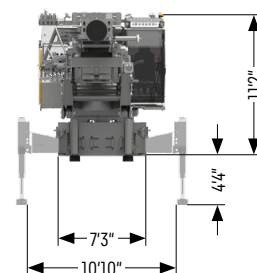
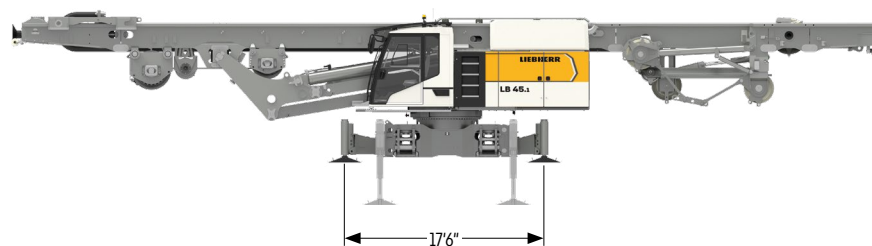
includes the basic machine (fully tanked and ready for operation) with leader, lbs 167,992
without attachments (such as rotary, Kelly bar etc.), without counterweight
and without adapter for casing oscillator



Folding leader (26.2 ft leader upper part)

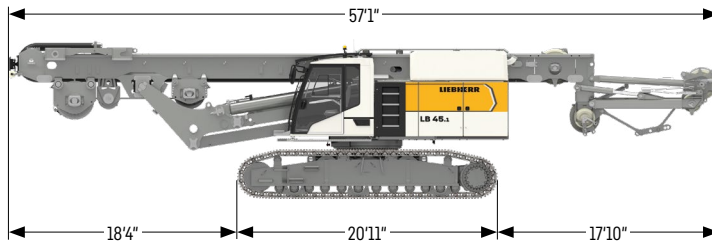
includes the basic machine (fully tanked and ready for operation) with leader, lbs 171,079
without attachments (such as rotary, Kelly bar etc.), without counterweight
and without adapter for casing oscillator

* Transport length leader not folded



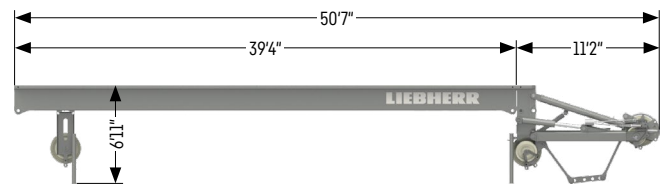
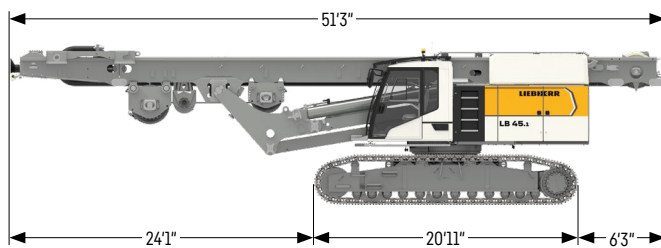
Folding leader without crawlers

includes the basic machine (fully tanked and ready for operation) with leader, lbs 135,364
jack-up system and adapter for casing oscillator, without attachments (such
as rotary, Kelly bar etc.), without counterweight and without crawlers



Low Head

includes the basic machine (fully tanked and ready for operation) with leader,	lbs	160,717
without attachments (such as rotary, Kelly bar etc.) and without counterweight		

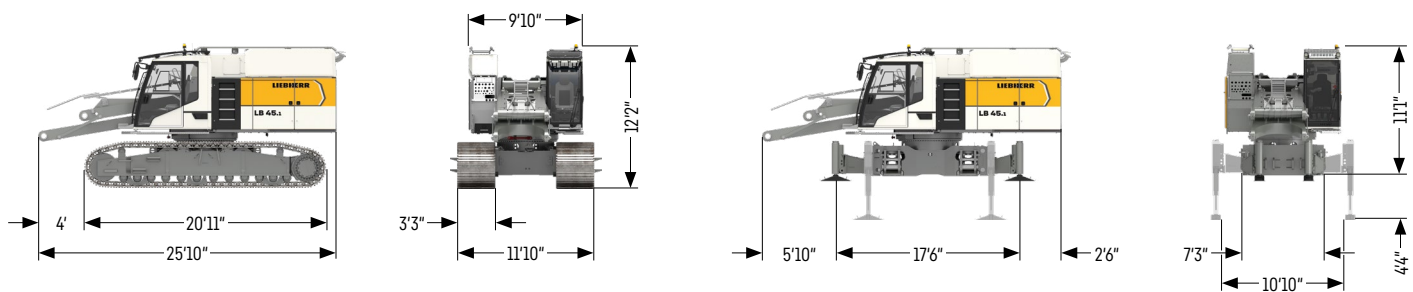


Kelly Only and single-pass

Kelly Only without 39.4 ft leader extension and leader top	lbs	159,174
includes the basic machine (fully tanked and ready for operation) with leader,		
without attachments (such as rotary, Kelly bar etc.) and without counterweight		

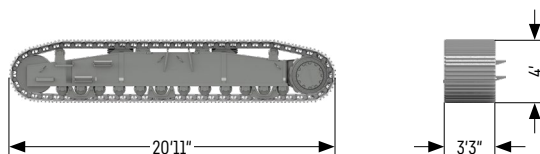
Single-pass without 39.4 ft leader extension and leader top	lbs	157,410
includes the basic machine (fully tanked and ready for operation) with leader,		
without attachments (such as rotary, Kelly bar etc.) and without counterweight		

39.4 ft leader extension with leader top	lbs	132,228
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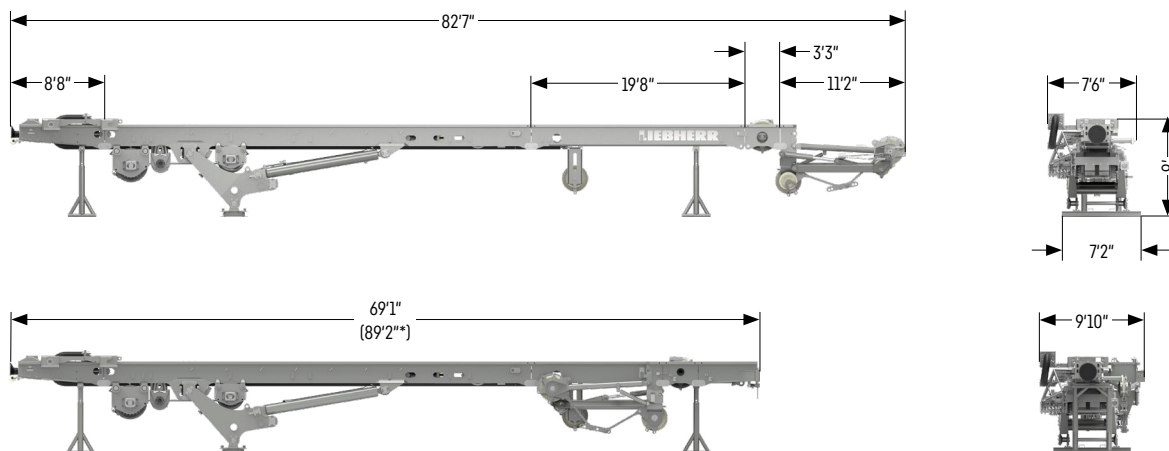
Carrier machine versions

without jack-up system, counterweight and adapter for casing oscillator	lbs 111,113
with jack-up system and adapter for casing oscillator, without counterweight and crawlers	lbs 75,398



Crawler

Left/right	lbs 22,487
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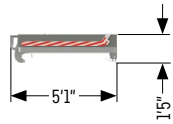
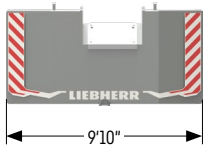
Leader versions

Standard leader	lbs 59,525
Folding leader	lbs 62,211
Standard leader lower part	lbs 3,748
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
3.2 ft leader extension with pulley support	lbs 1,763
Short leader lower part	lbs 1,102

* Transport length folding leader

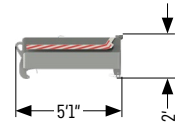
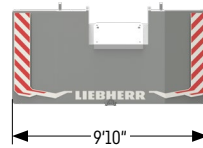
Options

Jack-up system	lbs 6,393
Adapter for casing oscillator	lbs 2,866
Concrete supply line	lbs 1,323
All round platform with railings	lbs 1,102



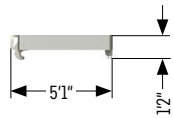
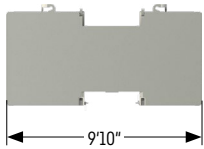
Counterweight

Weight lbs 11,023



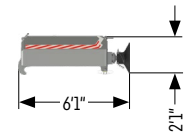
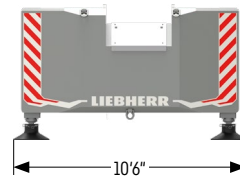
Counterweight

Weight lbs 17,636



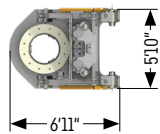
Intermediate slab

Weight lbs 11,023



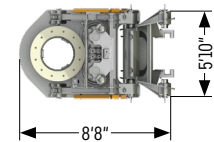
Rear counterweight with rear support

Weight lbs 17,636



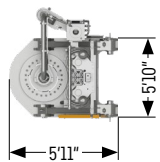
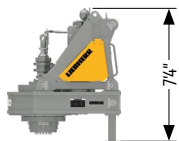
BAT 450.1

Transport weight lbs 20,062



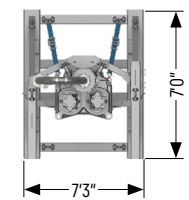
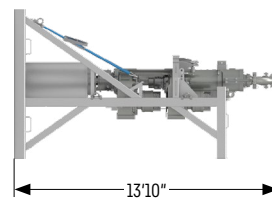
BAT 450.1 with adapter for drilling axis 5.9 ft

Transport weight lbs 23,369



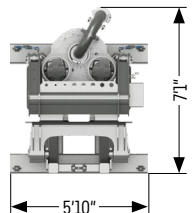
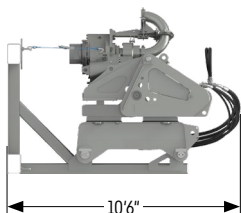
MA 220

Transport weight lbs 14,110



DBA 220

Transport weight lbs 19,401



DHR 220

Transport weight lbs 15,212

Kelly drilling

Standard with short leader lower part Kelly Only (large drilling axis)



Performance data

Rotary drive - torque	lbf-ft	0-452	
Rotary drive - speed	rpm	0-37	
		Drilling axis 4.3 ft	Drilling axis 5.9 ft
Max. drilling diameter cased*	ft	6.6	9.2
Max. drilling diameter uncased	ft	7.5	10.5
Max. drilling diameter uncased with short leader lower part	ft	12.5	14.8

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

* Depending on casing driver configuration.

Drilling depths with Low Head, standard, folding leader and Kelly Only

Technical data Kelly bars

Kelly bars			Drilling depths															
			Low Head				Standard				Folding leader				Kelly Only			
			X [ft]		Depth [ft]		X [ft]		Depth [ft]		X [ft]		Depth [ft]		X [ft]		Depth [ft]	
Model	Length A [ft]	Weight [lbs]	4.3	5.9	4.3	5.9	4.3	5.9	4.3	5.9	4.3	5.9	4.3	5.9	4.3	5.9	4.3	5.9
36/3/30	39.0	16,755	12.5	12.1	92.8	94.8	31.8	31.5	92.8	94.8	38.4	38.1	92.8	94.8	39.4	36.4	92.8	94.8
36/3/36	46.1	20,282	5.2 ^{1/2}	4.9 ¹	112.5 ^{1/2}	114.2	24.9	24.6	112.5	114.2	31.5	31.2	112.5	114.2	39.4	36.4	112.5	114.2
36/4/30	32.6	18,739	18.7	18.4	92.8	94.5	38.4	38.1	92.8	94.5	44.9	44.6	92.8	94.5	39.4	36.4	92.8	94.5
36/4/42	42.5	24,030	8.9	8.5 ¹	132.2 ¹	133.9 ¹	28.5	28.2	132.2	133.9	35.1	34.8	132.2	133.9	39.4	36.4	132.2	133.9
36/4/48	47.5	26,675	3.9 ^{1/2}	3.6 ¹	151.9 ^{1/2}	153.5 ¹	23.6	23.3	151.9	153.5	30.2	29.9	151.9	153.5	39.4	36.4	151.9	153.5
36/4/54	52.3	28,660	-	-	-	-	18.4	18.4	171.6	173.6	25.3	25.0	171.6	173.6	38.4	36.4	171.6	173.6
36/4/60	57.3	31,085	-	-	-	-	13.8	13.5	191.3	192.9	20.3	20.2	191.3	192.9	33.5	33.1	191.3	192.9
36/4/66	62.2	33,730	-	-	-	-	8.9 ¹	8.5 ¹	211.3 ¹	212.9 ¹	15.4	15.1	211.3	212.9	28.5	28.2	211.3	212.9
36/4/72	67.1	36,155	-	-	-	-	3.9 ^{1/2}	3.6 ¹	230.6 ^{1/2}	232.6 ¹	10.5 ¹	10.2	230.6 ¹	232.6	23.6	23.3	230.6	232.6
36/4/78	72.0	38,581	-	-	-	-	-	-	-	-	5.6 ^{1/2}	5.3 ¹	250.7 ^{1/2}	252.3 ¹	18.7	18.4	250.7	252.3
36/4/84	77.0	41,226	-	-	-	-	-	-	-	-	0.6 ^{1/2}	0.3 ^{1/2}	270.3 ^{1/2}	272.0 ^{1/2}	13.8	13.5	270.3	272.0
36/4/90	81.9	44,373	-	-	-	-	-	-	-	-	-	-	-	-	8.9 ¹	8.5 ¹	290.0 ¹	291.7 ¹
36/4/93	84.5	46,518	-	-	-	-	-	-	-	-	-	-	-	-	6.2 ¹	5.9 ¹	299.5 ¹	301.2 ¹
36/4/96	86.8	45,856	-	-	-	-	-	-	-	-	-	-	-	-	3.9 ^{1/2}	3.6 ¹	309.7 ^{1/2}	311.4 ¹

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

² Installation only possible using auxiliary equipment

Drilling axis 4.3 ft

Drilling axis 5.9 ft

Other Kelly bars available on request.

When using a casing oscillator (standard 118/120 KL, 150 KL, 180 KL and 200 KL), dimension X must be reduced by 5.2 ft.

Other casing oscillators available on request.

When using a Kelly bar guide, dimension X has to be reduced by 4.5 ft for a drilling axis of 4.3 ft, and by 7.5 ft for a drilling axis of 5.9 ft.

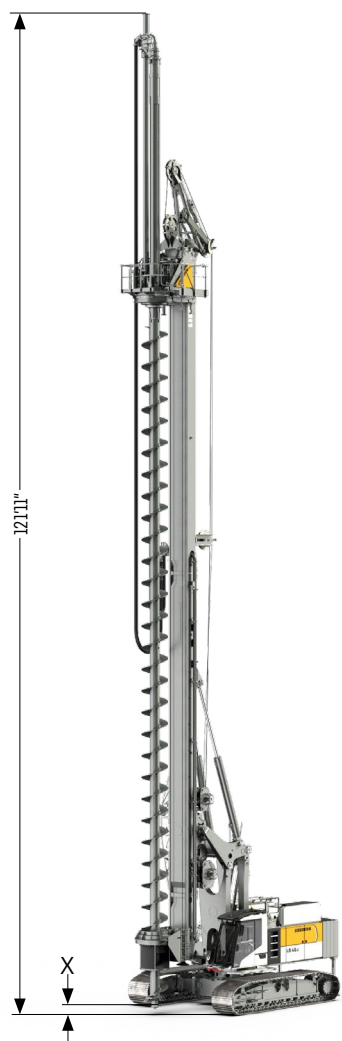
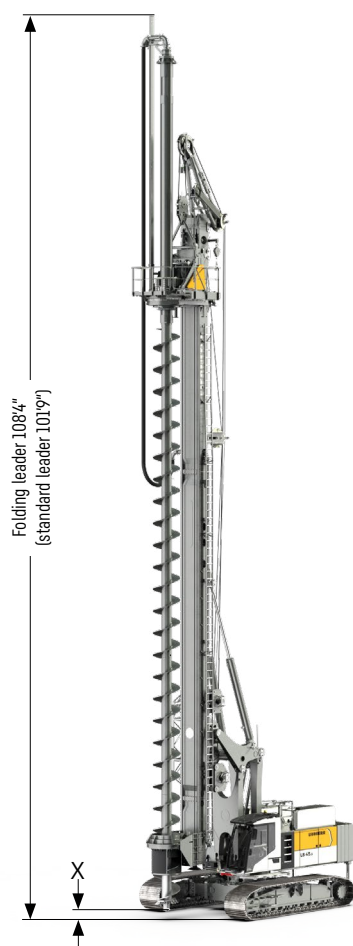
When using a short leader lower part the drilling depth is reduced by 5.7 ft for a drilling axis of 4.3 ft, and by 7.6 ft for a drilling axis of 5.9 ft.

Length of drilling tool 6.2 ft

Continuous flight auger drilling

Folding leader

Single-pass



Performance data

Rotary drive - torque	lbf-ft	0-333,378			
Rotary drive - speed	rpm	0-37			
Max. drilling diameter*	ft	3.9			
		Low Head	Standard	Folding leader	Single-pass
Drilling depth without Kelly extension	ft	34.8	54.5	61.0	73.8
Drilling depth with 26.2 ft Kelly extension	ft	61.0	80.7	87.3	100.1
Max. pull force	lbf	224,808	224,808	224,808	188,839

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 the X dimension of 0.7 ft (see above illustration).

* Other drilling diameters available on request

Full displacement drilling

Folding leader



Lattice boom extension



Performance data

Rotary drive - torque	lbf-ft	0-33,378			
Rotary drive - speed	rpm	0-37			
Max. drilling diameter*	ft	2.6			
		Low Head	Standard	Folding leader	Single-pass
Drilling depth without Kelly extension	ft	37.1	56.8	63.3	76.4
Drilling depth with 26.2 ft Kelly extension	ft	63.3	83.0	89.6	102.7
Drilling depth with 59.1 ft lattice boom extension	ft	-	109.9	122.4	-
Max. pull force	lbf	224,808	224,808	224,808	188,839

Above drilling depths are valid for the use of standard tools and for an X dimension of 1.4 ft (see above illustration).

* Other drilling diameters available on request

Double rotary drilling

DBA 220



Performance data

Rotary drive I - torque	lbf-ft	0-161,526			
Rotary drive I - speed	rpm	0-22			
Rotary drive II - torque	lbf-ft	0-80,394			
Rotary drive II - speed	rpm	0-37			
Max. drilling diameter*	ft	3.0			
		Low Head	Standard	Folding leader	Single-pass
Drilling depth**	ft	35.4	55.1	61.7	74.8
Max. pull force	lbf	184,343	184,343	184,343	184,343

Above drilling depths are valid for the use of standard tools and for an X dimension of 3.1 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 on request

** When using a protective hose, the maximum drilling depth has to be reduced by 1.2 ft.

Soil mixing

MA 220 / BAT 450.1



Performance data MA 220

Rotary drive - torque	lbf-ft	0-162,264			
Rotary drive - speed	rpm	0-80			
Max. mixing diameter*	ft	4.9			
		Low Head	Standard	Folding leader	Single-pass
Mixing depth	ft	36.4	56.1	62.7	75.8
Mixing depth with 26.2 ft Kelly extension	ft	62.7	82.3	88.9	102.0
Max. pull force	kN	224,808	224,808	224,808	188,839

Performance data BAT 450.1

Rotary drive - torque	lbf-ft	0-333,378			
Rotary drive - speed	rpm	0-37			
Max. mixing diameter*	ft	7.5			
		Low Head	Standard	Folding leader	Single-pass
Mixing depth	ft	36.4	56.1	62.7	75.8
Mixing depth with 26.2 ft Kelly extension	ft	62.7	82.3	88.9	102.0
Max. pull force	lbf	224,808	224,808	224,808	188,839

Above mixing depths are valid for the use of standard tools and for the X dimension of 2.0 ft (see above illustration).

When using a short leader lower part the mixing depth is reduced by 5.7 ft

* Other mixing diameters available on request

Down-the-hole drilling



Performance data DHR 220

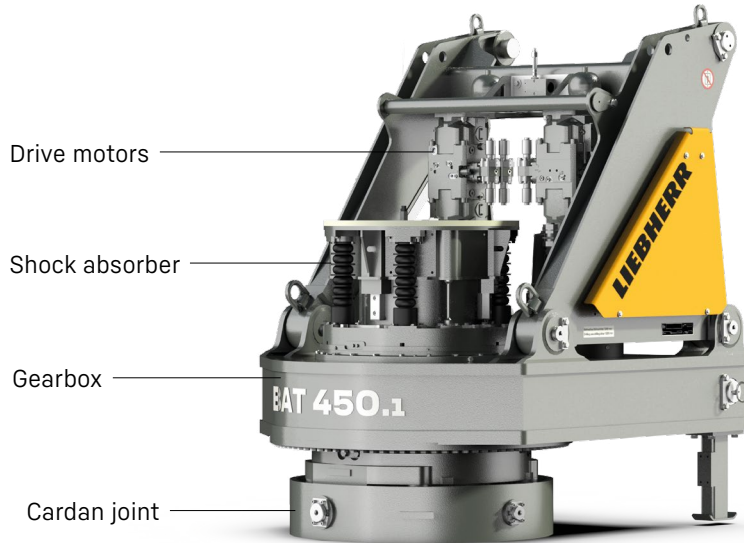
Rotary drive - torque	lbf-ft	0-160,788			
Rotary drive - speed	rpm	0-25			
		Low Head	Standard	Folding leader	Single-pass
Drilling depth	ft	36.7	56.4	63.0	76.1
Folding function	°	0-90	0-90	0-90	0-90
Max. pull force	lbf	134,885*/179,847**	134,885*/179,847**	134,885*/179,847**	134,885*/179,847**

Above drilling depths are valid for the use of standard tools and for an X dimension of 1.6 ft (see above illustration).

* Max. pull force in drilling operation

** Max. pull force in recovery mode

BAT 450.1



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

Highest availability through easy set-up:

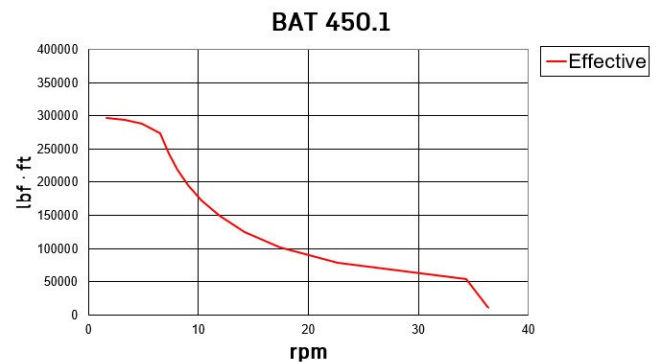
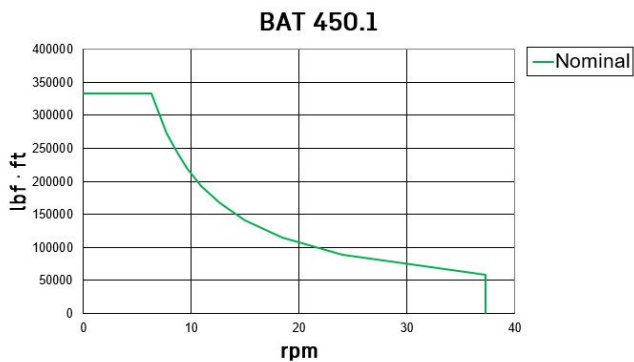
- No mechanical shift gearbox
- Low maintenance requirements

Automatic gearbox for best operating comfort:

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

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



Digital solutions

Liebherr-Werk Nenzing GmbH has set itself the goal of using digital solutions to network and optimise processes on the jobsite.

In the progression from an experienced machine manufacturer to a full-service provider Liebherr already has a number of digital solutions, which provide substantial support for all those involved in the construction site.



MyLiebherr

One portal, all services



PDE

Process data recording



MyJobsite

Your jobsite at a glance



LIPOS

Positioning system



XpertAssist

Remote support in real time



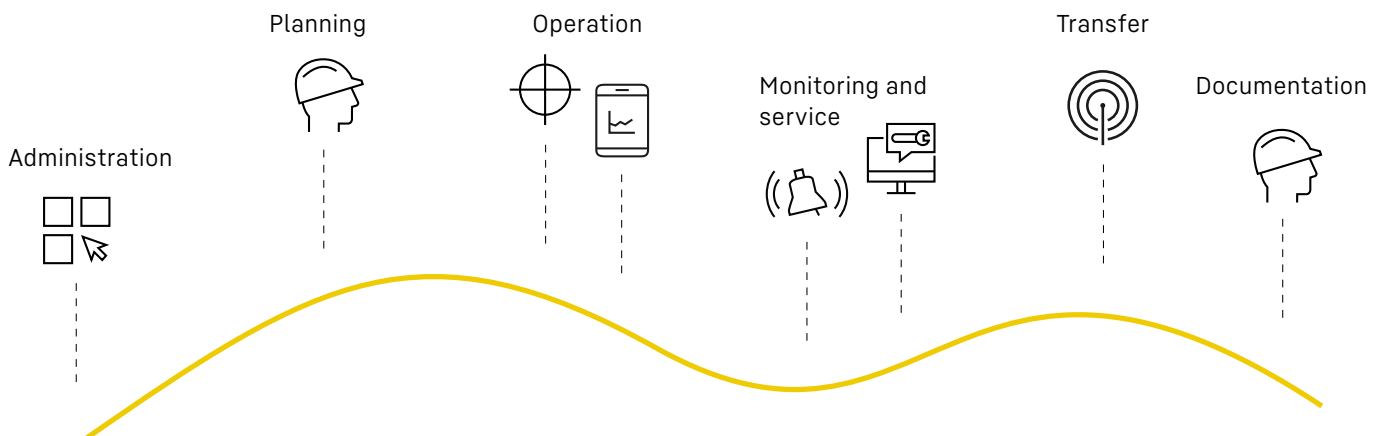
LiDAT

Data transfer and positioning system



MyNotifier

Monitoring tool for wind conditions and battery status





Download datasheet



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