EN-US

LBX 600 and LBX 600 unplugged

LBX 9001.07/LBX 9101.07
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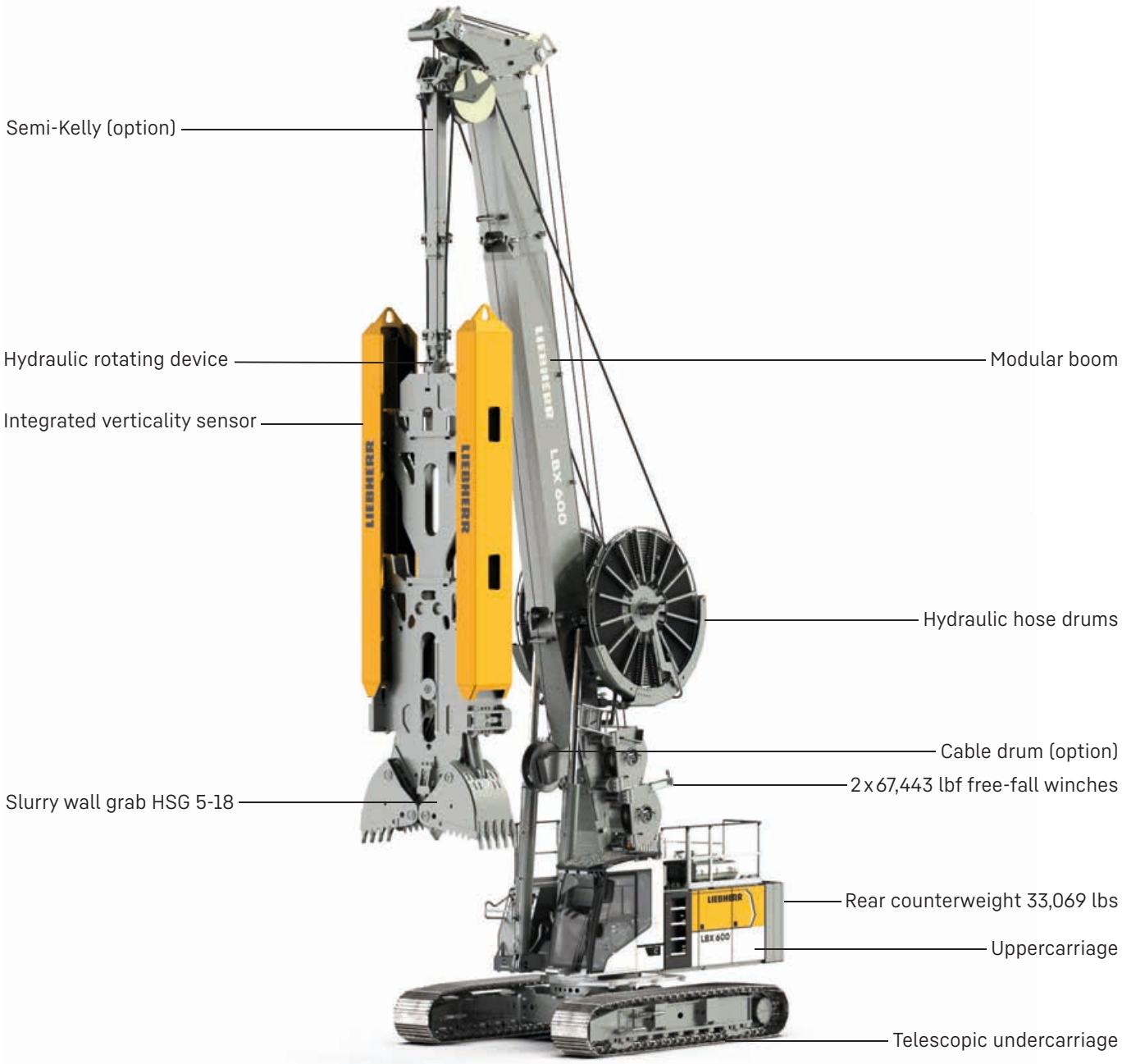
Carrier machines for slurry wall construction

Concept and characteristics



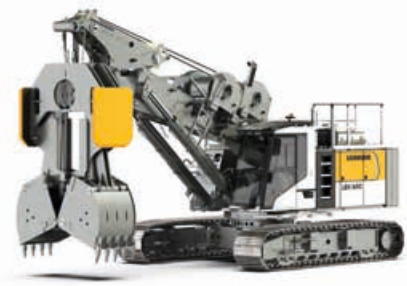
The LBX 600 is a carrier machine for slurry wall construction in accordance with EN 16228 and offers a high degree of flexibility thanks to its modular design.

The LBX 600 is the right choice especially for construction sites with limited space. If strict requirements regarding noise and exhaust emissions are also to be met, the LBX 600 unplugged is the ideal solution.

In combination with the HSG 5-18 hydraulic slurry wall grab, the package offers very intuitive operation, which also allows hydraulic corrections to the grab alignment resulting in higher verticality of the slurry wall.

Thanks to its compact dimensions and telescopic undercarriage, the LBX 600 shows its strengths in terms of transport and set-up.

Low Head for work under 36.1 ft



Ultra Low Head for work under 19 ft

Attachments

HSG 5-18 L

HSG 5-18 C

Mechanical slurry wall grab

Chisel

Mechanical slurry wall grab (Ultra Low Head)

Assistance systems

LiDAT®

PDE + verticality assistant

LIPOS

Radio remote control

MyJobsite

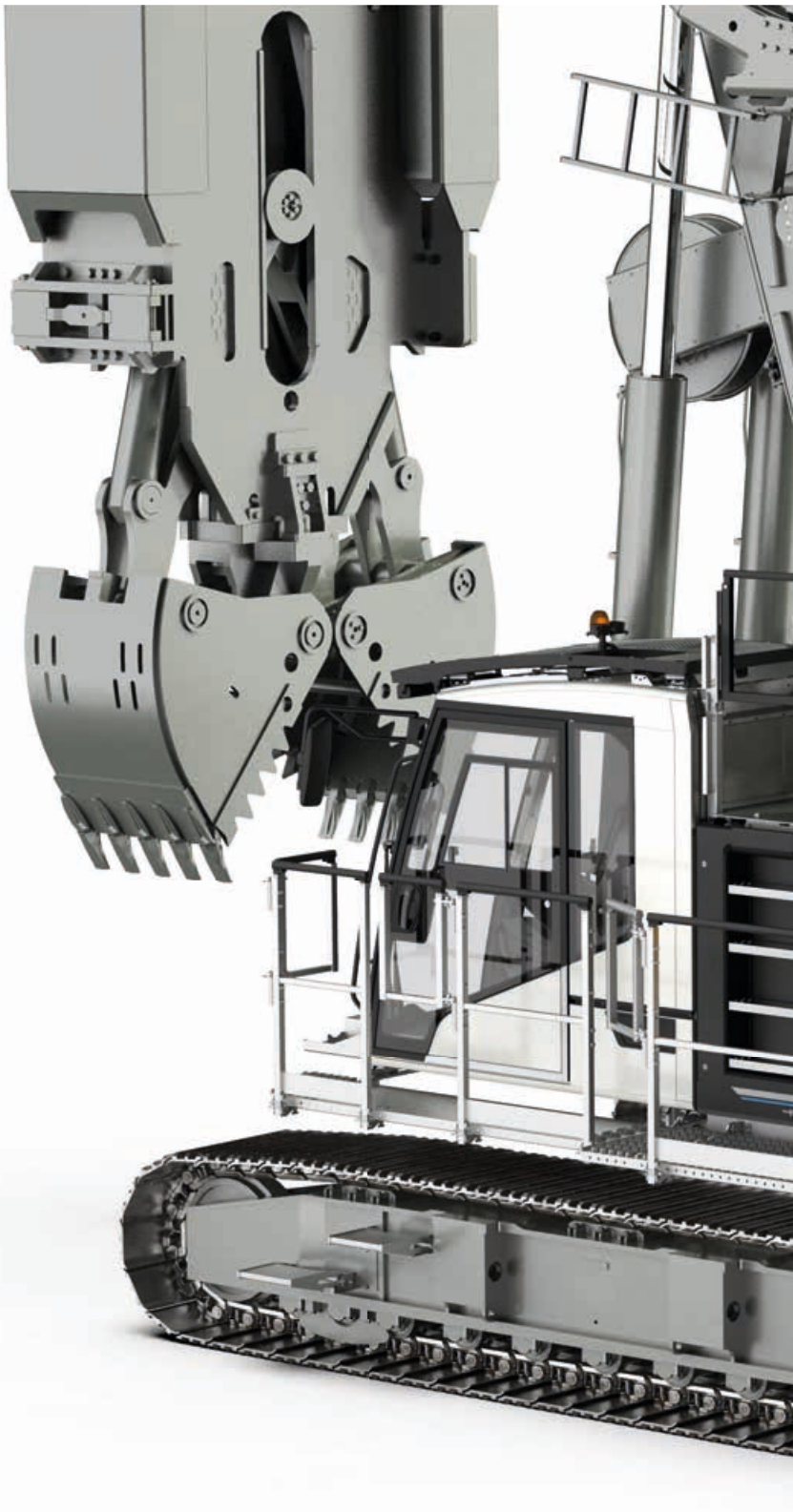
Ground pressure visualization

Local zero emission

Emission-free
The new machines with alternative electro-hydraulic drive have a very low noise level and are also emission-free. That is a huge advantage in areas sensitive to noise and also for the people working on the jobsite.

Operation
The LBX 600 unplugged can be operated both connected to the power supply (plugged in) or powered by battery (unplugged).

Sustainability
Liebherr is aware of its responsibility towards society and the enviroment and, with the unplugged series, strives for the best possible combination of environmental sustainability, customer benefit and efficiency.



Plugged in
When connected to the power supply, there are no restrictions in performance and application of the machine when compared to the conventional version with diesel engine. The battery is constantly charged when connected to the power supply and therefore always provides sufficient energy.

Unplugged
In slurry wall operation, the battery is designed for an operating time of approx. 4 hours. It can be simply recharged using a conventional jobsite electric supply (30 A, 60 A). Using a 100 A supply, the battery can be fast-charged in barely 5 hours.

Technical description

Options drive system

Diesel engine LBX 600

Power rating according to ISO 9249	320 kW (429 hp) at 1700 rpm
Engine type	Liebherr D 936 A7-05
Fuel tank capacity	185 gal with continuous level indicator and reserve warning
Exhaust certification	EU 2016/1628 Stage V EPA/CARB Tier 4f ECE-R.96 Power Band non-certified emission standard

Electric motor LBX 600 unplugged

Max. drive power	390 kW
Battery type	High Performance Battery System
Technology	Li-Ion NMC (nickel manganese cobalt)
Max. charging power	20 kW @ 30 A 40 kW @ 60 A 80 kW @ 100 A
Mains voltage	400-480 V AC (3 phase + N + PE / 3 phase + PE)
Capacity	standard 4 h*

* in normal operation

General

Hydraulic system

Hydraulic pumps for attachments	2 x 71 gal/min
Hydraulic oil tank capacity	159 gal
Max. working pressure	5,584 PSI
Hydraulic oil	electronic monitoring of all filters use of synthetic environmentally friendly oil possible

Hoist winches

Line pull effective	2 x 67,443 lbf (1st layer)
Rope diameter	34 mm
Rope speed	0-246 ft/min
Type	free fall

Swing gear

Drive system	with fixed axial piston hydraulic motors, planetary gearbox, pinion
Swing ring	triple-row roller bearing with external teeth and one swing drive
Brake	hydraulically released, spring-loaded multi-disc holding brake
Swing speed	0-3.7 rpm continuously variable

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	0-0.81 mph
Track force	136,684 lbf
Grousers	width 31.5 inch (option 27.6 inch)

Options basic machine

Air compressor*
Safety rails on top of the uppercarriage
Boom platform (for easier access to the winches)
All-round platform uppercarriage (incl. railings)
Additional headlight cabin
Pulley set on boom top for use of semi-Kelly
Aircraft warning light
Winch camera
Cabin protection FOPS 2
Radio remote control
LIPOS
Refuelling pump AdBlue / diesel*
Automatic central lubrication swing ring
Single-winch operation for HSG 5-18

* only for LBX 600

Remarks:

- Illustrations showing the type of application are examples only.
- Weights and transport dimensions can vary with the final configuration of the machine. The illustrations in this brochure may include options which are not within the standard scope of supply of the machine.

Operation mode hydraulic slurry wall grab HSG 5-18

The fully integrated control system of the HSG 5-18 offers the following assistance systems to support the machine operator:
- Slack rope monitoring
- All information relevant to grab operation is displayed on the monitor in the operator's cabin.

Technical data

Max. working depth	ft	262
Max. admissible grab weight, full	lbs	66,139
Max. pull force in grab operation (dual-winch operation)	lbf	101,164
Max. pull force in recovery mode (dual-winch operation)	lbf	134,885
Can be equipped with a hoist winch (reeving on the grab)	option	
Monitored high-pressure return filter	standard	

Operation mode mechanical slurry wall grab

A mechanical slurry wall grab can be operated without restrictions thanks to the fully exploitable free-fall winches and optional double-T control lever.
Options for operation mode mechanical slurry wall grab:
- Double-T control lever for hoist winches
- Constant tension free-fall winches
- Verticality assistant (Bluetooth)
- Grab control (facilitates free-fall operation)

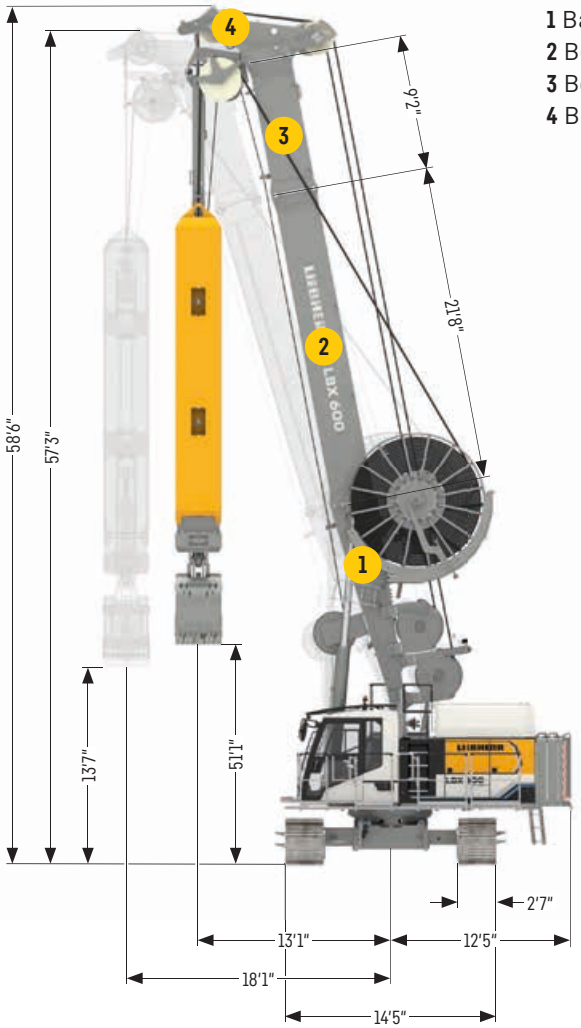
Technical data

Max. working depth	ft	262*
Max. admissible grab weight, full	lbs	66,139
Recommended max. grab weight, empty (e.g. K610II)	lbs	52,910
Max. chisel weight	lbs	33,069
Max. pull force in grab operation (dual-winch operation)	lbf	101,164
Max. pull force in recovery mode (dual-winch operation)	lbf	134,885

* reeving of grab closing mechanism must be deducted

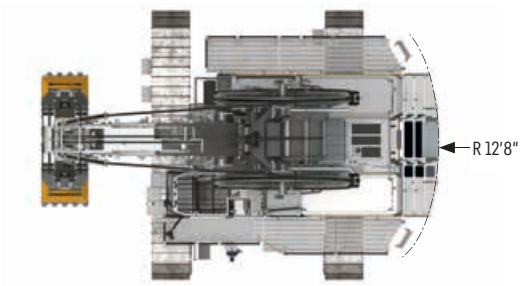
Dimensions

Standard



1 Base arm
2 Boom extension 21.7 ft
3 Boom section 9.2 ft
4 Boom top

Max. working depth: 262.5 ft

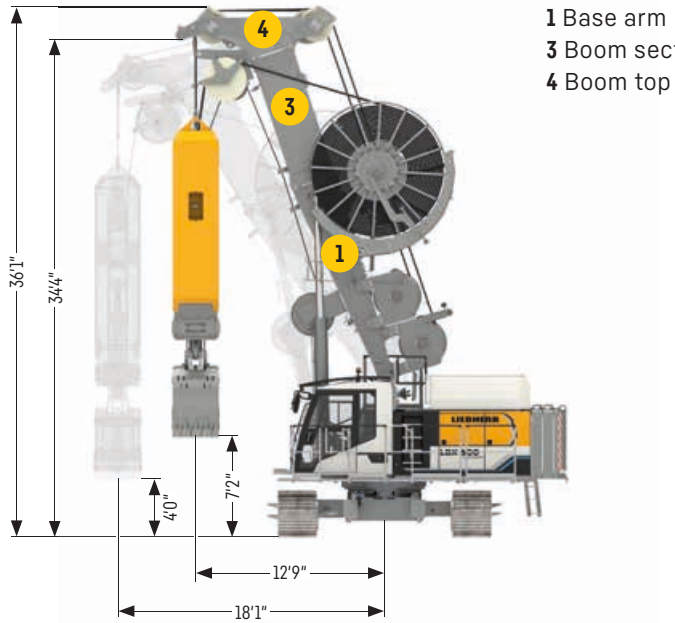


Operating weights

Total weight LBX 600 unplugged without grab, without hose drums	lbs	147,930*
Total weight LBX 600 unplugged without grab, with hose drums	lbs	159,835*

The total weight of the LBX 600 is reduced by 4,630 lbs.
* with 31.5 inch 3-web grousers and 33,069 lbs counterweight

Low Head (LH)



1 Base arm
3 Boom section 9.2 ft
4 Boom top

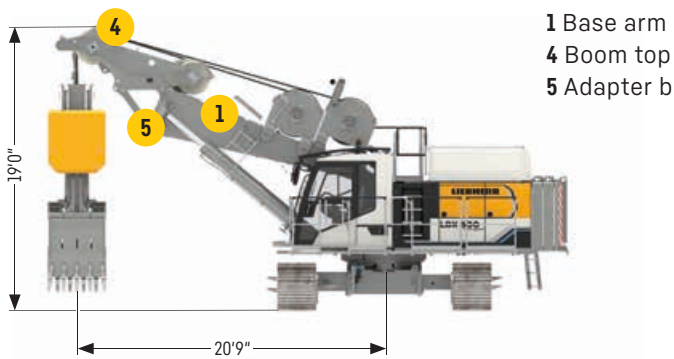
Max. working depth: 114.8 ft (with adapted drum flange)

Operating weights

Total weight LBX 600 unplugged without grab, without hose drums	lbs	143,080*
Total weight LBX 600 unplugged without grab, with hose drums	lbs	154,985*

The total weight of the LBX 600 is reduced by 4,630 lbs.
* with 31.5 inch 3-web grousers and 33,069 lbs counterweight

Ultra Low Head (ULH)



1 Base arm
4 Boom top
5 Adapter bracket for ULH

Max. working depth: 114.8 ft (with adapted drum flange)

Operating weights

Total weight LBX 600 unplugged without grab	lbs	140,875*

The total weight of the LBX 600 is reduced by 4,630 lbs.
* with 31.5 inch 3-web grousers and 33,069 lbs counterweight

Winch diagram

Significantly higher lowering speeds are possible thanks to efficient hydraulic circuits and a new type of control of the hydraulic swing motors. This leads to shorter cycle times and thus to an increase in production compared to other machines in this size class. Furthermore, the load is evenly distributed between the two hoist winches during lifting thanks to the hydraulic winch synchronisation.

In the mechanical slurry wall grab operation mode, the free-fall function is available without restrictions. The operator can regulate the coupling pressure using the two free-fall pedals.

The residual coupling pressure can be set in the cabin to minimise slack rope when using the free-fall mode while excavating.

Winch 66,139 lbs

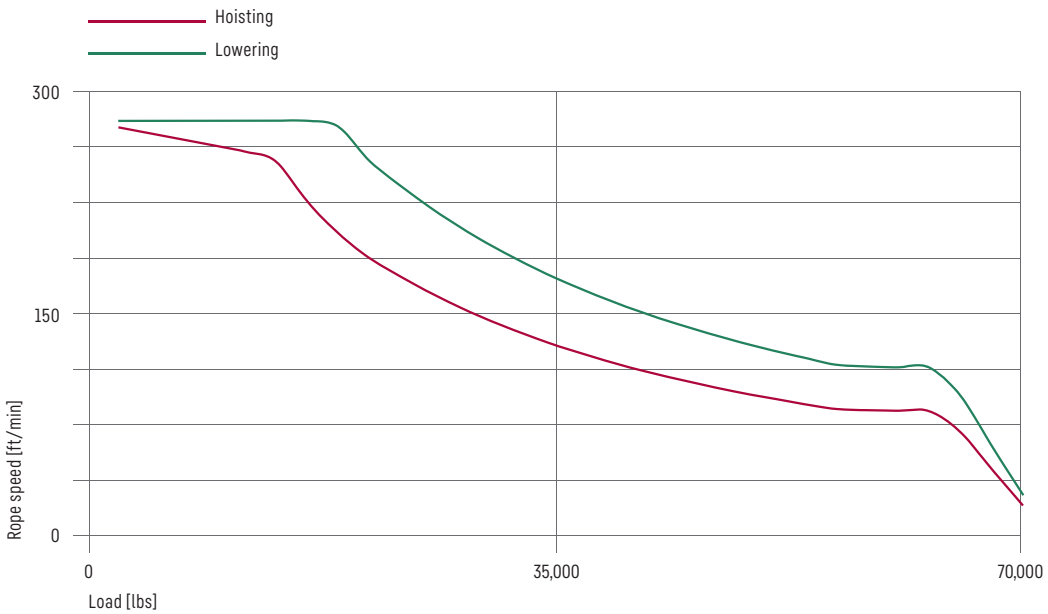
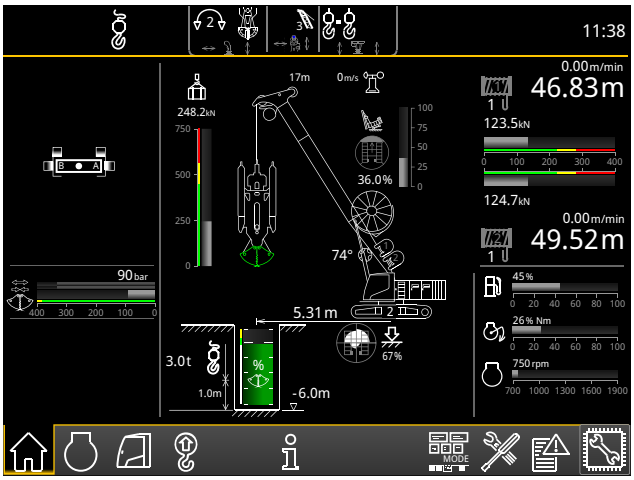
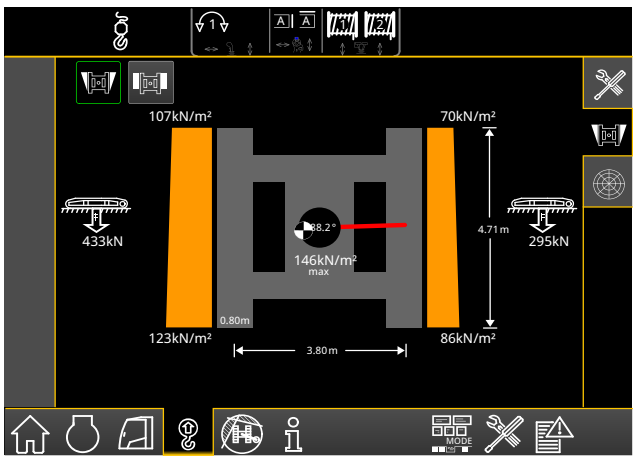


Diagram shows the course of a winch in dual-winch operation

Monitor display



Ground pressure visualization



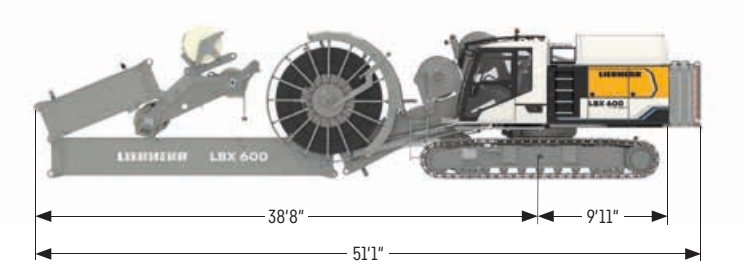
Features:
- The actual ground pressure is calculated in real time
- The maximum admissible ground pressure can be individually predefined
- The utilization is continuously calculated and displayed on the monitor in the operator's cabin
- Audible and visual warnings when the predefined values are approached

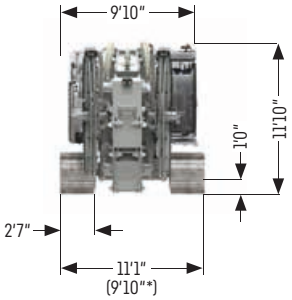
Your benefits:
- Increased safety on the jobsite due to consideration of prevailing ground conditions
- Higher operator comfort thanks to clearly displayed information and warning signals
- Prevention of critical or stressful situations before they occur
- User-friendly and intuitive handling in the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

All measurements displayed on this page are metric.

Transport dimensions and weights

All weights listed here apply to the LBX 600 unplugged, including ropes and hoses for 262.5 ft working depth, without platform on uppercarriage. Weights for the LBX 600 (diesel version, fully tanked) are each 4,630 lbs lower.

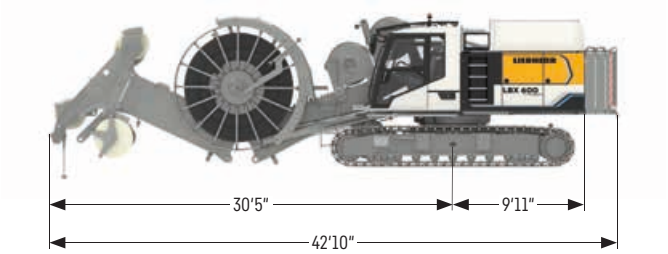




Transport option

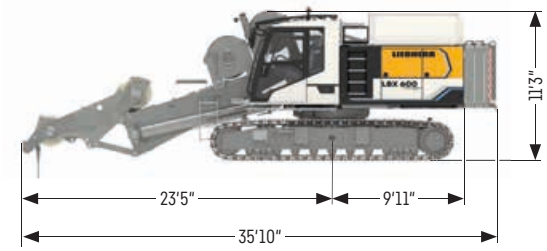
Weight with counterweight, with 31.5 inch 3-web grousers	lbs	156,969
Weight without counterweight, with 31.5 inch 3-web grousers	lbs	123,900

* transport width with 27.6 inch grousers



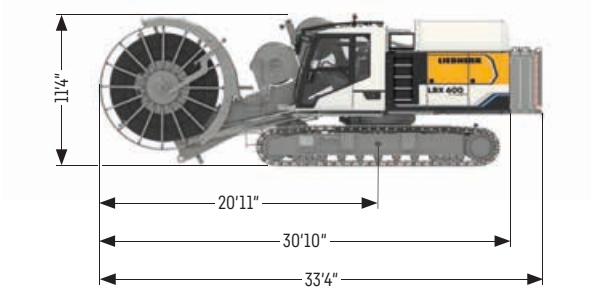
Transport option Low Head

Weight with counterweight, with 31.5 inch 3-web grousers	lbs	152,119
Weight without counterweight, with 31.5 inch 3-web grousers	lbs	119,050
Weight without counterweight and hose drums, with 31.5 inch 3-web grousers	lbs	108,908



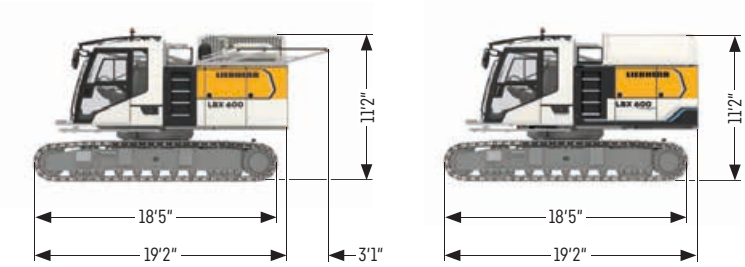
Transport option Ultra Low Head

Weight with counterweight, with 31.5 inch 3-web grousers	lbs	139,553
Weight without counterweight, with 31.5 inch 3-web grousers	lbs	106,263



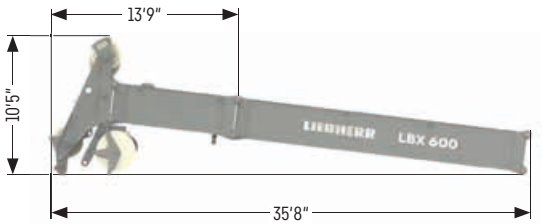
Transport option

Weight with counterweight, with 31.5 inch 3-web grousers	lbs	145,505
Weight without counterweight, with 31.5 inch 3-web grousers	lbs	112,436
Weight without counterweight and hose drums, with 31.5 inch 3-web grousers	lbs	103,617



Transport option

Weight LBX 600 unplugged with 31.5 inch 3-web grousers	lbs	76,280
Weight LBX 600 unplugged with 27.6 inch 3-web grousers	lbs	75,398
Weight LBX 600 (diesel version, 10 % tanked) with 27.6 inch 3-web grousers	lbs	69,666

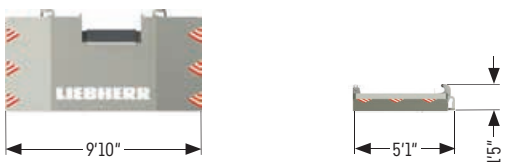


Boom system

Boom 35.8 ft (see illustration)	lbs	11,464
Boom section 21.7 ft	lbs	4,850
Boom section 9.2 ft	lbs	2,646
Base arm including hose drums and winches	lbs	36,156
Boom top	lbs	3,968

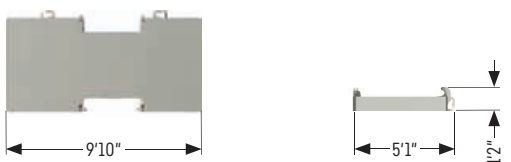
Options

Cable drum with cable	lbs	882
All round platform with railings	lbs	882



Rear counterweight

Weight	lbs	11,023

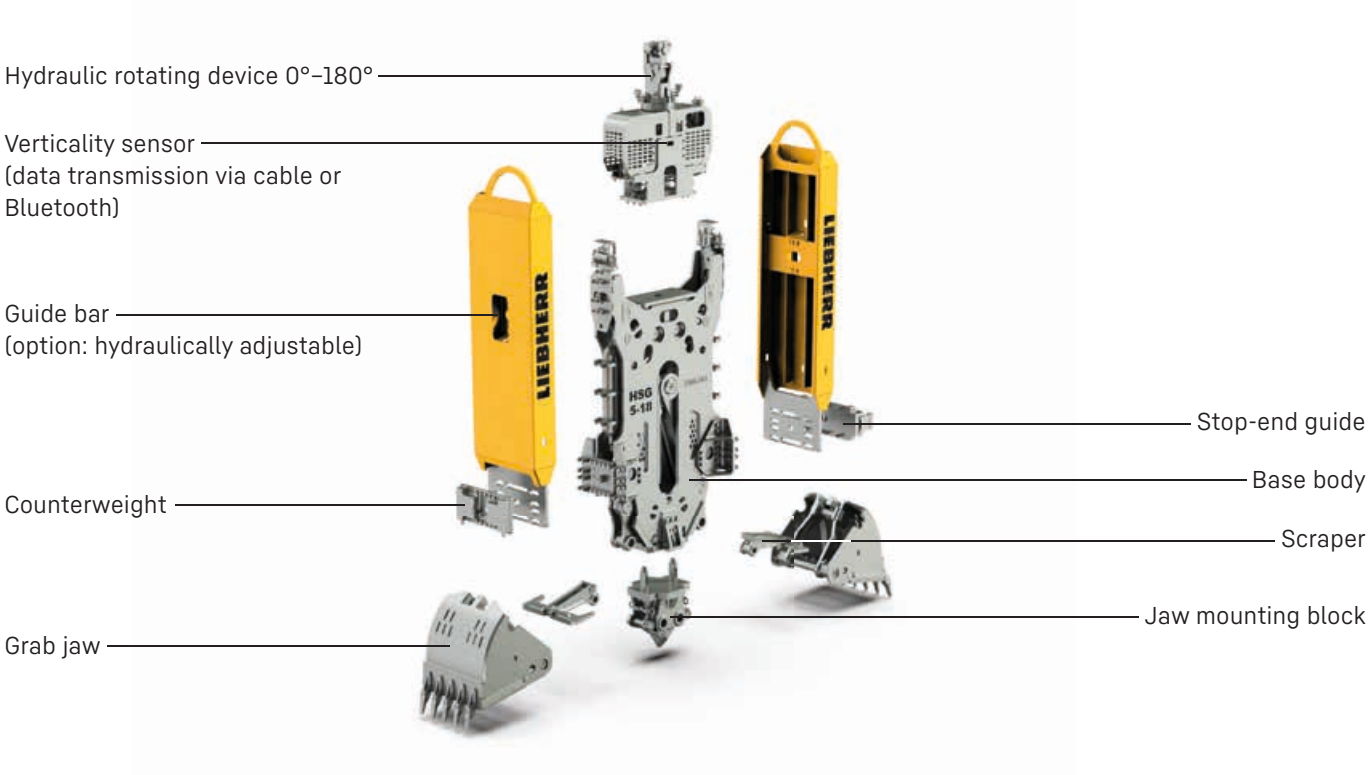


Intermediate slab (2x)

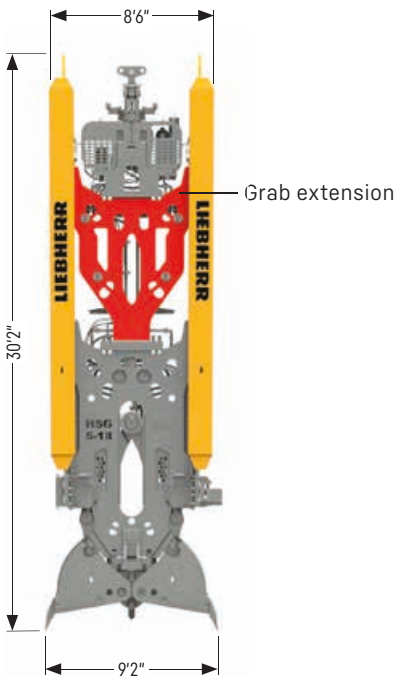
Weight	lbs	11,023

HSG 5-18

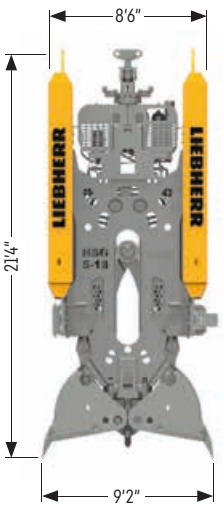
Modular design



HSG 5-18 C/L



HSG 5-18 L



HSG 5-18 C

The grab extension increases weight and length of the grab and therefore enhances the verticality of the trench. The extension is recommended for deep trenches.

Example dimensions of HSG 5-18 C/L for jaw opening width of 9.2 ft.

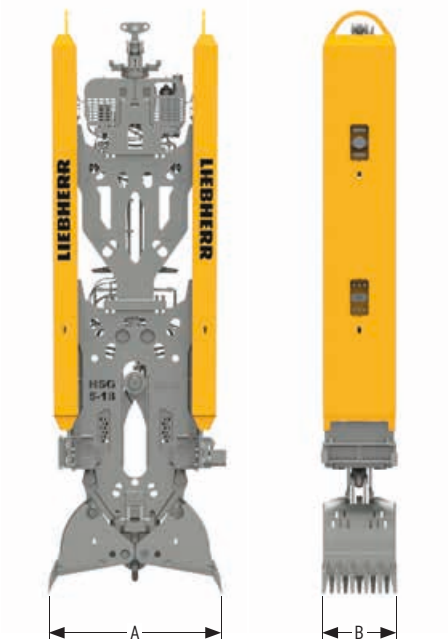
Different opening widths result in different dimensions.

Technical data HSG 5-18 C/L

Jaw opening width A	Slurry wall thickness B	Grab capacity	Grab weight empty		Grab weight full**		Weight stop-end guide (included)
			HSG C	HSG L	HSG C	HSG L	
[ft]	[in]	[cubic yard]	[lbs]	[lbs]	[lbs]	[lbs]	[lbs]
9.2	19.7	0.81	32,430	40,367	35,076	43,012	860
	23.6	1.02	33,334	41,271	36,861	44,798	882
	31.5	1.44	37,060	45,658	41,910	50,508	1,080
	39.4	1.86	39,904	48,943	46,077	55,116	1,279
	47.2	2.25	42,924	53,065	50,420	60,561	1,720
	59.0	2.89	47,399	57,320*	57,100	67,021*	2,006
	70.9	3.52	48,700	59,282*	60,605	71,187*	
10.5	19.7	1.03	33,973	41,910	37,501	45,437	860
	23.6	1.30	35,098	43,034	39,507	47,443	882
	31.5	1.82	38,823	47,421	44,996	53,594	1,080
	39.4	2.35	41,667	50,486	49,604	58,422	1,279
	47.2	2.88	44,688	54,829	54,388	64,529	1,720
	59.0	3.68	49,163	59,084*	61,509	71,430*	2,006
	70.9	4.46	50,243	61,046*	65,235	76,037*	

* exceeds the permissible grab weight of the LBX 600 (> 66,139 lbs)
** density of excavated material 20,044 lb/gal

Technical data



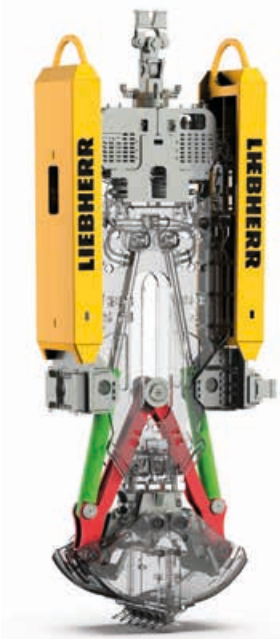
The following configurations are included in the given grab weights

Stop-end guide	see table
Hydraulically adjustable guide bars	lbs 1,1
Accumulator for accelerated opening	lbs 728
Verticality sensor	lbs 88
Reinforcement guide bars (from 3.9 ft slurry wall thickness)	lbs 1,477
Standard closing cylinder (180/140)	
Standard grab jaws with scrapers	
Signal and data transmission via cable	

Weights of optional equipment

Signal and data transmission via radio	lbs -551
Connector semi-Kelly	lbs 220
Generator	lbs 44
Additional weight	lbs 9,766
Additional weight	lbs 14,462
Heavy duty grab jaws	on request
Further jaw widths 8.2 - 11.8 ft	on request

Grab closing mechanism



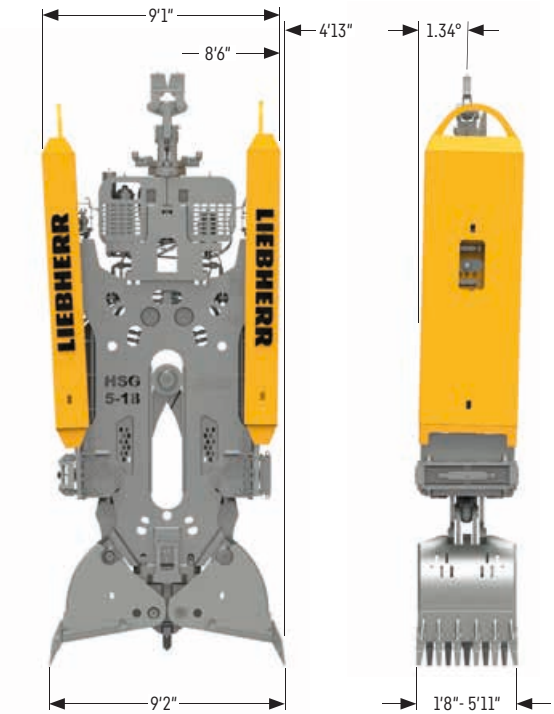
Opening and closing of the grab is actuated by two direct-acting cylinders. These are installed with the piston rods at the top, which means they are protected inside the grab body. The robust cylinder barrels are positioned downwards.

Synchronised opening or closing of the grab jaws is mechanically ensured via push rods. This mechanism is reliable and easy to maintain.

Cylinder 180/140 (standard)	PSI	4,351
Cylinder force (2 cylinders)	lbf	343,283
Max. closing force at teeth (9.2 ft)	lbf	213,119
Opening/closing speed approx.	s	9
Opening speed with accumulator for accelerated opening approx.	s	6

Cylinder 200/140 (option)	PSI	4,351
Cylinder force (2 cylinders)	lbf	423,765
Max. closing force at teeth (9.2 ft)	lbf	263,026
Opening/closing speed approx.	s	11
Opening speed with accumulator for accelerated opening approx.	s	8

Adjustable guide bars (option)



During excavation work the grab direction can be corrected using the guide bars and so higher verticality of the slurry wall is achieved. The system is driven hydraulically and can be controlled from the cabin.

In combination with the cable drum the guide bars can also be adjusted in the trench. The position of the guide bars is shown on the display.

Example dimensions of HSG 5-18 C for jaw opening width of 9.2 ft. Different opening widths result in different dimensions.

Hydraulic rotating device

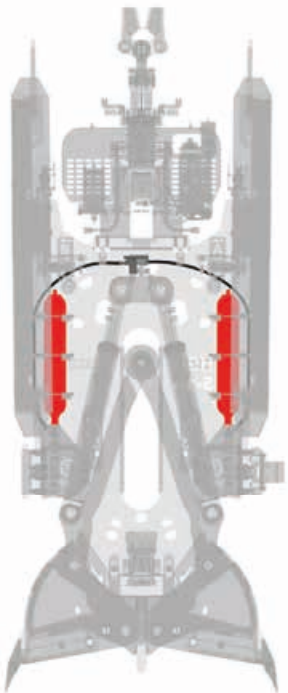
The rotating device allows for easy rotation and alignment of the grab after each grab cycle.

Advantages of the rotating device
- Alignment of the grab in slurry wall direction, rotation range 2x180°
- Storing of the grab position
- Rotation from 0° to 180° after each grab cycle

Signal and data transmission via radio
Control and sensor signals are transmitted via radio outside the trench.

Signal and data transmission via cable (option)
Control and sensor signals are transmitted via cable. If the cable is damaged, limited operation via radio is possible.

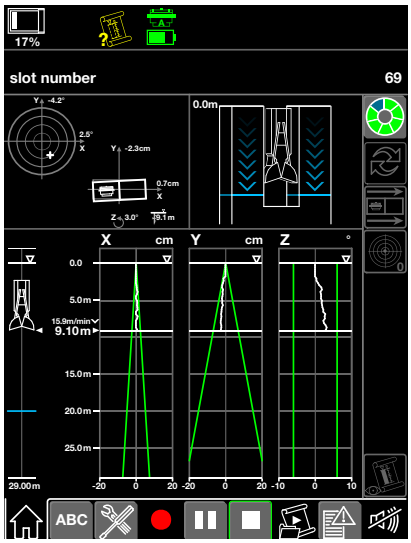
Accumulator for accelerated opening (option)

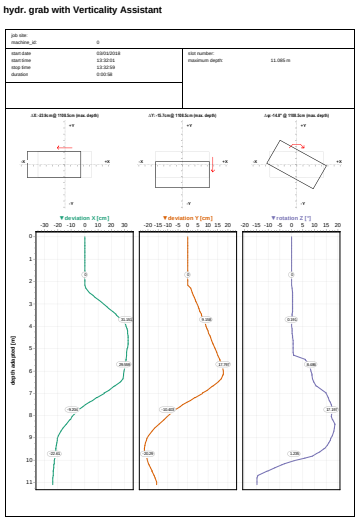


These additionally installed accumulators temporarily store the high oil flow that occurs when the jaws are opened. As a result, high opening and closing speeds can be achieved despite generously dimensioned cylinders.

The actual speeds that can be achieved depend on the size of the grab jaws and the cylinder installed.

Verticality assistant





PDE LiDAT® MyJobsite

Verticality assistant for hydraulic and mechanical slurry wall grabs

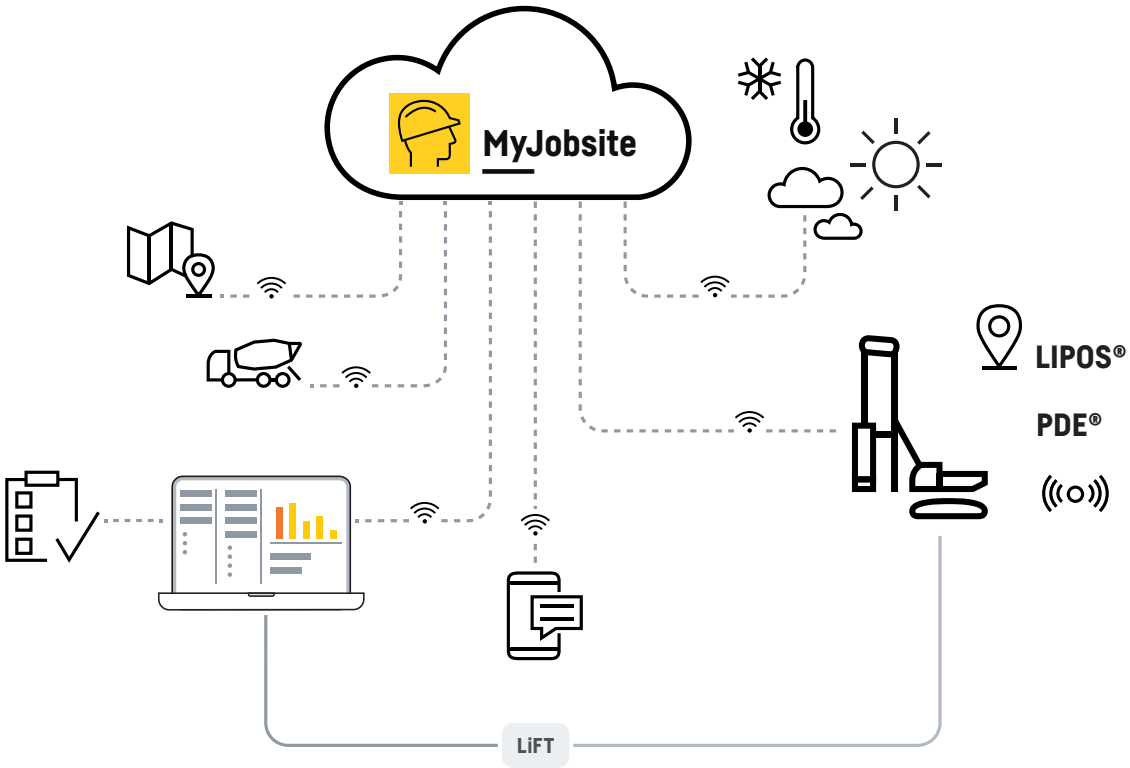
This assistance system is fully integrated in the Liebherr machine's control and process data recording system. It supports and records the slurry wall installation process. With the help of the verticality assistant deviations in the slurry wall along the X and Y axes, as well as the rotation round the Z axis are measured.

- Visualization of the measurements for the machine operator
- Two possible solutions for data transmission: Bluetooth transmission between sensor on the grab and receiver in the uppercarriage (delayed data visualization) or real-time transmission via cable
- Optimum support for the machine operator through an innovative, graphic control system in order to carry out successful measurements
- Ensures optimum measuring conditions by automatically limiting the hoisting speed with two options (exact slow or accelerated measuring run)
- Simple guidelines for calibrating the verticality measuring system
- Mobile data transfer via the telematics system from the machine to the reporting software in the office (MyJobsite)

This system allows control of the precision for the whole depth of the trench. Reports can also be created in MyJobsite for the whole slurry wall installation process. These enable traceability of the application and proof of quality.

Digitalization in deep foundation work

As deep foundation expert, Liebherr has created a combination of the most diverse assistance systems and software solutions in order to record and evaluate complex processes and to be able to provide the corresponding evidence.



LIPOS - Liebherr positioning system
Using pre-installed components, LIPOS enables the direct integration of machine control systems from Trimble and Leica. These systems are based on modern DGNSS technology (Differential Global Navigation Satellite System) and so achieve the best possible conditions for a precise and efficient positioning of Liebherr machines and their attachment tools.

PDE
All working processes can be electronically recorded and visualized using the process data recording system PDE. The system is operated and displayed on the PDE touchscreen in the operator's cabin.
PDE records operating data from the Litronic control system, as well as data from external sensors.

MyJobsite
Using the MyJobsite software solution all relevant process, machine, construction site and positioning data (LIPOS) can be recorded, displayed, analysed, managed and evaluated in one central location.

The collected data can be accessed via a web browser when an internet connection is active.

With the recorded PDE data, such as the driving progress of the pile per blow, the total number of blows, or the impact frequency per minute, a driving protocol is automatically generated as proof of quality directly after completion of a work process. The parameters of the driving protocol can be defined and assigned in advance. Using the templates saves a lot of time when creating the protocols.

MyJobsite is THE tool for quality control and documentation. The deluge of data, which s accrued each day from a wide variety of sources on the jobsite, can be recorded precisely and processed in an informative manner. Unpopular bureaucratic work is kept to a minimum and the amount of time required for it is significantly reduced. At the same time, the quality of administration work is maximised.

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