

EN



# LBX 600 and LBX 600 unplugged

LBX 9001.07/LBX 9101.07

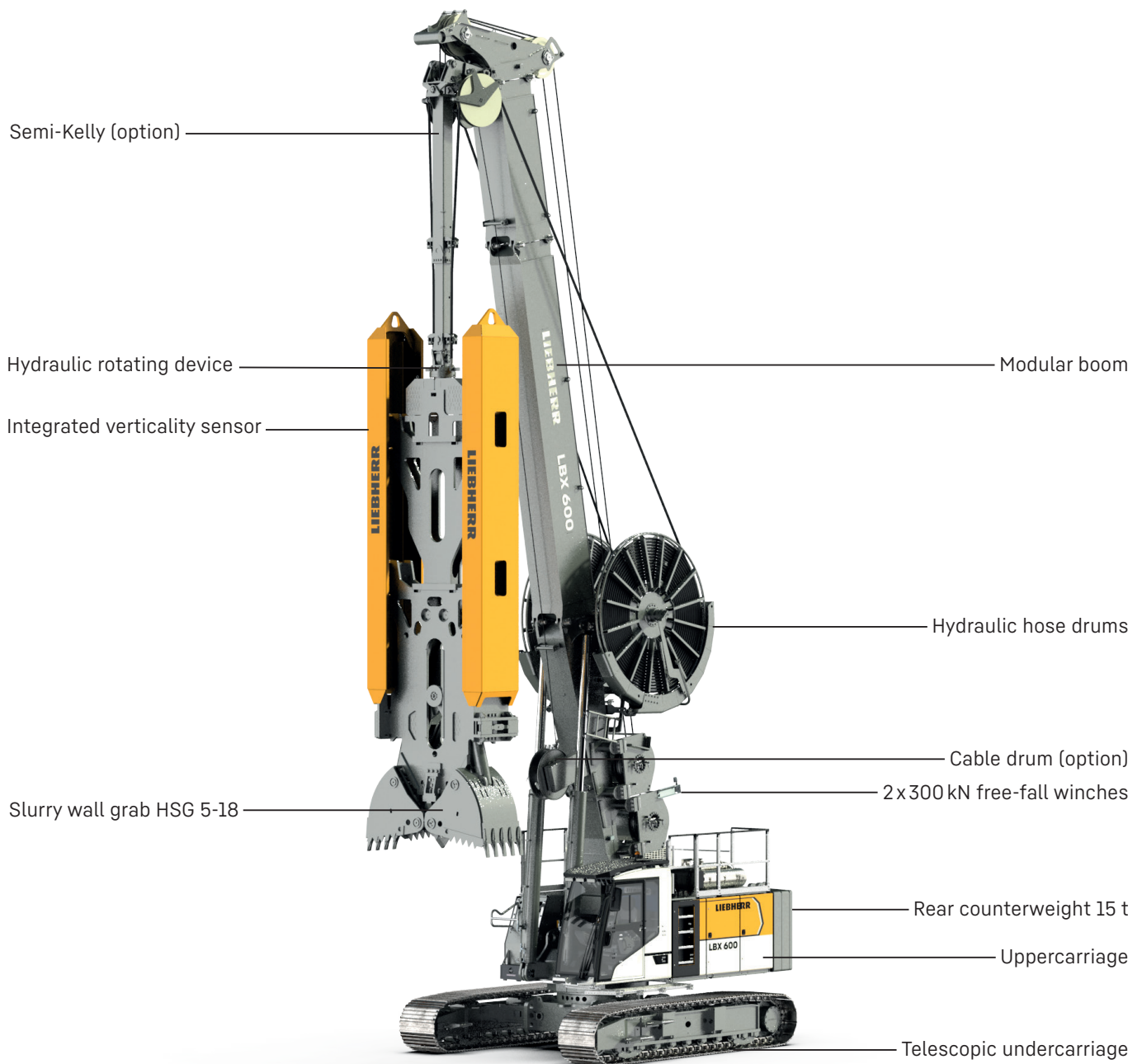
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## LIEBHERR

Carrier machines for slurry wall construction



# Concept and characteristics

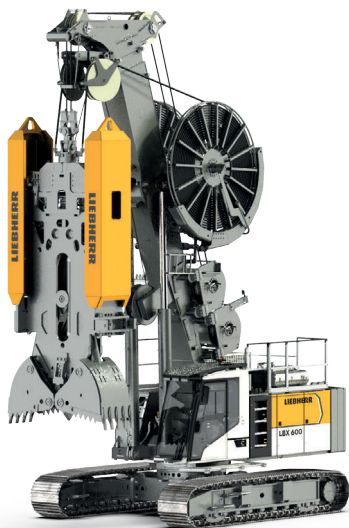


The LBX 600 is a carrier machine for slurry wall construction in accordance with EN 16228 and offers a high degree of flexibility thanks to its modular design.

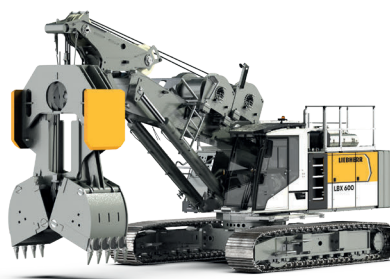
The LBX 600 is the right choice especially for construction sites with limited space. If strict requirements regarding noise and exhaust emissions are also to be met, the LBX 600 unplugged is the ideal solution.

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 11 m



Ultra Low Head for work under 5.8 m

## 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

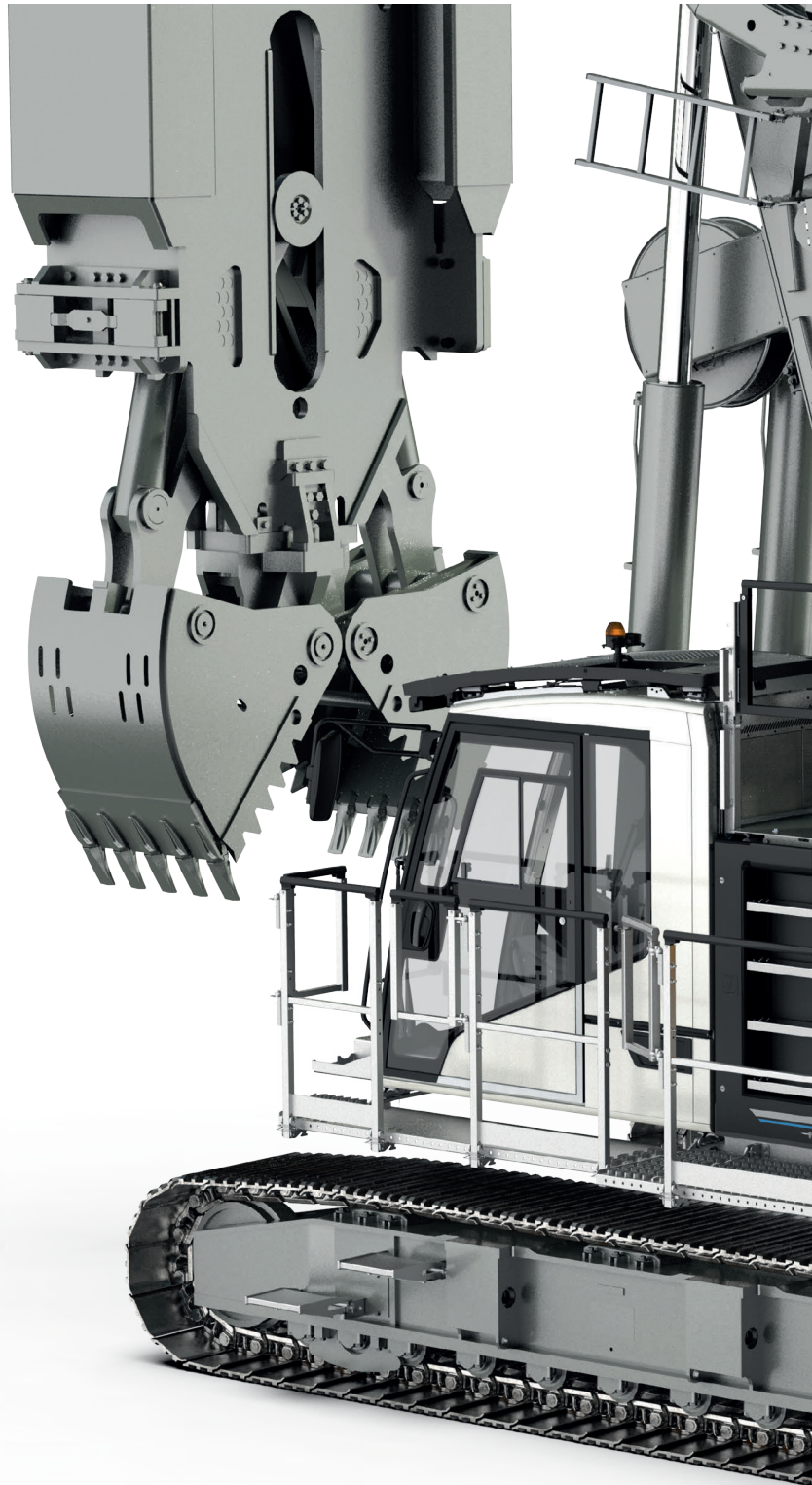
The new machines with alternative electro-hydraulic drive have a very low noise level and are also emission-free. That is a huge advantage in areas sensitive to noise and also for the people working on the jobsite.

## 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 environment 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 job-site electric supply (32 A, 63 A). Using a 125 A supply, the battery can be fast-charged in barely 5 hours.

# Technical description

## Options drive system



### Diesel engine LBX 600

<b>Power rating according to ISO 9249</b>	320 kW (429 hp) at 1700 rpm
<b>Engine type</b>	Liebherr D 936 A7-05
<b>Fuel tank capacity</b>	700 l with continuous level indicator and reserve warning
<b>Exhaust certification</b>	EU 2016/1628 Stage V EPA/CARB Tier 4f ECE-R.96 Power Band non-certified emission standard



### Electric motor LBX 600 unplugged

<b>Max. drive power</b>	390 kW
<b>Battery type</b>	High Performance Battery System
<b>Technology</b>	Li-Ion NMC (nickel manganese cobalt)
<b>Max. charging power</b>	20 kW (CEE socket 32 A / 400 VAC) 40 kW (CEE socket 63 A / 400 VAC) 80 kW (CEE socket 125 A / 400 VAC)
<b>Mains voltage</b>	400 VAC (3 phase + N + PE)
<b>Capacity</b>	standard 4h*

\* in normal operation

## General



### Hydraulic system

<b>Hydraulic pumps for attachments</b>	2x 270 l/min
<b>Hydraulic oil tank capacity</b>	600 l
<b>Max. working pressure</b>	385 bar
<b>Hydraulic oil</b>	electronic monitoring of all filters use of synthetic environmentally friendly oil possible



### Hoist winches

<b>Line pull effective</b>	2x 300 kN (1st layer)
<b>Rope diameter</b>	34 mm
<b>Rope speed</b>	0-75 m/min
<b>Type</b>	free fall



### 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 one swing drive
<b>Brake</b>	hydraulically released, spring-loaded multi-disc holding brake
<b>Swing speed</b>	0-3.7 rpm continuously variable



### 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>	hydraulically released, spring-loaded multi-disc holding brake
<b>Drive speed</b>	0-1.3 km/h
<b>Track force</b>	608 kN
<b>Grousers</b>	width 800 mm (option 700 mm)

### 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
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	m 80
Max. admissible grab weight, full	t 30
Max. pull force in grab operation (dual-winch operation)	kN 450
Max. pull force in recovery mode (dual-winch operation)	kN 600
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	m 80*
Max. admissible grab weight, full	t 30
Recommended max. grab weight, empty (e.g. K610II)	t 24
Max. chisel weight	t 15
Max. pull force in grab operation (dual-winch operation)	kN 450
Max. pull force in recovery mode (dual-winch operation)	kN 600

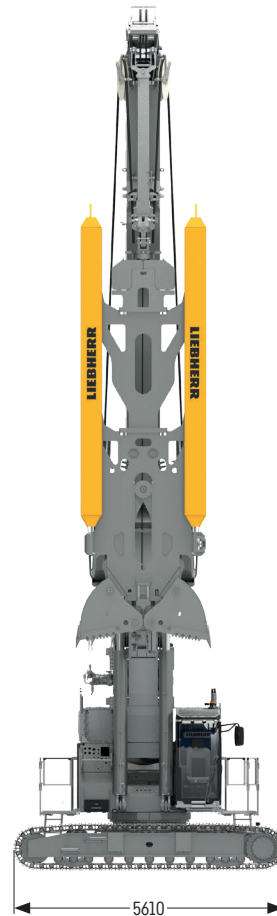
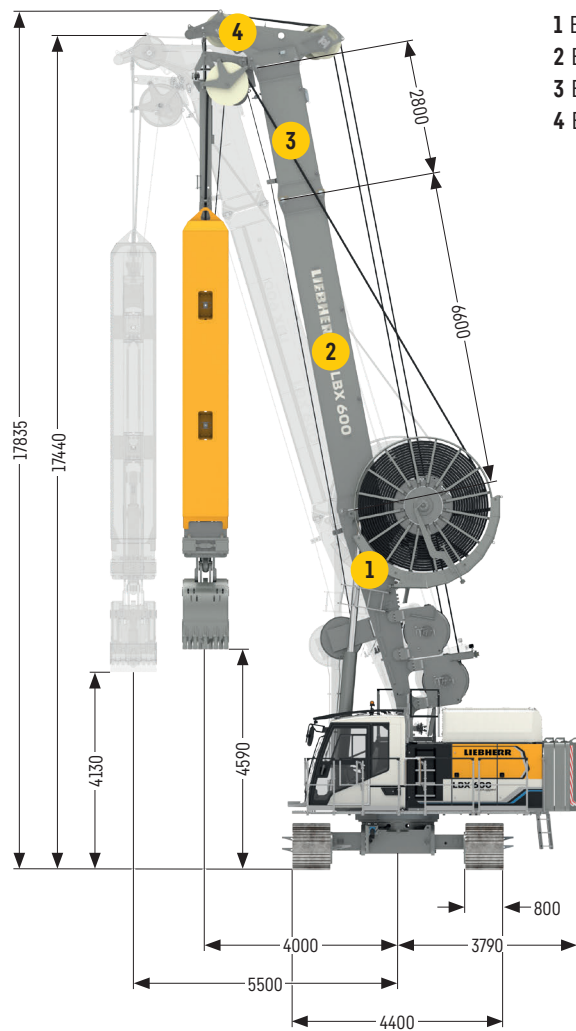
\* reeving of grab closing mechanism must be deducted



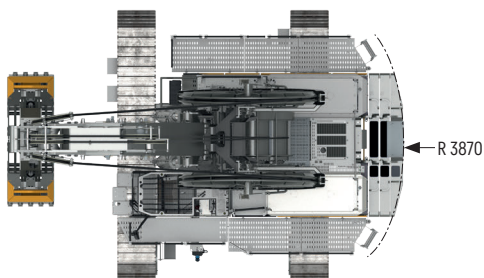


# Dimensions

## Standard



Max. working depth: 80 m



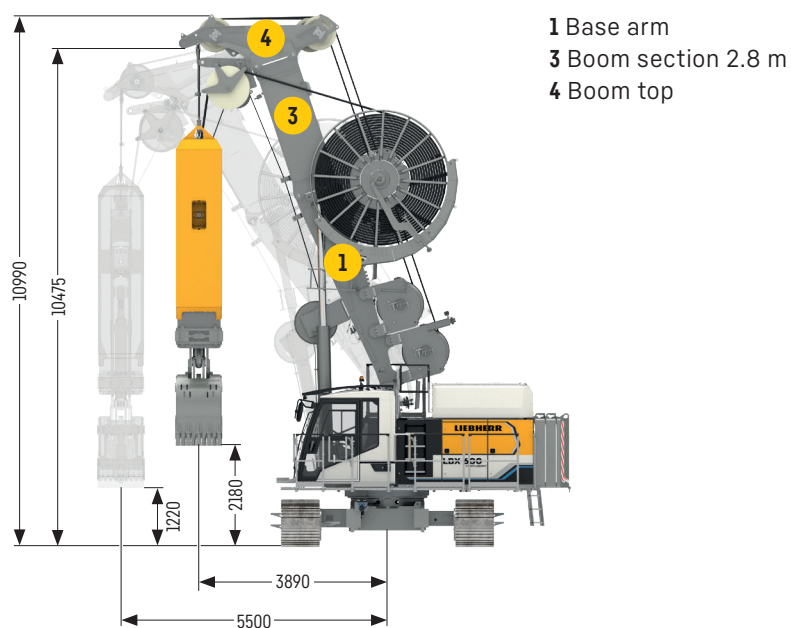
### Operating weights

Total weight LBX 600 unplugged without grab, without hose drums	t 67.1*
Total weight LBX 600 unplugged without grab, with hose drums	t 72.5*

The total weight of the LBX 600 is reduced by 2.1 t.

\* with 800 mm 3-web grousers and 15 t counterweight

## Low Head (LH)



Max. working depth: 35 m (with adapted drum flange)

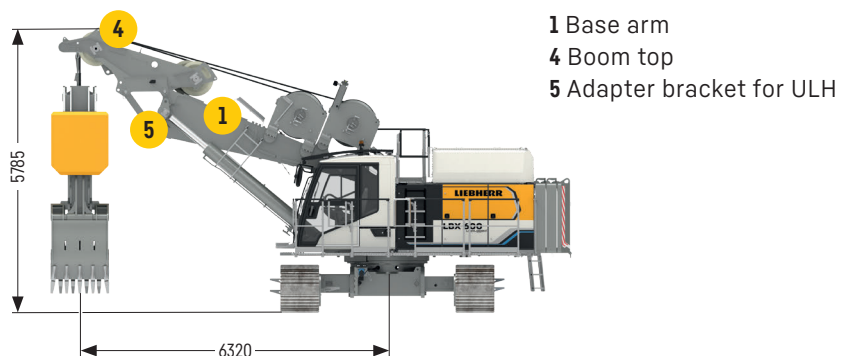
### Operating weights

Total weight LBX 600 unplugged without grab, without hose drums	t 64.9*
Total weight LBX 600 unplugged without grab, with hose drums	t 70.3*

The total weight of the LBX 600 is reduced by 2.1 t.

\* with 800 mm 3-web grousers and 15 t counterweight

## Ultra Low Head (ULH)



Max. working depth: 35 m (with adapted drum flange)

### Operating weights

Total weight LBX 600 unplugged without grab	t 63.9*
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The total weight of the LBX 600 is reduced by 2.1 t.

\* with 800 mm 3-web grousers and 15 t 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 30 t

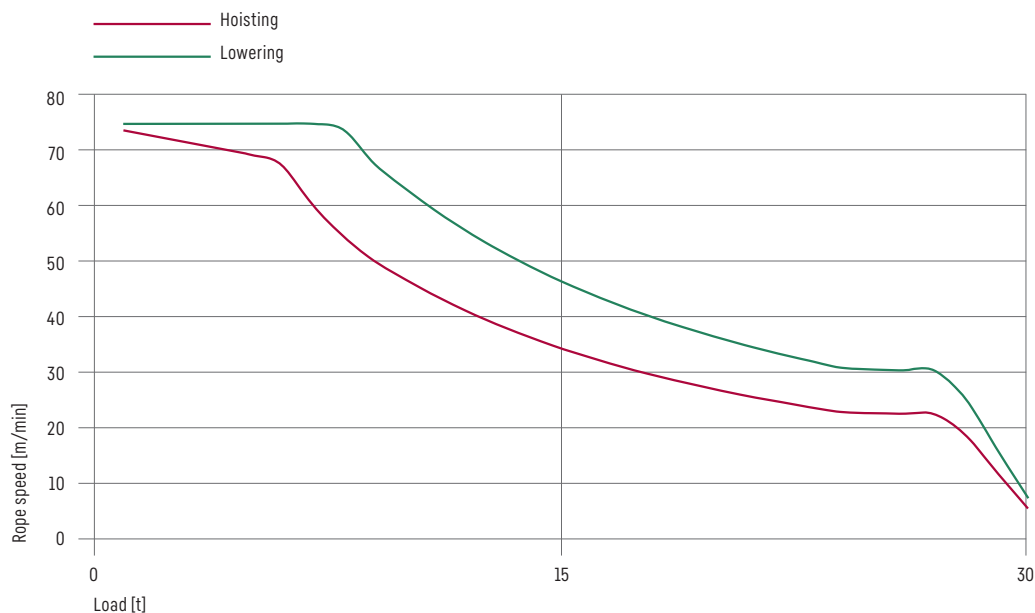


Diagram shows the course of a winch in dual-winch operation

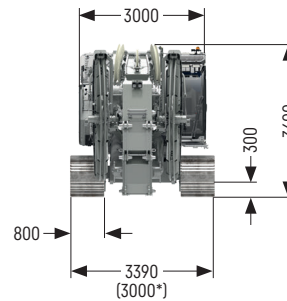
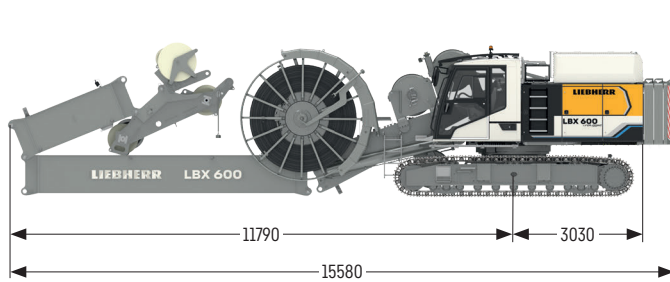


- The actual ground pressure is calculated in real time
- The maximum admissible ground pressure can be individually predefined
- The utilization is continuously calculated and displayed on the monitor in the operator's cabin
- Audible and visual warnings when the predefined values are approached

- 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

# Transport dimensions and weights

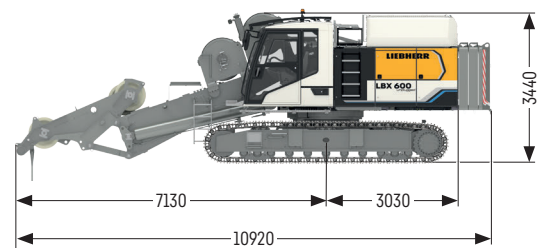
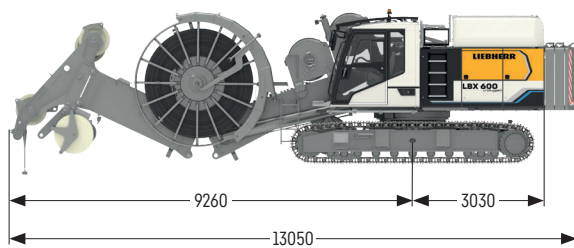
All weights listed here apply to the LBX 600 unplugged, including ropes and hoses for 80 m working depth, without platform on uppercarriage. Weights for the LBX 600 (diesel version, fully tanked) are each 2.1 t lower.



## Transport option

Weight with counterweight, with 800 mm 3-web grousers	t 71.2
Weight without counterweight, with 800 mm 3-web grousers	t 56.2

\* transport width with 700 mm grousers

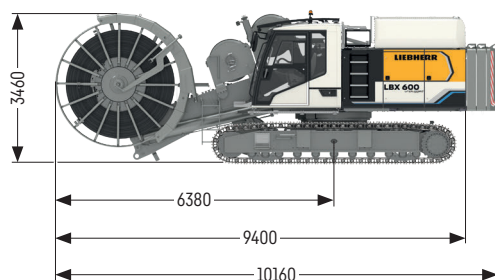


## Transport option Low Head

Weight with counterweight, with 800 mm 3-web grousers	t 69.0
Weight without counterweight, with 800 mm 3-web grousers	t 54.0
Weight without counterweight and hose drums, with 800 mm 3-web grousers	t 49.4

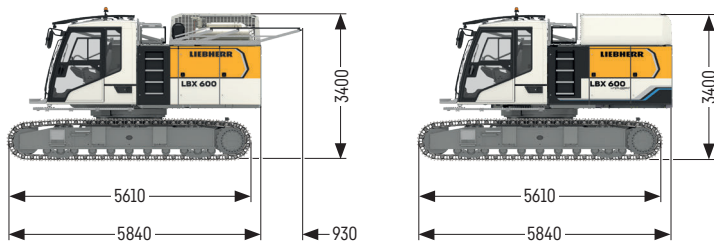
## Transport option Ultra Low Head

Weight with counterweight, with 800 mm 3-web grousers	t 63.3
Weight without counterweight, with 800 mm 3-web grousers	t 48.2



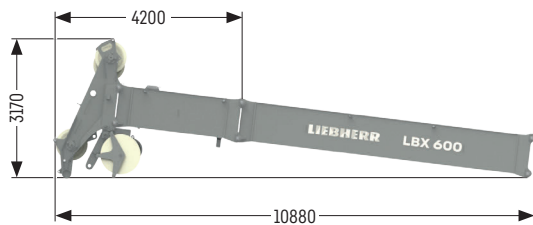
## Transport option

Weight with counterweight, with 800 mm 3-web grousers	t 66.0
Weight without counterweight, with 800 mm 3-web grousers	t 51.0
Weight without counterweight and hose drums, with 800 mm 3-web grousers	t 47.0



### Transport option

Weight LBX 600 unplugged with 800 mm 3-web grousers	t 34.6
Weight LBX 600 unplugged with 700 mm 3-web grousers	t 34.2
Weight LBX 600 (diesel version, 10 % tanked) with 700 mm 3-web grousers	t 31.6

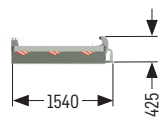
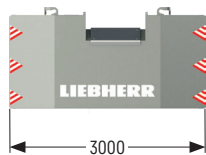


### Boom system

Boom 10.9 m (see illustration)	t 5.2
Boom section 6.6 m	t 2.2
Boom section 2.8 m	t 1.2
Base arm including hose drums and winches	t 16.4
Boom top	t 1.8

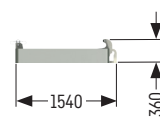
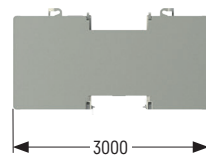
### Options

Cable drum with cable	t 0.4
All round platform with railings	t 0.4



### Rear counterweight

Weight	t 5.0
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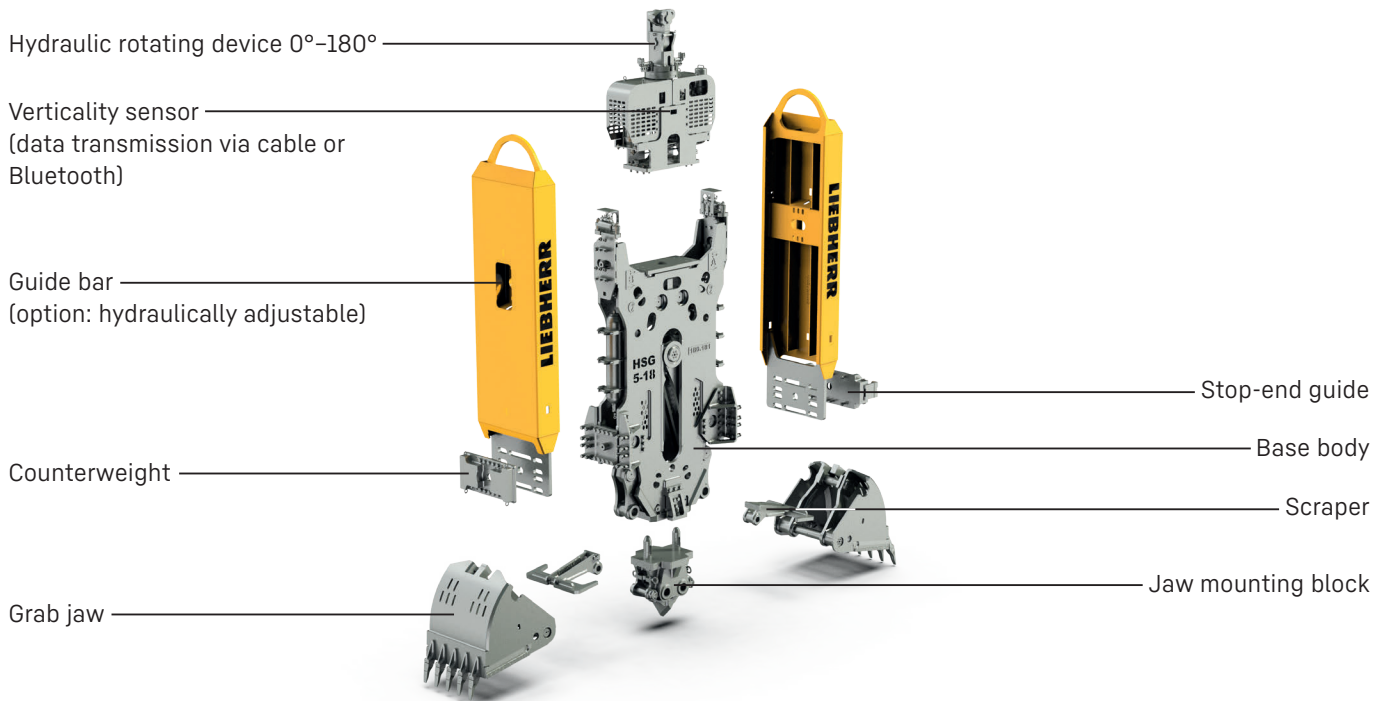
### Intermediate slab (2x)

Weight	t 5.0
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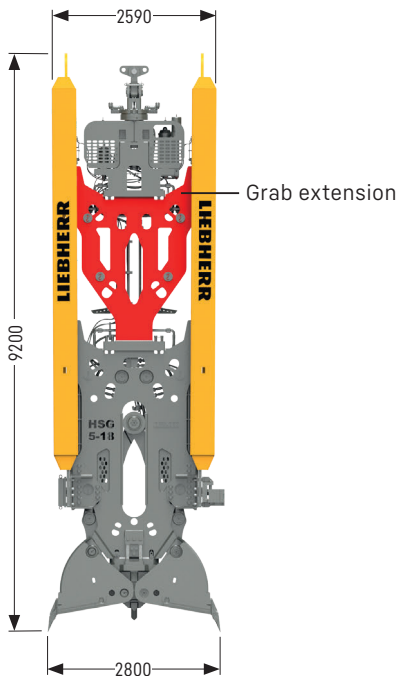


# HSG 5-18

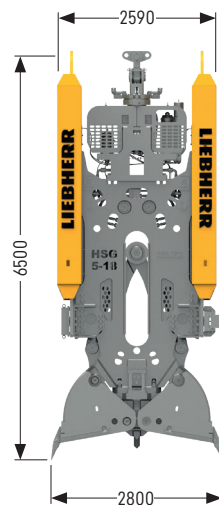
## Modular design



## 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 2800 mm.

Different opening widths result in different dimensions.

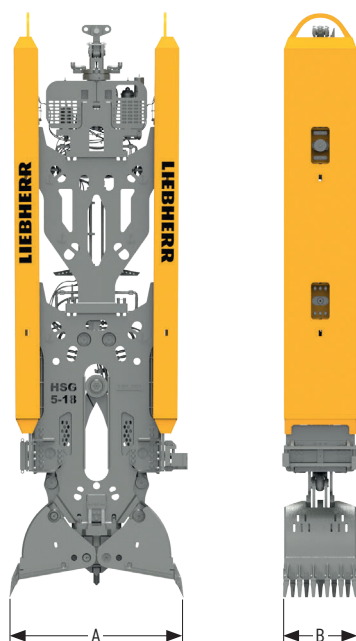
## Technical data HSG 5-18 C/L

Jaw opening width A [mm]	Slurry wall thickness B [mm]	Grab capacity [m³]	Grab weight empty		Grab weight full**		Weight stop-end guide (included) [t]
			HSG C [t]	HSG L [t]	HSG C [t]	HSG L [t]	
2800	500	0.62	14.71	18.31	15.91	19.51	0.39
	600	0.78	15.12	18.72	16.72	20.32	0.40
	800	1.10	16.81	20.71	19.01	22.91	0.49
	1000	1.42	18.10	22.20	20.90	25.00	0.58
	1200	1.72	19.47	24.07	22.87	27.47	0.78
	1500	2.21	21.50	26.00*	25.90	30.40*	0.91
	1800	2.69	22.09	26.89*	27.49	32.29*	
3200	500	0.79	15.41	19.01	17.01	20.61	0.39
	600	0.99	15.92	19.52	17.92	21.52	0.40
	800	1.39	17.61	21.51	20.41	24.31	0.49
	1000	1.80	18.90	22.90	22.50	26.50	0.58
	1200	2.20	20.27	24.87	24.67	29.27	0.78
	1500	2.81	22.30	26.80*	27.90	32.40*	0.91
	1800	3.41	22.79	27.69*	29.59	34.49*	

\* exceeds the permissible grab weight of the LBX 600 (> 30 t)

\*\* density of excavated material 2 kg/dm³

## Technical data



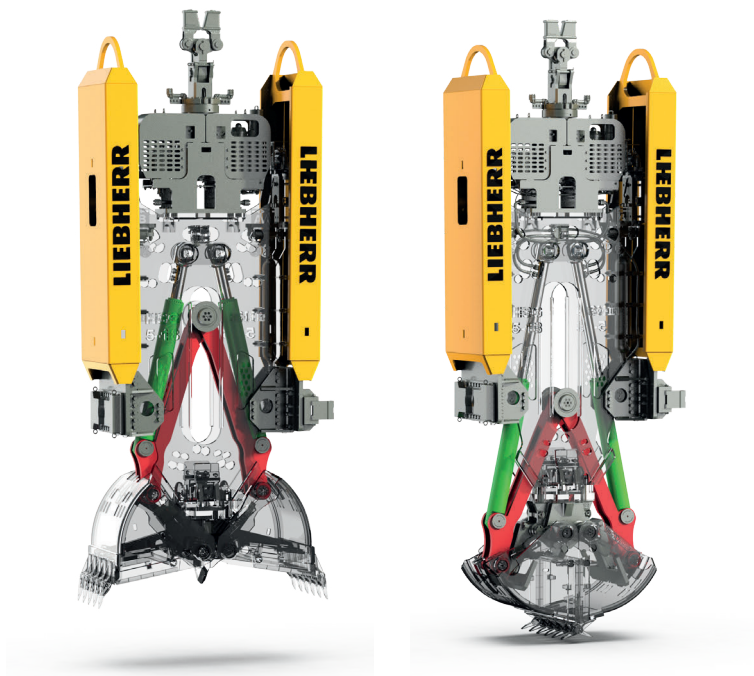
### The following configurations are included in the given grab weights

Stop-end guide	see table
Hydraulically adjustable guide bars	t 0.5
Accumulator for accelerated opening	t 0.33
Verticality sensor	t 0.04
Reinforcement guide bars (from 1200 mm slurry wall thickness)	t 0.67
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	t -0.25
Connector semi-Kelly	t 0.10
Generator	t 0.02
Additional weight	t 4.43
Additional weight	t 6.56
Heavy duty grab jaws	on request
Further jaw widths 2500 - 3600 mm	on request

## Grab closing mechanism

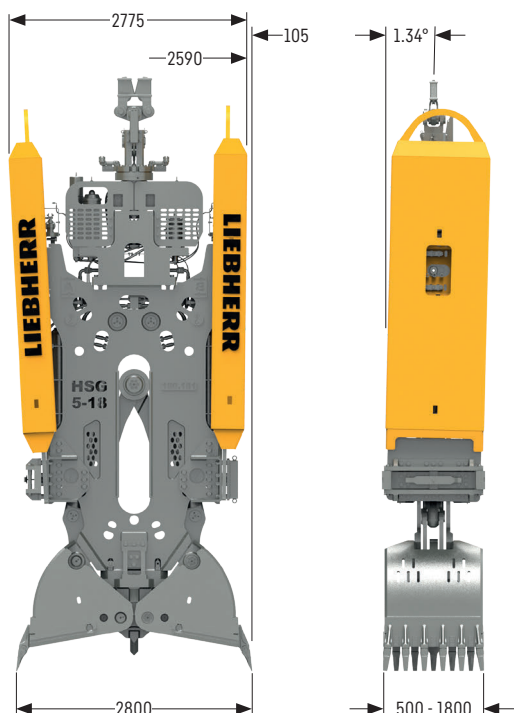


Opening and closing of the grab is actuated by two direct-acting cylinders. These are installed with the piston rods at the top, which means they are protected inside the grab body. The robust cylinder barrels are positioned downwards.

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)	bar	300
Cylinder force (2 cylinders)	kN	1527
Max. closing force at teeth (2800 mm)	kN	948
Opening/closing speed approx.	s	10/9
Opening speed with accumulator for accelerated opening approx.	s	8

## Adjustable guide bars (option)



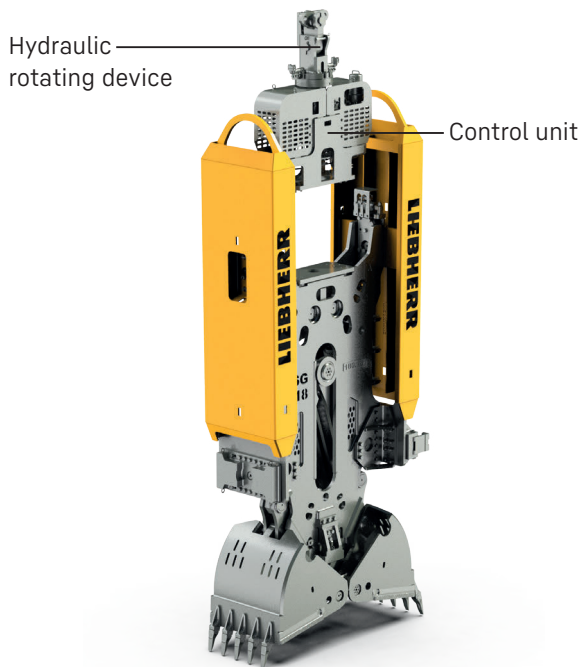
During excavation work the grab direction can be corrected using the guide bars and so higher verticality of the slurry wall is achieved. The system is driven hydraulically and can be controlled from the cabin.

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 2800 mm. 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  $2 \times 180^\circ$
- Storing of the grab position
- Rotation from  $0^\circ$  to  $180^\circ$  after each grab cycle

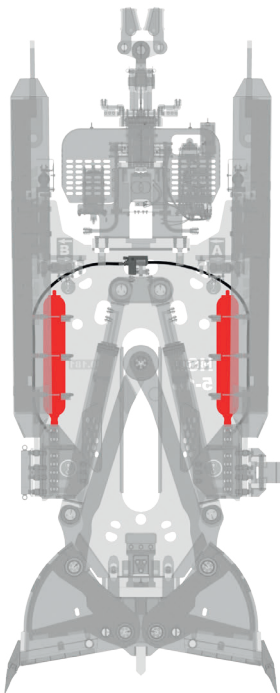
### Signal and data transmission via radio

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.

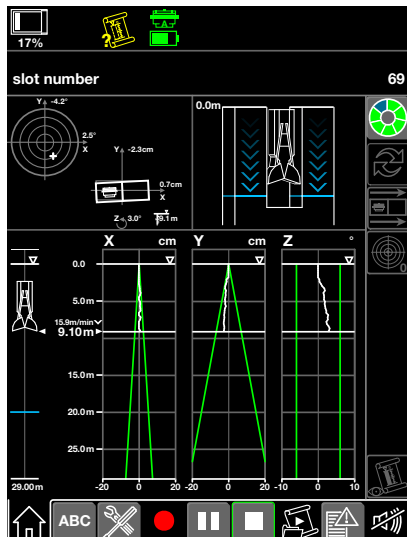
## Accumulator for accelerated opening (option)



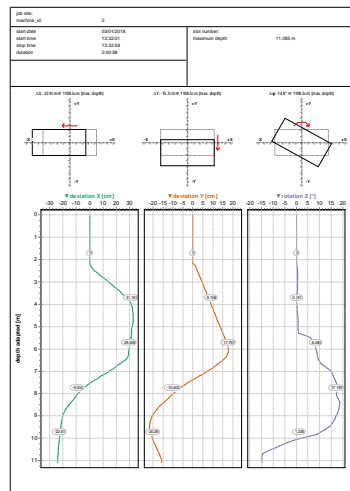
These additionally installed accumulators temporarily store the high oil flow that occurs when the jaws are opened. As a result, high opening and closing speeds can be achieved despite generously dimensioned cylinders.

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

# Verticality assistant



hydr. grab with Verticality Assistant



PDE



LiDAT®



MyJobsite



## Verticality assistant for hydraulic and mechanical slurry wall grabs

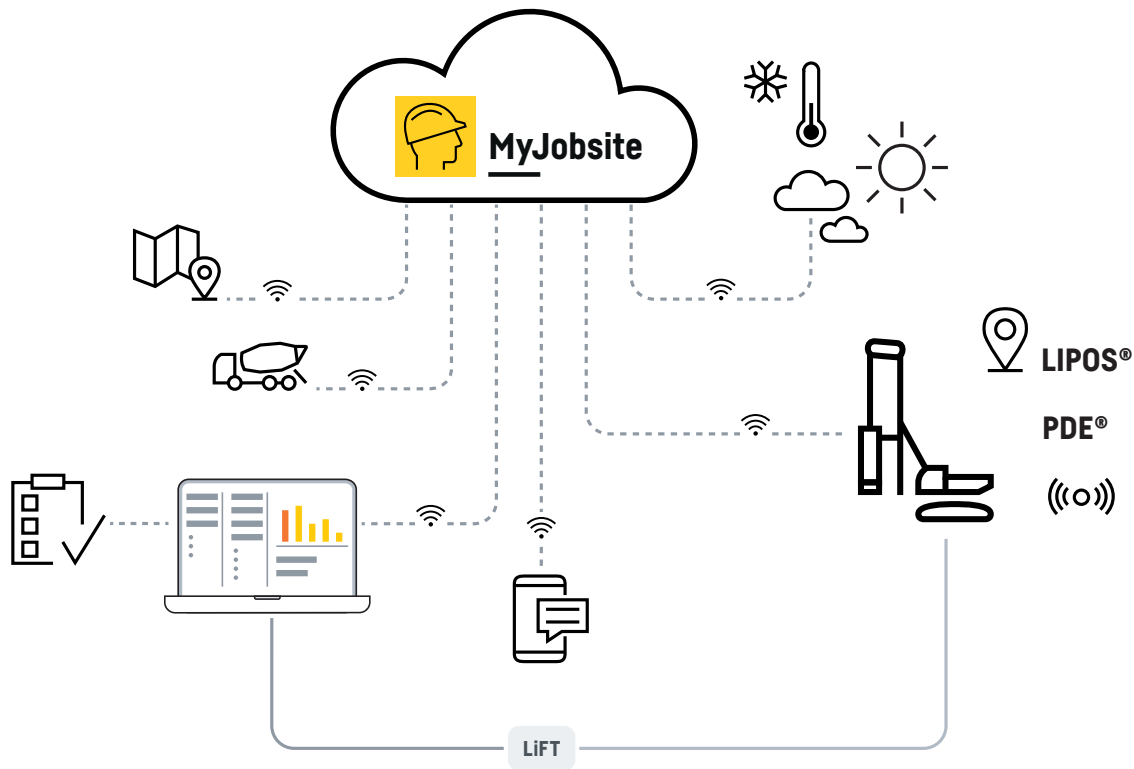
This assistance system is fully integrated in the Liebherr machine's control and process data recording system. It supports and records the slurry wall installation process. With the help of the verticality assistant deviations in the slurry wall along the X and Y axes, as well as the rotation round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



Download datasheet  
LBX 600



Download datasheet  
LBX 600 unplugged



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