EN

Solutions for deep foundation work

Drilling rigs, piling rigs, duty cycle crawler cranes

LIEBHERR

Liebherr-Werk Nenzing GmbH

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The applications

Drilling

Liebherr's deep foundation machines can be applied for all common drilling processes. These include Kelly drilling, continuous flight auger drilling, full displacement drilling, double rotary drilling, grab drilling and down-the-hole drilling. The appropriate process is chosen in accordance with the prevailing ground conditions or depending on the required depth and/or diameter of the borehole. The drilled cavity can be used for many purposes, for example, to install a so-called cast-in-place pile when filled with fresh concrete. Precast concrete and steel elements serving as load-bearing or support elements can also be inserted.

Kelly drilling

As the most common drilling process, Kelly drilling is suitable for almost all types of soil and rock. Characteristic are the relatively short drilling tools as well as a telescopic Kelly bar, which enable large drilling depths.

Continuous flight auger drilling

This process is used for pre-drilling as well as for the installation of cast-in-place piles. The loosened soil is constantly conveyed using a continuous flight auger.

Full displacement drilling

Full displacement tools are frequently used for the production of cast-in-place piles. The soil is displaced by a smooth casing with an auger starter piece and only a small amount is conveyed to the surface.

Double rotary drilling

For this process the casing and auger (inside the casing) are inserted simultaneously and subsequently extracted. It is used for the production of cast-in-place piles and for pre-drilling.

Down-the-hole drilling

Here, a simultaneously rotating and impacting hammer, activated by compressed air, is driven into the ground. A flushing current conveys loosened drill cuttings to the surface. This method is mainly applied for rock and/or for penetrating large boulders.

Grab drilling

Grab drilling is a common process which loosens the ground with a cutting or impacting action depending on the tool used. Duty cycle crawler cranes are equipped with either a pile grab, a chisel or special tools.

Pile driving

With pile driving, so-called piling elements can be installed in the ground and extracted again. Common piling elements include steel profiles and piles made of reinforced concrete or timber. Nowadays, mainly sheet pile walls for supporting or securing purposes, as well as foundation piles or cut-off walls are produced using the various pile driving processes. The erection of quay facilities in port construction presents difficult conditions and requires particularly heavy piling work with long piling elements. For this purpose, mainly powerful duty cycle crawler cranes with lattice booms and special leader systems are used. Pile driving processes are divided into two categories, namely vibrating and impact driving.

Vibrating

High frequency vibrators with variable static moment have especially low noise and vibration levels when operating. The piling element is set into harmonious oscillation. Thanks to the weight of the vibrator and pushing with the aid of the crowd system, the piling element can be installed in the ground.

Impact driving

The piling elements are installed dynamically. An hydraulic hammer, usually mounted on a piling rig with leader, impacts on the piling element with the aid of a drop weight. Impact driving is used for the same applications as vibrating, whereby the hydraulic hammers currently available are able to transfer much higher dynamic forces.

Slurry wall installation

Slurry walls are wall structures, which are installed deep into the ground and made of concrete or reinforced concrete. They have a static and/or sealing function. Trenches are excavated in panels, and a support fluid, usually bentonite suspension, prevents the soil around the trenches from caving in. In the single-phase process a self-hardening suspension remains in the trench. In the two-phase method the support fluid is pumped out of the trench and simultaneously replaced, for example, with concrete, after the final depth has been reached. In the combined process, additional precast concrete elements, steel elements or sealing panels are inserted in the suspension before it hardens. The powerful Liebherr duty cycle crawler cranes are used as carrier machines.

Mechanical slurry wall grabs

Mechanical grabs are the most common excavation tools used for slurry wall installation. They are opened and closed via rope. Trenches up to a depth of 50 metres are possible.

Hydraulic slurry wall grabs

Hydraulic slurry wall grabs are opened and closed via hydraulic cylinders. This facilitates extremely high closing forces. Additionally, they can be fitted with flexible guiding strips on the grab frame, which enable the alignment of the grab within the trench.

Slurry wall cutters

Slurry wall cutters are suitable for great depths and particularly when very hard soil conditions prevail. In the process the soil is loosened and crushed by a cutter head on the lower end of the guide frame. The loosened material is continuously pumped to the surface in the support fluid.

Ground improvement

This process involves the stabilization of the ground on the jobsite through treatment and/or the addition of other materials. A number of processes are available. Their purpose is to change the natural properties of the ground in such a way that it meets with the specific requirements of the intended constructional use at this position. The natural load-bearing capacity of the soil to support construction loads is enhanced and/or the compressibility (settlement) of the ground is reduced. Several different products can be installed for this purpose. These include various types of columns, retaining walls, cut-off walls and sealing slabs, as well as embankment and compaction structures.

Impact compaction

A heavy drop weight is dropped from a height of up to 40 metres onto the ground which is to be compacted. This dynamic input of energy increases the density. Liebherr duty cycle crawler cranes facilitate efficient compaction thanks to free-fall winches and an automatic control system.

Cutter soil mixing

For this process rotating wheels break up the ground structure. Simultaneously, a self-hardening binding agent suspension is added. The wheels of the mixing tool rotate around the horizontal axis so producing soil mixing elements with a rectangular cross-section.

Wet soil mixing

For wet soil mixing the mixing tools rotate around the vertical axis of the mixing shaft. The tools break up the soil matrix and mix the suspension with the soil. Cements are used as binding agents. These are mixed to a suspension by adding water.

Vibro-replacement

A deep vibrator, fitted on a leader, compacts the ground through vibration and the simultaneous addition of a coarse extraneous material. Thus load-bearing gravel or crushed stone columns, which stabilize the ground, are produced.

Vibro-flotation

With this process, non-cohesive soil is compacted using a vibro-flot. Through the vibration the soil grains change from their initial loose layering to a denser layering. A cylindrical compacted soil structure is created around the vibro-flot.

The machines

Drilling rigs
LB series

Multiple applications

The drilling rigs of the LB series are suitable for a wide range of applications in the deep foundation industry. In addition to the Kelly drilling process, they are also commonly used for the continuous flight auger, full displacement and double rotary drilling processes. Down-the-hole drilling is an exceptionally efficient method when working in hard ground or rock.

Successful on the market since 2007

Liebherr presented its first drilling rig in the successful LB series, namely the LB 28, at the Bauma 2007. Today, the LB series consists of six models with torques between 200 and 510 kNm. Depending on the process, drilling depths down to 120 metres and drilling diameters up to 4500 millimetres are possible.

Since 2019 LB 16 unplugged

The first battery-powered drilling rig in the world
The innovative Liebherr model does not only have an alternative electro-hydraulic drive concept, it can also be battery-operated without a cable, therefore: *unplugged*.

	LB 20.1	LB 25	LB 30	LB 35	LB 45	LB 55
Weight	52.8 t (116,404 lbs)	71.5 t (157,630 lbs)	78.5 t (173,063 lbs)	100.1 t (220,683 lbs)	116 t (255,736 lbs)	159 t (350,534 lbs)
Max. torque	200 kNm (147,512 lbf-ft)	250 kNm (184,390 lbf-ft)	300 kNm (221,268 lbf-ft)	347 kNm (255,934 lbf-ft)	452 kNm (333,378 lbf-ft)	550 kNm (405,659 lbf-ft)
Max. pull/crowd force	200 kN (44,962 lbf)	300 kN (67,443 lbf)	320 kN (71,939 lbf)	400 kN (89,924 lbf)	400 kN (89,924 lbf)	560 kN (125,893 lbf)
Kelly drilling max. drilling depth	34.5 m (113.2 ft)	58.8 m (192.9 ft)	70.8 m (232.3 ft)	77 m (352.6 ft)	95 m (311.7 ft)	120 m (397.7 ft)
Kelly drilling max. drilling diameter	1500 mm (4.9 ft)	3300 mm (10.8 ft)	3400 mm (11.1 ft)	4100 mm (13.5 ft)	4500 mm (14.8 ft)	4200 mm (13.7 ft)
Engine power	230 kW	320 kW	320 kW	390 kW	390 kW	565 kW
Available as battery-powered version	**LB 16 unplugged**	**LB 25 unplugged**	**LB 30 unplugged**			

Characteristics

The drilling rigs from Liebherr are distinguished through a compact design meaning they can be efficiently transported and quickly mobilized on the jobsite. Their powerful diesel engines convince with both low fuel consumption and low emissions. User-friendly rotary drives allow for high torques. Designed for continuous operation, the drilling rigs achieve fast working cycles.

Leader design

The leader is rigid and fitted with a wide leader profile, on which all winches are directly mounted. Thanks to this robust and rigid construction, it can resist high torques and transfer high pull forces through the Kelly winch and the rope crowd system.

Parallel kinematics

Thanks to the leader system's proven parallel kinematics, the drilling rigs have a large working range and, at the same time, work precisely.

Rope crowd system

The rope crowd system featuring extremely high pull and crowd forces contributes to the excellent performance of the drilling rigs.

Swing ring

The drilling rigs are equipped with a triple-row roller bearing ring which increases the stability of the machine when in operation. Thanks to an optimum adjustment of the tooth flank clearance, only a minimum clearance exists between the uppercarriage and undercarriage.

Drive system

The complete drive system comprises Liebherr components, including engine, pumps, distributor and on-board hydraulics. These are perfectly harm-onized and so achieve high efficiency. This results in low fuel consumption, high drilling performance and thus economic machine operation.

High stability

The long crawlers give the undercarriage a high level of stability and durability while minimizing the ground pressure.

Small swing radius

The machines in the LB series have a small swing radius in comparison to other drilling rigs.

Robust steel structure

Drilling rigs are sometimes subjected to high stresses in deep foundation applications. The steel construction of the LB series takes this into account. Low wear and a long service life is achieved through optimum force transmission.

Safety concept

The drilling rigs have a consistent safety concept that includes railings and walkways, as well as an installation for winch inspection. The complete assembly and loading activities can also be carried out outside the operator's cab with a radio remote control unit.

Video LB 45

Piling and drilling rigs
LRB series

All-round machines

Since the end of the 1990s, Liebherr in Nenzing has been developing and manufacturing a range of combined piling and drilling rigs. Today, the series has four models, which perfectly cover the various requirements of our customers.

Wide range of applications

Piling and drilling rigs from Liebherr are deployed for various applications on the jobsite. A typical application for smaller models is the vibration of sheet pile walls, whereas the LRB 355 was specially developed for drilling with full displacement tools. It is also suitable for all further common drilling applications, as well as operation with hydraulic hammer or vibrator.

	LRB 16	LRB 18	LRB 23	LRB 355.1
Weight	50 t (110,231 lbs)	52 t (114,640 lbs)	72,6 - 78,5 t (160,056 lbs) - (173,063 lbs)	95 - 109 t (210,762 - 239,863 lbs)
Max. crowd distance	16 m (42 ft)	18 m (49.2 ft)	23 m (75.5 ft)	27 m (88.6 ft)
Max. pull/crowd force	200 / 150 kN (44,962 lbs / 33,721 lbs)	200 / 150 kN (44,962 lbs / 33,721 lbs)	320 kN (71,939 lbs)	400 kN (89,924 lbs)
Max. torque rotary drive	120 kNm (88,507 lbs-ft)	120 kNm (88,507 lbs-ft)	300 kNm (221,268 lbs-ft)	450 kNm (331,903 lbs-ft)
Engine power	390 kW	390 kW	600 kw	600 kW / 750 kW

Characteristics

With the LRB series Liebherr offers its customers combined piling and drilling rigs for a diverse range of applications on the jobsite. The universal machines are characterized by both high performance and efficiency, as well as reliability. Easy transportation and quick set-up are only two fundamental characteristics for the flexible application of the LRB machines on jobsites. For example, the leader can simply be folded backwards during transportation and does not need to be dismounted.

Innovative leader design

The leader absorbs large torque and is fitted with a rope crowd system for high pull and crowd forces. All winches are mounted directly on the leader meaning it is not necessary to shift the ropes when adjusting the inclination or radius of the leader.

Supports

Thanks to both rear and leader supports, the undercarriage can be elevated and swivelled on the spot. This is of particular benefit in restricted spaces. Moreover, the supports provide more stability during operation.

Modular leader top

The leader top can be appropriately equipped for the actual application. Both the radius and the rope lead-off are adjustable.

Parallel kinematics

A large working area is possible thanks to the parallel kinematics. At the same time, this allows the leader to be folded back.

Compact uppercarriage

Despite their high performance the machines in the LRB series have a compact uppercarriage. This results in a relatively small swing radius and therefore efficient work in restricted spaces.

Robust undercarriage

Thanks to an extremely solid undercarriage, the machines in the LRB series have excellent stability and low ground bearing pressure.


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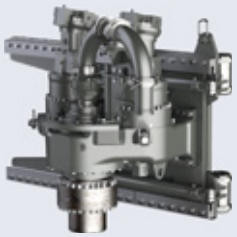
LRB 23

Attachments for the LB and LRB series

Rotary drive (BAT series)
The powerful rotary drive delivers the torque for many different drilling applications. A major advantage is the automatic torque regulation. Thanks to its continuous speed optimization, it can be flexibly adjusted to suit the prevailing ground conditions on the jobsite. The Kelly shock absorber can be adjusted to suit the weight of the Kelly bar.

Double rotary drive (DBA series)
Secant drilled piles and foundation piles can be installed using double rotary drives. The inner continuous flight auger is driven independently from the casing by two separate rotary drives. The compact design allows for work in close proximity to buildings (front-of-wall drilling).



Rotary drives for down-the-hole drilling (DTH)
Liebherr offers special rotary drives which are used for applications with DTH hammer. Through shift and folding functions these can be adapted to the respective requirements.

Hydraulic hammer
Liebherr's own H series of hydraulic free-fall hammers comprises seven types with a maximum impact energy of 225 kNm. These are guided on the leader when installed on Liebherr's piling and drilling rigs. Through the mounting of modular drop weights the hammers can be perfectly adapted to the particular piling requirements.

High frequency vibrator with slim design
The powerful high frequency vibrators are particularly easy to maintain, mainly due to a new cooling system and also the use of state-of-the-art components. Thanks to the symmetrical layout and linear guiding of the vibrator, energy loss is minimized.

Ring vibrator
The ring vibrator allows for the installation of pipes that project beyond the leader. When installing a cast-in-place vibration pile the vibrator does not have to be detached from the pipe during reinforcement and concreting work.

Casing oscillators
Hydraulic casing oscillators of various sizes can be attached to the basic machines. These are driven by the on-board hydraulics of the carrier machine. Together with the robust design of the casing oscillators this facilitates efficient operation on the jobsite.

Mixing drives
Should the piling and drilling rigs be required for ground improvement processes mixing drives are used. These are characterized through their compact design. The drives are either designed for mixing using single mixing equipment or have a modular design and can be fitted with single, double or triple mixing equipment.

Drilling and mixing tools

Tools are available for displaceable, mixable, loose and densely layered soil types, as well as for rock. They offer a high level of performance, low wear, and a long service life.

Kelly drilling
- drilling augers, drilling buckets, core barrels, cluster drills
- cross cutters, belling buckets
- casing drivers
- double-walled casings
- cutting shoes

Continuous flight auger drilling
- augers
- auger starters
- drill bits

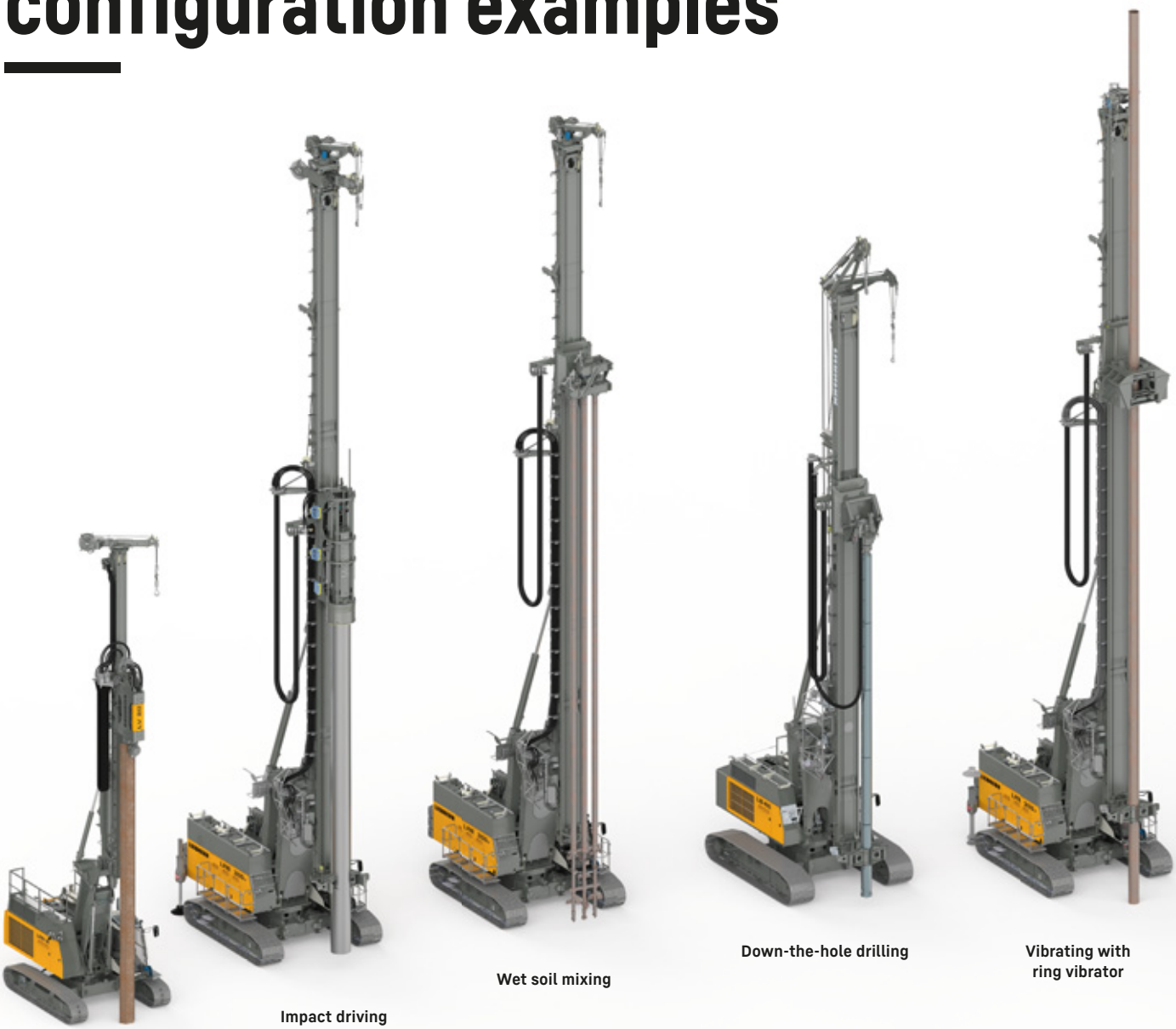
Double rotary drilling
- augers
- auger starters
- casing drivers
- single and double-walled casings
- cutting shoes

Full displacement drilling
- drive tubes
- displacers
- drill bits

Down-the-hole drilling
- down-the-hole hammers
- casing tubes
- drill bits

Wet soil mixing
- mixing shafts
- mixing tools with paddles, blades or auger screws

Application and configuration examples



Vibrating with high frequency vibrator

Impact driving

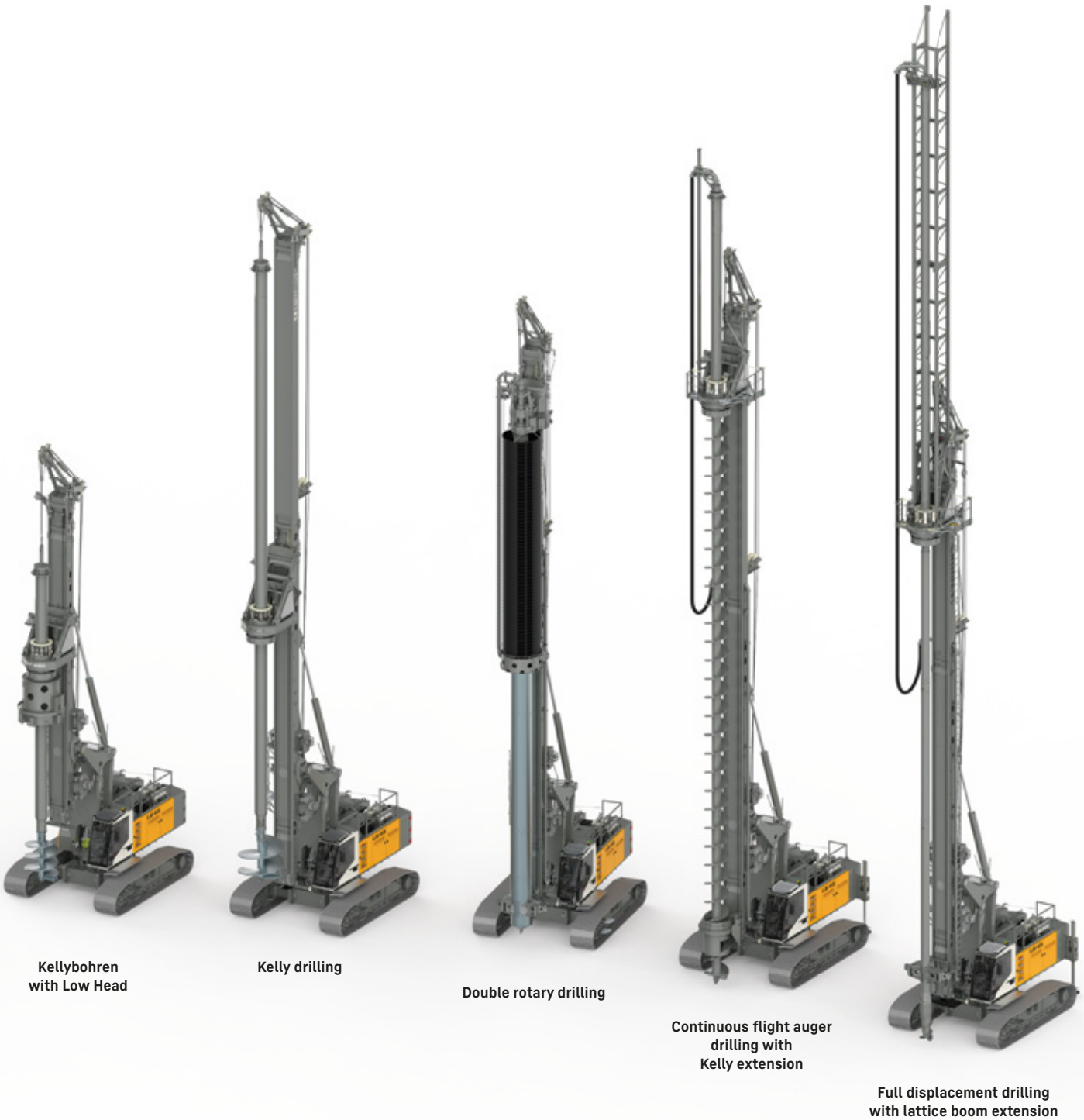
Wet soil mixing

Down-the-hole drilling

Vibrating with ring vibrator

Flexible application on the jobsite

The LB and LRB machines from Liebherr are available in different configurations and are highly flexible in their application depending on the prevailing conditions on the jobsite. Additional equipment is available as an option for drilled piles with very large diameters and great depths. This includes an extension of the drilling axis, additional counterweight, as well as a leader extension.



Kellybohren with Low Head

Kelly drilling

Double rotary drilling

Continuous flight auger drilling with Kelly extension

Full displacement drilling with lattice boom extension

The drilling rigs can also be fitted with a shortened leader, therefore making them ideal for use on jobsites with height restrictions.

Through a lattice boom extension the drilling depth can be significantly increased when using the full displacement drilling process.

Concrete technology

One-stop shop

Liebherr is a highly diversified complete provider of concrete technology developing and manufacturing high-quality truck mixers, mixing plants and concrete pumps. This enables economic manufacturing, as well as trouble-free transportation and installation of concrete.

Flexible application

The crawler concrete pumps require minimum space, are quickly set up and can be positioned anywhere on the jobsite.

High-pressure concreting

High concrete conveyance ensures quick cycles when installing cast-in-place piles.

Concrete pumps

The trailer and crawler concrete pumps offer high conveyance output and low emissions. The pumps are especially suitable for the conveyance of concrete via concrete lines or concrete distribution systems. Innovative pump units, the hydraulic system and state-of-the-art control ensure extremely cost-effective operation of the concrete pumps.

Thanks to an integrated solution, the main parameters of the concrete pump can be controlled from the control panel in the operator's cab of the deep foundation machine. This means the machine operator has control of the concreting process, which leads to safer and more efficient jobsite assignments.

Crawler concrete pumps provide fresh concrete to the drilling rig for the manufacture of cast-in-place piles.

Designed for tough everyday operation

Whether working in 40 °C heat, or severe winter conditions, they are designed for worldwide operation.

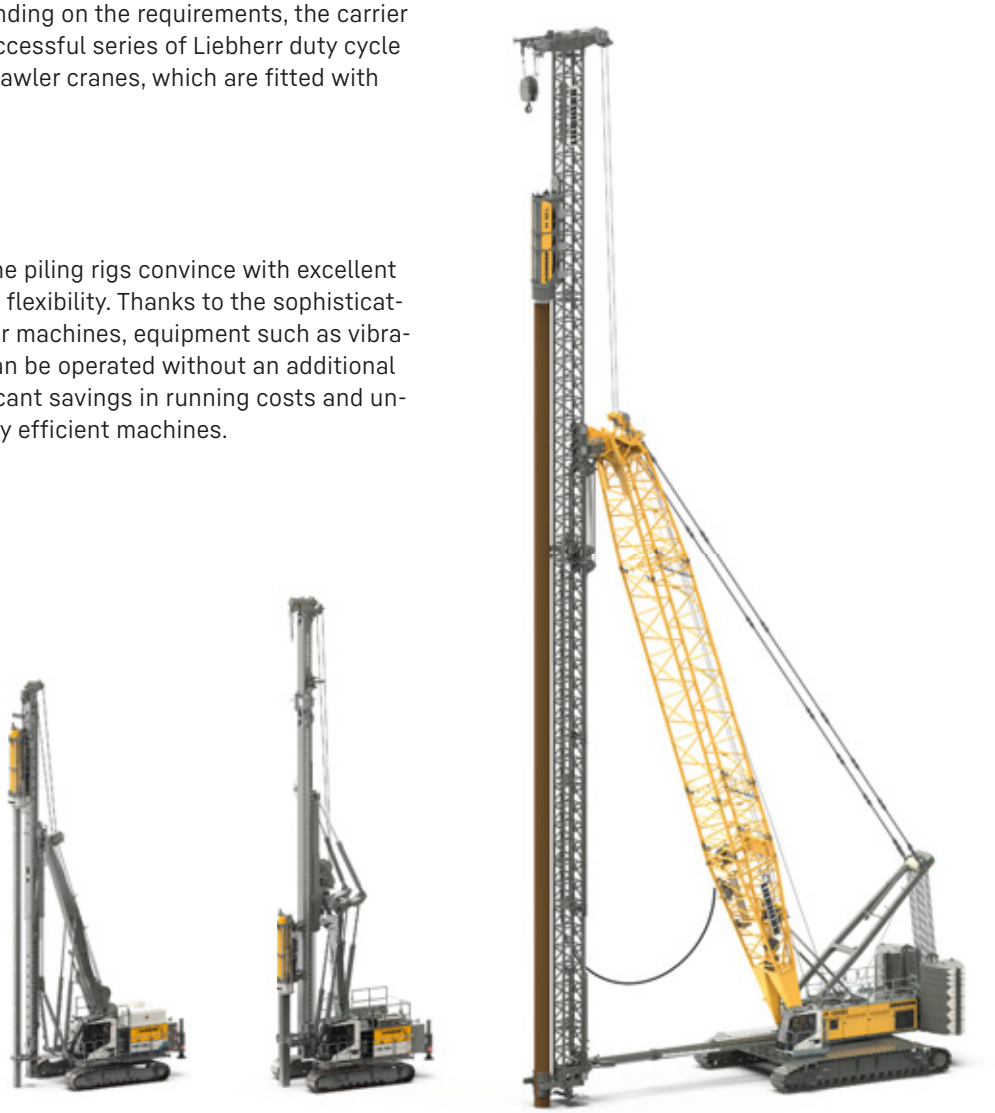
Piling rigs
LRH series

Flexible piling application

The piling rigs in the LRH series are suitable for jobs involving the installation of piling elements in widely varied types of soil. Liebherr's piling rigs are the first choice especially when very large radii and extreme angles are required. Depending on the requirements, the carrier machine is selected from the successful series of Liebherr duty cycle crawler cranes, drilling rigs, or crawler cranes, which are fitted with stable leader systems.

Efficiency on the jobsite

Combined with a stable leader the piling rigs convince with excellent performance characteristics and flexibility. Thanks to the sophisticated hydraulic system of the carrier machines, equipment such as vibrators, hammers or rotary drives can be operated without an additional power pack. This leads to significant savings in running costs and underlines their reputation as highly efficient machines.



	LRH 100.1	LRH 200	LRH 600
Max. pile length	19 m (62.3 ft)	24,5 m (82 ft)	34/44/55 m (111 / 144 / 180 ft)
Max. pile weight	8 t (17,637 lbs)	16 t (35,274 lbs)	40 t (88,185 lbs)
Max. inclination	1:3	1:3	1:4 / 1:3
Radius	8.7 m (28.5 ft)	7.8 m (25.6 ft)	15 m (49.2 ft)
Hammer	H 6	H6, H 10	H 15
Impact energy	72 kNm (53,104 lbf-ft)	120 kNm (88,507 lbf-ft)	225 kNm (165,451 lbf-ft)
Carrier machines	LB 25	LB 30	HS 8200 LR 1300.1 SX LR 1400 SX
Available as battery-powered version	**LRH 100.1 unplugged**	**LRH 200 unplugged**	

Characteristics LRH 600

Fixed leader

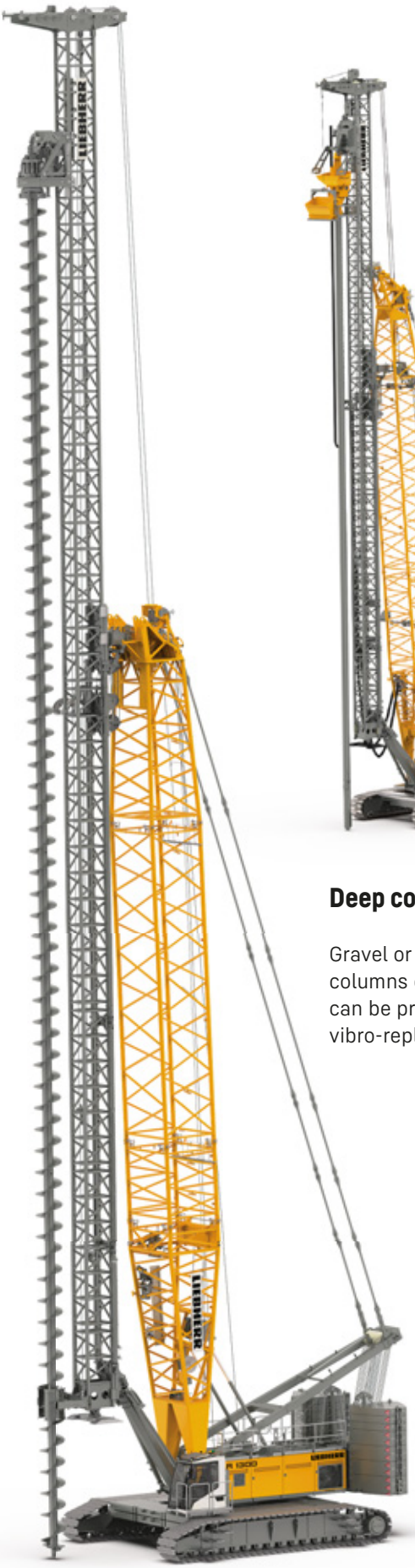
Ideal for heavy piling work with a large radius - that's how the LRH 600 can be characterized. The piling rig convinces with sophisticated leader kinematics which enable a working radius of up to 15 metres and a leader length of 51 metres. Furthermore, inclinations up to 14° to the rear and up to 9.5° to the fore are possible. The leader's lattice design provides a high level of stability.

Vertical leader adjustment

The leader is connected to the boom head via supporting tubes. This allows to change the leader height without influencing the leader inclination.

Applications

In addition to pile driving with a hammer or a vibrator, these include drilling processes with continuous flight auger or down-the-hole hammer, as well as diverse ground improvement processes.



Deep compaction

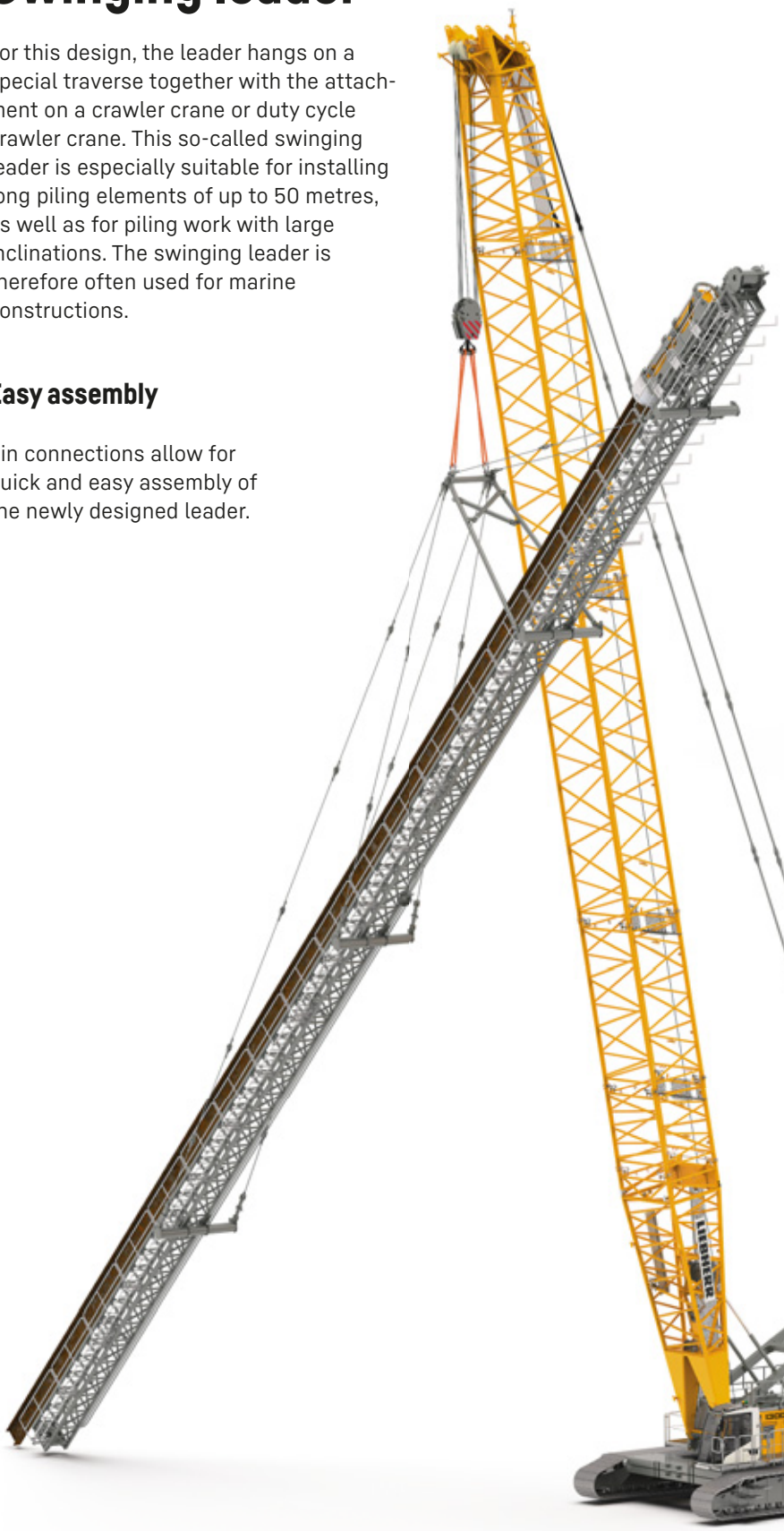
Gravel or crushed stone columns of up to 35 metres can be produced using vibro-replacement.

Swinging leader

For this design, the leader hangs on a special traverse together with the attachment on a crawler crane or duty cycle crawler crane. This so-called swinging leader is especially suitable for installing long piling elements of up to 50 metres, as well as for piling work with large inclinations. The swinging leader is therefore often used for marine constructions.

Easy assembly

Pin connections allow for quick and easy assembly of the newly designed leader.



Vertical swinging leader

The vertically hanging leader allows for piling positions that are not possible with a normal fixed leader due to space restrictions. This configuration is ideal for the subsequent driving of sheet piles.

Characteristics LRH 100.1 und LRH 200

With these piling rigs Liebherr offers its customers two compact machines with especially flexible leader kinematics. This allows for large radii as well as inclination in all directions.

The machines are based on the LB 25 and LB 30, two proven drilling rigs from the LB series. The design of these carrier machines enables quick and economic transportation, fully assembled, so allowing for quick set-up on the jobsite. Both LRH machines are especially suitable for the installation of various piling elements made of timber, concrete or steel.

Leader kinematics
Thanks to the special leader system, the LRH 200 achieves a radius of 8 metres, as well as a continuous inclination adjustment of 18° in all directions.

Mobility
The LRH 100.1 can erect and lower the leader independently (no auxiliary machines required) and is transported with mounted hammer.

Battery-powered version
We offer the piling rigs in an emission-free “unplugged” version. The machine has no restrictions in terms of performance and application when compared with the conventional version.

Attachments for the LRH series

Rotary drives

The Liebherr rotary drives in the BAT series are powerful and deliver high torque. Considerable advantages are the automatic torque regulation as well as four electronically adjustable speed ranges.

	BAT 320	BAT 250
Torque	0-320 kNm (0 - 236,020 lbf-ft)	0-250 kNm (0 - 184,390 lbf-ft)
Speed	0-47 U/min	0-58 U/min
Drilling depth	51 m (167.3 ft)	35.2 m (115.5 ft)
Max. drilling diameter	1200 mm (47.2 inch)	500 mm (19.7 inch)
Type	LRH 600	LRH 200

Hydraulic hammers (H series)

The hydraulic free-fall hammers from Liebherr are leader mounted. Through the mounting of modular drop weights the hammers can be perfectly adapted to the particular piling requirements. Thanks to their short and lightweight design they are user-friendly in terms of transportation and maintenance.

	H 6	H 10	H 15 L
Max. impact energy	72 kNm (53,105 lbf-ft)	120 kNm (88,507 lbf-ft)	225 kNm (165,952 lbf-ft)
Max. weight of hammer	6 t (13,230 lbs)	10 t (22,046 lbs)	15 t (33,070 lbs)
No. of impacts/min.	50 - 150	30 - 100	30 - 80
Max. inclination	1:3	1:1	1:3
Type	LRH 100.1 / LRH 200	LRH 200 / LRH 600	LRH 600

Pre-drilling drives

Pre-drilling drives are used for pre-drilling prior to pile work.

	BA 12	BA 35
Torque	0-12 kNm (0 - 8,850 lbf-ft)	0-35 kNm (0 - 25,814 lbf-ft)
Speed	0-65 rpm	0-20 rpm
Drilling depth	12 m (39.4 ft)	17.4 m (57.1 ft)
Max. drilling diameter	350 mm (13.8 inch)	350 mm (13.8 inch)
Type	LRH 100.1	LRH 200

Mixing drives

Mixing drives are used for ground improvement processes. These are characterized through their compact design.

	MA 180
Torque rotary drive	180 kNm (132,761 lbf-ft)
Speed rotary drive	0-80 rpm
Max. mixing depth	24.3 m (79.7 ft)
Type	LRH 200

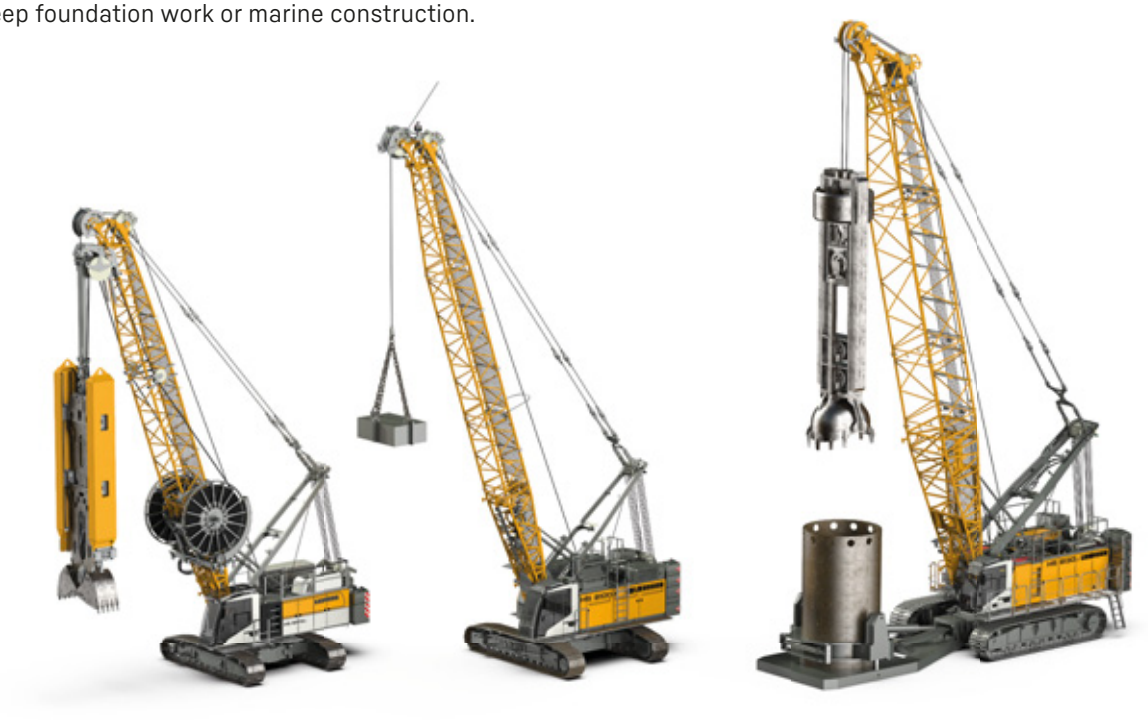
Duty cycle crawler cranes HS series

Universal machines for deep foundation work

In addition to machines purely for deep foundation work, Liebherr also offers a series of duty cycle crawler cranes which are deployed with appropriate attachments. The machines can be fitted, for example, with pile grabs and casing oscillators for drilling processes, slurry wall grabs or cutters for the installation of slurry walls, as well as with drop weights for carrying out dynamic soil compaction.

Proven in tough construction assignments

Thanks to their robust design the HS series of machines is ideally suited to the demands of deep foundation work. The three duty cycle crawler cranes with lifting capacities between 70 and 130 tonnes are especially popular for deep foundation applications. Additionally, Liebherr also offers smaller classes of machines with lifting capacities below 70 tonnes, as well as two larger types with lifting capacities up to 300 tonnes. These machines are applied, above all, for material handling with dragline buckets or grabs, but are also sometimes applied for deep foundation work or marine construction.



	HS 8070.1	HS 8100.1	HS 8130.1
Max. capacity	70 t (77 US t)	100 t (110 US t)	130 t (143 US t)
Min. transport weight	47 t (103,617 lbs)	40 t (88,185 lbs)	51 t (112,436 lbs)
Min. transport width	3000 mm (9.8 ft)	3500 mm (11.5 ft)	3500 mm (11.5 ft)
Max. drilling diameter*	1800 mm (5.9 ft)	2000 mm (6.6 ft)	3300 mm (10.8 ft)
Max. drop weight**	19 t at 8 m radius (42,000 lbs at 26.2 ft radius)	25 t at 8 m radius (54,000 lbs at 26.2 ft radius)	34.1 t at 8 m radius (75,200 lbs at 26.2 ft radius)
Engine	320 kW	390 kW	565 kW

* Casing oscillator
** Impact compaction

Characteristics

Duty cycle crawler cranes are exposed to high stresses in their various jobsite applications. A high level of stability is a basic requirement for efficiency when carrying out deep foundation work. Thus, the uppercarriage of the machine has a robust box design and is mounted on a large undercarriage. This fulfils the operating demands on the duty cycle crawler crane and, at the same time, achieves an extended service life of the machine.

Winches

The low-maintenance hydraulic free-fall winches are installed as complete units. Depending on the model, they have a maximum line pull of 350 kN. Thanks to state-of-the-art variable flow hydraulic engines, the rope speed is automatically adapted for all working ranges without any output losses.

Hydraulic system

Thanks to the innovative hydraulic design with a closed circuit, the duty cycle crawler cranes are fuel-saving and therefore economic. The available hydraulic power is optimally split between the winches, swing and luffing gears, or the external devices. Thus, parallel operation of all gears is possible.

Self-assembly system

No additional auxiliary crane is necessary for the assembly of duty cycle crawler cranes. All components, such as crawlers and counterweight, have a space-saving design and weights are optimized. These can be autonomously assembled using the sophisticated self-assembly system.

Control system

The duty cycle crawler crane is fitted with an intelligent control system which also includes a multitude of monitoring functions. Service and machine functions are clearly displayed on high contrast colour monitors. Depending on the requirements and the application, further assistance systems, such as the slurry wall grab control, are available.

Safety

The duty cycle crawler cranes meet the highest safety standards. Platforms, railings and ladders are wholly integrated in the machine design.

Crawlers

Depending on the machine's size the crawlers can be dismounted with the aid of the self-assembly system or, thanks to a hydraulic cylinder, they can be retracted to transport width.


LIEBHERR
HS 8070.I

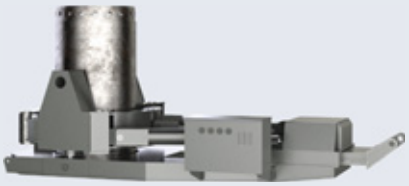
Attachments for the HS series

Pile grab
Duty cycle crawler cranes are equipped with universal hammer grabs when installing pile foundations with casing oscillator. These can be deployed for various ground conditions. The universal hammer grabs are extremely robust and are fitted with hard-wearing components.

Slurry wall grab
Mechanical grabs are opened and closed via a rope, hydraulic grabs via hydraulic cylinders. The verticality measuring system is fully integrated in the Liebherr control system. Additionally, hydraulic slurry wall grabs make it possible to carry out a vertical correction. This allows for a high level of accuracy, even at great depths.

Slurry wall cutter
Slurry walls can be installed practically vibration-free using a cutter (hydromill). Cutter wheels are mounted on the bottom of a steel profile frame and continuously break up and crush the ground at the bottom of the trench. The loosened soil particles are pumped from the trench to the surface together with the support fluid via a hose.

An important advantage of the slurry wall cutter is that it can be deployed for almost all types of soil, including rock. Furthermore, work can be carried out at depths of over 100 metres.



Casing oscillator
For the installation of casings, the duty cycle crawler cranes are always fitted with a casing oscillator. These are coupled with the carrier machine and excel through their extremely robust design. They are driven by the carrier machine's hydraulic system.

Slurry wall package

Liebherr offers the slurry wall cutter, the carrier machine and the separation plant as a complete package. The new pay-per-use model enables maximum gain with low investment and calculable maintenance costs.

Further information including video

Unplugged

Zero emission

Our contribution to a greener future

Liebherr consciously demonstrates its responsiblitiy towards society and the environment and strives for the best possible combination of environmental compatibility, customer benefit, and efficiency.

With battery-powered equipment, we already offer a wide range of emission-free construction machines. The unplugged series is being continuously expanded.

LB 16 unplugged

LRH 100.1 unplugged

LB 25 unplugged

LB 30 unplugged

LRH 200 unplugged

Further information

Those certain extras

Operator comfort

Modern cabins

With Liebherr machines, the focus is on the operator. High operator comfort makes the handling of the deep foundation machines considerably easier. The innovative design of the cabin sets new standards in the construction industry regarding ergonomics, interior fittings, and air conditioning. Furthermore, the optimum visability from the cabin allows for precise and safe operation.

Optimized visibility
Safety on site is Liebherr's highest priority. An unobstructed view from the cabin combined with a camera system for all working areas ensures this important factor.

Sunshade
A standard sliding window and sunshade serve as additional features for improving comfort.

Comfortable operator seat
The orthopaedic seat with automatic adjustment can be heated or cooled as required.

Ergonomic operating elements
All operating elements including redesigned joysticks, control keys and pedals are ergonomically arranged and allow for precise control of all machine functions.

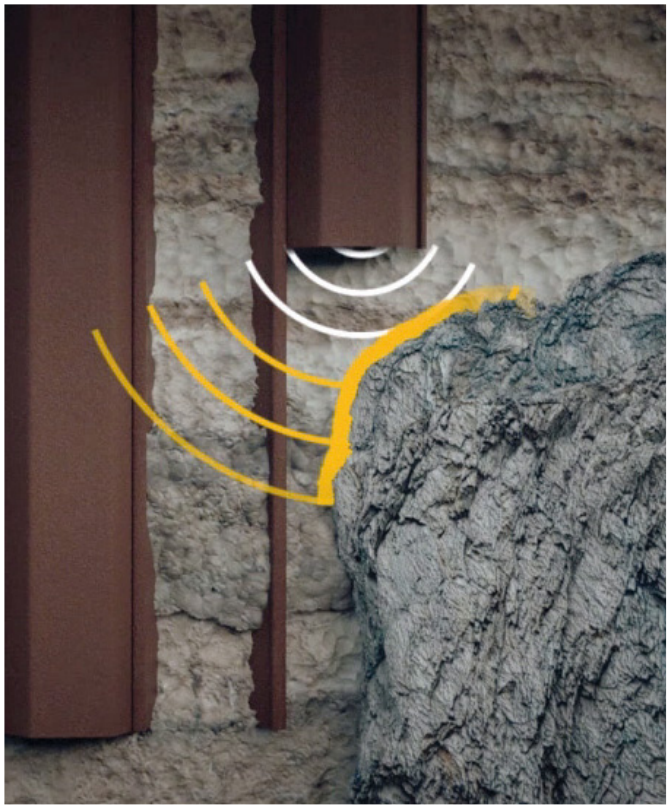
Ingenious interior

An optional cooler for provisions, various storage areas and surfaces, as well as a holder and USB port for mobile phones, are all within easy reach of the comfortable seat.

Control and assistance systems

Innovative and user-friendly

The integration of information technology into daily working processes simplifies many tasks, can improve safety on site, ensures transparency, and thus provides clearer understanding and improved quality. All control and assistance systems are user-friendly solutions from Liebherr.

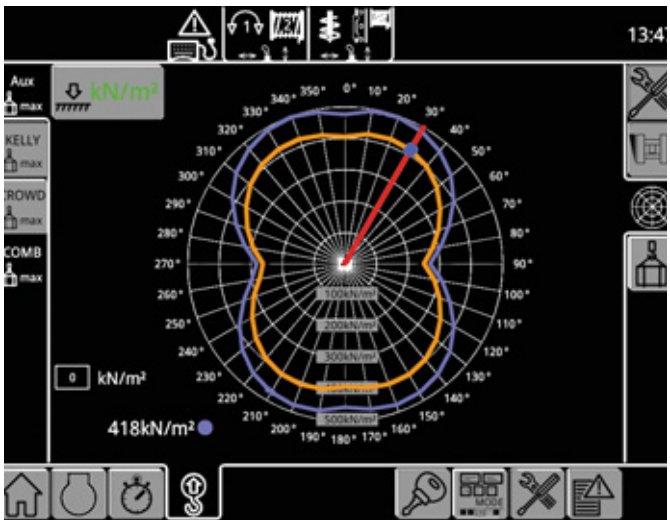


Obstacle recognition

Assistance systems

Liebherr offers a large number of different operator assistance systems in order to facilitate machine operation. This is all the more important in the deep foundation sector as a lot of the work is performed underground and outside the operator's field of vision.

Therefore, the operator profits from simplified handling even for challenging tasks. At the same time, the assistance systems increase both the level of performance as well as safety on the jobsite.



Ground pressure assistant

Control system

Liebherr's Litronic control system is based on the latest control software and includes all control and monitoring functions. Developed in-house, it is designed for tough jobsite applications even under harsh environmental conditions.

All information regarding service and machines is clearly displayed on touchscreens. Numerous functions make the handling of the machines considerably easier. This helps to achieve quicker working cycles. These include electro-hydraulic proportional control for precise operation or the handling of all machine functions with the joysticks.

Further information

Digital solutions

The construction machines of the future move in a digitalized world.

Precise positioning, data recording and transmission, central data management and analysis are all topical issues on the digital construction site. Performance and operational analyses in real time immediately reveal trends, irregularities or bottlenecks. This ability to react and work faster is the competitive edge of the future.

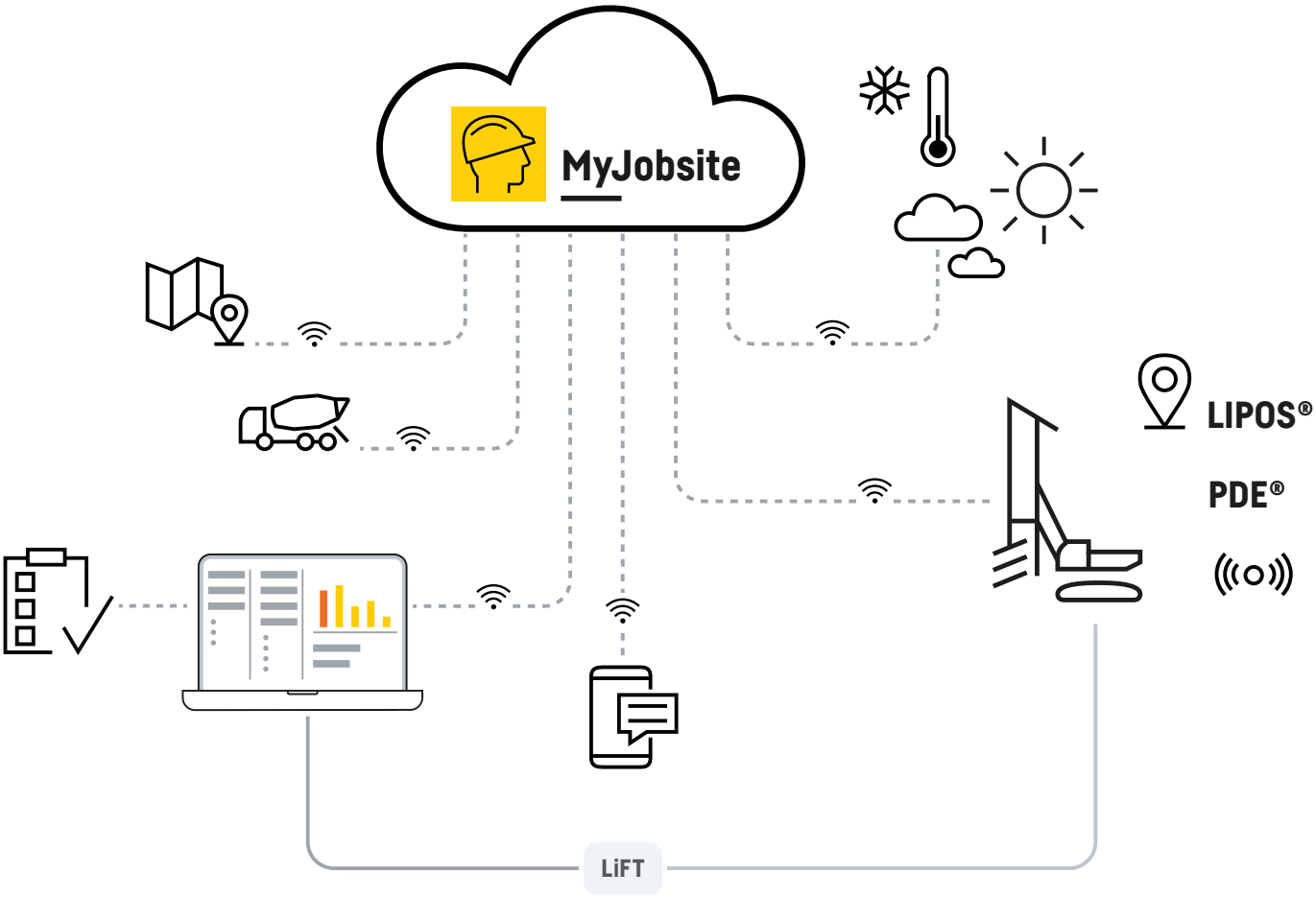
For Liebherr, as a manufacturer of construction machinery, the target is thus clearly defined. The digital integration of the machines is continuously being improved. The main objectives are work optimization, quality control, performance record, cost efficiency, and safety for the operator and machine.

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 – Process data recording

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 cab. PDE records operating data from the Litronic control system, as well as data from external sensors.



MyJobsite - your jobsite at a glance

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, 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, which is an enormous time-saver.

Further information about digital solutions

MyJobsite video

Transport and set-up

Focus on cost-efficiency

Special attention was given to the uncomplicated and economic transportation of Liebherr's deep foundation machines. Thanks to minimum set-up work, the machine can be quickly mobilized between jobsites so promoting economic deployment.

In one piece
If necessary, smaller drilling rigs can also be transported with mounted attachment.

Easy transportation and straightforward set-up

Duty cycle crawler cranes
All components in Liebherr's duty cycle crawler cranes have a space-saving design and weights are optimized so allowing for smooth transportation on all roads in accordance with current international transport regulations. Pendant straps and pins remain in the intended mountings during transportation so speeding up assembly.

The smaller duty cycle crawler cranes can be transported in one piece so reducing assembly and disassembly work to a minimum. For larger models the basic machines are transported without the crawlers. First of all, the uppercarriage is unloaded independently using a jack-up system, whereby the duty cycle crawler crane is supported by hydraulic jack-up cylinders. Subsequently, the uppercarriage unloads the crawlers, counterweight, and boom sections using either its A-frame or boom foot. Hydraulically activated pins, quick connections and an auxiliary rope winch simplify and accelerate the assembly process.

Piling and drilling rigs
The LB series of drilling rigs, the LRB series of piling and drilling rigs, as well as the smallest piling rig LRH 100 can all be transported without extensive disassembly thanks to their compact measurements and low weights. This means that ropes need not be dismounted and the leader can simply be folded back. Therefore, the set-up work is completed in a considerably shorter time.

If the counterweight of a larger machine is transported separately, it can be mounted on site using the leader without the need for an auxiliary crane. This means significant cost savings.

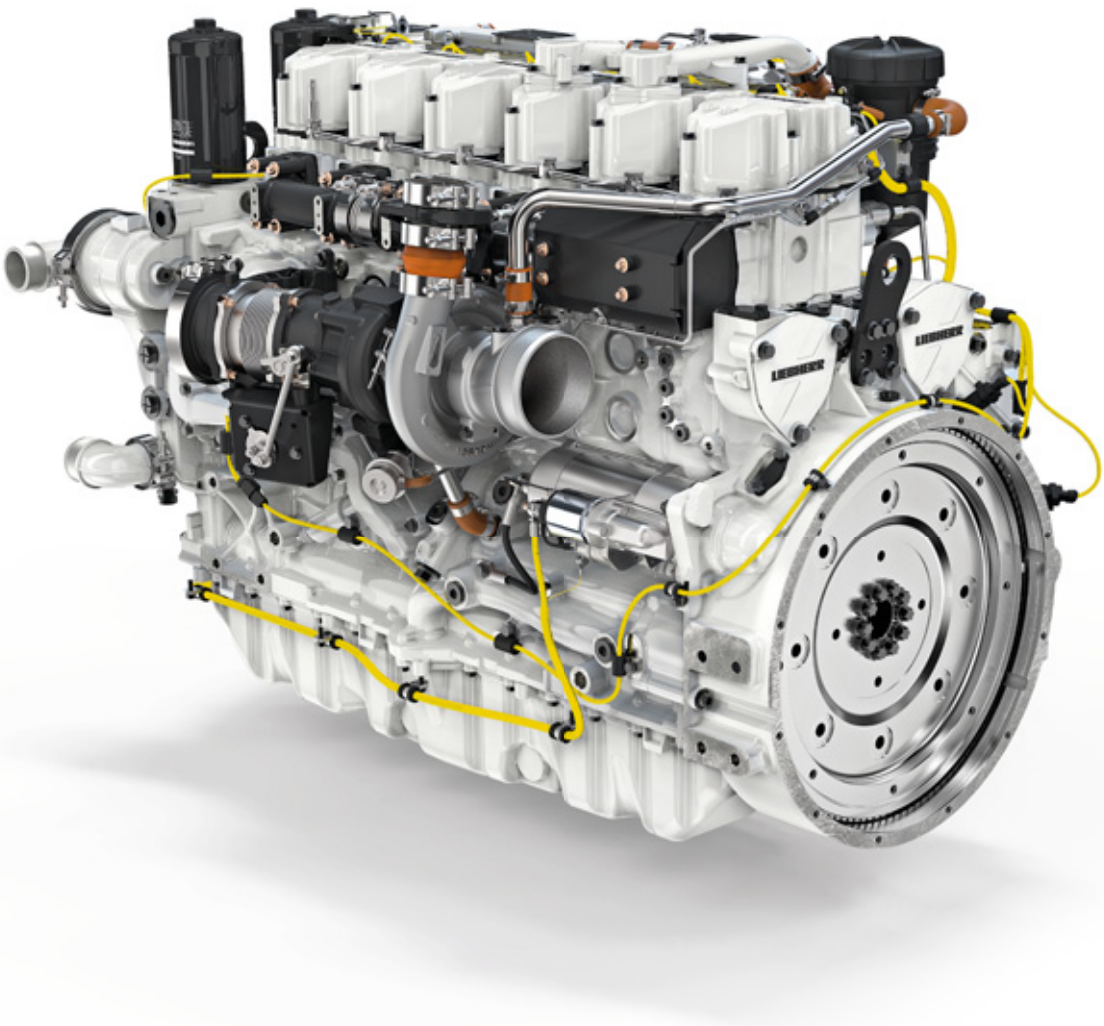
Intelligent assembly
Through the self-assembly system no additional crane is necessary for the set-up or disassembly of Liebherr's duty cycle crawler cranes.

Rapid mobilization
The rotary drive is mounted using an auxiliary winch without the need for an additional crane. If the attachment is exchanged, this is carried out using a quick connection system.

Fuel costs matter

Reduction of noise emissions and fuel consumption

The latest drive and control systems help to reduce fuel consumption and emissions, and at the same time increase the reliability and performance of deep foundation machines.



Deep foundation machines are fitted with Liebherr's own diesel engines. The latest generation complies with Stage V/TIER 4f.

Engine functions for increased efficiency

Downsizing of the engine

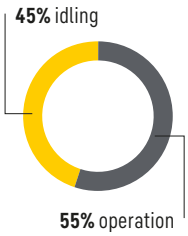
Thanks to the machine's optimized hydraulic system the size of the primary source can be reduced without negative effects on the performance.

Automatic Engine Stop Control

This control system switches the engine off automatically during longer idling periods, after having checked certain system functions.

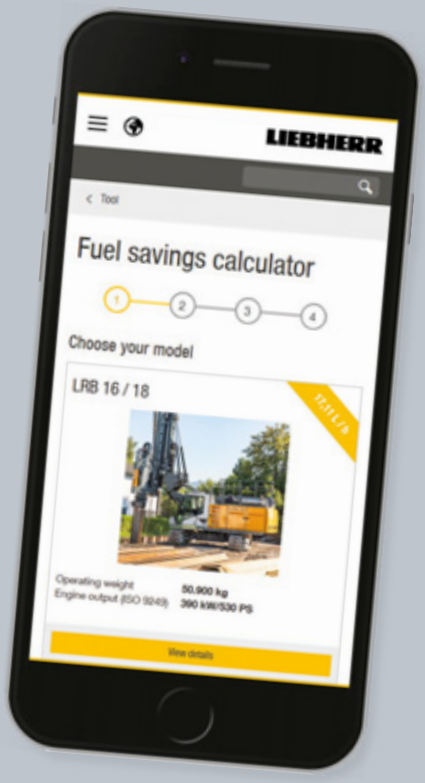
Eco-Silent Mode

With the aid of this feature the engine speed is reduced to a required predefined level.



Lower engine speed while idling

All diesel engines in the latest generation have a reduced maximum speed of only 1,700 rpm. The speed has been lowered from 950 rpm to 750 rpm while idling.



Fuel savings calculator

Check how much fuel you can save! Compare your consumption with worldwide fleet values.

Further information

Application and process technology

Practical advice from professionals for professionals

The application of sometimes very complex technologies and the correct choice of suitable equipment require special knowledge and practical experience. Our application specialists use their wide experience in various working methods and processes in order to get the most from your machine - maximum utilization for maximum performance.

Machine consulting
In combination with the choice of the most suitable machine, our application specialists also provide advice regarding the best choice of attachments and tools in consideration of site conditions. The aim is maximum efficiency during the production of the required product. Furthermore, fuel consumption as well as wear and tear must be minimized in the process.

Application and process specialists
Application specialists provide assistance for a full range of tasks in the deep foundation industry, for example, drilling and vibration processes, slurry wall installations, etc. They are pleased to help in providing expert knowledge when facing particular challenges such as difficult ground conditions or confined working spaces.

Application and performance optimization
Thanks to the detailed communication of new technological features, our customers are always well-informed about the latest developments and can so increase performance, improve operative safety, or comply with new directives.

The compendium provides a comprehensive overview of methods, equipment, and applications in the field of deep foundation.
Part 1: Drilling
Part 2: Ground improvement

Training on site
Our application specialists are at your disposal for training purposes directly on jobsites throughout the world. Ranging from the assembly or disassembly of the machine, through upgrades and retrofits, up to the optimization of the jobsite itself, Liebherr offers a broad spectrum of training possibilities including Liebherr's own digital solutions.

Training for machine operators
Liebherr offers training courses specifically tailored to the needs of your machine operators. These cover a wide range of topics from general operation up to comprehensive understanding and take place either on site, or independently at special training facilities. Using simulators, several operators can be trained at once.

Customer service

Your reliable service partner

The combination of customer focus, high quality, innovation, and commitment ensure the highest level of service. Based on many years of experience, we offer you effective support in all matters worldwide.

Further information

Technical support and field service

Professional field engineers provide support from the moment the machine leaves the factory and accompany it throughout its whole service life. Whether ad hoc or on a contractual basis, they have the knowledge and equipment to solve every problem. Immediate assistance and fault analysis are also possible via audio-visual connection. In order to provide the best possible service around the world, continuous improvement and expansion of the service network is one of our most fundamental commitments.

Parts and service products

Liebherr original spare parts are optimally suited to Liebherr machines and fulfil the highest quality standards. This significantly increases efficiency and the value retention of your machine. The availability of cost-effective new parts is ensured over the lifetime of your machine. A wide range of products that support you in your daily tasks is also available.

All parts and products can be viewed and ordered online to provide round-the-clock service.

LBX 600

Deep foundation methods

Download brochure

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