

Drilling Rig

LB 24-270

Litronic®

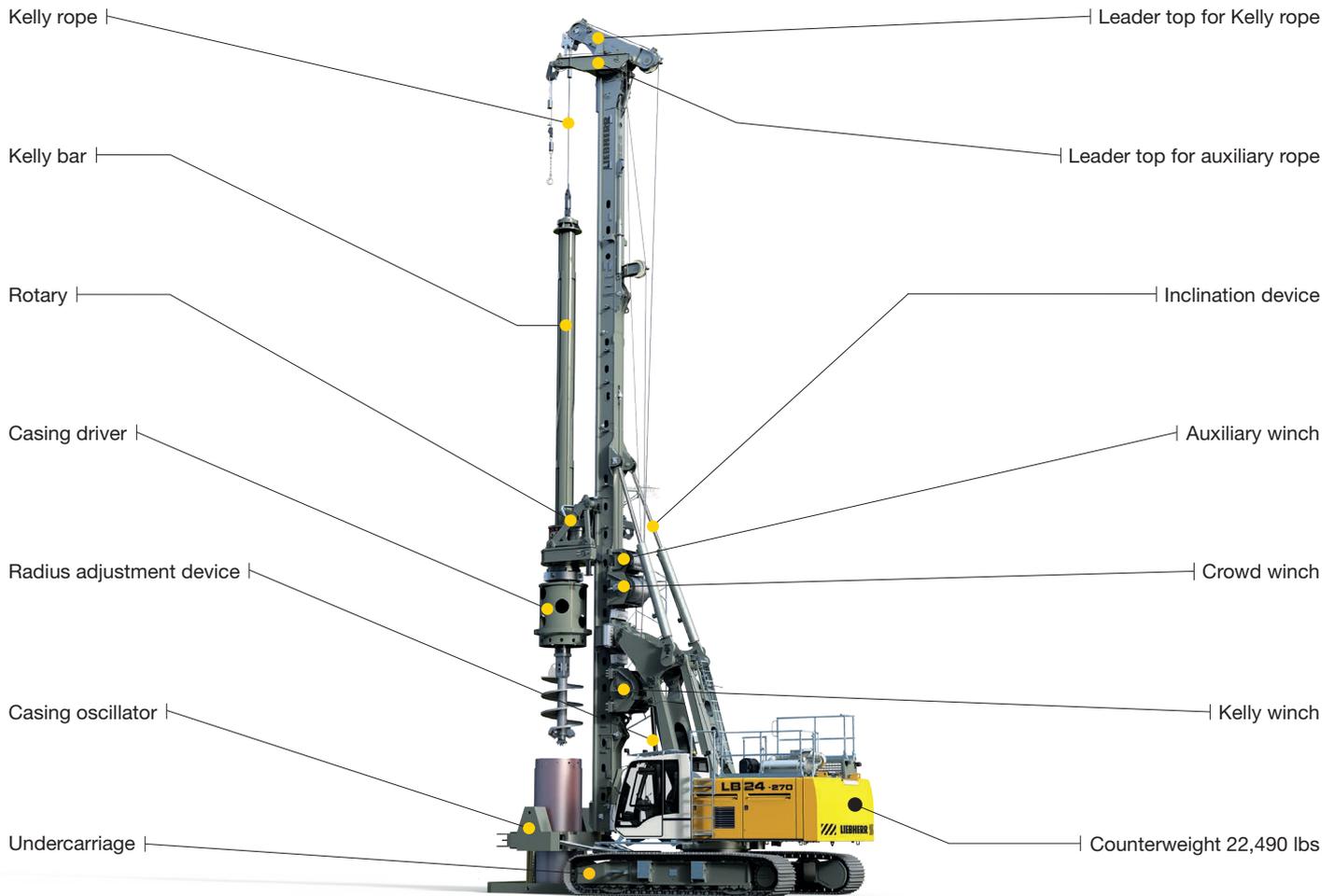
enUS

LB 2003.05



LIEBHERR

Concept and characteristics



LB24-270

The robust universal machine for a wide variety of applications:

- Kelly drilling
- Auger drilling
- Full displacement drilling
- Double rotary drilling

The solid undercarriage offers excellent stability and low ground bearing pressure.

The uppercarriage with its small swing radius enables operation in restricted space.

Parallel kinematics with a large working area allow to fold the leader back.

The rigid leader absorbs high torque and is fitted with a rope crowd system for high pull forces.

All winches are mounted on the leader, which provides a direct view of the main winch from the operator's cab.

The rotary drive of the BAT series combines exceptional torque with optimum operating comfort.

The powerful Liebherr diesel engine is low in emission and economical through SCR technology.



The Litronic control with assistance systems supports the operator:

- Cruise Control for the drilling process
- Joystick control for all machine functions
- Automatic shake-off function for working tools
- Leader inclination memory etc.

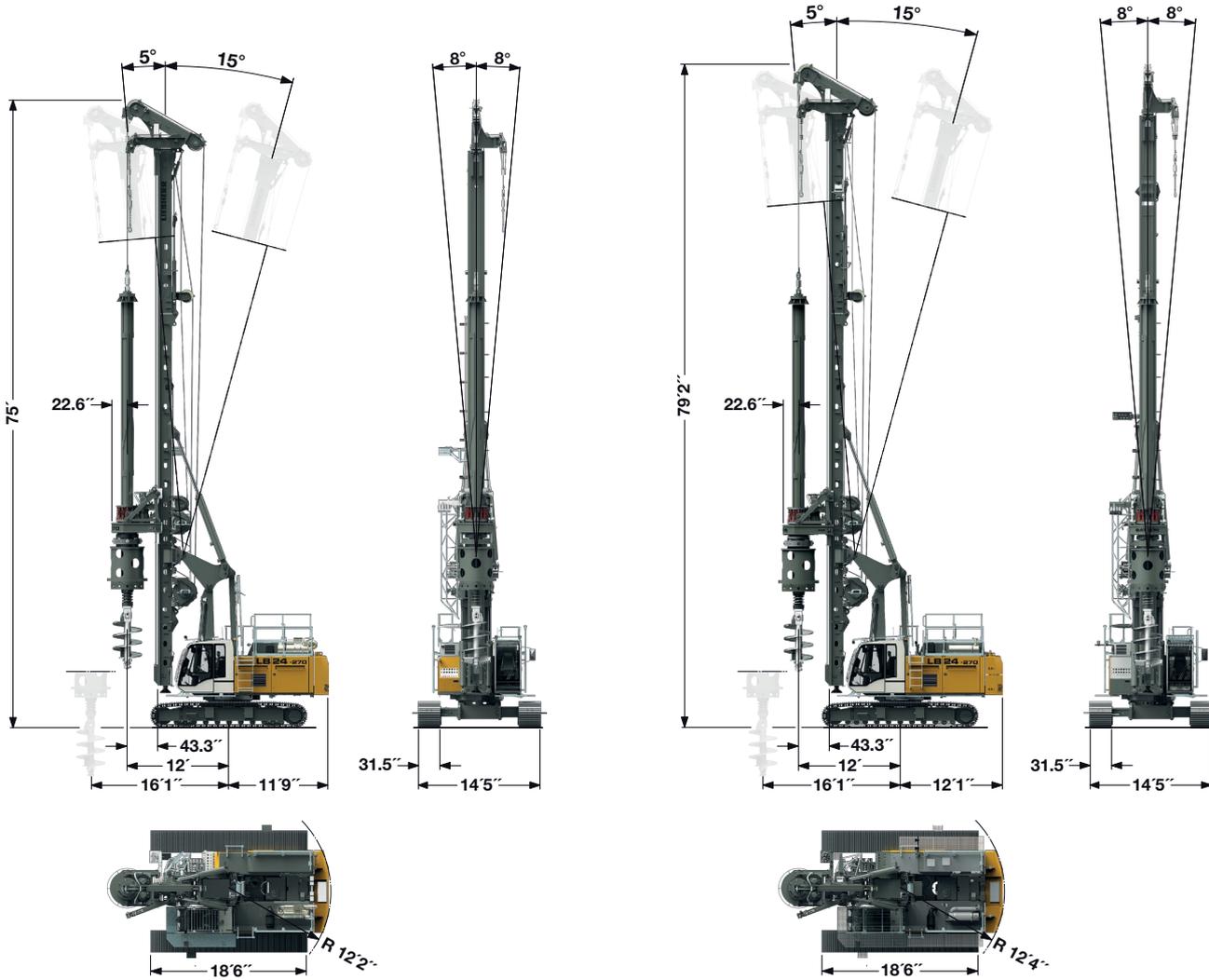
Sophisticated solutions provide safe operation and maintenance of the machine:

- Cab design for optimum visibility
- Acoustic and optic warning
- Walkways on the uppercarriage
- Safety rails on top of the uppercarriage
- Rear and side view cameras etc.

Liebherr Kelly bars feature strongly overlapping elements resulting in less wear.

Precise and robust Liebherr casings and drilling tools provide excellent drilling performance.

Dimensions



LB24-270

LB 24-270 with optional equipment

Technical data LB 24-270

Total height	74.97 ft
Continuous rig inclination adjustment	
Lateral inclination	± 8°
Forward inclination	5°
Backward inclination	15°

Operating weight LB 24-270

Total weight with 27.6 inch 3-web shoes	167,331 lbs
Total weight with 31.5 inch 3-web shoes	168,433 lbs
Total weight with 35.4 inch 3-web shoes	169,756 lbs

The operating weight includes the basic machine LB 24-270 (with rotary and Kelly bar MD 28/3/24) and 22,490 lbs counterweight, without equipment for casing oscillator.

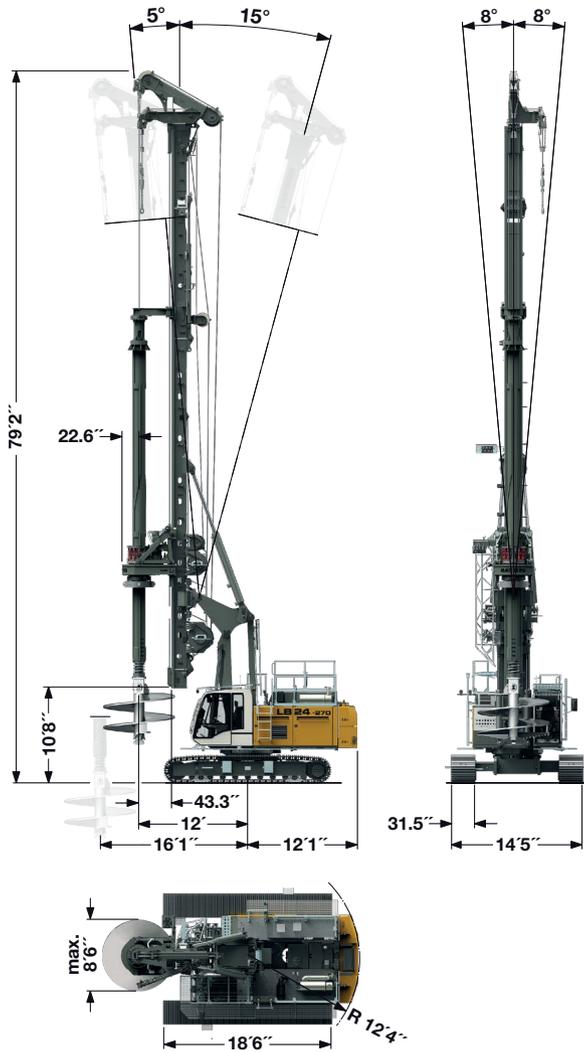
Technical data LB 24-270 with optional equipment

Total height	79.13 ft
Continuous rig inclination adjustment	
Lateral inclination	± 8°
Forward inclination	5°
Backward inclination	15°

Operating weight LB 24-270 with optional equipment

Total weight with 27.6 inch 3-web shoes	173,283 lbs
Total weight with 31.5 inch 3-web shoes	174,386 lbs
Total weight with 35.4 inch 3-web shoes	175,708 lbs

The operating weight includes the basic machine LB 24-270 (with long leader, rotary and Kelly bar MD 28/3/24) and 2x 13,230 lbs counterweight, without equipment for casing oscillator.



LB 24-270 with optional equipment and short leader lower part

Technical data LB 24-270 with optional equipment

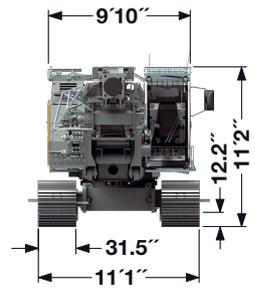
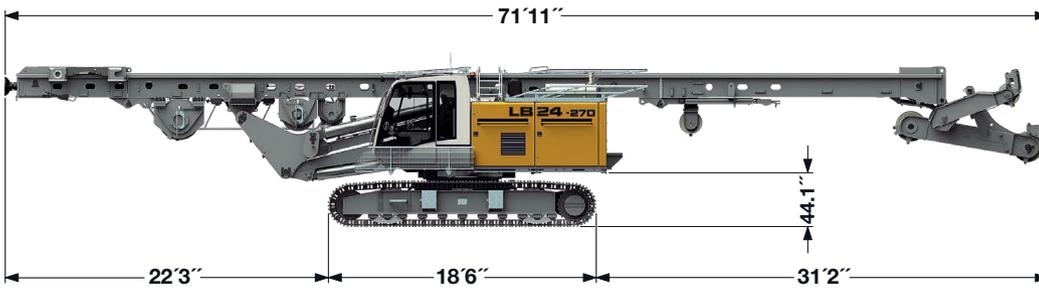
Total height	79.13 ft
Continuous rig inclination adjustment	
Lateral inclination	± 8°
Forward inclination	5°
Backward inclination	15°

Operating weight LB 24-270 with optional equipment

Total weight with 27.6 inch 3-web shoes	170,858 lbs
Total weight with 31.5 inch 3-web shoes	171,961 lbs
Total weight with 35.4 inch 3-web shoes	173,283 lbs

The operating weight includes the basic machine LB 24-270 (with long leader and short leader lower part, rotary and Kelly bar MD 28/3/24) and 2x 13,230 lbs counterweight, without equipment for casing oscillator.

Transport dimensions and weights

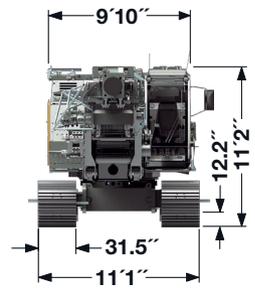
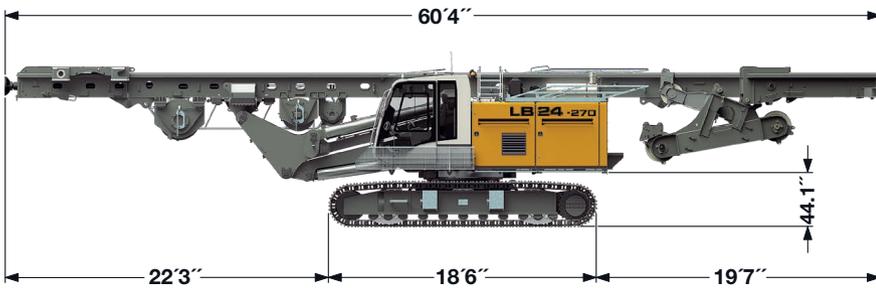


Transport standard

includes the basic machine (ready for operation) with leader, without attachment (such as rotary, Kelly bar etc.) and without counterweight.

Dimensions and weights

Length	71.90 ft
Weight complete without counterweight	120,813 lbs

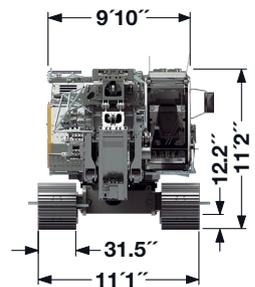
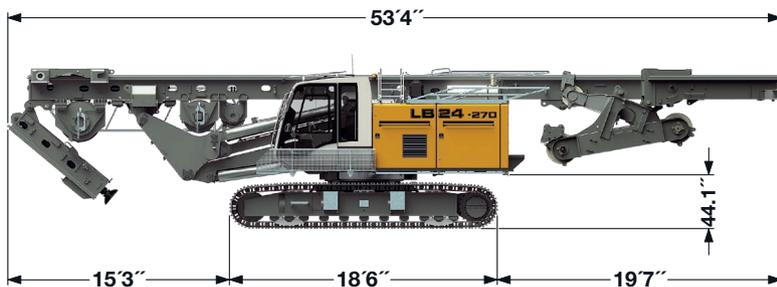


Transport with optional equipment

includes the basic machine (ready for operation) with long leader (leader upper part folded), without attachment (such as rotary, Kelly bar etc.) and without counterweight.

Dimensions and weights

Length	60.33 ft
Weight complete without counterweight	122,797 lbs

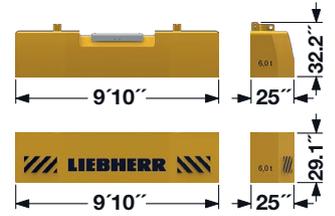
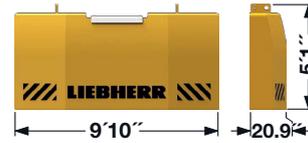
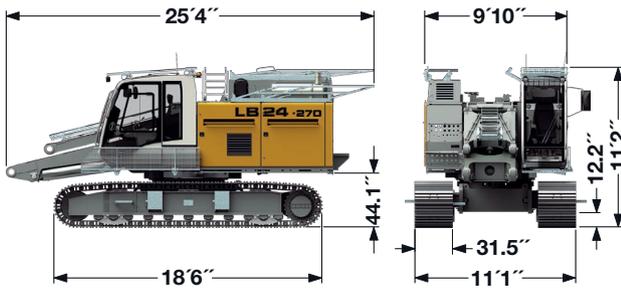


Transport with optional equipment (leader lower part folded)

includes the basic machine (ready for operation) with long leader (leader upper part and lower part folded), without attachment (such as rotary, Kelly bar etc.) and without counterweight.

Dimensions and weights

Length	53.35 ft
Weight complete without counterweight	122,797 lbs



Transport basic machine

ready for operation, without counterweight

Transport weight — 80,248 lbs

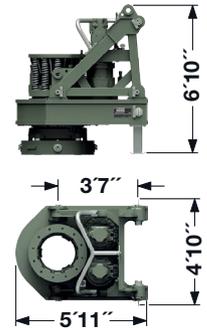
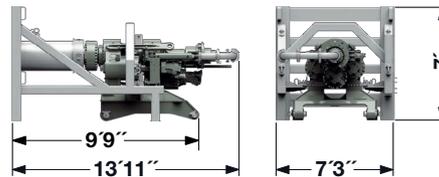
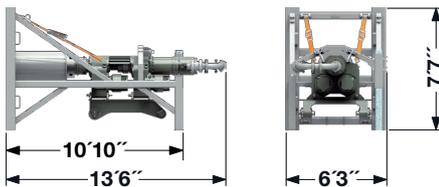
Counterweight (standard)

Counterweight — 22,490 lbs

Counterweight (optional equipment)

Upper section — 13,230 lbs

Lower section — 13,230 lbs



Double rotary drive DBA 80

Transport weight

DBA 80 — 12,787 lbs

Double rotary drive DBA 160

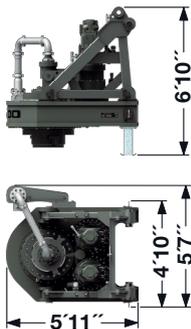
Transport weight

DBA 160 — 17,857 lbs

Rotary BAT 270

Transport weight

BAT 270 — 14,110 lbs



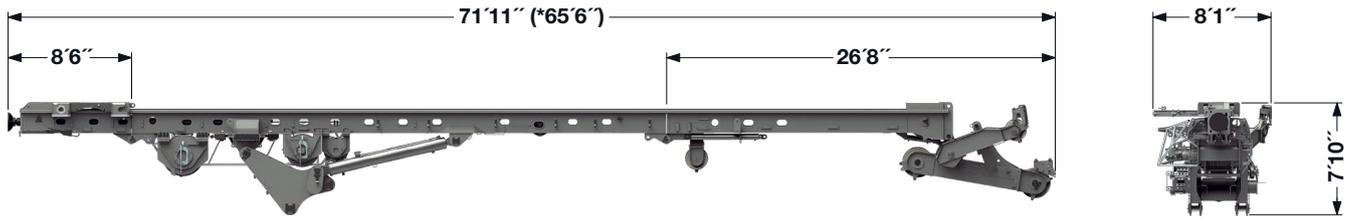
MAT 100

Transport weight

MAT 100 — 12,346 lbs

Weights can vary with the final configuration of the machine. The figures in this brochure may include options which are not within the standard scope of supply of the machine.

Transport dimensions and weights



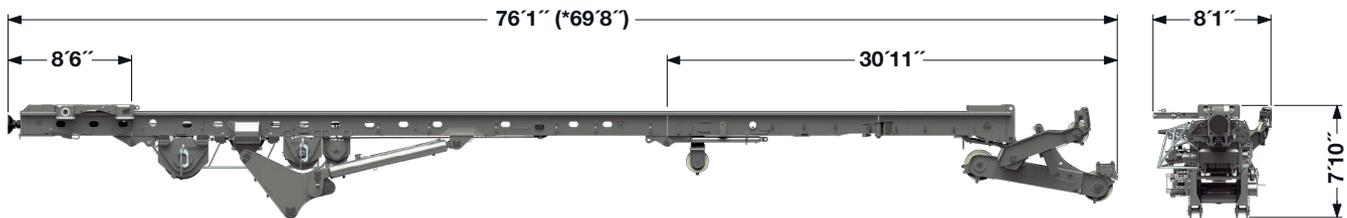
Transport leader

includes the leader without attachment (such as rotary, Kelly bar etc.).

* Possible variation: leader with short leader lower part.

Dimensions and weights

Length	71.90 ft
Weight complete	40,565 lbs
Leader lower part	2,646 lbs
Leader upper part with leader top	7,275 lbs



Transport long leader

includes the long leader without attachment (such as rotary, Kelly bar etc.).

* Possible variation: long leader with short leader lower part.

Dimensions and weights

Length	76.08 ft
Weight complete	42,549 lbs
Leader lower part	2,646 lbs
Leader upper part with leader top	9,259 lbs

Weights can vary with the final configuration of the machine. The figures in this brochure may include options which are not within the standard scope of supply of the machine.

Technical data

Engine

Power rating according to ISO 9249, 320 kW (429 hp) at 1700 rpm
 Engine type ————— Liebherr D 936 A7 - 04
 Fuel tank ————— 185 gal capacity with continuous level indicator and reserve warning

Engine complies with 97/68 EC Stage IV and NRMM exhaust certification EPA/CARB Tier 4f.

Hydraulic system

The main pumps are operated by a distributor gearbox. Axial piston variable displacement pumps work in open circuits supplying oil only when needed (flow control on demand). Hydraulic pressure peaks are absorbed by the integrated automatic pressure compensation, which relieves the pumps and saves fuel.

Pumps for working tools ————— 2x 71 gal/min
 Separate pump for kinematics ————— 34 gal/min
 Hydraulic oil tank ————— 159 gal
 Max. working pressure ————— 5,076 PSI

A system of electronically monitored pressure and return filters cleans the hydraulic oil. Any clogging is displayed in the cabin. The use of synthetic environmentally friendly oil is also possible.

Crawlers

Propulsion through axial piston motor, hydraulically released multi-disc brake, maintenance-free crawler tracks, hydraulic chain tensioning device.

Drive speed ————— 0 – 0.9 mph
 Track force ————— 156,000 lbf
 Width of 3-web grousers ————— 31.5 inch
 Transport width ————— 11.2 ft

Option:
 Width of 3-web grousers ————— 27.6 inch
 Transport width ————— 9.8 ft
 Width of 3-web grousers ————— 35.4 inch
 Transport width ————— 11.5 ft

Noise emission

Noise emissions correspond with 2000/14/EC directive.
 Guaranteed average sound pressure level L_{PA} in the cabin — 74.9 dB(A)

Guaranteed sound power level L_{WA} ————— 109 dB(A)
 Option: Eco-Silent Mode
 Reduction of guaranteed sound power level L_{WA} ————— 4 dB(A)

Vibration transmitted to the hand-arm system of the machine operator ————— < 8.20 ft/s²
 Vibration transmitted to the whole body of the machine operator ————— < 1.64 ft/s²

Swing

Consists of triple-row roller bearing with external teeth and two swing drives, fixed axial piston hydraulic motor, hydraulically released multi-disc holding brake, planetary gearbox and pinion. Selector for 3 speed ranges to increase swing precision.
 Swing speed from 0 – 3.4 rpm continuously variable.

Control

The control system – developed and manufactured by Liebherr – is designed to withstand extreme temperatures and the many heavy-duty construction tasks for which this machine has been designed. Complete machine operating data are displayed on a high resolution monitor screen. A GSM/GPRS telematics module allows for remote inquiry of machine data and operational conditions. To ensure clarity of the information on display, different levels of data are shown in enlarged lettering and symbols.

Control and monitoring of the sensors are also handled by this high technology system. Error indications are automatically displayed on the monitor in clear text. The machine is equipped with proportional control for all movements, which can be carried out simultaneously. Two joysticks are required for operation. Pedal control can be changed to hand control.

Options:
 PDE®: Process data recording

Kelly winch with freewheeling

Line pull effective (1st layer) ————— 47,210 lbf
 Rope diameter ————— 28 mm
 Rope speed ————— 0 – 279 ft/min

Option (only enabled in the operating mode “Kelly drilling”):
 Line pull effective (1st layer) ————— 51,710 lbf
 Rope diameter ————— 28 mm
 Rope speed ————— 0 – 279 ft/min

Auxiliary winch

Line pull effective (1st layer) ————— 17,985 lbf
 Rope diameter ————— 20 mm
 Rope speed ————— 0 – 271 ft/min

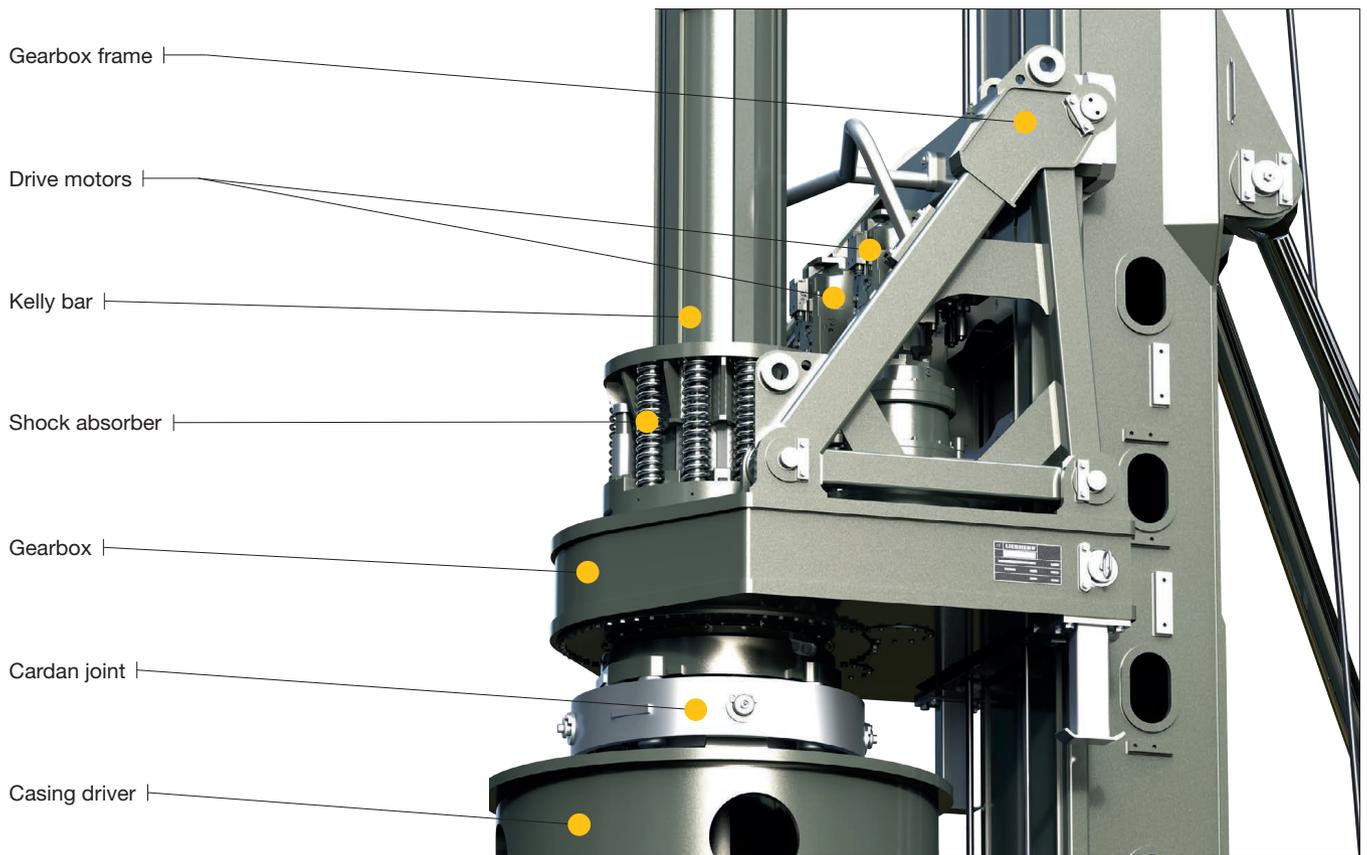
Rope crowd system

Crowd force (push/pull) ————— 71,940/71,940 lbf
 Line pull (effective) ————— 35,970 lbf
 Rope diameter ————— 24 mm
 Travel (standard leader) ————— 53.15 ft
 Travel (long leader) ————— 57.41 ft
 Travel reduction (with short leader lower part) ————— 5.25 ft
 Rope speed ————— 0 – 289 ft/min

The winches are outstanding in their compact design and easy assembly. Propulsion is via a maintenance-free planetary gearbox in oil bath.

Load support by the hydraulic system; additional safety factor by a spring-loaded, multi-disc holding brake. All line pull values are effective values. The efficiency factor of approx. 25% has already been deducted.

Rotary BAT 270 with shock absorber



Automatic gearbox for best operating comfort

- No stopping required to change gears
- No interruption of the drilling process
- Automatic torque adjustment
- Continuous optimization of speed
- Four electronically adjustable speed ranges

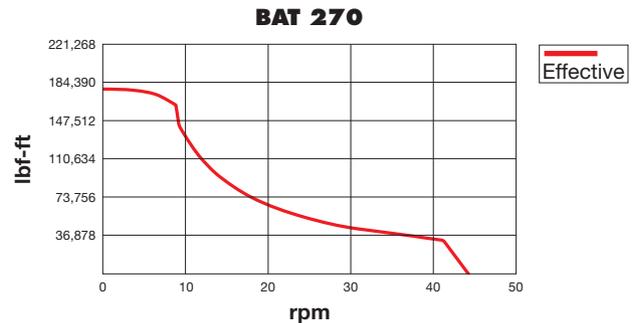
Highest availability through easy set-up

- No mechanical shift gearbox
- Higher availability thanks to less moving parts
- Less maintenance required

- No pressure lubrication necessary
- No interferences through defective lubrication pump
- Simplified hydraulics
- Lower risk of hydraulics leakages

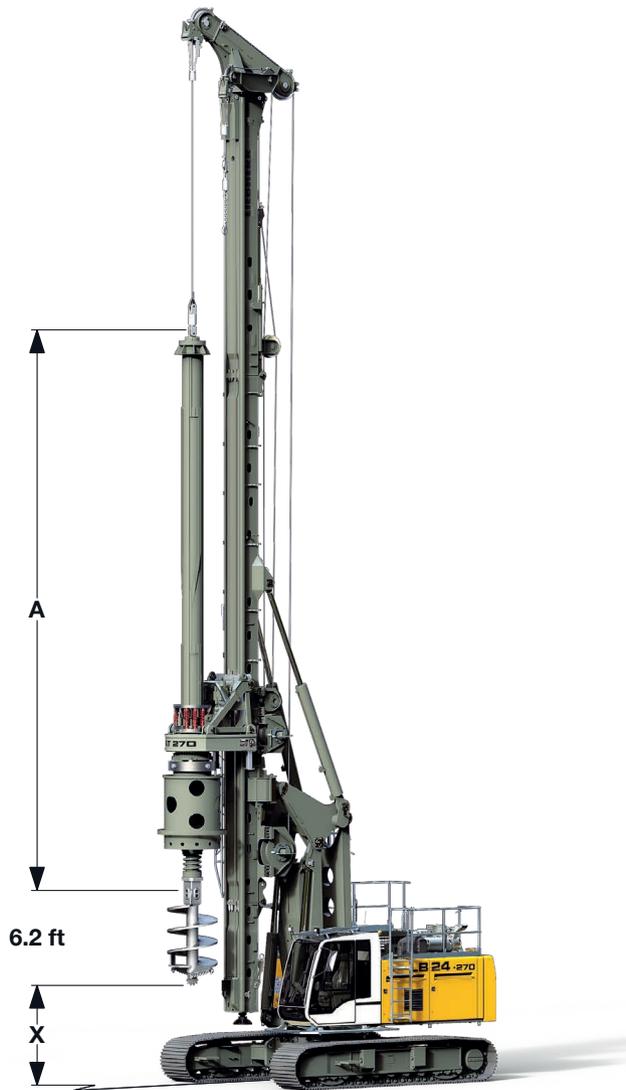
Flexibility through modular design

- Exchangeable drive adapters for use of other Kelly bars
- Exchangeable cardan joint for other casing drivers
- Quickly exchangeable equipment for other methods of operation

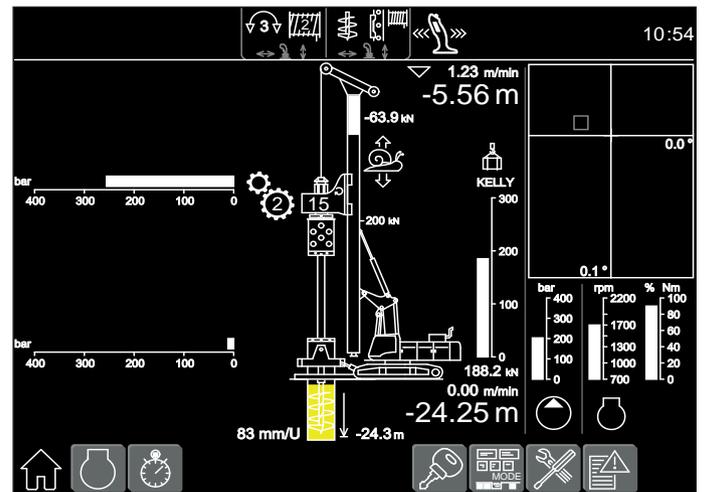


Kelly drilling

LB 24-270



LB 24-270



Display for Kelly drilling

Technical data

Rotary drive - torque	0 – 199,145 lbf-ft
Rotary drive - speed	0 – 46 rpm

Performance data

Max. drilling diameter*	6.2 ft uncased
Max. drilling diameter*	4.9 ft cased

*) Other drilling diameters on request. Other Kelly bars available on request.

1) When using a casing oscillator, value X has to be reduced by 4.9 ft.
When using a Kelly bar guide, value X has to be reduced by 21.7 inch.

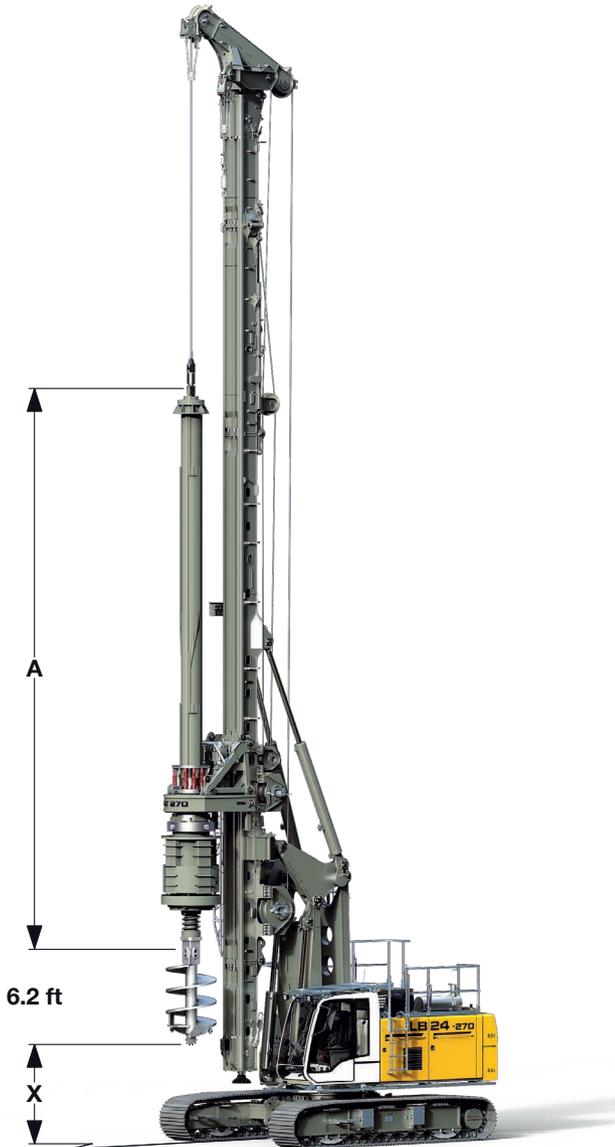
2) Installation only possible using auxiliary equipment.

Kelly bars

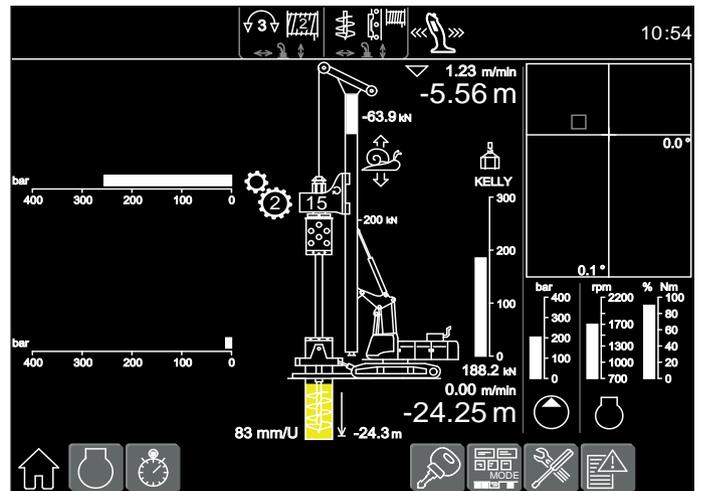
	A	X ¹	Drilling depth	Weight	Kelly Ø
	(ft)	(ft)	(ft)	(lbs)	(inch)
MD 28/3/24	32.4	27.9	73.8	11,023	16.5
MD 28/3/27	35.7	24.6	83.7	12,787	16.5
MD 28/3/30	39.0	21.3	93.5	14,110	16.5
MD 28/3/33	42.3	18.0	103.3	14,771	16.5
MD 28/3/36	45.5	14.8	113.2	16,094	16.5
MD 28/4/36	37.6	22.6	113.5	16,976	16.5
MD 28/4/42	42.5	17.7	133.2	19,180	16.5
MD 28/4/48	47.4	12.8	152.9	21,164	16.5
MD 28/4/54	52.3	7.9	172.6	23,369	16.5
MD 28/4/60 ²	57.3	3.0	192.3	25,574	16.5

Kelly drilling

LB 24-270 with optional equipment and automatic casing driver



LB 24-270 with optional equipment and automatic casing driver



Display for Kelly drilling

Technical data

Rotary drive - torque	0 – 199,145 lbf-ft
Rotary drive - speed	0 – 46 rpm

Performance data

Max. drilling diameter*	6.2 ft uncased
Max. drilling diameter*	4.9 ft cased

*) Other drilling diameters on request. Other Kelly bars available on request.

1) When using a casing oscillator, value X has to be reduced by 4.9 ft.
When using a Kelly bar guide, value X has to be reduced by 21.7 inch.

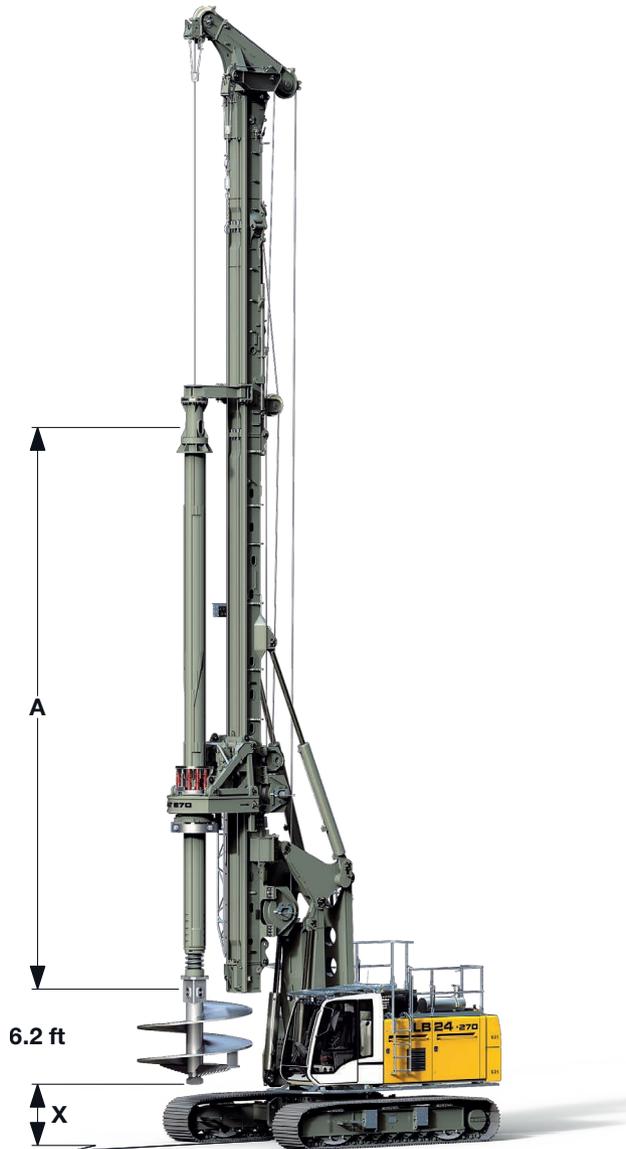
2) Installation only possible using auxiliary equipment.

Kelly bars

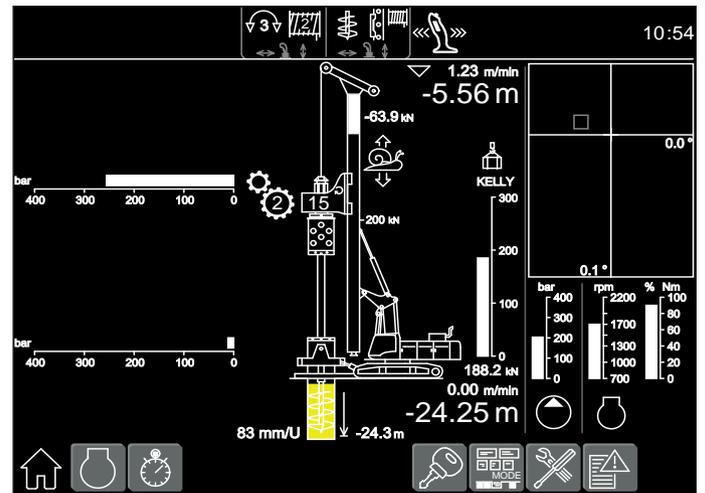
	A	X ¹	Drilling depth	Weight	Kelly Ø
	(ft)	(ft)	(ft)	(lbs)	(inch)
MD 28/3/24	32.4	31.8	73.8	11,023	16.5
MD 28/3/27	35.7	28.5	83.7	12,787	16.5
MD 28/3/30	39.0	25.3	93.5	14,110	16.5
MD 28/3/33	42.3	22.0	103.3	14,771	16.5
MD 28/3/36	45.5	18.7	113.2	16,094	16.5
MD 28/4/36	37.6	26.9	113.5	16,976	16.5
MD 28/4/42	42.5	22.0	133.2	19,180	16.5
MD 28/4/48	47.7	17.1	152.9	21,164	16.5
MD 28/4/54	52.3	12.1	172.6	23,369	16.5
MD 28/4/60	57.3	7.2	192.3	25,574	16.5
MD 28/4/66 ²	62.2	2.0	211.9	27,778	16.5

Kelly drilling

LB 24-270 with optional equipment and short leader lower part



LB 24-270 with optional equipment and short leader lower part



Display for Kelly drilling

Technical data

Rotary drive - torque	0 – 199,145 lbf-ft
Rotary drive - speed	0 – 46 rpm

Performance data

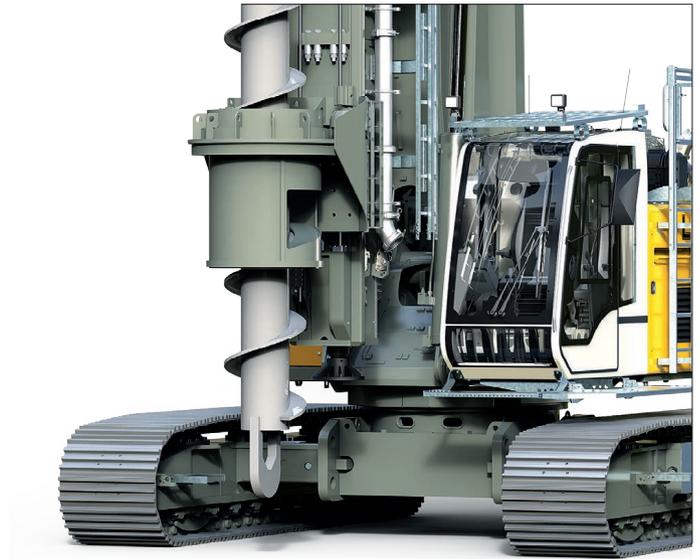
Max. drilling diameter*	9.2 ft uncased
Max. drilling diameter*	4.9 ft cased

- *) Other drilling diameters on request. Other Kelly bars available on request.
- 1) When using a casing oscillator, value X has to be reduced by 4.9 ft. When using a Kelly bar guide, value X has to be reduced by 21.7 inch.
- 2) Installation only possible using auxiliary equipment.

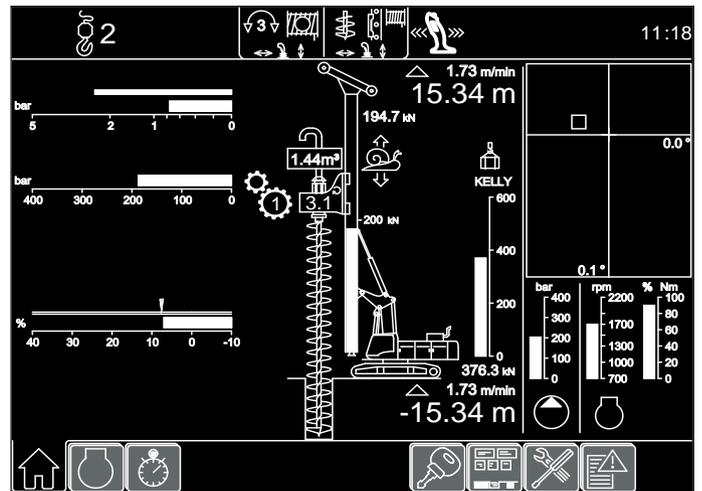
Kelly bars

	A	X ¹	Drilling depth	Weight	Kelly Ø
	(ft)	(ft)	(ft)	(lbs)	(inch)
MD 28/3/24	32.4	31.8	68.6	11,023	16.5
MD 28/3/27	35.7	28.5	78.4	12,787	16.5
MD 28/3/30	39.0	25.3	88.3	14,110	16.5
MD 28/3/33	42.3	22.0	98.1	14,771	16.5
MD 28/3/36	45.5	18.7	107.9	16,094	16.5
MD 28/4/36	37.6	26.9	108.3	16,976	16.5
MD 28/4/42	42.5	22.0	128.0	19,180	16.5
MD 28/4/48	47.4	17.1	147.6	21,164	16.5
MD 28/4/54	52.3	12.1	167.3	23,369	16.5
MD 28/4/60	57.3	7.2	187.0	25,574	16.5
MD 28/4/66 ²	62.2	2.0	206.7	27,778	16.5

Continuous flight auger drilling



Auger with auger cleaner



Display for continuous flight auger drilling

Technical data

Rotary drive - torque	0 – 199,145 lbf-ft
Rotary drive - speed	0 – 46 rpm

Performance data

Drilling depth without Kelly extension, with auger cleaner	47.9 / 52.2*
Drilling depth with 19.7 ft Kelly extension, with auger cleaner	67.6 / 71.9*
Drilling depth with 26.2 ft Kelly extension, with auger cleaner	74.1 / 78.4*
Max. pull force (crowd winch and Kelly winch)	161,865 lbf
Max. drilling diameter**	39.4 inch

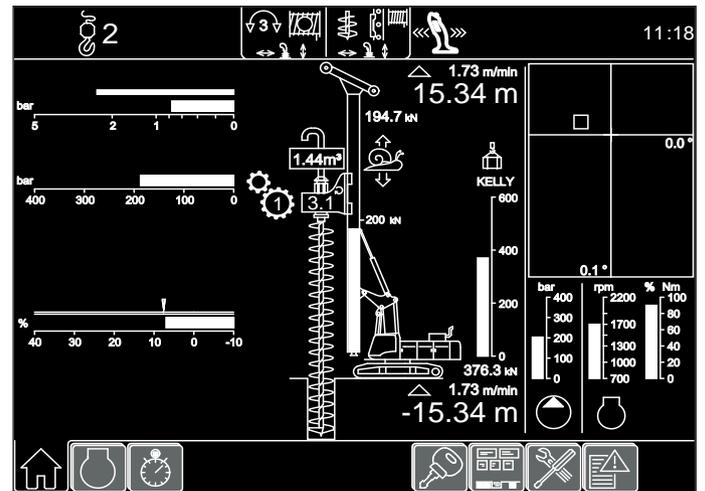
*) With optional equipment

**) Other drilling diameters available on request

Full displacement drilling



Full displacement tool with auger guide



Display for full displacement drilling

Technical data

Rotary drive - torque	0 – 199,145 lbf-ft
Rotary drive - speed	0 – 30 rpm

Performance data

Drilling depth	49.9 / 54.1* ft
Drilling depth with 6 m Kelly extension	69.6 / 73.8* ft
Drilling depth with 8 m Kelly extension	76.1 / 80.4* ft
Max. pull force	161,865 lbf
Max. drilling diameter**	23.6 inch

*) With optional equipment

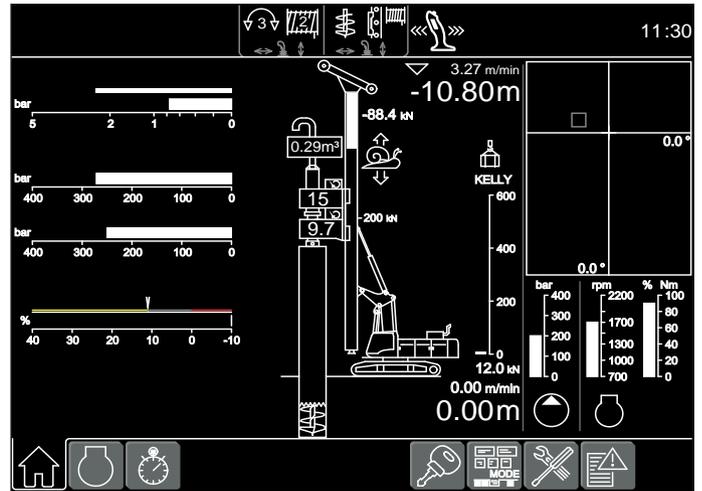
**) Other drilling diameters available on request

Double rotary drilling

Model DBA 80 / DBA 160



DBA 160 with protective hose



Display for double rotary drilling

Technical data DBA 80

Drilling drive I – torque	1 st gear	61,220 lbf-ft
Drilling drive I – speed	1 st gear	16 rpm
Drilling drive I – torque	2 nd gear	30,240 lbf-ft
Drilling drive I – speed	2 nd gear	32 rpm
Drilling drive II – torque	1 st gear	45,730 lbf-ft
Drilling drive II – speed	1 st gear	21.5 rpm
Drilling drive II – torque	2 nd gear	22,865 lbf-ft
Drilling drive II – speed	2 nd gear	43 rpm

Performance data DBA 80

Max. drilling depth without protective hose	49.9 / 54.1* ft
Max. pull force	71,940 lbf
Max. drilling diameter**	24.4 inch

Technical data DBA 160

Drilling drive I – torque	0 – 118,010 lbf-ft
Drilling drive I – speed	0 – 16 rpm
Drilling drive II – torque	0 – 77,445 lbf-ft
Drilling drive II – speed	0 – 28 rpm

Performance data DBA 160

Max. drilling depth***	49.9 / 54.1* ft
Max. pull force	116,900 lbf
Max. drilling diameter**	29.5 inch

*) With optional equipment

**) Other drilling diameters available on request

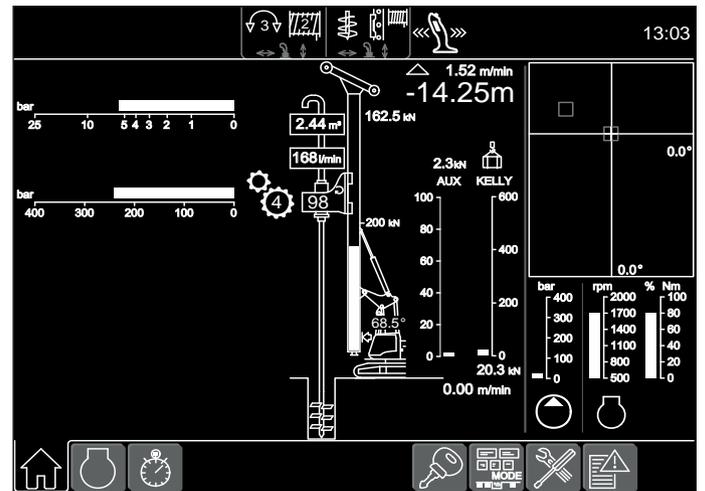
***) When using a protective hose, the maximum drilling depth has to be reduced by 19.7 inch. When using the pulling device, the max. drilling depth decreases by 39.4 inch.

Soil mixing

Model MAT 100



Soil mixing



Display for soil mixing

Technical data

Mixing drive - torque ————— 0 – 70,070 lbf-ft

Mixing drive - speed ————— 0 – 100 rpm

Performance data

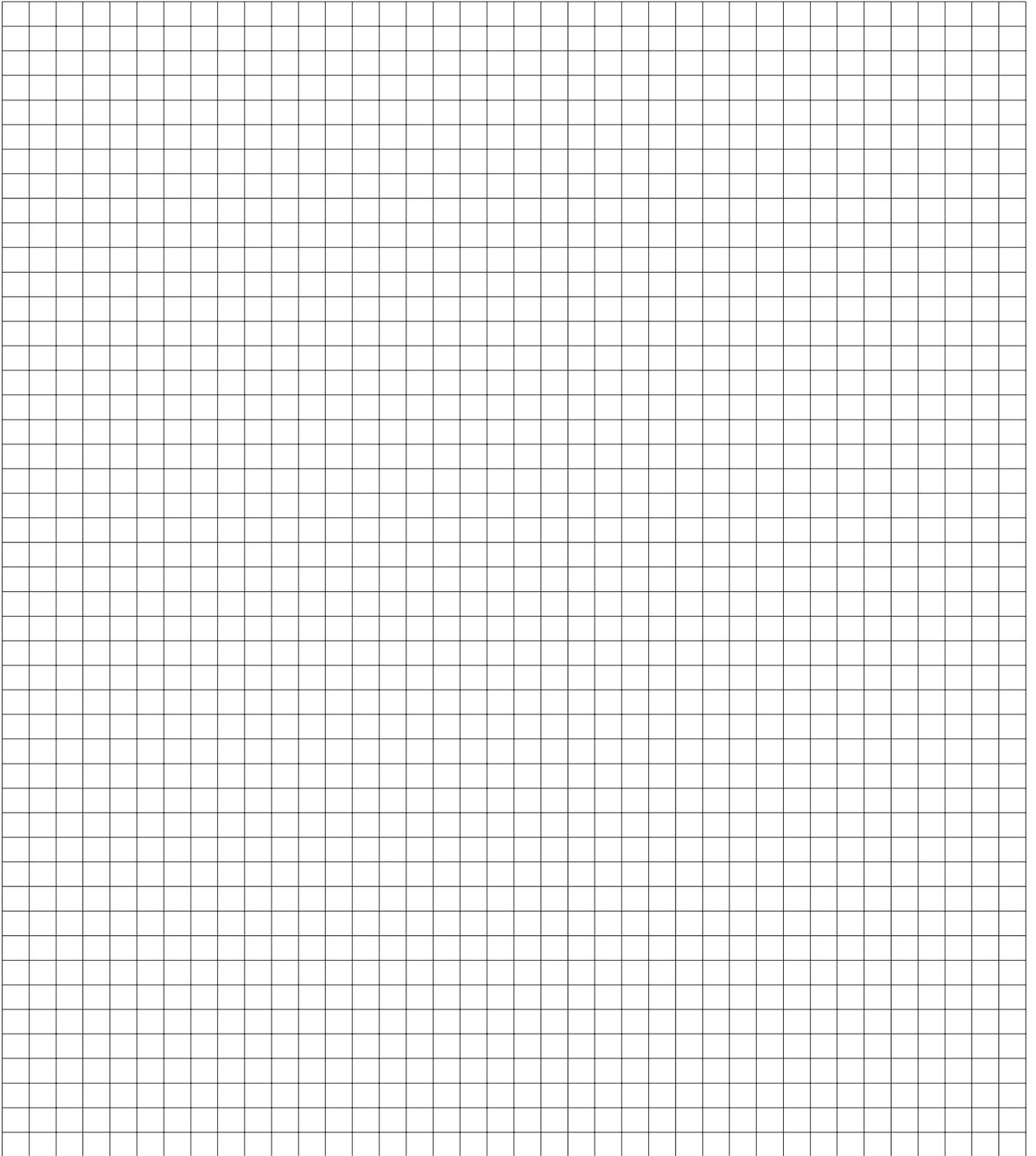
Max. mixing depth ————— 49.9 / 54.1* ft

Max. mixing diameter** ————— 4.9 ft

*) With optional equipment

**) Other mixing diameters on request

Notes



Liebherr-Werk Nenzing GmbH

Dr. Hans Liebherr Str. 1, 6710 Nenzing/Austria
Tel.: +43 50809 41-473, Fax: +43 50809 41-499
crawler.crane@liebherr.com, www.liebherr.com
facebook.com/LiebherrConstruction