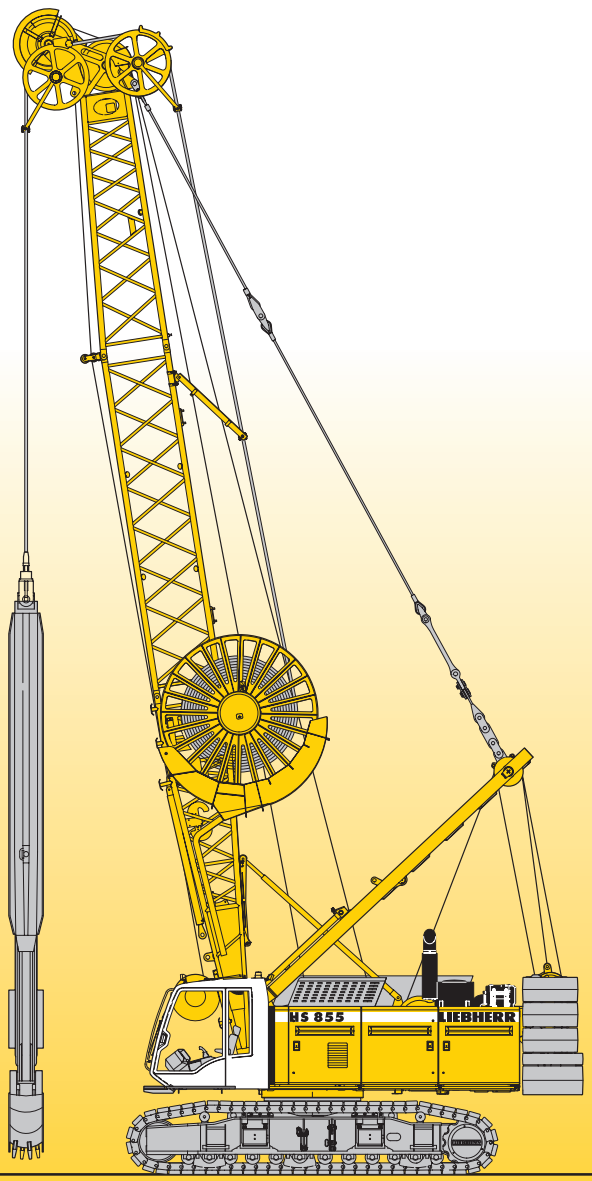
Technical data
Hydraulic crawler crane

HS 855 HD
Litronic®

with hydraulic slurry wall grab



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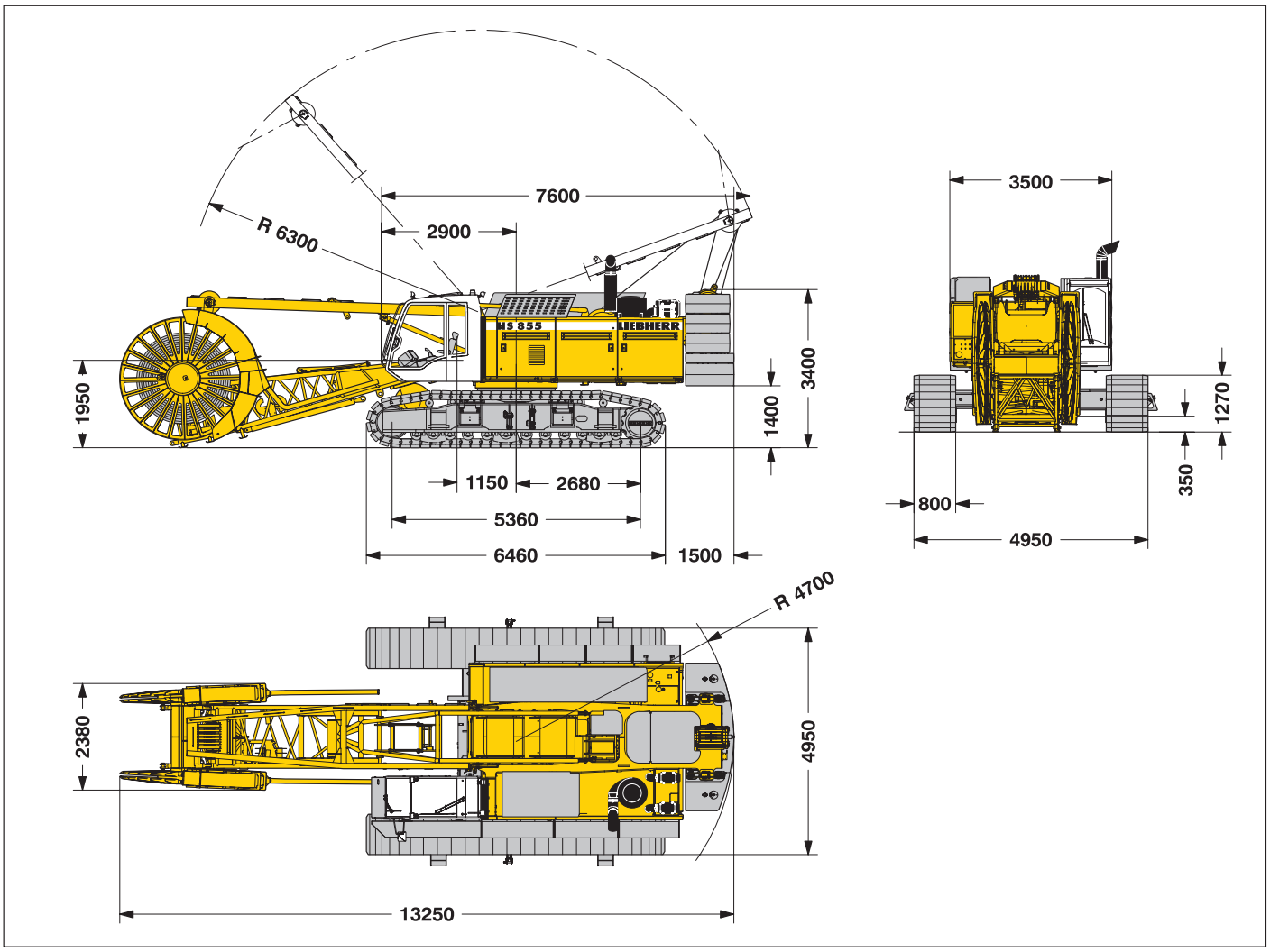
Dimensions
Basic machine with undercarriage



Operating weight

The operating weight includes the basic machine with HD undercarriage, 2 main winches 250 kN including wire ropes (90 m) and 18 m main boom, 2x hose–reels (1 m), each with 120 m of hydraulic hose, consisting of A–frame, boom foot (5.5 m), boom extension (6 m) and boom head (5.5 m), 26.3 t basic counterweight, 800 mm triple grouser track shoes.

Total weight ——— approx. 93.6 t

Ground pressure

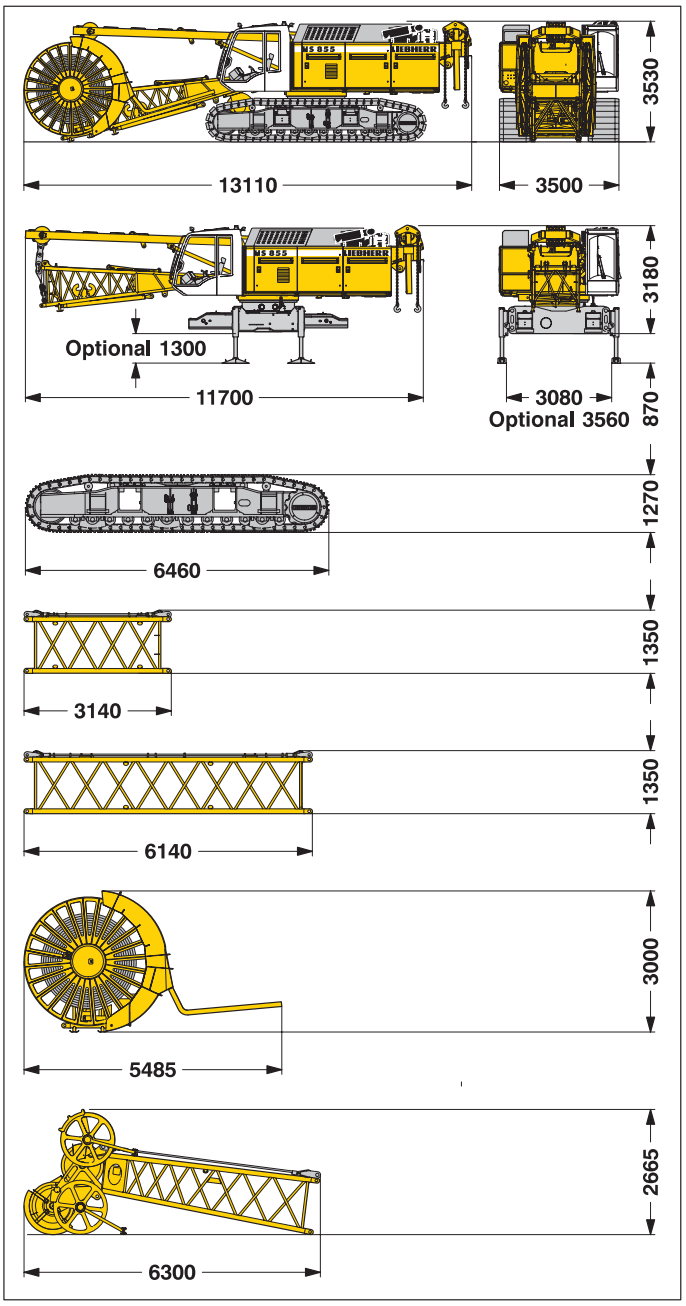
Ground bearing pressure ——— 1.1 kg/cm^2

Remarks

1. The lifting capacities stated are valid for lifting operation only (corresponds with crane classification according to F.E.M. 1.001, crane group A1).
2. Crane standing on firm, horizontal ground.
3. The weight of the lifting device (hoisting ropes, hook block, shackle etc.) must be deducted from the gross lifting capacity to obtain a net lifting value.
4. Additional equipment on boom (e.g. boom walkways, auxiliary jib) must be deducted to get the net lifting capacity.
5. For max. wind speed please refer to lift chart in operator's cab or manual.
6. Working radii are measured from centre of swing and under load.
7. The lifting capacities are valid for 360 degrees of swing.
8. Calculation of stability under load is based on DIN 15019 / part 2 / chart 1 and ISO 4305 Table 1 + 2, tipping angle 4°.
9. The structures are calculated according to F.E.M. 1.001 – 1998 (EN 13001–2 / 2004).

Transport dimensions and weights

Basic machine and boom (No. 1311.xx)



*) Including pendant ropes

Basic machine

with HD undercarriage, boom foot (No. 1311.xx), A–frame, 2x 250 kN winches including wire ropes (90 m), 2x hose–reels (1 m) each with 90 m of hydraulic hose, without basic counterweight

Width	mm	3500
Weight	kg	63050

Basic machine

with boom foot (No. 1311.xx), A–frame, 2x 250 kN winches including wire ropes (90 m), without basic counterweight and crawlers

Width	mm	3500
Weight	kg	39400

Crawler 2x

Triple grouser track shoes	mm	800
Width	mm	915
Weight	kg	9650

Boom section (No. 1311.xx) 3 m

Width	mm	1400
Weight*	kg	500

Boom section (No. 1311.xx) 6 m

Width	mm	1400
Weight*	kg	800

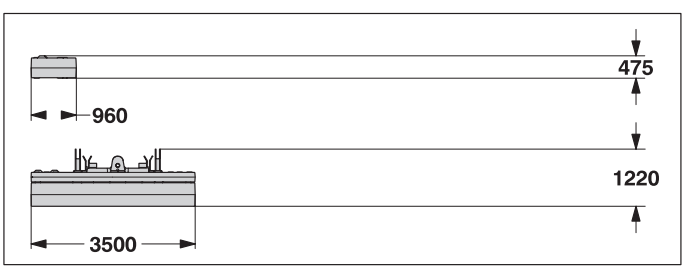
Boom section (No. 1311.xx) 1 m

Width	mm	2380
Weight*	kg	3830

Boom head (No. 1311.xx)

Width	mm	1400
Weight*	kg	2500

Counterweight



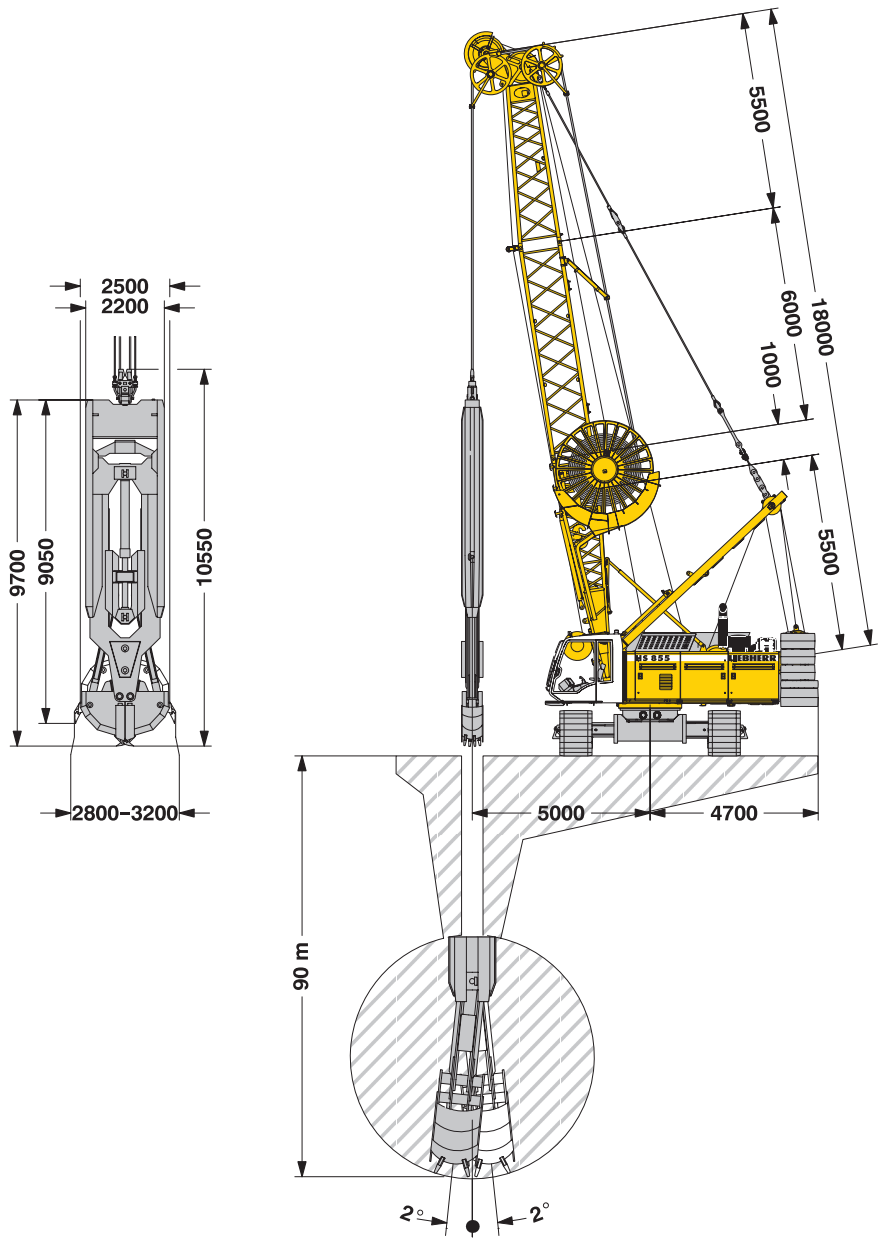
Counterweight 6x optional 10x

Width	mm	850
Weight	kg	1500

Counterweight 1x

Width	mm	1050
Weight	kg	17300

Technical data
Hydraulic slurry wall grab



Grab type	Radius with 18 m boom		Grab				Max. operating speeds						
				Weight			Hoisting grab		Grab	Radius	Slewing	Grab	
	max.	min.	Capacity	empty	full Density 1.8	full Density 2.0	full Density 1.8	full Density 2.0	lowering empty	from max – min		open	close
HSWG 3.2	m	m	Litre	t	t	t	m/min	m/min	m/min	sec	U/min	sec	sec
400	9.0	5.0	500	13.0	13.9	14.0	65.2	65.2	68	9.0	1.5	5	8
500	9.0	5.0	700	13.5	14.7	14.9	65.2	65.2	68	9.0	1.5	5	8
600	9.0	5.0	900	14.0	15.6	15.8	65.2	65.2	68	9.0	1.5	5	8
700	9.0	5.0	1100	14.5	16.4	16.7	65.2	65.2	68	9.0	1.5	5	8
800	9.0	5.0	1300	15.0	17.3	17.6	65.2	64.7	68	9.0	1.5	5	8
900	9.0	5.0	1500	15.5	18.2	18.5	65.2	61.6	68	9.0	1.5	5	8
1000	8.5	5.0	1700	16.0	19.0	19.4	60.0	58.7	68	8.0	1.5	5	8
1200	8.0	5.0	2200	19.4	23.4	23.8	49.3	48.1	68	7.0	1.5	5	8

Technical description

Engine

Power rating according to ISO 9249, 450 kW (603 hp) at 1900 rpm
Engine type ——— Liebherr D 9508 LE
Fuel tank ——— 800 l capacity with continuous level indicator and reserve warning
Engine complies with NRMM exhaust certification EPA / CARB Tier 3 and 97/68 EC Stage III

Hydraulic system

The main pumps are operated by a distributor gearbox. Axial piston displacement pumps work in closed and open circuits supplying oil only when needed (flow control on demand). To minimize peak pressure an automatically working pressure cut off is integrated. This spares pumps and saves energy. The hydraulic oil is cleaned through electronically controlled pressure and return filters.
Possible contamination is signalled in the cabin. The use of synthetic environmentally friendly oils is possible.
Ready made hydraulic retrofit kits are available to customize requirements e. g. powering casing oscillators, VM vibrators, hydraulic grabs, hanging leads etc.
Working pressure ——— max. 350 bar
Oil tank capacity ——— 820 l

Boom winch

Line pull ——— max. 105 kN
Rope diameter ——— 20 mm
Boom up ——— 44 sec. from 15° to 86°

Swing

Consists of rollerbearing with external teeth for lower tooth flank pressure, fixed axial piston hydraulic motor, spring loaded and hydraulically released multi–disc holding brake, planetary gearbox and pinion.
Swing speed from 0 – 4.6 rpm continuously variable, selector for 3 speed ranges to increase swing precision.
Option:
Second swing drive

Noise emission

Noise emissions correspond with 2000/14/EC directive on noise emission by equipment used outdoors.

Main winches

Winch options:

Line pull (nom. load)	200 kN	250 kN
Rope diameter	30 mm	34 mm
Drum diameter	630 mm	750 mm
Rope speed m/min	0–101	0–81
Rope capacity 1st layer	46.5 m	48.3m

The winches are outstanding in their compact design and easy assembly. Clutch and braking functions on the free fall system are provided by a compact designed, low wear and maintenance free multi–disc brake.
The drag and hoist winches use pressure controlled, variable flow hydraulic motors.
This system features sensors that automatically adjust oil flow to provide max. winch speed depending on load.
Option:
Auxiliary winch ——— 70 kN in boom foot
Tagline winch ——— 30 kN with free fall

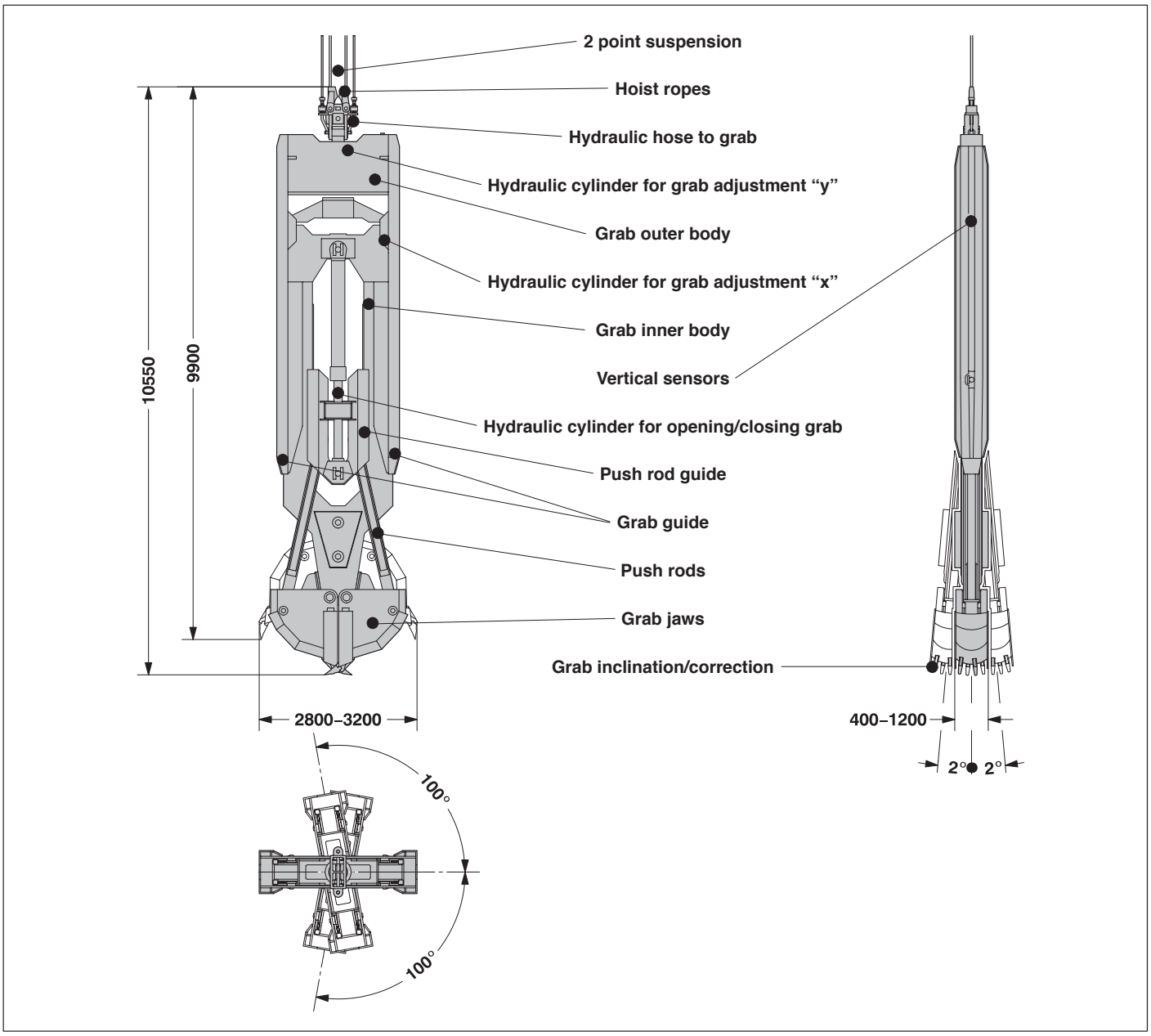
Crawlers

The track width of the undercarriage is changed hydraulically.
Propulsion through axial piston motor, hydraulically released spring loaded multi–disc brake, maintenance free crawler tracks, hydraulic chain tensioning device.
Flat or triple grouser track shoes 800 mm
Drive speed ——— 0 – 1.34 km/h
Option:
- 2 speed hydraulic motor for higher travel speed
- Self assembly system, jack up system

Control

The control system – developed and manufactured by Liebherr – is designed to withstand extreme temperature changes and the rough heavy duty tasks common in the construction industry. Complete machine operating data are shown on a high resolution display. The crane is equipped with proportional control for all movements, which can be carried out simultaneously.
Dragline operation: A special ”Interlock” control system is an option available. It is designed for power lifting of the dragline bucket without using the drag winch brake.
An additional option is the ”Redundant Control System”, which allows restricted operation of the machine in the event of a failure on the electronic base control or its sensors.
On request, Liebherr also offers special custom designed control systems for free fall winches.
Operation: Left joy stick for boom winch and swing, right two directional levers for winch I and II. Crawler control is actuated with the two central foot pedals. Additionally, hand levers can be attached to the pedals.
Options:
- Special demolition control system
- MDE: Machine data recording
- PDE: Process data recording
- GSM modem

Basic components
Hydraulic slurry wall grab



Grab operation

Hydraulic power and electrical supply are transmitted to the grab down to a depth of 90 m through hose reels located between boom foot and first boom extension. Opening and closing of the grab is operated using the following components:

- hydraulic cylinder
- push rod guides at the inner part of the grab body
- push rods
- grab jaws

Jaw teeth and cutting edges

The cutting edges are manufactured from “HARDOX” material, ensuring long working life and precision digging.
Other grab profiles and sizes are available on request.

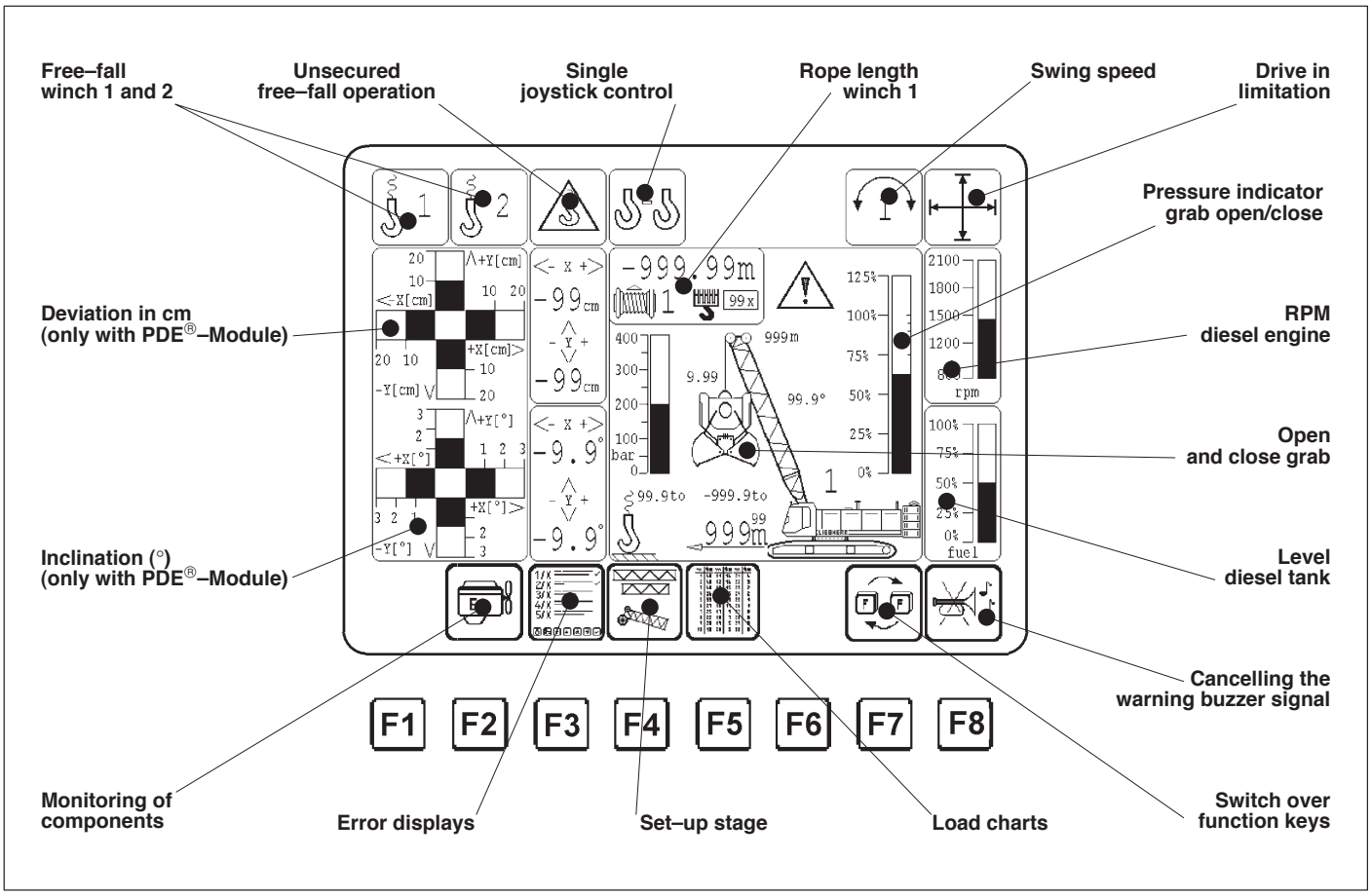
Correction of grab deviation

With this feature it is possible to incline the grab jaws for immediate correction of deviations from the vertical position.

Display and documentation

Any deviation of the grab from the vertical will be measured by inclination sensors and shown on a display in the operator’s cabin.

Control system components



Standard control system

When the hydraulic grab is not fitted, all basic functions of a standard crawler crane are available. If a hydraulic grab is attached, the operator must select hydraulic grab operation. The above illustrated graphic appears on the monitor and the free fall mode of both main winches is disabled. Constant tension of hose reels and cable drums, lifting and lowering motion of the main winches are only possible with constant tension “ON”.

Grab adjustment across the trench (X–axis) – standard

Two hydraulic cylinders in the upper part of the grab shift the hinged inner body in relation to the outer body causing the grab jaws to jut out from the grab profile by max. ±2°. Thanks to the special design of the adjustment system the centre position of the inner grab body can be selected hydraulically. In case of any malfunction of the measuring system the grab can still be used as a “rigid” grab.

Grab adjustment parallel to the trench (Y–axis) – optional

Two hydraulic cylinders shift the suspension point of the grab causing the grab to tilt. Thus, deviations from the vertical position can easily be corrected. This function also allows to hydraulically select the centre position of the inner grab body.

Grab rotation +/– 100° or 200° (XY–axis) – optional

Excavations close to existing buildings often require to turn the grab in relation to the carrier unit for excavating corners. When creating so–called cross–shaped barrettes the grab has to be turned by 90°. The possibility to hydraulically rotate the grab suspension point by ±100° fulfils this requirement. Rotating the grab by 180° also compensates the unequal positioning of the jaw teeth. Before the grab is rotated the measuring system must be de–activated.

PDE – Process data recording (Additional equipment)

This module constantly calculates and stores the current working processes.

Measurements

The measurement of the excavation is automatically fed back from the sensors to the processor for display in the operator's cabin.

Display of measurement data

The measured deviations from the vertical position are indicated on the monitor in the operator's cab. The operator can correct them and maintain the vertical position without interrupting normal operations.

Working process interruption

The working process and the measurement can be interrupted at any time.
The measurements are automatically continued upon resumption of work.

Storage of measurement and machine data

All data are stored on a memory card. This can be read via a PC. Thereby an evaluation and processing of data can also be performed at a later time. For example, for:

- Daily performance and achievements
- Excavated quantities per trench, per day, etc.
- Maximum and average deviations from the vertical
- x/y profile of each trench

Diagram

On completion of a trench, a diagram of the recorded data may be printed.

The diagram contains:

- Company logos
- Date, time of start and end
- Construction site number
- Trench number– trench depth
- Profile of x and y coordinates.

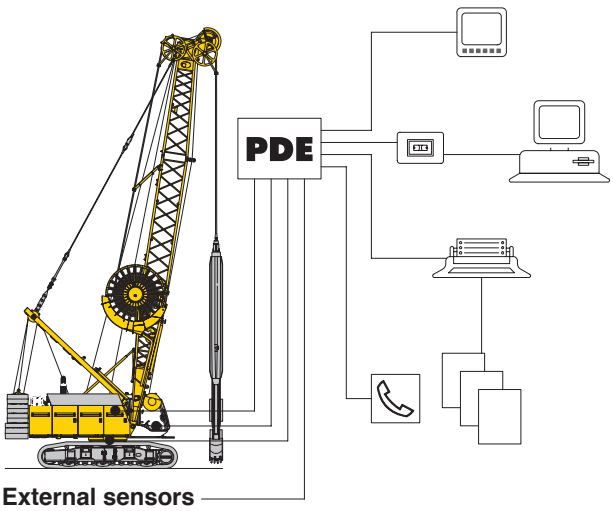
Graph file

For quick and easy review on a PC or laptop, diagrams can be saved on a memory card.

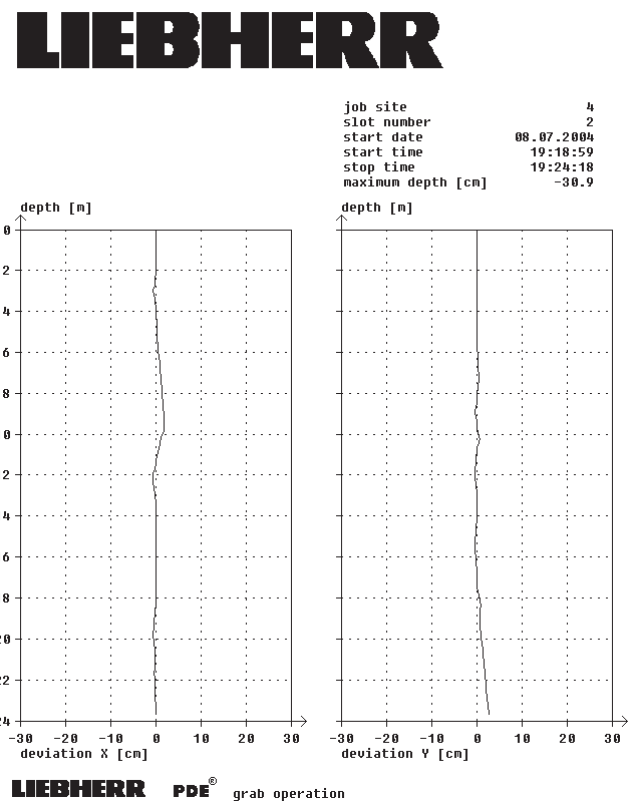
Data transmission

A GSM modem can be connected to the PDE making long distance data transmission possible.

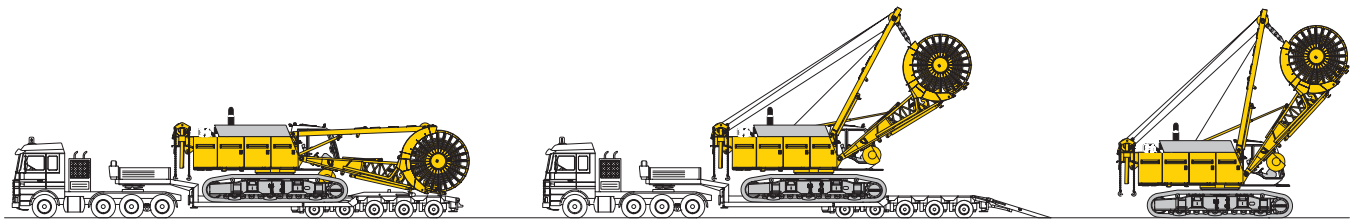
PDE – diagram



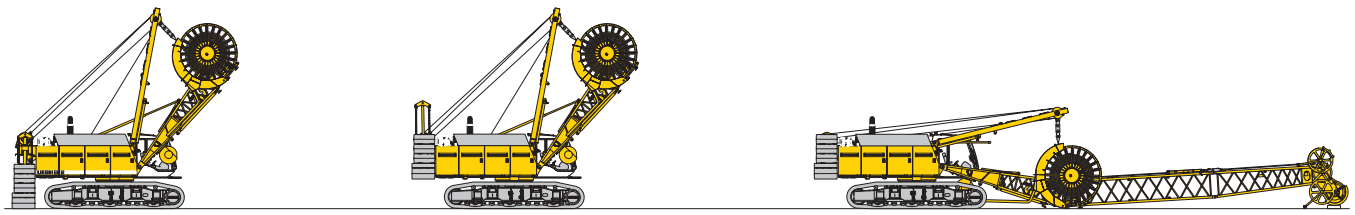
Example of a protocol (in required language)



Self assembly system

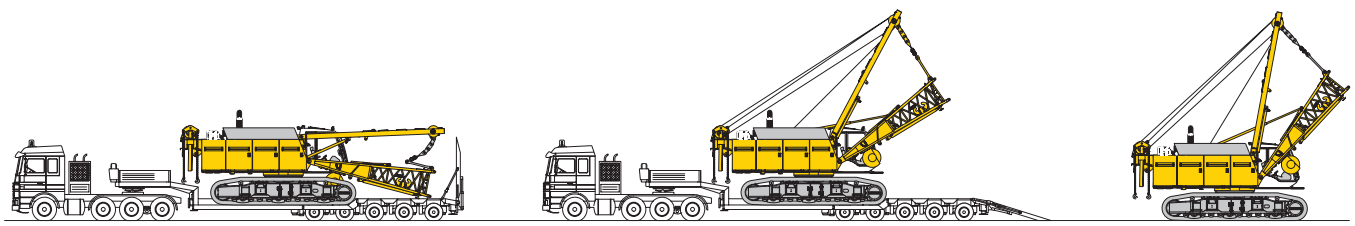


Unloading of basic machine (standard)

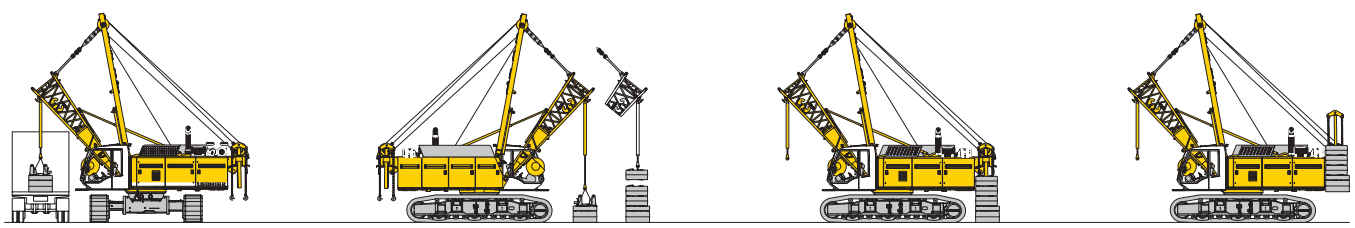


Unloading and assembly of counterweight

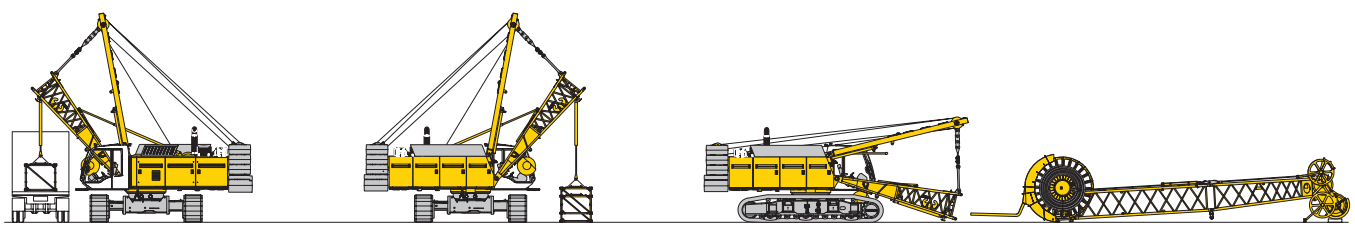
Assembly of boom and reeving of hoist ropes



Unloading of basic machine (option)



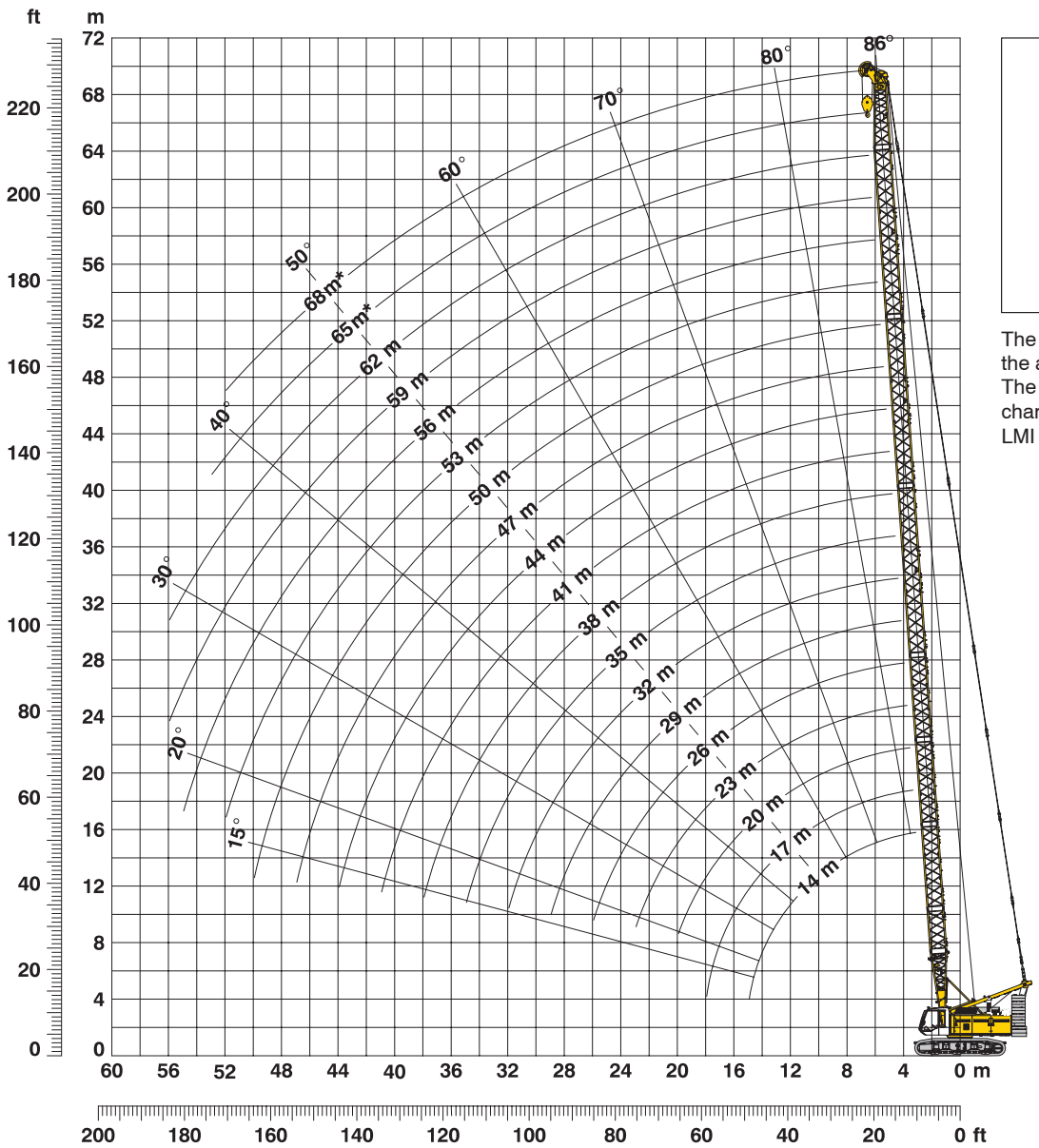
Unloading and assembly of counterweight

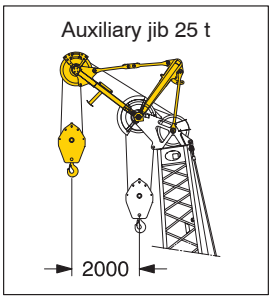


Unloading and assembly of boom

Assembly of boom and reeving of hoist ropes

Working range – main boom (No. 1311.xx) 86° – 15°
26.3 t counterweight





The maximum capacity of the auxiliary jib is 25 t.
The corresponding load chart is programmed in the LMI system.

Main boom configuration (Table 1 – No. 1311.xx)

Configuration for boom lengths (11 m – 68 m)																						
	Length	Amount of boom extensions																				
Boom foot	5.5 m	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Boom insert	3.0 m		1		1		1		1		1		1		1		1		1		1	
Boom insert	6.0 m			1	1	2	2	3	3	2	2	3	3	2	2	3	3	2	2	3	3	
Boom insert	12.0 m									1	1	1	1	2	2	2	2	3	3	3	3	
Boom head	5.5 m	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Boom length (m)		11	14	17	20	23	26	29	32	35	38	41	44	47	50	53	56	59	62	65*	68*	

* Additional counterweight allows self erection of boom up to 68 m.

Lift chart for main boom (No. 1311.xx)

26.3 t counterweight

Capacities in metric tons for boom lengths (11 m – 62 m) – with 250 kN winches
26.3 t counterweight

	Boom length (m)																		
Radius	11	14	17	20	23	26	29	32	35	38	41	44	47	50	53	56	59	62	Radius
(m)	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	(m)
3.6			90.0																3
4	84.3	86.1	83.7	77.9															4
5	72.4	68.0	64.0	60.5	57.2	54.3	51.6												5
6	57.2	54.3	51.7	49.2	47.0	44.9	43.0	41.1	39.6	38.1									6
7	46.8	45.1	43.2	41.4	39.7	38.2	36.7	35.3	34.2	32.9	31.7	30.4	28.2	24.9					7
8	38.3	38.5	37.1	35.6	34.3	33.1	31.9	30.8	29.9	28.9	27.9	27.0	26.2	24.8	20.9				8
9	32.3	32.5	32.4	31.2	30.2	29.1	28.1	27.2	26.5	25.7	24.9	24.1	23.4	22.6	20.5	18.3	15.4	13.4	9
10	27.8	28.0	28.1	27.7	26.8	25.9	25.1	24.3	23.8	23.0	22.5	21.8	21.3	20.6	19.6	17.5	14.9	13.2	10
11	24.3	24.5	24.6	24.6	24.1	23.3	22.7	22.0	21.6	21.0	20.3	19.7	19.3	18.7	18.2	16.9	14.3	12.6	11
12	21.6	21.9	21.9	21.9	21.9	21.3	20.6	20.0	19.7	19.1	18.5	18.0	17.6	17.1	16.6	16.1	13.8	12.1	12
13		19.6	19.7	19.6	19.6	19.4	18.9	18.3	18.0	17.5	17.0	16.5	16.2	15.7	15.3	14.8	13.2	11.6	13
14		17.6	17.8	17.7	17.7	17.6	17.3	16.8	16.6	16.1	15.6	15.2	14.9	14.5	14.1	13.6	12.7	11.1	14
16			14.8	14.8	14.7	14.6	14.6	14.4	14.2	13.8	13.4	13.0	12.8	12.4	12.1	11.7	11.5	10.4	16
18			12.5	12.5	12.5	12.4	12.3	12.2	12.3	12.0	11.6	11.3	11.1	10.8	10.5	10.1	9.9	9.6	18
20				10.7	10.7	10.7	10.6	10.5	10.6	10.5	10.2	9.9	9.8	9.4	9.1	8.8	8.7	8.4	20
22					9.3	9.3	9.2	9.1	9.2	9.1	9.0	8.7	8.6	8.3	8.0	7.8	7.6	7.3	22
24						8.1	8.0	7.9	8.1	7.9	7.8	7.7	7.7	7.4	7.1	6.8	6.7	6.5	24
26						7.1	7.1	7.0	7.1	7.0	6.9	6.7	6.8	6.6	6.3	6.0	6.0	5.7	26
28							6.3	6.2	6.3	6.2	6.1	5.9	6.0	5.9	5.6	5.4	5.3	5.0	28
30								5.5	5.6	5.5	5.4	5.2	5.3	5.2	5.0	4.8	4.7	4.5	30
32								4.8	5.0	4.9	4.8	4.6	4.7	4.6	4.4	4.2	4.2	3.9	32
34									4.5	4.4	4.3	4.1	4.2	4.0	3.9	3.8	3.7	3.5	34
36										3.9	3.8	3.7	3.7	3.6	3.5	3.3	3.3	3.1	36
38										3.5	3.4	3.2	3.3	3.2	3.0	2.9	2.9	2.7	38
40											3.0	2.9	2.9	2.8	2.7	2.5	2.5	2.4	40
42												2.5	2.6	2.5	2.3	2.2	2.2	2.0	42
44												2.2	2.3	2.2	2.0	1.9	1.9	1.8	44
46													2.0	1.9	1.8	1.6	1.6	1.5	46
50														1.4	1.3	1.1	1.1	1.0	50
52															1.0				52

Above lift chart is for reference only. For actual lift duty please refer to lift chart in operator's cab or manual.

HS855 – 102 248 55 – 10/2007 Subject to change without notice.

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