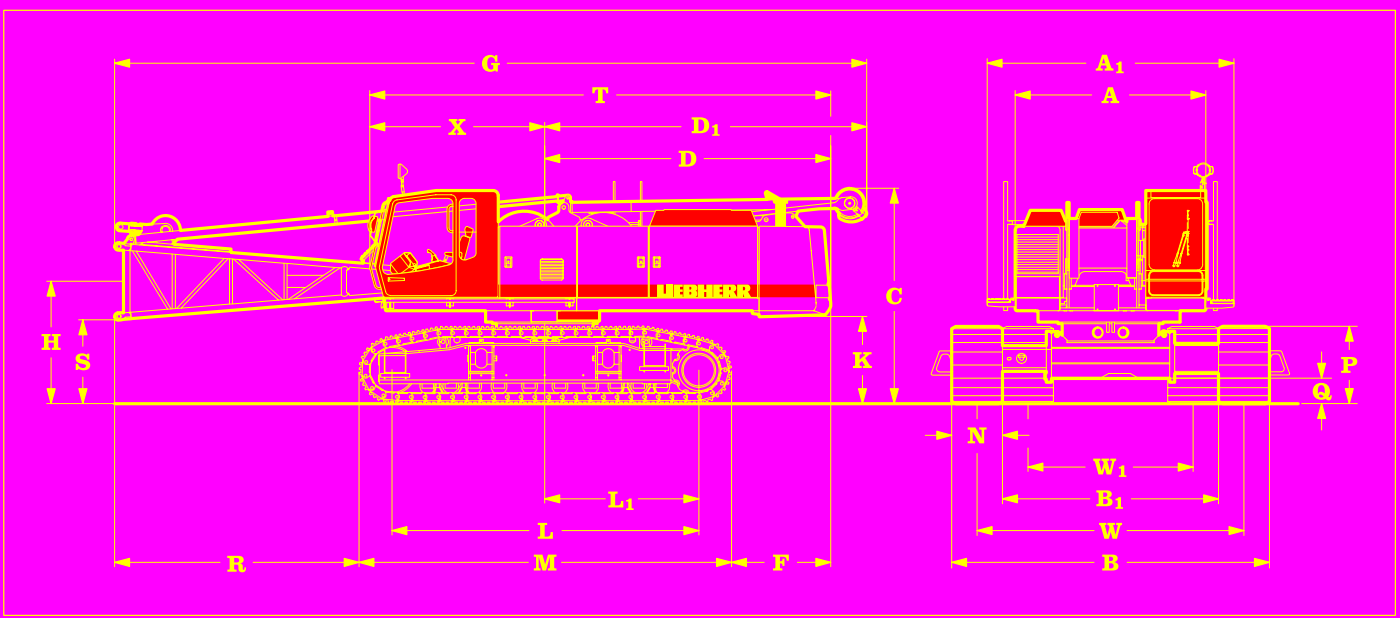
Technical Data
Hydraulic crawler crane

HS 853 HD
Litronic®

Basic machine with undercarriage



Dimensions

		mm
A	Width of superstructure	3000
A_1	Width of superstructure with walk way	3440
C	Height of basic machine	3450
D	Tail reach	4530
	Tail swing radius	4560
D_1	Tail reach A-frame	5090
F	Distance between rear end of crawler and outside of counterweight	1590
G	Overall length of superstructure with lowered A-frame	11860
H	Ground clearance of boom foot pivot	1920
K	Ground clearance of superstructure	1370
L	Wheel base (centre idler to centre tumbler)	4850
L_1	Distance from centre of rotation to centre of tumbler	2425
M	Length of crawlers	5890
P	Height of crawlers	1260
Q	Ground clearance of crawler	400
R	Distance from edge of horizontal boom foot to crawler	3820
S	Ground clearance of horizontal boom foot	1320
T	Length of superstructure	7280

		mm			
X	Distance from centre of rotation to end of cab	2750			
N	Width of track shoes	700	800	900	1000
W_1	Track width retracted	2600	2600	2600	2600
W	Track width extended	3900	3900	3900	3900
B	Crawler width extended	4600	4700	4800	4900
B_1	Crawler width retracted	3300	3400	3500	3600

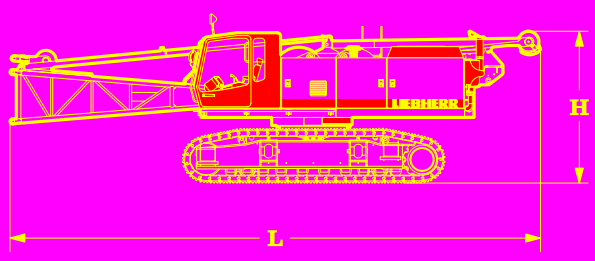
Operating Weight and Ground Pressure

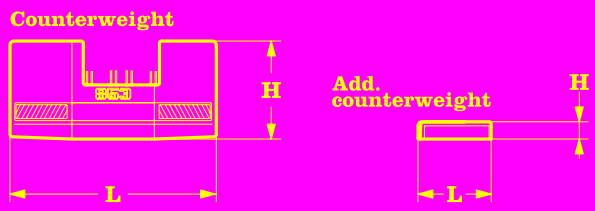
The operating weight includes the basic unit with B7 crawler tracks, 2 main winches 25 t and 11 m boom, consisting of A-frame, boom foot (5.5 m), boom head (5.5 m) and 22 t counterweight + 2 t add. counter-weight.
All systems are ready.

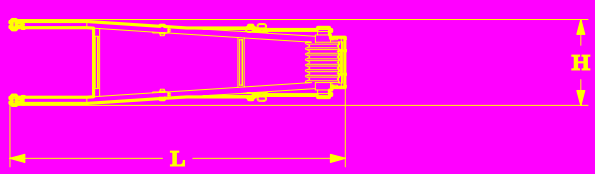
with 700 mm flat track shoes	78.4 t – 1.08 kg/cm²
with 800 mm flat track shoes	79.3 t – 0.96 kg/cm²
with 900 mm flat track shoes	80.2 t – 0.86 kg/cm²
with 1000 mm flat track shoes	81.2 t – 0.79 kg/cm²
with 700 mm 3-web shoes	76.4 t – 1.05 kg/cm²
with 800 mm 3-web shoes	76.8 t – 0.93 kg/cm²
with 900 mm 3-web shoes	77.5 t – 0.83 kg/cm²
with 1000 mm 3-web shoes	78.1 t – 0.75 kg/cm²

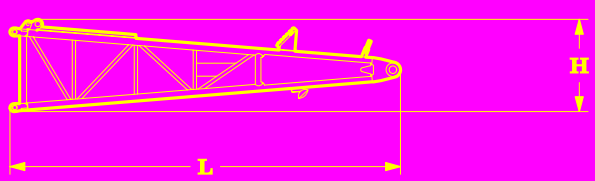
LIEBHERR

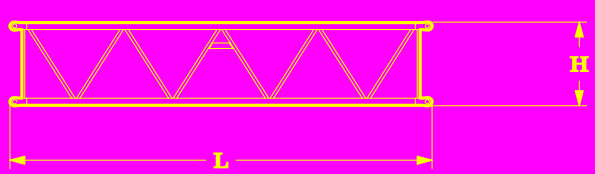
The Better Machine

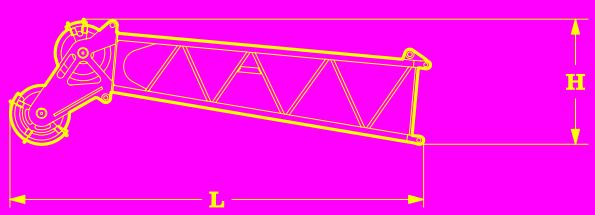












Basic machine

with HD undercarriage, without counterweight,
L 6 cylinder Liebherr diesel engine, 2 x 25 t winches
A-frame, boom foot section with boom back stops and pulley block with equalizer

3-web shoes	mm	700	800	900	1000
Width	mm	3300	3400	3500	3600
Weight	t	47.7	48.4	49.0	49.6
L Length	mm	11860	11860	11860	11860
H Height	mm	3450	3450	3450	3450

Counterweight

		Basic	Additional
Width	mm	1240	1040
Weight	kg	22000	2000
L Length	mm	3000	1070
H Height	mm	1430	250

Pulley block with equalizer

Width	mm	490
Weight	kg	300
L Length	mm	1010
H Height	mm	660

A-frame

Width	mm	530
Weight	kg	790
L Length	mm	4830
H Height	mm	1210

Boom foot

		Basic
Width	mm	1400
Weight	kg	1280
L Length	mm	5680
H Height	mm	1340

Tubular boom extension

		3 m	6 m	9 m
Width	mm	1400	1400	1400
Weight*	kg	420	670	930
L Length	mm	3140	6140	9140
H Height	mm	1220	1220	1220

Boom head

		Crane	Dragline
Width	mm	1400	1400
Weight*	kg	1600	1550
L Length	mm	6070	6160
H Height	mm	1940	2030

*) including stay ropes

Transport dimensions and weights

Engine

Water cooled, in–line 6 cylinder Liebherr diesel engine, turbocharged with intercooler, model D 926 TI–E, power rating according to ISO 9249, 220 kW (300 hp) at 1800 rpm.
Option:
Water cooled, V 8 cylinder Liebherr diesel engine, turbo charged with intercooler, model D 9408 TI–E, power rating according to ISO 9249, 400 kW (544 hp) at 1900 rpm.
The automatic limiting load control adapts perfectly the power of the main users to the present engine speed.
The temperature and engine speed controlled cooling system saves energy and reduces the noise emission.
Fuel Tank: 800 l capacity with continuous level indicator and reserve warning.

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.
Winch 1 and 2: Axial piston displacement pumps (swash plate design) with 324 l/min. each.
Crawlers: Axial piston displacement pumps (swash plate design) with 2 x 296 l/min.
Swing gear: Axial piston displacement pump (swash plate design) with 296 l/min.
Boom hoist: Axial piston displacement pump (swash plate design) with 296 l/min.
Max. working pressure: 350 bar.
Hydraulic oil tank capacity: 650 l
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, auger drills etc.

Winches

Winch options:

Line pull (nom. load)	120 kN	160 kN	200 kN	250 kN
Rope diameter :	24 mm	26 mm	30 mm	34 mm
Drum diameter :	525 mm	550 mm	630 mm	750 mm
Rope speed m/min	0–136	0–114	0–92	0–72
Rope capacity				
1st layer	45 m	46.5 m	46.5 m	48.3m

The winches are outstanding in their compact design and easy assembly.
Propulsion is via a planetary gearbox in oil bath. Load support by the hydraulic system; additional safety factor provided by a spring loaded, multi–disc holding brake.
Clutch and braking functions on the freefall system are provided by a compact designed, low wear and maintenance free multi–disc brake. The dragline 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.
Working with 2 rope clamshell, the oil motors distribute the load to both winches providing speed compensation, even when working in different rope layers.
Option:
Crane winch 80 kN (8 t) – without clutch, but with multi–disc holding brake.

Noise emission

Special sound proofing results in a very low noise pressure level of 76 dB (A) at 16 m radius.

Equipment

Lattice boom of tubular construction up to 65 m, universal boom head with interchangeable rope pulleys. Modular designed equipment for operation as crane, dragline or clamshell.
For dragline operation, a rotating fairlead is fitted into the boom foot. This minimizes rope angle to drum, which results in lower rope wear. Jibs and fly jibs of different lengths are available on request.

Swing Drive

Consists of single row ballbearing 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.
Free swing with hydraulic moment control reduces wear to a minimum, because rotation moment is sustained through the hydraulic system by the diesel engine.
A multi–disc holding brake acts automatically at zero swing motion.
Swing speed from 0 – 4.7 rpm continuously variable, selector for 3 speed ranges to increase swing precision.

Crawler

The track width of the undercarriage is changed hydrau–lically.
Propulsion through axial piston motor, hydraulically released spring loaded multi–disc brake, maintenance free crawler tracks, hydraulic chain tensioning device.
Flat or 3 – web track shoes. Drive speed 0 – 1.4 km/h.
Option:
2 speed hydraulic motor for higher travel speed.

Control

The control system – developed and manufactured by Liebherr – is designed to withstand extreme temperature and the many heavy–duty construction tasks for which this crane has been designed. Complete machine operating data are displayed on a high resolution monitor screen. To ensure clarity of the information on display, different levels of data are shown in en–larged 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 English. The crane is equipped with proportional control for all movements, which can be carried out simultaneously.
A special "Interlock" control system is also optionally avail-able. It is designed for power lifting of the dragline bucket without using the grab winch brake.
An additional option is also the so–called "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.
The crane is operated with 2 multi–directional joysticks, right for winch I and boom hoist drive, left for winch II and slewing gear. Crawler control is actuated with the two central foot pedals. Additionally, hand levers can be attached to the pedals.
Options:

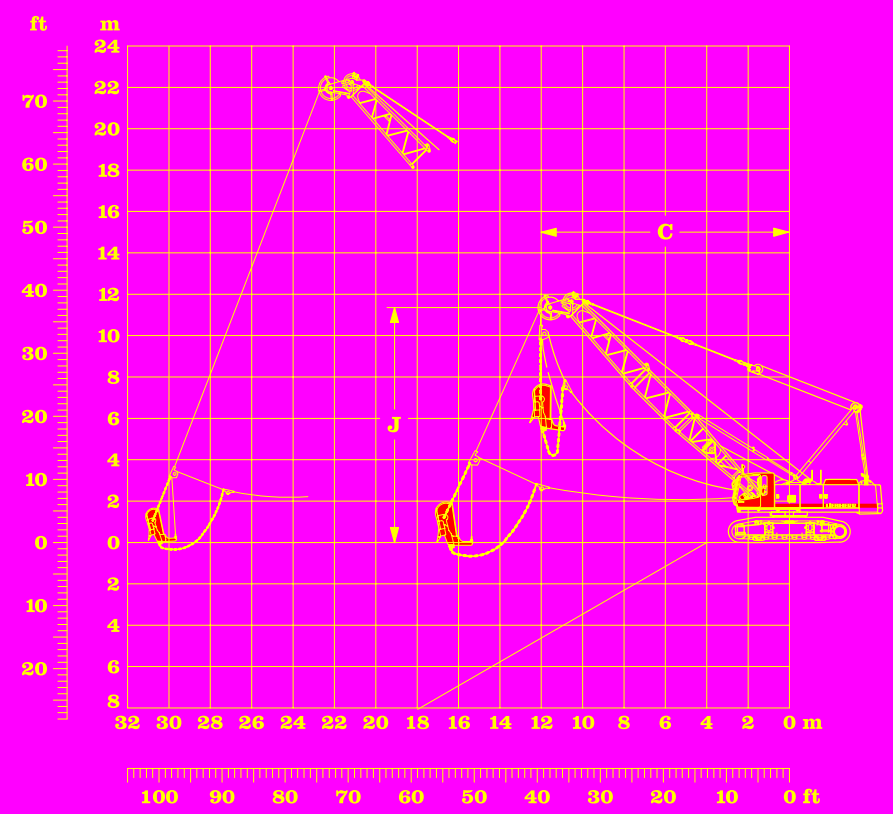
- Both main winches with double–T levers
- Special demolition control system
- MDE: Machine data recording
- PDE: Process data recording

Boom hoist drive

Twin drum with internally located planetary gearbox, axial piston hydraulic motor and hydraulically released spring loaded multi–disc brake.
Max. line pull 2x 50 kN. Rope diameter: 18 mm
Max. line speed: 45 m/min.
Counterweight lifting with boom hoist.
Two speed boom hoist option

Technical Description

24 t counterweight



Scope of delivery:

- Basic machine with corresponding track shoes
- Second swing drive with free swing
- A-frame
- Boom foot 5.5 m
- Boom extension 3 m tubular steel
- Boom extension 6 m tubular steel
- Boom extension 9 m tubular steel
- Boom head 5.5 m
- Boom head with interchangeable pulleys
- Main winches according to specification
- Drag rope should be 2 mm below nominal diameter
- Corresponding fair lead
- Corresponding ropes optional
- Dragline bucket optional

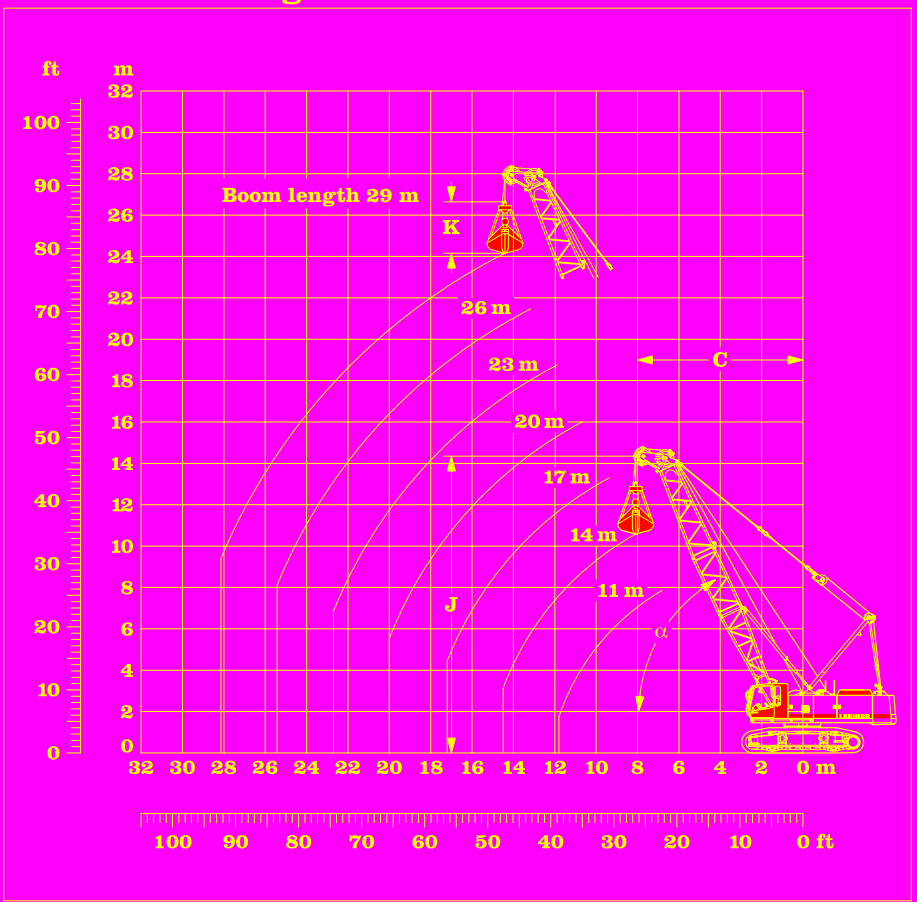
Capacities in metric tons for boom lengths from 14 m to 29 m — **Counterweight 24 t**

	14 m			17 m			20 m			23 m			26 m			29 m		
	C	J		C	J		C	J		C	J		C	J		C	J	
α°	m	m	t	m	m	t	m	m	t	m	m	t	m	m	t	m	m	t
45	12.0	11.3	17.4	14.1	13.4	14.0	16.2	15.5	11.6	18.3	17.6	8.2	20.5	19.7	8.2	22.6	21.9	7.1
40	12.8	10.4	16.0	15.1	12.3	12.9	17.4	14.3	10.6	19.6	16.2	7.5	21.9	18.1	7.5	24.2	20.0	6.4
35	13.5	9.5	15.0	15.9	11.2	12.0	18.4	12.9	9.8	20.8	14.6	6.9	23.3	16.4	6.9	25.7	18.1	5.8
30	14.1	8.5	14.1	16.7	10.0	11.3	19.3	11.5	9.2	21.9	13.0	6.4	24.5	14.5	6.4	27.0	16.0	5.4
25	14.6	7.5	13.3	17.3	8.7	10.5	20.0	10.0	8.6	22.7	11.3	5.9	25.4	12.5	5.9	28.2	13.8	5.0

Max. capacities in metric tons do not exceed 75 % of tipping load

Dragline equipment

24 t counterweight



Scope of delivery:

- Basic machine with corresponding track shoes
- A–frame
- Boom foot (5.5 m)
- Boom extension 3 m tubular steel
- Boom extension 6 m tubular steel
- Boom extension 9 m tubular steel
- Boom head 5.5 m
- Boom head with interchangeable pulleys
- Stay ropes according to boom length
- Main winches according to specification
- Tagline winch
- Corresponding ropes optional
- Clamshell optional
- Hoist limit switch
- Load moment limitation
- 4–rope clamshell on request

Working diagram

C = Radius / dumping radius
J = Height of boom head sheave centre above ground level
K = Length of clamshell (depending on type and capacity of bucket)

Capacities in metric tons for boom lengths from 14 m to 29 m: **Counterweight 24 t**

	14 m			17 m			20 m			23 m			26 m			29 m		
	C	J		C	J		C	J		C	J		C	J		C	J	
α°	m	m	t	m	m	t	m	m	t	m	m	t	m	m	t	m	m	t
65	8.1	13.9	26.3	9.4	16.6	21.5	10.7	19.3	18.0	11.9	22.1	15.4	13.2	24.8	13.3	14.5	27.5	11.7
60	9.2	13.4	22.2	10.7	16.0	18.0	12.2	18.6	15.0	13.7	21.2	12.8	15.2	23.8	11.0	16.7	26.4	9.6
55	10.2	12.7	19.3	11.9	15.2	15.6	13.6	17.7	13.0	15.3	20.1	11.0	17.0	22.6	9.4	18.8	25.0	8.1
50	11.1	12.0	17.1	13.0	14.3	13.8	15.0	16.6	11.4	16.9	18.9	9.6	18.8	21.2	8.2	20.8	23.5	7.1
45	12.0	11.3	15.5	14.1	13.4	12.5	16.2	15.5	10.3	18.3	17.6	8.6	20.5	19.7	7.3	22.6	21.9	6.3
40	12.8	10.4	14.3	15.0	12.3	11.4	17.4	14.3	9.4	19.6	16.2	7.9	21.9	18.1	6.6	24.2	20.0	5.7
35	13.5	9.5	13.3	15.9	11.2	10.6	18.4	12.9	8.7	20.8	14.6	7.3	23.3	16.4	6.1	25.7	18.1	5.2
30	14.0	8.5	12.6	16.7	10.0	10.0	19.3	11.5	8.2	21.9	13.0	6.8	24.5	14.5	5.7	27.0	16.0	4.8
25	14.6	7.5	11.8	17.3	8.7	9.4	20.0	10.0	7.6	22.7	11.3	6.3	25.4	12.5	5.3	28.2	13.8	4.4

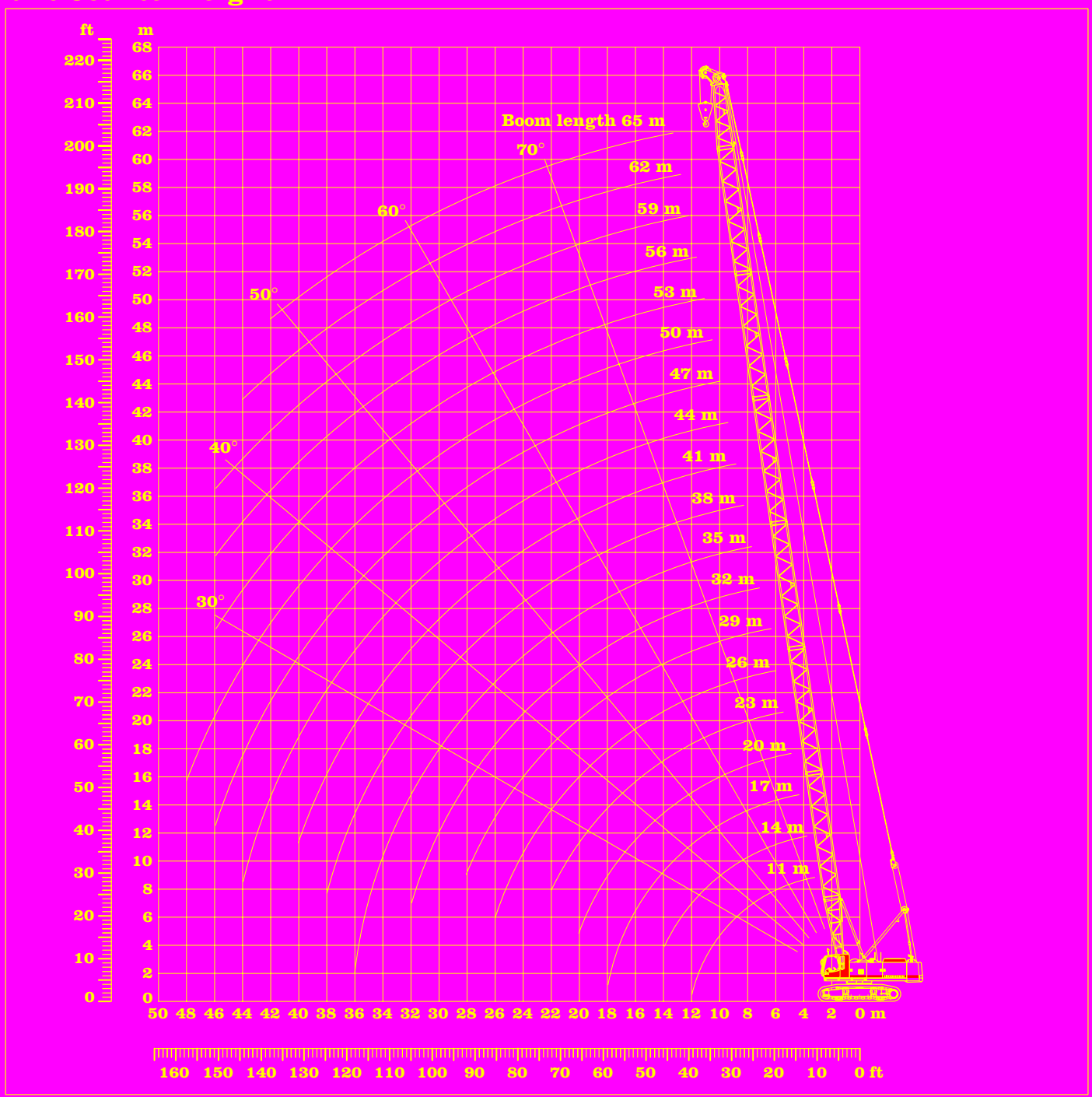
Max. capacities in metric tons do not exceed 66.7 % of tipping load.

Load diagram restricted by safety factors of standard ropes:

Winches	120 kN	160 kN	200 kN	250 kN
Rope diameter	24 mm	26 mm	30 mm	34 mm
Calc. breaking load	524 kN	613 kN	820 kN	1051 kN
1–rope clamshell	9.5 t	11.1 t	14.8 t	19.0 t
2–rope clamshell	14.4 t	16.8 t	22.5 t	28.9 t

Clamshell equipment

24 t Counterweight



Scope of delivery:

- Basic machine with corresponding track shoes
- A-frame
- Pulley block
- Boom foot 5.5 m
- Boom extension 3 m tubular steel
- Boom extension 6 m tubular steel
- Boom extension 9 m tubular steel
- Boom head 5.5 m with interchangeable pulleys
- Stay ropes according to boom length
- Main winches according to specification
- Hoisting limit switch
- Load moment limitation
- Corresponding hook block optional

Remarks:

1. The lifting capacities are valid for wide track.
2. The lifting capacities stated do not exceed 75 % of the tipping load.
3. The lifting capacities are indicated in metric tons with unlimited swing (360 degrees).
4. The weight of the lifting device must be deducted to arrive at the net lifting capacity.
5. Working radii are measured from centre of swing.
6. Crane standing on firm, horizontal ground.
7. Indicated values on load chart are affected by off-lead operation, wind speeds, load under slew and stop/go movements.
8. The max. lifting capacity of the crane may be reduced dependent on the admissible rope safety regulations of each country.

Crane configuration

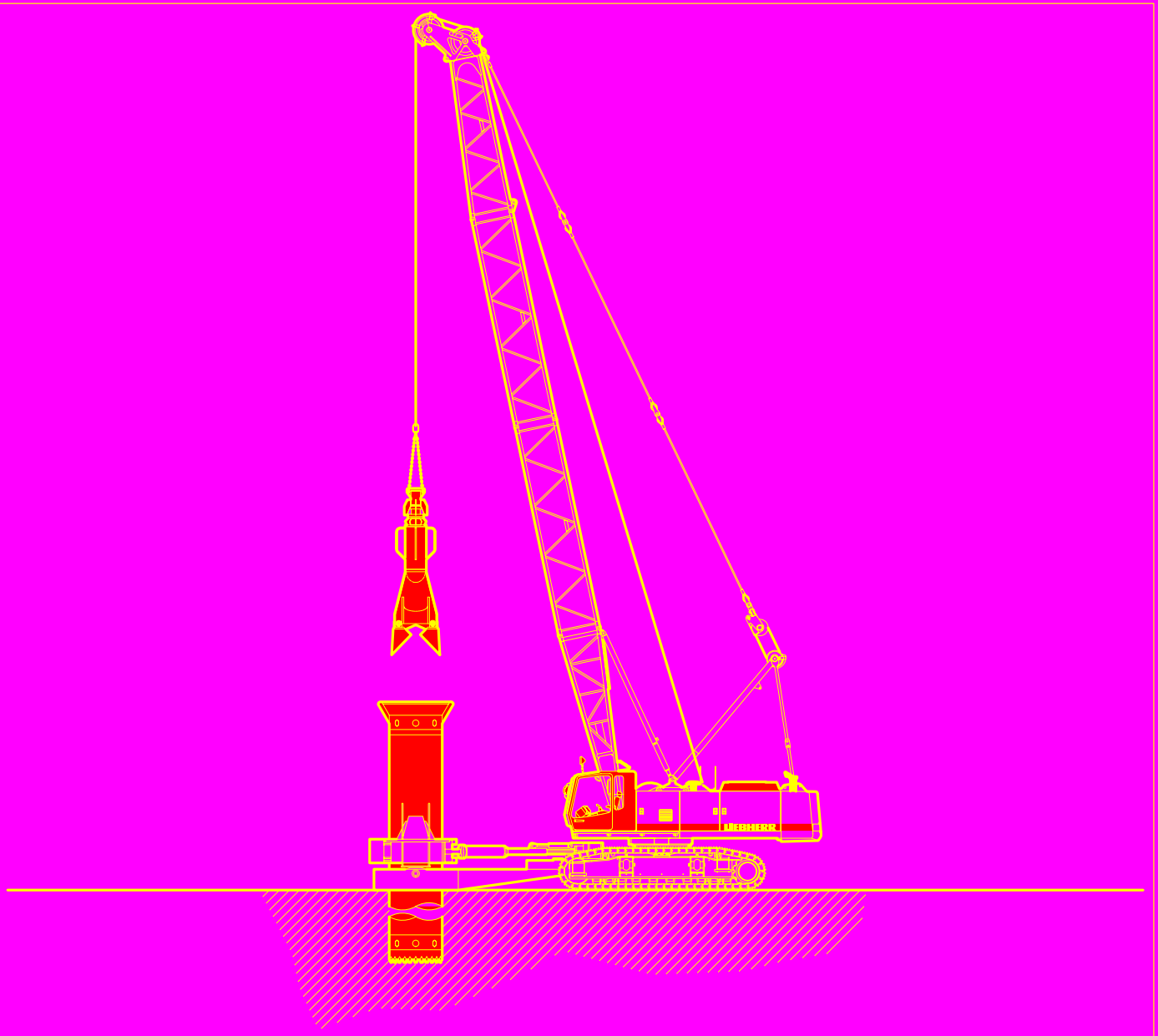
Capacities in metric tons for boom lengths from 11 m to 65 m:																			Counterweight 24 t
Boom length	11m	14m	17m	20m	23m	26m	29m	32m	35m	38m	41m	44m	47m	50m	53m	56m	59m	62m	65m
Radius in (m)	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t
3.5	80.0																		
4.0	80.0	78.6																	
4.5	74.0	73.9	73.7																
5.0	61.9	61.9	61.9	61.9															
5.5	52.8	52.8	52.8	52.7	52.7	52.7													
6.0	46.0	46.0	45.9	45.9	45.9	45.8	45.8												
6.5	40.7	40.6	40.6	40.6	40.5	40.5	40.4	40.4											
7.0	36.4	36.4	36.4	36.3	36.3	36.2	36.2	36.1	36.0										
7.5	30.1	32.9	32.9	32.9	32.8	32.7	32.7	32.6	32.5	32.5									
8.0	25.6	30.1	30.0	30.0	29.9	29.8	29.8	29.7	29.6	29.6	29.5	27.3							
9.0	22.2	25.5	25.5	25.4	25.4	25.3	25.2	25.1	25.1	25.0	24.9	24.8	22.8	19.9					
10.0	19.5	22.1	22.1	22.0	22.0	21.9	21.8	21.7	21.6	21.6	21.5	21.4	21.3	19.2	16.7	14.9			
11.0		19.5	19.5	19.4	19.3	19.2	19.2	19.1	19.0	18.9	18.8	18.7	18.6	18.5	16.1	14.4	12.0	10.2	8.8
12.0		17.4	17.3	17.3	17.2	17.1	17.0	16.9	16.9	16.8	16.7	16.6	16.5	16.4	15.5	13.8	11.5	9.7	8.3
13.0		15.6	15.6	15.5	15.5	15.4	15.3	15.2	15.1	15.0	14.9	14.8	14.7	14.7	14.6	13.3	10.9	9.2	7.8
14.0		14.2	14.2	14.1	14.0	13.9	13.9	13.8	13.7	13.6	13.5	13.4	13.3	13.2	13.1	12.9	10.3	8.7	7.3
15.0			12.9	12.9	12.8	12.7	12.6	12.5	12.4	12.4	12.3	12.2	12.1	12.0	11.9	11.8	9.8	8.2	6.9
16.0			11.9	11.8	11.7	11.7	11.6	11.5	11.4	11.3	11.2	11.1	11.0	10.9	10.8	10.7	9.4	7.7	6.5
17.0			11.0	10.9	10.8	10.8	10.7	10.6	10.5	10.4	10.3	10.2	10.1	10.0	9.9	9.8	8.9	7.3	6.1
18.0				10.1	10.0	10.0	9.9	9.8	9.7	9.6	9.5	9.4	9.3	9.2	9.1	9.0	8.4	6.9	5.8
19.0				9.4	9.3	9.3	9.2	9.1	9.0	8.9	8.8	8.7	8.6	8.5	8.4	8.3	8.0	6.5	5.4
20.0				8.8	8.7	8.6	8.6	8.5	8.4	8.3	8.2	8.1	8.0	7.9	7.8	7.6	7.5	6.2	5.1
22.0					7.7	7.6	7.5	7.4	7.3	7.2	7.1	7.0	6.9	6.8	6.7	6.6	6.5	5.6	4.5
24.0						6.7	6.6	6.5	6.4	6.3	6.2	6.1	6.0	5.9	5.8	5.7	5.6	5.0	4.0
26.0						6.0	5.9	5.8	5.7	5.6	5.5	5.4	5.3	5.2	5.1	5.0	4.9	4.5	3.6
28.0							5.3	5.2	5.1	5.0	4.9	4.8	4.7	4.6	4.5	4.4	4.2	4.1	3.1
30.0								4.6	4.6	4.5	4.3	4.2	4.1	4.0	3.9	3.8	3.7	3.6	2.8
32.0									4.1	4.0	3.9	3.8	3.7	3.6	3.5	3.4	3.3	3.1	2.5
34.0									3.7	3.6	3.5	3.4	3.3	3.2	3.1	3.0	2.8	2.7	2.1
36.0										3.2	3.1	3.0	2.9	2.8	2.7	2.6	2.5	2.4	1.8
38.0										2.9	2.8	2.7	2.6	2.5	2.4	2.3	2.2	2.1	1.5
40.0											2.5	2.4	2.3	2.2	2.1	2.0	1.9	1.8	1.3
42.0													2.1	2.0	1.9	1.8	1.6	1.5	1.1
44.0													1.8	1.7	1.6	1.5	1.4	1.3	0.8
46.0													1.6	1.5	1.4	1.3	1.2	1.1	
48.0														1.3	1.2	1.1	1.0		

Up to 59 m of boom length self erection is possible.
The necessary hoistrope reeving arrangement has to be provided according to the load diagram in the cabin.

Optimal boom configuration for boom lengths between 11 m to 65 m:																					
	Length	Number 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
Boom extension	3.0 m		1			1			1			1			1			1			
Boom extension	6.0 m			1			1			1			1			1			1		
Boom extension	9.0 m				1	1	1	2	2	2	3	3	3	4	4	4	5	5	5	6	
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
Boom length in meters		11	14	17	20	23	26	29	32	35	38	41	44	47	50	53	56	59	62	65	

Load diagram for crane configuration

Courtesy of Crane.Market



Casing oscillator

Winch options	**2 x 20 t**	**2 x 25 t**
Line pull 2 x	**400 kN**	**500 kN**
Line speed 1st layer (m/min)	**0–92**	**0–72**
Drilling diameter	**2000 mm**	**2000 mm**
Chisel weight	**12 t**	**16 t**
Max. capacity with boom position in longitudinal direction of undercarriage at 7.5 m radius.	**37.8 t**	**37.8 t**

Free fall winches with maintenance free, spring loaded multi disc brake working in an oil bath.
Simultaneous working of both winches is assured through our hydraulic system.
Hydraulic supply for casing oscillator q = 2 x 296 l/min. P = 300 bar max.
Mechanical connection casing oscillator on undercarriage.
Automatic operation for one and two rope grabs. (optional)
Hoisting speed will have priority over the casing oscillator while main winches are activated.

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