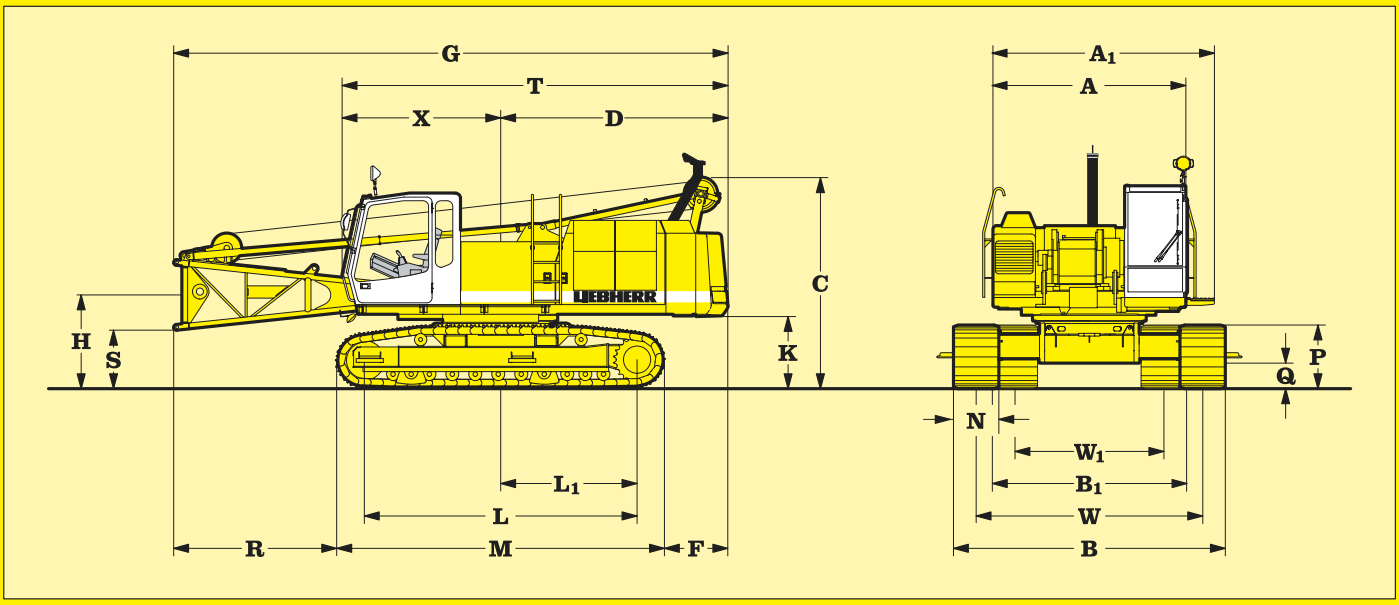
Technical Data
Hydraulic crawler crane

HS 833 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	3280
D	Tail reach	3510
	Tail swing radius	3600
F	Distance between rear end of crawler and outside of counterweight	970
G	Overall length of superstructure with lowered A–frame	8570
H	Ground clearance of boom foot pivot	1450
K	Ground clearance of superstructure	1120
L	Wheel base (centre idler to centre tumbler)	4210
L_1	Distance from centre of rotation to centre of tumbler	2100
M	Length of crawlers	5110
P	Height of crawlers	1015
Q	Ground clearance of crawler	400
R	Distance from edge of horizontal boom foot to crawler	2520
S	Ground clearance of horizontal boom foot	910
T	Length of superstructure	5970

		mm		
X	Distance from centre of rotation to end of cab	2460		
N	Width of track shoes	600	700	800
W	Track width extended	3500	3500	3500
W_1	Track width retracted	2300	2300	2500
B	Crawler width extended	4100	4200	4300
B_1	Crawler width retracted	2900	3000	3300

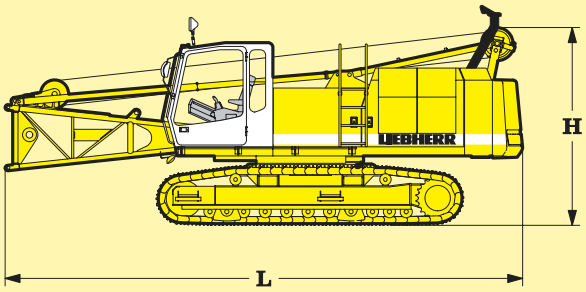
Operating Weight and Ground Pressure

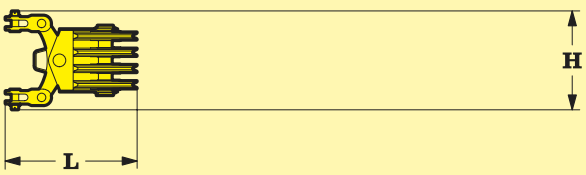
The operating weight includes the basic unit with B60 crawler tracks, 2 main winches 12 t and 8 m boom, consisting of A–frame, boom foot (4 m), boom head (4 m) and 6.3 t counterweight.
All systems are ready.

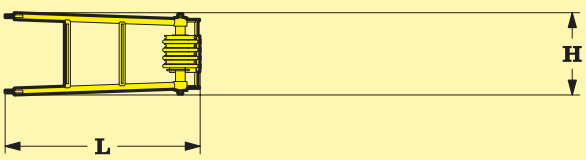
with	600 mm 3–web shoes	34.7 t – 0.69 kg/cm²
with	700 mm 3–web shoes	35.2 t – 0.60 kg/cm²
with	800 mm 3–web shoes	35.7 t – 0.54 kg/cm²

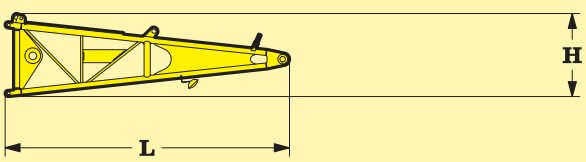
LIEBHERR

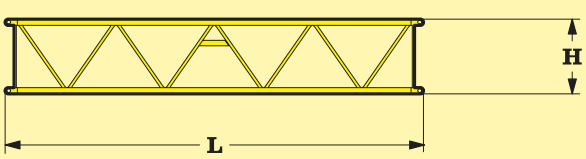
The Better Machine

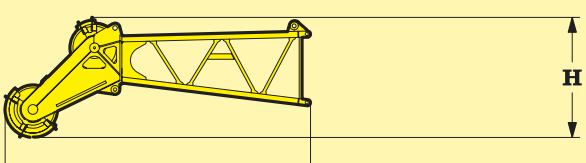


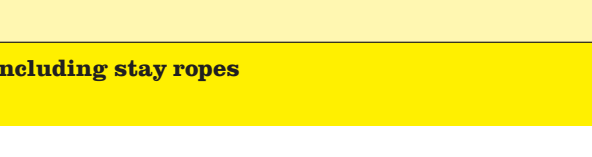












*) including stay ropes

Basic machine

with HD undercarriage, without counterweight 6.3 t, R 6 cylinder Liebherr diesel engine, 2 x 12 t winches, A–frame, boom foot section with boom back stops and pulley block with equalizer.

3–web shoes	mm	600	700	800
Width	mm	2900	3000	3300
Weight	t	33.6	34.1	34.6
L Length	mm	8570	8570	8570
H Height	mm	3250	3250	3250

Counterweight

		Basic
Width	mm	500
Weight	kg	6300
L Length	mm	2980
H Height	mm	1295

Pulley block with equalizer

Width	mm	480
Weight	kg	200
L Length	mm	970
H Height	mm	750

A–frame

Width	mm	600
Weight	kg	800
L Length	mm	2850
H Height	mm	1235

Boom foot section

		Basic
Width	mm	1310
Weight	kg	800
L Length	mm	4150
H Height	mm	1210

Tubular boom extension

		3 m	6 m
Width	mm	1290	1290
Weight*	kg	340	540
L Length	mm	3110	6110
H Height	mm	1090	1090

Boom head

		Crane	Dragline
Width	mm	1310	1310
Weight*	kg	1085	1070
L Length	mm	4460	4600
H Height	mm	1750	1860

Transport dimensions and weights

Engine

Water cooled, in–line 4 cylinder Liebherr diesel engine, turbocharged with intercooler, model D 924 TI–E, power rating according to ISO 9249, 125 kW (170 hp) at 1800 rpm.
Option:
Water cooled, in–line 6 cylinder Liebherr diesel engine, turbo charged with intercooler, model D 926 TI–E, power rating according to ISO 9249, 210 kW (285 hp) at 1800 rpm.
The automatic limiting load control adapts perfectly the power of the main users to the present engine speed.
Fuel Tank: 540 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 214 l/min. each.
Crawlers: Axial piston displacement pumps (swash plate design) with 2 x 214 l/min.
Swing gear: Axial piston displacement pump (swash plate design) with 193 l/min. in a closed circuit.
Boom hoist: Axial piston displacement pump (swash plate design) with 214 l/min.
Max. working pressure: 350 bar.
Hydraulic oil tank capacity: 500 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)	80 kN	120 kN
Rope diameter :	20 mm	24 mm
Drum diameter :	420 mm	505 mm
Rope speed m/min	0–138	0–112
Rope capacity 1st layer	46.5 m	46.5m

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.

Equipment

Lattice boom of tubular construction up to 38 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.
Variable swing speed control from 0 – 4.2 rpm.

Crawler

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 3 – web track shoes. Drive speed 0 – 1.7 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. Control and displaying of the sensors are also handled by this high technology system. The crane is equipped with proportional control for all movements, which can be carried out simultaneously.
On request, Liebherr also offers special custom designed control systems for freefall 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.
The Liebherr developed Load–Sensing–Control in connection with Liebherr Litronic® power management enables simultaneous operation of all crane functions, full utilization of installed engine power and reduced fuel consumption.

Boom hoist drive

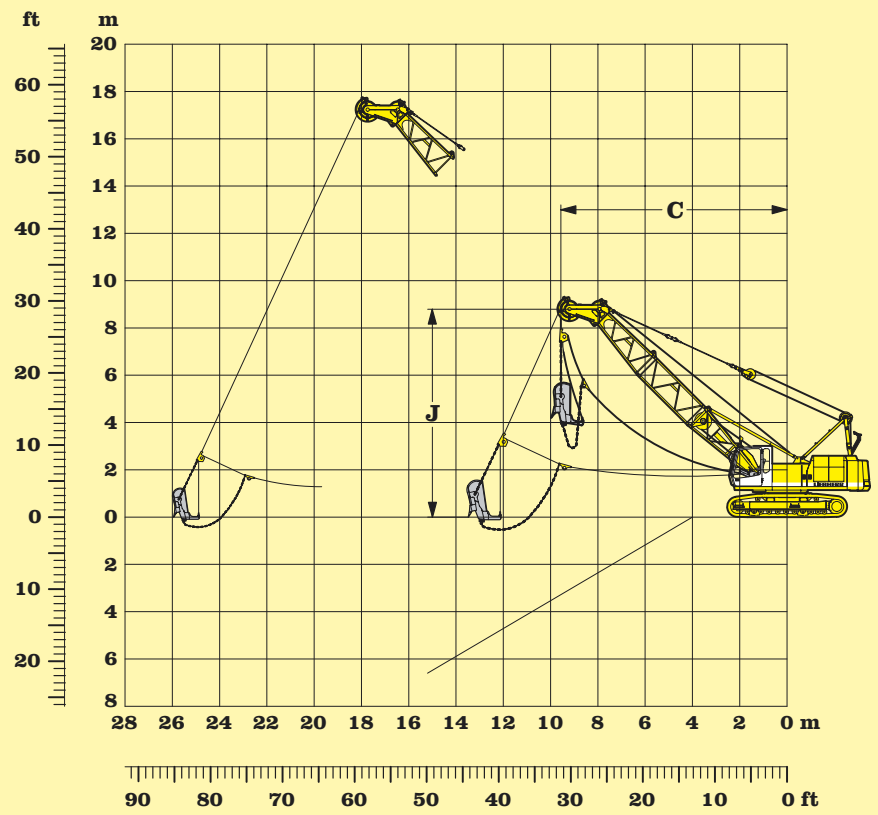
Twin drum with internally located planetary gearbox, axial piston hydraulic motor and hydraulically released spring loaded multi–disc brake.
Max. line pull 1 x 50 kN. Rope diameter: 18 mm
Max. line speed: 0 – 67 m/min.
Counterweight lifting with boom hoist.
Two speed boom hoist option

Noise emission

Special sound proofing results in a very low noise pressure level of 73 dB (A) at 16 m radius.

Technical description

6.3 t counterweight



Scope of delivery:

- Basic machine with corresponding track shoes
- Second swing drive with free swing
- A–frame
- Boom foot 4 m
- Boom extension 3 m tubular steel
- Boom extension 6 m tubular steel
- Boom head 4 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

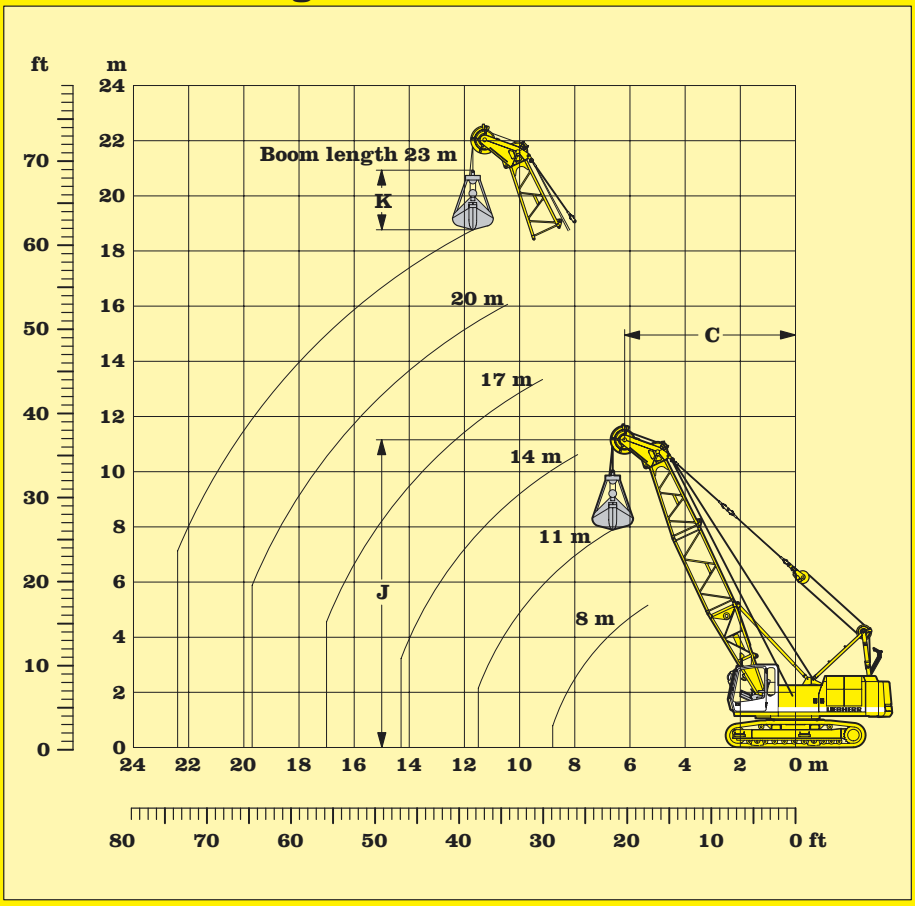
Capacities in metric tons for boom lengths from 11 m to 23 m — **Counterweight 6.3 t**

	11 m			14 m			17 m			20 m			23 m		
α°	C m	J m	t	C m	J m	t	C m	J m	t	C m	J m	t	C m	J m	t
45	9.5	8.8	8.3	11.7	10.9	6.2	13.8	13.0	4.8	15.9	15.2	3.8	18.0	17.3	3.0
40	10.1	8.1	7.6	12.4	10.0	5.7	14.7	11.9	4.4	17.0	13.8	3.4	19.3	15.8	2.7
35	10.7	7.3	7.1	13.1	9.0	5.2	15.6	10.7	4.0	18.1	12.4	3.1	20.5	14.2	2.4
30	11.2	6.4	6.7	13.8	7.9	4.9	16.3	9.4	3.7	18.9	10.9	2.9	21.5	12.4	2.2
25	11.5	5.6	6.3	14.3	6.8	4.6	17.0	8.1	3.5	19.7	9.4	2.7	22.4	10.6	2.1

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

Dragline equipment

6.3 t counterweight



Scope of delivery:

- Basic machine with corres–ponding track shoes
- A–frame
- Boom foot 4 m
- Boom extension 3 m tubular steel
- Boom extension 6 m tubular steel
- Boom head 4 m
- Boom head with interchangeable pulleys
- Stay ropes according to boom length
- Main winches according to specification
- Stabilizing 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 8 m to 23 m: **Counterweight 6.3 t**

	8 m			11 m			14 m			17 m			20 m			23 m		
α°	C m	J m	t	C m	J m	t	C m	J m	t	C m	J m	t	C m	J m	t	C m	J m	t
65	5.3	8.4	13.8	6.5	11.2	12.9	7.8	13.9	9.7	9.1	16.6	7.9	10.3	19.3	6.4	11.6	22.0	5.4
60	5.8	8.1	13.8	7.3	10.7	10.8	8.8	13.3	8.2	10.3	15.9	6.5	11.8	18.5	5.3	13.3	21.1	4.3
55	6.4	7.7	13.2	8.1	10.1	9.3	9.8	12.6	7.0	11.6	15.0	5.5	13.3	17.5	4.4	15.0	19.9	3.6
50	6.9	7.2	11.7	8.9	9.5	8.2	10.8	11.8	6.2	12.7	14.1	4.8	14.6	16.4	3.8	16.6	18.7	3.1
45	7.4	6.7	10.6	9.5	8.8	7.4	11.7	10.9	5.5	13.8	13.0	4.3	15.9	15.2	3.4	18.0	17.3	2.7
40	7.8	6.1	9.8	10.1	8.1	6.8	12.4	10.0	5.0	14.7	11.9	3.9	17.0	13.8	3.1	19.3	15.8	2.4
35	8.2	5.5	9.1	10.7	7.3	6.3	13.1	9.0	4.7	15.6	10.7	3.6	18.1	12.4	2.8	20.5	14.2	2.2
30	8.6	4.9	8.6	11.2	6.4	5.9	13.8	7.9	4.4	16.3	9.4	3.3	18.9	10.9	2.6	21.5	12.4	2.0
25	8.8	4.3	8.2	11.5	5.6	5.6	14.3	6.8	4.1	17.0	8.1	3.1	19.7	9.4	2.4	22.4	10.6	1.8

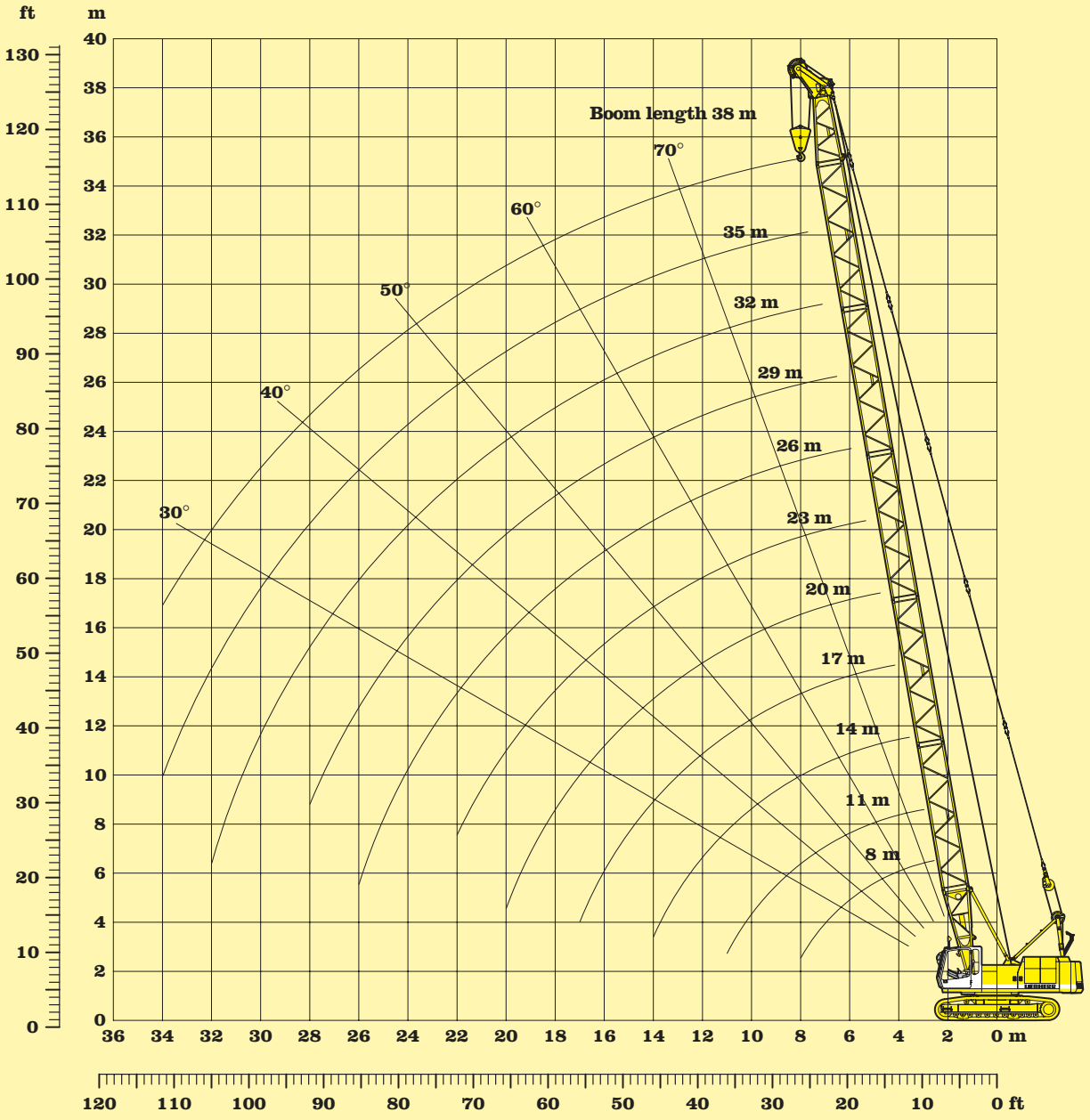
Max. capacities in metric tons do not exceed 66.7 % of tipping load.

Load diagram restricted by safety factors of standard ropes:

Winches	80 kN	120 kN
Rope diameter	20 mm	24 mm
Calc. breaking load	363 kN	524 kN
1–rope clamshell	6.5 t	9.5 t
2–rope clamshell	9.9 t	14.4 t

Clamshell equipment

6.3 t Counterweight



Scope of delivery:

- Basic machine with corresponding track shoes
- A–frame
- Pulley block
- Boom foot 4 m
- Boom extension 3 m tubular steel
- Boom extension 6 m tubular steel
- Boom head 4 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 exeeced 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.

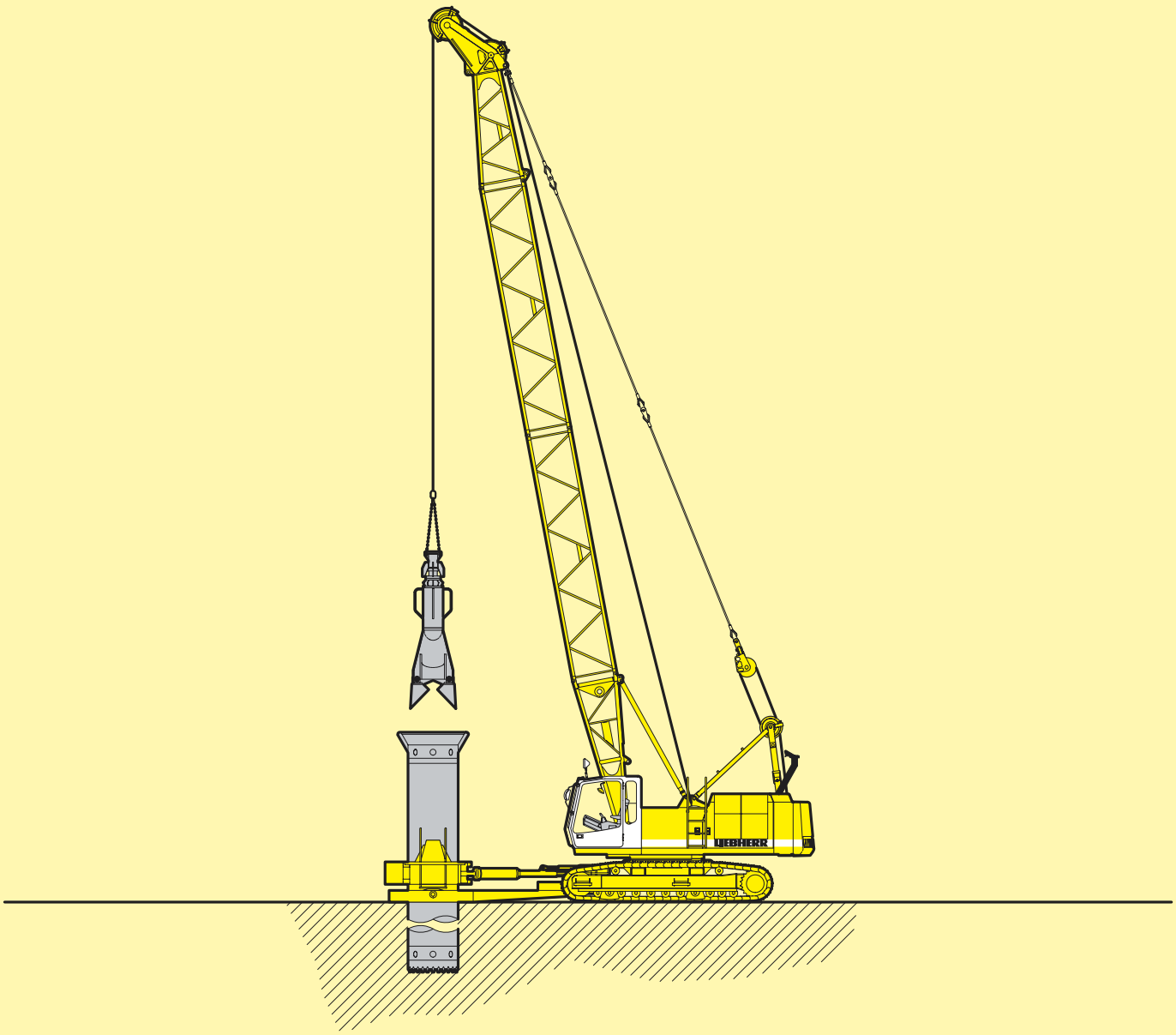
Crane configuration

Capacities in metric tons for boom lengths from 11 m to 38 m :											Counterweight 6.3 t
Boom length	**8 m**	**11 m**	**14 m**	**17 m**	**20 m**	**23 m**	**26 m**	**29 m**	**32 m**	**35 m**	**38 m**
Radius in (m)	**t**	**t**	**t**	**t**	**t**	**t**	**t**	**t**	**t**	**t**	**t**
3.0	35.0										
3.5	35.0	32.8									
4.0	31.5	31.4	28.4								
4.5	25.5	25.5	25.4	24.9							
5.0	21.4	21.3	21.3	21.2	21.2						
5.5	18.4	18.3	18.3	18.2	18.1	18.0					
6.0	16.1	16.0	16.0	15.9	15.8	15.7	15.7				
6.5	14.3	14.2	14.2	14.1	14.0	13.9	13.8	13.8			
7.0	12.8	12.8	12.7	12.6	12.5	12.5	12.4	12.3	12.2		
7.5	11.6	11.6	11.5	11.4	11.3	11.2	11.2	11.1	11.0	10.9	
8.0	10.6	10.6	10.5	10.4	10.3	10.2	10.1	10.0	10.0	9.9	9.6
9.0		9.0	8.9	8.8	8.7	8.6	8.5	8.4	8.3	8.2	8.1
10.0		7.8	7.7	7.6	7.5	7.4	7.3	7.2	7.1	7.2	6.9
11.0		6.8	6.7	6.7	6.6	6.5	6.4	6.3	6.2	6.1	6.0
12.0			6.0	5.9	5.8	5.7	5.6	5.5	5.4	5.3	5.2
13.0			5.4	5.3	5.2	5.1	5.0	4.9	4.8	4.7	4.6
14.0			4.8	4.8	4.7	4.6	4.4	4.3	4.2	4.1	4.0
15.0				4.3	4.2	4.1	4.0	3.9	3.8	3.7	3.6
16.0				3.9	3.8	3.7	3.6	3.5	3.4	3.3	3.2
17.0				3.6	3.5	3.4	3.3	3.2	3.1	3.0	2.9
18.0					3.2	3.1	3.0	2.9	2.8	2.7	2.5
19.0					2.9	2.8	2.7	2.6	2.5	2.4	2.3
20.0					2.7	2.6	2.5	2.4	2.3	2.1	2.0
22.0						2.2	2.1	2.0	1.9	1.7	1.6
24.0							1.8	1.6	1.5	1.4	1.2
26.0							1.5	1.4	1.2	1.1	1.0
28.0								1.1	1.0	0.8	0.7
30.0									0.8	0.6	0.5
32.0									0.6	0.5	0.3
34.0										0.3	0.2

The necessary hoist rope reeving arrangement has to be provided according to the load diagram in the cabin.

Optimal boom configuration for boom lengths between 8 m to 38 m:												
	Length	**Amount of boom extensions**										
Boom foot	**4.0 m**	1	1	1	1	1	1	1	1	1	1	1
Boom extension	**3.0 m**		1		1		1		1		1	
Boom extension	**6.0 m**			1	1	2	2	3	3	4	4	5
Boom head	**4.0 m**	1		1	1	1	1	1	1	1	1	1
Boom length (m)		8	11	14	17	20	23	26	29	32	35	38

Load diagram for crane configuration



Casing oscillator

Winch options	**2 x 8 t**	**2 x 12 t**
Line pull 2 x	**160 kN**	**240 kN**
Line speed 1st layer (m/min)	**0–138**	**0–112**
Drilling diameter	**1300 mm**	**1300 mm**
Chisel weight	**6 t**	**10 t**
Maximum capacity with boom position in longitudinal direction of under–carriage at 6.5 m radius.	**16.0 t**	**16.0 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 200 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.

LIEBHERR–WERK NENZING GMBH, **P.O. Box 10, A–6710 Nenzing / Austria / Europa**
Telephone (0043) 5525 – 606 – 473,
Telefax (0043) 5525 – 606 – 499
Email: info@lwn.liebherr.com

Presented by: