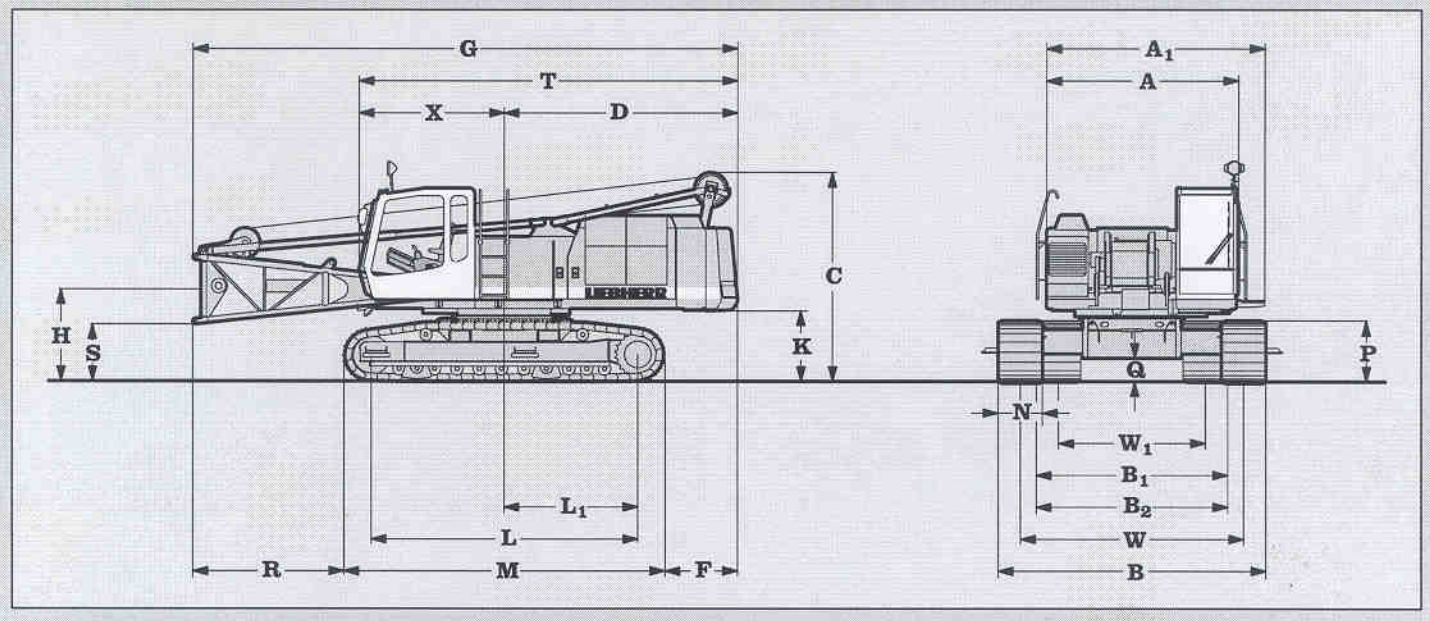
Technical Data
Hydraulic crawler crane

HS 833 HD
Litronic®

Basic machine with undercarriage



Dimensions

A	Width of superstructure	9' 10"
A_1	Width of superstructure with walk way	11' 3"
C	Height of basic machine	10' 8"
D	Tail reach	11' 6"
	Tail swing radius	11' 10"
F	Distance between rear end of crawler and outside of counterweight	3' 1"
G	Overall length of superstructure with lowered A–frame	28' 1"
H	Center of boom foot to ground	4' 9"
K	Ground clearance of superstructure	3' 8"
L	Center idler to center tumbler	3' 8"
L_1	Distance from center of rotation to center of tumbler	13' 10"
M	Length of crawlers	7' 0"
P	Height of crawler	16' 9"
Q	Ground clearance of crawler	3' 4"
R	Distance from edge of horizontal boom foot to crawler	1' 4"
S	Ground clearance of horizontal boom foot	8' 0"
T	Length of superstructure	3' 0"
		19' 3"

X	Distance from center of rotation to end of cab			7' 9"
N	Track shoes	24"	28"	32"
W	Track width extended	11' 6"	11' 6"	11' 6"
W_1	Track width retracted	7' 6"	7' 6"	8' 2"
B	Crawler width extended	13' 5"	13' 9"	14' 1"
B_1	Crawler width retracted	9' 6"	9'10"	10'10"

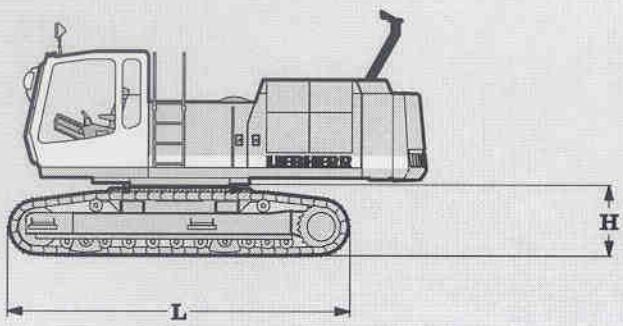
Operating Weight and Ground Pressure

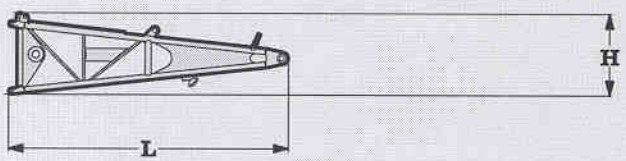
The operating weight includes the basic unit with B60 crawler tracks, 2 main winches 26,500 lbs and 26' (8m) boom, consisting of A–frame, 13' (4m) boom foot, 13' (4m) boom head and 14,000 lbs counterweight.

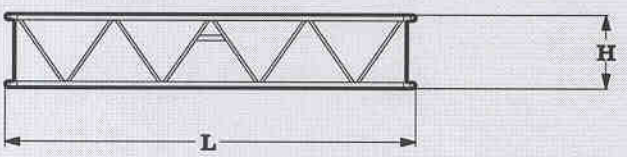
24" triple grouser track shoe	78,705 lbs	–10.1 lbs/sq in
28" triple grouser track shoe	79,587 lbs	– 8.7 lbs/sq in
31" triple grouser track shoe	80,248 lbs	– 7.7 lbs/sq in

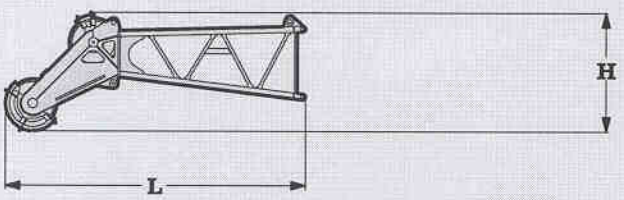
LIEBHERR

The Better Machine.









Basic machine

with HD undercarriage, 14,000 lbs counterweight
6 cylinder Liebherr diesel engine, 2 x 26,500 lbs (2x12t) winches without A–frame

Triple grouser track shoe	24"	28"	31"
Weight in lbs	72,500	73,400	74,000

Crawler retraced

Triple grouser track shoe	24"	28"	31"
L Length	16' 9"	16' 9"	16' 9"
H Height	3' 6"	3' 6"	3' 6"
Width	9' 6"	9'10"	10'10"
Weight in lbs	27,800	28,900	30,000

Counterweight

L Length	9' 9"
H Height	4' 3"
Width	1' 8"
Weight in lbs	14,000

Pulley block with equalizer

L Length	3' 2"
H Height	2' 6"
Width	1' 7"
Weight in lbs	440

A–frame

L Length	9' 4"
H Height	4' 1"
Width	2' 0"
Weight in lbs	1,800

Boom foot	Basic	Dragline
L Length	13' 7"	13' 7"
H Height	4' 0"	4' 0"
Width	4' 4"	4' 4"
Weight in lbs	1,800	1,900

Tubular boom extension	10'	20'
L Length	10' 2"	20' 1"
H Height	3' 7"	3' 7"
Width	4' 3"	4' 3"
Weight in lbs	750	1,200

Boom head	Crane	Dragline
L Length	14' 8"	20' 0"
H Height	5' 9"	6' 8"
Width	4' 4"	4' 7"
Weight in lbs	2,200	2,100

Transport dimensions and weights

Engine

Water cooled, in–line 4 cylinder Liebherr diesel engine, turbocharged with intercooler, model 914 Ti, power rating according to DIN ISO 3046 T1 IFN: 170 hp (125 kW) at 1800 rpm.
Option:
Water cooled, in–line 6 cylinder Liebherr diesel engine, turbo charged with intercooler, model 926 Ti, power rating according to DIN ISO 3046 T1 IFN: 300 hp (220 kW) at 1800 rpm.
The automatic limiting load control adapts perfectly the power of the main users to the present engine speed.
Fuel Tank: 142.6 gal 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 peek pressure a automatically working pressure cut off is integrated. This lowers pump wear.
Winch 1 and 2: Axial piston displacement pumps (swash plate design) with 56.5 gal/min. each.
Crawlers: Axial piston displacement pumps (swash plate design) with 2 x 56.5 gal/min.
Swing gear: Axial piston displacement pump (swash plate design) with 51 gal/min. in a closed circuit.
Boom hoist: Axial piston displacement pump (swash plate design) with 56.5 gal/min.
Max. working pressure: 5075 psi.
Hydraulic oil tank capacity: 132 gal
The cleaning of the hydraulic oil is made through electronically controlled pressure and return filters.
Contamination is signaled in the cabin.
Ready made hydraulic retrofit kits are available to customize requirements e. g. powering casing oscillators, auger drills etc.

Winches

Winch options:

Line pull (in 1000 lbs)	17.6 lbs	26.5 lbs
Rope diameter :	$^{51}/_{64}$"	$^{61}/_{64}$"
Drum diameter :	16.5"	19.9"
Rope speed ft/min	0–453	0–367
Rope capacity 1st layer	152 ft	152 ft

The winches stand out for their compact design and easy assembly.
Winch drive 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 free–fall 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 17600 lbs – without clutch, but with multi disc holding brake.

Equipment

Lattice boom of tubular construction up to 124' 8" (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, which 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 swing ring 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.
Variable swing speed control from 0 – 4.2 rpm.

Crawler

The track width of the undercarriage is changed hydraulically.
Crawler drive through axial piston motor. Hydraulically released spring loaded multi–disc brake, maintenance free crawler tracks, hydraulic chain tensioning device.
Flat or triple grouser track shoe.
Drive speed 0 – 1.24 mph.
Option:
2 speed hydraulic motor for higher travel speed.

Control

The control system–developed and manufactured by Liebherr – is designed to withstand temperature extremes 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 free fall winches.
The operation of the crane is done with 2 multi–directional joysticks, right for winch I and boom hoist drive, left for winch II and slewing gear.
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

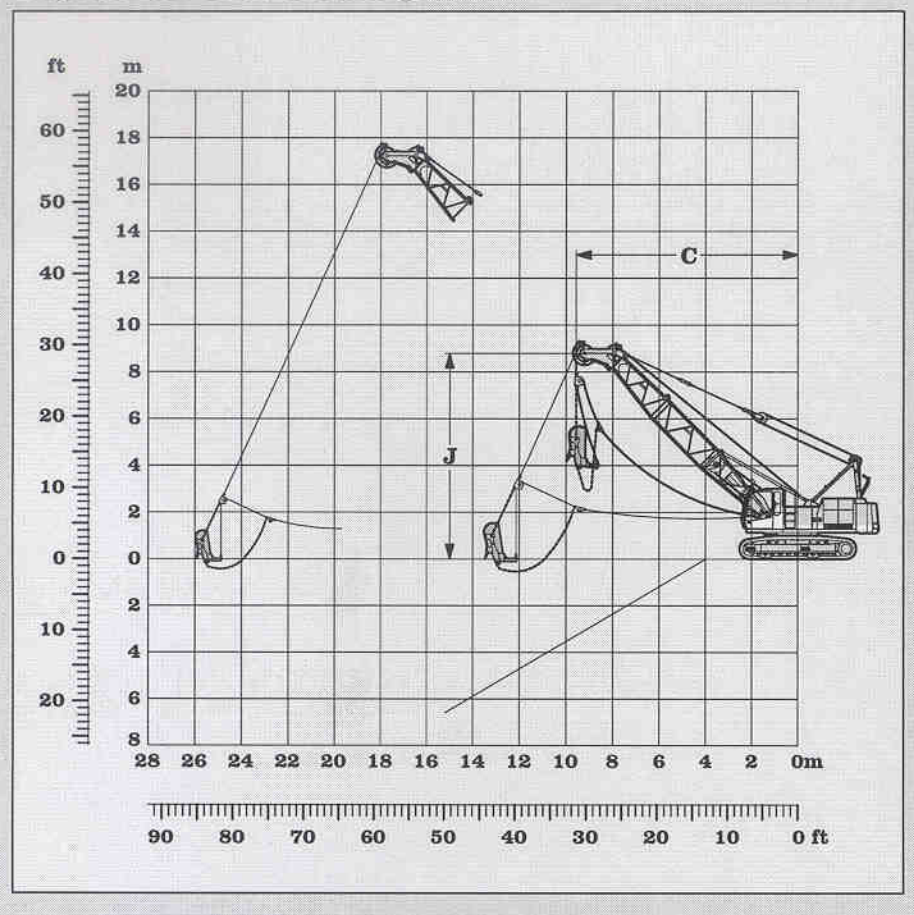
Two drum design with internally located planetary gearbox, axial piston hydraulic motor and hydraulically released spring loaded multi–disc brake.
Max. line pull 2 x 11000 lbs.
Rope diameter: $^{23}/_{32}$"
Max. line speed: 147 ft/min.
Two speed boom hoist option

Noise emission

Special sound proofing results in a very low noise level of 73 dB (A) at 52 ft (16m) radius.

Technical Description

14,000 lbs counterweight



The following equipment is required:

- Basicmachine with corresponding track shoes
- Second swing drive with free swing
- A–frame
- Boom foot 13ft (4m)
- Boom extension 10ft (3m) tubular steel
- Boom extension 20ft (6m) tubular steel
- Boom head 13ft (4m)
- Boom head with interchangeable pulleys
- Main winches according to specification
- Drag rope should be $^{5}/_{64}$" below nominal diameter
- Corresponding fair lead
- Corresponding ropes optional
- Dragline bucket optional

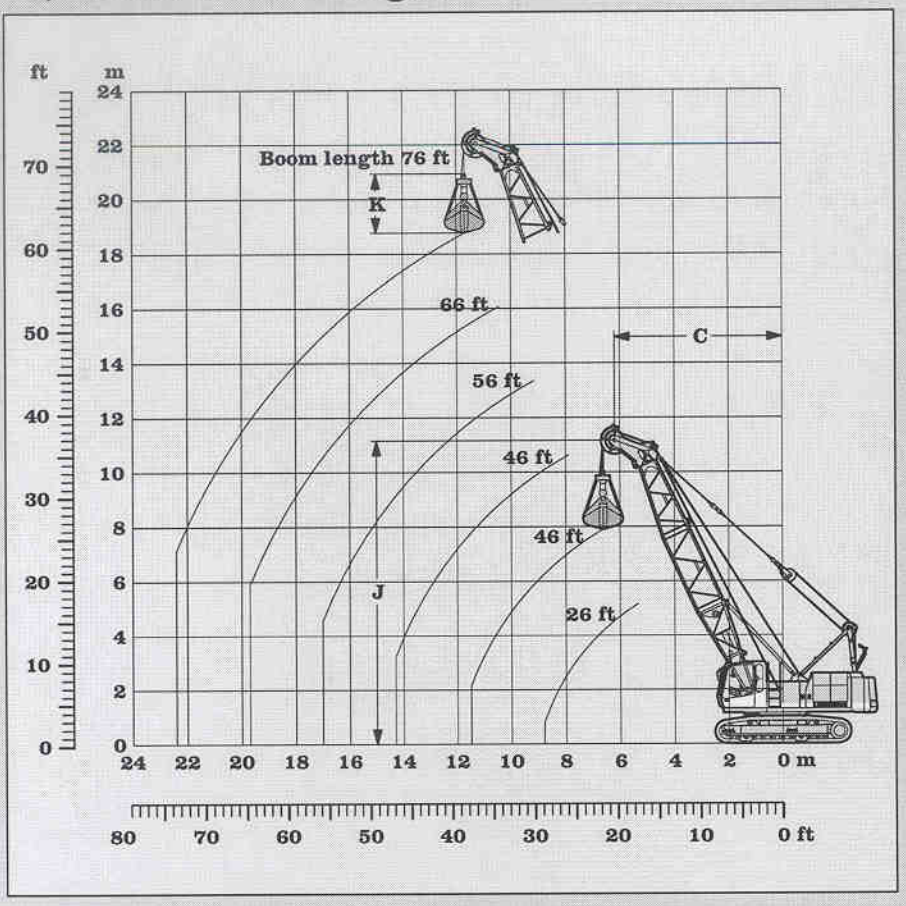
Capacities in 1000 lbs for boom lengths from 36ft (11m) to 75ft (23m) — **Counterweight 14,000 lbs**

	36ft (11m)			46ft (14m)			56ft (17m)			66ft (20m)			76ft (23m)		
Boom angle	C ft	J ft	lbs	C ft	J ft	lbs	C ft	J ft	lbs	C ft	J ft	lbs	C ft	J ft	t
45	31	29	18.3	38	36	13.7	45	43	10.6	52	50	8.4	59	58	3.0
40	33	27	16.7	41	33	12.6	48	39	9.7	58	45	7.5	63	52	2.7
35	35	24	15.6	43	30	11.5	51	35	8.8	59	41	6.8	67	47	2.4
30	37	21	14.8	45	26	10.8	53	31	8.1	62	36	6.4	70	41	2.2
25	38	18	13.9	47	22	10.1	56	27	7.7	65	31	5.9	73	35	2.1
Content of dragline bucket															
cu.yd	$2^{1}/_{2}$			2			$1^{1}/_{2}$			1			$^{3}/_{4}$		
m^3	1.91			1.58			1.15			0.76			0.57		

Max. capacities do not exceed 75 % of tipping load

Dragline equipment

14,000 lbs counterweight



The following equipment is required:

- Basic machine with corresponding track shoes
- A–frame
- Boom foot 13 ft (4 m)
- Boom extension 10 ft (3 m) tubular steel
- Boom extension 20 ft (6 m) tubular steel
- Boom head 13 ft (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 1000 lbs for boom lengths from 26ft (8m) to 76ft (23m): **Counterweight 14,000 lbs**

	26 ft (8 m)			36 ft (11 m)			46 ft (14 m)			56 ft (17 m)			66 ft (20 m)			76 ft (23 m)		
Boom angle	C ft	J ft	lbs	C ft	J ft	lbs	C ft	J ft	lbs	C ft	J ft	lbs	C ft	J ft	lbs	C ft	J ft	lbs
65	17	28	30.4	21	37	28.4	26	46	21.4	30	55	17.4	34	63	14.1	38	72	11.9
60	19	27	30.4	24	35	23.8	29	44	18.0	34	52	14.3	39	61	11.7	44	69	9.5
55	21	25	29.1	27	33	20.5	32	41	15.4	38	49	12.1	44	57	9.7	49	65	7.9
50	23	24	25.8	29	31	18.0	135	39	13.7	42	46	10.6	48	54	8.4	54	61	6.8
45	24	22	23.4	31	29	16.3	38	36	12.1	45	43	9.5	52	50	7.5	59	57	5.9
40	26	20	21.6	33	27	15.0	41	33	11.0	48	39	8.6	56	45	6.8	63	52	5.3
35	27	18	20.0	35	24	13.9	43	30	10.4	51	35	7.9	59	41	6.1	67	47	4.8
30	28	16	18.9	37	21	13.0	45	26	9.7	53	31	7.3	62	36	5.7	71	41	4.4
25	29	14	18.0	38	19	12.3	47	22	9.0	56	27	6.8	66	31	5.3	73	35	3.9

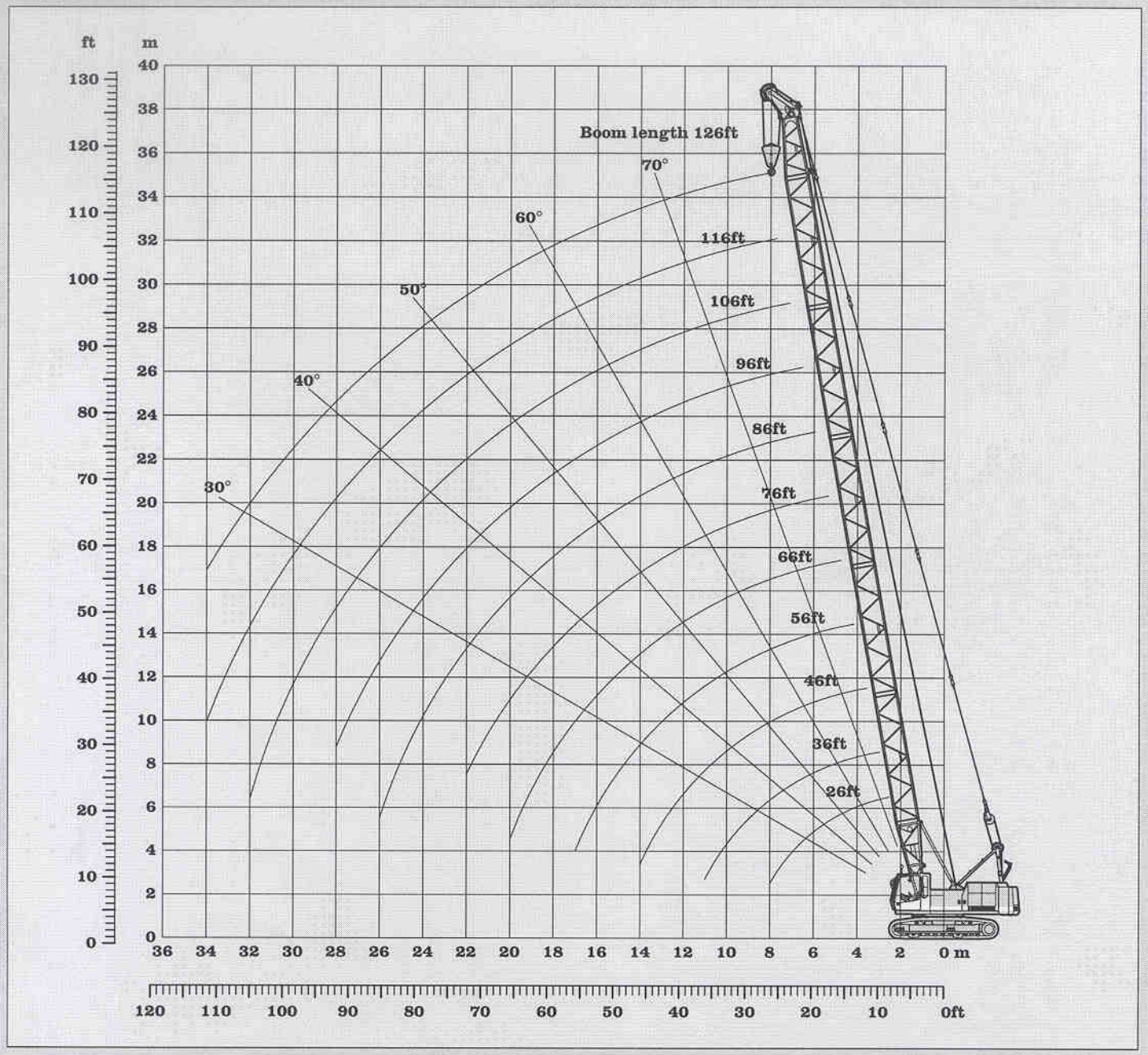
Max. capacities do not exceed 66.7 % of tipping load.

Load diagram restricted by safety factors of standard ropes:

Winches	17,600 lbs	26,500 lbs
Rope diameter	$^{51}/_{64}$"	$^{61}/_{64}$"
Calc. breaking load	80,000 lbs	115,500 lbs
1–rope clamshell	14,300 lbs	20,900 lbs
2–rope clamshell	21,800 lbs	31,700 lbs

Clamshell equipment

14,000 lbs Counterweight



The following equipment is required:

- Basic machine with corresponding track shoes
- A–frame
- Pulley block
- Boom foot 13ft (4m)
- Boom extension 10ft (3m) tubular steel
- Boom extension 20ft (6m) tubular steel
- Boom head 13ft (4m) 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 for track extended.
2. The lifting capacities stated do not exeeced 75 % of the tipping load.
3. The lifting capacities are indicated in lbs 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 center of rotation.
6. Crane standing on firm, level ground.
7. Indicated values on load chart are affected by off–lead operation, wind speeds, load under swing and stop/go movements.

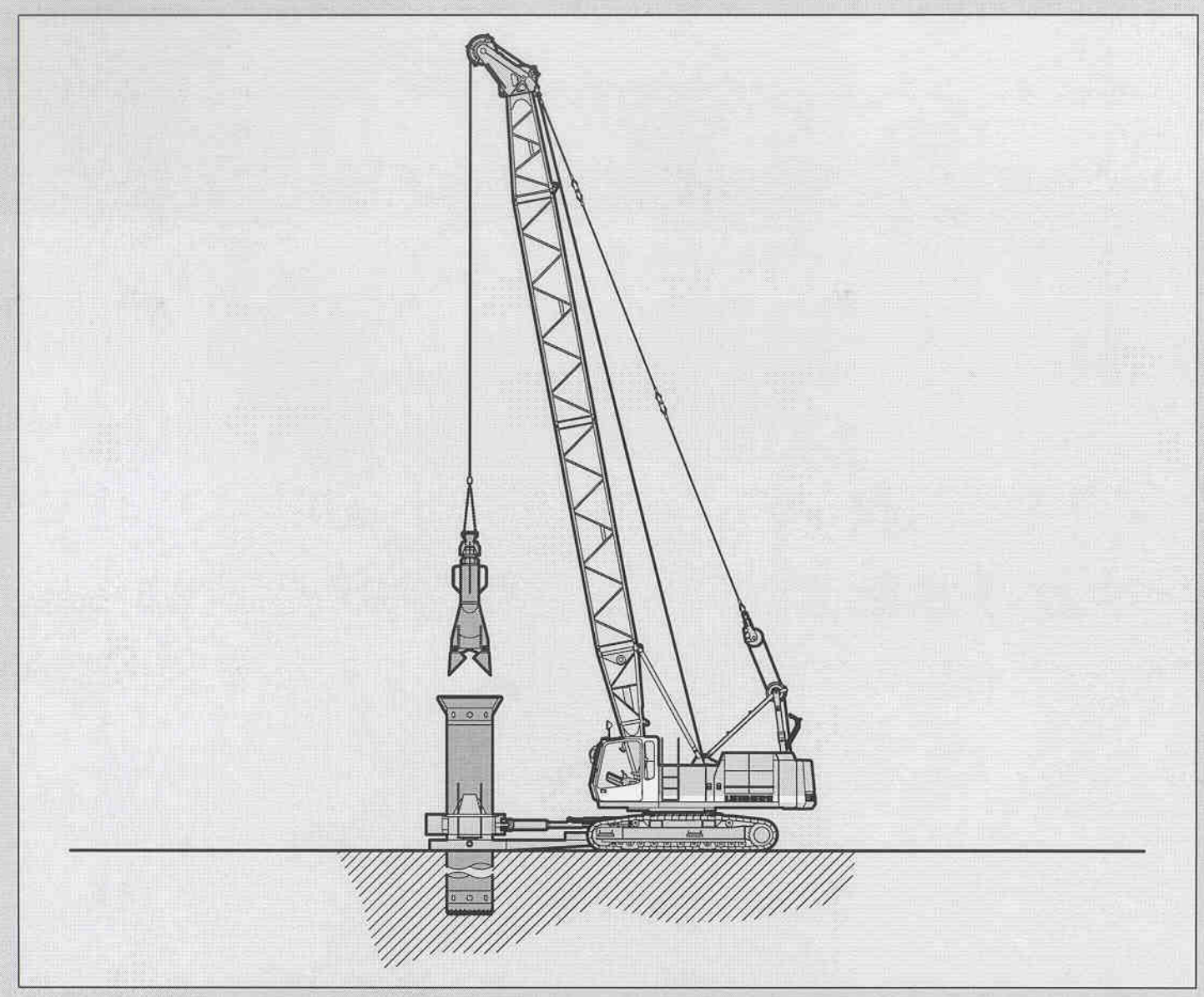
Crane configuration

Capacities in 1000 lbs for boom lengths from 26ft (8m) to 126ft (38m) :											Counterweight 14,000 lbs
Boom length	26ft (8m)	36ft (11m)	46ft (14m)	56ft (17m)	66ft (20m)	76ft (23m)	86ft (26m)	96ft (29m)	106ft (32m)	116ft (35m)	126ft (8m)
Radius inft (m)	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs	lbs
10ft (3.0m)	77.1										
11ft (3.5m)	77.1	72.3									
13ft (4.0m)	69.4	69.2	62.6								
15ft (4.5m)	56.2	56.2	56.0	54.9							
16ft (5.0m)	46.7	46.9	47.0	46.7	46.7						
18ft (5.5m)	40.5	40.3	40.3	40.1	39.9	39.7					
20ft (6.0m)	35.5	35.3	35.3	35.0	34.8	34.6	34.6				
21ft (6.5m)	31.5	31.3	31.3	31.0	30.8	30.6	30.4	30.4			
23ft (7.0m)	28.2	28.2	28.0	27.8	27.5	27.5	27.3	27.1	26.9		
25ft (7.5m)	25.6	25.5	25.3	25.1	24.9	24.6	24.7	24.5	24.2	24.0	
26ft (8.0m)	23.4	23.4	23.1	22.9	22.7	22.5	22.2	22.0	22.0	21.8	21.1
30ft (9.0m)		19.8	19.6	19.4	19.1	18.9	18.7	15.5	18.3	18.0	17.8
33ft (10.0m)		17.1	17.0	16.7	16.5	16.3	16.0	15.8	15.6	15.8	15.2
36ft (11.0m)		15.0	14.8	14.8	14.5	14.3	14.1	13.9	13.7	13.4	13.2
39ft (12.0m)			13.2	13.0	12.7	12.5	12.3	12.1	11.9	11.7	11.5
43ft (13.0m)			11.9	11.7	11.4	11.2	11.0	10.8	10.6	10.4	10.1
46ft (14.0m)			10.6	10.6	10.4	10.1	9.7	9.5	9.2	9.0	8.8
49ft (15.0m)				9.4	9.2	9.0	8.8	8.6	8.4	8.1	7.9
53ft (16.0m)				8.6	8.4	8.1	7.9	7.7	7.5	7.3	7.0
56ft (17.0m)				7.9	7.7	7.5	7.3	7.0	6.8	6.6	6.4
59ft (18.0m)					7.0	6.8	6.6	6.4	6.1	5.9	5.5
62ft (19.0m)					6.4	6.1	5.9	5.7	5.5	5.3	5.0
66ft (20.0m)					5.9	5.7	5.5	5.3	5.0	4.6	4.4
72ft (22.0m)						4.8	4.6	4.4	4.2	3.7	3.5
79ft (24.0m)							3.9	3.5	3.3	3.0	2.6
85ft (26.0m)							3.3	3.1	2.6	2.4	2.2
92ft (28.0m)								2.4	2.2	1.7	1.5
98ft (30.0m)									1.7	1.3	1.1
105ft (32.0m)									1.3	1.1	0.7
112ft (34.0m)										0.7	0.4

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

Optimal boom configuration for boom lengths between 26ft (8m) to 126ft (38m):												
	Length	Amount of boom extensions										
Boom foot	13ft (4m)	1	1	1	1	1	1	1	1	1	1	1
Boom extension	10ft (3m)		1		1		1		1		1	
Boom extension	20ft (6m)			1	1	2	2	3	3	4	4	5
Boom head	13ft (4m)	1		1	1	1	1	1	1	1	1	1
Boom length in (ft)		26	36	46	56	66	76	86	96	106	116	126

Load diagram for crane configuration



Casing oscillator

Winch options	**2 x 17,600 lbs**	**2 x 26,500 lbs**
Line pull in 2 x	**35,200 lbs**	**53,000 lbs**
Line speed 1st layer (ft/min)	**0–453**	**0–367**
Drilling diameter	**4' 3"**	**4' 3"**
Chisel weight	**13,200 lbs**	**26,400 lbs**
Maximum capacity over tilting edge and in longitudinal direction of undercarriage at 21ft (6.5m) radius.	**35,200 lbs**	**35,200 lbs**

Free fall winches with maintenance free, spring loaded multi–disc brake working in an oil bath.
Simultaneous operation of both winches is possible due to hydraulic system.
Hydraulic supply for casing oscillator
q = 2 x 52.8 gal/min.
P = 4350 psi max.
Mechanical connection casing oscillator on under–carriage.
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 / Europe**
Telephone (++ 43) 5525 – 606 – 0,
Telex 52141 lwn a, Telefax (++ 43) 5525 – 606 – 499

Presented by: