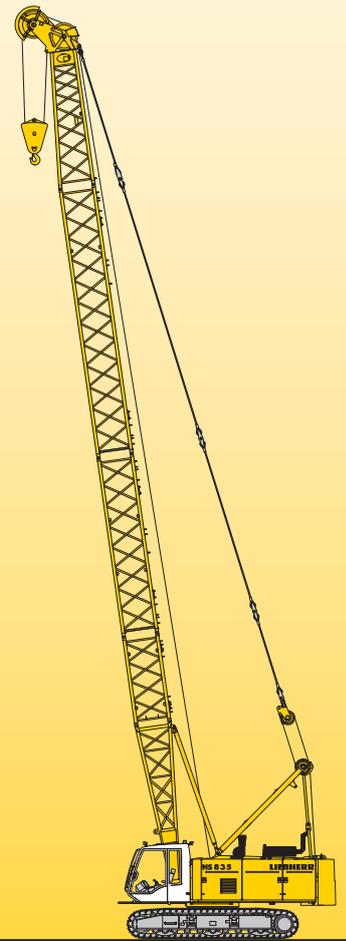


**Technical data**  
**Hydraulic crawler crane**

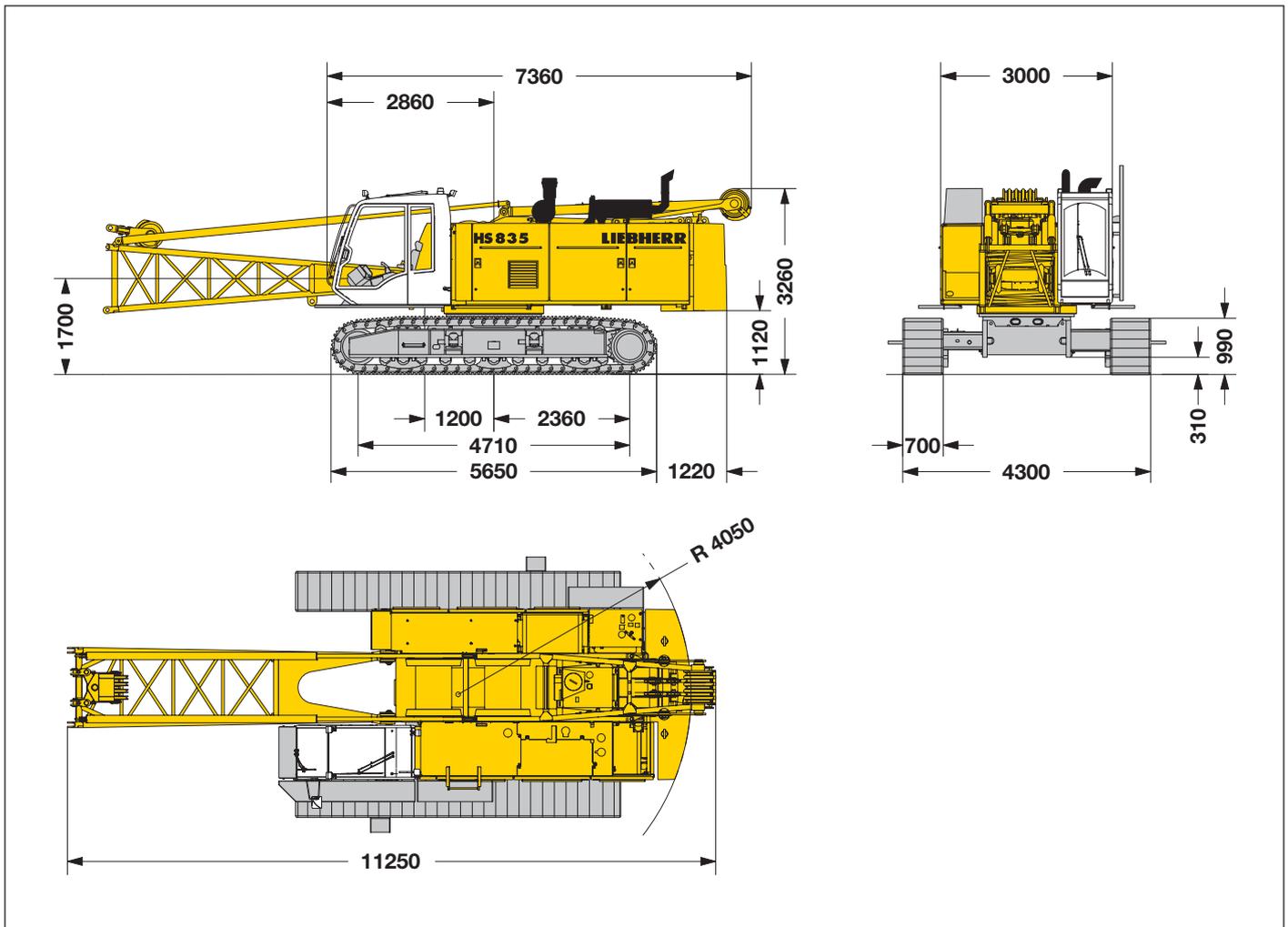
**HS 835 HD**  
Litronic®



**LIEBHERR**

# Dimensions

## Basic machine with undercarriage



### Operating weight

The operating weight includes the basic machine with HD undercarriage, 2 main winches 160 kN including wire ropes (60 m) and 11 m main boom, consisting of A-frame, pulley block, boom foot (5.5 m) and boom head (5.5 m), 16.4 t basic counterweight, 700 mm 3-web grousers and 50 t hook block.

Total weight \_\_\_\_\_ approx. 59.6 t

### Ground pressure

Ground bearing pressure \_\_\_\_\_ 0.91 kg/cm<sup>2</sup>

### Equipment

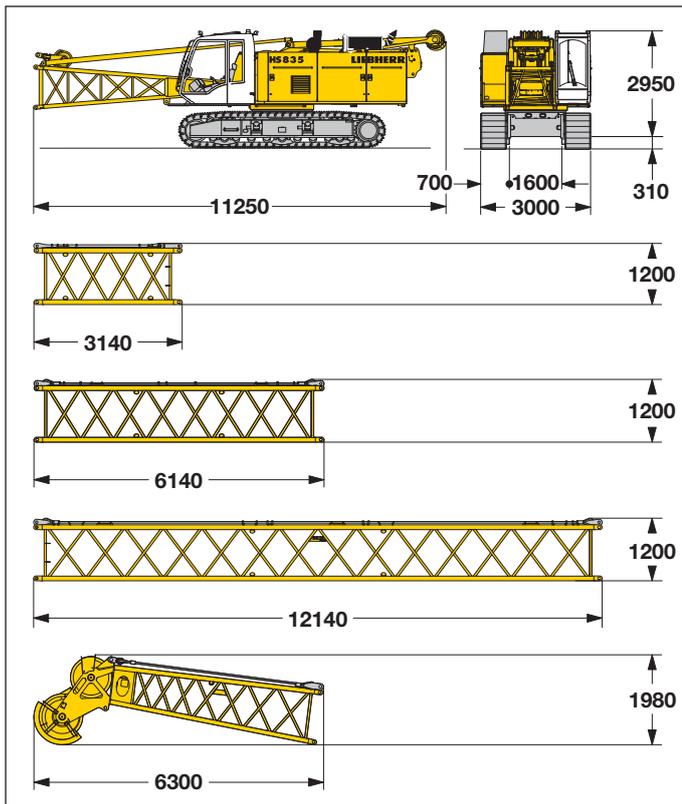
Main boom (No. 1310.17) max. length \_\_\_\_\_ 50 m  
 Main boom (No. 1311.18) max. length \_\_\_\_\_ 47 m  
 Fixed jib \_\_\_\_\_ upon request  
 Modular designed equipment for operation as crane, with dragline or clamshell.  
 For dragline operation, a rotating fairlead is fitted into the boom foot. This minimizes the rope angle to drum, which results in lower rope wear.

### Remarks

1. The lifting capacities stated are valid for lifting operation only (corresponding 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 center 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 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. 1310.17)



·) Including pendant ropes, without auxiliary equipment

### Basic machine

with HD undercarriage, boom foot, pulley block, A-frame, 2x 160 kN winches including wire ropes (60 m), without basic counterweight

Width	3000 mm
Weight	41600 kg

### Boom section (No. 1310.17)

**3 m**

Width	1430 mm
Weight*	300 kg

### Boom section (No. 1310.17)

**6 m**

Width	1430 mm
Weight*	480 kg

### Boom section (No. 1310.17)

**12 m**

Width	1430 mm
Weight*	880 kg

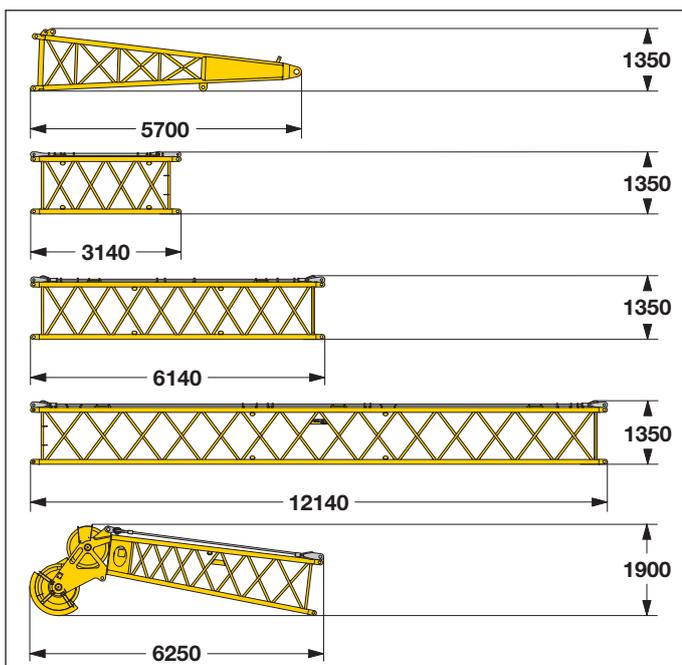
### Boom head\*\* (No. 1310.17)

Width	1430 mm
Weight*	1140 kg

\*\* Polyamide sheaves

# Transport dimensions and weights

## Main boom (No. 1311.18)



·) Including pendant ropes, without auxiliary equipment

### Boom foot (No. 1311.18)

Width	1430 mm
Weight*	1570 kg

### Boom section (No. 1311.18)

**3 m**

Width	1430 mm
Weight*	390 kg

### Boom section (No. 1311.18)

**6 m**

Width	1430 mm
Weight*	620 kg

### Boom section (No. 1311.18)

**12 m**

Width	1430 mm
Weight*	1085 kg

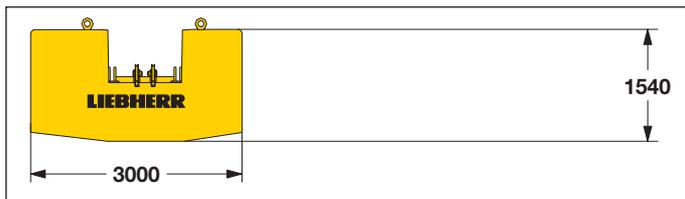
### Boom head\*\* (No. 1311.18)

Width	1430 mm
Weight*	1420 kg

\*\* Polyamide sheaves

# Transport dimensions and weights

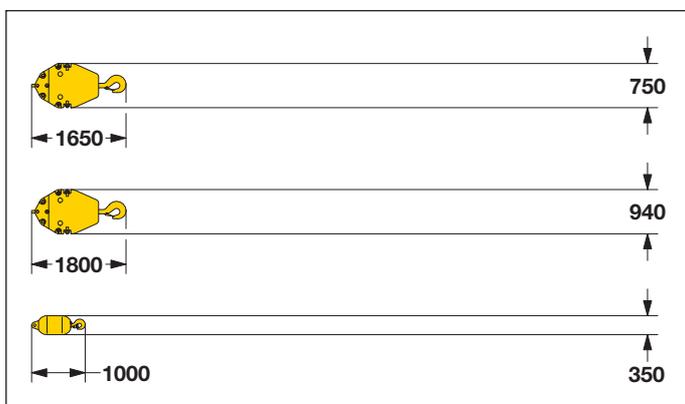
## Counterweight



### Counterweight

Width	1145 mm
Weight*	16400 kg

## Hooks



### 50 t hook block - 2 sheaves

Width	350 mm
Weight	900 kg

### 32 t hook block - 1 sheave

Width	350 mm
Weight	515 kg

### 12 t single hook

Width	350 mm
Weight	300 kg

# Technical description



## Engine

Power rating according to ISO 9249, 270 kW (362 hp) at 2000 rpm

Engine type \_\_\_\_\_ Liebherr D 936 L A6

Fuel tank \_\_\_\_\_ 790 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

Option:

Power rating according to ISO 9249, 180 kW (241 hp) at 2000 rpm

Engine type \_\_\_\_\_ Liebherr D 934 L A6

Fuel tank \_\_\_\_\_ 790 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

A double axial displacement pump with integrated gearbox supplies the open loop hydraulic system, allowing all functions to be operated simultaneously. To minimize peak pressure an automatic working pressure cut-off is integrated in the pump. All filters are electronically monitored.

The use of synthetic environmentally friendly (biodegradable) oils is possible. Ready made hydraulic retrofit kits are available to customize requirements e. g. powering casing oscillators, VM vibrators, hydraulic grabs, fixed leaders etc.

Working pressure \_\_\_\_\_ max. 350 bar

Oil tank capacity \_\_\_\_\_ 650 l



## Boom winch

Line pull \_\_\_\_\_ max. 2x 50 kN

Rope diameter \_\_\_\_\_ 18 mm

Boom up \_\_\_\_\_ 45 sec. from 15° to 82°



## Swing

Consists of roller bearing 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 – 4.5 rpm continuously variable, selector for 3 speed ranges to increase swing precision.



## 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) \_\_\_\_\_ 80 kN \_\_\_\_\_ 120 kN \_\_\_\_\_ 160 kN

Rope diameter \_\_\_\_\_ 20 mm \_\_\_\_\_ 24 mm \_\_\_\_\_ 26 mm

Drum diameter \_\_\_\_\_ 420 mm \_\_\_\_\_ 525 mm \_\_\_\_\_ 550 mm

Rope speed \_\_\_\_\_ 0–126 m/min · 0–130 m/min · 0–130 m/min

Rope capacity 1st layer — 42.5 m \_\_\_\_\_ 40 m \_\_\_\_\_ 41.5 m

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:

Tagline winch \_\_\_\_\_ 20 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.

3-web grousers \_\_\_\_\_ 700 mm

Drive speed \_\_\_\_\_ 0 – 1.15 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 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.

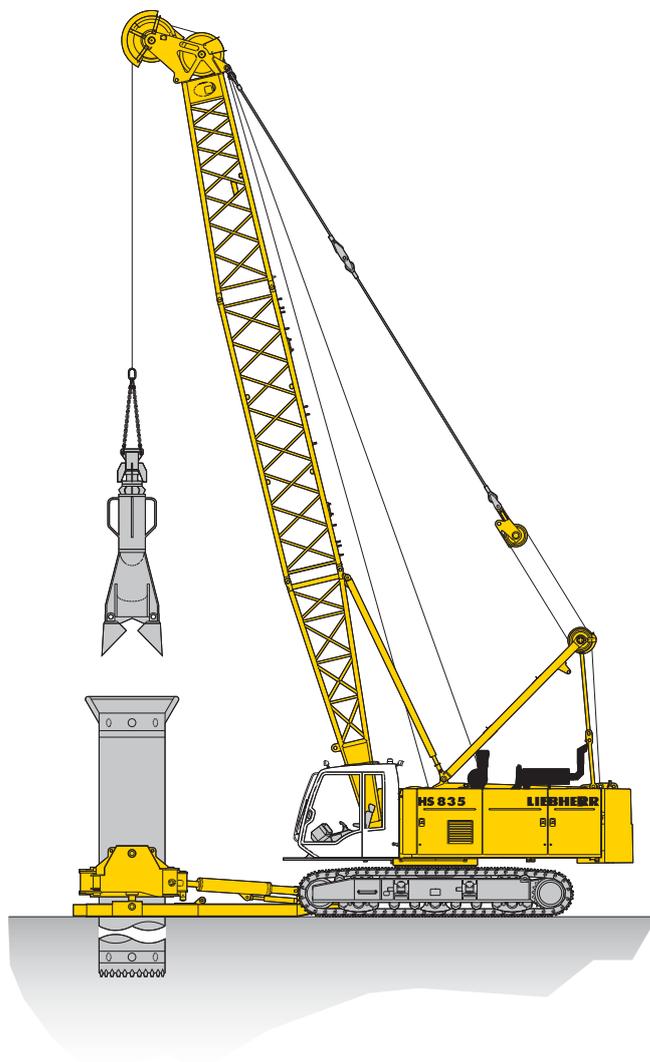
Operation: left joy stick for boom winch and swing, right two directional levers for winch I and II. Crawler control is actuated with the two central foot pedals. Additionally, hand levers can be attached to the pedals.

Options:

- Special demolition control system
- MDE: Machine data recording
- PDE: Process data recording
- GSM modem

# Equipment (main boom No. 1311.18 and 16.4 t counterweight)

## Casing oscillator



### Casing oscillator\*

Winch options	2 x 160 kN
Line speed 1st layer	0–130 m/min
Drilling diameter	1500 mm

\*) Load chart for duty cycle operation see page 8

# Equipment (main boom No. 1311.18 and 16.4 t counterweight)

## Slurry wall grab



### Slurry wall grab\*

Winch options	2 x 160 kN
Line speed 1st layer	0–130 m/min
Max. chisel weight	10 t

# Load chart for duty cycle operation (main boom No. 1311.18)

## 16.4 t counterweight

Capacities in metric tons for boom lengths (11 m - 32 m) - with 160 kN winches

Radius	Boom length (m)								Radius
	11	14	17	20	23	26	29	32	
(m)	t	t	t	t	t	t	t	t	(m)
4.2		24.2							4.2
5	24.2	24.2	24.2	24.2					5
6	24.0	23.9	23.9	24.0	22.9	20.0			6
7	22.9	22.4	21.7	21.0	20.5	19.7	17.5	15.3	7
8	19.0	19.0	18.7	18.0	17.4	16.8	16.1	15.3	8
9	16.1	16.1	16.0	15.7	14.9	14.6	13.9	13.4	9
10	13.9	14.0	14.0	13.6	13.2	12.5	12.2	11.5	10
12		10.9	10.9	10.7	10.2	9.8	9.5	8.9	12
14		8.8	8.8	8.6	8.2	7.8	7.5	7.1	14
16			7.3	7.0	6.7	6.3	6.1	5.8	16
18				5.8	5.5	5.3	5.0	4.7	18
20				5.0	4.7	4.4	4.2	3.9	20
22					3.9	3.7	3.6	3.3	22
24						3.2	3.1	2.8	24
26							2.7	2.5	26
28							2.3	2.2	28
30								2.0	30

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### Maximum capacity in duty cycle operation with standard ropes

Line pull	kN	80	120	160
Rope diameter	mm	20	24	26
Minimum breaking load	kN	365	517	615
Line pull - 1-rope duty cycle operation	t	8	12	16
Line pull - 2-rope duty cycle operation <sup>1)</sup>	t	12.1	18.2	24.2

- 1) Lifting a load exceeding the line pull of one winch is only allowed if it can be ensured that each individual winch is not overloaded. When working with a mechanical 2-rope grab the total load to be lifted is limited by the line pull of one winch. Rigging and ropes are part of the load.
- 2) Max. capacities in metric tons do not exceed 75% of tipping load. Crane standing on firm, horizontal ground.

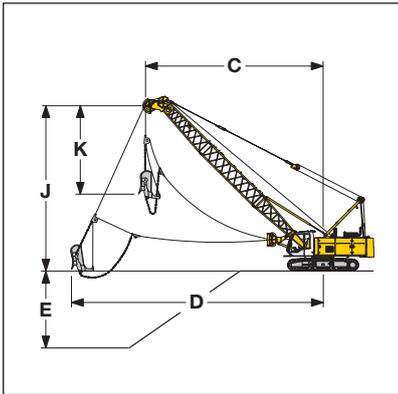
Capacities in duty cycle operation are for reference only and are not programmed in the LMI system.

All loads and counterweight configurations are max. values and must not be exceeded.

Weight of additional equipment on boom (e.g. walkways, hose drums etc.) must be deducted to get the net capacity.

# Dragline equipment

## 16.4 t counterweight - main boom (No. 1311.18)



Capacities in metric tons for boom lengths (14 m - 26 m) counterweight 16.4 t

alpha	Boom length (m)																	
	11			14			17			20			23			26		
	C	J	t	C	J	t	C	J	t	C	J	t	C	J	t	C	J	t
	(m)	(m)		(m)	(m)		(m)	(m)		(m)	(m)		(m)	(m)		(m)	(m)	
45	9.8	9.0	14.3	11.9	11.1	11.0	14.1	13.2	8.7	16.2	15.4	6.8	18.3	17.5	5.4	20.4	19.6	4.2
40	10.4	8.3	13.2	12.7	10.2	10.1	15.0	12.1	8.0	17.3	14.0	6.2	19.6	16.0	4.8	21.9	17.9	3.7
35	11.0	7.5	12.3	13.4	9.2	9.4	15.9	10.9	7.4	18.3	12.6	5.7	20.8	14.3	4.4	23.2	16.1	3.4
30	11.4	6.6	11.6	14.0	8.1	8.8	16.6	9.6	6.9	19.2	11.1	5.3	21.8	12.6	4.0	24.4	14.1	3.1
25	11.8	5.7	11.1	14.5	7.0	8.4	17.3	8.3	6.6	20.0	9.5	5.0	22.7	10.8	3.7	25.4	12.1	2.9

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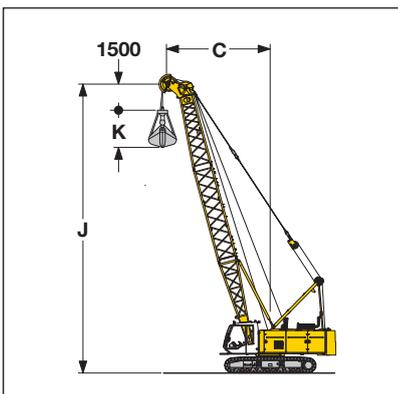
Max. capacities in metric tons do not exceed 75% of tipping load.  
Capacities in duty cycle operation are for reference only and are not programmed in the LMI system.  
The size of the bucket has to be determined according to local conditions.

### Digging diagram

- C = Radius / dumping radius
- D = Max. digging radius = approx.  $C + 1/3$  to  $1/2 J - K$
- E = Digging depth = approx. 40 - 50% of C
- J = Height to centre rope pulley boom head
- K = Length of dragline bucket (according to manufacturer's specification)

# Clamshell equipment

## 16.4 t counterweight - main boom (No. 1311.18)



Capacities in metric tons for boom lengths (14 m - 26 m) counterweight 16.4 t

alpha	Boom length (m)																	
	11			14			17			20			23			26		
	C	J	t	C	J	t	C	J	t	C	J	t	C	J	t	C	J	t
	(m)	(m)		(m)	(m)		(m)	(m)		(m)	(m)		(m)	(m)		(m)	(m)	
65	6.8	11.4	21.0	8.1	14.1	16.5	9.4	16.8	13.5	10.6	19.5	11.3	11.9	22.3	9.7	13.2	25.0	8.4
60	7.6	10.9	17.8	9.1	13.5	13.9	10.6	16.1	11.3	12.1	18.7	9.4	13.6	21.3	8.0	15.1	23.9	6.9
55	8.4	10.3	15.5	10.1	12.8	12.0	11.9	15.2	9.7	13.6	17.7	8.1	15.3	20.1	6.8	17.0	22.6	5.8
50	9.1	9.7	13.9	11.1	12.0	10.7	13.0	14.3	8.6	14.9	16.6	7.1	16.9	18.9	6.0	18.8	21.2	4.9
45	9.8	9.0	12.6	11.9	11.1	9.7	14.1	13.2	7.7	16.2	15.4	6.4	18.3	17.5	5.3	20.4	19.6	4.2
40	10.4	8.3	11.6	12.7	10.2	8.9	15.0	12.1	7.1	17.3	14.0	5.8	19.6	16.0	4.8	21.9	17.9	3.7
35	11.0	7.5	10.8	13.4	9.2	8.2	15.9	10.9	6.6	18.3	12.6	5.3	20.8	14.3	4.4	23.2	16.1	3.4
30	11.4	6.6	10.2	14.0	8.1	7.8	16.6	9.6	6.1	19.2	11.1	5.0	21.8	12.6	4.0	24.4	14.1	3.1
25	11.8	5.7	9.8	14.5	7.0	7.4	17.3	8.3	5.8	20.0	9.5	4.7	22.7	10.8	3.7	25.4	12.1	2.9

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Max. capacities in metric tons do not exceed 66.7% of tipping load.  
Capacities in duty cycle operation are for reference only and are not programmed in the LMI system.

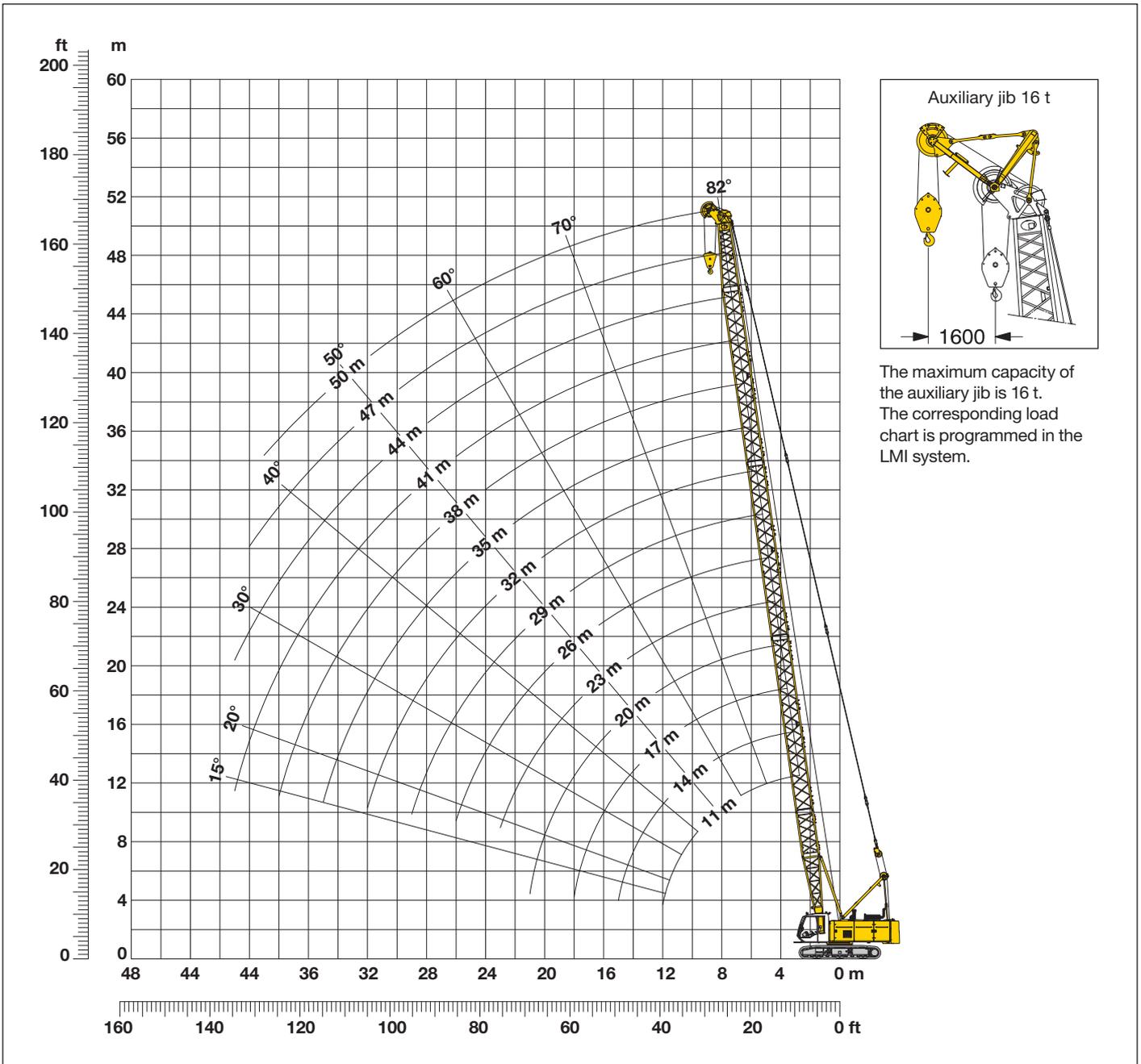
### Working diagram

- 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)

# Main boom (No. 1310.17)

## 16.4 t counterweight

# 82° - 15°



## Main boom configuration (No. 1310.17)

### Configuration for boom lengths (11 m - 50 m)

	Length	Amount of boom extensions													
		1	1	1	1	1	1	1	1	1	1	1	1	1	1
Boom foot	5.5 m	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Boom section	3.0 m		1		1		1		1		1		1		1
Boom section	6.0 m			1	1		1		1		1		1		1
Boom section	12.0 m					1	1	1	1	2	2	2	2	3	3
Boom head	5.5 m	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

# Load chart for lift crane operation (main boom No. 1310.17)

## 16.4 t counterweight

Capacities in metric tons for boom lengths (11 m - 50 m) - with 160 kN winches

Radius (m)	Boom length (m)														Radius (m)	
	11	14	17	20	23	26	29	32	35	38	41	44	47	50		
3.8	t	47.9														3.8
4		46.5														4
5	38.3	36.5	34.7	33.0												5
6	30.5	29.3	28.0	26.8	25.7	24.7	23.8									6
7	24.3	24.3	23.4	22.5	21.7	21.0	20.2	19.5	18.8	18.1						7
8	20.0	20.1	20.1	19.4	18.7	18.1	17.5	17.0	16.4	15.9	15.4	14.4				8
9	17.0	17.0	17.0	16.9	16.4	15.9	15.4	15.0	14.5	14.1	13.6	13.2	12.8	12.2		9
10	14.7	14.7	14.7	14.7	14.6	14.2	13.7	13.3	12.9	12.6	12.2	11.8	11.5	11.1		10
12	11.5	11.5	11.6	11.5	11.5	11.5	11.2	10.9	10.6	10.3	10.0	9.7	9.4	9.2		12
14		9.3	9.4	9.3	9.3	9.3	9.2	9.1	8.9	8.6	8.4	8.1	7.9	7.7		14
16			7.8	7.7	7.8	7.7	7.6	7.6	7.5	7.3	7.1	6.9	6.7	6.4		16
18			6.6	6.6	6.6	6.5	6.5	6.4	6.3	6.3	6.1	5.9	5.6	5.4		18
20				5.6	5.6	5.6	5.5	5.5	5.4	5.3	5.2	5.0	4.8	4.6		20
22					4.9	4.8	4.8	4.7	4.7	4.6	4.5	4.4	4.2	4.0		22
24						4.2	4.2	4.1	4.0	4.0	3.9	3.8	3.6	3.4		24
26						3.7	3.7	3.6	3.5	3.5	3.4	3.3	3.1	3.0		26
28							3.2	3.1	3.1	3.0	3.0	2.9	2.8	2.6		28
30								2.8	2.7	2.6	2.6	2.5	2.4	2.3		30
32								2.4	2.4	2.3	2.3	2.2	2.1	2.0		32
34									2.1	2.0	2.0	1.9	1.8	1.7		34
36										1.8	1.7	1.6	1.6	1.5		36
38										1.5	1.5	1.4	1.3	1.3		38
40											1.3	1.2	1.1	1.1		40
42												1.0				42

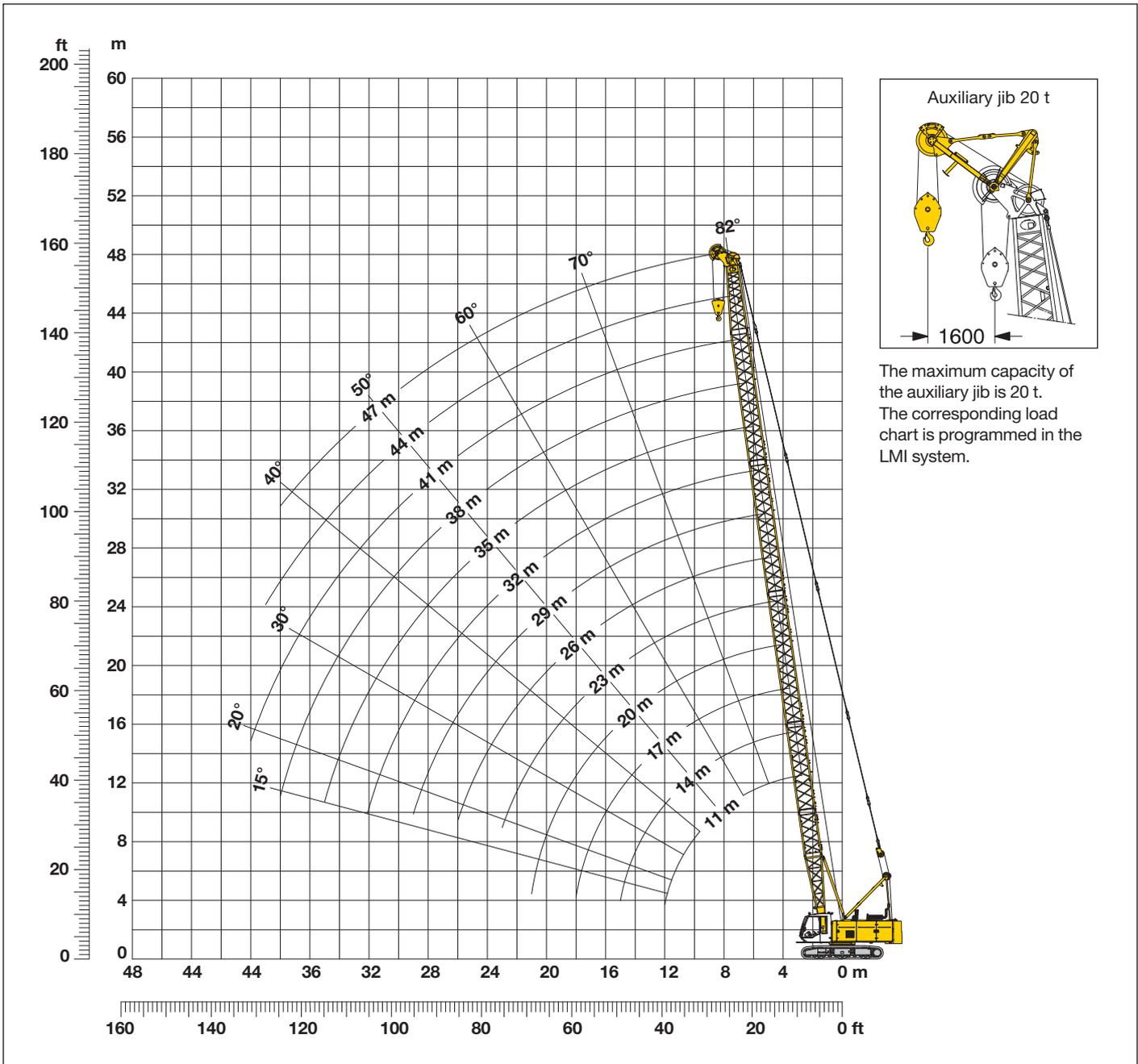
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Above load chart is for reference only. For actual lift duty please refer to load chart in operator's cab or manual.

# Main boom (No. 1311.18)

## 16.4 t counterweight

# 82° - 15°



## Main boom configuration (No. 1311.18)

### Configuration for boom lengths (11 m - 47 m)

	Length	Amount of boom extensions												
		11	14	17	20	23	26	29	32	35	38	41	44	47
Boom foot	5.5 m	1	1	1	1	1	1	1	1	1	1	1	1	1
Boom section	3.0 m		1		1		1		1		1		1	
Boom section	6.0 m			1	1			1	1			1	1	
Boom section	12.0 m					1	1	1	1	2	2	2	2	3
Boom head	5.5 m	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

# Load chart for lift crane operation (main boom No. 1311.18)

## 16.4 t counterweight

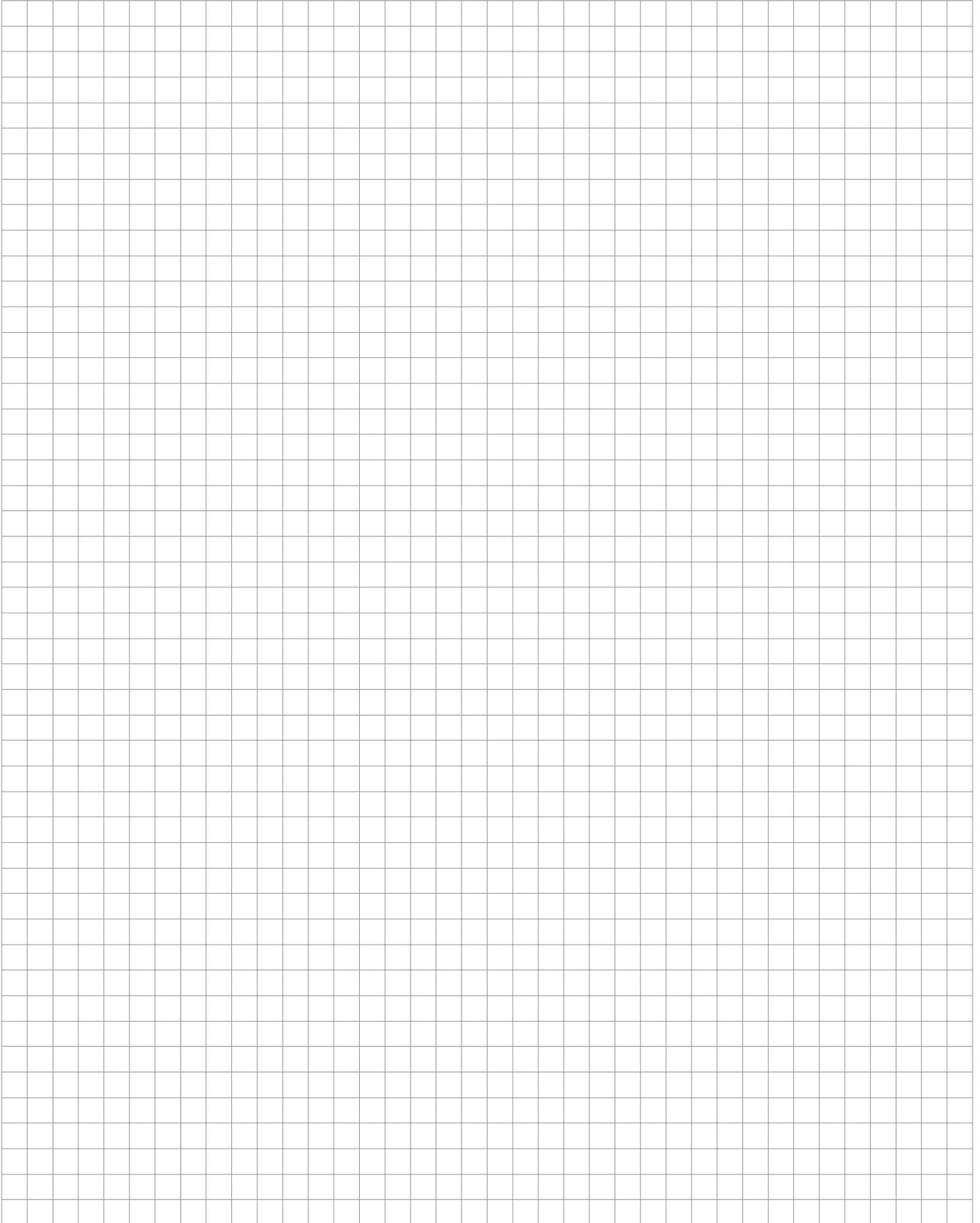
Capacities in metric tons for boom lengths (11 m - 47 m) - with 160 kN winches

Radius (m)	Boom length (m)												Radius (m)		
	11	14	17	20	23	26	29	32	35	38	41	44		47	
3.4	50.0														3.4
4	47.3	46.5													4
5	38.2	36.5	34.6	32.9	31.3	29.9	27.3								5
6	30.5	29.2	28.0	26.8	25.7	24.6	23.6	22.7	21.8	20.3					6
7	24.3	24.3	23.4	22.5	21.7	20.9	20.1	19.4	18.7	18.0	17.4	16.5	15.0		7
8	20.0	20.1	20.0	19.3	18.7	18.0	17.4	16.8	16.3	15.7	15.2	14.7	14.2		8
9	17.0	17.0	17.0	16.9	16.3	15.8	15.3	14.8	14.3	13.9	13.4	13.0	12.5		9
10	14.7	14.7	14.7	14.6	14.5	14.0	13.6	13.2	12.8	12.4	12.0	11.7	11.3		10
12	11.5	11.3	11.5	11.5	11.4	11.4	11.1	10.8	10.4	10.1	9.8	9.5	9.2		12
14		9.3	9.3	9.3	9.2	9.2	9.1	8.9	8.7	8.4	8.1	7.9	7.6		14
16			7.7	7.7	7.7	7.6	7.5	7.4	7.4	7.1	6.9	6.6	6.4		16
18			6.5	6.5	6.5	6.4	6.3	6.2	6.2	6.1	5.9	5.7	5.5		18
20				5.5	5.5	5.5	5.4	5.3	5.2	5.1	5.0	4.8	4.6		20
22					4.8	4.7	4.6	4.5	4.5	4.4	4.3	4.2	4.0		22
24						4.1	4.0	3.9	3.9	3.8	3.7	3.6	3.4		23
26						3.6	3.5	3.4	3.4	3.3	3.2	3.1	2.9		26
28							3.1	3.0	2.9	2.8	2.7	2.6	2.5		28
30								2.6	2.5	2.4	2.4	2.2	2.2		30
32								2.3	2.2	2.1	2.0	1.9	1.8		32
34									1.9	1.8	1.7	1.6	1.5		34
36										1.6	1.5	1.4	1.3		36
38										1.3	1.3	1.1	1.1		38
40											1.0				40

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

# Notes



# Notes

