LIEBHERR
TELESCOPIC BOOM MOBILE CRANE

Type LTM 1040

Load charts

and notes on crane operation

Load charts' N° 69 / 172-02

Pages : 1 up to 20

Crane-No.	
Date	

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TABLE OF CONTENTS

Notes on crane operation

A) Important notes

1. The load capacities quoted in these charts apply to the telescopic boom **without** the folding fly jib attached in the transport or the working position. If the folding fly jib is attached to the telescopic boom, the load capacities must be reduced (see the following chart).

position of the folding fly jib	Telescopic boom lengths in meters				
	9,5	16,3	23,2	28,4	30
8,3 m jib in transport position at the side of boom pivot section	0,2	0,15	0,1	0,1	0,1
8,3 m jib in working position at the boom head section	0,9	0,75	0,7	0,7	0,7
14,5 m jib in transport position at the side of boom pivot section	0,3	0,2	0,15	0,1	0,1
6,2 m jib head section at the side of boom pivot and 8,3 m jib in working position at the boom head section	1,0	0,85	0,75	0,75	0,75
14,5 m jib in working position at the boom head section	1,4	1,15	1,05	1,0	0,95
Tele I Tele II Tele III	0 0 0	33 33 33	66 66 66	92 92 92	100 100 100

Telescoping condition of the telescopic sections.

2. The radius data quoted here are measured from slewing axis of the crane. They take into account boom flexing under its own weight and the weight of the nominal load.
3. The load capacity data in the load charts are given in metric tons and do not exceed 75% of the tipping load.
4. Boom extension settings other than those specifically stated in the load charts are prohibited.
5. The lifting capacities include the weights of hook block and sling ropes. The weight of load must be reduced by these weights.
6. The stated lifting capacities include the weight of the supporting and load-lifting equipment, and lashing material. The permissible weight of the load to be lifted is therefore reduced by the weights of these items.

B) There is a risc of overturning:

1. if the slewing platform is turned away from the longitudinal axis of the truck chassis with the crane free-standing. To avoid tipping, the outrigger supports must be extended,
2. if the load limits and working radius data shown in the load charts are exceeded,
3. if the crane is not supported correctly on all 4 hydraulic outrigger supports and levelled accurately,
4. if sliding arms of the hydraulic supports are not secured by bolts.
5. if the 4 hydraulic outrigger support pads are not underlaid by suitable material according to the nature of ground surface,
6. if the sliding arms for the hydraulic supports are not extended and locked in accordance with the relevant load chart.
7. if crane movements were controlled carelessly, so that the suspended load begins to swing,
8. if the permissible radius range is exceeded with the telescopic boom fully extended and the folding fly jib attached.

C) Hoisting gears

1. Main hoisting gear
   It is rated at a maximum rope pull of 42 kN. This figure must never be exceeded. Select the minimum number of rope runs accordingly, to suit the weight of the load.
2. Auxiliary hoisting gear
   The precautions stated under "Main hoisting gear" apply here too. If no auxiliary hoisting gear is installed, a additional counterweight must be attached to the slewing platform.

D) Hoisting rope reeving

According to the maximum rope pull and the weight of the load the hoisting rope must be reeved between boom head and hook block.

Rope reeving	Max. load capacity
1	4,25
2	8,43
3	12,56
4	16,61
5	20,61
6	24,56
7	28,44
8	32,26
9	36,03
10	40,00

Put the rope reeving switch at the Safe Load Indicator control and display unit to the position according to the actual number of rope runs.

Note
If rope reeving data are given in a load chart, it **must** be observed.

E) Telescopic boom

1. The boom has four telescopic sections. Note that its load capacity is subject to strict limits. The loads stated in the tables must never be exceeded.
2. Details of the telescopic sections to be extented to accommodate various loads must always be complied with exactly.
3. In all normal circumstances, extend the boom off-load to the desired length, and only then pick up the load. It is even possible, to extend or to retract the boom under part-load. This part load is dependent on the lubrication of the bearing pads and the usable length of the telescopic sections.

F) Folding fly jib

1. The folding fly jib is an extension of the 28,4 or 30 m telescopic boom. In the transport position it is folded against the side of the boom pivot.
2. The folding fly jib can be mounted either at an angle of 0° (zero degrees) ,15° (fifteen degrees) or 30° (thirty degrees) to the telescopic boom.

G) Safe Load Indicator

The built-in electronic Safe Load Indicator (Load Moment Limiter) trips if the permissible load moment limit is exceeded, and shuts down movement of the hoisting gear, boom luffing gear and boom telescoping gear. However, movements having the effect of reducing the load moment can still be performed.

1. The Safe Load Indicator must be set to the two-digit **SLI CODE** number corresponding with the crane's operating and equipment modes.
2. The Safe Load Indicator must never be used during regular load handlings as a means of shutting down the crane. Before each load handling movement, the crane operator must ascertain the weight of the load.
3. Display instruments in the crane cab enable the operator to check the crane's working range and margin of spare capacity from the load limit at any time.
4. A hoisting limit switch prevent the hook block from running up to the boom head. Its correct functioning must be checked each time before the crane is operated.
5. Geared cam limit switches on the hoisting gears ensure that 3 safety windings remain on the hoisting gear drums. When the last section of rope is reached, visual monitoring must also be carried out to ensure that the three safety windings remain on the drums. The limit switches must be reset if the hoisting gear is rotated too far in the hoisting direction, and after a new rope is fitted.
6. The crane operator must ensure that the load moment limiter is functioning at the start of each working session. Note that the crane manufacturer will not accept any liability whatsoever for damage to the crane or of consequential damage occuring as a result of non-functioning or overriding of the overload protection system.

H) Crane operation "unsupported" and travel movements with suspended loads.

The crane must not work unsupported (on tyres) and it must not travel with suspended load unless the following conditions are fulfilled:

1. The boom must only be extended to a maximum length of 16,3 m.
2. The ground or road surface and the subsoil must be capable of withstanding the crane's max. service weight of 40 t + the weight of the load.
3. The surface bust be smooth and level.
4. The crane must not be driven across a slope with the load suspended.
5. The slewing platform must be aligned with the crane's longitudinal axis over rear and locked mecanically to the undercarriage.
6. The load and radius limits stated in the load charts for "unsupported (on tyres)"must not be exceeded.
7. The prescribed pressure (see load chart "unsupported") must be present in all tyres.
8. The 4 outrigger support jacks should always be extended so that the pads are app. 10 cm - 15 cm above the ground.
9. The suspended load must be lashed to prevent it from swinging.
10. The crane may only travel with a suspended load in the 1st gear and off-road range.
11. The hydraulic axle locking system must be operated, so that the vehicle's axles are rigid with the chassis (program 1).

I) Max. permissible wind speeds.

Boom lengths (m)	Wind speed (m/s)
9,5 16,3	14,3
23,2	12,8
28,4 30	11,1
Crane operation with folding fly jib	9,0

If the wind speed exceeds the above stated values, crane operation must be stopped and the boom lowered.

K) Hook blocks and hooks

	Lifting capacity rating	No. of sheeves	Tare weight
Hook block	40 t	5	350 kg
Hook block	28 t	5	350 kg
Hook block	12,5 t	1	180 kg
Hook block	4,2 t	--	110 kg

L) The operation modes

T

Crane operation with telescopic boom
Crane supported, 360 ° slewing
Crane supported, working over rear
wide " b " or reduced " r " supporting base.

Crane freestanding on tyres " R "

TK

Crane operation with folding fly jib
Length 8,3 m or 14,5 m
Angle between boom and folding jib 0 °, 15 ° or 30 °
Wide supporting base only

M) Considering the influence of wind

Crane operations are only permissible up to the wind speed specified in the load capacity table to be used for the working boom length.
The wind area A_W of the load must not exceed certain values. These values can be taken from diagram 1 in the following.

If the wind area of the load is larger, crane operations are only permissible up to a correspondingly lower wind speed (note following example).

Example:

-Weight of load to be lifted:	50 t
-Permissible wind speed from load capacity table:	9 m/s
-Actual wind area of the load A_{Wr}:	100 m²
Permissible wind area of the load A_{Wz}, diagram 1:	55 m²

For a wind speed of 9 m/s, diagram 2 yields a dynamic pressure of 50 N/m².
Thus, a force F is exerted on a load with the permissible wind area A_{Wz} of 55 m², **F** being:

F = dynamic pressure p X wind area A_{Wz} = 50 N/m² X 55m² = 2750N

For the actual wind area A_{Wr} of 100 m², the following permissible dynamic pressure is yielded for the same force F:

$$p = \frac{F}{A_{Wr}} = \frac{2750\ N}{100\ m^2} = 27{,}5\ N/m^2$$

Thus, a maximum permissible wind speed of 6,7 m/s is taken from diagram 2.

DANGER: **Before beginning crane operations, the crane operator must consult with the local meteorological authorities for information on the anticipated wind speeds. If impermissible wind speeds are expected, hoisting loads is prohibited!**

DANGER: **Exceeding the maximum permissible wind speeds as specified in the load capacity table is prohibited, even if the wind area of the load is less than what the calculation yields.**

Diagram 1
Wind area of the load

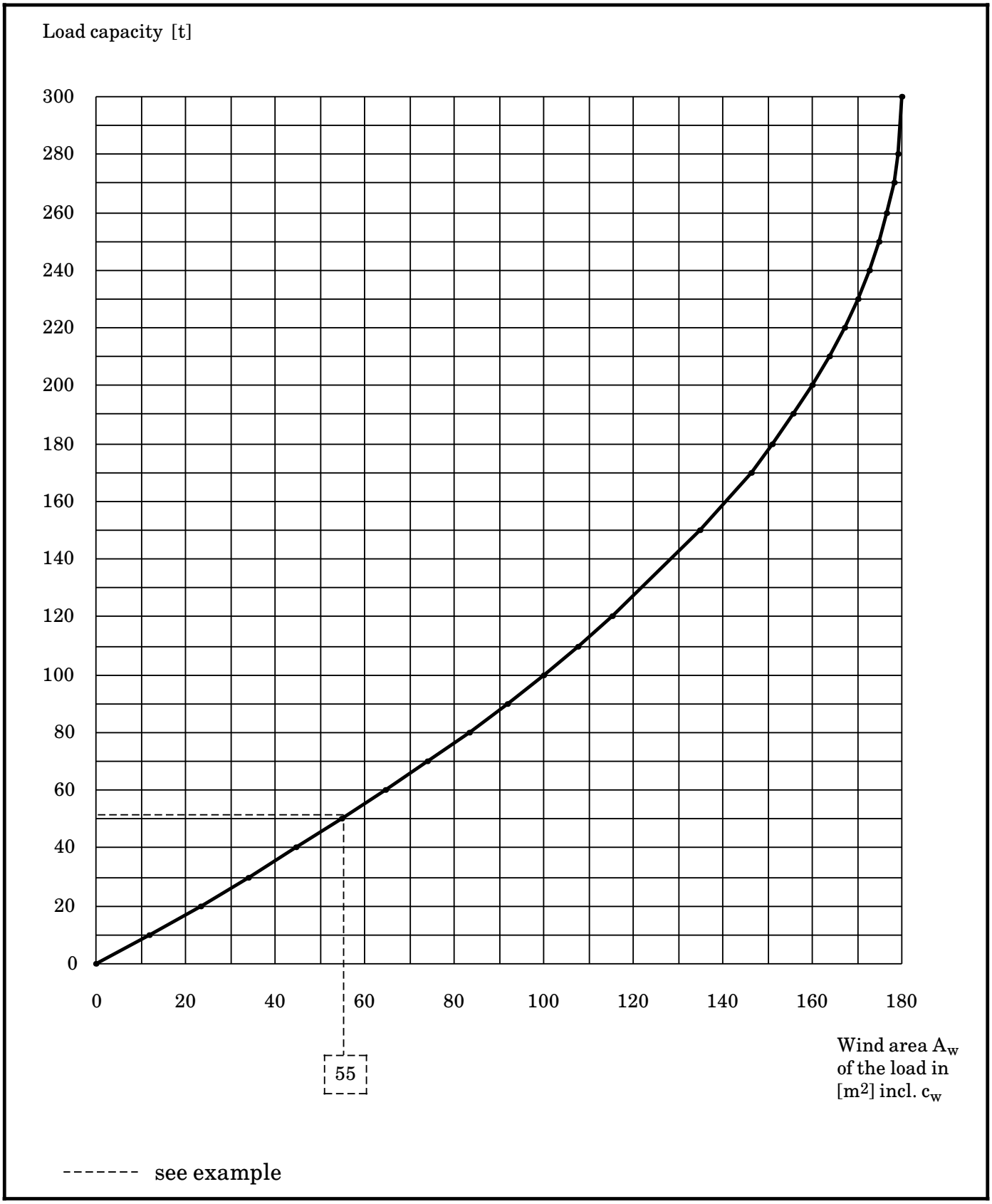
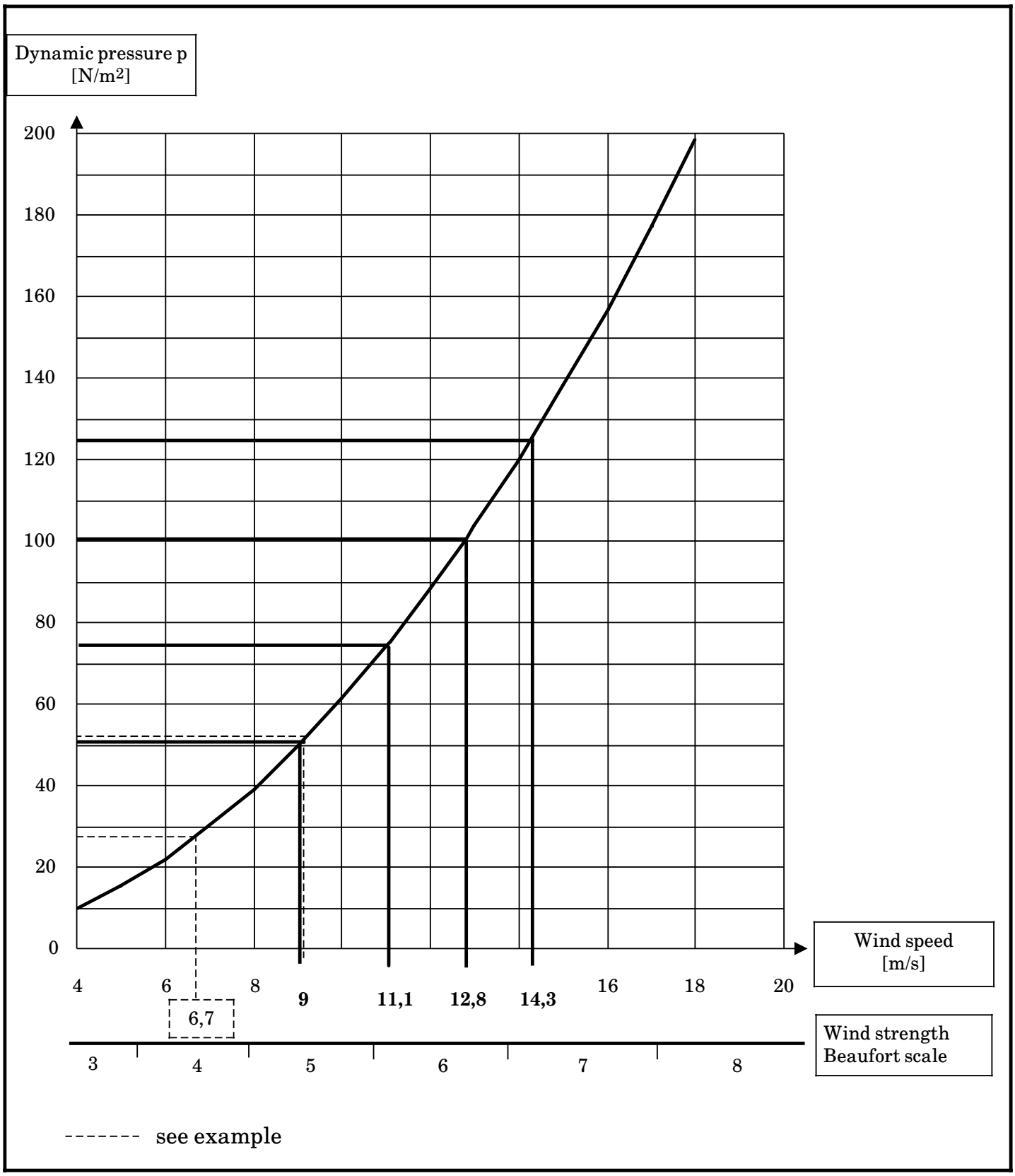


Diagram 2
Wind speed, wind strength, dynamic pressure



Load charts LTM 1040-3

Crane supported, supporting base area: 6,7 m × 6,2 m,
Working range: 360 ° (* over rear)
9,0 t counterweight or 8,5 t counterweight

TAB 69 544
360 °; o. r.
b
9,0 t / 8,5 t

Working radius m	Telescopic boom lengths in m					
	9,5*	9,5	16,3	23,2	28,4	30,0
3,0	40	40				
3,5	36,5	35	22,5			
4,0	33,5	31,5	22,5	14,0		
4,5	30,5	28,6	22,5	13,9	10,3	9,3
5,0	27,7	26,1	22,5	13,8	10,3	9,3
6,0	23,3	22,1	21,2	13,6	10,2	9,3
7,0	16,9	16,9	17,7	13,4	10,1	9,2
8,0			15,0	13,3	10,0	9,1
9,0			13,0	12,4	9,8	8,8
10,0			11,3	10,9	9,7	8,6
12,0			8,5	8,6	8,2	8,1
14,0			6,6	6,8	6,6	6,5
16,0				5,5	5,5	5,4
18,0				4,5	4,5	4,5
20,0				3,8	3,7	3,6
22,0					3,1	3,1
24,0					2,7	2,6
26,0						2,3
SLI CODE	**02**	**01**	**01**	**01**	**01**	**01**
Tele I	0	0	33	66	92	100
Tele II	0	0	33	66	92	100
Tele III	0	0	33	66	92	100
Extending conditions of telescopic sections in percent (%)						

* working range: over rear = o.r.
For crane operation with 8,5 t counterweight auxiliary hoisting gear or substitute ballast is needed.

Load charts LTM 1040-3

Crane supported, supporting base area: 6,7 m × 6,2 m,
Working range: 360 °
4,2 t counterweight or 3,7 t counterweight

TAB 69 439
360 °
r
4,2 t / 3,7 t

Working radius [m]	Telescopic boom lengths in [m]				
	9,5	16,3	23,2	28,4	30,0
3,0	38				
3,5	33,5				
4,0	30		14,0		
4,5	27,2		13,9	10,3	9,3
5	24,5	17,7	13,8	10,3	9,3
6	18,7	17,7	13,6	10,2	9,3
7	13,9	14,3	12,9	10,1	9,2
8		11,3	10,9	10,0	9,1
9		9,2	9,4	8,8	8,6
10		7,7	7,8	7,7	7,5
12		5,7	5,8	5,8	5,7
14		4,4	4,5	4,5	4,4
16			3,5	3,4	3,3
18			2,8	2,7	2,7
20			2,3	2,2	2,2
22				1,8	1,8
24				1,5	1,5
26					1,2
SLI CODE	05	05	05	05	05
Tele I	0	33	66	92	100
Tele II	0	33	66	92	100
Tele III	0	33	66	92	100
Extending conditions of telescopic sections in percent [%]					

For crane operation with 3,7 t counterweight auxiliary hoisting gear or substitute ballast is needed.

Load charts LTM 1040-3

Crane supported, supporting base area: 6,7 m × 4,4 m,
Working range: 360 °
4,2 t counterweight or 3,7 t counterweight

TAB 69 444
360 °
r
4,2 t / 3,7 t

Working radius [m]	Telescopic boom lengths in [m]				
	9,5	16,3	23,2	28,4	30,0
3,0	33,5				
3,5	29,4				
4,0	23,9		14,0		
4,5	20,0	16,3	13,9	10,3	9,3
5	16,4	14,2	12,3	10,3	9,3
6	11,6	11,1	9,8	9,0	8,8
7	8,7	9,0	8,1	7,5	7,3
8		7,2	6,8	6,3	6,2
9		5,9	5,8	5,4	5,3
10		4,9	4,9	4,7	4,6
12		3,5	3,4	3,3	3,2
14		2,6	2,6	2,5	2,4
16			1,9	1,9	1,8
18			1,5	1,4	1,4
20			1,2	1,1	1,0
22				0,8	0,8
SLI CODE	10	10	10	10	10
Tele I	0	33	66	92	100
Tele II	0	33	66	92	100
Tele III	0	33	66	92	100
Extending conditions of telescopic sections in percent [%]					

For crane operation with 3,7 t counterweight auxiliary hoisting gear or substitute ballast is needed.

Load charts LTM 1040-3

Crane supported, supporting base area: 6,7 m × 4,4 m,
Working range: 360 °
9,0 t counterweight or 8,5 t counterweight

TAB 69 442
360 °
r
9,0 t / 8,5 t

Radius	Telescopic boom lengths in m				
m	9,5	16,3	23,2	28,4	30,0
3,0	34,5				
3,5	31	22,5			
4,0	28,1	22,5	14,0		
4,5	25,6	22,2	13,9	10,3	9,3
5,0	22,2	19,5	13,8	10,3	9,3
6,0	15,8	15,5	13,6	10,2	9,3
7,0	12,1	12,4	11,4	10,1	9,2
8,0		10,0	9,7	9,1	8,9
9,0		8,2	8,4	7,9	7,7
10,0		7,0	7,1	6,9	6,8
12,0		5,2	5,3	5,2	5,2
14,0		4,0	4,0	3,9	3,8
16,0			3,2	3,1	3,1
18,0			2,6	2,5	2,5
20,0			2,1	2,0	2,0
22,0				1,7	1,7
24,0				1,4	1,4
26,0					1,1
SLI CODE	08	08	08	08	08
Tele I	0	33	66	92	100
Tele II	0	33	66	92	100
Tele III	0	33	66	92	100
Extending conditions of telescopic sections in percent (%)					

For crane operation with 8,5 t counterweight auxiliary hoisting gear or substitute ballast is needed.

Load charts LTM 1040-3

crane freestanding on tyres
Working range: over rear
9,0 t counterweight or 8,5 t counterweight
Tyres 16.00-25 10 bar

TAB 69 456
R
over rear
9,0 t / 8,5 t

Working radius [m]	Telescopic boom lengths in [m]	
	9,5	16,3
3,0	17,0	
3,5	15,6	15,0
4,0	14,1	13,9
4,5	12,8	12,7
5	11,7	11,6
6	9,9	9,9
7	8,5	8,5
8		7,2
9		6,0
10		5,1
12		3,8
14		3,0
SLI CODE	13	13
Tele I	0	33
Tele II	0	33
Tele III	0	33
Extending conditions of telescopic sections in percent [%]		

For crane operation with 8,5 t counterweight auxiliary hoisting gear or substitute ballast is needed.

Load charts LTM 1040-3

crane freestanding on tyres
Working range: over rear
4,2 t counterweight or 3,7 t counterweight
Tyres 16.00-25 10 bar

TAB 69 458
R
over rear
4,2 t / 3,7 t

Working radius [m]	Telescopic boom lengths in [m]	
	9,5	16,3
3,0	16,0	
3,5	15,0	14,0
4,0	13,5	12,7
4,5	12,3	11,2
5	10,6	9,9
6	8,0	8,0
7	6,2	6,5
8		5,3
9		4,4
10		3,6
12		2,6
14		2,0
SLI CODE	15	15
Tele I	0	33
Tele II	0	33
Tele III	0	33
Extending conditions of telescopic sections in percent [%]		

For crane operation with 3,7 t counterweight auxiliary hoisting gear or substitute ballast is needed.

Load charts LTM 1040-3

crane freestanding on tyres
Working range: 360 °
4,2 t counterweight or 3,7 t counterweight
Tyres 16.00-25 10 bar

TAB 69 463
R
360 °
4,2 t / 3,7 t

Working radius [m]	Telescopic boom lengths in [m]	
	9,5	16,3
3,0	12,0	
3,5	10,1	8,0
4,0	8,5	7,1
4,5	7,3	6,2
5	6,3	5,4
6	4,7	4,2
7	3,5	3,3
8		2,6
9		2,1
10		1,6
12		1,0
14		0,6
SLI CODE	19	19
Tele I	0	33
Tele II	0	33
Tele III	0	33
Extending conditions of telescopic sections in percent [%]		

For crane operation with 3,7 t counterweight auxiliary hoisting gear or substitute ballast is needed

Load chart LTM 1040-3
Folding fly jib 0°

Crane supported, supporting base area: 6,7 m × 6,2 m,
Working range: 360 °
9,0 t counterweight or 8,5 t counterweight

TAB 69 447
TK 0 °
360 °
9,0 t / 8,5 t

Working radius	Telescopic boom lengths in m			
	28,4		30,0	
	Folding fly jib		Folding fly jib	
m	8,3 m	14,5 m	8,3 m	14,5 m
6	6,0		5,6	
7	5,8		5,5	
8	5,7	2,7	5,5	2,7
9	5,6	2,7	5,4	2,6
10	5,4	2,6	5,2	2,6
12	5,1	2,4	4,9	2,4
14	4,6	2,2	4,5	2,2
16	4,1	2,1	4,1	2,1
18	3,7	1,9	3,7	1,9
20	3,4	1,8	3,4	1,8
22	2,9	1,7	2,9	1,7
24	2,5	1,6	2,5	1,6
26	2,2	1,6	2,1	1,5
28	1,9	1,5	1,9	1,5
30	1,7	1,4	1,6	1,4
32	1,5	1,4	1,4	1,3
34	1,3	1,3	1,3	1,2
36		1,1	1,1	1,1
38		1,0		1,0
40		0,9		0,9
42				0,8
SLI CODE	**41**	**50**	**41**	**50**
hoisting rope reeving	2	2	2	2
Tele I	92		100	
Tele II	92		100	
Tele III	92		100	
Extending conditions of telescopic sections in percent (%)				

For crane operation with 8,5 t counterweight auxiliary hoisting gear or substitute ballast is needed.

Load chart LTM 1040-3
Folding fly jib 15°

Crane supported, supporting base area: 6,7 m × 6,2 m,
Working range: 360 °
9,0 t counterweight or 8,5 t counterweight

TAB 69 450
TK 15 °
360 °
9,0 t / 8,5 t

Working radius	Telescopic boom lengths in m			
	28,4		30,0	
	Folding fly jib		Folding fly jib	
m	8,3 m	14,5 m	8,3 m	14,5 m
8	4,3		4,2	
9	4,1		4,0	
10	3,9		3,8	
12	3,6	1,9	3,6	1,8
14	3,3	1,8	3,3	1,7
16	3,2	1,7	3,1	1,7
18	3,0	1,6	3,0	1,6
20	2,9	1,5	2,9	1,5
22	2,8	1,5	2,8	1,5
24	2,6	1,4	2,6	1,4
26	2,2	1,4	2,2	1,3
28	2,0	1,3	1,9	1,3
30	1,7	1,3	1,7	1,2
32	1,5	1,2	1,5	1,1
34		1,2	1,3	1,1
36		1,1		1,0
38		1,1		1,0
40				0,9
SLI CODE	**44**	**53**	**44**	**53**
hoisting rope reeving	2	2	2	2
Tele I	92		100	
Tele II	92		100	
Tele III	92		100	
Extending conditions of telescopic sections in percent (%)				

For crane operation with 8,5 t counterweight auxiliary hoisting gear or substitute ballast is needed.

Load chart LTM 1040-3
Folding fly jib 30°

Crane supported, supporting base area: 6,7 m × 6,2 m,
Working range: 360 °
9,0 t counterweight or 8,5 t counterweight

TAB 69 453
TK 30 °
360 °
9,0 t / 8,5 t

Working radius	Telescopic boom lengths in m			
	28,4		30,0	
	Folding fly jib		Folding fly jib	
m	8,3 m	14,5 m	8,3 m	14,5 m
9	3,2			
10	3,1		3,0	
12	2,9		2,9	
14	2,8	1,5	2,8	
16	2,7	1,4	2,7	1,4
18	2,6	1,4	2,6	1,4
20	2,5	1,4	2,6	1,3
22	2,5	1,3	2,5	1,2
24	2,4	1,2	2,4	1,2
26	2,3	1,2	2,3	1,1
28	2,0	1,2	2,0	1,1
30	1,7	1,1	1,7	1,0
32		1,1	1,5	1,0
34		1,0		0,9
36		1,0		0,9
SLI CODE	**47**	**56**	**47**	**56**
hoisting rope reeving	2	2	2	2
Tele I	92		100	
Tele II	92		100	
Tele III	92		100	
Extending conditions of telescopic sections in percent (%)				

For crane operation with 8,5 t counterweight auxiliary hoisting gear or substitute ballast is needed.