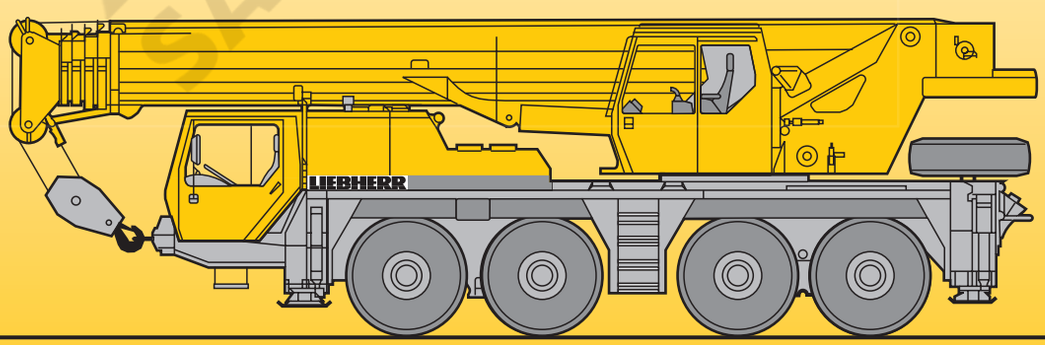
Mobilkran · Mobile Crane
Grue automotrice

LTM 1080/1

Technische Daten
Technical Data
Caractéristiques techniques



LIEBHERR

Traglasten am Teleskopausleger
Lifting capacities on telescopic boom
Forces de levage à la flèche télescopique

m	10,8 m *		14,2 m	17,6 m	21,1 m	24,5 m	27,9 m	31,3 m	34,8 m	38,2 m	41,6 m	45 m	48 m	m
2,5	80													2,5
3	71	62	62	57										3
3,5	63	56	56	53	46									3,5
4	57	52	52	49,5	44									4
4,5	52	47,5	47,5	46	42	35								4,5
5	47	44	44	43	40	33,5	27,9							5
6	39	38	37,5	37	36,5	30,5	26,1	22,6						6
7	33,5	33	32,5	32,5	32	28	24,5	21,2	18,2					7
8	28,9	28,5	28,3	27,7	27,5	25,6	22,9	19,9	17,3	15	12,8			8
9			24,6	24,1	23,8	22,9	21	18,7	16,5	14,3	12,3	10,8	8,7	9
10			21,6	21,1	20,6	19,9	19,5	17,5	15,8	13,7	11,8	10,5	8,4	10
12			16,1	15,7	15,5	15,5	15,3	15,2	13,8	12,4	10,9	9,6	7,7	12
14				12,1	12	12,1	12,2	12,3	12,1	11,1	9,8	8,6	7,2	14
16					9,4	9,6	9,9	10,1	10	10	8,8	7,8	6,5	16
18					7,6	7,9	8	8,3	8,3	8,5	8	7,1	6	18
20						7,1	6,5	6,9	7	7,2	7,2	6,5	5,5	20
22						6,3	5,6	6,3	5,8	6,1	6,2	5,9	5,1	22
24							5	5,6	5,2	5	5,2	5,4	4,7	24
26								4,9	4,8	4,5	4,8	4,5	4,4	26
28								4,2	4,4	4,1	4,3	3,9	3,9	28
30									4,1	3,8	3,7	3,4	3,4	30
32									3,7	3,5	3,3	3	2,9	32
34										3,1	2,9	2,6	2,5	34
36											2,6	2,3	2,2	36
38											2,3	2	1,9	38
40												1,7	1,7	40
42												1,4	1,4	42
44													1,2	44

* nach hinten / over rear / en arrière

TAB 106137 / 106140

Anmerkungen zu den Traglasttabellen

1. Für die Kranberechnungen gelten die DIN-Vorschriften lt. Gesetz gemäß Bundesarbeitsblatt von 2/85: Die Traglasten DIN/ISO entsprechen den geforderten Standsicherheiten nach DIN 15019, Teil 2 und ISO 4305. Für die Stahltragwerke gilt DIN 15018, Teil 3. Die bauliche Ausbildung des Krans entspricht DIN 15018, Teil 2 sowie der F. E. M.
2. Bei den DIN/ISO-Traglasttabellen sind in Abhängigkeit von der Auslegerlänge Windstärken von 5 bis 7 Beaufort zulässig.
3. Die Traglasten sind in Tonnen angegeben.
4. Das Gewicht des Lasthakens bzw. der Hakenflasche ist von den Traglasten abzuziehen.
5. Die Ausladungen sind von Mitte Drehkranz gemessen.
6. Die Traglasten für den Teleskopausleger gelten nur bei demontierter Klappspitze.
7. Traglasténderungen vorbehalten.
8. Traglasten über 53 t nur mit Zusatzflasche.
9. Traglasten über 71 t nur mit Zusatzeinrichtung.

Remarks referring to load charts

1. When calculating crane stresses and loads, German Industrial Standards (DIN) are applicable, in conformity with German legislation (published 2/85): The lifting capacities (stability margin) DIN/ISO are as laid down in DIN 15019, part 2, and ISO 4305. The crane's structural steel works is in accordance with DIN 15018, part 3. Design and construction of the crane comply with DIN 15018, part 2, and with F. E. M. regulations.
2. For the DIN/ISO load charts, depending on jib length, crane operation may be permissible at wind speeds up to 5 resp. 7 Beaufort.
3. Lifting capacities are given in metric tons.
4. The weight of the hook blocks and hooks must be deducted from the lifting capacities.
5. Working radii are measured from the slewing centreline.
6. The lifting capacities given for the telescopic boom only apply if the folding jib is taken off.
7. Subject to modification of lifting capacities.
8. Lifting capacities above 53 t only with additional pulley block.
9. Lifting capacities above 71 t only with special equipment.

Traglasten am Teleskopausleger
Lifting capacities on telescopic boom
Forces de levage à la flèche télescopique


DIN ISO

m	10,8 m	14,2 m	17,6 m	21,1 m	24,5 m	27,9 m	31,3 m	34,8 m	38,2 m	41,6 m	45 m	48 m	m
3	61	61	57										3
3,5	56	56	53	46									3,5
4	51	51	49,5	44									4
4,5	47	46,5	46	42	35								4,5
5	43	43	42,5	40	33,5	27,9							5
6	36,5	36,5	35	32,5	30,5	26,1	22,6						6
7	30,5	30,5	28	26,1	24,9	24	21,2	18,2					7
8	25,3	25,3	23,1	21,7	20,8	20,1	19,6	17,3	15	12,8			8
9		20,5	19,4	18,1	17,4	17	16,7	16,2	14,3	12,3	10,8	8,7	9
10		17,8	16,4	15,3	14,8	14,5	14,4	14	13,7	11,8	10,5	8,4	10
12		13,1	11,7	11,4	11,9	11	11,6	10,8	10,9	10,8	9,6	7,7	12
14			9,6	8,6	10,2	9	9,8	9,2	8,7	8,7	8,6	7,2	14
16				7,5	8,4	7,7	8	8	7,5	7,7	7,2	6,5	16
18				6,6	6,8	6,9	6,6	6,9	6,7	6,5	6	5,9	18
20					5,7	5,9	5,6	6,1	5,7	5,4	5	4,9	20
22					4,8	5,3	5,1	5	4,6	4,4	4,1	4	22
24						4,5	4,4	4,2	3,9	3,7	3,4	3,3	24
26							3,8	3,6	3,4	3,2	2,8	2,8	26
28							3,3	3,2	2,9	2,7	2,4	2,3	28
30								2,7	2,5	2,3	2	1,9	30
32								2,4	2,1	1,9	1,6	1,6	32
34									1,8	1,7	1,3	1,3	34
36										1,4	1,1	1	36
38										1,1	0,8	0,8	38

TAB 106142

Remarques relatives aux tableaux des charges

1. La grue est calculée selon normes DIN conformément au décret fédéral 2/85. Les charges DIN/ISO respectent les sécurités au basculement requises par les normes DIN 15019, partie 2 et ISO 4305. La structure de la grue est conçue selon la norme DIN 15018, partie 3. La conception générale est réalisée selon la norme DIN 15018, partie 2, ainsi que selon les recommandations de la F. E. M.
2. Les charges DIN/ISO tiennent compte d'efforts au vent selon Beaufort de 5 à 7 en fonction de la longueur de flèche.
3. Les charges sont indiquées en tonnes.
4. Les poids du crochet ou de la moufle sont à déduire des charges indiquées.
5. Les portées sont prises à partir de l'axe de rotation de la partie tournante.
6. Les charges données en configuration flèche télescopiques s'entendent sans la fléchette pliante repliée contre le télescope en position route ou en position de travail en tête de télescope.
7. Charges données sous réserve de modification.
8. Les charges supérieures à 53 t ne peuvent être levées qu'avec un moufle complémentaire.
9. Forces de levage plus de 71 t seulement avec équipement supplémentaire.

Traglasten am Teleskopausleger
Lifting capacities on telescopic boom
Forces de levage à la flèche télescopique


DIN ISO

m	10,8 m	14,2 m	17,6 m	21,1 m	24,5 m	27,9 m	31,3 m	34,8 m	38,2 m	41,6 m	45 m	48 m	m
3	61	61	57										3
3,5	56	56	53	46									3,5
4	51	51	49,5	44									4
4,5	46,5	46,5	46	42	35								4,5
5	42,5	42,5	42	39	33,5	27,9							5
6	35,5	35,5	32,5	30	28,5	26,1	22,6						6
7	30	28,8	26,1	24,3	23,2	22,3	21,2	18,2					7
8	23,6	23,6	21,4	19,8	19	18,4	18	17,3	15	12,8			8
9		19,1	17,7	16,5	15,8	15,5	15,2	14,8	14,3	12,3	10,8	8,7	9
10		16,8	14,9	13,9	13,8	13,2	13,4	12,8	12,8	11,8	10,5	8,4	10
12		12,1	11	10,2	11,9	10,4	11,1	10,5	9,9	9,8	9,6	7,7	12
14			9,6	8,5	9,7	9	8,9	8,9	8,5	8,5	7,9	7,2	14
16				7,5	7,6	7,7	7,2	7,7	7,3	7	6,4	6,3	16
18				6,4	6,2	6,4	6,2	6,5	6,1	5,8	5,3	5,2	18
20					5,1	5,7	5,5	5,3	5	4,8	4,3	4,3	20
22					4,5	4,7	4,5	4,4	4,1	3,9	3,5	3,5	22
24						4,1	3,9	3,7	3,5	3,3	2,9	2,9	24
26							3,3	3,2	2,9	2,7	2,4	2,3	26
28							2,9	2,8	2,5	2,3	2	1,9	28
30								2,4	2,1	1,9	1,6	1,5	30
32								2	1,8	1,6	1,3	1,2	32
34									1,5	1,3	1	1	34
36										1,1	0,8		36
38										0,8			38

TAB 106143


DIN ISO

m	10,8 m ○ 16 t	10,8 m ○ 8,5 t	10,8 m ● 16 t	10,8 m ● 8,5 t	14,2 m ○ 16 t	14,2 m ○ 8,5 t	14,2 m ● 16 t	14,2 m ● 8,5 t	17,6 m ○ 16 t	17,6 m ○ 8,5 t	17,6 m ● 16 t	17,6 m ● 8,5 t	m
3	18,1	17,3	11,9	11,9	18,8	18	12,5	12,5	19,2	18,4	12,8	12,8	3
3,5	16,2	15,4	10,6	10,5	16,8	16,1	11,2	11,2	17,2	16,5	11,5	11,5	3,5
4	14,5	13,8	9,4	9,4	15,2	14,5	10,1	10,1	15,6	14,9	10,4	10,4	4
4,5	13,1	12,4	8,4	8,4	13,8	13,1	9,1	9,1	14,1	13,5	9,4	9,4	4,5
5	11,8	11,2	7,6	7,6	12,5	12	8,2	8,2	12,9	12,3	8,6	8,6	5
6	9,8	9,3	6,2	6,2	10,5	10	6,8	6,8	10,9	10,4	7,2	7,2	6
7	8,2	7,8	5	5	8,9	8,5	5,7	5,7	9,3	8,9	6,1	6,1	7
8	6,9	6,5	4,1	4,1	7,7	7,2	4,8	4,8	8,1	7,6	5,2	5,2	8
9					6,6	6,2	4	4	7	6,6	4,4	4,4	9
10					5,7	5,4	3,4	3,4	6,1	5,8	3,8	3,7	10
12					4,3	4	2,4	2,4	4,7	4,4	2,7	2,7	12
14									3,7	3,4	2	2	14

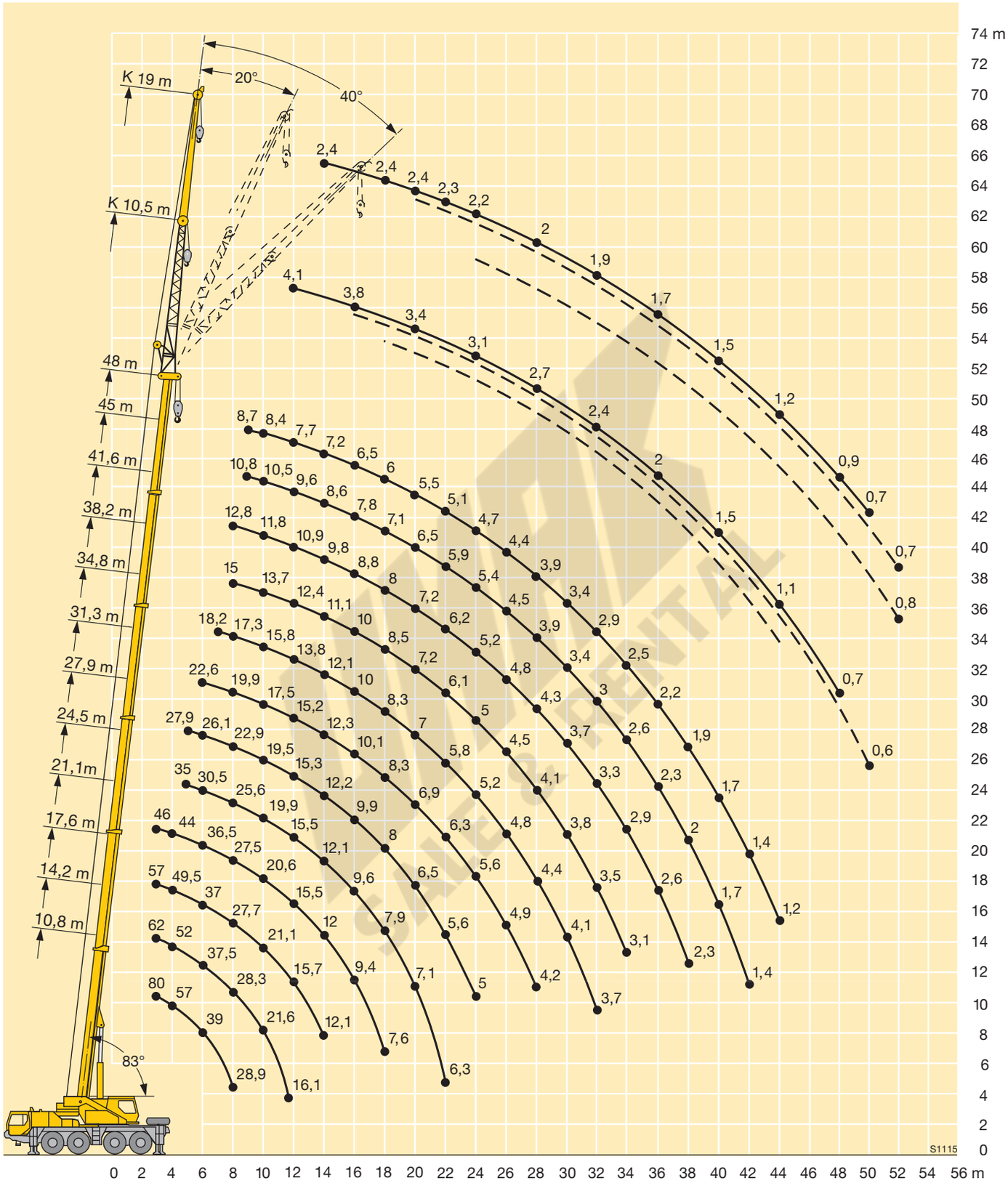
0° = nach hinten / over rear / en arrière

TAB 106189 / 106194 / 106191 / 106196

○ Reifengröße / tyre size / dimensions de pneumatiques: 16.00 R 25

● Reifengröße / tyre size / dimensions de pneumatiques: 14.00 R 25

Hubhöhen
Lifting heights
Hauteurs de levage

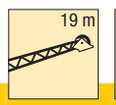


Traglasten an der Klappspitze
Lifting capacities on the folding jib
Forces de levage à la fléchette pliante


DIN ISO

m	38,2 m 10,5 m 0°	20°	40°	41,6 m 10,5 m 0°	20°	40°	45 m 10,5 m 0°	20°	40°	48 m 10,5 m 0°	20°	40°	m
10	8,7												10
12	8,4			7			5,7			4,1			12
14	7,9	6,6		6,5	5,8		5,3	4,7		4			14
16	7,1	6,3	5,5	6,1	5,4	5,1	4,9	4,4		3,8	3,7		16
18	6,4	6,1	5,4	5,6	5,1	4,8	4,5	4,1	4	3,6	3,5	3,5	18
20	5,9	5,7	5,3	5,1	4,7	4,5	4,2	3,9	3,7	3,4	3,4	3,3	20
22	5,3	5,2	5,2	4,7	4,5	4,3	4	3,6	3,5	3,3	3,2	3,2	22
24	4,9	4,7	4,8	4,3	4,2	4	3,7	3,4	3,3	3,1	3,1	3,1	24
26	4,3	4,3	4,4	3,9	4	3,8	3,5	3,3	3,2	2,9	2,9	2,9	26
28	3,7	4	4	3,6	3,7	3,7	3,3	3,1	3	2,7	2,8	2,8	28
30	3,2	3,5	3,6	3,2	3,4	3,4	3,1	2,9	2,9	2,6	2,6	2,7	30
32	2,8	3	3,1	2,8	3	3,2	2,8	2,8	2,7	2,4	2,5	2,5	32
34	2,4	2,6	2,7	2,6	2,6	2,7	2,5	2,6	2,7	2,3	2,3	2,4	34
36	2,2	2,3	2,3	2,4	2,4	2,5	2,1	2,3	2,4	2	2,2	2,2	36
38	2,1	2,1		2,1	2,3	2,3	1,8	2	2,1	1,8	1,9	2,1	38
40	1,9	2		1,9	2		1,6	1,7	1,8	1,5	1,7	1,8	40
42	1,8	1,8		1,6	1,7		1,3	1,5	1,5	1,3	1,4	1,5	42
44	1,6	1,6		1,4	1,5		1,1	1,2		1,1	1,2	1,2	44
46	1,4			1,2	1,2		0,9	1		0,8	1		46
48				1			0,7	0,8		0,7	0,8		48
50								0,6			0,6		50

TAB 106156 / 106162 / 106168




DIN ISO

m	38,2 m 19 m 0°	20°	40°	41,6 m 19 m 0°	20°	40°	45 m 19 m 0°	20°	40°	48 m 19 m 0°	20°	40°	m
12	3,4												12
14	3,3			3,1			2,7			2,4			14
16	3,2			2,9			2,7			2,4			16
18	3	2,6		2,8	2,4		2,6			2,4			18
20	2,9	2,5		2,8	2,4		2,6	2,2		2,4	2,1		20
22	2,8	2,4	2,1	2,7	2,3		2,5	2,2		2,3	2		22
24	2,8	2,4	2,1	2,6	2,3	2	2,5	2,1	1,9	2,2	2	1,8	24
26	2,7	2,3	2	2,6	2,2	2	2,4	2,1	1,9	2,1	2	1,8	26
28	2,6	2,2	2	2,5	2,2	2	2,3	2,1	1,9	2	2	1,8	28
30	2,5	2,2	2	2,4	2,1	2	2,2	2	1,9	1,9	1,9	1,7	30
32	2,4	2,1	2	2,4	2,1	1,9	2,1	2	1,9	1,9	1,8	1,7	32
34	2,3	2,1	1,9	2,3	2	1,9	2	1,9	1,8	1,8	1,8	1,7	34
36	2,2	2	1,9	2,3	2	1,9	1,9	1,8	1,8	1,7	1,7	1,7	36
38	2	2	1,9	2	2	1,9	1,8	1,7	1,7	1,6	1,6	1,6	38
40	1,8	2	1,9	1,8	2	1,9	1,7	1,7	1,7	1,5	1,6	1,6	40
42	1,6	1,8	1,9	1,7	1,8	1,8	1,5	1,6	1,6	1,4	1,5	1,5	42
44	1,5	1,5	1,7	1,6	1,5	1,7	1,3	1,6	1,6	1,2	1,4	1,4	44
46	1,4	1,4		1,4	1,5	1,5	1,1	1,3	1,5	1	1,3	1,3	46
48	1,3	1,3		1,2	1,4	1,4	0,9	1,1	1,3	0,9	1,1	1,2	48
50	1,2	1,2		1	1,2		0,8	1	1,1	0,7	0,9	1	50
52	1	1,1		0,9	1		0,6	0,8			0,7	0,8	52
54	0,9			0,7	0,8			0,6					54
56				0,6									56

TAB 106156 / 106162 / 106168

Traglasten an der Klappspitze
Lifting capacities on the folding jib
Forces de levage à la fléchette pliante

m	38,2 m			41,6 m			45 m			48 m			m
	10,5 m			10,5 m			10,5 m			10,5 m			
	0°	20°	40°	0°	20°	40°	0°	20°	40°	0°	20°	40°	
10	8,7												10
12	8,4			7			5,7			4,1			12
14	7,9	6,6		6,5	5,8		5,3	4,7		4			14
16	6,7	6,3	5,5	6,1	5,4	5,1	4,9	4,4		3,8	3,7		16
18	5,5	6,1	5,4	5,4	5,1	4,8	4,5	4,1	4	3,6	3,5	3,5	18
20	4,6	5,1	5,3	4,5	4,7	4,5	4,2	3,9	3,7	3,4	3,4	3,3	20
22	3,9	4,3	4,6	3,9	4,2	4,3	3,8	3,6	3,5	3,3	3,2	3,2	22
24	3,6	3,6	3,9	3,6	3,5	3,9	3,2	3,4	3,3	3,1	3,1	3,1	24
26	3,3	3,1	3,2	3,1	3,3	3,2	2,7	3	3,2	2,6	2,9	2,9	26
28	2,8	3	2,9	2,6	2,8	3	2,2	2,5	2,8	2,1	2,4	2,7	28
30	2,4	2,6	2,8	2,2	2,4	2,6	1,8	2,1	2,3	1,7	2	2,2	30
32	2	2,2	2,4	1,8	2	2,2	1,5	1,7	1,9	1,4	1,6	1,8	32
34	1,7	1,9	2	1,5	1,7	1,8	1,2	1,4	1,6	1,1	1,3	1,5	34
36	1,5	1,6	1,7	1,3	1,4	1,5	0,9	1,1	1,3	0,8	1	1,2	36
38	1,2	1,4		1	1,2	1,2	0,7	0,8	1		0,8	0,9	38
40	1	1,1		0,8	0,9			0,6	0,7			0,7	40
42	0,8	0,9		0,6	0,7								42
44	0,6	0,7											44

TAB 106158 / 106164 / 106170

m	38,2 m			41,6 m			45 m			48 m			m
	19 m			19 m			19 m			19 m			
	0°	20°	40°	0°	20°	40°	0°	20°	40°	0°	20°	40°	
12	3,4												12
14	3,3			3,1			2,7			2,4			14
16	3,2			2,9			2,7			2,4			16
18	3	2,6		2,8	2,4		2,6			2,4			18
20	2,9	2,5		2,8	2,4		2,6	2,2		2,4	2,1		20
22	2,8	2,4	2,1	2,7	2,3		2,5	2,2		2,3	2		22
24	2,8	2,4	2,1	2,6	2,3	2	2,5	2,1	1,9	2,2	2	1,8	24
26	2,7	2,3	2	2,6	2,2	2	2,4	2,1	1,9	2,1	2	1,8	26
28	2,4	2,2	2	2,4	2,2	2	2,3	2,1	1,9	2	2	1,8	28
30	2,2	2,2	2	2,2	2,1	2	2	2	1,9	1,9	1,9	1,7	30
32	2	2,1	2	2	2,1	1,9	1,7	2	1,9	1,6	1,8	1,7	32
34	1,9	1,9	1,9	1,7	1,9	1,9	1,4	1,8	1,8	1,3	1,7	1,7	34
36	1,7	1,8	1,8	1,5	1,8	1,8	1,1	1,5	1,8	1	1,4	1,7	36
38	1,4	1,7	1,7	1,2	1,5	1,7	0,9	1,3	1,5	0,8	1,2	1,5	38
40	1,2	1,5	1,6	1	1,3	1,5	0,7	1	1,3		0,9	1,2	40
42	1	1,2	1,4	0,8	1,1	1,2		0,8	1		0,7	1	42
44	0,8	1	1,2	0,6	0,9	1		0,6	0,8			0,7	44
46	0,7	0,8			0,7	0,8							46
48		0,7				0,6							48

TAB 106158 / 106164 / 106170

Traglasten an der Klappspitze
Lifting capacities on the folding jib
Forces de levage à la fléchette pliante

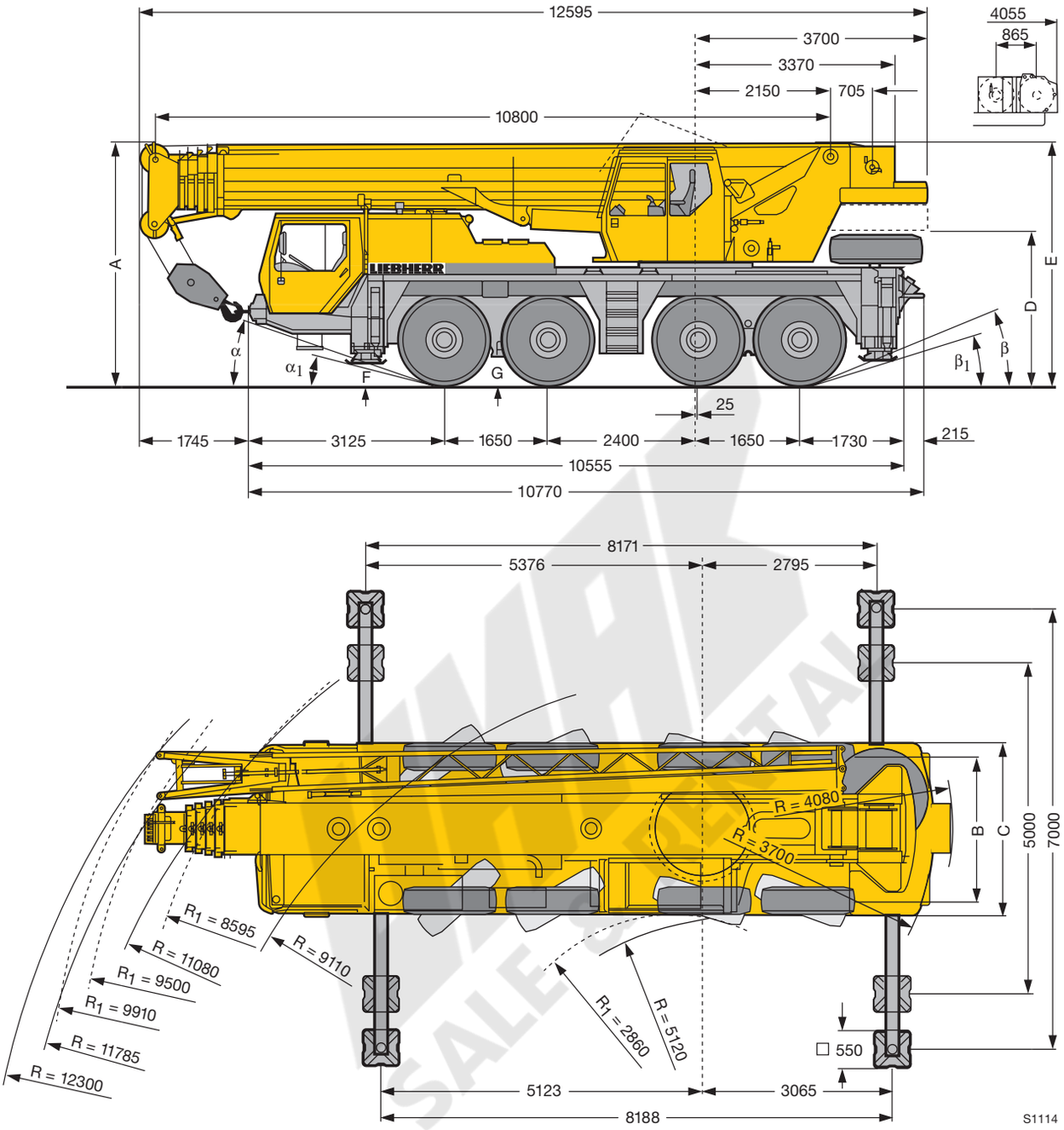
m	38,2 m / 10,5 m			41,6 m / 10,5 m			45 m / 10,5 m			48 m / 10,5 m			m
	0°	20°	40°	0°	20°	40°	0°	20°	40°	0°	20°	40°	
10	8,7												10
12	8,4			7			5,7			4,1			12
14	7,3	6,6		6,5	5,8		5,3	4,7		4			14
16	6	6,3	5,5	5,9	5,4	5,1	4,9	4,4		3,8	3,7		16
18	4,9	5,5	5,4	4,8	5,1	4,8	4,5	4,1	4	3,6	3,5	3,5	18
20	4,2	4,5	4,9	4,3	4,5	4,5	4	3,9	3,7	3,4	3,4	3,3	20
22	3,9	3,7	4,1	3,7	3,7	4,1	3,3	3,6	3,5	3,2	3,2	3,2	22
24	3,4	3,4	3,4	3,1	3,5	3,4	2,7	3,1	3,3	2,6	3	3,1	24
26	2,9	3,1	3,1	2,6	2,9	3,2	2,2	2,6	2,9	2,1	2,5	2,8	26
28	2,4	2,7	2,8	2,2	2,4	2,7	1,8	2,1	2,4	1,7	2	2,3	28
30	2	2,2	2,4	1,8	2	2,2	1,4	1,7	1,9	1,3	1,6	1,9	30
32	1,7	1,9	2	1,5	1,7	1,8	1,1	1,4	1,6	1	1,3	1,5	32
34	1,4	1,6	1,7	1,2	1,4	1,5	0,8	1,1	1,2	0,7	1	1,2	34
36	1,2	1,3	1,4	0,9	1,1	1,2		0,8	0,9		0,7	0,9	36
38	0,9	1,1		0,7	0,9	1			0,7				38
40	0,7	0,8			0,7								40
42		0,6											42

TAB 106159 / 106165 / 106171

m	38,2 m / 19 m			41,6 m / 19 m			45 m / 19 m			48 m / 19 m			m
	0°	20°	40°	0°	20°	40°	0°	20°	40°	0°	20°	40°	
12	3,4												12
14	3,3			3,1			2,7			2,4			14
16	3,2			2,9			2,7			2,4			16
18	3	2,6		2,8	2,4		2,6			2,4			18
20	2,9	2,5		2,8	2,4		2,6	2,2		2,4	2,1		20
22	2,8	2,4	2,1	2,7	2,3		2,5	2,2		2,3	2		22
24	2,8	2,4	2,1	2,6	2,3	2	2,5	2,1	1,9	2,2	2	1,8	24
26	2,5	2,3	2	2,5	2,2	2	2,4	2,1	1,9	2,1	2	1,8	26
28	2,3	2,2	2	2,3	2,2	2	2	2,1	1,9	1,9	2	1,8	28
30	2,2	2,2	2	2	2,1	2	1,6	2	1,9	1,5	1,9	1,7	30
32	1,9	2	2	1,7	2	1,9	1,3	1,8	1,9	1,2	1,7	1,7	32
34	1,6	1,9	1,9	1,4	1,8	1,9	1	1,5	1,8	0,9	1,4	1,7	34
36	1,4	1,7	1,8	1,1	1,5	1,8	0,8	1,2	1,5	0,7	1,1	1,5	36
38	1,1	1,4	1,6	0,9	1,2	1,5		0,9	1,2		0,9	1,2	38
40	0,9	1,2	1,4	0,7	1	1,2		0,7	1		0,6	0,9	40
42	0,8	1	1,1		0,8	1			0,7			0,7	42
44	0,6	0,8	0,9		0,6	0,8							44
46		0,6											46

TAB 106159 / 106165 / 106171

Maße
Dimensions
Encombrement



R_1 = Allradlenkung / All-wheel steering / Direction toutes roues

	Maße / Dimensions / Encombrement mm											
	A	A 100 mm*	B	C	D	E **	F	G	α	α_1	β	β_1
14.00 R 25	3800	3700	2350	2750	2356	3816	295	380	17°	14°	21°	14°
16.00 R 25	3850	3750	2310	2750	2406	3866	345	430	19°	16°	23°	16°

* abgesenkt / lowered / abaissé
** mit Klappspitze / with folding jib / avec fléchette pliante

Gewichte
Weights
Poids

Achse Axle Essieu	1	2	3	4	Gesamtgewicht t Total weight (metric tons) Poids total t
t	12	12	12	12	48[1)]

[1)] mit 6,6 t Ballast und Doppel-Klappspitze / with 6.6 t counterweight and double folding jib / avec contrepoids 6,6 t et fléchette pliante double

Traglast t Load (metric tons) Forces de levage t	Rollen No. of sheaves Poulies	Stränge No. of lines Brins	Gewicht kg Weight kg Poids kg
80	7	14	500
58	5	10	450
38	3	7	520
16	1	3	360
5,7	–	1	110

Geschwindigkeiten
Working speeds
Vitesses

	1	2	3	4	5	6	R1	R 2		1	2	3	4	5	6	R 1	R 2	
km/h	8,8	13,6	21,3	33,1	46,6	75	8,8	21,3	39 %	9,6	14,8	23,2	36	52,9	80	9,6	23,2	35 %
km/h	5,7	8,8	13,8	21,4	31,4	48,7	5,7	13,8	60 %	6,2	9,6	15	23,3	34,2	53,1	6,2	15	60 %
	14.00 R 25									16.00 R 25								

Antriebe Drive Mécanismes	stufenlos infinitely variable en continu	Seil ø / Seillänge Rope diameter / Rope length Diamètre du câble / Longueur du câble	Max. Seilzug Max. single line pull Effort au brin maxi.
1	0 – 130 m/min für einfachen Strang m/min single line m/min au brin simple	17 mm / 250 m	57 kN
2	0 – 130 m/min für einfachen Strang m/min single line m/min au brin simple	17 mm / 210 m	57 kN
360°	0 – 2,0 min^{-1}		
	ca. 48 s bis 83° Auslegerstellung approx. 48 seconds to reach 83° boom angle env. 48 s jusqu'à 83°		
	ca. 280 s für Auslegerlänge 10,8 m – 48 m approx. 280 seconds for boom extension from 10.8 m – 48 m env. 280 s pour passer de 10,8 m – 48 m		

Ausstattung
Equipment
Equipement

Kranfahrgestell

Rahmen	Eigengefertigte, verwindungssteife Kastenkonstruktion aus hochfestem Feinkorn-Baustahl.
Abstützungen	4-Punkt-Abstützung, horizontal und vertikal vollhydraulisch ausschiebbar.
Motor	6-Zylinder-Diesel, Fabrikat Liebherr, Typ D 9406 TI-E, wassergekühlt, Leistung nach DIN 320 KW (435 PS) bei 2100 min^{-1} nach ECE-R 24.03 und 2001/27/EG (Euro 3), max. Drehmoment 1900 Nm bei 1100 – 1400 min^{-1}, Motormanagement mit Liebherr-Datenbus. Kraftstoffbehälter: 400 l.
Getriebe	ZF-Lastschaltgetriebe mit Drehmomentwandler, Lock-up-Kupplung und integrierter Geländestufe, Vorderachsantrieb zuschaltbar. 6 Vorwärts- und 2 Rückwärtsgänge.
Achsen	Alle Achsen gelenkt. Achsen 1, 3 und 4 sind Planetenachsen mit Differentialsperren.
Federung	Alle Achsen sind hydropneumatisch gefedert und hydraulisch blockierbar.
Bereifung	8fach. Reifengröße: 14.00 R 25.
Lenkung	Mechanische Lenkung der Vorderachsen, hydraulisch unterstützt, Reservelenkpumpe, Lenkung der Hinterachsen hydraulisch zuschaltbar. Hydrostatische Lenkung aller Achsen aus der Krankabine. Lenkung entsprechend EG-Richtlinie 70/311/EWG.
Bremsen	Betriebsbremse: Allrad-Servo-Druckluftbremse, 2-Kreisanlage. Handbremse: Federspeicher auf die Räder der 2., 3. und 4. Achse wirkend. Dauerbremse: Auspuffklappenbremse mit Liebherr-Zusatzbremssystem. Bremsen entsprechend EG-Richtlinien 71/320 EWG.
Fahrerhaus	2-Mann-Fahrerhaus in Stahlblechausführung, tauchgrundiert und pulverbeschichtet, mit Kontroll- und Bedienungselementen für den Fahrbetrieb.
Elektr. Anlage	Steuerung der elektrischen und elektronischen Komponenten mit modernster Datenbus-Technik, 24 Volt Gleichstrom, 2 Batterien, Beleuchtung nach StVZO.

Kranoberwagen

Rahmen	Eigengefertigte, verwindungssteife Schweißkonstruktion aus hochfestem Feinkorn-Baustahl. Als Verbindungselement zum Kranfahrgestell dient eine 3-reihige Rollendrehverbindung, die unbegrenztes Drehen ermöglicht.
Hydrauliksystem	Diesel-hydraulisch mit 1 Axialkolben-Doppelverstellpumpe mit automatischer Leistungsregelung, 1 Zahnrad-Doppelpumpe, vom Dieselmotor im Fahrgestell angetrieben, offene Ölkreisläufe mit elektrisch geregeltem „Load Sensing“. 4 Arbeitsbewegungen gleichzeitig fahrbar.
Steuerung	Durch selbstzentrierende 4fach-Handsteuerhebel in der Krankabine und über elektronische Verstellung der Dieselmotor-Drehzahl, elektrische Vorsteuerung und stufenlose Regulierung aller Kranbewegungen. Liebherr-Datenbus zur Datenübertragung.
Hubwerk	Axialkolben-Konstantmotor, Hubwerkstrommel mit eingebautem Planetengetriebe und federbelasteter Haltebremse, Antrieb im offenen Ölkreislauf.
Wippwerk	1 Differentialzylinder mit vorgesteuertem Bremsventil.
Drehwerk	Hydromotor, Planetengetriebe mit federbelasteter Haltebremse, Antrieb im offenen Ölkreislauf, Drehgeschwindigkeit stufenlos regelbar.
Kranfahrerkabine	Stahlblechausführung, voll verzinkt, mit Sicherheitsverglasung, Heizung, Bedienungs- und Kontrollelemente. Kabine nach hinten neigbar.
Sicherheitseinrichtungen	LICCON-Überlastanlage, Hubendbegrenzung, Sicherheitsventile gegen Rohr- und Schlauchbrüche.
Teleskopausleger	Beulsichere und verwindungssteife Konstruktion aus hochfestem Feinkornbaustahl mit ovalem Auslegerprofil, 1 Anlenkstück und 5 Teleskopteile. Alle Teleskopteile unabhängig voneinander hydraulisch ausschiebbar. Schnelltakt-Teleskopiersystem „Telematik“. Auslegerlänge: 10,8 m – 48 m.
Ballast	8,5 t Grundballast.
Elektr. Anlage	Steuerung der elektrischen und elektronischen Komponenten mit modernster Datenbus-Technik, 24 Volt Gleichstrom, 2 Batterien.

Zusatzausrüstung

Klappspitze	Einfach-Klappspitze 10,5 m lang, unter 0°, 20° oder 40° montierbar. Doppel-Klappspitze 10,5 m – 19 m lang, unter 0°, 20° oder 40° montierbar.
2. Hubwerk	Für den 2-Hakenbetrieb oder bei Betrieb mit Klappspitze, wenn Haupthubseil eingeschert bleiben soll.
Zusatzballast	7,5 t für einen Grundballast von 16 t.
Bereifung	8fach. Reifengröße: 16.00 R 25
Antrieb 8 x 8	Zusätzlich wird die 2. Achse angetrieben.

Weitere Zusatzausrüstung auf Anfrage.

Ausstattung
Equipment
Equipement

Crane carrier

Frame	Liebherr designed and manufactured, box-type, torsion resistant design of high-tensile fine grained structural steel.
Outriggers	4-point support, all-hydraulic horizontal and vertical operation.
Engine	6-cylinder Diesel engine, make Liebherr, type D 9406 TI-E, watercooled, 320 kW (435 HP) at 2100 min^{-1} acc. to ECE-R 24.03 and 2001/27/EG (Euro 3), max. torque 1900 Nm at 1100 – 1400 min^{-1}, engine management with Liebherr data bus. Fuel tank: 400 l.
Transmission	ZF power shift gear with torque converter, lock-up and integrated off-road ratio, additional activation of front wheel drive, 6 forwards and 2 reverse speeds.
Axles	All axles steered. Axles 1, 3 and 4 with planetary gears and differential locks.
Suspension	All axles with hydropneumatic suspension and hydraulic locking facility.
Tyres	8 tyres. Tyre size: 14.00 R 25.
Steering	Front axles mechanically steered, with hydraulic power assistance and stand-by steering pump. Rear axles hydraulically steered. All axles steered hydrostatically from crane cab. Steering acc. to EC directive 70/311/EEC.
Brakes	Service brake: All-wheel servo-air brake, dual circuit system. Hand brake: Spring-loaded, acting on all wheels of axles 2, 3 and 4. Sustained-action brake: Exhaust retarder with additional Liebherr braking system Brakes acc. to EC directive 71/320/EEC.
Driver's cab	Two-men driving cab, steel sheet design, with dipping varnish and powder coating. With control elements and instruments for driving.
Electrical system	Control of the electrical and electronical components by modern data bus technique. 24 Volt DC, 2 batteries, lighting according to traffic regulations.

Crane superstructure

Frame	Liebherr-made, torsion-resistant, welded construction of high-tensile structural steel, linked to carrier by a three-row roller slewing ring for 360° continuous rotation.
Hydraulic system	Diesel-hydraulic with 1 double axial piston variable displacement pump with automatic capacity control, 1 double gear pump, driven by the carrier Diesel engine, open oil circuits with electrically controlled „load sensing", operation of 4 movements simultaneously.
Crane control	By 2 control levers (joystick type) and by electronic speed variation of Diesel engine, electric pilot control with stepless control of all crane motions. Liebherr data bus technique for data transfer.
Hoist gear	Axial piston fixed displacement motor, hoist drum with integrated planetary gear and spring-loaded static brake, actuation by open oil circuit.
Luffing gear	1 differential ram with pilot operated brake valve.
Slewing gear	Hydraulic motor, planetary gear with spring-loaded static brake, actuation by open oil circuit. Continuous control of slewing speed.
Crane cab	All-steel construction, fully galvanized, with safety glass, heater, operating and control elements. Cab tiltable backwards.
Safety devices	LICCON safe load indicator, hoist limit switch, safety valves against rupture of pipes and hoses.
Telescopic boom	Buckling resistant and torsion-proof design of high tensile steel with oviform boom profile, 1 base section and 5 telescopic sections. All telescopic sections extendable hydraulically and independently from one another. Rapid-cycle telescoping system „Telematik". Boom length: 10.8 m – 48 m.
Counterweight	8.5 t basic counterweight.
Electric system	Control of the electrical and electronical components by modern data bus technique. 24 Volt DC, 2 batteries.

Additional equipment

Folding jib	Single folding jib, 10.5 m long, installation at 0°, 20° or 40°. Double folding jib, 10.5 m – 19 m long, installation at 0°, 20° or 40°.
2nd hoist gear	For two-hook operation, or with folding jib in case main hoist shall remain reeved.
Additional counterweight	7.5 t for a total counterweight of 16 t.
Tyres	8 tyres. Tyre size: 16.00 R 25
Drive 8 x 8	Axle 2 additionally driven.

Other items of equipment available on request.

Ausstattung
Equipment
Equipement

Châssis porteur

Châssis	Fabrication Liebherr, construction en caisson indéformable, en acier à haute résistance à grains fins.
Stabilisateurs	Calage en 4 points, à telescopage horizontal et vérinage entièrement hydrauliques.
Moteur	Diesel, 6 cylinders, marque Liebherr, type D 9406 TI-E, refroidi par eau, puissance 320 kW (435 ch) à 2100 min^{-1} selon ECE-R 24.03 et 2001/27/EG (Euro 3), couple max. 1900 Nm à 1100 – 1400 min^{-1}, gestion électronique par Liebherr bus de données. Réservoir à carburant: 400 l.
Boîte de vitesse	ZF à changement de rapports en charge avec convertisseur de couple, lock-up et étage gamme terrain integré et actionnement additionnel de l'entraînement de l'essieu avant. 6 rapports avants et 2 rapports arrières.
Essieux	Tous les essieux sont directeurs. Les essieux 1, 3 et 4 avec planétaires et blockages de différentiels.
Suspension	Tous les essieux sont suspendus hydropneumatiquement et blocable hydrauliquement.
Pneumatiques	8 roues. Taille: 14.00 R 25.
Direction	Direction mécanique à assistance hydraulique des essieux avants. Pompe de secours. Direction des essieux arrières enclenchable hydrauliquement. Direction hydrostatique de tous les essieux à commande depuis la cabine du grutier. Direction selon directive CE 70/311/CEE.
Freins	Frein de service: servo-frein pneumatique à deux circuits indépendants agissant sur toutes les roues. Frein à main: par cylindres à ressorts, agissant sur les roues des essieux 2, 3 et 4. Frein à régime continu: Ralentisseur sur échappement avec système de freinage additionnel Liebherr. Freins selons directive CE 71/320/CEE.
Cabine	Cabine conducteur bi-place en tôle d'acier revêtue anti-corrosion par bain de cataphorèse, peinte par poudrage polyester et cuisson au four comportant tous les organes de commande et de contrôle nécessaire à la conduite du véhicule.
Installation électrique	Composants électriques et électroniques reliés entre eux par bus de données moderne. Courant continu 24 Volts, 2 batteries, éclairage conforme au code de la route.

Partie tournante

Châssis	Fabrication Liebherr, construction mécano-soudée en tôle d'acier à haute résistance à grains fins. Reliée au porteur par une couronne d'orientation à 3 rangées de rouleaux. Rotation totale 360°.
Système hydraulique	Diesel hydraulique avec 1 pompe double à débit variable et regulation de puissance automatique, 1 pompe à engrenages double, entraînés par le moteur Diesel du porteur, circuits hydrauliques ouverts avec „load sensing", régulé électriquement. 4 mouvements simultanés practicables.
Commande	Par deux manipulateurs (type manche à balai) dans la cabine du grutier, et par variation électronique du régime du moteur Diesel, servo-commande électrique avec régulation progressive en continu de tous les mouvements en simultané. Technique de transmission par bus de données Liebherr.
Treuil	Moteur hydraulique à cylindrée constante, treuil à réducteur planétaire incorporé et frein d'arrêt à ressort, en circuit hydraulique ouvert.
Relevage de flèche	1 vérin différentiel à soupape pilotage de freinage.
Orientation	Moteur hydraulique, réducteur planétaire, frein d'arrêt commandé par ressort en circuit hydraulique ouvert. Vitesse d'orientation réglable en continu.
Cabine de grue	Entièrement en tôle d'acier avec vitrage de sécurité, chauffage, tous les éléments de commande et de contrôle. Cabine inclinable sur l'arrière.
Sécurités	Contrôleur de charge LICCON, fin de course crochet haut, clapets de sécurité en cas de ruptures de flexibles.
Flèche télescopique	Construction en acier de haute résistance à grains fins à profil oval à haute résistance au flambage, 1 élement de base et 5 élements télescopiques. Chaque élement télescopable indépendamment de l'autre. Système de télescopage „Telematik" séquentiel rapide. Longueur de flèche: 10,8 m - 48 m.
Contrepoids	Contrepoids de base 8,5 t
Circuit électrique	Composants électriques et électroniques reliés entre eux par bus de données moderne. Courant continu 24 Volts, 2 batteries.

Equipement supplémentaire

Fléchette pliante	Fléchette pliante simple, longueur 10,5 m, montable à 0°, 20° ou 40°. Fléchette pliante double, longueur 10,5 m – 19 m, montable à 0°, 20° ou 40°.
Deuxième treuil	Pour le levage avec 2 crochets ou pour le travail avec fléchette pliante lorsque le câble de levage principale rest mouflé.
Contrepoids complémentaire	7,5 t pour une masse totale de 16 t.
Pneumatiques	8 roues. Taille: 16.00 R 25.
Entraînement 8 x 8	Essieu 2 est entraîné additionnellement.

Autres équipements supplémentaires sur demande.

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Technical Data
Caractéristiques techniques

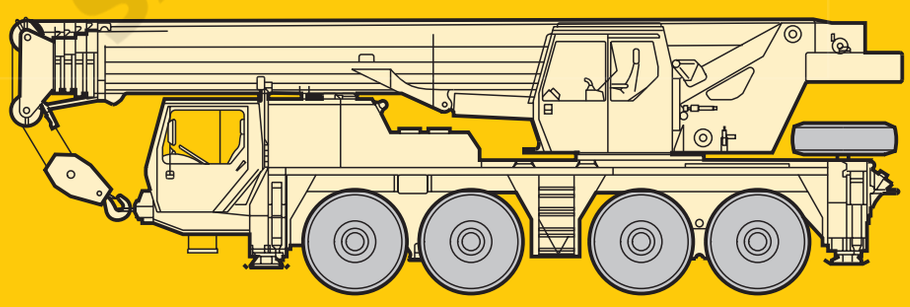
LTM 1080/1

Mobile Crane
Grue automotrice

Telescopic boom

Flèche télescopique

157 ft



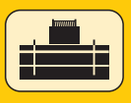
LIEBHERR

Lifting capacities on telescopic boom.
Forces de levage à la flèche télescopique.

LTM 1080/1


35 ft – 157 ft


360°


35500 lbs

85%

ft	35 ft *		47 ft	58 ft	69 ft	80 ft	92 ft	103 ft	114 ft	125 ft	136 ft	148 ft	157 ft	ft
9	183													9
10	169	149	148	137										10
11	158	141	140	131										11
12	148	133	133	126	110									12
13	139	126	126	121	107									13
14	131	120	120	116	104									14
15	124	114	114	111	101	84								15
16	117	109	109	106	98	81.5								16
17	111	104	104	102	95.5	79.5	67							17
18	105	99.5	99	97.5	93	77.5	65.5							18
20	94	90.5	90	89	87.5	73.5	63	54.5						20
22	85	83	83	82	80.5	69.5	60.5	52.4						22
24	77.5	76.5	76	75	73	66	58.1	50.4	43.5					24
26	71	70	69.5	68	65	62	55.7	48.4	42.2					26
28			64	62	58.9	56.9	53.1	46.6	41	35.5	30.3			28
30			58.6	56.3	53.3	51.6	50.1	44.9	39.8	34.5	29.6	26	20.9	30
32			54.2	51.4	48.8	47.3	46.3	43.1	38.8	33.5	28.9	25.6	20.5	32
34			50.2	47.4	45	43.7	42.9	41	37.4	32.6	28.2	25	20	34
36			46.4	44	41.7	40.5	39.9	38.7	36	31.6	27.5	24.3	19.5	36
38			42.7	40.5	38.4	37.4	36.9	36.4	34.5	30.7	26.9	23.6	19	38
40				37.4	35.4	34.5	34.2	34.1	32.9	29.8	26.2	23	18.6	40
45				31.1	29.8	29.1	28.9	29	28.5	27.4	24.1	21.2	17.5	45
50					25.2	24.7	24.6	24.9	24.6	24.6	22.3	19.7	16.4	50
55					21.2	21	21.1	21.4	21.3	21.8	20.6	18.3	15.4	55
60						18.9	18.2	18.6	18.5	19	19	17.1	14.4	60
65						17.4	15.4	17	16.2	16.8	16.8	15.9	13.5	65
70						15.9	14.1	15.8	14.3	14.9	15	14.8	12.8	70
75							12.9	14.4	13.3	13.1	13.3	13.6	12	75
80								12.9	12.4	11.5	12.3	12.2	11.3	80
85								11.4	11.7	10.8	11.5	10.6	10.5	85
90								10.2	11	10.2	10.3	9.5	9.4	90
95									10.2	9.5	9.3	8.5	8.4	95
100									9.5	8.8	8.4	7.6	7.5	100
105										8.1	7.6	6.9	6.7	105
110										7.4	6.9	6.2	6.1	110
115											6.3	5.6	5.5	115
120											5.8	5	4.9	120
125												4.5	4.4	125
130												4.1	4	130
135												3.7	3.6	135
140													3.2	140
I	0		0/ 0	46/ 0/ 0	92/ 0/ 0	92/ 0/ 0	92/ 0/ 0	92/ 0/ 0	92/ 0/ 0	92/ 0	92/46	92	100	I
II	0		46/ 0	46/ 0/ 0	46/ 0/ 0	92/ 0/ 0	92/ 0/ 0	92/92/ 0	92/92/46	92/92	92/92	92	100	II
III	0		0/ 0	0/ 0/ 0	0/ 0/ 0	0/92/ 0	46/92/46	46/92/92	92/92/92	92/92	92/92	92	100	III
IV	0		0/ 0	0/46/ 0	0/92/46	0/46/92	0/92/92	46/46/92	46/92/92	46/92	92/92	92	100	IV
% V	0		0/46	0/46/92	0/46/92	0/46/92	0/46/92	0/46/92	0/46/92	46/92	46/92	92	100	V %

* over rear / en arrière

TAB 106139/106145

Remarks referring to load charts.

1. The tabulated lifting capacities do not exceed 85% of the tipping load.
2. The crane's structural steelwork is in accordance with DIN 15018, part 3. Design and construction of the crane comply with DIN 15018, part 2, and with F.E.M. regulations.
3. The 85% overturning limit values take into account wind force 5 = wind speed 20 mph.
4. Lifting capacities are given in kips.
5. The weight of the hook blocks and hooks must be deducted from the lifting capacities.
6. Working radii are measured from the slewing centreline.
7. The lifting capacities given for the telescopic boom only apply if the folding jib is taken off.
8. Lifting capacities are subject to modifications.
9. Lifting capacities above 128 kips / 172 kips only with additional pulley block / special equipement.

Remarques relatives aux tableaux des charges.

1. Les forces de levage indiquées ne dépassent pas 85% de la charge de basculement.
2. La norme DIN 15018, 3ème partie est appliquée pour les charpentes. La construction de la grue est réalisée conformément à la norme DIN 15018, 2ème partie, et aux règles de la F. E. M.
3. A 85% de la charge de basculement, il a été tenu compte d'un vent de force 5 = vitesse de vent 20 mph.
4. Les forces de levage sont données en kips.
5. Les poids des moufles et crochets doit être soustrait des charges indiquées.
6. Les portées sont calculées à partir de l'axe de rotation.
7. Les forces indiquées pour la flèche télescopique s'entendent fléchette dépliable déposée.
8. Les forces de levage sont modifiables sans préavis.
9. Forces de levage plus de 128 kips / 172 kips seulement avec un moufle complémentaire / équipement supplémentaire.

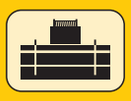
Lifting capacities are given in kips (1,000 lbs).

Lifting capacities on telescopic boom.
Forces de levage à la flèche télescopique.

LTM 1080/1


35 ft – 157 ft


360°


18740 lbs

85%

ft	35 ft	47 ft	58 ft	69 ft	80 ft	92 ft	103 ft	114 ft	125 ft	136 ft	148 ft	157 ft	ft
10	134	134	124										10
11	127	127	119										11
12	120	120	114	99.5									12
13	113	113	110	97									13
14	108	107	105	94.5									14
15	102	102	101	91.5	76								15
16	97	96.5	95.5	89	74								16
17	92	92	90.5	85	72	61							17
18	88	87.5	85.5	80	70.5	59.6							18
20	79	78.5	76	70	66	57.1	49.6						20
22	71.5	71	66.5	61.5	58.5	54.3	47.6						22
24	64	63.5	58.4	54.5	52	50.2	45.6	39.5					24
26	56.7	56.6	51.8	48.5	46.4	45	43.6	38.4					26
28		50	46.6	43.5	41.8	40.6	39.8	36.9	32.3	27.6			28
30		44	41.8	39	37.5	36.6	36	35.1	31.4	26.9	23.6	19	30
32		39.9	37.8	35.3	34	33.3	32.9	32.1	30.5	26.3	23.2	18.6	32
34		37.3	34.3	32.2	31.1	30.6	30.3	29.7	29	25.6	22.7	18.2	34
36		34.2	31.1	29.5	28.6	28.2	28	27.5	27.2	24.9	22.1	17.7	36
38		31.1	27.9	26.9	27.1	25.8	26.4	25.3	25.3	24.2	21.5	17.3	38
40			25.1	24.5	25.8	23.6	25.2	23.3	23.6	23.3	20.9	16.9	40
45			21.6	19.7	23	20.3	22.2	20.8	19.9	19.7	19.3	15.9	45
50				17.4	20	18.1	19.2	18.7	17.4	17.9	17	14.9	50
55				15.8	17.2	16.4	16.5	16.6	15.9	16	14.8	13.8	55
60					14.7	15	14.2	14.9	14.4	14	12.9	12.6	60
65					12.7	13.1	12.6	13.5	12.9	12.2	11.2	11	65
70					11.1	12.1	11.7	11.8	11	10.5	9.6	9.5	70
75						10.9	10.6	10.3	9.5	9.1	8.3	8.2	75
80							9.3	9	8.4	8	7.2	7.1	80
85							8.4	8.1	7.4	7	6.3	6.1	85
90							7.5	7.3	6.6	6.2	5.5	5.4	90
95								6.5	5.9	5.5	4.8	4.7	95
100								5.8	5.3	4.9	4.1	4	100
105									4.7	4.3	3.6	3.5	105
110									4.1	3.8	3.1	3	110
115										3.3	2.6	2.5	115
120										2.9	2.2	2.1	120
I	0	0/ 0	46/ 0/ 0	92/ 0/ 0	92/ 0/ 0	92/ 0/ 0	92/ 0/ 0	92/ 0/ 0	92/ 0	92/46	92	100	I
II	0	46/ 0	46/ 0/ 0	46/ 0/ 0	92/ 0/ 0	92/ 0/ 0	92/92/ 0	92/92/46	92/92	92/92	92	100	II
III	0	0/ 0	0/ 0/ 0	0/ 0/ 0	0/92/ 0	46/92/46	46/92/92	92/92/92	92/92	92/92	92	100	III
IV	0	0/ 0	0/46/ 0	0/92/46	0/46/92	0/92/92	46/46/92	46/92/92	46/92	92/92	92	100	IV
% V	0	0/46	0/46/92	0/46/92	0/46/92	0/46/92	0/46/92	0/46/92	46/92	46/92	92	100	V %

TAB 106142

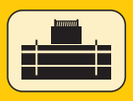
Les forces de levage sont données en kips (1,000 lbs).

Lifting capacities on telescopic boom.
Forces de levage à la flèche télescopique.

LTM 1080/1


35 ft – 58 ft


0°


35500 lbs[1)]
18740 lbs[2)]

85%

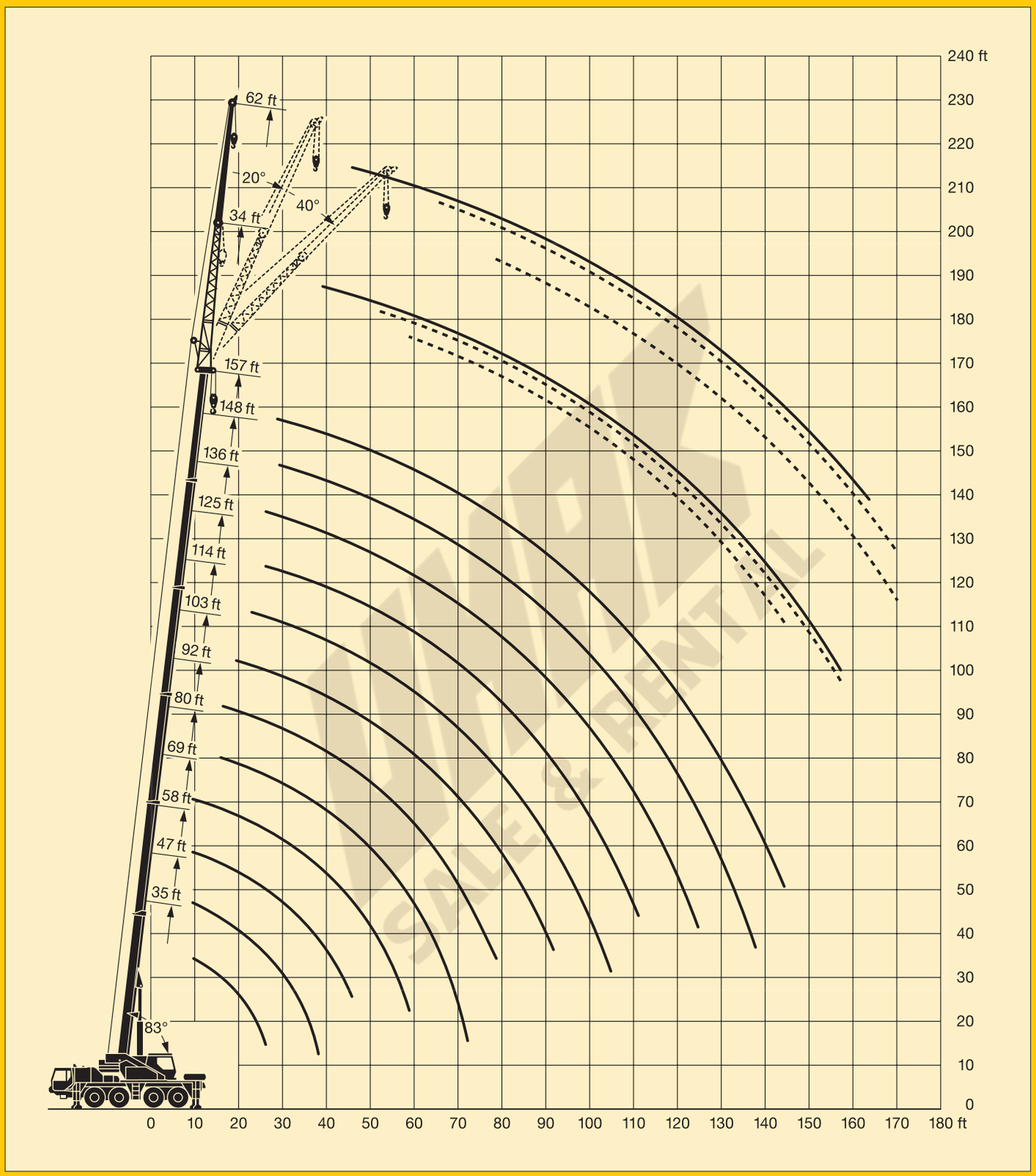
ft	35 ft 1)	35 ft 2)	47 ft 1)	47 ft 2)	58 ft 1)	58 ft 2)	ft
10	39.6	37.8	41	39.3	41.8	40.1	10
11	36.9	35.2	38.4	36.7	39.2	37.5	11
12	34.5	32.9	36	34.4	36.8	35.2	12
13	32.2	30.7	33.8	32.3	34.6	33.1	13
14	30.3	28.8	31.8	30.4	32.6	31.2	14
15	28.4	27	30	28.6	30.8	29.4	15
16	26.8	25.4	28.3	27	29.2	27.8	16
17	25.3	24	26.8	25.6	27.7	26.4	17
18	23.9	22.7	25.5	24.3	26.3	25.1	18
20	21.3	20.1	22.9	21.7	23.7	22.6	20
22	19.1	18.1	20.7	19.7	21.6	20.5	22
24	17.2	16.2	18.8	17.8	19.7	18.7	24
26	15.5	14.6	17.1	16.1	18	17	26
28			15.6	14.7	16.5	15.6	28
30			14.3	13.4	15.1	14.3	30
32			13.1	12.3	14	13.2	32
34			12	11.3	12.9	12.2	34
36			11.1	10.4	12	11.3	36
38			10.2	9.5	11	10.3	38
40					10.2	9.5	40
45					8.4	7.8	45

%				
I	0	0/ 0	46/ 0/ 0	I
II	0	46/ 0	46/ 0/ 0	II
III	0	0/ 0	0/ 0/ 0	III
IV	0	0/ 0	0/46/ 0	IV
V	0	0/46	0/46/92	V

TAB 106189 / 106191

Lifting heights.
Hauteurs de levage.

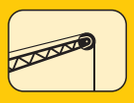
LTM 1080/1



Lifting capacities on the folding jib.
Forces de levage à la fléchette pliante.

LTM 1080/1

 125 ft – 157 ft

 34 ft – 62 ft

 360°

 35500 lbs

85%

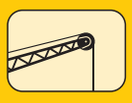
ft	125 ft						136 ft						148 ft						157 ft						ft
	34 ft			62 ft			34 ft			62 ft			34 ft			62 ft			34 ft			62 ft			
	0°	20°	40°	0°	20°	40°	0°	20°	40°	0°	20°	40°	0°	20°	40°	0°	20°	40°	0°	20°	40°	0°	20°	40°	
34	21																								34
36	20.7																								36
38	20.5																								38
40	20.3			8.1			16.8						13.6						9.9						40
45	19.3			8			15.9						12.9						9.7						45
50	17.9	15.5		7.8			15.1	13.4		7.2			12.2	10.9		6.5			9.4			5.8			50
55	16.6	15.1	13.3	7.6			14.3	12.8	12.1	7			11.5	10.4		6.4			9.1	8.8		5.9			55
60	15.4	14.6	13.1	7.3	6.2		13.4	12.2	11.5	6.9	5.9		10.9	9.9	9.5	6.4			8.7	8.5	8.4	5.9			60
65	14.4	13.9	12.9	7.1	6.1		12.6	11.6	11	6.7	5.8		10.3	9.4	9.1	6.3			8.3	8.2	8.1	5.8			65
70	13.4	13	12.7	7	5.9		11.8	11	10.5	6.6	5.7		9.8	9	8.7	6.2	5.3		8	7.9	7.9	5.6	5		70
75	12.4	12.1	12.2	6.8	5.8	5.1	11	10.5	10.1	6.5	5.6		9.4	8.6	8.3	6.1	5.2		7.7	7.6	7.6	5.4	4.9		75
80	11.4	11.3	11.4	6.6	5.7	5	10.3	10.1	9.7	6.3	5.5	4.9	8.9	8.2	8	5.9	5.1	4.6	7.4	7.4	7.3	5.3	4.9	4.3	80
85	10.1	10.5	10.7	6.5	5.6	4.9	9.6	9.7	9.3	6.2	5.4	4.9	8.5	7.9	7.7	5.8	5.1	4.6	7	7.1	7.1	5.1	4.8	4.3	85
90	9	9.6	10	6.3	5.5	4.9	8.9	9.1	9	6.1	5.3	4.8	8.1	7.6	7.4	5.7	5	4.6	6.7	6.8	6.9	4.9	4.8	4.3	90
95	8	8.7	9.1	6.2	5.4	4.8	8.1	8.5	8.6	6	5.2	4.8	7.7	7.3	7.1	5.5	4.9	4.5	6.4	6.5	6.7	4.8	4.7	4.2	95
100	7.2	7.7	8.2	6	5.3	4.8	7.2	7.8	8.1	5.9	5.1	4.8	7.2	7	6.9	5.3	4.9	4.5	6.1	6.2	6.4	4.6	4.5	4.2	100
105	6.4	6.9	7.3	5.8	5.2	4.8	6.6	6.9	7.3	5.8	5	4.7	6.6	6.7	6.6	5.1	4.8	4.5	5.8	6	6.1	4.5	4.4	4.2	105
110	5.9	6.2	6.5	5.6	5.1	4.7	6.3	6.3	6.6	5.7	4.9	4.7	5.9	6.3	6.5	4.9	4.7	4.5	5.6	5.7	5.8	4.4	4.3	4.2	110
115	5.6	5.8	5.8	5.5	5	4.7	5.9	6	6.1	5.5	4.9	4.6	5.3	5.7	6	4.7	4.5	4.4	5.1	5.4	5.6	4.2	4.2	4.1	115
120	5.3	5.4		5.1	4.9	4.6	5.4	5.7	5.8	5.1	4.8	4.6	4.7	5.1	5.4	4.5	4.4	4.3	4.5	5	5.2	4	4	4.1	120
125	5	5.1		4.6	4.9	4.6	4.9	5.2		4.6	4.8	4.6	4.2	4.6	4.8	4.4	4.2	4.2	4	4.4	4.7	3.9	3.9	3.9	125
130	4.7	4.8		4.2	4.8	4.6	4.4	4.7		4.3	4.7	4.6	3.7	4.1	4.3	4.1	4.1	4.1	3.6	3.9	4.2	3.7	3.8	3.8	130
135	4.5	4.5		3.9	4.4	4.6	4	4.3		4.1	4.3	4.5	3.3	3.6	3.8	3.7	3.9	4	3.1	3.5	3.7	3.5	3.7	3.7	135
140	4.1	4.2		3.7	3.9	4.3	3.6	3.8		3.9	3.9	4.2	2.9	3.2		3.3	3.8	3.9	2.8	3.1	3.2	3.1	3.5	3.6	140
145	3.8			3.5	3.6		3.3	3.4		3.6	3.7	3.9	2.6	2.8		3	3.5	3.8	2.4	2.7		2.8	3.4	3.4	145
150	3.4			3.3	3.4		2.9	3.1		3.3	3.6	3.7	2.2	2.5		2.6	3.2	3.5	2.1	2.3		2.4	3	3.2	150
155				3.1	3.2		2.6			3	3.3	3.5	1.9	2.1		2.3	2.8	3.1	1.7	2		2.1	2.7	3	155
160				2.9	3					2.7	3		1.5	1.7		2	2.5	2.8		1.7		1.8	2.3	2.7	160
165				2.7	2.8					2.4	2.7					1.7	2.2					1.6	2	2.3	165
170				2.6	2.6					2.1	2.4					1.5	1.9					1.3	1.7	2	170
175				2.3						1.8	2.1						1.6						1.4		175
180										1.6															180
I	92/ 0						92/46						92						100						I
II	92/92						92/92						92						100						II
III	92/92						92/92						92						100						III
IV	46/92						92/92						92						100						IV
% V	46/92						46/92						92						100						V %

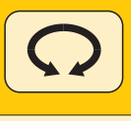
TAB 106161 / 106167 / 106173

Lifting capacities on the folding jib.
Forces de levage à la fléchette pliante.

LTM 1080/1

 125 ft – 157 ft

 34 ft – 62 ft

 360°

 18740 lbs

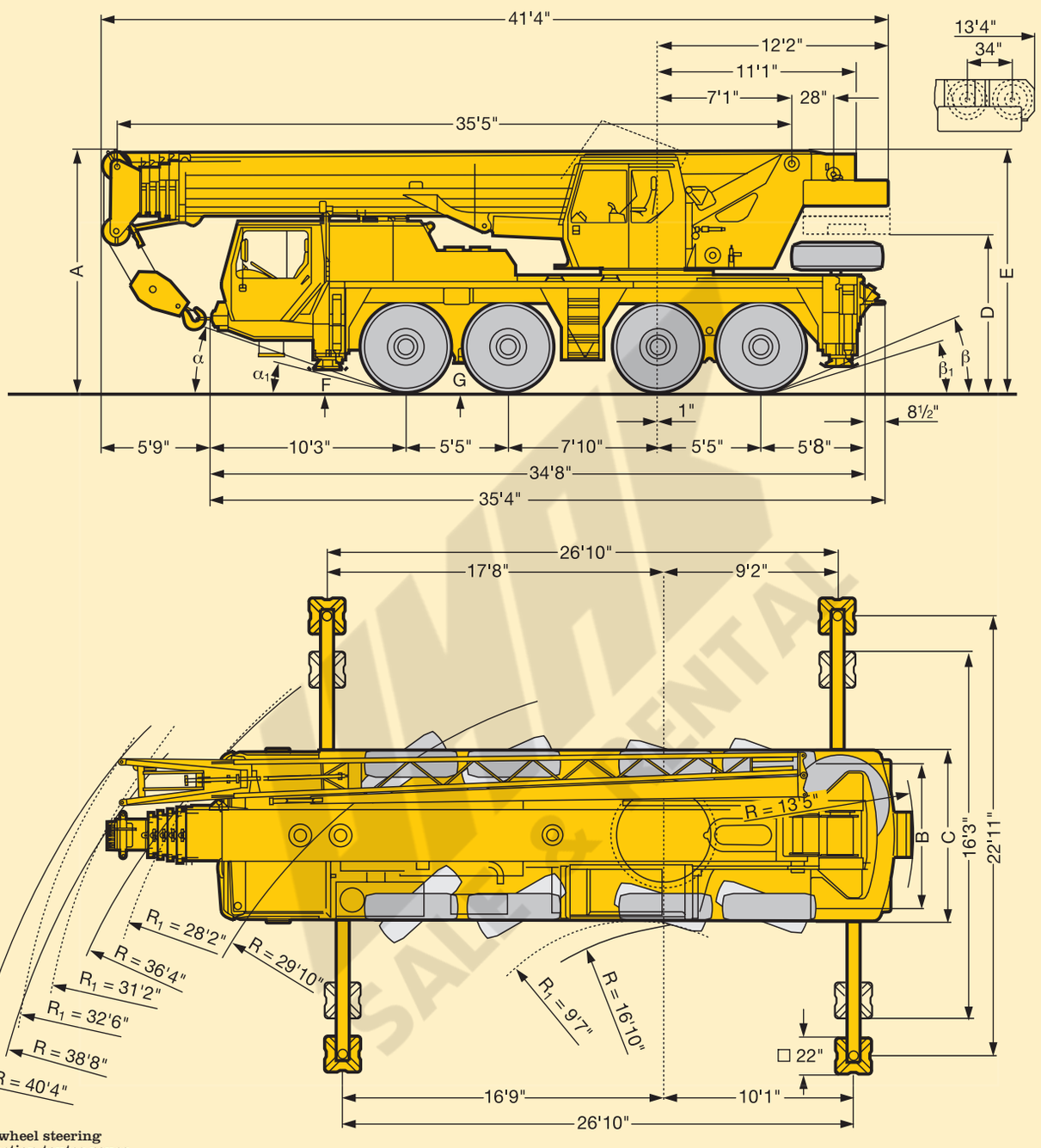
85%

ft	125 ft						136 ft						148 ft						157 ft						ft
	34 ft			62 ft			34 ft			62 ft			34 ft			62 ft			34 ft			62 ft			
	0°	20°	40°	0°	20°	40°	0°	20°	40°	0°	20°	40°	0°	20°	40°	0°	20°	40°	0°	20°	40°	0°	20°	40°	
34	19																								34
36	18.9																								36
38	18.7																								38
40	18.4			7.4			15.2						12.4						9						40
45	17.5			7.3			14.4						11.7						8.9						45
50	15.7	14.1		7.1			13.7	12.2		6.6			11.1	9.9		5.9			8.6			5.3			50
55	13.7	13.7	12.1	6.9			12.8	11.6	11	6.4			10.5	9.4		5.8			8.2	8		5.3			55
60	11.9	13.1	11.9	6.7	5.6		11.7	11	10.4	6.2	5.3		9.9	9	8.7	5.8			7.9	7.7	7.7	5.4			60
65	10.3	11.4	11.7	6.5	5.5		10.2	10.5	10	6.1	5.2		9.4	8.6	8.2	5.7			7.6	7.5	7.4	5.3			65
70	9	10	10.7	6.3	5.4		8.9	9.7	9.6	6	5.2		8.7	8.2	7.9	5.6	4.8		7.3	7.2	7.1	5.1	4.5		70
75	8.3	8.7	9.5	6.2	5.3	4.6	8.4	8.7	9	5.9	5.1		7.8	7.8	7.6	5.5	4.8		7	6.9	6.9	4.9	4.5		75
80	7.8	7.6	8.3	6	5.2	4.6	7.7	7.6	8.3	5.8	5	4.5	6.8	7.4	7.3	5.4	4.7	4.2	6.6	6.7	6.7	4.8	4.4	3.9	80
85	7.3	6.9	7.2	5.9	5.1	4.5	6.8	7.2	7.2	5.6	4.9	4.4	5.9	6.7	7	5.3	4.6	4.2	5.7	6.4	6.5	4.6	4.4	3.9	85
90	6.5	6.6	6.5	5.5	5	4.5	6	6.5	6.7	5.4	4.8	4.4	5.2	5.9	6.3	5.2	4.5	4.1	4.9	5.7	6.1	4.5	4.3	3.9	90
95	5.8	6.2	6.3	5	4.9	4.4	5.2	5.8	6.2	5	4.7	4.3	4.5	5.1	5.6	4.8	4.5	4.1	4.2	4.9	5.5	4.3	4.3	3.9	95
100	5.1	5.6	5.9	4.7	4.8	4.4	4.6	5.1	5.5	4.7	4.6	4.3	3.8	4.4	4.9	4.3	4.4	4.1	3.6	4.2	4.7	4	4.1	3.8	100
105	4.5	4.9	5.2	4.5	4.7	4.3	4	4.5	4.8	4.5	4.6	4.3	3.2	3.8	4.2	3.7	4.4	4.1	3	3.6	4.1	3.5	4	3.8	105
110	4	4.4	4.6	4.3	4.2	4.3	3.5	3.9	4.2	4	4.2	4.2	2.7	3.3	3.6	3.2	4.1	4.1	2.5	3.1	3.5	3	3.9	3.8	110
115	3.5	3.9	4.1	4	4	4.1	3	3.4	3.7	3.5	4	4.1	2.3	2.8	3.1	2.7	3.7	4	2.1	2.6	3	2.5	3.5	3.8	115
120	3.1	3.4		3.5	3.8	3.8	2.6	3	3.2	3	3.8	3.9	1.8	2.3	2.6	2.3	3.2	3.8		2.1	2.5	2.1	3	3.6	120
125	2.7	3		3.1	3.7	3.7	2.2	2.5		2.6	3.3	3.7		1.8	2.1	1.9	2.7	3.3			2		2.5	3.2	125
130	2.3	2.5		2.8	3.3	3.6	1.9	2.2		2.3	2.9	3.4		1.4	1.7	1.5	2.3	2.9			1.5		2.1	2.8	130
135	1.9	2.1		2.4	2.9	3.3	1.5	1.8		1.9	2.5	3					1.9	2.5					1.7	2.3	135
140	1.6	1.8		2.1	2.6	2.9				1.6	2.2	2.6					1.5	2.1						1.9	140
145				1.8	2.2						1.9	2.2													145
150				1.5	1.9						1.5	1.9													150
155					1.6							1.5													155

%				
I	92/ 0	92/46	92	100
II	92/92	92/92	92	100
III	92/92	92/92	92	100
IV	46/92	92/92	92	100
V	46/92	46/92	92	100

TAB 106158 / 106164 / 106170

Dimensions.
Encombrement.



R_1 = All-wheel steering
Direction toutes roues

	Dimensions / Encombrement											
	A	A	B	C	D	E **	F	G	α	α_1	β	β_1
16.00 R 25	12'8"	12'4"	7'7"	9'	9'6"	12'8"	13 1/3"	15 1/3"	19°	16°	23°	16°

* lowered / abaissé

** with folding jib / avec fléchette pliante

Weights.
Poids.

Axle Essieu	1	2	3	4	Total weight Poids total
lbs	26400	26400	26400	26400	105600[1)]

[1)] with 18740 lbs counterweight / avec contrepoids 18740 lbs

Load (kips) Forces de levage kips	No. of sheaves Poulies	No. of lines Brins	Weight lbs Poids lbs
176	7	14	950
128	5	10	730
84	3	7	880
35	1	3	520
12.5	–	1	240

Working speeds.
Vitesses.

	1	2	3	4	5	6	R_1	R_2	%
mph	6.0	9.2	14.4	22.4	32.9	49.7	6	14.4	35 %
mph	3.9	6	9.3	14.5	21.2	33	3.9	6	60 %
	16.00 R 25								

Drive Mécanismes	infinitely variable en continu	Rope diameter / Rope length Diamètre du câble / Longueur du câble	Max. single line pull Effort au brin maxi.
1	0 – 426 ft/min single line ft/min au brin simple	$^2/_3$" / 820'	12800 lbs
2	0 – 426 ft/min single line ft/min au brin simple	$^2/_3$" / 690'	12800 lbs
360°	0 – 2.0 rpm		
	approx. 48 seconds to reach 83° boom angle env. 48 s jusqu'à 83°		
	approx. 240 seconds for boom extension from 35 ft – 157 ft env. 240 s pour passer de 35 ft – 157 ft		

Crane carrier.

LTM 1080/1

Frame:	Liebherr designed and manufactured, box-type, torsion resistant design of high-tensile fine grained structural steel.
Outriggers:	4-point support, all-hydraulic horizontal and vertical operation.
Engine:	6-cylinder Diesel engine, make Liebherr, type D 9406 TI-E, watercooled, 320 kW (435 HP) at 2100 min^{-1} acc. to ECE-R 24.03 and 2001/27/EG (Euro 3), max. torque 1900 Nm at 1100 – 1400 min^{-1}, engine management with Liebherr data bus. Fuel tank: 400 l.
Transmission:	ZF power shift gear, with torque converter, lock-up and integrated off-road ratio, additional activation of front wheel drive, 6 forwards and 2 reverse speeds.
Axles:	All axles steered. Axles 1, 3 and 4 with planetary gears and differential locks.
Suspension:	All axles with hydropneumatic suspension and hydraulic locking facility.
Tyres:	8 tyres. Tyre size: 16.00 R 25.
Steering:	Front axles mechanically steered, with hydraulic power assistance and stand-by steering pump. Rear axles hydraulically steered. All axles steered hydrostatically from crane cab. Steering acc. to EC directive 70/311/EEC.
Brakes:	Service brake: All-wheel servo-air brake, dual circuit system. Hand brake: Spring-loaded, acting on all wheels of axles 2, 3 and 4. Sustained-action brake: Exhaust retarder with additional Liebherr braking system Brakes acc. to EC directive 71/320/EEC.
Driving cab:	Two-men driving cab, steel sheet design, with dipping varnish and powder coating. With control elements and instruments for driving.
Electrical system:	Control of the electrical and electronical components by modern data bus technique. 24 Volt DC, 2 batteries, lighting according to traffic regulations.

Crane superstructure.

Frame:	Liebherr-made torsion resistant, welded construction of high-tensile structural steel, linked to carrier by a three-row roller slewing ring for 360° continuous rotation.
Crane drive:	Diesel-hydraulic with 1 double axial piston variable displacement pump with automatic capacity control, 1 double gear pump, driven by the carrier Diesel engine, open oil circuits with electrically controlled "load sensing", operation of 4 movements simultaneously.
Crane control:	By 2 control levers (joystick type) and by electronic speed variation of Diesel engine, electric pilot control with stepless control of all crane motions. Liebherr data bus technique for data transfer.
Hoist gear:	Axial piston fixed displacement motor, hoist drum with integrated planetary gear and spring-loaded static brake, actuation by open oil circuit.
Luffing gear:	1 differential ram with pilot operated brake valve.
Slewing gear:	Hydraulic motor, planetary gear with spring-loaded static brake, actuation by open oil circuit. Continuous control of slewing speed.
Crane cab:	All-steel construction, fully galvanized, with safety glass, heater, operating and control elements. Cab tiltable backwards.
Safety devices:	LICCON safe load indicator, hoist limit switch, safety valves against rupture of pipes and hoses.
Telescopic boom:	Buckling resistant and torsion-proof design of high tensile steel with oviform boom profile, 1 base section and 5 telescopic sections. All telescopic sections extendable hydraulically and independently from one another. Rapid-cycle telescoping system "TELEMATIK". Boom length: 35 ft – 157 ft.
Counterweight:	18740 lbs basic counterweight.
Electric system:	Control of the electrical and electronical components by modern data bus technique.

Complementary equipment.

Folding jib:	34 ft – 62 ft long, for mounting on telescopic boom at 0°, 20° and 40°.
2nd hoist gear:	For two-hook operation, or with folding jib in case main hoist shall remain reeved.
Additional counterweight:	16760 lbs for a total counterweight of 35500 lbs.
Drive 8 x 8:	Axle 2 additionally driven.

Other equipments available on request.

Châssis porteur.

LTM 1080/1

Châssis:	Fabrication Liebherr, construction en caisson indéformable, en acier à haute résistance à grains fins.
Stabilisateurs:	Calage en 4 points, à telescopage horizontal et vérinage entièrement hydrauliques.
Moteur:	Diesel 6 cylindres, marque Liebherr, type D 9406 TI-E, refroidi par eau, puissance 320 kW (435 ch) à 2100 min^{-1} selon ECE-R 24.03 et 2001/27/EG (Euro 3), couple max. 1900 Nm à 1100 – 1400 min^{-1}, gestion électronique par Liebherr bus de données. Réservoir à carburant: 400 l.
Boîte de vitesse:	ZF à changement de rapports en charge avec convertisseur de couple, lock-up et étage gamme terrain integré et actionnement additionnel de l'entraînement de l'essieu avant. 6 rapports avants et 2 rapports arrières.
Essieux:	Tous les essieux sont directeurs. Les essieux 1, 3 et 4 avec planétaires et blockages de différentiels.
Suspension:	Tous les essieux sont suspendus hydropneumatiquement et blocable hydrauliquement.
Pneumatiques:	8 roues. Taille: 16.00 R 25.
Direction:	Direction mécanique à assistance hydraulique des essieux avants. Pompe de secours. Direction des essieux arrières enclenchable hydrauliquement. Direction hydrostatique de tous les essieux à commande depuis la cabine du grutier. Direction selon directive CE 70/311/CEE.
Freins:	Frein de service: servo-frein pneumatique à deux circuits indépendants agissant sur toutes les roues. Frein à main: par cylindres à ressorts, agissant sur les roues des essieux 2, 3 et 4. Frein à régime continu: Ralentisseur sur échappement avec système de freinage additionnel Liebherr. Freins selons directive CE 71/320/CEE.
Cabine:	Cabine conducteur bi-place en tôle d'acier revêtue anti-corrosion par bain de cataphorèse, peinte par poudrage polyester et cuisson au four comportant tous les organes de commande et de contrôle nécessaire à la conduite du véhicule.
Installation électrique:	Composants électriques et électroniques reliés entre eux par bus de données moderne. Courant continu 24 Volts, 2 batteries, éclairage conforme au code de la route.

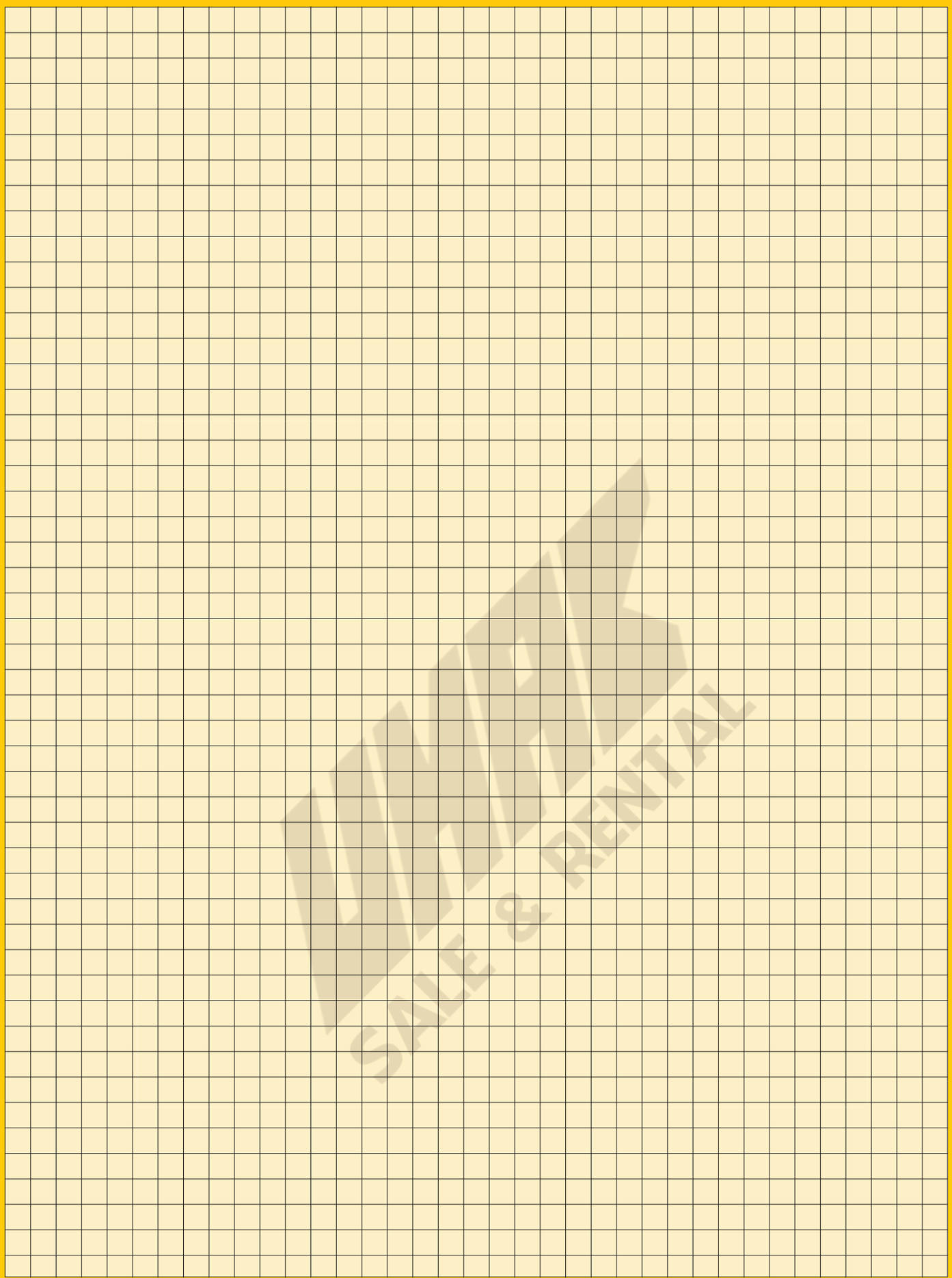
Partie tournante.

Châssis:	Construction mécanosoudée en tôle d'acier à haute résistance à grains fins. Reliée au porteur par une couronne d'orientation à 3 rangées de rouleaux. Rotation totale 360°.
Entraînement:	Diesel hydraulique avec 1 pompe double à débit variable et regulation de puissance automatique, 1 pompe à engrenages double, entraînés par le moteur Diesel du porteur, circuits hydrauliques ouverts avec "load sensing", régulé électriquement. 4 mouvements simultanés practicables.
Commande:	Par deux manipulateurs (type manche à balai) dans la cabine du grutier, et par variation électronique du régime du moteur Diesel, servo-commande électrique avec régulation progressive en continu de tous les mouvements en simultané. Technique de transmission par bus de données Liebherr.
Treuil:	Moteur hydraulique à cylindree constante, treuil à réducteur planétaire incorporé et frein d'arrêt à ressort, en circuit hydraulique ouvert.
Relevage de flèche:	1 vérin différentiel à soupape pilotage de freinage.
Orientation:	Moteur hydraulique, réducteur planétaire, frein d'arrêt commandé par ressort en circuit hydraulique ouvert. Vitesse d'orientation réglable en continu.
Cabine de grue:	Entièrement en tôle d'acier avec vitrage de sécurité, chauffage, tous les instruments de commande et de contrôle. Cabine inclinable sur l'arrière.
Sécurités:	Contrôleur de charge LICCON, fin de course crochet haut, clapets de sécurité en cas de ruptures de flexibles.
Flèche télescopique:	Construction en acier à haute résistance à grains fins à profil oval à haute résistance au flambage, 1 élément de base et 5 éléments télescopiques. Chaque élément télescopable indépendamment de l'autre. Système de télescope «Télématik» séquentiel rapide. Télescope: 35 ft à 157 ft.
Contrepoids:	Contrepoids de base 18740 lbs.
Circuit électrique:	Composants électriques et électroniques reliés entre eux par bus de données moderne.

Equipement optionnel.

Fléchette pliante:	34 ft à 62 ft de long, pour montage à la flèche télescopique à 0°, 20° ou 40°.
Deuxième treuil:	Pour le levage avec 2 crochets ou pour le travail avec fléchette pliante lorsque le câble de levage principale reste mouflé.
Contrepoids complémentaire:	16760 lbs pour une masse totale de 35500 lbs.
Entraînement 8 x 8:	Essieu 2 est entraîné additionnellement.

Autres équipements supplémentaires sur demande.



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Load handling chart book

LTM 1080/1L

061513

Date : 22.10.2002

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Product identification

Manufacturer: LIEBHERR-WERK EHINGEN GMBH
Product group: Telescope mobile crane
Type: LTM 1080/1L
Machine number: 061513
Date: 22.10.2002

Contents

I. INFORMATION FOR USING THE LOAD CAPACITY TABLES

DANGER: The specifications contained in the operating instructions are of vital importance for crane operation. Failure to observe these instructions may lead to ACCIDENTS!!

II. LOAD CAPACITY TABLES

1. Explanations

1.1 The load capacity values in the tables are stated in pounds [lbs].

1.2 The working radius is the horizontal gravity center distance of the load from the rotational axis of the crane superstructure measured at the ground. The radius stated is valid under load conditions, i.e. including boom flexure.

1.3 Boom positions differing from those given in the load capacity tables are not permissible.

1.4 Even without a load, the boom may only be moved inside those areas for which load capacity values are stated, otherwise there is a danger of tilting. In normal operation, this hazard is prevented by the overload safety device. After switching to "Assembly" mode (with the "assembly" key-operated switch), the boom must not be lowered or topped outside the range of the working radius.

1.5 The stated load capacities contain the weights of the load bearing, lifting and slinging tackle. The possible weight for the load to be lifted is therefore reduced according to the weights of the afore-mentioned tackle.

1.6 If the boomnose is mounted on the jib head during crane operation, then the possible load is reduced further corresponding the weight of the boomnose. (144 lbs)

2. Crane operating mode "Crane supported"

2.1 Before the crane is raised on its supports, the axle suspension must be blocked.

2.2 The sliding arms of the hydraulic support jack must be extended (to a uniform length on both sides) to the extent stated in the applirope load capacity table.

2.3 The sliding arms must be secured by pins.

2.4 It is necessary to place stable underlay material under the support pads of the support jacks over a large surface area according to ground conditions.

2.5 All wheels must be raised clear of the ground.

2.6 The crane must be aligned horizontally with the aid of the level gauges. The horizontal crane position must be checked occasionally, and if necessary corrected, during crane operation.

3. Crane operating mode "Free-standing on tires"

The crane can be operated in this mode if the following instructions are observed:

3.1 The telescopic boom may be extended to a maximum length of 58 ft.

3.2 The ground beneath the crane must be in a position to securely bear the maximum operating weight of the crane supplemented by the weight of the load.

3.3 The ground beneath the crane must be level and not sloping.

3.4 The suspension of all axles must be locked.

3.5 If possible, the sliding arms should be extended and the support jacks, with support pads mounted, lowered to a location slightly above the ground, so that the crane can rest on the supports if the ground gives way.

3.6 The air pressure of all tires must conform to the pressure specified for crane operation:.

Tire equipment	air pressure for road travel	air pressure for crane operation
14.00-25	145.0 psi (10 bar)	145.0 psi (10 bar)
16.00-25	130.5 psi (9 bar)	145.0 psi (10 bar)
20.5-25	101.5 psi (7 bar)	116.0 psi (8 bar)

DANGER: Failure to comply with these pressures may lead to accidents

4. Crane travel with load

The crane can be driven with a suspended load if the instructions given under point 3 are observed. The following supplementary rules apply:

4.1 The crane must be driven very slowly (1st gear).

4.2 Abrupt travel movements must be avoided.

4.3 The load must be kept close to the ground and safeguarded against pendulum motion.

5. There is a danger of overloading or toppling the crane:

5.1 if the loads, boom lengths and radius indicated in the appropriate load chart are not strictly adhered to;

5.2 if the load begins to swing due to improper control of crane movements;

5.3 if loads are pulled at an angle. Pulling diagonally to the boom's longitudinal axis is the most dangerous movement, and must never be carried out. Pulling at an angle is prohibited.

5.4 if there is insufficient distance from trenches, cellars, and holes;

5.5 if in operating condition "crane supported":

5.5.1 the crane is not propeerly supported on all 4 hydraulic supports and the crane is not adjusted horizontally;

5.5.2 the sliding outrigger arms are not extended to the exact length stated in the applicable load chart (to a uniform length on both sides);

5.5.3 the sliding arms are not secured with pins;

5.5.4 the support pads are not provided with a suitable foundation of stable material in accordance with the relevant ground conditions;

5.6 if in operating condition "crane freestanding on tires, working over rear":

5.6.1 the telescopic boom is extended to a length of more than 58 ft;

5.6.2 the axle suspension is not blocked;

5.6.3 the ground is not capable of bearing the max. operating weight of the crane supplemented by the weight of the load.

5.6.4 the ground is not level an not without inclination;

5.6.5 the crane is driven too fast with a load suspended, and braking or other movements are sudden.

6. Telescopic boom

6.1 The lifting capacity of the telescopic boom with its 5 extendable telescopic sections is limited. The loads stated in the load capacity tables must not be exceeded.

6.2 The specifications for the telescopic sections to be extended according to load and required boom length must be observed under all circumstances.

6.3 As a general rule, the boom should first be extended to the required length, and then loaded. However, it is possible to extend and retract the boom under partial load. The weight of this partial load is dependent on bearing pad lubrication and the available useable lengths of the telescopic sections.

6.4 Even without a load, the telescopic boom may only be moved within the working radius ranges for which values are listed in the load capacity table.

DANGER: Failure to observe this regulation may lead to accidents

7. Rope winches

7.1 Winch 1 (main hoisting gear)
Winch 1 is designed for a maximum rope tension of 13900 lbs (63 kN). This rope tension must not be exceeded under any circumstances. Accordingly, the minimum number of hoisting rope lines (rope reeving) should be selected according to the weight of the load to be lifted (see Table "Hoisting rope reeving" in Chapter II).

7.2 Winch 2 (Auxiliary hoisting gear)
Winch 2 is designed for a maximum rope tension of 13900 lbs (63 kN). This rope tension must not be exceeded under any circumstances. Accordingly, the minimum number of hoisting rope lines (rope reeving) should be selected according to the weight of the load to be lifted (see Table "Hoisting rope reeving" in Chapter II).

7.3 Prevention of rope slack formation:

7.3.1 When retracting the telescopic boom, the winch must be operated in the direction of lifting simultaneously, in order to prevent the hook block from descending to the ground and creating rope slack. The speed of the hoisting rope movement should matched to that used for retraction!

7.3.2 The rope guides on the winches must be supervised by a member of the workforce when additional equipment is being mounted!

8. Hoisting rope reeving

8.1 The hoisting rope must be reeved in between boom head and hook block in accordance with the maximum rope tension of the winch and the weight of the load to be lifted.

8.2 If several hoisting rope lines are reeved in, the effeciency of the hook block is reduced due to pulley friction and rope flexure.
In consequence, with a rope tension of e.g. 13900 lbs (63 kN), only 67200 lbs (306 kN) can be pulled with a 5-fold line reeving, instead of 69500 lbs (315 kN)

8.3 Consult the table "Hoisting rope reeving" in Chapter II of this manual for the maximum loads in dependence on the number of hoisting rope lines.

8.4 The number of hoisting rope lines reeved must be set on the control and display unit of the LICCON overload safety device according to the current hoisting rope reeving total.

8.5 If the block hook is operated with a higher reeve number than necessary for the respective boom lenght loads, then the block hook weight will not be sufficient and can slacken the cable when lowering, whitch can lead to damage to the cable.

9. Changing between material handling and installation operation

9.1 Load carrying capacity of the crane

The load carrying members of the crane have been designed according to the load criteria for installation /set up operations (load collective classification = "light" = Q1 or L1). Stress collective S1 according to DIN 15018 Part 3 and stress margin range N1 according to DIN 15018 Part 1 or ISO 4301, group A1.
If an installaton / set up crane is used material handling, the stress margin rangs increases. Therefore the loads must be reduced since a higher stress group now be applicable. This is especially true if the calculated loads are limited by strength values.

CAUTION: **For crane value calculation, it has been assumed that the crane will be utilized as an installation crane** (load collective classification = "light" = Q1 or L1)**. If the crane is also used in material handling application, premature wear of all drive sections must be expected, and cracksmay occur in load carrying steel members. We therefo-restronglyrecommend, that if the crane is utilized in material handling application, the load values are reduced by 50 %, as compared to the data given in the corresponding load carrying capacity chart.**

For details, have material handling data ready and then contact your Liebherr Service Dept.

The size of the cables as well as drive sections of hoist gears are configured according to the load collectives applicable for installation operation (load collective classification = "light" = Q1 or L1):

ISO 4301/2 or 4308/2
Group A1
Hoist gears M3
Intake gears M2

If an installaton / set up crane is used material handling (load collective classification = "light" = Q1 or L1), the stress margin range increases, the rope runs must therefore be reduced. If this in not assured, then the hoist rope wear out rate will be reached much earlier, and / or the hoist gear must be rebuilt / serviced much earlier.

Please refer to the information regarding wear out criteria for ropes according to DIN 15020, part 2 or ISO 4309 in chapter 8.01 "Repeat crane inspections" in the crane's Operating Instructions.

NOTE: **In order to keep wear out rate of hoist ropes as low as possible during material handling operation (load collective classification = "medium" or higher) , we recommend the use of a special length rope, so thatduring material handling operation the rope is rolled onto drum of the hoist winch in only one rope layer**
If several layers are on the rope drum, the wear rate increases. In addition, the winch drive will run cooler, if the crane is operated with only one rope layer.

10. LICCON Overload safety device and Limit switch

If the permissible load moment is exceeded, the electronic LICCON overload safety device shuts down the hoisting, boom topping and boom extension movements. It is possible to decrease the load by means of movements in the opposite direction. The LICCON overload safety device must be checked for correct operation on each occasion before operating the crane.

10.1 The LICCON overload safety device must be set to the current equipment mode of the crane by means of function keys or by entering the corresponding 3-digit code .

10.2 The LICCON overload limit switch is a safety device and must not be used as a shutdown device for operating purposes. The crane operator must assure himself of the weight of a load before attempting to lift it. The fact that the crane is equipped with the LICCON overload safety device does not free the operator from responsibility with regard to operating safety.

10.3 The control and display unit of the LICCON overload safety device indicates among other things the working radius, boom length, pulley height, load and degree of crane load utilization. This provides the operator with a constant overview of the working range and crane utilization.

10.4 Hoisting limit switches at the head of the telescopic boom and folding fly jib prevent the hook block from running up against the boom head. The hoisting limit switches must be checked for correct operation on each occasion before the crane is operated.

10.5 Gear cam limit switches on the rope winches ensure that 3 safety turns remain on the rope drums. When the final rope layer is reached, a visual check is also necessary to ensure that the 3 safety turns are available. If the hoisting gears have been overturned in the lifting direction, or if the hoisting rope has been changed, then the corresponding limit switch must be reset before resuming operation.

10.6 The crane operator must check correct operation of the LICCON overload safety device on each occasion before operating the crane. The crane manufacturer will accept no liability for damage to the crane and consequential damage resulting from non-function or disactivation of the LICCON overload safety device.

11. Hook blocks and load hooks

Load		weight		Number of rope pulleys	strings
[t]	[lbs]	[t]	[lbs]		
80	176400	0.430	948	7	14
63	138915	0.330	728	5	10
40	88200	0.400	882	3	7
16	35280	0.235	518	1	3
6	13230	0.110	243	-	1

12. Load capacity reduction with folding jib mounted

12.1 The load capacity values stated for the telescopic boom in the load capacity tables apply to the boom without installation of a folding fly jib for transport or operating purposes.

12.2 When operating the crane, the folding jib is mounted at an angle from **0°** to the telescopic jib, the possible load capacities of the telescopic jib are reduced according to the chart below. The weight of the hook block for TK operation of 530 lbs and 243 lbs respectively, must be considered.

Position of the folding jib	[ft]	T-35	T-47	T-58	T-69	T-80	T-92
Entire folding jib sideways on the jib pivoting section	[lbs]	1764	1323	1103	882	662	662
K- 34 ft on the jib head, the rest on the jib pivoting section	[lbs]	4190	6395	4631	4190	3749	3749
K- 62 ft on the jib head	[lbs]	5733	10143	7056	5733	5292	5292

Position of the folding jib	[ft]	T-103	T-114	T-125	T-136	T-148	T-157
Entire folding jib sideways on the jib pivoting section	[lbs]	662	441	441	441	441	441
K- 34 ft on the jib head, the rest on the jib pivoting section	[lbs]	3749	3528	3528	3528	3528	3308
K- 62 ft on the jib head	[lbs]	5292	4631	4631	4631	4631	4190

12.3 When operating the crane, the folding jib is mounted at an angle from **20˚** to the telescopic jib, the possible load capacities of the telescopic jib are reduced according to the chart below. The weight of the hook block for TK operation of 530 lbs and 243 lbs respectively, must be considere.

Position of the folding jib	[ft]	T-35	T-47	T-58	T-69	T-80	T-92
K- 34 ft on the jib head, the rest on the jib pivoting section	[lbs]	4190	6395	5072	4410	4190	4190
K- 62 ft on the jib head	[lbs]	6395	10584	8600	7277	6615	6615

Position of the folding jib	[ft]	T-103	T-114	T-125	T-136	T-148	T-157
K- 34 ft on the jib head, the rest on the jib pivoting section	[lbs]	4190	3749	3749	3749	3749	3528
K- 62 ft on the jib head	[lbs]	6615	5733	5733	5733	5733	5072

12.4 When operating the crane, the folding jib is mounted at an angle from **40˚** to the telescopic jib, the possible load capacities of the telescopic jib are reduced according to the chart below. The weight of the hook block for TK operation of 530 lbs and 243 lbs respectively, must be considered.

Position of the folding jib	[ft]	T-35	T-47	T-58	T-69	T-80	T-92
K- 34 ft on the jib head, the rest on the jib pivoting section	[lbs]	4851	7718	6836	5733	5292	5292
K- 62 ft on the jib head	[lbs]	7718	13451	11907	9702	8600	8600

Position of the folding jib	[ft]	T-103	T-114	T-125	T-136	T-148	T-157
K- 34 ft on the jib head, the rest on the jib pivoting section	[lbs]	5292	4631	4631	4631	4631	3969
K- 62 ft on the jib head	[lbs]	8600	7056	7056	7056	7056	6174

13. Counterweight

The counterweight slabs are marked with their own weights.

DANGER: **The size of the attached counterweight must correspond to the specifications given in the load capacity table - otherwise, accidents may occur!**

nominal counterweight	
4.1 t	9000 lbs
6.6 t	14600 lbs
8.5 t	18700 lbs
12.8 t	28200 lbs
16.1 t	35500 lbs

Note: **The operating instructions for attaching and disattaching the counterweight must be strictly adhered to.**

14. Maximum turning speed of the crane's superstructure with a nominal load

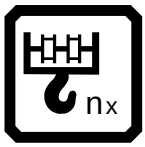
Boom [ft]	permissible slewing speed in percentage of the maximum slewing speed	permissible slewing speed in $\left[\frac{1}{\text{min}}\right]$
T-35	45	0.90
T-47	45	0.90
T-58	30	0.60
T-69	30	0.60
T-80	30	0.60
T-92	30	0.60
T-103	30	0.60
T-114	30	0.60
T-125	15	0.30
T-136	15	0.30
T-148	15	0.30
T-157	15	0.30
TK-operation	15	0.30
for 85 % lifting capacity tables *	**15**	**0.30**

***** 85% load capacity charts are marked in the upper left corner with "**85%**" on the corresponding page of the chart.

On 85% load capacity charts, nominal loads may only be moved with the lowest lifting or luffing speed.

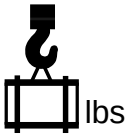
DANGER: **If the above is not observed, there is a high risk of serious ACCIDENTS**

15. Explanation of symbols



Hoisting rope reeving

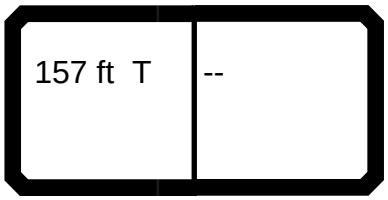
This symbol appears on the hoisting rope reeving table (1st table of chapter II) and indicates the required number of hoisting rope reevings to achieve a certain load capacity.



Load capacity in pounds [lbs]

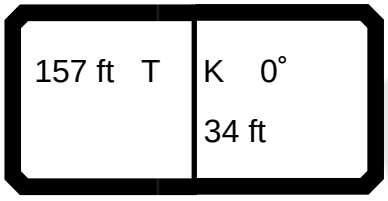
This symbol appears on the hoisting rope reeving table (1st table of chapter II) and indicates the max. permissible load capacity depending on hoisting rope reeving.

Operating mode



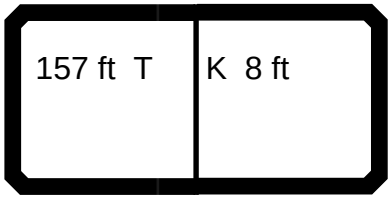
2part symbol
left side = Main boom mode
example:

- Length of the main boom ex. : 157 ft
- Main boom type ex.: T = Telescopic boom

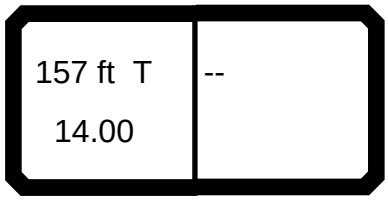


right side = Additional jib mode
example:

- Additional jib type ex.: K = folding fly jib
- Angle of the additional jib ex.: 0° = 0 deg. offset from main boom
- Additional jib length ex.: 34 ft



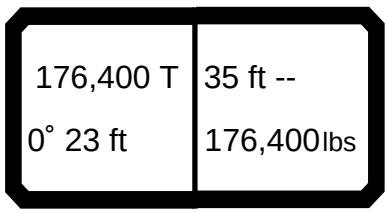
- Additional jib type ex.: K 8 ft = Optional jib type
- Additional jib length ex.: 8 ft



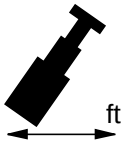
In some additional jib modes of operation, additional imformation is displayed in the left half of the symbol

- Indication of the tire dimensions ex.: 14.00 = 14.00 R 25

Operating types that can only be operated with accessories!

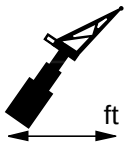


- Length of the main boom ex.: 35 ft
- Max. load capacity ex.: 176,400 lbs
- Working range ex.: 0° = working range over rear
- Support base ex.: 27 ft x 23 ft



Working radius of the telescopic boom

The working radius is the horizontal distance of the center of gravity of the load to the slewing axis of the crane superstructure as measured from the ground beneath the load.



Working radius of the additional jib

The working radius is the horizontal distance of the center of gravity of the load to the slewing axis of the crane superstructure as measured from the ground beneath the load.

Telescopic boom length /units of measurement

In the row beneath this symbol the different boom length of the crane are indicated in columns. The letters next to the symbol indicate the units of measurement in the actual load chart, par example " ft> <lbs" means that all lengths are given in feet [ft] and all weights are given in pounds [lbs].

CODE 〉001〈

Short code

3-digit short code; can be directly entered into the LICCON overload safety device in order to call up the corresponding load chart.

* n *

Hoisting rope reeving

Appears in the load charts as a line below the load capacity values. Indicates the number of hoisting rope reevings required to hoist the maximum load in the corresponding load chart column. If a load capacity value in the column exceeds the load which can be lifted with the maximum reeving, then an exclamation mark (!) is next to the reeving number to signify that special equipment is required to lift this load.

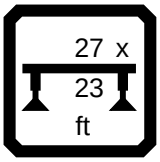
- Loads over 116.870 lbs with auxiliary pulley
- Loads over 138.900 lbs with additional pulley block
- Loads over 156.560 lbs with additional device

Extension conditions of the telescopic boom sections

Indications i percent for the individual telescopic sections (Tele 1 / Tele 2 / Tele 3 / Tele 4 / Tele 5). Indication 0 = completely retracted, 100 = completely extended. Extension conditions other than those specified in the load charts are prohibited.
A + symbol after a percentage entry means that the corresponding telescope parts are pinned down.
The status indicator "-" next to the extension condition in percentages means that the corresponding telescopic section can be telescoped out under load to the extension condition value shown in percentages (according to the load capacity chart).

Counterweight

In this symbol, the size of the counterweight is indicated in pounds [lbs] which must be on the crane superstructure in order to achieve the values of the given load chart.



Crane operations "Crane supported"

Indication of the support base (ex.: 27 ft x 23 ft = length x width). The hydraulic supports of the crane must be extended to the dimensions specified in this symbol and pinned when the corresponding load chart is being worked with.

Crane operations "Crane freestanding on tires"

- Indication of the tire dimensions ex.: 16.00 = 16.00-25
- Indication of required tire pressure ex.: 10 = 10 bar

Slewing range

Slewing range data of the crane superstructure for the corresponding load capacity table:

- 360˚ = unlimited slewing permissible
- ! 0˚ = working range to the rear
- 0˚ = working range to the rear

The appearance of ! 0˚ indicates that a load chart also exists for the 360˚ working range for the same equipment mode. If the slewing platform locking is not engaged, the LICCON automatically switches to the weaker load chart for the 360˚ working range. The displayed abbreviated code is different for the ! 0˚ working range and the 360˚ working range. If 0˚ appears, this means that there is no corresponding 360˚ load capacity table. In this case, if the slewing platform lock is not engaged, crane operation is not possible.

Permissible wind speed

Indication of wind speed in [ft/s] up to which crane operation is permissible depending on boom length. If the wind speed exceeds the indicated value, crane operations must be terminated, and if necessary, equipment must be removed from the crane.

16. Observation of wind conditions

16.1 Wind influence on the LICCON-overload safety device

When working in operation modes involving long boom systems and steeper boom positions in particular, the wind can either increase or ease additional duress on the crane system. The load will then be incorrectly displayed, and the LMB can shut down too early or too late.

16.1.1 Wind from the rear

With wind from the rear the boom system will be under increased duress. The load being displayed is too high. LMB-shutdown occurs with loads smaller than the max. load.

16.1.2 Wind from the front

With wind from the front the boom system will be eased of duress. The load being displayed is too low. LMB-shutdown will only occur with loads greater than the max. load.

DANGER: **Wind from the front will not relieve duress from the hook, hoist cable, cable pulleys or the hoisting winch. These units can become overloaded through lifting to the point of LMB-shutdown with wind from the front!**

The entire crane can become overloaded when wind from the front eases, if it has previously been loaded to the point of LMB-shutdown!

The operator must therefore be aware of the load weight and may not then exceed the max. load!

There is SERIOUS RISK OF ACCIDENT if these points are not observed!

16.2 Permissible wind speed and surface susceptibility to wind

16.2.1 Crane operation is permissible up to the wind velocity stated in the load capacity table corresponding to the current boom length.

DANGER : The crane operator must consult the local meterological office for information on the expected wind velocity prior to commencing operations. If unacceptable wind velocities are forecast, it is not permissible to lift a load. Failure to observe this precaution may result in accidents!

16.2.2 The wind surface A_W of the load must not exceed certain values. These values are stated in Diagram 1 (see next page).
If the wind surface of the load exceeds the diagram values, the wind velocity up to which crane operation is permissible is reduced correspondingly (note example below).

DANGER : Even if the wind surface of the load is smaller than the reference surface, it is prohibited to operate the crane if wind velocity exceeds the limits stated in the load capacity tables! Failure to observe this rule will lead to risk of accidents!

16.2.3 Example:

Weight of the load to be hoisted:

m = 50.0 t (110250 lbs)

Permissible wind speed according to load capacity table:

v = 9.0 m/s (29.5 ft/sec)

Actual load wind surface area:

A_{Wr} = 100.0 m^2 (1076.5 sqft)

Permissible load wind surface area, diagram 1:

A_{Wz} = 55.0 m^2 (592.1 sqft)

Diagram 2 yields for v = 9 m/s (29.5 ft/sec) an impact pressure of:

p = 50.0 N/m^2 (4.645 N/sqft)

Accordingly, a force F acts upon a load with the permissible wind surface area

A_{wz} = 55 m^2 (592.1 sqft):

F = impact pressure p x wind surface area A_{Wz}

F = 4.645 N/sqft x 592.1 sqft = 2750 N

For the actual wind surface area A_{Wr} = 1076.5 sqft, a permissible impact pressure p is yielded for the same force F:

p = F / A_{Wr} = 2750 N / 1076.5 sqft = 2.555 N/sqft

A maximum permissible wind speed of v = 6.7 m/s (22.0 ft/sec) is yielded for p = 27.5 N/m^2 (2.555 N/sqft) from diagram 2.

Diagramm 1

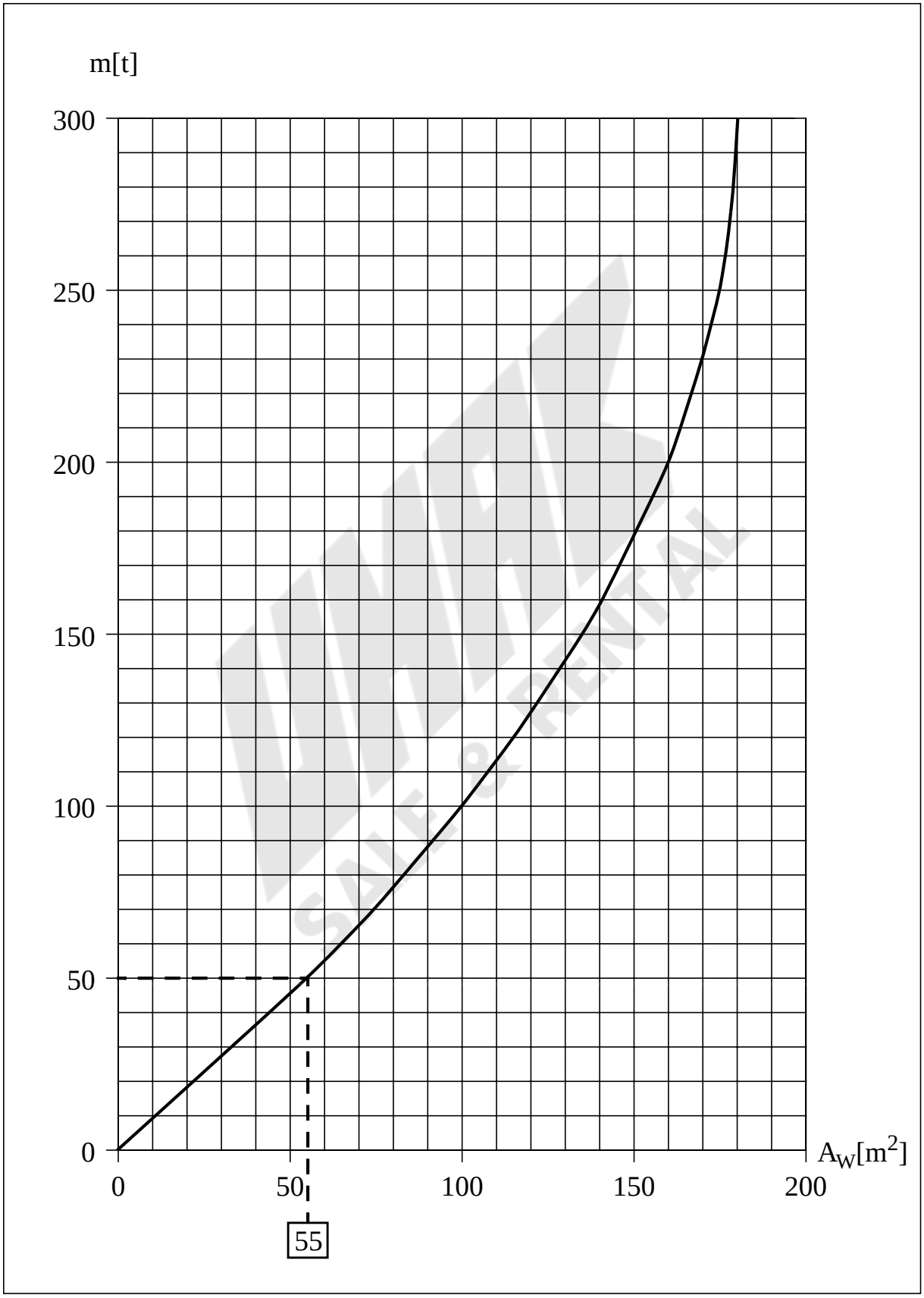
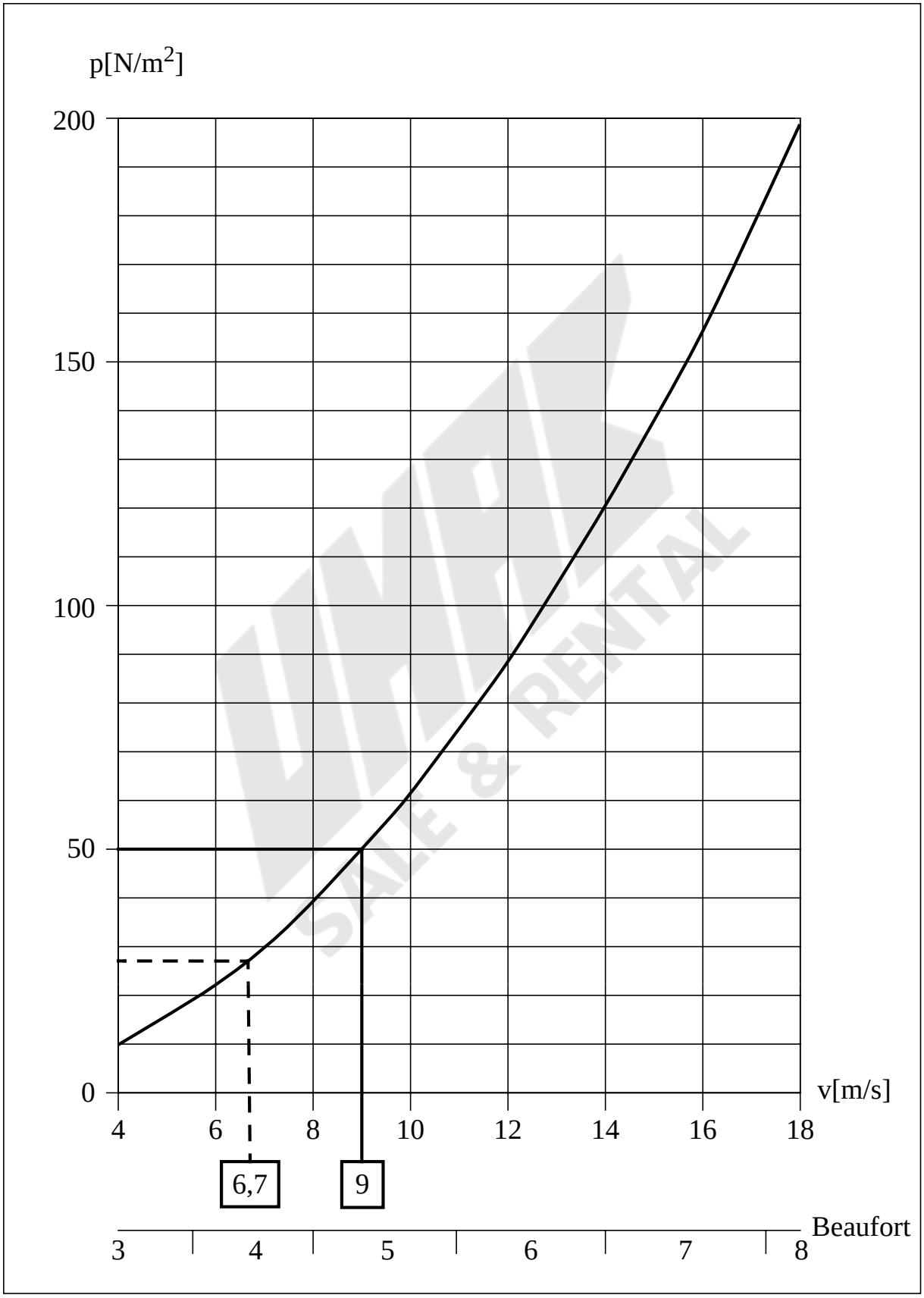
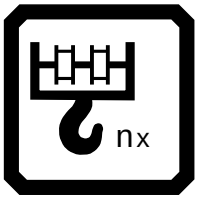


Diagramm 2





→ 3

157 ft T 16.00	--

→ 4

157 ft T	--

→ 8

157 ft T	K 0° 34 ft

→ 63

157 ft T	K 0° 62 ft

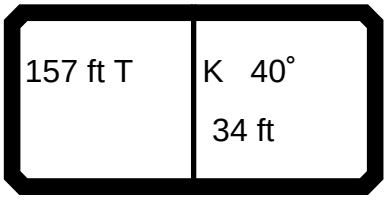
→ 67

157 ft T	K 20° 34 ft

→ 71

157 ft T	K 20° 62 ft

→ 75



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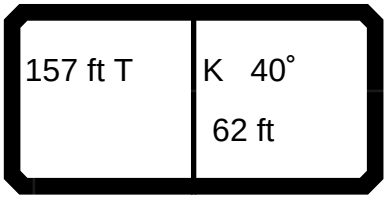

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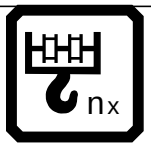
	
1	13900
2	27500
3	41000
4	54200
5	67200
6	80200
7	92800
8	105400
9	116800
10	116800

ISO DIN

157 ft T	--
16.00	

061513 TAB 134055 20.02

ft> < lbs CODE 〉019〈 L134 2500 .x(x)

ft	36	46	46	59	59	59				
10	26,100	26,000	27,500	25,400	27,800	28,100				
11	24,400	24,300	25,800	23,700	26,100	26,400				
12	22,900	22,700	24,200	22,100	24,600	24,900				
13	21,400	21,300	22,800	20,600	23,100	23,500				
14	20,100	20,000	21,500	19,300	21,800	22,200				
15	18,900	18,700	20,200	18,000	20,600	21,000				
16	17,700	17,600	19,100	16,900	19,500	19,900				
17	16,700	16,600	18,100	15,900	18,500	18,900				
18	15,800	15,600	17,200	14,900	17,600	17,900				
20	13,900	13,800	15,400	13,100	15,800	16,200				
22	12,400	12,300	13,900	11,500	14,300	14,700				
24	11,000	10,900	12,500	10,100	12,900	13,300				
26	9,700	9,600	11,300	8,700	11,700	12,100				
28		8,300	10,100	7,400	10,600	11,000				
30		7,100	9,000	6,100	9,600	10,000				
32		6,000	8,000	5,100	8,500	9,000				
34			7,100		7,600	8,100				
36			6,300		6,800	7,300				
38			5,500		6,000	6,500				
40					5,300	5,700				
45					3,800	4,300				
* n *	2	2	2	2	3	3				

%										
1	0+	0+	0+	46+	0+	0+				
2	0+	46+	0+	46+	0+	0+				
3	0+	0+	0+	0+	0+	0+				
4	0+	0+	0+	0+	46+	0+				
5	0+	0+	46+	0+	46+	92+				
ft/s	23	23	23	23	23	23				

	157 ft T	--	0,000 lbs	16.00 10	0 °		
	16.00						

ISO DIN

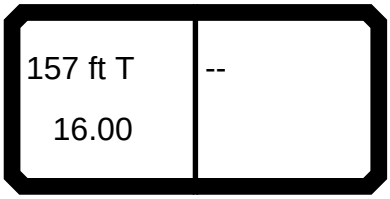
157 ft T	--
16.00	

061513 TAB 134054 20.02

ft> < lbs CODE 〉018〈 L134 2500 .x(x)

ft	36	46	46	59	59	59				
10	25,700	25,600	27,000	25,000	27,300	27,700				
11	24,000	23,900	25,300	23,300	25,700	26,000				
12	22,400	22,300	23,800	21,700	24,200	24,500				
13	21,000	20,900	22,400	20,200	22,700	23,100				
14	19,700	19,600	21,100	18,900	21,500	21,800				
15	18,500	18,400	19,900	17,700	20,300	20,600				
16	17,400	17,300	18,800	16,600	19,200	19,500				
17	16,400	16,200	17,800	15,500	18,200	18,500				
18	15,400	15,300	16,900	14,600	17,300	17,600				
20	13,600	13,500	15,100	12,800	15,500	15,800				
22	12,100	12,000	13,600	11,300	14,000	14,400				
24	10,800	10,600	12,200	9,900	12,700	13,000				
26	9,600	9,400	11,000	8,600	11,400	11,800				
28		8,300	10,000	7,600	10,400	10,800				
30		7,300	9,000	6,500	9,400	9,800				
32		6,500	8,100	5,700	8,600	9,000				
34		5,700	7,400		7,800	8,200				
36		5,100	6,700		7,100	7,500				
38		4,400	6,000		6,400	6,800				
40					5,800	6,200				
45					4,500	4,900				
* n *	2	2	2	2	2	3				
1	0+	0+	0+	46+	0+	0+				
2	0+	46+	0+	46+	0+	0+				
3	0+	0+	0+	0+	0+	0+				
4	0+	0+	0+	0+	46+	0+				
5	0+	0+	46+	0+	46+	92+				
%										
ft/s	23	23	23	23	23	23				

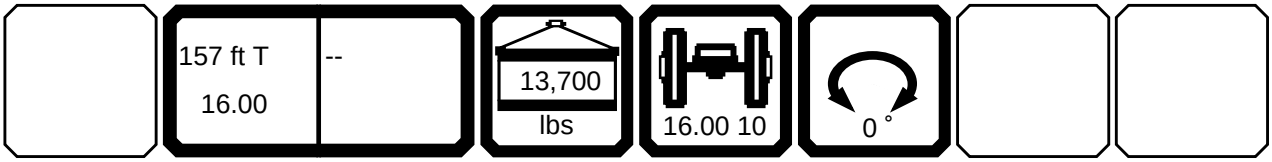
	157 ft T / 16.00	--	9,000 lbs	16.00 10	0 °	



061513 TAB 134053 20.02

ft> < lbs CODE 〉017〈 L134 2500 .x(x)

ft	36	46	46	59	59	59				
10	25,500	25,400	26,800	24,700	27,100	27,400				
11	23,800	23,700	25,100	23,000	25,500	25,800				
12	22,200	22,100	23,600	21,500	23,900	24,300				
13	20,800	20,700	22,200	20,000	22,500	22,900				
14	19,500	19,400	20,900	18,700	21,300	21,600				
15	18,300	18,200	19,700	17,500	20,100	20,400				
16	17,200	17,100	18,600	16,400	19,000	19,300				
17	16,200	16,100	17,600	15,400	18,000	18,400				
18	15,300	15,100	16,700	14,400	17,100	17,500				
20	13,500	13,300	14,900	12,600	15,300	15,700				
22	12,000	11,800	13,400	11,100	13,900	14,200				
24	10,600	10,500	12,100	9,700	12,500	12,900				
26	9,400	9,300	10,900	8,500	11,300	11,700				
28		8,200	9,900	7,400	10,300	10,700				
30		7,200	8,900	6,400	9,300	9,700				
32		6,400	8,000	5,600	8,400	8,800				
34		5,600	7,300		7,700	8,100				
36		5,000	6,600		7,000	7,400				
38		4,300	5,900		6,300	6,700				
40					5,700	6,100				
45					4,400	4,800				
* n *	2	2	2	2	2	2				
1	0+	0+	0+	46+	0+	0+				
2	0+	46+	0+	46+	0+	0+				
3	0+	0+	0+	0+	0+	0+				
4	0+	0+	0+	0+	46+	0+				
5	0+	0+	46+	0+	46+	92+				
%										
ft/s	23	23	23	23	23	23				



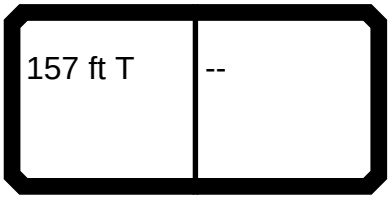
157 ft T	--
16.00	

061513 TAB 134050 20.02

ft	ft> < lbs	CODE 〉014〈		L134 2500 .x(x)					
	36	**46**	**46**	**59**	**59**	**59**			
10	24,400	24,300	25,700	23,700	26,100	26,400			
11	22,800	22,700	24,100	22,000	24,500	24,800			
12	21,300	21,200	22,600	20,500	23,000	23,300			
13	19,900	19,800	21,300	19,100	21,600	22,000			
14	18,600	18,500	20,000	17,900	20,400	20,700			
15	17,500	17,300	18,800	16,700	19,200	19,600			
16	16,400	16,200	17,800	15,600	18,200	18,500			
17	15,400	15,300	16,800	14,600	17,200	17,600			
18	14,500	14,400	15,900	13,700	16,300	16,700			
20	12,800	12,600	14,200	11,900	14,600	15,000			
22	11,300	11,200	12,800	10,400	13,200	13,500			
24	10,000	9,900	11,500	9,100	11,900	12,300			
26	8,900	8,700	10,300	7,900	10,700	11,100			
28		7,600	9,300	6,900	9,700	10,100			
30		6,700	8,300	5,900	8,800	9,200			
32		5,900	7,500	5,000	7,900	8,300			
34		5,100	6,800		7,200	7,600			
36		4,500	6,100		6,500	6,900			
38		3,900	5,500		5,900	6,300			
40					5,200	5,600			
45					4,000	4,400			
* n *	2	2	2	2	2	2			
1	0+	0+	0+	46+	0+	0+			
2	0+	46+	0+	46+	0+	0+			
3	0+	0+	0+	0+	0+	0+			
4	0+	0+	0+	0+	46+	0+			
5	0+	0+	46+	0+	46+	92+			
%									
ft/s	23	23	23	23	23	23			

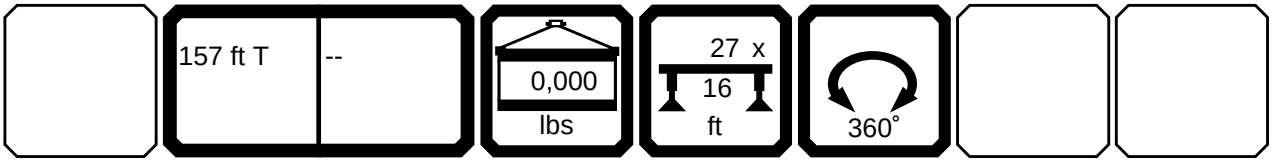
	157 ft T / 16.00	--	35,500 lbs	16.00 10	0 °		

ISO DIN



061513 TAB 134013 20.01

ft	ft> < lbs	CODE 〉013〈		L134 0500 .x(x)						
	36	**46**	**46**	**59**	**59**	**59**	**69**	**69**	**69**	**79**
10	112,000	95,000	82,500	79,000	67,500	58,700				
11	95,500	81,500	79,500	68,500	64,000	56,300				
12	81,500	70,000	73,500	59,500	61,500	54,100	52,400	50,700	50,700	
13	70,000	61,000	65,000	52,300	58,500	51,900	46,400	48,800	48,800	
14	62,000	54,200	58,300	46,800	53,400	49,900	41,700	46,900	47,000	
15	54,700	48,200	52,100	41,800	48,300	47,600	37,500	44,800	45,000	34,800
16	49,100	43,500	47,300	37,800	44,000	44,400	34,000	41,500	42,400	31,700
17	44,600	39,700	43,300	34,500	40,500	41,300	31,100	38,600	39,700	29,100
18	40,800	36,400	39,900	31,600	37,500	38,300	28,600	35,900	37,000	26,800
20	33,800	30,200	33,500	26,200	31,800	32,500	23,800	30,700	31,800	22,500
22	29,000	25,900	29,000	22,400	27,700	28,500	20,300	27,000	28,000	19,300
24	24,700	22,200	25,300	19,100	24,300	25,000	17,300	23,800	24,800	16,600
26	20,900	19,200	22,100	16,300	21,400	22,000	14,800	21,100	22,000	14,200
28		16,800	19,700	14,200	19,100	19,700	12,800	18,900	19,900	12,300
30		14,700	17,400	12,200	17,000	17,600	10,900	16,900	17,900	10,600
32		13,000	15,500	10,600	15,300	15,900	9,400	15,300	16,200	9,100
34		11,500	13,900	9,200	13,800	14,400	8,100	13,900	14,800	7,900
36		10,100	12,400	8,100	12,500	13,100	7,000	12,700	13,600	6,900
38		8,700	11,000	6,900	11,200	11,800	5,900	11,500	12,400	5,800
40				5,800	10,000	10,600		10,500	11,300	
45				3,900	7,800	8,300		8,400	9,100	
50								6,700	7,400	
55								5,300	6,000	
60										
65										
70										
75										
* n *	9	8	7	6	6	5	4	4	4	3
1	0+	0+	0+	46+	0+	0+	92+	0+	0+	92+
2	0+	46+	0+	46+	0+	0+	46+	0+	0+	92+
3	0+	0+	0+	0+	0+	0+	0+	0+	0+	0+
4	0+	0+	0+	0+	46+	0+	0+	92+	46+	0+
5 %	0+	0+	46+	0+	46+	92+	0+	46+	92+	0+
ft/s	23	23	23	23	23	23	23	23	23	23



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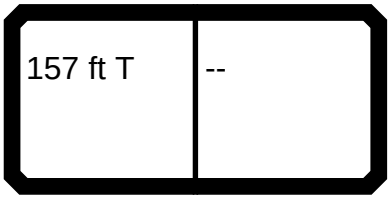
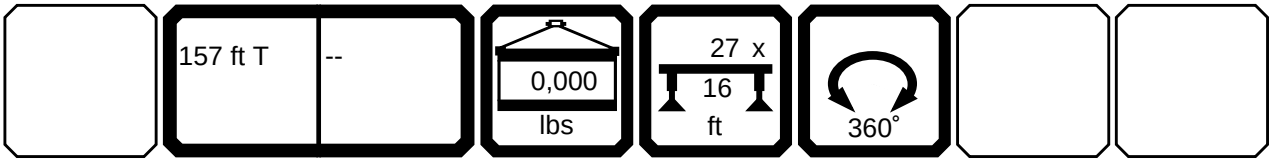


061513 TAB 134013 20.01

ft> < lbs CODE 〉013〈 L134 0500 .x(x)

ft	79	79	92	92	92	102	102	102	115	115
10										
11										
12										
13										
14										
15	41,500	37,900								
16	38,200	36,600								
17	35,500	35,100	27,900	33,900	35,100					
18	33,000	33,400	25,800	31,700	32,900					
20	28,400	30,000	21,900	27,500	28,800	21,500	24,500	26,800		
22	25,000	26,600	18,900	24,400	25,600	18,800	21,700	23,900		
24	22,100	23,600	16,400	21,600	22,800	16,400	19,200	21,400	15,900	18,900
26	19,600	21,100	14,100	19,300	20,500	14,300	17,000	19,200	14,000	16,800
28	17,600	19,000	12,400	17,400	18,600	12,600	15,300	17,400	12,400	15,200
30	15,800	17,200	10,700	15,600	16,800	11,000	13,700	15,700	10,900	13,700
32	14,200	15,600	9,300	14,200	15,300	9,700	12,300	14,300	9,600	12,400
34	12,900	14,300	8,200	12,900	14,100	8,600	11,200	13,200	8,600	11,300
36	11,800	13,100	7,100	11,800	13,000	7,600	10,200	12,100	7,600	10,300
38	10,600	12,000	6,100	10,800	11,900	6,600	9,100	11,100	6,700	9,300
40	9,600	10,900		9,800	10,800	5,700	8,200	10,100	5,800	8,400
45	7,600	8,900		7,800	8,900	3,900	6,400	8,200	4,100	6,600
50	6,000	7,300		6,300	7,300		4,900	6,700		5,200
55	4,800	5,900		5,000	6,000		3,700	5,500		4,000
60	3,700	4,800		3,900	5,000			4,400		
65	2,800	3,800		3,100	4,100			3,500		
70		3,100			3,300			2,800		
75					2,600					
* n *	4	3	3	3	3	2	2	2	2	2
1	0+	0+	92+	0+	0+	92+	0+	0+	92+	0+
2	0+	0+	92+	0+	0+	92+	92+	0+	92+	92+
3	92+	0+	46+	92+	46+	46+	92+	92+	92+	92+
4	46+	92+	0+	92+	92+	46+	46+	92+	46+	92+
5	46+	92+	0+	46+	92+	0+	46+	92+	0+	46+
%										
ft/s	23	23	23	23	23	23	23	23	23	23



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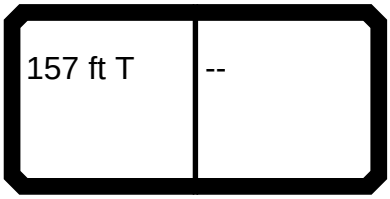
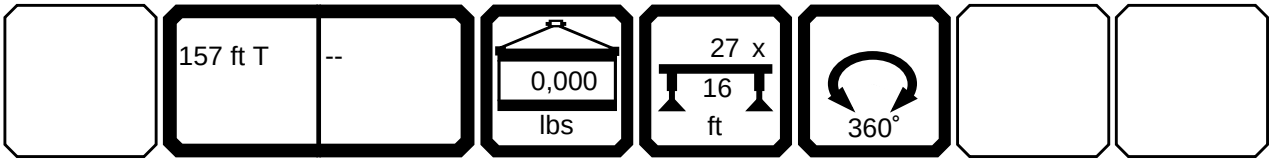
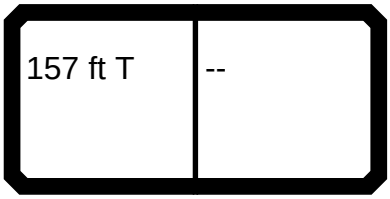


061513 TAB 134013 20.01

ft	ft> < lbs CODE 〉013〈 L134 0500 .x(x)									
	115	**125**	**125**	**138**	**138**	**148**	**157**	**46**	**59**	**69**
10								34,800	31,100	
11								34,800	30,900	
12								34,700	30,800	21,800
13								34,700	30,600	21,500
14								34,700	30,500	21,100
15								34,700	30,400	20,800
16								34,700	30,300	20,500
17								34,000	29,600	20,200
18								32,900	28,600	19,900
20								30,200	26,200	19,400
22								25,900	22,400	18,900
24	20,100							22,200	19,100	17,300
26	18,100							19,200	16,300	14,800
28	16,400	12,800	15,100	12,600	14,200			16,800	14,200	12,800
30	14,900	11,300	13,700	11,200	12,800	11,500	11,000	14,700	12,200	10,900
32	13,600	10,100	12,500	10,100	11,600	10,300	10,000	13,000	10,600	9,400
34	12,400	9,100	11,400	9,100	10,600	9,400	9,100	11,500	9,200	8,100
36	11,400	8,200	10,400	8,200	9,700	8,500	8,300	10,100	8,100	7,000
38	10,500	7,300	9,500	7,300	8,800	7,700	7,400	8,700	6,900	5,900
40	9,500	6,400	8,600	6,500	8,000	6,900	6,700		5,800	
45	7,700	4,700	6,900	4,900	6,400	5,300	5,100		3,900	
50	6,300		5,500	3,600	5,000	4,000	3,900			
55	5,100		4,300		3,900					
60	4,100		3,400							
65	3,200		2,500							
70										
75										
* n *	2	1	2	1	2	1	1	3	3	2
1	0+	92+	0+	92+	46+	92+	100+	0+	46-	92-
2	46+	92+	92+	92+	92+	92+	100+	46-	46+	46+
3	92+	92+	92+	92+	92+	92+	100+	0+	0+	0+
4	92+	46+	92+	92+	92+	92+	100+	0+	0+	0+
5	92+	46+	92+	46+	92+	92+	100+	0+	0+	0+
%										
ft/s	23	23	23	23	23	23	23	23	23	23



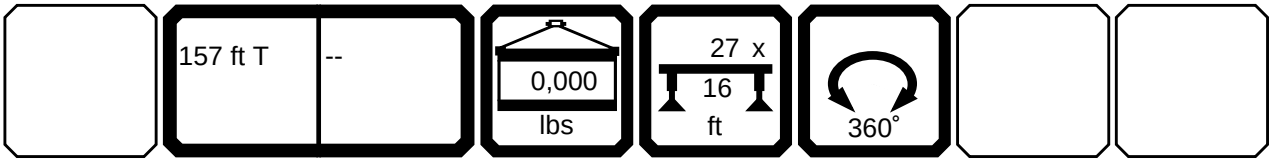


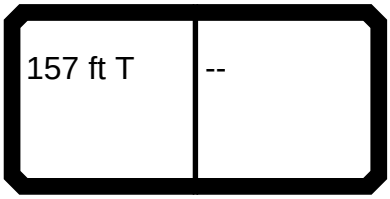
061513 TAB 134013 20.01

ft> < lbs CODE 〉013〈 L134 0500 .x(x)

ft	79	92	102	115	46	59	79	102	125	69
10					42,400	39,500				
11					42,400	39,300				
12					42,300	39,100				28,900
13					42,300	38,900				28,500
14					42,300	38,800				28,100
15	19,900				42,300	38,600	25,100			27,700
16	19,500				42,300	38,500	23,700			27,300
17	19,200	18,600			40,800	37,300	22,900			26,900
18	18,800	18,300			38,300	35,500	22,500			26,600
20	18,200	17,600	17,300		33,500	31,800	21,900	19,200		25,900
22	17,600	17,000	16,600		29,000	27,700	21,300	18,600		25,300
24	16,300	15,800	15,600	15,300	25,300	24,300	20,500	17,800		23,600
26	14,200	14,100	14,200	13,900	22,100	21,400	19,400	16,900		21,100
28	12,300	12,400	12,600	12,400	19,700	19,100	17,600	15,300	12,800	18,900
30	10,600	10,700	11,000	10,900	17,400	17,000	15,800	13,700	11,300	16,900
32	9,100	9,300	9,700	9,600	15,500	15,300	14,200	12,300	10,100	15,300
34	7,900	8,200	8,600	8,600	13,900	13,800	12,900	11,200	9,100	13,900
36	6,900	7,100	7,600	7,600	12,400	12,600	11,800	10,200	8,200	12,700
38	5,800	6,100	6,600	6,700	11,000	11,300	10,600	9,100	7,300	11,500
40			5,700	5,800		10,200	9,600	8,200	6,400	10,500
45			3,900	4,100		7,900	7,600	6,400	4,700	8,400
50							6,000	4,900		6,700
55							4,800	3,700		5,300
60							3,700			
65							2,800			
70										
75										
* n *	2	2	2	2	4	3	2	2	1	3

%										
1	92-	92-	92-	92-	0+	0+	0+	0+	92-	0+
2	92-	92-	92-	92-	0+	0+	0+	92-	92+	0+
3	0+	46-	46-	92-	0+	0+	92-	92+	92+	0+
4	0+	0+	46-	46-	0+	46-	46+	46+	46+	92-
5	0+	0+	0+	0+	46-	46+	46+	46+	46+	46+
ft/s	23	23	23	23	23	23	23	23	23	23

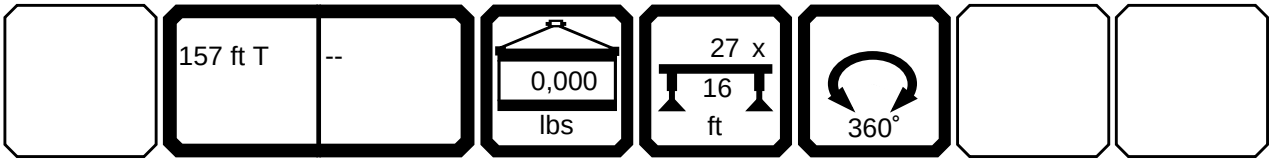


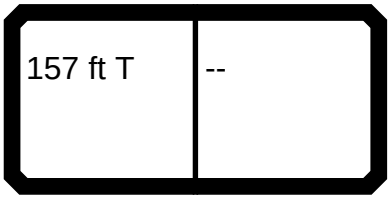


061513 TAB 134013 20.01

ft> < lbs CODE 〉013〈 L134 0500 .x(x)

ft	92	115	138	59	69	79	92	102	115	125
10				32,300						
11				31,900						
12				31,500	38,200					
13				31,100	37,900					
14				30,800	37,600					
15				30,400	37,400	26,600				
16				30,100	37,200	26,200				
17	22,200			29,800	36,200	25,500	31,900			
18	21,800			29,500	34,800	24,600	30,900			
20	21,200			28,800	31,800	23,100	28,800	20,700		
22	20,500			27,200	28,000	22,500	25,600	20,100		
24	19,800	17,500		25,000	24,800	21,700	22,800	19,500	20,100	
26	19,100	16,700		22,000	22,000	20,900	20,500	18,900	18,100	
28	17,400	15,200	12,600	19,700	19,900	19,000	18,600	17,300	16,400	15,100
30	15,600	13,700	11,200	17,600	17,900	17,200	16,800	15,700	14,900	13,700
32	14,200	12,400	10,100	15,900	16,200	15,600	15,300	14,300	13,600	12,500
34	12,900	11,300	9,100	14,400	14,800	14,300	14,100	13,200	12,400	11,400
36	11,800	10,300	8,200	13,100	13,600	13,100	13,000	12,100	11,400	10,400
38	10,800	9,300	7,300	11,800	12,400	12,000	11,900	11,100	10,500	9,500
40	9,800	8,400	6,500	10,600	11,300	10,900	10,800	10,100	9,500	8,600
45	7,800	6,600	4,900	8,300	9,100	8,900	8,900	8,200	7,700	6,900
50	6,300	5,200	3,600		7,400	7,300	7,300	6,700	6,300	5,500
55	5,000	4,000			6,000	5,900	6,000	5,500	5,100	4,300
60	3,900					4,800	5,000	4,400	4,100	3,400
65	3,100					3,800	4,100	3,500	3,200	2,500
70						3,100	3,300	2,800		
75							2,600			
* n *	2	2	1	3	3	2	3	2	2	2
1	0+	0+	92-	0+	0+	0+	0+	0+	0+	0+
2	0+	92-	92+	0+	0+	0+	0+	0+	46-	92-
3	92-	92+	92+	0+	0+	0+	46-	92-	92+	92+
4	92+	92+	92+	0+	46-	92-	92+	92+	92+	92+
5	46+	46+	46+	92-	92+	92+	92+	92+	92+	92+
%										
ft/s	23	23	23	23	23	23	23	23	23	23

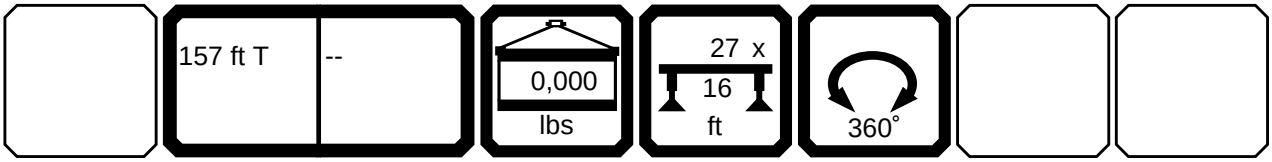


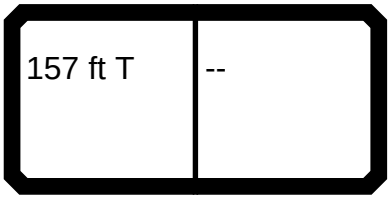


061513 TAB 134013 20.01

ft> < lbs CODE 〉013〈 L134 0500 .x(x)

ft	138	148	157							
10										
11										
12										
13										
14										
15										
16										
17										
18										
20										
22										
24										
26										
28	14,200									
30	12,800	11,500	9,500							
32	11,600	10,300	9,100							
34	10,600	9,400	8,600							
36	9,700	8,500	7,900							
38	8,800	7,700	7,300							
40	8,000	6,900	6,700							
45	6,400	5,300	5,100							
50	5,000	4,000	3,900							
55	3,900									
60										
65										
70										
75										
* n *	2	1	1							
% 1	46-	92-	100-							
2	92+	92+	100-							
3	92+	92+	100-							
4	92+	92+	100-							
5	92+	92+	100-							
ft/s	23	23	23							

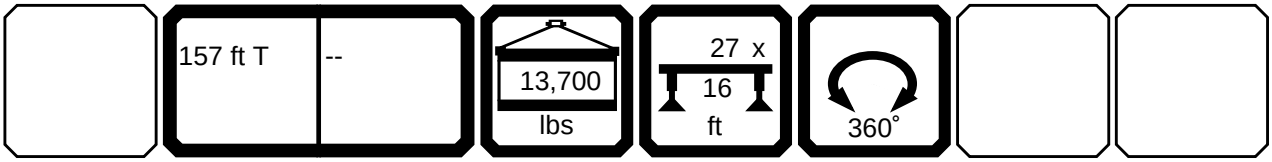




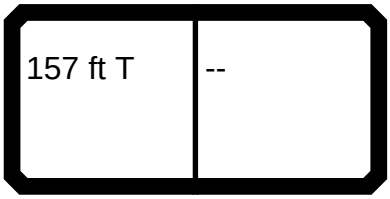
061513 TAB 134011 20.01

ft> < lbs CODE 〉011〈 L134 0600 .x(x)

ft	36	46	46	59	59	59	69	69	69	79
10	116,000	116,000	82,500	113,000	67,500	58,700				
11	109,000	109,000	79,500	98,000	64,000	56,300				
12	102,000	99,000	76,000	86,000	61,500	54,100	76,500	50,700	50,700	
13	96,000	87,000	72,500	76,000	58,500	51,900	68,000	48,800	48,800	
14	87,500	78,000	70,000	68,500	55,800	49,900	62,000	46,900	47,000	
15	79,000	70,000	67,000	62,000	53,200	47,800	56,000	45,100	45,200	52,100
16	71,000	63,500	64,500	56,300	50,700	45,900	51,300	43,400	43,500	47,900
17	65,000	58,300	61,000	51,800	48,600	44,300	47,300	41,700	41,800	44,400
18	59,900	53,900	56,800	47,900	46,900	42,800	43,800	40,100	40,200	41,300
20	50,200	45,400	48,800	40,500	43,400	40,000	37,300	37,000	37,000	35,300
22	43,200	39,600	42,700	35,300	39,800	37,700	32,500	34,800	34,800	31,000
24	37,100	34,600	37,600	30,800	36,000	35,200	28,400	32,700	32,700	27,200
26	31,700	30,400	33,400	27,000	32,000	32,500	25,000	30,900	30,800	24,000
28		27,200	29,700	24,000	28,900	29,600	22,200	28,300	28,800	21,400
30		24,200	26,400	21,300	26,100	26,800	19,700	25,800	26,700	19,000
32		21,400	23,600	19,100	23,800	24,400	17,600	23,600	24,500	17,100
34		19,200	21,300	17,300	21,800	22,400	15,900	21,700	22,600	15,400
36		17,400	19,400	15,700	19,900	20,400	14,300	20,100	21,000	13,900
38		15,500	17,500	14,100	18,000	18,500	12,800	18,500	19,300	12,500
40				12,600	16,400	16,800	11,400	17,000	17,800	11,200
45				9,600	13,200	13,700	8,800	13,900	14,600	8,600
50							6,700	11,600	12,200	6,600
55							5,000	9,600	10,300	4,900
60										
65										
70										
75										
80										
85										
90										
95										
100										
* n *	9	9	7	9	6	5	6	4	4	4
1	0+	0+	0+	46+	0+	0+	92+	0+	0+	92+
2	0+	46+	0+	46+	0+	0+	46+	0+	0+	92+
3	0+	0+	0+	0+	0+	0+	0+	0+	0+	0+
4	0+	0+	0+	0+	46+	0+	0+	92+	46+	0+
5	0+	0+	46+	0+	46+	92+	0+	46+	92+	0+
%										
ft/s	23	23	23	23	23	23	23	23	23	23



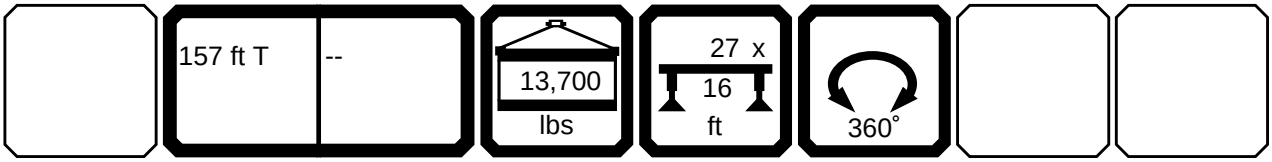
ISO DIN



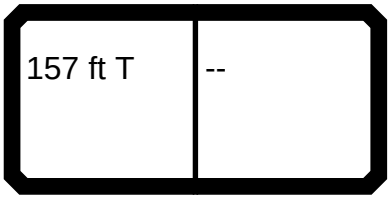
061513 TAB 134011 20.01

ft> < lbs CODE 〉011〈 L134 0600 .x(x)

ft	79	79	92	92	92	102	102	102	115	115
10										
11										
12										
13										
14										
15	52,500	37,900								
16	50,700	36,600								
17	48,600	35,400	42,300	41,200	35,800					
18	46,100	34,300	39,500	40,100	34,800					
20	41,300	31,900	34,100	37,800	32,900	33,200	36,200	32,000		
22	36,700	29,900	30,100	34,900	31,100	29,500	32,400	30,600		
24	32,800	27,800	26,600	31,900	29,400	26,200	29,100	29,200	25,400	28,400
26	29,400	25,900	23,600	28,700	27,800	23,400	26,200	27,900	22,800	25,600
28	26,700	24,500	21,100	26,200	26,400	21,100	23,800	25,800	20,600	23,400
30	24,200	23,300	18,900	23,800	25,000	19,000	21,600	23,700	18,600	21,400
32	22,200	22,100	17,000	21,900	23,000	17,200	19,800	21,800	16,900	19,600
34	20,400	21,000	15,400	20,200	21,300	15,600	18,300	20,200	15,400	18,100
36	18,900	19,700	14,000	18,800	19,900	14,300	16,900	18,800	14,100	16,800
38	17,400	18,500	12,600	17,300	18,400	12,900	15,500	17,400	12,900	15,500
40	16,000	17,300	11,400	15,900	17,000	11,700	14,200	16,100	11,700	14,300
45	13,300	14,600	8,800	13,300	14,400	9,300	11,800	13,600	9,300	11,900
50	11,000	12,200	6,900	11,200	12,300	7,400	9,800	11,600	7,500	10,000
55	9,100	10,300	5,200	9,400	10,400	5,800	8,100	9,900	5,900	8,400
60	7,600	8,600	3,800	7,900	8,700	4,400	6,800	8,500	4,600	7,000
65	6,400	7,400	2,700	6,700	7,500	3,300	5,600	7,300	3,500	5,900
70	5,300	6,300		5,700	6,500		4,600	6,300		4,900
75				4,800	5,700		3,800	5,400		4,100
80							3,100	4,600		3,300
85							2,400	3,800		2,700
90								3,200		2,200
95										
100										
* n *	4	3	4	4	3	3	3	3	2	3
1	0+	0+	92+	0+	0+	92+	0+	0+	92+	0+
2	0+	0+	92+	0+	0+	92+	92+	0+	92+	92+
3	92+	0+	46+	92+	46+	46+	92+	92+	92+	92+
4	46+	92+	0+	92+	92+	46+	46+	92+	46+	92+
5	46+	92+	0+	46+	92+	0+	46+	92+	0+	46+
%										
ft/s	23	23	23	23	23	23	23	23	23	23



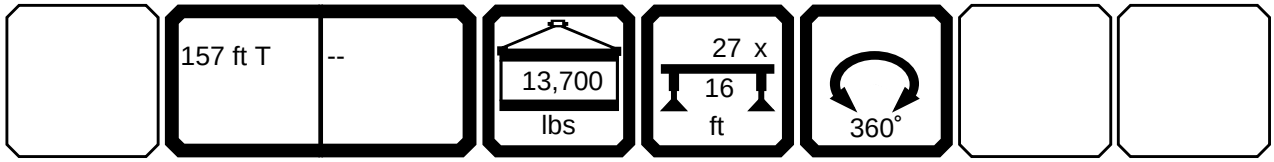
ISO DIN

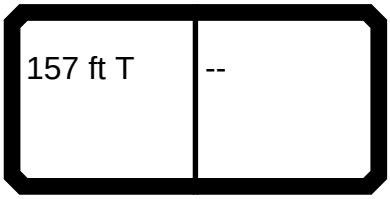


061513 TAB 134011 20.01

ft> < lbs CODE 〉011〈 L134 0600 .x(x)

ft	115	125	125	138	138	148	157	46	59	69
10								34,800	31,100	
11								34,800	30,900	
12								34,700	30,800	21,800
13								34,700	30,600	21,500
14								34,700	30,500	21,100
15								34,700	30,400	20,800
16								34,700	30,300	20,500
17								34,700	30,200	20,200
18								34,700	30,100	19,900
20								34,700	30,000	19,400
22								34,700	29,900	18,900
24	28,400							33,200	28,800	18,400
26	26,800							30,300	26,800	17,900
28	24,700	20,700	23,100	20,300	21,900			27,200	24,000	17,500
30	22,600	18,800	21,200	18,500	20,100	18,500	18,000	24,200	21,300	17,200
32	20,800	17,200	19,500	16,900	18,500	17,000	16,500	21,400	19,100	16,800
34	19,300	15,800	18,100	15,600	17,200	15,800	15,300	19,200	17,300	15,800
36	18,000	14,600	16,800	14,400	16,000	14,600	14,200	17,400	15,700	14,300
38	16,700	13,300	15,500	13,200	14,700	13,500	13,100	15,500	14,100	12,800
40	15,400	12,200	14,400	12,100	13,600	12,400	12,100		12,600	11,400
45	13,000	9,900	12,100	9,900	11,400	10,300	10,000		9,600	8,800
50	11,100	8,100	10,200	8,200	9,600	8,600	8,400			6,700
55	9,500	6,500	8,600	6,700	8,100	7,100	6,900			5,000
60	8,100	5,200	7,300	5,400	6,800	5,900	5,700			
65	6,900	4,100	6,200	4,300	5,700	4,800	4,700			
70	6,000	3,200	5,300	3,400	4,800	3,900	3,800			
75	5,100		4,400	2,700	4,000	3,100	3,000			
80	4,400		3,700		3,300					
85	3,700		3,100		2,600					
90	3,100		2,500		2,100					
95	2,600		2,000							
100	2,100									
* n *	3	2	2	2	2	2	2	3	3	2
1	0+	92+	0+	92+	46+	92+	100+	0+	46-	92-
2	46+	92+	92+	92+	92+	92+	100+	46-	46+	46+
3	92+	92+	92+	92+	92+	92+	100+	0+	0+	0+
4	92+	46+	92+	92+	92+	92+	100+	0+	0+	0+
5	92+	46+	92+	46+	92+	92+	100+	0+	0+	0+
%										
ft/s	23	23	23	23	23	23	23	23	23	23

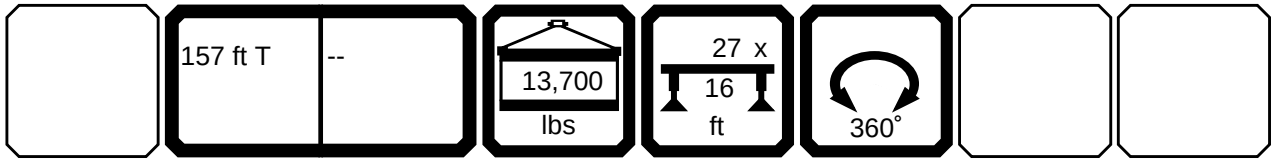


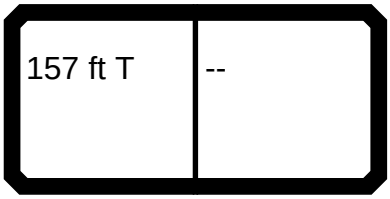


061513 TAB 134011 20.01

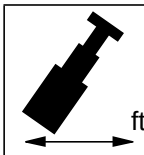
ft> < lbs CODE 〉011〈 L134 0600 .x(x)

ft	79	92	102	115	46	59	79	102	125	69
10					42,400	39,500				
11					42,400	39,300				
12					42,300	39,100				28,900
13					42,300	38,900				28,500
14					42,300	38,800				28,100
15	19,900				42,300	38,600	25,100			27,700
16	19,500				42,300	38,500	23,700			27,300
17	19,200	18,600			42,300	38,400	22,900			26,900
18	18,800	18,300			42,300	38,200	22,500			26,600
20	18,200	17,600	17,300		42,000	38,000	21,900	19,200		25,900
22	17,600	17,000	16,600		40,600	37,900	21,300	18,600		25,300
24	17,100	16,400	16,000	15,700	37,600	35,900	20,700	18,000		24,200
26	16,600	15,800	15,400	15,100	33,400	32,000	20,200	17,400		22,700
28	16,100	15,300	14,900	14,500	29,700	28,900	19,700	16,900	14,500	22,100
30	15,600	14,800	14,400	14,000	26,400	26,100	19,300	16,300	14,000	21,700
32	15,200	14,300	13,900	13,500	23,600	23,800	18,800	15,900	13,500	21,300
34	14,400	13,700	13,200	12,800	21,300	21,800	18,200	15,400	12,700	20,500
36	13,300	12,900	12,300	11,900	19,400	19,900	17,500	15,000	11,800	19,300
38	12,200	12,200	11,300	11,000	17,500	18,000	16,800	14,600	10,900	18,200
40	11,200	11,400	10,500	10,200		16,400	16,000	14,000	10,200	17,000
45	8,600	8,800	9,100	9,100		13,200	13,300	11,700	9,500	13,900
50	6,600	6,900	7,400	7,500			11,000	9,800	8,000	11,600
55	4,900	5,200	5,800	5,900			9,100	8,100	6,500	9,600
60		3,800	4,400	4,600			7,600	6,800	5,200	
65		2,700	3,300	3,500			6,400	5,600	4,100	
70							5,300	4,600	3,200	
75								3,800		
80								3,100		
85								2,400		
90										
95										
100										
* n *	2	2	2	2	4	3	2	2	2	3
1	92-	92-	92-	92-	0+	0+	0+	0+	92-	0+
2	92-	92-	92-	92-	0+	0+	0+	92-	92+	0+
3	0+	46-	46-	92-	0+	0+	92-	92+	92+	0+
4	0+	0+	46-	46-	0+	46-	46+	46+	46+	92-
5	0+	0+	0+	0+	46-	46+	46+	46+	46+	46+
%										
ft/s	23	23	23	23	23	23	23	23	23	23



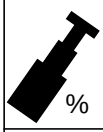


061513 TAB 134011 20.01



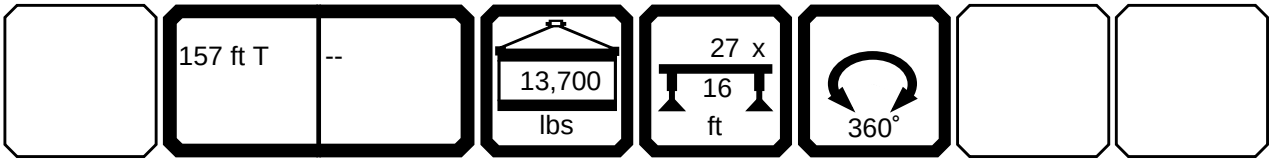
ft> < lbs CODE 〉011〈 L134 0600 .x(x)

ft	92	115	138	59	69	79	92	102	115	125
10				32,300						
11				31,900						
12				31,500	38,200					
13				31,100	37,900					
14				30,800	37,600					
15				30,400	37,400	26,600				
16				30,100	37,200	26,200				
17	22,200			29,800	36,600	25,500	32,300			
18	21,800			29,500	35,900	24,600	32,000			
20	21,200			29,000	34,500	23,100	31,500	20,700		
22	20,500			28,500	34,000	22,500	30,700	20,100		
24	19,900	17,600		28,000	32,700	21,900	29,400	19,500	27,700	
26	19,300	17,100		27,600	30,800	21,300	27,800	18,900	26,700	
28	18,800	16,500	14,300	27,200	28,800	20,800	26,400	18,300	24,700	16,300
30	18,300	16,000	13,800	26,500	26,700	20,300	25,000	17,800	22,600	15,700
32	17,900	15,500	13,300	24,400	24,500	19,900	23,000	17,300	20,800	15,200
34	17,400	15,000	12,500	22,400	22,600	19,300	21,300	16,900	19,300	14,800
36	17,000	14,600	11,600	20,400	21,000	18,700	19,900	16,400	18,000	14,300
38	16,600	14,100	10,800	18,500	19,300	18,100	18,400	16,000	16,700	13,900
40	15,900	13,600	10,100	16,800	17,800	17,300	17,000	15,500	15,400	13,300
45	13,300	11,800	9,300	13,700	14,600	14,600	14,400	13,500	13,000	11,300
50	11,200	10,000	8,000		12,200	12,200	12,300	11,600	11,100	9,900
55	9,400	8,400	6,700		10,300	10,300	10,400	9,900	9,500	8,600
60	7,900	7,000	5,400			8,600	8,700	8,500	8,100	7,300
65	6,700	5,900	4,300			7,400	7,500	7,300	6,900	6,200
70	5,700	4,900	3,400			6,300	6,500	6,300	6,000	5,300
75	4,800	4,100	2,700				5,700	5,400	5,100	4,400
80		3,300						4,600	4,400	3,700
85		2,700						3,800	3,700	3,100
90		2,200						3,200	3,100	2,500
95									2,600	2,000
100									2,100	
* n *	2	2	2	3	3	2	3	2	3	2

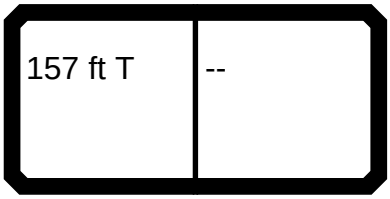


%										
1	0+	0+	92-	0+	0+	0+	0+	0+	0+	0+
2	0+	92-	92+	0+	0+	0+	0+	0+	46-	92-
3	92-	92+	92+	0+	0+	0+	46-	92-	92+	92+
4	92+	92+	92+	0+	46-	92-	92+	92+	92+	92+
5	46+	46+	46+	92-	92+	92+	92+	92+	92+	92+

ft/s										
	23	23	23	23	23	23	23	23	23	23

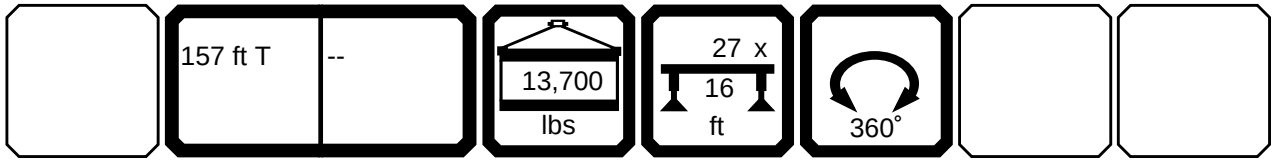


ISO DIN

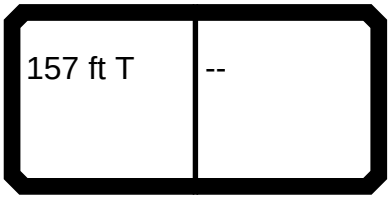


061513 TAB 134011 20.01

ft	ft> < lbs CODE 〉011〈 L134 0600 .x(x)									
	138	**148**	**157**							
10										
11										
12										
13										
14										
15										
16										
17										
18										
20										
22										
24										
26										
28	21,600									
30	20,100	13,800	9,500							
32	18,500	13,300	9,100							
34	17,200	12,600	8,700							
36	16,000	11,700	8,400							
38	14,700	10,800	8,000							
40	13,600	10,100	7,700							
45	11,400	9,400	6,900							
50	9,600	8,300	6,200							
55	8,100	7,100	5,600							
60	6,800	5,900	5,100							
65	5,700	4,800	4,600							
70	4,800	3,900	3,800							
75	4,000	3,100	3,000							
80	3,300									
85	2,600									
90	2,100									
95										
100										
* n *	2	1	1							
1	46-	92-	100-							
2	92+	92+	100-							
3	92+	92+	100-							
4	92+	92+	100-							
5	92+	92+	100-							
%										
ft/s	23	23	23							

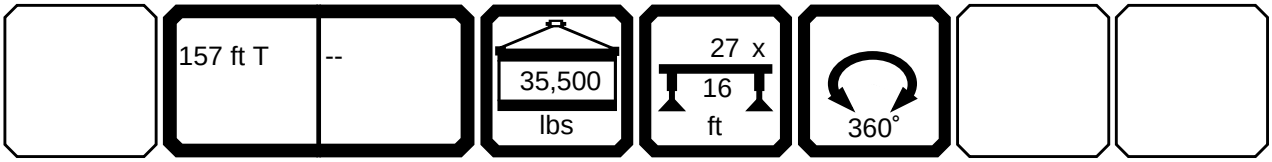


ISO DIN

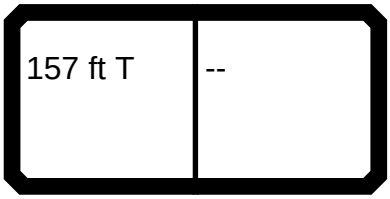


061513 TAB 134008 20.01

ft	ft> < lbs CODE 〉008〈 L134 0900 .x(x)									
	36	**46**	**46**	**59**	**59**	**59**	**69**	**69**	**69**	**79**
10	120,000	120,000	82,500	119,000	67,500	58,700				
11	112,000	112,000	79,500	111,000	64,000	56,300				
12	106,000	105,000	76,000	105,000	61,500	54,100	99,500	50,700	50,700	
13	99,500	99,000	72,500	98,500	58,500	51,900	97,000	48,800	48,800	
14	94,000	94,000	70,000	93,000	55,800	49,900	91,000	46,900	47,000	
15	89,000	89,000	67,000	88,000	53,200	47,800	84,500	45,100	45,200	76,000
16	84,500	84,500	64,500	83,500	50,700	45,900	78,000	43,400	43,500	72,000
17	80,500	80,500	62,500	78,500	48,600	44,300	72,500	41,700	41,800	68,000
18	77,000	76,500	60,000	73,000	46,900	42,800	67,500	40,100	40,200	63,500
20	70,000	69,000	56,100	62,500	43,500	40,000	58,100	37,000	37,000	55,100
22	63,000	60,500	52,500	55,100	40,700	37,700	51,400	34,800	34,800	48,900
24	55,700	53,600	49,200	48,800	38,000	35,500	45,600	32,700	32,700	43,600
26	48,100	47,700	46,000	43,400	35,600	33,500	40,700	30,900	30,800	39,100
28		42,400	43,000	39,200	33,300	31,600	36,800	29,200	29,100	35,400
30		37,500	39,800	35,400	31,200	29,900	33,200	27,700	27,500	32,100
32		33,700	35,800	32,300	29,200	28,200	30,300	26,200	26,000	29,300
34		30,600	32,700	29,500	27,600	26,900	27,800	24,800	24,600	26,900
36		28,000	30,000	26,900	26,400	25,800	25,600	23,500	23,200	24,900
38		25,400	27,400	24,400	25,100	24,800	23,500	22,200	21,900	22,800
40				22,100	23,900	23,800	21,500	21,100	20,700	20,900
45				17,900	20,900	21,300	17,600	19,200	18,700	17,300
50							14,400	17,400	17,000	14,400
55							11,700	15,600	15,300	12,000
60										9,800
65										8,000
70										6,500
75										
80										
85										
90										
95										
100										
105										
110										
115										
120										
* n *	10!	10!	7	10!	6	5	8	4	4	6
1	0+	0+	0+	46+	0+	0+	92+	0+	0+	92+
2	0+	46+	0+	46+	0+	0+	46+	0+	0+	92+
3	0+	0+	0+	0+	0+	0+	0+	0+	0+	0+
4	0+	0+	0+	0+	46+	0+	0+	92+	46+	0+
5 %	0+	0+	46+	0+	46+	92+	0+	46+	92+	0+
ft/s	23	23	23	23	23	23	23	23	23	23



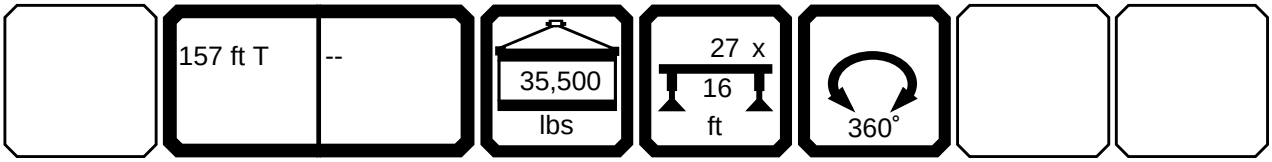
ISO DIN



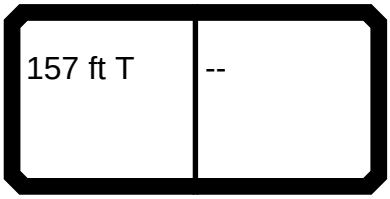
061513 TAB 134008 20.01

ft> < lbs CODE 〉008〈 L134 0900 .x(x)

ft	79	79	92	92	92	102	102	102	115	115
10										
11										
12										
13										
14										
15	52,500	37,900								
16	50,700	36,600								
17	49,100	35,400	60,000	41,200	35,800					
18	47,500	34,300	57,800	40,100	34,800					
20	44,400	31,900	52,900	37,900	32,900	49,300	41,100	32,000		
22	41,600	29,900	47,300	35,700	31,100	45,300	39,100	30,600		
24	38,900	27,800	42,300	33,700	29,400	41,300	37,100	29,200	38,800	32,000
26	36,200	25,900	38,100	31,700	27,800	37,400	35,200	27,900	36,200	30,700
28	34,400	24,500	34,700	30,100	26,500	34,100	33,500	26,700	33,200	29,500
30	32,600	23,300	31,500	28,600	25,200	31,200	31,800	25,400	30,400	28,200
32	31,100	22,100	28,900	27,300	24,100	28,600	30,100	24,200	28,100	27,100
34	29,700	21,100	26,600	26,100	23,100	26,500	28,500	23,100	26,000	26,000
36	28,400	20,200	24,600	24,900	22,200	24,600	26,800	22,100	24,200	24,900
38	27,100	19,200	22,700	23,800	21,200	22,700	25,100	21,200	22,400	23,900
40	25,700	18,300	20,900	22,700	20,300	21,000	23,500	20,300	20,700	22,800
45	21,600	16,200	17,300	20,300	18,300	17,600	20,000	18,300	17,500	19,900
50	18,400	14,500	14,500	18,100	16,500	14,900	17,300	16,600	14,800	17,300
55	15,700	13,200	12,200	16,000	15,100	12,600	15,000	14,900	12,600	15,100
60	13,500	12,100	10,200	13,900	14,000	10,700	13,000	13,500	10,800	13,200
65	11,800	11,200	8,600	12,200	12,900	9,100	11,300	12,600	9,200	11,600
70	10,300	10,200	7,100	10,700	11,500	7,800	9,800	11,200	7,900	10,100
75			5,800	9,400	10,200	6,600	8,500	10,000	6,700	8,800
80						5,400	7,400	8,900	5,700	7,800
85						4,500	6,400	7,900	4,800	6,800
90						3,700	5,600	7,000	4,000	6,000
95									3,200	5,200
100									2,600	4,600
105										
110										
115										
120										
* n *	4	3	5	4	3	4	4	3	3	3
1	0+	0+	92+	0+	0+	92+	0+	0+	92+	0+
2	0+	0+	92+	0+	0+	92+	92+	0+	92+	92+
3	92+	0+	46+	92+	46+	46+	92+	92+	92+	92+
4	46+	92+	0+	92+	92+	46+	46+	92+	46+	92+
5	46+	92+	0+	46+	92+	0+	46+	92+	0+	46+
%										
ft/s	23	23	23	23	23	23	23	23	23	23



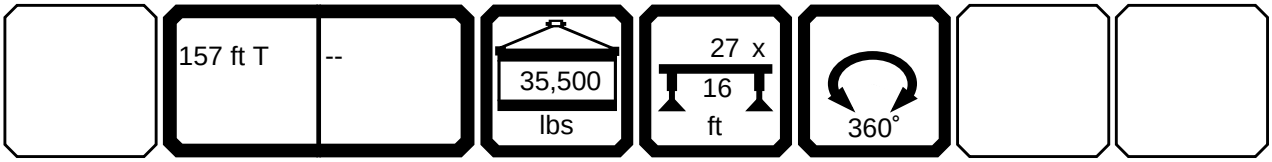
ISO DIN

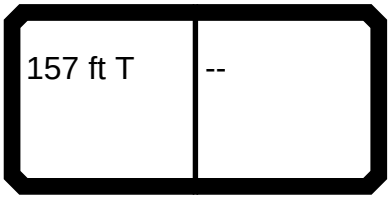


061513 TAB 134008 20.01

ft> < lbs CODE 〉008〈 L134 0900 .x(x)

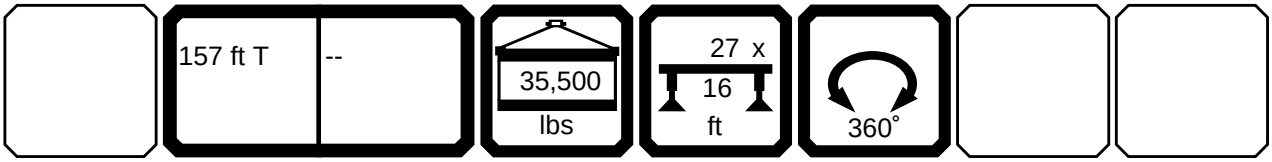
ft	115	125	125	138	138	148	157	46	59	69
10								34,800	31,100	
11								34,800	30,900	
12								34,700	30,800	21,800
13								34,700	30,600	21,500
14								34,700	30,500	21,100
15								34,700	30,400	20,800
16								34,700	30,300	20,500
17								34,700	30,200	20,200
18								34,700	30,100	19,900
20								34,700	30,000	19,400
22								34,700	29,900	18,900
24	28,800							34,700	29,900	18,400
26	27,800							34,700	29,900	17,900
28	26,800	31,900	25,600	27,600	24,600			34,700	29,900	17,500
30	25,800	30,300	24,800	26,900	24,100	23,600	19,000	34,400	29,900	17,200
32	24,800	28,100	23,900	26,300	23,600	23,200	18,600	32,800	29,900	16,800
34	23,900	26,100	23,200	25,100	23,000	22,700	18,200	30,600	28,500	16,500
36	23,000	24,400	22,400	23,600	22,500	22,100	17,700	28,000	26,300	16,200
38	22,100	22,600	21,700	22,200	21,900	21,500	17,300	25,400	24,200	16,000
40	21,300	21,000	20,900	20,800	21,200	20,700	16,900		22,100	15,700
45	19,500	17,800	19,000	17,700	19,000	17,900	15,900		17,900	15,300
50	17,800	15,300	17,100	15,200	16,700	15,500	14,700			13,700
55	16,100	13,100	15,200	13,100	14,600	13,500	13,200			11,700
60	14,200	11,300	13,400	11,400	12,800	11,700	11,500			
65	12,600	9,800	11,800	9,900	11,300	10,300	10,100			
70	11,100	8,500	10,400	8,600	10,000	9,000	8,900			
75	9,800	7,300	9,200	7,500	8,800	7,900	7,800			
80	8,700	6,300	8,100	6,500	7,800	7,000	6,800			
85	7,700	5,500	7,200	5,600	6,900	6,100	6,000			
90	6,900	4,700	6,400	4,900	6,100	5,400	5,200			
95	6,200	3,900	5,700	4,200	5,400	4,700	4,500			
100	5,500	3,300	5,000	3,600	4,800	4,000	3,900			
105		2,600	4,400	3,000	4,100	3,500	3,400			
110		2,100	3,900	2,500	3,600	3,000	2,900			
115				2,000	3,100	2,500	2,400			
120					2,600					
* n *	3	3	2	3	2	2	2	3	3	2
1	0+	92+	0+	92+	46+	92+	100+	0+	46-	92-
2	46+	92+	92+	92+	92+	92+	100+	46-	46+	46+
3	92+	92+	92+	92+	92+	92+	100+	0+	0+	0+
4	92+	46+	92+	92+	92+	92+	100+	0+	0+	0+
5	92+	46+	92+	46+	92+	92+	100+	0+	0+	0+
%										
ft/s	23	23	23	23	23	23	23	23	23	23





061513 TAB 134008 20.01

ft	ft> < lbs	CODE 〉008〈			L134 0900 .x(x)					
	79	**92**	**102**	**115**	**46**	**59**	**79**	**102**	**125**	**69**
10					42,400	39,500				
11					42,400	39,300				
12					42,300	39,100				28,900
13					42,300	38,900				28,500
14					42,300	38,800				28,100
15	19,900				42,300	38,600	25,100			27,700
16	19,500				42,300	38,500	23,700			27,300
17	19,200	18,600			42,300	38,400	22,900			26,900
18	18,800	18,300			42,300	38,200	22,500			26,600
20	18,200	17,600	17,300		42,300	38,000	21,900	19,200		25,900
22	17,600	17,000	16,600		42,300	37,900	21,300	18,600		25,300
24	17,100	16,400	16,000	15,700	42,300	37,000	20,700	18,000		24,200
26	16,600	15,800	15,400	15,100	42,300	35,500	20,200	17,400		22,700
28	16,100	15,300	14,900	14,500	41,400	33,300	19,700	16,900	14,500	22,100
30	15,600	14,800	14,400	14,000	39,800	31,200	19,300	16,300	14,000	21,700
32	15,200	14,300	13,900	13,500	35,800	29,200	18,800	15,900	13,500	21,300
34	14,800	13,900	13,200	12,800	32,700	27,600	18,400	15,400	12,700	21,000
36	14,400	13,500	12,300	11,900	30,000	26,400	18,100	15,000	11,800	20,700
38	14,100	13,100	11,300	11,000	27,400	25,100	17,700	14,600	10,900	20,400
40	13,700	12,600	10,600	10,300		23,900	17,300	14,200	10,200	20,000
45	13,000	10,600	9,900	9,500		20,900	16,600	13,300	9,500	19,000
50	11,400	9,700	9,300	8,900			16,000	11,600	8,800	17,400
55	10,400	9,200	8,700	8,300			15,000	10,400	8,200	15,600
60	9,800	8,800	8,300	7,700			13,500	9,900	7,700	
65	8,000	8,400	7,800	7,300			11,800	9,500	7,200	
70	6,500	7,100	7,400	6,900			10,300	9,100	6,800	
75		5,800	6,600	6,400				8,400	6,400	
80			5,400	5,700				7,400	6,000	
85			4,500	4,800				6,400	5,400	
90			3,700	4,000				5,600	4,700	
95				3,200					3,900	
100				2,600					3,300	
105									2,600	
110									2,100	
115										
120										
* n *	2	2	2	2	4	3	2	2	2	3
1	92-	92-	92-	92-	0+	0+	0+	0+	92-	0+
2	92-	92-	92-	92-	0+	0+	0+	92-	92+	0+
3	0+	46-	46-	92-	0+	0+	92-	92+	92+	0+
4	0+	0+	46-	46-	0+	46-	46+	46+	46+	92-
5	0+	0+	0+	0+	46-	46+	46+	46+	46+	46+
%										
ft/s	23	23	23	23	23	23	23	23	23	23



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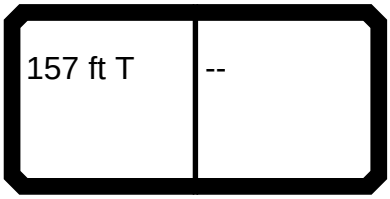
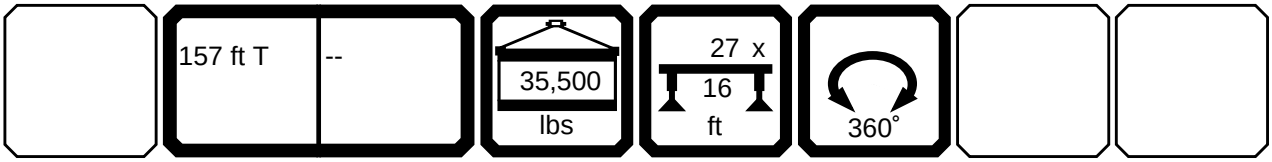
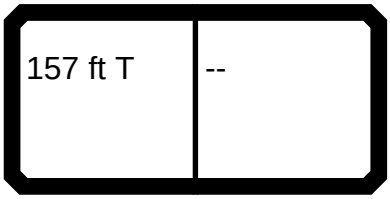


061513 TAB 134008 20.01

ft> < lbs CODE 〉008〈 L134 0900 .x(x)

ft	92	115	138	59	69	79	92	102	115	125
10				32,300						
11				31,900						
12				31,500	38,200					
13				31,100	37,900					
14				30,800	37,600					
15				30,400	37,400	26,600				
16				30,100	37,200	26,200				
17	22,200			29,800	36,600	25,500	32,300			
18	21,800			29,500	35,900	24,600	32,000			
20	21,200			29,000	34,500	23,100	31,500	20,700		
22	20,500			28,500	34,000	22,500	30,700	20,100		
24	19,900	17,600		28,000	32,700	21,900	29,400	19,500	27,900	
26	19,300	17,100		27,600	30,800	21,300	27,800	18,900	27,400	
28	18,800	16,500	14,300	27,200	29,100	20,800	26,500	18,300	26,700	16,300
30	18,300	16,000	13,800	26,900	27,500	20,300	25,200	17,800	25,800	15,700
32	17,900	15,500	13,300	26,600	26,000	19,900	24,100	17,300	24,800	15,200
34	17,400	15,000	12,500	26,100	24,600	19,500	23,100	16,900	23,900	14,800
36	17,000	14,600	11,600	25,300	23,200	19,100	22,200	16,400	23,000	14,300
38	16,600	14,100	10,800	24,600	21,900	18,700	21,200	16,000	22,100	13,900
40	16,200	13,700	10,100	23,800	20,700	18,200	20,300	15,600	21,300	13,300
45	15,300	12,800	9,300	21,300	18,700	16,200	18,300	14,700	19,500	11,300
50	14,600	11,200	8,600		17,000	14,500	16,500	13,900	17,800	10,400
55	14,000	10,000	8,000		15,300	13,200	15,100	13,200	16,100	9,800
60	13,300	9,500	7,500			12,100	14,000	12,400	14,200	9,200
65	12,100	9,000	7,000			11,200	12,900	10,900	12,600	8,700
70	10,700	8,600	6,500			10,200	11,500	10,400	11,100	8,300
75	9,400	8,200	6,100				10,200	9,700	9,800	7,900
80		7,700	5,700					8,900	8,700	7,500
85		6,800	5,400					7,900	7,700	7,200
90		6,000	4,800					7,000	6,900	6,400
95		5,200	4,200						6,200	5,700
100		4,600	3,600						5,500	5,000
105			3,000							4,400
110			2,500							3,900
115			2,000							
120										
* n *	2	2	2	3	3	2	3	2	3	2
1	0+	0+	92-	0+	0+	0+	0+	0+	0+	0+
2	0+	92-	92+	0+	0+	0+	0+	0+	46-	92-
3	92-	92+	92+	0+	0+	0+	46-	92-	92+	92+
4	92+	92+	92+	0+	46-	92-	92+	92+	92+	92+
5	46+	46+	46+	92-	92+	92+	92+	92+	92+	92+
%										
ft/s	23	23	23	23	23	23	23	23	23	23

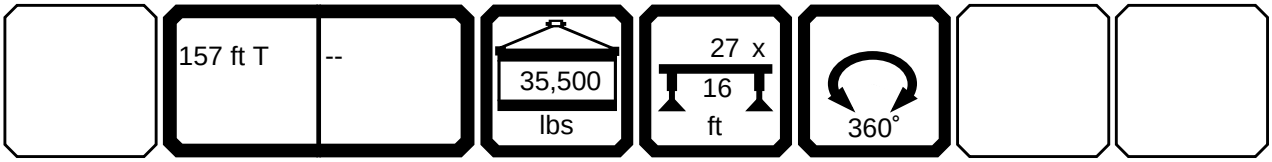




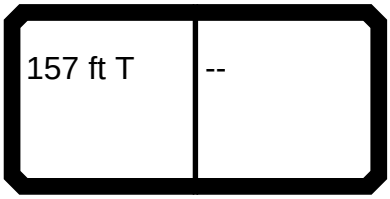
061513 TAB 134008 20.01

ft> < lbs CODE 〉008〈 L134 0900 .x(x)

ft	138	148	157							
10										
11										
12										
13										
14										
15										
16										
17										
18										
20										
22										
24										
26										
28	22,400									
30	22,100	13,800	9,500							
32	21,700	13,300	9,100							
34	21,300	12,600	8,700							
36	21,000	11,700	8,400							
38	20,700	10,800	8,000							
40	20,300	10,100	7,700							
45	18,900	9,400	6,900							
50	16,700	8,700	6,200							
55	14,600	8,100	5,600							
60	12,800	7,500	5,100							
65	11,300	7,000	4,600							
70	10,000	6,600	4,200							
75	8,800	6,100	3,800							
80	7,800	5,800	3,400							
85	6,900	5,400	3,000							
90	6,100	5,100	2,800							
95	5,400	4,600	2,500							
100	4,800	4,000	2,200							
105	4,100	3,500	2,000							
110	3,600	3,000	1,800							
115	3,100	2,500								
120	2,600									
* n *	2	1	1							
1	46-	92-	100-							
2	92+	92+	100-							
3	92+	92+	100-							
4	92+	92+	100-							
5	92+	92+	100-							
%										
ft/s	23	23	23							



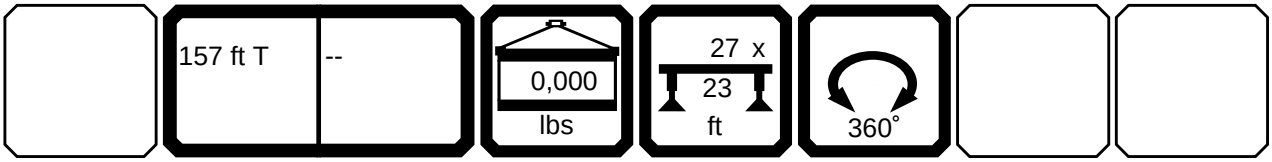
85%

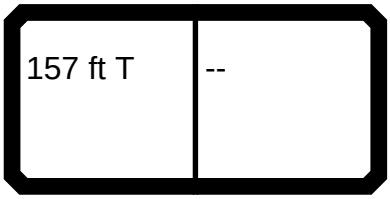


061513 TAB 134062 20.01

ft> < lbs CODE 〉007〈 L134 1000 .x(x)

ft	36	46	46	59	59	59	69	69	69	79
10	147,000	146,000	90,500	137,000	74,000	64,500				
11	138,000	138,000	87,000	131,000	70,500	62,000				
12	130,000	130,000	83,500	126,000	67,500	59,500	110,000	55,800	55,800	
13	122,000	122,000	80,000	121,000	64,500	57,100	107,000	53,600	53,700	
14	116,000	115,000	76,500	109,000	61,500	54,800	96,500	51,600	51,700	
15	109,000	108,000	73,500	96,000	58,500	52,600	85,500	49,600	49,700	78,000
16	102,000	96,500	71,000	84,500	55,800	50,500	76,000	47,700	47,800	70,000
17	94,000	86,500	68,500	76,000	53,500	48,700	68,500	45,900	46,000	63,500
18	85,500	78,500	66,000	69,000	51,600	47,100	62,500	44,100	44,200	58,100
20	70,000	62,500	61,500	55,600	47,900	44,000	50,900	40,700	40,800	48,000
22	58,900	53,000	55,100	47,200	44,800	41,500	43,400	38,200	38,300	41,200
24	50,100	45,100	48,800	40,200	41,800	39,100	37,100	36,000	36,000	35,400
26	43,400	38,800	42,300	34,600	39,100	36,800	32,000	34,000	33,900	30,700
28		34,200	37,600	30,400	35,600	34,800	28,200	32,200	32,000	27,100
30		30,100	33,400	26,600	32,200	32,600	24,700	30,300	30,200	23,900
32		26,900	30,100	23,700	29,000	29,600	21,900	28,300	28,600	21,300
34		24,300	27,300	21,200	26,400	27,100	19,600	26,200	26,700	19,100
36		22,000	24,800	19,200	24,300	24,900	17,700	24,100	24,800	17,200
38		19,700	22,400	17,100	22,100	22,700	15,700	22,000	22,800	15,300
40				15,200	20,100	20,700	13,900	20,100	21,100	13,700
45				11,700	16,100	16,600	10,700	16,600	17,500	10,500
50							8,200	13,700	14,600	8,100
55							6,200	11,300	12,200	6,100
60										4,500
65										3,200
70										
75										
80										
85										
90										
95										
100										
* n *	10!	10!	7	10!	6	5	9	5	5	6
1	0+	0+	0+	46+	0+	0+	92+	0+	0+	92+
2	0+	46+	0+	46+	0+	0+	46+	0+	0+	92+
3	0+	0+	0+	0+	0+	0+	0+	0+	0+	0+
4	0+	0+	0+	0+	46+	0+	0+	92+	46+	0+
5	0+	0+	46+	0+	46+	92+	0+	46+	92+	0+
ft/s	23	23	23	23	23	23	23	23	23	23





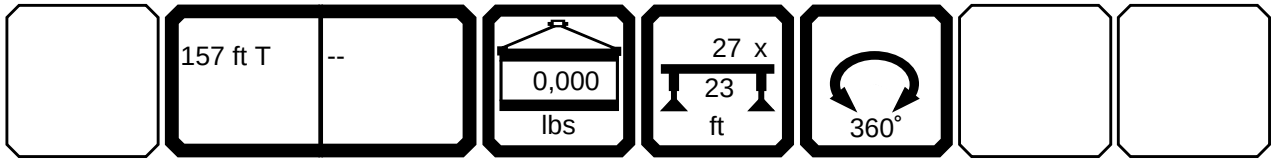
061513 TAB 134062 20.01

ft> < lbs CODE 〉007〈 L134 1000 .x(x)

ft	79	79	92	92	92	102	102	102	115	115
10										
11										
12										
13										
14										
15	57,700	41,800								
16	55,800	40,300								
17	54,000	39,000	59,900	45,300	39,400					
18	52,200	37,700	55,100	44,100	38,300					
20	48,800	35,100	46,000	41,700	36,100	44,500	45,000	35,200		
22	45,700	32,800	39,800	39,300	34,200	38,800	41,200	33,700		
24	41,800	30,600	34,500	37,000	32,300	33,900	37,200	32,200	32,800	34,700
26	37,100	28,500	30,100	34,800	30,500	29,800	33,000	30,700	29,000	32,100
28	33,300	27,000	26,700	32,100	29,100	26,600	29,700	29,300	25,900	29,200
30	29,800	25,600	23,700	29,300	27,800	23,700	26,700	27,900	23,200	26,300
32	27,000	24,400	21,200	26,600	26,500	21,300	24,300	26,200	20,900	24,000
34	24,700	23,200	19,100	24,400	25,000	19,300	22,200	24,400	19,000	22,000
36	22,700	22,200	17,300	22,500	23,400	17,600	20,400	22,600	17,400	20,300
38	20,700	21,100	15,500	20,600	21,700	15,800	18,600	20,800	15,700	18,600
40	19,000	20,000	13,900	18,900	20,100	14,300	17,000	19,100	14,200	17,100
45	15,600	17,000	10,800	15,700	16,800	11,300	14,000	16,000	11,300	14,100
50	13,000	14,400	8,400	13,200	14,300	9,000	11,600	13,500	9,100	11,800
55	10,700	12,000	6,500	11,000	12,100	7,100	9,600	11,500	7,200	9,800
60	8,800	9,900	4,900	9,100	10,100	5,500	8,000	9,800	5,700	8,200
65	7,400	8,500	3,600	7,700	8,600	4,200	6,600	8,300	4,400	6,900
70	6,400	7,400		6,600	7,500	3,100	5,500	7,200	3,300	5,800
75				5,600	6,500		4,600	6,200		4,900
80							3,700	5,300		4,000
85							3,000	4,600		3,300
90							2,300	3,900		2,700
95										2,100
100										
* n *	5	4	5	4	3	4	4	3	3	3

%										
1	0+	0+	92+	0+	0+	92+	0+	0+	92+	0+
2	0+	0+	92+	0+	0+	92+	92+	0+	92+	92+
3	92+	0+	46+	92+	46+	46+	92+	92+	92+	92+
4	46+	92+	0+	92+	92+	46+	46+	92+	46+	92+
5	46+	92+	0+	46+	92+	0+	46+	92+	0+	46+

ft/s										
	23	23	23	23	23	23	23	23	23	23



85%

157 ft T | --

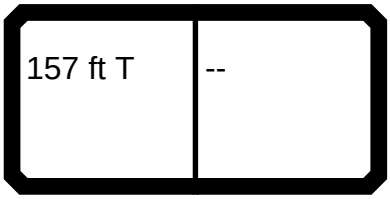
061513 TAB 134062 20.01

ft> < lbs CODE 〉007〈 L134 1000 .x(x)

ft	115	125	125	138	138	148	157	46	59	69
10								38,300	34,200	
11								38,300	34,000	
12								38,200	33,800	24,000
13								38,200	33,700	23,600
14								38,200	33,500	23,300
15								38,200	33,400	22,900
16								38,200	33,300	22,500
17								38,200	33,200	22,200
18								38,200	33,100	21,900
20								38,200	33,000	21,300
22								38,200	32,900	20,700
24	31,700							38,200	32,800	20,200
26	30,500							38,100	32,800	19,700
28	29,300	26,000	27,700	25,500	26,300			34,200	29,900	19,300
30	27,700	23,400	26,100	23,000	24,800	23,000	20,800	30,100	26,600	18,900
32	25,300	21,200	23,800	20,900	22,700	21,000	20,000	26,900	23,700	18,500
34	23,400	19,400	22,000	19,200	20,900	19,300	18,800	24,300	21,200	17,600
36	21,600	17,800	20,300	17,600	19,300	17,800	17,400	22,000	19,200	16,400
38	19,900	16,200	18,700	16,100	17,700	16,300	15,900	19,700	17,100	15,200
40	18,300	14,800	17,200	14,700	16,300	15,000	14,600		15,200	13,900
45	15,300	11,900	14,300	12,000	13,600	12,400	12,100		11,700	10,700
50	13,000	9,700	12,000	9,900	11,400	10,300	10,000			8,200
55	11,000	7,900	10,100	8,100	9,600	8,500	8,300			6,200
60	9,400	6,400	8,600	6,600	8,000	7,100	6,900			
65	8,100	5,100	7,300	5,300	6,800	5,800	5,700			
70	6,900	4,000	6,200	4,300	5,700	4,800	4,700			
75	5,900	3,100	5,300	3,400	4,800	3,900	3,800			
80	5,100		4,400		4,000	3,100	3,000			
85	4,300		3,700		3,300	2,400	2,300			
90	3,700		3,100		2,700					
95	3,100		2,500		2,100					
100	2,600									
* n *	3	2	3	2	2	2	2	3	3	2

%										
1	0+	92+	0+	92+	46+	92+	100+	0+	46-	92-
2	46+	92+	92+	92+	92+	92+	100+	46-	46+	46+
3	92+	92+	92+	92+	92+	92+	100+	0+	0+	0+
4	92+	46+	92+	92+	92+	92+	100+	0+	0+	0+
5	92+	46+	92+	46+	92+	92+	100+	0+	0+	0+
ft/s	23	23	23	23	23	23	23	23	23	23

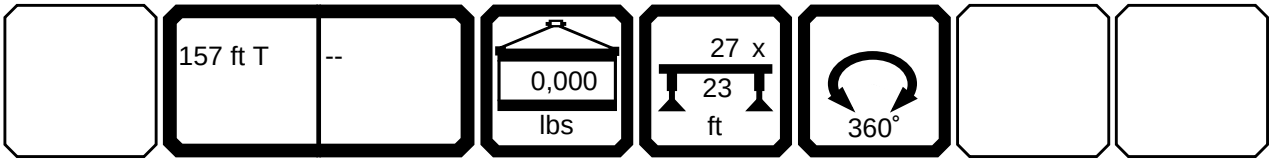
157 ft T | -- | 0,000 lbs | 27 x 23 ft | 360°



061513 TAB 134062 20.01

ft> < lbs CODE 〉007〈 L134 1000 .x(x)

ft	79	92	102	115	46	59	79	102	125	69
10					46,700	43,500				
11					46,600	43,300				
12					46,500	43,000				31,800
13					46,500	42,800				31,300
14					46,500	42,700				30,900
15	21,900				46,500	42,500	27,600			30,400
16	21,500				46,500	42,300	26,000			30,000
17	21,100	20,500			46,500	42,200	25,200			29,600
18	20,700	20,100			46,500	42,100	24,800			29,200
20	20,000	19,300	19,000		46,500	41,800	24,100	21,100		28,500
22	19,400	18,700	18,300		46,500	41,700	23,400	20,400		27,800
24	18,800	18,000	17,600	17,300	44,900	40,700	22,800	19,800		26,600
26	18,200	17,400	17,000	16,600	41,900	39,000	22,200	19,100		25,000
28	17,700	16,800	16,400	16,000	37,600	35,600	21,700	18,500	16,000	24,400
30	17,200	16,300	15,800	15,400	33,400	32,200	21,200	18,000	15,400	23,900
32	16,700	15,800	15,300	14,900	30,100	29,000	20,700	17,400	14,800	23,500
34	16,100	15,300	14,500	14,100	27,300	26,400	20,300	17,000	14,000	22,800
36	15,300	14,900	13,500	13,100	24,800	24,300	19,900	16,500	13,000	22,000
38	14,600	14,400	12,500	12,100	22,400	22,100	19,400	16,000	12,000	21,100
40	13,700	13,700	11,700	11,300		20,100	18,800	15,500	11,300	20,100
45	10,500	10,800	10,900	10,500		16,200	15,600	13,700	10,400	16,600
50	8,100	8,400	9,000	8,900			13,000	11,600	9,300	13,700
55	6,100	6,500	7,100	7,200			10,700	9,600	7,900	11,300
60	4,500	4,900	5,500	5,700			8,800	8,000	6,400	
65	3,200	3,600	4,200	4,400			7,400	6,600	5,100	
70			3,100	3,300			6,400	5,500	4,000	
75								4,600	3,100	
80								3,700		
85								3,000		
90								2,300		
95										
100										
* n *	2	2	2	2	4	4	3	2	2	3
1	92-	92-	92-	92-	0+	0+	0+	0+	92-	0+
2	92-	92-	92-	92-	0+	0+	0+	92-	92+	0+
3	0+	46-	46-	92-	0+	0+	92-	92+	92+	0+
4	0+	0+	46-	46-	0+	46-	46+	46+	46+	92-
5	0+	0+	0+	0+	46-	46+	46+	46+	46+	46+
ft/s	23	23	23	23	23	23	23	23	23	23



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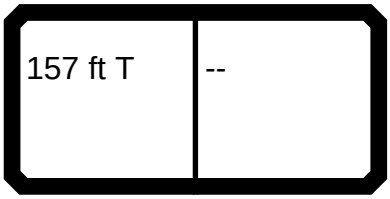
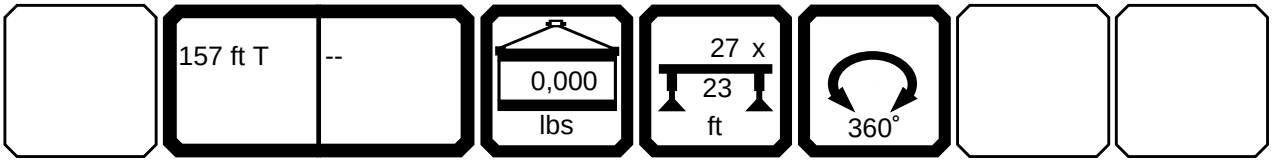


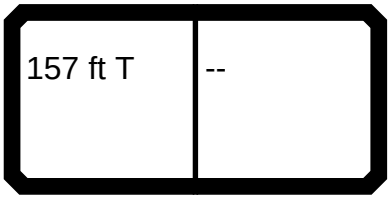
061513 TAB 134062 20.01

ft> < lbs CODE 〉007〈 L134 1000 .x(x)

ft	92	115	138	59	69	79	92	102	115	125
10				35,500						
11				35,100						
12				34,600	42,000					
13				34,200	41,700					
14				33,800	41,400					
15				33,500	41,100	29,300				
16				33,100	40,900	28,800				
17	24,400			32,800	40,300	28,100	35,500			
18	24,000			32,500	39,500	27,100	35,200			
20	23,300			31,900	38,000	25,400	34,600	22,800		
22	22,600			31,300	37,400	24,700	33,700	22,100		
24	21,900	19,400		30,800	36,000	24,100	32,300	21,400	30,700	
26	21,300	18,800		30,400	33,900	23,400	30,500	20,800	30,200	
28	20,700	18,200	15,700	30,000	32,000	22,900	29,100	20,200	29,100	17,900
30	20,200	17,600	15,100	29,500	30,200	22,400	27,800	19,600	27,700	17,300
32	19,600	17,000	14,600	28,700	28,600	21,900	26,500	19,100	25,300	16,700
34	19,200	16,500	13,800	27,100	26,700	21,400	25,000	18,600	23,400	16,200
36	18,700	16,000	12,800	24,900	24,800	21,000	23,400	18,100	21,600	15,800
38	18,200	15,600	11,800	22,700	22,800	20,600	21,700	17,600	19,900	15,300
40	17,700	15,100	11,100	20,700	21,100	19,900	20,100	17,100	18,300	14,700
45	15,500	13,800	10,300	16,600	17,500	16,900	16,800	15,700	15,300	12,400
50	13,200	11,800	9,300		14,600	14,400	14,300	13,500	13,000	11,300
55	11,000	9,800	8,100		12,200	12,000	12,100	11,500	11,000	10,100
60	9,100	8,200	6,600			9,900	10,100	9,800	9,400	8,600
65	7,700	6,900	5,300			8,500	8,600	8,300	8,100	7,300
70	6,600	5,800	4,300			7,400	7,500	7,200	6,900	6,200
75	5,600	4,900	3,400				6,500	6,200	5,900	5,300
80		4,000						5,300	5,100	4,400
85		3,300						4,600	4,300	3,700
90		2,700						3,900	3,700	3,100
95		2,100							3,100	2,500
100									2,600	
* n *	2	2	2	3	4	3	3	2	3	2
1	0+	0+	92-	0+	0+	0+	0+	0+	0+	0+
2	0+	92-	92+	0+	0+	0+	0+	0+	46-	92-
3	92-	92+	92+	0+	0+	0+	46-	92-	92+	92+
4	92+	92+	92+	0+	46-	92-	92+	92+	92+	92+
5	46+	46+	46+	92-	92+	92+	92+	92+	92+	92+
%										
ft/s	23	23	23	23	23	23	23	23	23	23



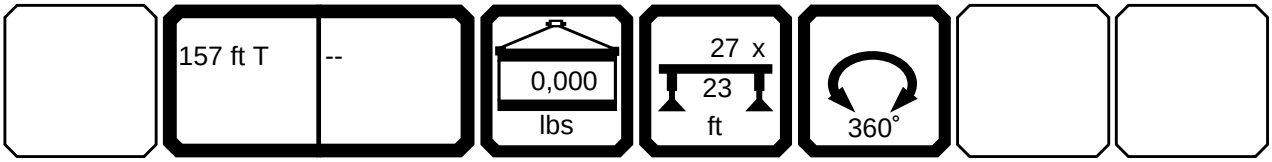
85%



061513 TAB 134062 20.01

ft> < lbs CODE 〉007〈 L134 1000 .x(x)

ft	138	148	157							
10										
11										
12										
13										
14										
15										
16										
17										
18										
20										
22										
24										
26										
28	24,700									
30	24,000	15,200	10,400							
32	22,400	14,600	10,000							
34	20,900	13,800	9,600							
36	19,300	12,800	9,200							
38	17,700	11,900	8,800							
40	16,300	11,100	8,400							
45	13,600	10,300	7,600							
50	11,400	9,600	6,900							
55	9,600	8,500	6,200							
60	8,000	7,100	5,600							
65	6,800	5,800	5,100							
70	5,700	4,800	4,500							
75	4,800	3,900	3,800							
80	4,000	3,100	3,000							
85	3,300	2,400	2,300							
90	2,700									
95	2,100									
100										
* n *	2	2	1							
1	46-	92-	100-							
2	92+	92+	100-							
3	92+	92+	100-							
4	92+	92+	100-							
5	92+	92+	100-							
%										
ft/s	23	23	23							



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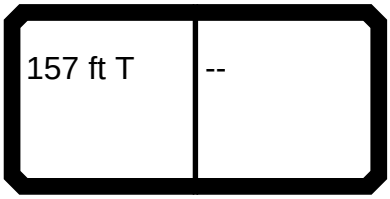
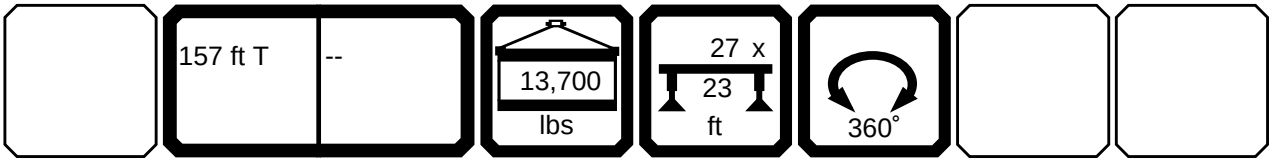


061513 TAB 134060 20.01

ft> < lbs CODE 〉005〈 L134 1100 .x(x)

ft	36	46	46	59	59	59	69	69	69	79
10	148,000	148,000	90,500	137,000	74,000	64,500				
11	140,000	139,000	87,000	131,000	70,500	62,000				
12	132,000	132,000	83,500	126,000	67,500	59,500	110,000	55,800	55,800	
13	125,000	125,000	80,000	121,000	64,500	57,100	107,000	53,600	53,700	
14	118,000	118,000	76,500	116,000	61,500	54,800	104,000	51,600	51,700	
15	112,000	112,000	73,500	111,000	58,500	52,600	101,000	49,600	49,700	84,000
16	106,000	106,000	71,000	105,000	55,800	50,500	98,000	47,700	47,800	81,500
17	101,000	100,000	68,500	98,500	53,500	48,700	93,000	45,900	46,000	78,500
18	95,500	95,500	66,000	91,500	51,600	47,100	85,500	44,100	44,200	75,000
20	85,500	84,500	61,500	78,000	47,900	44,000	71,500	40,700	40,800	67,500
22	77,000	73,000	57,800	66,500	44,800	41,500	61,500	38,200	38,300	58,600
24	68,500	63,500	54,100	57,400	41,800	39,100	53,400	36,000	36,000	51,000
26	61,000	55,100	50,600	49,900	39,100	36,800	46,700	34,000	33,900	44,800
28		49,000	48,100	44,400	36,700	34,800	41,500	32,200	32,000	40,000
30		43,600	45,600	39,400	34,300	32,800	36,900	30,400	30,200	35,700
32		39,400	42,200	35,500	32,100	31,000	33,200	28,800	28,600	32,200
34		35,800	38,800	32,200	30,400	29,600	30,200	27,300	27,000	29,300
36		32,700	35,500	29,500	29,000	28,400	27,600	25,900	25,500	26,800
38		29,700	32,200	26,800	27,600	27,300	25,000	24,500	24,100	24,400
40				24,300	26,300	26,200	22,700	23,200	22,800	22,100
45				19,700	23,500	23,800	18,400	21,100	20,600	18,000
50							15,100	19,200	18,600	14,700
55							12,300	17,100	16,900	12,100
60										9,800
65										8,000
70										6,500
75										
80										
85										
90										
95										
100										
105										
110										
115										
120										
* n *	10!	10!	7	10!	6	5	9	5	5	7
1	0+	0+	0+	46+	0+	0+	92+	0+	0+	92+
2	0+	46+	0+	46+	0+	0+	46+	0+	0+	92+
3	0+	0+	0+	0+	0+	0+	0+	0+	0+	0+
4	0+	0+	0+	0+	46+	0+	0+	92+	46+	0+
5	0+	0+	46+	0+	46+	92+	0+	46+	92+	0+
%										
ft/s	23	23	23	23	23	23	23	23	23	23



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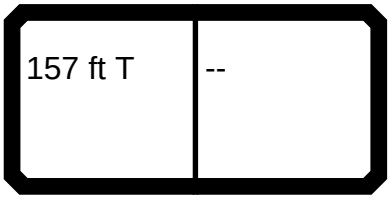
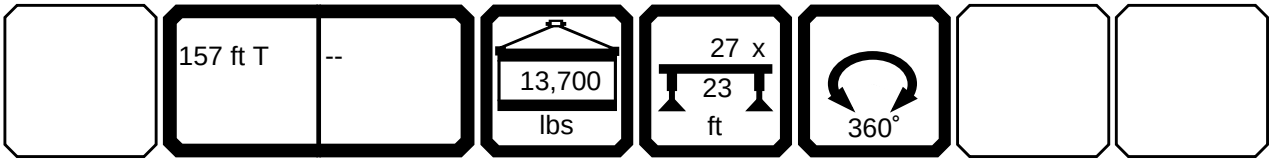


061513 TAB 134060 20.01

ft	ft> < lbs CODE 〉005〈 L134 1100 .x(x)									
	79	**79**	**92**	**92**	**92**	**102**	**102**	**102**	**115**	**115**
10										
11										
12										
13										
14										
15	57,700	41,800								
16	55,800	40,300								
17	54,000	39,000	67,000	45,300	39,400					
18	52,200	37,700	65,500	44,100	38,300					
20	48,800	35,100	62,500	41,700	36,100	54,500	45,200	35,200		
22	45,700	32,800	55,600	39,300	34,200	52,100	43,000	33,700		
24	42,700	30,600	49,400	37,000	32,300	48,100	40,900	32,200	43,100	35,200
26	39,800	28,500	43,600	34,800	30,500	42,700	38,800	30,700	41,100	33,800
28	37,800	27,000	39,100	33,100	29,100	38,500	36,800	29,300	37,500	32,400
30	35,900	25,600	35,000	31,500	27,800	34,700	35,000	28,000	33,900	31,100
32	34,200	24,400	31,700	30,000	26,500	31,500	33,200	26,600	30,900	29,800
34	32,500	23,200	29,000	28,700	25,400	28,900	31,200	25,400	28,400	28,600
36	30,800	22,200	26,600	27,400	24,400	26,600	29,100	24,300	26,200	27,400
38	29,200	21,100	24,200	26,200	23,400	24,400	27,000	23,300	24,000	26,200
40	27,500	20,100	22,100	25,000	22,400	22,300	25,100	22,300	22,100	24,900
45	23,100	17,800	18,100	22,300	20,100	18,400	21,100	20,100	18,300	21,100
50	19,700	16,000	14,900	19,500	18,200	15,300	17,900	18,200	15,300	18,000
55	16,800	14,500	12,300	16,900	16,600	12,800	15,400	16,400	12,900	15,500
60	14,300	13,400	10,200	14,600	15,300	10,700	13,200	14,800	10,800	13,400
65	12,300	12,300	8,400	12,500	13,600	9,000	11,500	13,300	9,100	11,700
70	10,600	11,300	7,000	10,800	11,900	7,600	9,800	11,600	7,800	10,100
75			5,700	9,500	10,400	6,400	8,500	10,100	6,500	8,800
80						5,300	7,400	8,900	5,500	7,700
85						4,300	6,500	7,900	4,600	6,700
90						3,400	5,600	7,100	3,800	5,900
95									3,000	5,200
100										4,500
105										
110										
115										
120										
* n *	5	4	5	4	3	5	4	3	4	3
1	0+	0+	92+	0+	0+	92+	0+	0+	92+	0+
2	0+	0+	92+	0+	0+	92+	92+	0+	92+	92+
3	92+	0+	46+	92+	46+	46+	92+	92+	92+	92+
4	46+	92+	0+	92+	92+	46+	46+	92+	46+	92+
5	46+	92+	0+	46+	92+	0+	46+	92+	0+	46+
%										
ft/s	23	23	23	23	23	23	23	23	23	23



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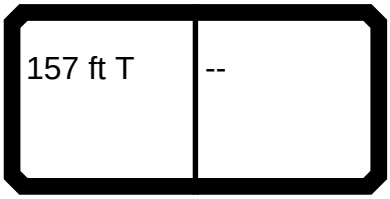
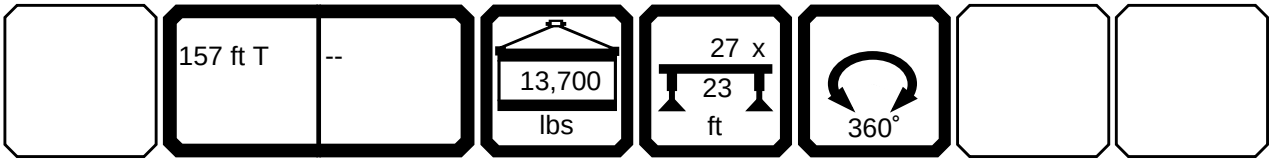


061513 TAB 134060 20.01

ft> < lbs CODE 〉005〈 L134 1100 .x(x)

ft	115	125	125	138	138	148	157	46	59	69
10								38,300	34,200	
11								38,300	34,000	
12								38,200	33,800	24,000
13								38,200	33,700	23,600
14								38,200	33,500	23,300
15								38,200	33,400	22,900
16								38,200	33,300	22,500
17								38,200	33,200	22,200
18								38,200	33,100	21,900
20								38,200	33,000	21,300
22								38,200	32,900	20,700
24	31,700							38,200	32,800	20,200
26	30,500							38,200	32,800	19,700
28	29,500	35,400	28,100	30,300	27,100			38,200	32,800	19,300
30	28,400	33,800	27,200	29,600	26,500	26,000	20,900	38,100	32,800	18,900
32	27,300	30,900	26,300	28,900	25,900	25,600	20,500	37,800	32,800	18,500
34	26,300	28,500	25,500	27,500	25,300	24,900	20,000	35,800	31,400	18,200
36	25,300	26,400	24,700	25,700	24,700	24,100	19,500	32,700	29,000	17,900
38	24,400	24,300	23,800	23,900	24,100	23,300	19,000	29,700	26,600	17,600
40	23,400	22,400	23,000	22,200	23,300	22,400	18,600		24,300	17,300
45	21,400	18,700	20,800	18,700	20,200	18,900	17,500		19,700	16,800
50	19,000	15,800	18,100	15,900	17,400	16,200	15,600			14,800
55	16,700	13,400	15,700	13,500	15,000	13,900	13,600			12,300
60	14,500	11,400	13,600	11,600	13,000	12,000	11,700			
65	12,800	9,800	12,000	9,900	11,400	10,400	10,200			
70	11,200	8,400	10,500	8,600	10,000	9,000	8,900			
75	9,800	7,200	9,200	7,400	8,800	7,900	7,700			
80	8,600	6,100	8,100	6,300	7,700	6,800	6,700			
85	7,700	5,200	7,100	5,400	6,700	5,900	5,800			
90	6,900	4,400	6,300	4,600	5,900	5,100	5,000			
95	6,100	3,700	5,600	3,900	5,200	4,400	4,300			
100	5,500	3,000	4,900	3,300	4,500	3,800	3,700			
105			4,300	2,700	4,000	3,200	3,100			
110			3,800	2,200	3,500	2,700	2,600			
115					2,900	2,200	2,200			
120					2,400					
* n *	3	3	3	3	2	2	2	3	3	2

%										
1	0+	92+	0+	92+	46+	92+	100+	0+	46-	92-
2	46+	92+	92+	92+	92+	92+	100+	46-	46+	46+
3	92+	92+	92+	92+	92+	92+	100+	0+	0+	0+
4	92+	46+	92+	92+	92+	92+	100+	0+	0+	0+
5	92+	46+	92+	46+	92+	92+	100+	0+	0+	0+
ft/s	23	23	23	23	23	23	23	23	23	23



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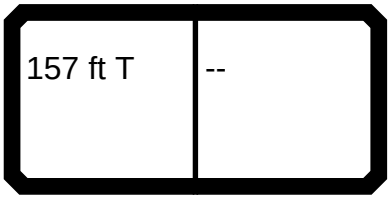
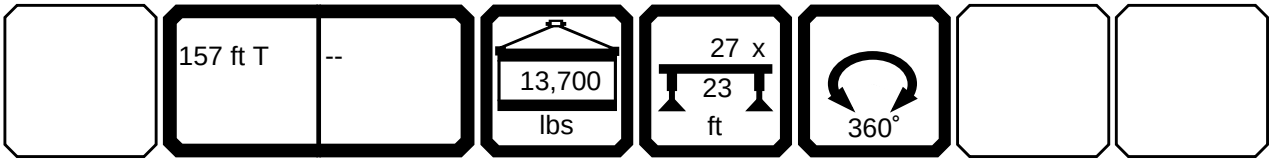


061513 TAB 134060 20.01

ft> < lbs CODE 〉005〈 L134 1100 .x(x)

ft	79	92	102	115	46	59	79	102	125	69
10					46,700	43,500				
11					46,600	43,300				
12					46,500	43,000				31,800
13					46,500	42,800				31,300
14					46,500	42,700				30,900
15	21,900				46,500	42,500	27,600			30,400
16	21,500				46,500	42,300	26,000			30,000
17	21,100	20,500			46,500	42,200	25,200			29,600
18	20,700	20,100			46,500	42,100	24,800			29,200
20	20,000	19,300	19,000		46,500	41,800	24,100	21,100		28,500
22	19,400	18,700	18,300		46,500	41,700	23,400	20,400		27,800
24	18,800	18,000	17,600	17,300	46,500	40,700	22,800	19,800		26,600
26	18,200	17,400	17,000	16,600	46,500	39,000	22,200	19,100		25,000
28	17,700	16,800	16,400	16,000	46,400	36,700	21,700	18,500	16,000	24,400
30	17,200	16,300	15,800	15,400	45,600	34,300	21,200	18,000	15,400	23,900
32	16,700	15,800	15,300	14,900	42,200	32,100	20,700	17,400	14,800	23,500
34	16,300	15,300	14,500	14,100	38,800	30,400	20,300	17,000	14,000	23,100
36	15,900	14,900	13,500	13,100	35,500	29,000	19,900	16,500	13,000	22,700
38	15,500	14,400	12,500	12,100	32,200	27,600	19,400	16,000	12,000	22,400
40	15,100	13,800	11,700	11,300		26,300	19,100	15,600	11,300	22,000
45	14,300	11,600	10,900	10,500		23,500	18,300	14,600	10,400	20,900
50	12,600	10,700	10,200	9,800			17,600	12,800	9,700	19,200
55	11,000	10,200	9,600	9,100			16,300	11,500	9,100	17,100
60	9,800	9,500	9,100	8,500			14,300	10,900	8,500	
65	8,000	8,400	8,600	8,000			12,300	10,400	7,900	
70	6,500	7,000	7,500	7,400			10,600	9,600	7,400	
75		5,700	6,400	6,500				8,500	6,900	
80			5,300	5,500				7,400	6,100	
85			4,300	4,600				6,500	5,200	
90			3,400	3,800				5,600	4,400	
95				3,000					3,700	
100									3,000	
105										
110										
115										
120										
* n *	2	2	2	2	4	4	3	2	2	3
1	92-	92-	92-	92-	0+	0+	0+	0+	92-	0+
2	92-	92-	92-	92-	0+	0+	0+	92-	92+	0+
3	0+	46-	46-	92-	0+	0+	92-	92+	92+	0+
4	0+	0+	46-	46-	0+	46-	46+	46+	46+	92-
% 5	0+	0+	0+	0+	46-	46+	46+	46+	46+	46+
ft/s	23	23	23	23	23	23	23	23	23	23



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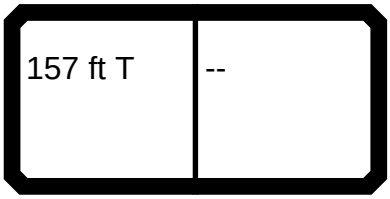
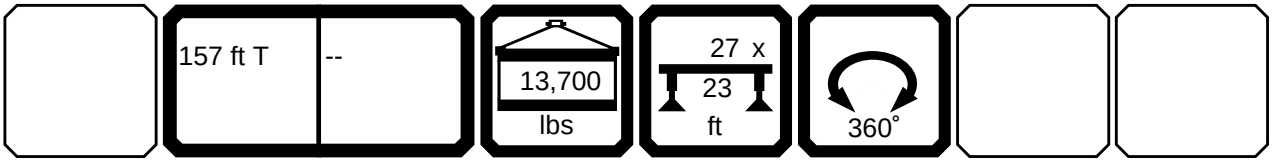


061513 TAB 134060 20.01

ft> < lbs CODE 〉005〈 L134 1100 .x(x)

ft	92	115	138	59	69	79	92	102	115	125
10				35,500						
11				35,100						
12				34,600	42,000					
13				34,200	41,700					
14				33,800	41,400					
15				33,500	41,100	29,300				
16				33,100	40,900	28,800				
17	24,400			32,800	40,300	28,100	35,500			
18	24,000			32,500	39,500	27,100	35,200			
20	23,300			31,900	38,000	25,400	34,600	22,800		
22	22,600			31,300	37,400	24,700	33,700	22,100		
24	21,900	19,400		30,800	36,000	24,100	32,300	21,400	30,700	
26	21,300	18,800		30,400	33,900	23,400	30,500	20,800	30,200	
28	20,700	18,200	15,700	30,000	32,000	22,900	29,100	20,200	29,300	17,900
30	20,200	17,600	15,100	29,600	30,200	22,400	27,800	19,600	28,400	17,300
32	19,600	17,000	14,600	29,300	28,600	21,900	26,500	19,100	27,300	16,700
34	19,200	16,500	13,800	28,700	27,000	21,400	25,400	18,600	26,300	16,200
36	18,700	16,000	12,800	27,900	25,500	21,000	24,400	18,100	25,300	15,800
38	18,200	15,600	11,800	27,000	24,100	20,600	23,400	17,600	24,400	15,300
40	17,800	15,100	11,100	26,200	22,800	20,000	22,400	17,200	23,400	14,700
45	16,900	14,100	10,300	23,800	20,600	17,800	20,100	16,200	21,400	12,400
50	16,100	12,300	9,500		18,600	16,000	18,200	15,300	19,000	11,400
55	15,400	11,000	8,800		16,900	14,500	16,600	14,500	16,700	10,700
60	14,500	10,400	8,200			13,400	15,300	13,600	14,500	10,100
65	12,500	9,900	7,700			12,300	13,600	11,900	12,800	9,600
70	10,800	9,400	7,200			11,300	11,900	11,100	11,200	9,100
75	9,500	8,700	6,700				10,400	10,100	9,800	8,600
80		7,700	6,200					8,900	8,600	8,100
85		6,700	5,400					7,900	7,700	7,100
90		5,900	4,600					7,100	6,900	6,300
95		5,200	3,900						6,100	5,600
100		4,500	3,300						5,500	4,900
105			2,700							4,300
110			2,200							3,800
115										
120										
* n *	2	2	2	3	4	3	3	2	3	2
1	0+	0+	92-	0+	0+	0+	0+	0+	0+	0+
2	0+	92-	92+	0+	0+	0+	0+	0+	46-	92-
3	92-	92+	92+	0+	0+	0+	46-	92-	92+	92+
4	92+	92+	92+	0+	46-	92-	92+	92+	92+	92+
5	46+	46+	46+	92-	92+	92+	92+	92+	92+	92+
%										
ft/s	23	23	23	23	23	23	23	23	23	23



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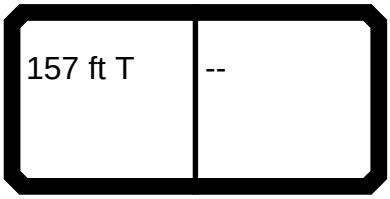
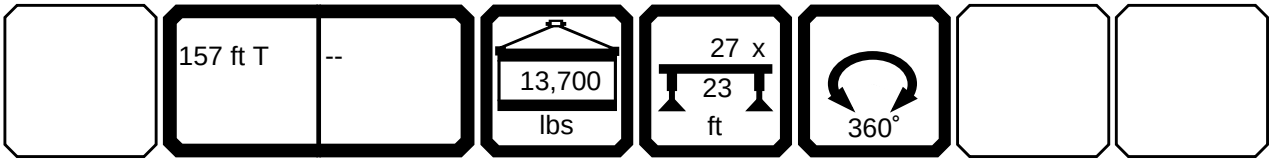


061513 TAB 134060 20.01

ft> < lbs CODE 〉005〈 L134 1100 .x(x)

ft	138	148	157							
10										
11										
12										
13										
14										
15										
16										
17										
18										
20										
22										
24										
26										
28	24,700									
30	24,300	15,200	10,400							
32	23,900	14,600	10,000							
34	23,500	13,800	9,600							
36	23,100	12,800	9,200							
38	22,700	11,900	8,800							
40	22,200	11,100	8,400							
45	20,000	10,300	7,600							
50	17,400	9,600	6,900							
55	15,000	8,900	6,200							
60	13,000	8,300	5,600							
65	11,400	7,700	5,100							
70	10,000	7,200	4,600							
75	8,800	6,800	4,100							
80	7,700	6,300	3,700							
85	6,700	5,900	3,400							
90	5,900	5,100	3,000							
95	5,200	4,400	2,700							
100	4,500	3,800	2,400							
105	4,000	3,200	2,200							
110	3,500	2,700	2,000							
115	2,900	2,200								
120	2,400									
* n *	2	2	1							
1	46-	92-	100-							
2	92+	92+	100-							
3	92+	92+	100-							
4	92+	92+	100-							
5	92+	92+	100-							
%										
ft/s	23	23	23							



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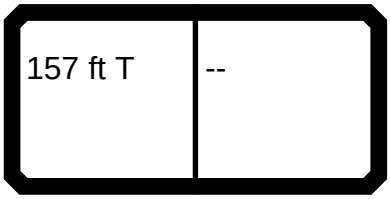
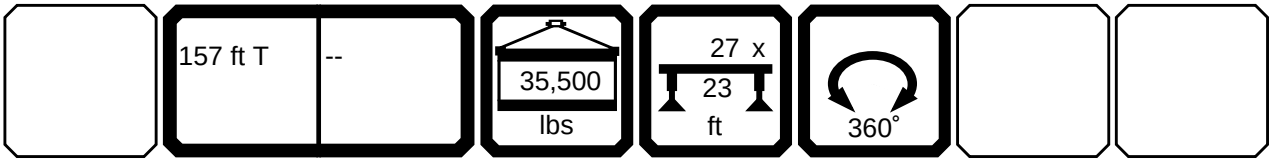


061513 TAB 134057 20.01

ft> < lbs CODE 〉002〈 L134 1400 .x(x)

ft	36	46	46	59	59	59	69	69	69	79
10	149,000	149,000	90,500	137,000	74,000	64,500				
11	141,000	141,000	87,000	131,000	70,500	62,000				
12	134,000	134,000	83,500	126,000	67,500	59,500	110,000	55,800	55,800	
13	127,000	127,000	80,000	121,000	64,500	57,100	107,000	53,600	53,700	
14	121,000	120,000	76,500	116,000	61,500	54,800	104,000	51,600	51,700	
15	115,000	114,000	73,500	111,000	58,500	52,600	101,000	49,600	49,700	84,000
16	109,000	109,000	71,000	106,000	55,800	50,500	98,000	47,700	47,800	81,500
17	104,000	104,000	68,500	102,000	53,500	48,700	95,500	45,900	46,000	79,500
18	100,000	99,500	66,000	98,000	51,600	47,100	93,000	44,100	44,200	77,500
20	91,000	90,500	61,500	89,500	47,900	44,000	87,500	40,700	40,800	73,500
22	83,500	83,500	57,800	82,500	44,800	41,500	81,500	38,200	38,300	69,500
24	76,500	76,500	54,100	75,500	41,800	39,100	75,000	36,000	36,000	66,000
26	70,000	70,000	50,600	68,500	39,100	36,800	68,500	34,000	33,900	62,500
28		64,000	48,100	63,000	36,700	34,800	62,000	32,200	32,000	58,200
30		59,000	45,900	57,900	34,300	32,800	55,800	30,400	30,200	53,800
32		54,600	43,900	53,300	32,100	31,000	50,700	28,800	28,600	49,000
34		50,600	42,000	49,200	30,400	29,600	46,500	27,300	27,000	45,100
36		47,000	40,200	45,400	29,000	28,400	42,900	25,900	25,500	41,700
38		43,400	38,500	41,600	27,600	27,300	39,300	24,500	24,100	38,300
40				38,200	26,300	26,200	36,100	23,200	22,800	35,200
45				31,800	23,500	23,800	30,200	21,100	20,600	29,400
50							25,600	19,200	18,600	25,000
55							21,800	17,400	16,900	21,400
60										18,300
65										15,600
70										13,500
75										
80										
85										
90										
95										
100										
105										
110										
115										
120										
* n *	10!	10!	7	10!	6	5	9	5	5	7
1	0+	0+	0+	46+	0+	0+	92+	0+	0+	92+
2	0+	46+	0+	46+	0+	0+	46+	0+	0+	92+
3	0+	0+	0+	0+	0+	0+	0+	0+	0+	0+
4	0+	0+	0+	0+	46+	0+	0+	92+	46+	0+
5	0+	0+	46+	0+	46+	92+	0+	46+	92+	0+
%										
ft/s	23	23	23	23	23	23	23	23	23	23



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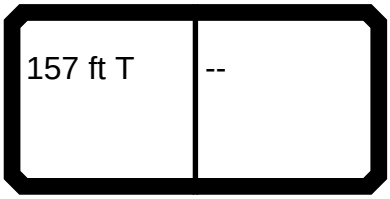
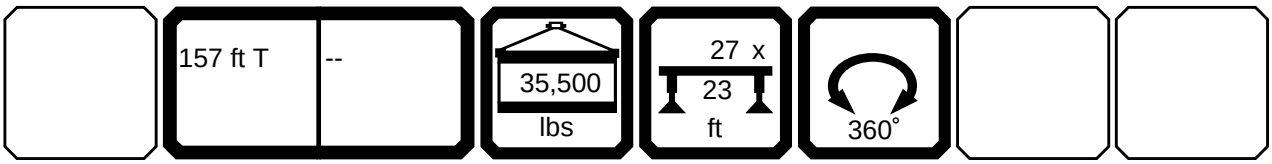


061513 TAB 134057 20.01

ft	ft> <lbs	CODE 〉002〈		L134 1400 .x(x)						
	36	**46**	**46**	**59**	**59**	**59**	**69**	**69**	**69**	**79**
125										
130										
135										
140										
* n *	10!	10!	7	10!	6	5	9	5	5	7
1	0+	0+	0+	46+	0+	0+	92+	0+	0+	92+
2	0+	46+	0+	46+	0+	0+	46+	0+	0+	92+
3	0+	0+	0+	0+	0+	0+	0+	0+	0+	0+
4	0+	0+	0+	0+	46+	0+	0+	92+	46+	0+
5	0+	0+	46+	0+	46+	92+	0+	46+	92+	0+
%										
ft/s	23	23	23	23	23	23	23	23	23	23



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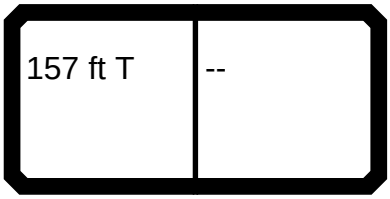
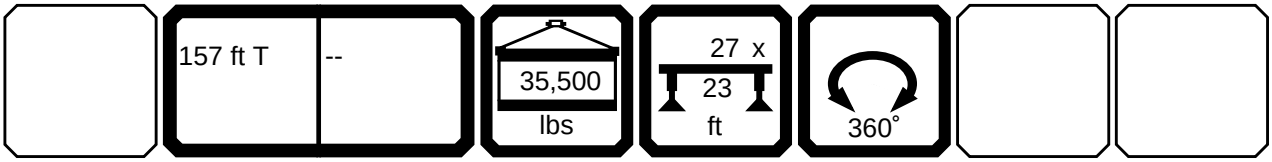


061513 TAB 134057 20.01

ft> < lbs CODE 〉002〈 L134 1400 .x(x)

ft	79	79	92	92	92	102	102	102	115	115
10										
11										
12										
13										
14										
15	57,700	41,800								
16	55,800	40,300								
17	54,000	39,000	67,000	45,300	39,400					
18	52,200	37,700	65,500	44,100	38,300					
20	48,800	35,100	63,000	41,700	36,100	54,500	45,200	35,200		
22	45,700	32,800	60,500	39,300	34,200	52,400	43,000	33,700		
24	42,700	30,600	58,100	37,000	32,300	50,400	40,900	32,200	43,500	35,200
26	39,800	28,500	55,700	34,800	30,500	48,400	38,800	30,700	42,200	33,800
28	37,800	27,000	53,100	33,100	29,100	46,600	36,800	29,300	41,000	32,400
30	35,900	25,600	50,300	31,500	27,800	44,900	35,000	28,000	39,800	31,100
32	34,200	24,400	47,400	30,000	26,500	43,100	33,200	26,600	38,800	29,800
34	32,700	23,200	44,300	28,700	25,400	41,100	31,600	25,400	37,400	28,600
36	31,200	22,200	41,000	27,400	24,400	39,000	30,300	24,300	36,000	27,400
38	29,800	21,100	37,800	26,200	23,400	36,800	29,000	23,300	34,500	26,300
40	28,400	20,100	34,800	25,000	22,400	34,700	27,700	22,300	32,900	25,200
45	25,300	17,800	29,200	22,300	20,100	29,300	25,000	20,100	28,800	22,800
50	22,800	16,000	24,900	19,900	18,200	25,100	22,600	18,200	24,900	20,700
55	20,700	14,500	21,400	18,000	16,600	21,700	20,300	16,400	21,600	18,800
60	18,900	13,400	18,400	16,600	15,400	18,800	18,300	14,800	18,700	17,000
65	17,400	12,300	15,900	15,300	14,300	16,500	17,000	13,800	16,400	15,300
70	15,900	11,300	13,900	14,100	13,300	14,500	15,800	12,900	14,500	14,200
75			12,000	12,900	12,400	12,700	14,600	12,000	12,800	13,300
80						11,000	13,300	11,200	11,200	12,400
85						9,600	11,800	10,300	9,800	11,500
90						8,500	10,500	9,600	8,700	10,600
95									7,700	9,700
100									6,800	8,800
105										
110										
115										
120										
* n *	5	4	5	4	3	5	4	3	4	3
1	0+	0+	92+	0+	0+	92+	0+	0+	92+	0+
2	0+	0+	92+	0+	0+	92+	92+	0+	92+	92+
3	92+	0+	46+	92+	46+	46+	92+	92+	92+	92+
4	46+	92+	0+	92+	92+	46+	46+	92+	46+	92+
5	46+	92+	0+	46+	92+	0+	46+	92+	0+	46+
%										
ft/s	23	23	23	23	23	23	23	23	23	23



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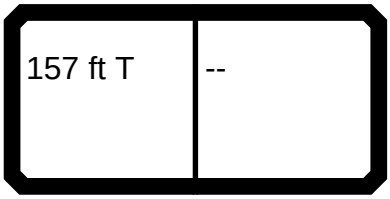
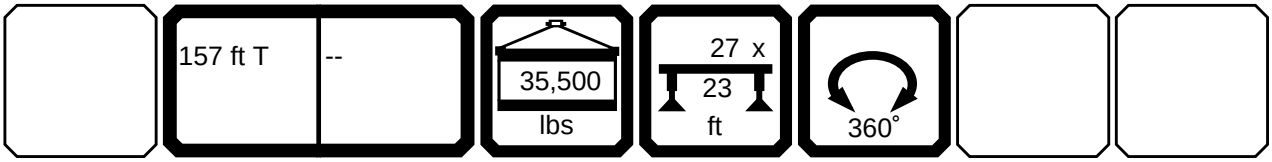
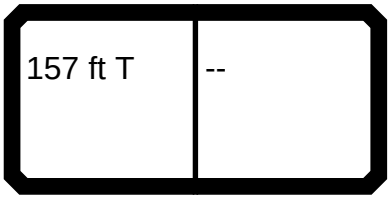


061513 TAB 134057 20.01

ft	ft> <lbs CODE 〉002〈 L134 1400 .x(x)									
	79	**79**	**92**	**92**	**92**	**102**	**102**	**102**	**115**	**115**
125										
130										
135										
140										
* n *	5	4	5	4	3	5	4	3	4	3
1	0+	0+	92+	0+	0+	92+	0+	0+	92+	0+
2	0+	0+	92+	0+	0+	92+	92+	0+	92+	92+
3	92+	0+	46+	92+	46+	46+	92+	92+	92+	92+
4	46+	92+	0+	92+	92+	46+	46+	92+	46+	92+
5	46+	92+	0+	46+	92+	0+	46+	92+	0+	46+
%										
ft/s	23	23	23	23	23	23	23	23	23	23

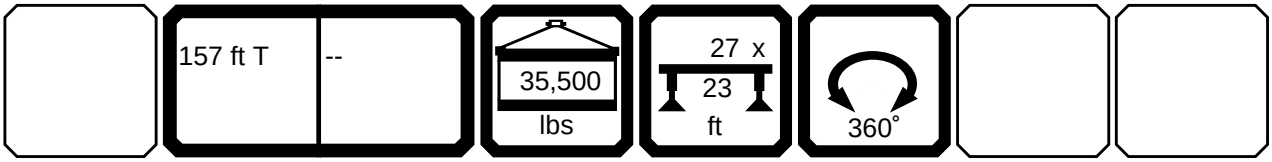




061513 TAB 134057 20.01

ft> < lbs CODE 〉002〈 L134 1400 .x(x)

ft	115	125	125	138	138	148	157	46	59	69
10								38,300	34,200	
11								38,300	34,000	
12								38,200	33,800	24,000
13								38,200	33,700	23,600
14								38,200	33,500	23,300
15								38,200	33,400	22,900
16								38,200	33,300	22,500
17								38,200	33,200	22,200
18								38,200	33,100	21,900
20								38,200	33,000	21,300
22								38,200	32,900	20,700
24	31,700							38,200	32,800	20,200
26	30,500							38,200	32,800	19,700
28	29,500	35,500	28,100	30,300	27,100			38,200	32,800	19,300
30	28,400	34,500	27,200	29,600	26,500	26,000	20,900	38,200	32,800	18,900
32	27,300	33,500	26,300	28,900	25,900	25,600	20,500	38,200	32,800	18,500
34	26,300	32,600	25,500	28,200	25,300	25,000	20,000	38,200	32,800	18,200
36	25,300	31,600	24,700	27,500	24,700	24,300	19,500	38,200	32,800	17,900
38	24,400	30,700	23,800	26,900	24,100	23,600	19,000	38,200	32,800	17,600
40	23,400	29,800	23,000	26,200	23,400	23,000	18,600		32,600	17,300
45	21,400	27,400	20,900	24,100	21,500	21,200	17,500		30,900	16,800
50	19,600	24,700	19,100	22,300	19,800	19,700	16,400			16,600
55	17,900	22,000	17,500	20,600	18,300	18,300	15,400			16,600
60	16,400	19,200	15,900	19,000	16,900	17,100	14,400			
65	15,000	17,000	14,500	17,000	15,600	15,900	13,500			
70	14,000	15,100	13,200	15,200	14,400	14,800	12,800			
75	13,200	13,400	12,200	13,500	13,300	13,700	12,000			
80	12,400	11,900	11,500	12,100	12,300	12,500	11,300			
85	11,700	10,400	10,800	10,700	11,700	11,200	10,600			
90	11,000	9,300	10,200	9,500	10,600	10,000	9,800			
95	10,300	8,300	9,600	8,500	9,600	8,900	8,800			
100	9,700	7,400	9,000	7,600	8,800	8,000	8,000			
105		6,600	8,400	6,800	8,000	7,300	7,200			
110		5,900	7,700	6,200	7,300	6,600	6,500			
115				5,600	6,600	5,900	5,900			
120				5,000	6,100	5,400	5,300			
* n *	3	3	3	3	2	2	2	3	3	2
1	0+	92+	0+	92+	46+	92+	100+	0+	46-	92-
2	46+	92+	92+	92+	92+	92+	100+	46-	46+	46+
3	92+	92+	92+	92+	92+	92+	100+	0+	0+	0+
4	92+	46+	92+	92+	92+	92+	100+	0+	0+	0+
5	92+	46+	92+	46+	92+	92+	100+	0+	0+	0+
%										
ft/s	23	23	23	23	23	23	23	23	23	23



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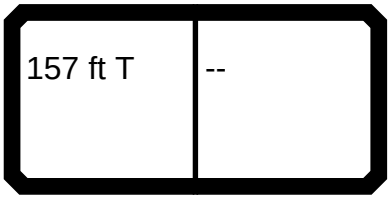
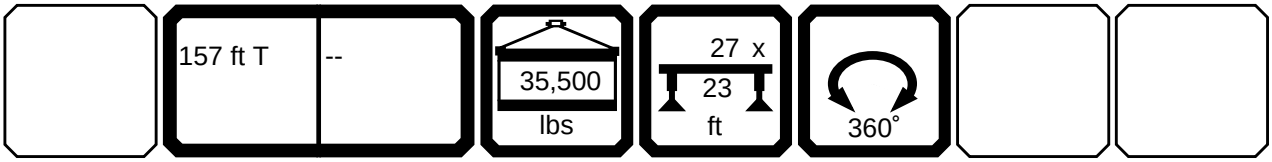
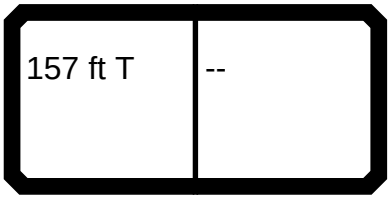


061513 TAB 134057 20.01

ft	ft> <lbs CODE 〉002〈 L134 1400 .x(x)									
	115	**125**	**125**	**138**	**138**	**148**	**157**	**46**	**59**	**69**
125						4,900	4,800			
130						4,300	4,300			
135						3,900	3,900			
140							3,400			
* n *	3	3	3	3	2	2	2	3	3	2
% 1	0+	92+	0+	92+	46+	92+	100+	0+	46-	92-
2	46+	92+	92+	92+	92+	92+	100+	46-	46+	46+
3	92+	92+	92+	92+	92+	92+	100+	0+	0+	0+
4	92+	46+	92+	92+	92+	92+	100+	0+	0+	0+
5	92+	46+	92+	46+	92+	92+	100+	0+	0+	0+
ft/s	23	23	23	23	23	23	23	23	23	23

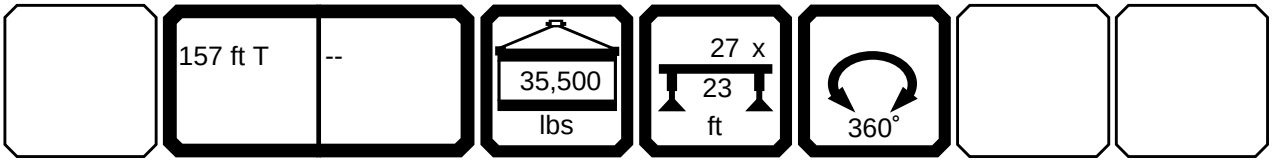




061513 TAB 134057 20.01

ft> < lbs CODE 〉002〈 L134 1400 .x(x)

ft	79	92	102	115	46	59	79	102	125	69
10					46,700	43,500				
11					46,600	43,300				
12					46,500	43,000				31,800
13					46,500	42,800				31,300
14					46,500	42,700				30,900
15	21,900				46,500	42,500	27,600			30,400
16	21,500				46,500	42,300	26,000			30,000
17	21,100	20,500			46,500	42,200	25,200			29,600
18	20,700	20,100			46,500	42,100	24,800			29,200
20	20,000	19,300	19,000		46,500	41,800	24,100	21,100		28,500
22	19,400	18,700	18,300		46,500	41,700	23,400	20,400		27,800
24	18,800	18,000	17,600	17,300	46,500	40,700	22,800	19,800		26,600
26	18,200	17,400	17,000	16,600	46,500	39,000	22,200	19,100		25,000
28	17,700	16,800	16,400	16,000	46,400	36,700	21,700	18,500	16,000	24,400
30	17,200	16,300	15,800	15,400	45,900	34,300	21,200	18,000	15,400	23,900
32	16,700	15,800	15,300	14,900	43,900	32,100	20,700	17,400	14,800	23,500
34	16,300	15,300	14,500	14,100	42,000	30,400	20,300	17,000	14,000	23,100
36	15,900	14,900	13,500	13,100	40,200	29,000	19,900	16,500	13,000	22,700
38	15,500	14,400	12,500	12,100	38,500	27,600	19,400	16,000	12,000	22,400
40	15,100	13,800	11,700	11,300		26,300	19,100	15,600	11,300	22,000
45	14,300	11,600	10,900	10,500		23,500	18,300	14,600	10,400	20,900
50	12,600	10,700	10,200	9,800			17,600	12,800	9,700	19,200
55	11,400	10,200	9,600	9,100			17,000	11,500	9,100	17,400
60	11,200	9,700	9,100	8,500			16,600	10,900	8,500	
65	11,100	9,300	8,600	8,000			16,400	10,400	7,900	
70	11,100	9,100	8,200	7,500			15,700	10,000	7,400	
75		8,900	7,900	7,100				9,700	7,000	
80			7,600	6,800				9,400	6,600	
85			7,500	6,500				9,200	6,300	
90			7,500	6,200				9,200	6,000	
95				6,100					5,700	
100				6,000					5,500	
105									5,300	
110									5,300	
115										
120										
* n *	2	2	2	2	4	4	3	2	2	3
1	92-	92-	92-	92-	0+	0+	0+	0+	92-	0+
2	92-	92-	92-	92-	0+	0+	0+	92-	92+	0+
3	0+	46-	46-	92-	0+	0+	92-	92+	92+	0+
4	0+	0+	46-	46-	0+	46-	46+	46+	46+	92-
5	0+	0+	0+	0+	46-	46+	46+	46+	46+	46+
%										
ft/s	23	23	23	23	23	23	23	23	23	23



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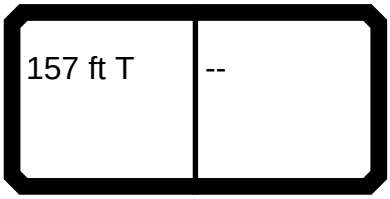
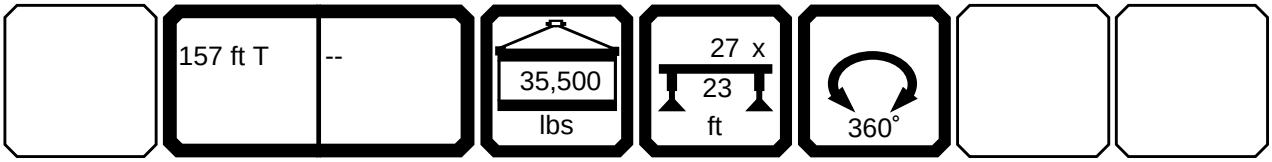


061513 TAB 134057 20.01

ft	ft> <lbs CODE 〉002〈 L134 1400 .x(x)									
	79	**92**	**102**	**115**	**46**	**59**	**79**	**102**	**125**	**69**
125 **130**										
135 **140**										
* n *	2	2	2	2	4	4	3	2	2	3
1	92-	92-	92-	92-	0+	0+	0+	0+	92-	0+
2	92-	92-	92-	92-	0+	0+	0+	92-	92+	0+
3	0+	46-	46-	92-	0+	0+	92-	92+	92+	0+
4	0+	0+	46-	46-	0+	46-	46+	46+	46+	92-
5	0+	0+	0+	0+	46-	46+	46+	46+	46+	46+
%										
ft/s	23	23	23	23	23	23	23	23	23	23



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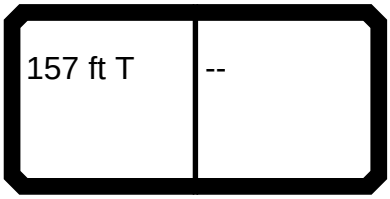
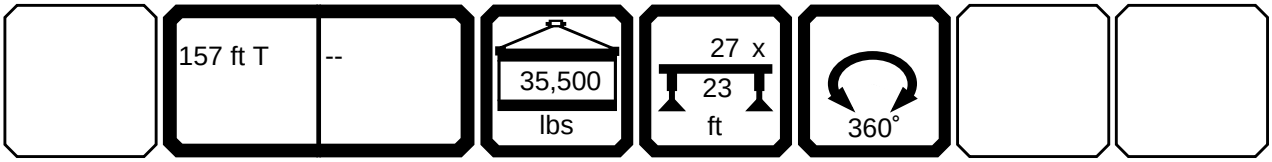


061513 TAB 134057 20.01

ft> < lbs CODE 〉002〈 L134 1400 .x(x)

ft	92	115	138	59	69	79	92	102	115	125
10				35,500						
11				35,100						
12				34,600	42,000					
13				34,200	41,700					
14				33,800	41,400					
15				33,500	41,100	29,300				
16				33,100	40,900	28,800				
17	24,400			32,800	40,300	28,100	35,500			
18	24,000			32,500	39,500	27,100	35,200			
20	23,300			31,900	38,000	25,400	34,600	22,800		
22	22,600			31,300	37,400	24,700	33,700	22,100		
24	21,900	19,400		30,800	36,000	24,100	32,300	21,400	30,700	
26	21,300	18,800		30,400	33,900	23,400	30,500	20,800	30,200	
28	20,700	18,200	15,700	30,000	32,000	22,900	29,100	20,200	29,300	17,900
30	20,200	17,600	15,100	29,600	30,200	22,400	27,800	19,600	28,400	17,300
32	19,600	17,000	14,600	29,300	28,600	21,900	26,500	19,100	27,300	16,700
34	19,200	16,500	13,800	28,700	27,000	21,400	25,400	18,600	26,300	16,200
36	18,700	16,000	12,800	27,900	25,500	21,000	24,400	18,100	25,300	15,800
38	18,200	15,600	11,800	27,000	24,100	20,600	23,400	17,600	24,400	15,300
40	17,800	15,100	11,100	26,200	22,800	20,000	22,400	17,200	23,400	14,700
45	16,900	14,100	10,300	23,800	20,600	17,800	20,100	16,200	21,400	12,400
50	16,100	12,300	9,500		18,600	16,000	18,200	15,300	19,600	11,400
55	15,400	11,000	8,800		16,900	14,500	16,600	14,500	17,900	10,700
60	14,700	10,400	8,200			13,400	15,400	13,600	16,400	10,100
65	14,200	9,900	7,700			12,300	14,300	11,900	15,000	9,600
70	12,800	9,400	7,200			11,300	13,300	11,400	14,000	9,100
75	12,100	9,000	6,700				12,400	11,000	13,200	8,700
80		8,700	6,300					10,700	12,400	8,300
85		8,300	5,900					10,300	11,700	7,900
90		8,100	5,600					9,600	11,000	7,600
95		7,900	5,300						10,300	7,400
100		7,800	5,000						9,700	7,100
105			4,800							6,900
110			4,600							6,800
115			4,500							
120			4,400							
* n *	2	2	2	3	4	3	3	2	3	2
1	0+	0+	92-	0+	0+	0+	0+	0+	0+	0+
2	0+	92-	92+	0+	0+	0+	0+	0+	46-	92-
3	92-	92+	92+	0+	0+	0+	46-	92-	92+	92+
4	92+	92+	92+	0+	46-	92-	92+	92+	92+	92+
5	46+	46+	46+	92-	92+	92+	92+	92+	92+	92+
%										
ft/s	23	23	23	23	23	23	23	23	23	23



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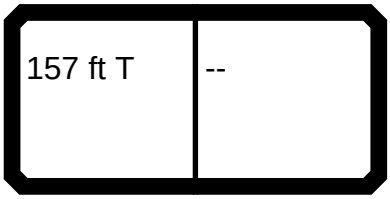
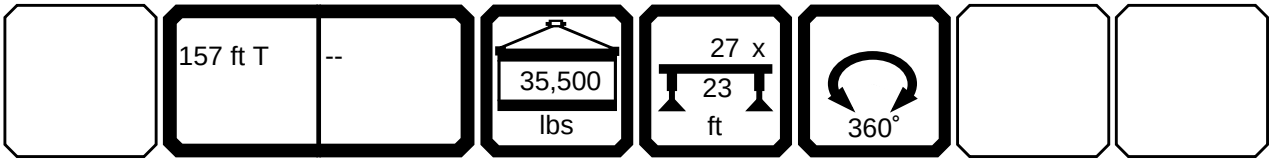


061513 TAB 134057 20.01

ft> < lbs CODE 〉002〈 L134 1400 .x(x)

ft	92	115	138	59	69	79	92	102	115	125
125										
130										
135										
140										
* n *	2	2	2	3	4	3	3	2	3	2
1	0+	0+	92-	0+	0+	0+	0+	0+	0+	0+
2	0+	92-	92+	0+	0+	0+	0+	0+	46-	92-
3	92-	92+	92+	0+	0+	0+	46-	92-	92+	92+
4	92+	92+	92+	0+	46-	92-	92+	92+	92+	92+
5	46+	46+	46+	92-	92+	92+	92+	92+	92+	92+
%										
ft/s	23	23	23	23	23	23	23	23	23	23



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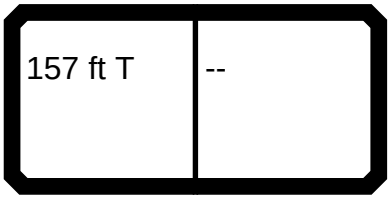
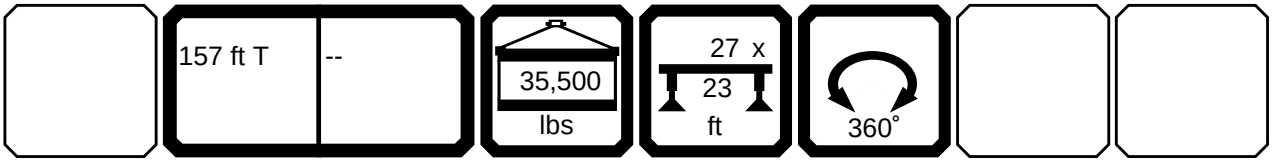


061513 TAB 134057 20.01

ft> < lbs CODE 〉002〈 L134 1400 .x(x)

ft	138	148	157							
10										
11										
12										
13										
14										
15										
16										
17										
18										
20										
22										
24										
26										
28	24,700									
30	24,300	15,200	10,400							
32	23,900	14,600	10,000							
34	23,500	13,800	9,600							
36	23,100	12,800	9,200							
38	22,700	11,900	8,800							
40	22,400	11,100	8,400							
45	21,300	10,300	7,600							
50	19,800	9,600	6,900							
55	18,300	8,900	6,200							
60	16,900	8,300	5,600							
65	15,600	7,700	5,100							
70	14,400	7,200	4,600							
75	13,300	6,800	4,100							
80	12,300	6,300	3,700							
85	11,700	5,900	3,400							
90	10,600	5,600	3,000							
95	9,600	5,300	2,700							
100	8,800	5,000	2,400							
105	8,000	4,700	2,200							
110	7,300	4,500	2,000							
115	6,600	4,300								
120	6,100	4,100								
* n *	2	2	1							
1	46-	92-	100-							
2	92+	92+	100-							
3	92+	92+	100-							
4	92+	92+	100-							
5	92+	92+	100-							
%										
ft/s	23	23	23							



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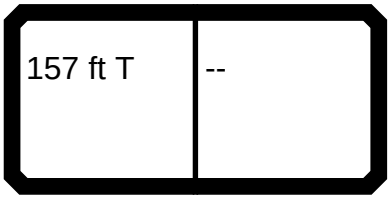
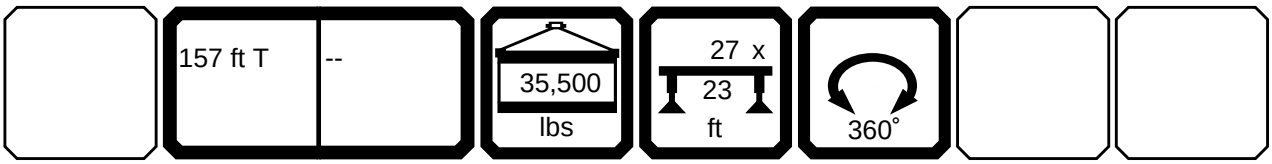


061513 TAB 134057 20.01

ft	ft> < lbs	CODE 〉002〈	L134 1400 .x(x)							
	138	**148**	**157**							
125		4,000								
130		3,900								
135		3,500								
140										
* n *	2	2	1							
1	46-	92-	100-							
2	92+	92+	100-							
3	92+	92+	100-							
4	92+	92+	100-							
5	92+	92+	100-							
%										
ft/s	23	23	23							



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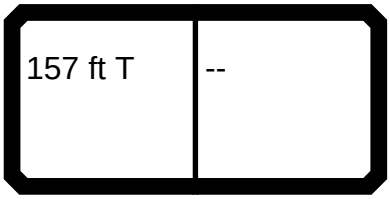
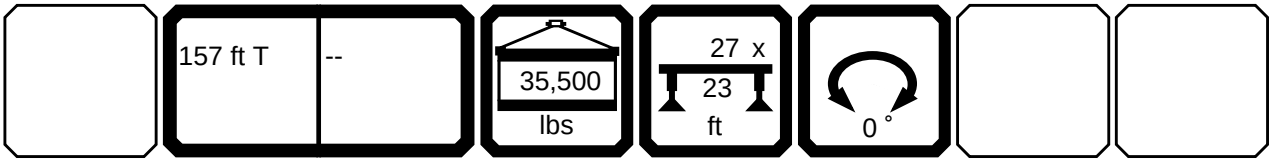


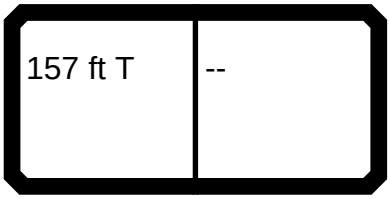
061513 TAB 134056 20.01

ft> < lbs CODE 〉001〈 L134 1600 .x(x)

ft	36									
9	183,000									
10	170,000									
11	159,000									
12	149,000									
13	140,000									
14	132,000									
15	124,000									
16	117,000									
17	111,000									
18	105,000									
20	94,000									
22	85,000									
24	77,500									
26	71,000									
* n *	10!									
1	0+									
2	0+									
3	0+									
4	0+									
5	0+									
ft/s	23									



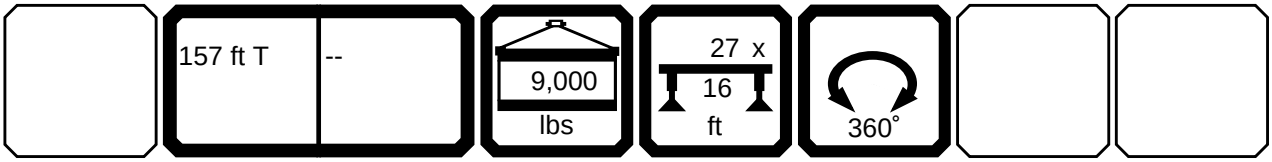
ISO DIN



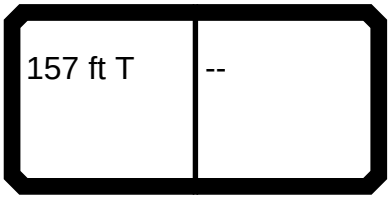
061513 TAB 134012 20.02

ft> < lbs CODE 〉012〈 L134 1700 .x(x)

ft	36	46	46	59	59	59	69	69	69	79
10	115,000	114,000	82,500	101,000	67,500	58,700				
11	108,000	101,000	79,500	88,000	64,000	56,300				
12	99,000	89,500	76,000	77,000	61,500	54,100	68,000	50,700	50,700	
13	89,000	78,000	72,500	68,000	58,500	51,900	60,500	48,800	48,800	
14	79,500	70,000	70,000	61,000	55,800	49,900	54,900	46,900	47,000	
15	70,500	62,500	66,000	54,900	53,200	47,800	49,600	45,100	45,200	46,100
16	63,500	56,700	60,500	49,900	50,700	45,900	45,300	43,400	43,500	42,300
17	58,000	51,900	55,600	45,800	48,300	44,300	41,700	41,700	41,800	39,100
18	53,400	47,900	51,400	42,300	45,900	42,800	38,600	40,100	40,200	36,300
20	44,500	40,200	43,500	35,600	41,200	39,800	32,600	36,900	37,000	30,900
22	38,400	34,900	38,000	30,800	36,200	36,200	28,300	34,200	34,800	27,000
24	32,900	30,300	33,400	26,800	32,000	32,600	24,600	31,100	32,000	23,600
26	28,000	26,600	29,500	23,300	28,400	29,000	21,400	27,800	28,700	20,600
28		23,600	26,300	20,600	25,500	26,200	19,000	25,100	26,100	18,300
30		20,900	23,400	18,200	23,000	23,600	16,700	22,700	23,600	16,100
32		18,600	20,800	16,200	20,900	21,500	14,800	20,700	21,600	14,400
34		16,600	18,800	14,500	19,000	19,600	13,200	19,000	19,900	12,800
36		14,900	17,000	13,100	17,400	18,000	11,800	17,600	18,400	11,500
38		13,200	15,300	11,600	15,800	16,300	10,400	16,100	17,000	10,200
40				10,300	14,300	14,800	9,200	14,700	15,600	9,000
45				7,700	11,500	11,900	6,800	12,100	12,800	6,700
50							4,900	9,900	10,600	4,800
55								8,100	8,800	
60										
65										
70										
75										
80										
85										
90										
* n *	9	9	7	8	6	5	6	4	4	4
1	0+	0+	0+	46+	0+	0+	92+	0+	0+	92+
2	0+	46+	0+	46+	0+	0+	46+	0+	0+	92+
3	0+	0+	0+	0+	0+	0+	0+	0+	0+	0+
4	0+	0+	0+	0+	46+	0+	0+	92+	46+	0+
5	0+	0+	46+	0+	46+	92+	0+	46+	92+	0+
ft/s	23	23	23	23	23	23	23	23	23	23



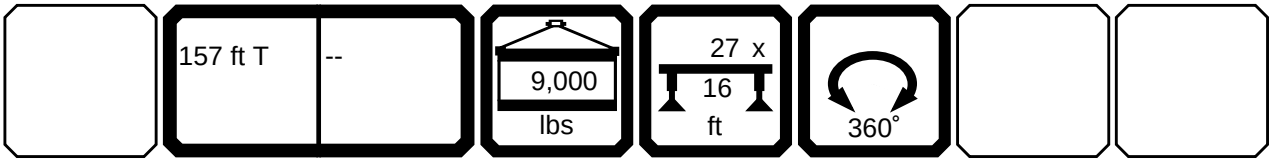
ISO DIN



061513 TAB 134012 20.02

ft> < lbs CODE 〉012〈 L134 1700 .x(x)

ft	79	79	92	92	92	102	102	102	115	115
10										
11										
12										
13										
14										
15	52,100	37,900								
16	48,600	36,600								
17	45,500	35,400	37,400	40,800	35,800					
18	42,500	34,300	34,800	39,100	34,800					
20	36,900	31,900	29,900	35,500	32,900	29,200	32,200	32,000		
22	32,700	29,900	26,200	31,700	31,100	25,800	28,700	30,100		
24	29,100	27,800	23,100	28,300	29,000	22,800	25,700	27,800	22,200	25,100
26	26,000	25,900	20,300	25,500	26,600	20,200	23,000	25,100	19,700	22,600
28	23,600	24,300	18,100	23,100	24,300	18,100	20,900	23,000	17,800	20,600
30	21,300	22,700	16,100	21,000	22,200	16,200	18,900	20,900	16,000	18,700
32	19,400	20,800	14,400	19,200	20,400	14,600	17,200	19,200	14,400	17,100
34	17,800	19,200	12,900	17,700	18,800	13,200	15,800	17,800	13,100	15,800
36	16,400	17,800	11,700	16,400	17,500	12,000	14,600	16,500	11,900	14,600
38	15,000	16,400	10,400	15,100	16,100	10,800	13,300	15,200	10,700	13,400
40	13,800	15,100	9,200	13,800	14,900	9,600	12,200	14,100	9,700	12,300
45	11,300	12,600	7,000	11,500	12,500	7,400	9,900	11,800	7,500	10,100
50	9,300	10,500	5,200	9,600	10,500	5,700	8,100	9,900	5,800	8,300
55	7,700	8,700		8,000	8,800	4,200	6,600	8,400	4,400	6,900
60	6,300	7,300		6,600	7,400		5,300	7,100		5,600
65	5,100	6,200		5,500	6,300		4,300	6,000		4,600
70	4,200	5,200		4,600	5,400		3,400	5,100		3,700
75				3,800	4,600		2,700	4,300		3,000
80								3,600		
85								2,900		
90								2,400		
* n *	4	3	3	3	3	3	3	3	2	2
1	0+	0+	92+	0+	0+	92+	0+	0+	92+	0+
2	0+	0+	92+	0+	0+	92+	92+	0+	92+	92+
3	92+	0+	46+	92+	46+	46+	92+	92+	92+	92+
4	46+	92+	0+	92+	92+	46+	46+	92+	46+	92+
5	46+	92+	0+	46+	92+	0+	46+	92+	0+	46+
%										
ft/s	23	23	23	23	23	23	23	23	23	23



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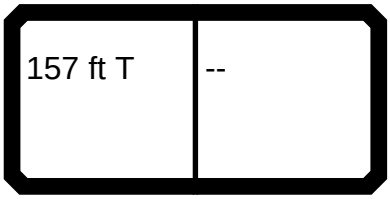
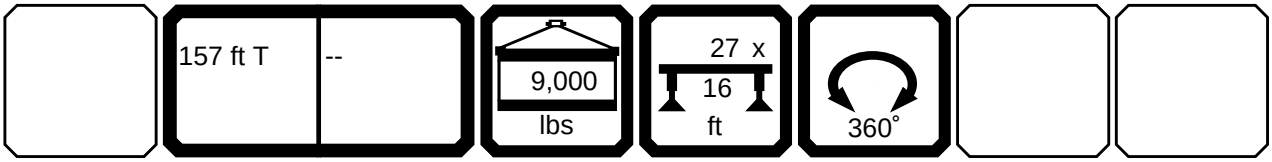


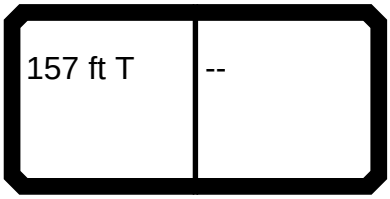
061513 TAB 134012 20.02

ft> < lbs CODE 〉012〈 L134 1700 .x(x)

ft	115	125	125	138	138	148	157	46	59	69
10								34,800	31,100	
11								34,800	30,900	
12								34,700	30,800	21,800
13								34,700	30,600	21,500
14								34,700	30,500	21,100
15								34,700	30,400	20,800
16								34,700	30,300	20,500
17								34,700	30,200	20,200
18								34,700	30,100	19,900
20								34,500	29,800	19,400
22								33,000	29,000	18,900
24	26,400							30,300	26,800	18,400
26	23,900							26,600	23,300	17,900
28	21,800	18,000	20,400	17,700	19,300			23,600	20,600	17,500
30	19,900	16,300	18,600	16,000	17,600	16,100	15,600	20,900	18,200	16,700
32	18,300	14,800	17,100	14,600	16,200	14,800	14,300	18,600	16,200	14,800
34	17,000	13,500	15,800	13,400	14,900	13,600	13,200	16,600	14,500	13,200
36	15,700	12,400	14,600	12,300	13,800	12,500	12,200	14,900	13,100	11,800
38	14,500	11,200	13,500	11,200	12,700	11,500	11,100	13,200	11,600	10,400
40	13,400	10,200	12,400	10,200	11,700	10,500	10,200		10,300	9,200
45	11,200	8,100	10,300	8,200	9,700	8,600	8,300		7,700	6,800
50	9,400	6,500	8,600	6,600	8,000	7,000	6,800			4,900
55	8,000	5,100	7,200	5,200	6,600	5,700	5,500			
60	6,700	3,900	5,900	4,100	5,500	4,500	4,400			
65	5,700	2,900	4,900	3,100	4,500	3,600	3,500			
70	4,800		4,100		3,600	2,800	2,700			
75	4,000		3,300		2,900					
80	3,300		2,700							
85	2,800		2,100							
90	2,200									
* n *	2	2	2	2	2	2	2	3	3	2

%										
1	0+	92+	0+	92+	46+	92+	100+	0+	46-	92-
2	46+	92+	92+	92+	92+	92+	100+	46-	46+	46+
3	92+	92+	92+	92+	92+	92+	100+	0+	0+	0+
4	92+	46+	92+	92+	92+	92+	100+	0+	0+	0+
5	92+	46+	92+	46+	92+	92+	100+	0+	0+	0+
ft/s	23	23	23	23	23	23	23	23	23	23





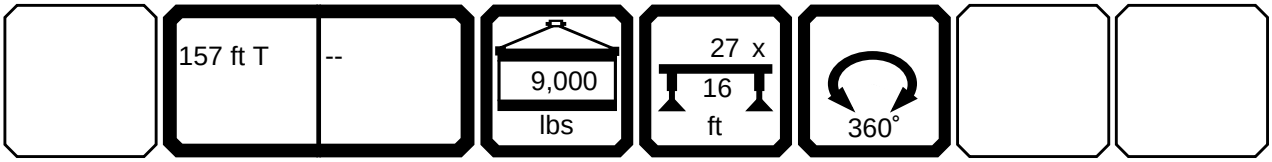
061513 TAB 134012 20.02

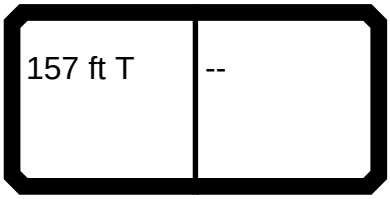
ft> < lbs CODE 〉012〈 L134 1700 .x(x)

ft	79	92	102	115	46	59	79	102	125	69
10					42,400	39,500				
11					42,400	39,300				
12					42,300	39,100				28,900
13					42,300	38,900				28,500
14					42,300	38,800				28,100
15	19,900				42,300	38,600	25,100			27,700
16	19,500				42,300	38,500	23,700			27,300
17	19,200	18,600			42,300	38,400	22,900			26,900
18	18,800	18,300			42,300	38,200	22,500			26,600
20	18,200	17,600	17,300		41,600	37,600	21,900	19,200		25,900
22	17,600	17,000	16,600		37,400	35,100	21,300	18,600		25,300
24	17,100	16,400	16,000	15,700	33,400	32,000	20,700	18,000		24,200
26	16,600	15,800	15,400	15,100	29,500	28,400	20,200	17,400		22,700
28	16,100	15,300	14,900	14,500	26,300	25,500	19,700	16,900	14,500	22,100
30	15,400	14,700	14,400	14,000	23,400	23,000	19,300	16,300	14,000	21,500
32	14,100	14,000	13,900	13,500	20,800	20,900	18,800	15,900	13,500	20,400
34	12,800	12,900	13,000	12,700	18,800	19,000	17,800	15,100	12,700	19,000
36	11,500	11,700	11,900	11,700	17,000	17,400	16,400	14,100	11,800	17,600
38	10,200	10,400	10,700	10,600	15,300	15,800	15,000	13,100	10,900	16,100
40	9,000	9,200	9,600	9,700		14,300	13,800	12,200	10,100	14,700
45	6,700	7,000	7,400	7,500		11,500	11,300	9,900	8,100	12,100
50	4,800	5,200	5,700	5,800			9,300	8,100	6,500	9,900
55			4,200	4,400			7,700	6,600	5,100	8,100
60							6,300	5,300	3,900	
65							5,100	4,300	2,900	
70							4,200	3,400		
75								2,700		
80										
85										
90										
* n *	2	2	2	2	4	3	2	2	2	3

%										
1	92-	92-	92-	92-	0+	0+	0+	0+	92-	0+
2	92-	92-	92-	92-	0+	0+	0+	92-	92+	0+
3	0+	46-	46-	92-	0+	0+	92-	92+	92+	0+
4	0+	0+	46-	46-	0+	46-	46+	46+	46+	92-
5	0+	0+	0+	0+	46-	46+	46+	46+	46+	46+

ft/s										
	23	23	23	23	23	23	23	23	23	23

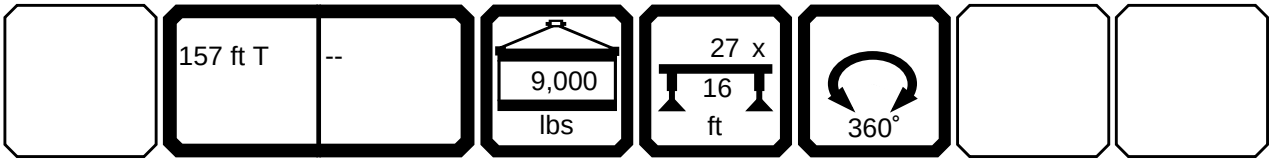




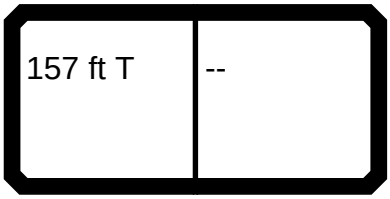
061513 TAB 134012 20.02

ft> < lbs CODE 〉012〈 L134 1700 .x(x)

ft	92	115	138	59	69	79	92	102	115	125
10				32,300						
11				31,900						
12				31,500	38,200					
13				31,100	37,900					
14				30,800	37,600					
15				30,400	37,400	26,600				
16				30,100	37,200	26,200				
17	22,200			29,800	36,600	25,500	32,300			
18	21,800			29,500	35,900	24,600	32,000			
20	21,200			29,000	34,500	23,100	31,500	20,700		
22	20,500			28,500	34,000	22,500	30,700	20,100		
24	19,900	17,600		28,000	32,000	21,900	29,000	19,500	26,400	
26	19,300	17,100		27,600	28,700	21,300	26,600	18,900	23,900	
28	18,800	16,500	14,300	25,700	26,100	20,800	24,300	18,300	21,800	16,300
30	18,300	16,000	13,800	23,600	23,600	20,300	22,200	17,800	19,900	15,700
32	17,900	15,500	13,300	21,500	21,600	19,900	20,400	17,300	18,300	15,200
34	17,000	14,800	12,500	19,600	19,900	18,900	18,800	16,600	17,000	14,600
36	15,900	13,900	11,600	18,000	18,400	17,600	17,500	15,800	15,700	13,900
38	14,900	13,100	10,800	16,300	17,000	16,300	16,100	14,900	14,500	13,200
40	13,800	12,300	9,900	14,800	15,600	15,100	14,900	14,100	13,400	12,400
45	11,500	10,100	8,200	11,900	12,800	12,600	12,500	11,800	11,200	10,300
50	9,600	8,300	6,600		10,600	10,500	10,500	9,900	9,400	8,600
55	8,000	6,900	5,200		8,800	8,700	8,800	8,400	8,000	7,200
60	6,600	5,600	4,100			7,300	7,400	7,100	6,700	5,900
65	5,500	4,600	3,100			6,200	6,300	6,000	5,700	4,900
70	4,600	3,700				5,200	5,400	5,100	4,800	4,100
75	3,800	3,000					4,600	4,300	4,000	3,300
80								3,600	3,300	2,700
85								2,900	2,800	2,100
90								2,400	2,200	
* n *	2	2	2	3	3	2	3	2	2	2
1	0+	0+	92-	0+	0+	0+	0+	0+	0+	0+
2	0+	92-	92+	0+	0+	0+	0+	0+	46-	92-
3	92-	92+	92+	0+	0+	0+	46-	92-	92+	92+
4	92+	92+	92+	0+	46-	92-	92+	92+	92+	92+
5	46+	46+	46+	92-	92+	92+	92+	92+	92+	92+
%										
ft/s	23	23	23	23	23	23	23	23	23	23



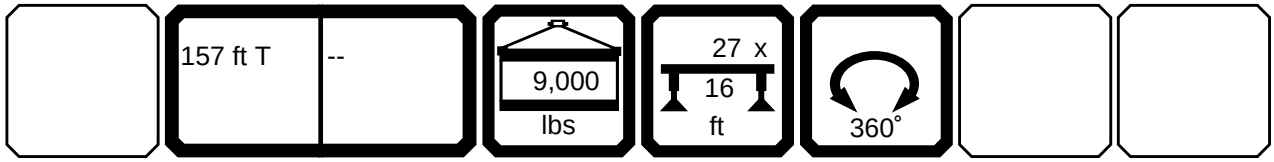
ISO DIN



061513 TAB 134012 20.02

ft> < lbs CODE 〉012〈 L134 1700 .x(x)

ft	138	148	157							
10										
11										
12										
13										
14										
15										
16										
17										
18										
20										
22										
24										
26										
28	19,300									
30	17,600	13,800	9,500							
32	16,200	13,300	9,100							
34	14,900	12,600	8,700							
36	13,800	11,700	8,400							
38	12,700	10,800	8,000							
40	11,700	10,000	7,700							
45	9,700	8,500	6,900							
50	8,000	7,000	6,200							
55	6,600	5,700	5,400							
60	5,500	4,500	4,400							
65	4,500	3,600	3,500							
70	3,600	2,800	2,700							
75	2,900									
80										
85										
90										
* n *	2	1	1							
1	46-	92-	100-							
2	92+	92+	100-							
3	92+	92+	100-							
4	92+	92+	100-							
5	92+	92+	100-							
%										
ft/s	23	23	23							



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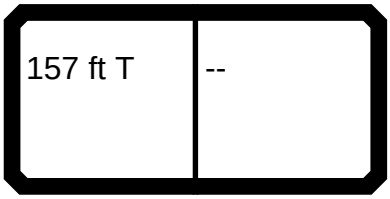
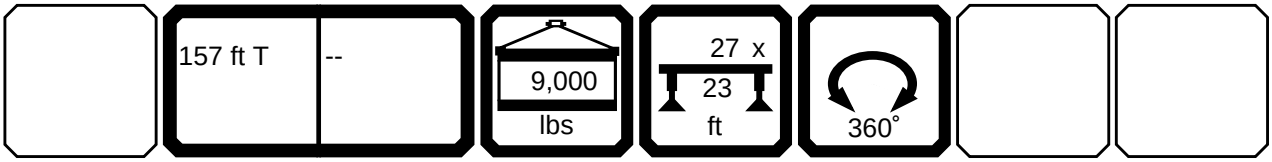
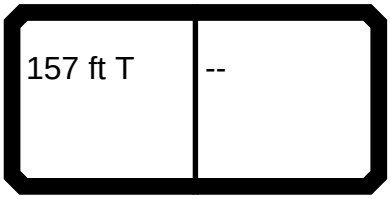


061513 TAB 134061 20.02

ft	ft> < lbs	CODE 〉006〈	L134 1800 .x(x)						
	36	**46**	**46**	**59**	**59**	**59**	**69**	**69**	**69**	**79**
10	148,000	147,000	90,500	137,000	74,000	64,500				
11	139,000	139,000	87,000	131,000	70,500	62,000				
12	131,000	131,000	83,500	126,000	67,500	59,500	110,000	55,800	55,800	
13	124,000	124,000	80,000	121,000	64,500	57,100	107,000	53,600	53,700	
14	117,000	117,000	76,500	115,000	61,500	54,800	104,000	51,600	51,700	
15	111,000	111,000	73,500	109,000	58,500	52,600	100,000	49,600	49,700	84,000
16	105,000	105,000	71,000	103,000	55,800	50,500	93,000	47,700	47,800	81,500
17	99,500	98,500	68,500	94,500	53,500	48,700	86,000	45,900	46,000	77,500
18	94,000	91,500	66,000	86,000	51,600	47,100	78,500	44,100	44,200	71,500
20	83,000	78,500	61,500	70,000	47,900	44,000	64,500	40,700	40,800	61,000
22	72,500	66,500	57,800	59,900	44,800	41,500	55,400	38,200	38,300	52,600
24	63,000	57,100	54,100	51,400	41,800	39,100	47,800	36,000	36,000	45,600
26	55,000	49,500	50,600	44,600	39,100	36,800	41,600	34,000	33,900	39,900
28		43,900	46,400	39,600	36,700	34,800	36,900	32,200	32,000	35,600
30		39,000	42,200	35,000	34,300	32,800	32,700	30,400	30,200	31,600
32		35,100	38,200	31,400	32,100	31,000	29,300	28,800	28,600	28,400
34		31,900	34,900	28,400	30,400	29,600	26,600	27,300	27,000	25,800
36		29,100	31,900	25,900	29,000	28,400	24,200	25,900	25,500	23,500
38		26,300	28,900	23,400	27,600	27,300	21,800	24,500	24,100	21,300
40				21,200	26,000	26,000	19,700	23,200	22,800	19,200
45				16,800	21,400	21,800	15,700	21,100	20,600	15,400
50							12,700	18,200	18,500	12,400
55							10,100	15,400	16,200	10,000
60										8,000
65										6,500
70										5,000
75										
80										
85										
90										
95										
100										
105										
110										
115										
* n *	10!	10!	7	10!	6	5	9	5	5	7
1	0+	0+	0+	46+	0+	0+	92+	0+	0+	92+
2	0+	46+	0+	46+	0+	0+	46+	0+	0+	92+
3	0+	0+	0+	0+	0+	0+	0+	0+	0+	0+
4	0+	0+	0+	0+	46+	0+	0+	92+	46+	0+
5	0+	0+	46+	0+	46+	92+	0+	46+	92+	0+
%										
ft/s	23	23	23	23	23	23	23	23	23	23

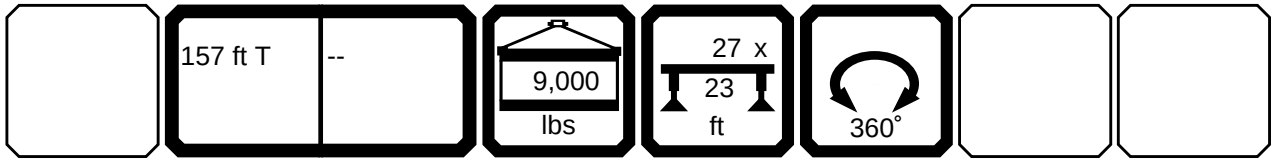




061513 TAB 134061 20.02

ft> < lbs CODE 〉006〈 L134 1800 .x(x)

ft	79	79	92	92	92	102	102	102	115	115
10										
11										
12										
13										
14										
15	57,700	41,800								
16	55,800	40,300								
17	54,000	39,000	66,000	45,300	39,400					
18	52,200	37,700	63,500	44,100	38,300					
20	48,800	35,100	58,200	41,700	36,100	54,000	45,200	35,200		
22	45,700	32,800	50,700	39,300	34,200	48,500	43,000	33,700		
24	42,700	30,600	44,300	37,000	32,300	43,200	40,900	32,200	41,800	35,200
26	39,800	28,500	39,000	34,800	30,500	38,300	38,800	30,700	37,100	33,800
28	37,800	27,000	34,800	33,100	29,100	34,400	36,400	29,300	33,500	32,400
30	35,800	25,600	31,100	31,500	27,800	30,900	33,900	28,000	30,200	31,100
32	33,700	24,400	28,100	30,000	26,500	28,000	31,000	26,600	27,500	29,800
34	31,400	23,200	25,600	28,600	25,400	25,600	28,500	25,400	25,200	28,100
36	29,100	22,200	23,400	27,200	24,400	23,500	26,400	24,300	23,200	26,100
38	26,700	21,100	21,200	25,800	23,400	21,400	24,200	23,300	21,200	24,100
40	24,500	20,100	19,300	24,400	22,400	19,500	22,300	22,300	19,400	22,200
45	20,500	17,800	15,600	20,500	20,100	16,000	18,600	20,100	15,900	18,700
50	17,400	16,000	12,700	17,400	18,100	13,200	15,700	17,600	13,200	15,900
55	14,800	14,500	10,300	14,900	16,000	10,800	13,400	15,300	10,900	13,500
60	12,500	13,300	8,400	12,800	13,800	8,900	11,400	13,300	9,100	11,600
65	10,500	11,700	6,800	10,800	11,800	7,400	9,700	11,500	7,500	10,000
70	9,100	10,200	5,500	9,300	10,300	6,100	8,400	10,000	6,200	8,700
75			4,300	8,100	9,000	5,000	7,200	8,700	5,100	7,500
80						4,000	6,200	7,700	4,200	6,500
85						3,100	5,300	6,800	3,300	5,600
90						2,300	4,500	6,100	2,600	4,900
95										4,200
100										3,500
105										
110										
115										
* n *	5	4	5	4	3	4	4	3	4	3
1	0+	0+	92+	0+	0+	92+	0+	0+	92+	0+
2	0+	0+	92+	0+	0+	92+	92+	0+	92+	92+
3	92+	0+	46+	92+	46+	46+	92+	92+	92+	92+
4	46+	92+	0+	92+	92+	46+	46+	92+	46+	92+
5	46+	92+	0+	46+	92+	0+	46+	92+	0+	46+
%										
ft/s	23	23	23	23	23	23	23	23	23	23



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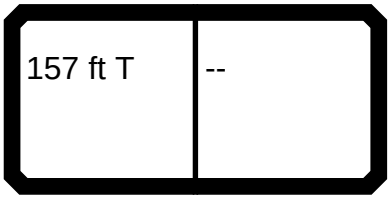
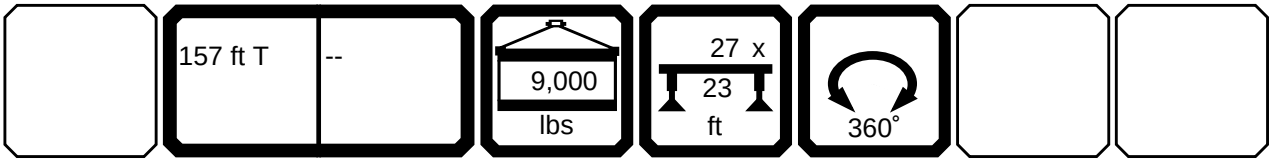


061513 TAB 134061 20.02

ft> < lbs CODE 〉006〈 L134 1800 .x(x)

ft	115	125	125	138	138	148	157	46	59	69
10								38,300	34,200	
11								38,300	34,000	
12								38,200	33,800	24,000
13								38,200	33,700	23,600
14								38,200	33,500	23,300
15								38,200	33,400	22,900
16								38,200	33,300	22,500
17								38,200	33,200	22,200
18								38,200	33,100	21,900
20								38,200	33,000	21,300
22								38,200	32,900	20,700
24	31,700							38,200	32,800	20,200
26	30,500							38,200	32,800	19,700
28	29,500	33,400	28,100	30,300	27,100			38,200	32,800	19,300
30	28,400	30,200	27,200	29,200	26,500	26,000	20,900	37,500	32,400	18,900
32	27,300	27,600	26,300	27,000	25,900	25,600	20,500	34,700	30,700	18,500
34	26,300	25,400	25,400	25,000	25,000	24,400	20,000	31,900	28,400	18,200
36	25,300	23,500	24,400	23,200	23,700	22,900	19,500	29,100	25,900	17,900
38	24,400	21,500	23,300	21,300	22,500	21,300	19,000	26,300	23,400	17,600
40	23,300	19,800	22,200	19,600	21,300	19,800	18,400		21,200	17,100
45	19,800	16,400	18,800	16,400	17,900	16,700	16,100		16,800	15,300
50	17,100	13,800	16,000	13,800	15,300	14,100	13,900			12,700
55	14,700	11,500	13,800	11,600	13,100	12,000	11,800			10,100
60	12,800	9,700	11,900	9,800	11,300	10,300	10,100			
65	11,200	8,200	10,300	8,300	9,800	8,800	8,600			
70	9,700	6,900	9,000	7,100	8,500	7,600	7,400			
75	8,400	5,800	7,900	6,000	7,400	6,500	6,400			
80	7,400	4,800	6,800	5,100	6,400	5,600	5,400			
85	6,500	4,000	5,900	4,200	5,600	4,700	4,600			
90	5,800	3,300	5,200	3,500	4,800	4,000	3,900			
95	5,100	2,600	4,600	2,800	4,200	3,400	3,300			
100	4,500		4,000	2,300	3,600	2,800	2,700			
105			3,400		3,000					
110			2,900		2,500					
115					2,000					
* n *	3	3	3	3	2	2	2	3	3	2
% 1	0+	92+	0+	92+	46+	92+	100+	0+	46-	92-
2	46+	92+	92+	92+	92+	92+	100+	46-	46+	46+
3	92+	92+	92+	92+	92+	92+	100+	0+	0+	0+
4	92+	46+	92+	92+	92+	92+	100+	0+	0+	0+
5	92+	46+	92+	46+	92+	92+	100+	0+	0+	0+
ft/s	23	23	23	23	23	23	23	23	23	23



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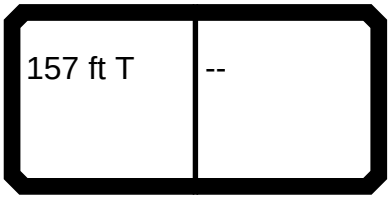
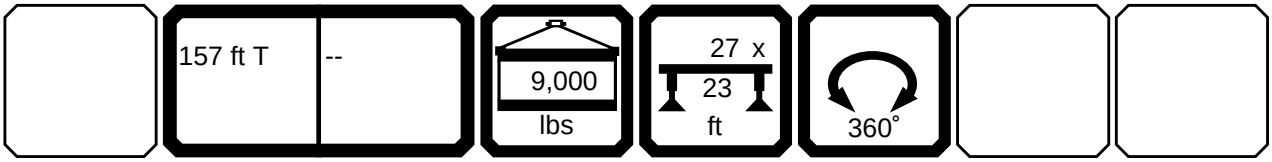


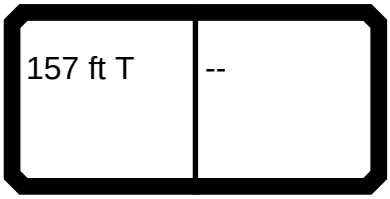
061513 TAB 134061 20.02

ft> < lbs CODE 〉006〈 L134 1800 .x(x)

ft	79	92	102	115	46	59	79	102	125	69
10					46,700	43,500				
11					46,600	43,300				
12					46,500	43,000				31,800
13					46,500	42,800				31,300
14					46,500	42,700				30,900
15	21,900				46,500	42,500	27,600			30,400
16	21,500				46,500	42,300	26,000			30,000
17	21,100	20,500			46,500	42,200	25,200			29,600
18	20,700	20,100			46,500	42,100	24,800			29,200
20	20,000	19,300	19,000		46,500	41,800	24,100	21,100		28,500
22	19,400	18,700	18,300		46,500	41,700	23,400	20,400		27,800
24	18,800	18,000	17,600	17,300	46,500	40,700	22,800	19,800		26,600
26	18,200	17,400	17,000	16,600	46,500	39,000	22,200	19,100		25,000
28	17,700	16,800	16,400	16,000	44,700	36,700	21,700	18,500	16,000	24,400
30	17,200	16,300	15,800	15,400	42,200	34,300	21,200	18,000	15,400	23,900
32	16,700	15,800	15,300	14,900	38,200	32,100	20,700	17,400	14,800	23,500
34	16,300	15,300	14,500	14,100	34,900	30,400	20,300	17,000	14,000	23,100
36	15,900	14,900	13,500	13,100	31,900	29,000	19,900	16,500	13,000	22,700
38	15,500	14,400	12,500	12,100	28,900	27,600	19,400	16,000	12,000	22,400
40	15,100	13,800	11,700	11,300		26,100	19,100	15,600	11,300	22,000
45	14,300	11,600	10,900	10,500		21,500	18,300	14,600	10,400	20,900
50	12,200	10,700	10,200	9,800			16,800	12,800	9,700	18,200
55	10,000	9,800	9,600	9,100			14,800	11,500	9,100	15,400
60	8,000	8,400	8,900	8,400			12,500	10,800	8,500	
65	6,500	6,800	7,400	7,400			10,500	9,700	7,900	
70	5,000	5,500	6,100	6,200			9,100	8,400	6,900	
75		4,300	5,000	5,100				7,200	5,800	
80			4,000	4,200				6,200	4,800	
85			3,100	3,300				5,300	4,000	
90			2,300	2,600				4,500	3,300	
95									2,600	
100										
105										
110										
115										
* n *	2	2	2	2	4	4	3	2	2	3
1	92-	92-	92-	92-	0+	0+	0+	0+	92-	0+
2	92-	92-	92-	92-	0+	0+	0+	92-	92+	0+
3	0+	46-	46-	92-	0+	0+	92-	92+	92+	0+
4	0+	0+	46-	46-	0+	46-	46+	46+	46+	92-
% 5	0+	0+	0+	0+	46-	46+	46+	46+	46+	46+
ft/s	23	23	23	23	23	23	23	23	23	23

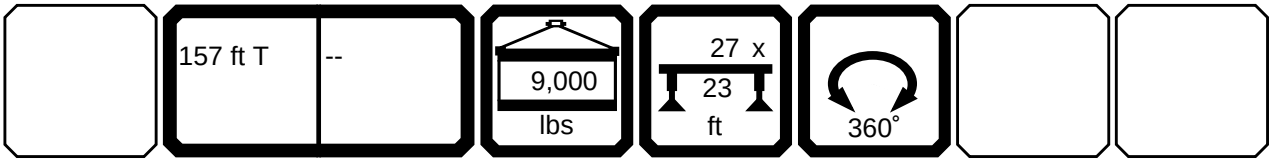


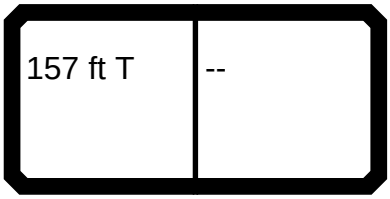
85%



061513 TAB 134061 20.02

ft	ft> < lbs	CODE 〉006〈		L134 1800 .x(x)						
	92	**115**	**138**	**59**	**69**	**79**	**92**	**102**	**115**	**125**
10				35,500						
11				35,100						
12				34,600	42,000					
13				34,200	41,700					
14				33,800	41,400					
15				33,500	41,100	29,300				
16				33,100	40,900	28,800				
17	24,400			32,800	40,300	28,100	35,500			
18	24,000			32,500	39,500	27,100	35,200			
20	23,300			31,900	38,000	25,400	34,600	22,800		
22	22,600			31,300	37,400	24,700	33,700	22,100		
24	21,900	19,400		30,800	36,000	24,100	32,300	21,400	30,700	
26	21,300	18,800		30,400	33,900	23,400	30,500	20,800	30,200	
28	20,700	18,200	15,700	30,000	32,000	22,900	29,100	20,200	29,300	17,900
30	20,200	17,600	15,100	29,600	30,200	22,400	27,800	19,600	28,400	17,300
32	19,600	17,000	14,600	29,300	28,600	21,900	26,500	19,100	27,300	16,700
34	19,200	16,500	13,800	28,700	27,000	21,400	25,400	18,600	26,300	16,200
36	18,700	16,000	12,800	27,900	25,500	21,000	24,400	18,100	25,300	15,800
38	18,200	15,600	11,800	27,000	24,100	20,600	23,400	17,600	24,400	15,300
40	17,800	15,100	11,100	26,000	22,800	20,000	22,400	17,200	23,300	14,700
45	16,900	14,100	10,300	21,800	20,600	17,800	20,100	16,200	19,800	12,400
50	16,100	12,300	9,500		18,500	16,000	18,100	15,300	17,100	11,400
55	14,700	11,000	8,800		16,200	14,500	16,000	14,400	14,700	10,700
60	12,800	10,400	8,200			13,300	13,800	13,300	12,800	10,100
65	10,800	9,900	7,700			11,700	11,800	11,500	11,200	9,600
70	9,300	8,700	6,900			10,200	10,300	10,000	9,700	8,800
75	8,100	7,500	6,000				9,000	8,700	8,400	7,900
80		6,500	5,100					7,700	7,400	6,800
85		5,600	4,200					6,800	6,500	5,900
90		4,900	3,500					6,100	5,800	5,200
95		4,200	2,800						5,100	4,600
100		3,500	2,300						4,500	4,000
105										3,400
110										2,900
115										
* n *	2	2	2	3	4	3	3	2	3	2
1	0+	0+	92-	0+	0+	0+	0+	0+	0+	0+
2	0+	92-	92+	0+	0+	0+	0+	0+	46-	92-
3	92-	92+	92+	0+	0+	0+	46-	92-	92+	92+
4	92+	92+	92+	0+	46-	92-	92+	92+	92+	92+
5	46+	46+	46+	92-	92+	92+	92+	92+	92+	92+
%										
ft/s	23	23	23	23	23	23	23	23	23	23

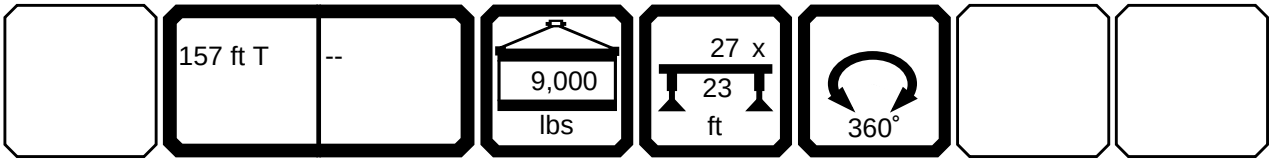




061513 TAB 134061 20.02

ft> < lbs CODE 〉006〈 L134 1800 .x(x)

ft	138	148	157							
10										
11										
12										
13										
14										
15										
16										
17										
18										
20										
22										
24										
26										
28	24,700									
30	24,300	15,200	10,400							
32	23,900	14,600	10,000							
34	23,300	13,800	9,600							
36	22,700	12,800	9,200							
38	22,100	11,900	8,800							
40	21,300	11,100	8,400							
45	17,900	10,300	7,600							
50	15,300	9,600	6,900							
55	13,100	8,900	6,200							
60	11,300	8,300	5,600							
65	9,800	7,700	5,100							
70	8,500	7,200	4,600							
75	7,400	6,500	4,100							
80	6,400	5,600	3,700							
85	5,600	4,700	3,400							
90	4,800	4,000	3,000							
95	4,200	3,400	2,700							
100	3,600	2,800	2,400							
105	3,000									
110	2,500									
115	2,000									
* n *	2	2	1							
1	46-	92-	100-							
2	92+	92+	100-							
3	92+	92+	100-							
4	92+	92+	100-							
5	92+	92+	100-							
%										
ft/s	23	23	23							



85%

157 ft T	K 0° 34 ft

061513 TAB 134068 20.02

ft	ft> < lbs	CODE 〉031〈		L134 0010 .x(x)						
	125	**125**	**138**	**138**	**148**	**157**				
34	17,900	15,800								
36	16,500	15,400								
38	15,100	14,900								
40	13,800	14,400	13,600	14,000	13,400	9,900				
45	11,300	13,000	11,100	12,200	11,100	9,700				
50	9,300	11,100	9,100	10,300	9,200	8,600				
55	7,600	9,400	7,500	8,600	7,600	7,300				
60	6,200	7,900	6,100	7,200	6,200	5,900				
65	5,000	6,700	5,000	6,000	5,100	4,800				
70	4,000	5,700	4,000	5,000	4,100	3,900				
75	3,100	4,800	3,100	4,200	3,300	3,100				
80		4,000		3,400						
85		3,300		2,700						
90		2,700		2,100						
95		2,200								
* n *	2	2	1	2	1	1				
1	92+	0+	92+	46+	92+	100+				
2	92+	92+	92+	92+	92+	100+				
3	92+	92+	92+	92+	92+	100+				
4	46+	92+	92+	92+	92+	100+				
5	46+	92+	46+	92+	92+	100+				
%										
ft/s	23	23	23	23	23	23				

	157 ft T	K 0° 34 ft	0,000 lbs	27 x 23 ft	360°		

85%

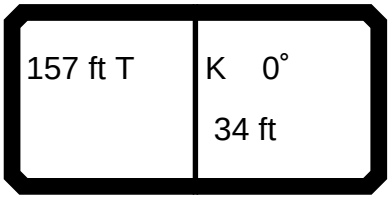
157 ft T	K 0° 34 ft

061513 TAB 134067 20.02

ft	ft> < lbs	CODE 〉030〈				L134 0010 .x(x)				
	125	**125**	**138**	**138**	**148**	**157**				
34	20,700	15,800								
36	20,000	15,400								
38	19,400	14,900								
40	18,600	14,500	16,700	14,100	13,600	9,900				
45	15,500	13,400	15,000	13,300	12,900	9,700				
50	13,100	12,500	12,900	12,500	12,100	9,400				
55	11,100	11,700	10,900	11,500	10,900	9,100				
60	9,300	10,900	9,200	10,300	9,300	8,600				
65	7,900	9,600	7,900	8,900	8,000	7,600				
70	6,700	8,400	6,700	7,700	6,800	6,500				
75	5,700	7,400	5,700	6,700	5,800	5,500				
80	4,700	6,400	4,700	5,800	4,900	4,700				
85	3,900	5,600	3,900	4,900	4,100	3,900				
90	3,200	4,900	3,200	4,300	3,400	3,200				
95	2,600	4,200	2,600	3,600	2,800	2,600				
100		3,600		3,000	2,200					
105		3,100		2,500						
110		2,600		2,000						
115		2,200								
120		1,800								
* n *	2	2	2	2	1	1				
1	92+	0+	92+	46+	92+	100+				
2	92+	92+	92+	92+	92+	100+				
3	92+	92+	92+	92+	92+	100+				
4	46+	92+	92+	92+	92+	100+				
5	46+	92+	46+	92+	92+	100+				
%										
ft/s	23	23	23	23	23	23				

	157 ft T	K 0° 34 ft	9,000 lbs	27 x 23 ft	360°		

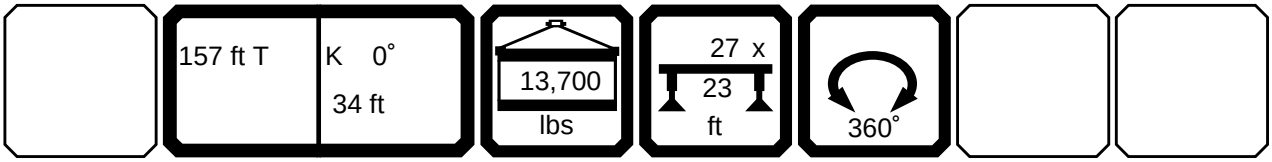
85%



061513 TAB 134066 20.02

CODE 〉029〈 L134 0010 .x(x)

ft	ft> < lbs 125	125	138	138	148	157				
34	21,000	15,800								
36	20,700	15,400								
38	20,500	14,900								
40	20,100	14,500	16,800	14,100	13,600	9,900				
45	17,600	13,400	15,900	13,300	12,900	9,700				
50	15,100	12,500	14,400	12,500	12,200	9,400				
55	12,900	11,700	12,700	11,700	11,500	9,100				
60	11,000	11,000	10,900	11,000	10,800	8,700				
65	9,500	10,300	9,400	10,300	9,400	8,300				
70	8,200	9,600	8,100	9,200	8,200	7,700				
75	7,000	8,700	7,000	8,000	7,100	6,800				
80	6,000	7,700	6,000	7,000	6,100	5,900				
85	5,100	6,800	5,100	6,100	5,200	5,000				
90	4,300	6,000	4,300	5,400	4,500	4,300				
95	3,700	5,300	3,700	4,700	3,800	3,600				
100	3,000	4,600	3,000	4,000	3,200	3,000				
105	2,500	4,100	2,500	3,500	2,600	2,500				
110	1,900	3,500	2,000	3,000	2,100	2,000				
115		3,100		2,500	1,700					
120		2,700		2,100						
125		2,200								
130		1,800								
135		1,500								
* n *	2	2	2	2	1	1				
% 1	92+	0+	92+	46+	92+	100+				
2	92+	92+	92+	92+	92+	100+				
3	92+	92+	92+	92+	92+	100+				
4	46+	92+	92+	92+	92+	100+				
5	46+	92+	46+	92+	92+	100+				
ft/s	23	23	23	23	23	23				



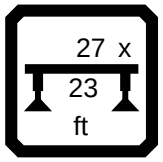
85%

157 ft T	K 0° 34 ft

061513 TAB 134063 20.02

ft	ft> < lbs	CODE 〉026〈		L134 0010 .x(x)					
	125	**125**	**138**	**138**	**148**	**157**			
34	21,000	15,800							
36	20,700	15,400							
38	20,500	14,900							
40	20,300	14,500	16,800	14,100	13,600	9,900			
45	19,300	13,400	15,900	13,300	12,900	9,700			
50	17,900	12,500	15,100	12,500	12,200	9,400			
55	16,600	11,700	14,300	11,700	11,500	9,100			
60	15,400	11,000	13,400	11,000	10,900	8,700			
65	14,400	10,300	12,600	10,400	10,300	8,300			
70	13,400	9,700	11,800	9,800	9,800	8,000			
75	12,500	9,100	11,000	9,300	9,400	7,700			
80	11,500	8,500	10,300	8,800	8,900	7,400			
85	10,400	8,000	9,600	8,300	8,500	7,000			
90	9,400	7,400	9,000	7,800	8,100	6,700			
95	8,400	7,000	8,300	7,400	7,700	6,400			
100	7,500	6,600	7,500	6,900	7,300	6,100			
105	6,800	6,200	6,700	6,600	6,900	5,800			
110	6,100	5,900	6,100	6,300	6,200	5,600			
115	5,500	5,600	5,500	6,000	5,600	5,200			
120	4,900	5,300	4,900	5,700	5,000	4,800			
125	4,300	5,000	4,400	5,300	4,500	4,300			
130	3,800	4,700	3,900	4,800	4,000	3,800			
135	3,300	4,500	3,400	4,300	3,600	3,400			
140	2,800	4,200	2,900	3,800	3,100	3,000			
145	2,400	3,900	2,500	3,400	2,700	2,600			
150	2,000	3,500	2,100	3,000	2,300	2,200			
155			1,700	2,600	2,000	1,900			
160					1,600	1,500			
* n *	2	2	2	2	1	1			
1	92+	0+	92+	46+	92+	100+			
2	92+	92+	92+	92+	92+	100+			
3	92+	92+	92+	92+	92+	100+			
4	46+	92+	92+	92+	92+	100+			
5	46+	92+	46+	92+	92+	100+			
%									
ft/s	23	23	23	23	23	23			

157 ft T | K 0° 34 ft



85%

157 ft T	K 0° 62 ft

061513 TAB 134068 20.02

CODE 〉037〈 L134 0011 .x(x)

ft> < lbs

ft	125	125	138	138	148	157				
40	8,100	7,300								
45	8,000	7,300								
50	7,800	7,100	7,200	6,800	6,500	5,800				
55	7,400	6,900	7,000	6,800	6,400	5,900				
60	6,800	6,700	6,700	6,700	6,200	5,800				
65	5,700	6,600	5,600	6,400	5,500	5,200				
70	4,700	6,000	4,600	5,500	4,600	4,400				
75	3,900	5,300	3,800	4,700	3,800	3,600				
80	3,100	4,500	3,000	3,900	3,100	2,800				
85	2,400	3,800	2,400	3,200	2,400	2,200				
90		3,200		2,600						
95		2,700		2,100						
100		2,200								
* n *	1	1	1	1	1	1				

%										
1	92+	0+	92+	46+	92+	100+				
2	92+	92+	92+	92+	92+	100+				
3	92+	92+	92+	92+	92+	100+				
4	46+	92+	92+	92+	92+	100+				
5	46+	92+	46+	92+	92+	100+				

ft/s										
	23	23	23	23	23	23				

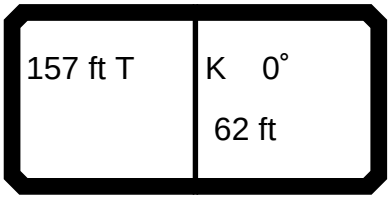
157 ft T | K 0° 62 ft

0,000 lbs

27 x 23 ft

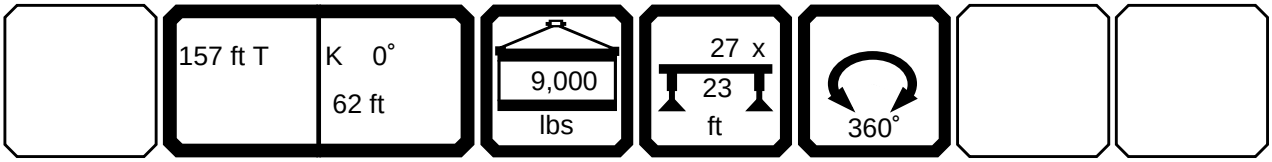
360°

85%

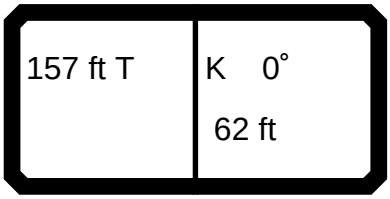


061513 TAB 134067 20.02

ft	ft> <lbs									
	CODE 〉036〈						L134 0011 .x(x)			
	125	**125**	**138**	**138**	**148**	**157**				
40	8,100	7,300								
45	8,000	7,300								
50	7,800	7,100	7,200	6,800	6,500	5,800				
55	7,600	6,900	7,000	6,800	6,400	5,900				
60	7,300	6,700	6,900	6,700	6,400	5,900				
65	7,100	6,600	6,700	6,600	6,300	5,800				
70	7,000	6,400	6,600	6,400	6,200	5,600				
75	6,300	6,300	6,100	6,300	5,900	5,400				
80	5,400	6,200	5,300	6,000	5,400	5,100				
85	4,600	5,900	4,500	5,400	4,600	4,300				
90	3,900	5,300	3,900	4,700	3,900	3,700				
95	3,300	4,700	3,200	4,100	3,300	3,100				
100	2,700	4,100	2,700	3,500	2,700	2,500				
105	2,200	3,600	2,100	3,000	2,200					
110	1,700	3,100	1,700	2,500	1,800					
115		2,600		2,100						
120		2,200		1,700						
125		1,900								
130		1,500								
* n *	1	1	1	1	1	1				
% 1	92+	0+	92+	46+	92+	100+				
2	92+	92+	92+	92+	92+	100+				
3	92+	92+	92+	92+	92+	100+				
4	46+	92+	92+	92+	92+	100+				
5	46+	92+	46+	92+	92+	100+				
ft/s	23	23	23	23	23	23				



85%

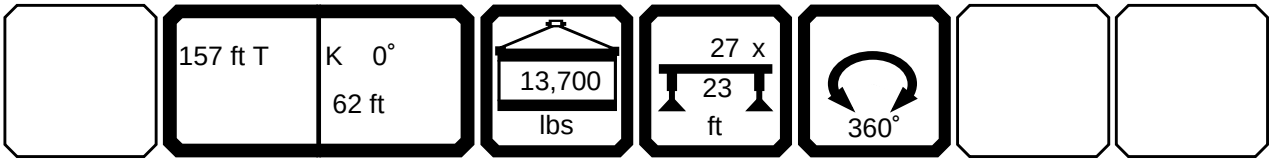


061513 TAB 134066 20.02

CODE 〉035〈 L134 0011 .x(x)

ft> < lbs

ft	125	125	138	138	148	157				
40	8,100	7,300								
45	8,000	7,300								
50	7,800	7,100	7,200	6,800	6,500	5,800				
55	7,600	6,900	7,000	6,800	6,400	5,900				
60	7,300	6,700	6,900	6,700	6,400	5,900				
65	7,100	6,600	6,700	6,600	6,300	5,800				
70	7,000	6,400	6,600	6,400	6,200	5,600				
75	6,800	6,300	6,500	6,300	6,100	5,400				
80	6,500	6,200	6,200	6,100	5,900	5,300				
85	5,800	5,900	5,700	6,000	5,700	5,100				
90	5,000	5,600	4,900	5,700	5,000	4,600				
95	4,300	5,400	4,300	5,100	4,300	4,100				
100	3,700	5,100	3,600	4,500	3,700	3,500				
105	3,100	4,500	3,100	3,900	3,200	2,900				
110	2,600	4,000	2,600	3,400	2,700	2,400				
115	2,200	3,500	2,100	3,000	2,200	2,000				
120	1,700	3,100		2,500	1,800					
125		2,700		2,100						
130		2,300		1,800						
135		2,000		1,400						
140		1,700								
* n *	1	1	1	1	1	1				
% 1	92+	0+	92+	46+	92+	100+				
2	92+	92+	92+	92+	92+	100+				
3	92+	92+	92+	92+	92+	100+				
4	46+	92+	92+	92+	92+	100+				
5	46+	92+	46+	92+	92+	100+				
ft/s	23	23	23	23	23	23				



85%

157 ft T	K 0° 62 ft

061513 TAB 134063 20.02

ft> < lbs CODE 〉032〈 L134 0011 .x(x)

ft	125	125	138	138	148	157				
40	8,100	7,300								
45	8,000	7,300								
50	7,800	7,100	7,200	6,800	6,500	5,800				
55	7,600	6,900	7,000	6,800	6,400	5,900				
60	7,300	6,700	6,900	6,700	6,400	5,900				
65	7,100	6,600	6,700	6,600	6,300	5,800				
70	7,000	6,400	6,600	6,400	6,200	5,600				
75	6,800	6,300	6,500	6,300	6,100	5,400				
80	6,600	6,200	6,300	6,100	5,900	5,300				
85	6,500	5,900	6,200	6,000	5,800	5,100				
90	6,300	5,600	6,100	5,700	5,700	4,900				
95	6,200	5,400	6,000	5,500	5,500	4,800				
100	6,000	5,200	5,900	5,300	5,300	4,600				
105	5,800	4,900	5,800	5,100	5,100	4,500				
110	5,600	4,800	5,700	4,900	4,900	4,400				
115	5,500	4,600	5,600	4,700	4,700	4,200				
120	5,200	4,400	5,400	4,600	4,500	4,000				
125	4,900	4,300	4,800	4,400	4,400	3,900				
130	4,400	4,100	4,400	4,300	4,200	3,700				
135	4,000	3,900	3,900	4,100	3,900	3,600				
140	3,600	3,700	3,500	4,000	3,600	3,300				
145	3,200	3,500	3,100	3,800	3,200	3,000				
150	2,700	3,300	2,800	3,600	2,800	2,600				
155	2,400	3,100	2,400	3,200	2,500	2,300				
160	2,000	2,900	2,100	2,800	2,200	2,000				
165	1,700	2,700	1,700	2,500	1,900	1,700				
170	1,400	2,600	1,400	2,200	1,500	1,400				
175		2,300		1,900						
180				1,600						
* n *	1	1	1	1	1	1				
% 1	92+	0+	92+	46+	92+	100+				
2	92+	92+	92+	92+	92+	100+				
3	92+	92+	92+	92+	92+	100+				
4	46+	92+	92+	92+	92+	100+				
5	46+	92+	46+	92+	92+	100+				
ft/s	23	23	23	23	23	23				

157 ft T | K 0° 62 ft

35,500 lbs

27 x 23 ft

360°

157 ft T	K 20° 34 ft

061513 TAB 134074 20.02

CODE 〉043〈 L134 0020 .x(x)

ft> < lbs

ft	125	125	138	138	148	157
50	10,900	11,500	10,700	11,100	10,300	
55	9,000	10,400	8,900	9,900	8,900	8,300
60	7,500	9,000	7,400	8,300	7,400	7,200
65	6,100	7,700	6,100	7,100	6,200	6,000
70	5,000	6,600	5,000	6,000	5,100	4,900
75	4,100	5,600	4,100	5,000	4,200	4,000
80	3,200	4,700	3,200	4,200	3,400	3,200
85	2,500	4,000	2,500	3,400	2,700	2,500
90		3,300		2,800	2,000	
95		2,700		2,200		
100		2,200				
* n *	1	1	1	1	1	1
% 1	92+	0+	92+	46+	92+	100+
2	92+	92+	92+	92+	92+	100+
3	92+	92+	92+	92+	92+	100+
4	46+	92+	92+	92+	92+	100+
5	46+	92+	46+	92+	92+	100+
ft/s	23	23	23	23	23	23

85%

157 ft T	K 20°
	34 ft

061513 TAB 134073 20.02

ft> < lbs CODE 〉042〈 L134 0020 .x(x)

ft	125	125	138	138	148	157				
50	14,400	11,500	13,400	11,200	10,900					
55	12,500	10,800	12,200	10,600	10,400	8,800				
60	10,600	10,200	10,500	10,000	9,800	8,500				
65	9,100	9,600	9,000	9,500	9,000	8,200				
70	7,800	9,000	7,700	8,600	7,800	7,400				
75	6,600	8,200	6,600	7,600	6,700	6,500				
80	5,600	7,100	5,600	6,600	5,700	5,500				
85	4,700	6,300	4,700	5,700	4,900	4,700				
90	3,900	5,500	4,000	4,900	4,100	3,900				
95	3,200	4,800	3,300	4,200	3,400	3,300				
100	2,600	4,100	2,600	3,600	2,800	2,700				
105		3,500		3,000	2,300					
110		3,000		2,500	1,800					
115		2,600		2,000						
120		2,100								
125		1,700								
130		1,400								
* n *	2	1	1	1	1	1				
% 1	92+	0+	92+	46+	92+	100+				
2	92+	92+	92+	92+	92+	100+				
3	92+	92+	92+	92+	92+	100+				
4	46+	92+	92+	92+	92+	100+				
5	46+	92+	46+	92+	92+	100+				
ft/s	23	23	23	23	23	23				

157 ft T | K 20° | 34 ft

9,000 lbs

27 x 23 ft

360°

85%

157 ft T	K 20°
	34 ft

061513 TAB 134072 20.02

ft> < lbs CODE 〉041〈 L134 0020 .x(x)

ft	125	125	138	138	148	157				
50	15,500	11,500	13,400	11,200	10,900					
55	14,300	10,800	12,800	10,600	10,400	8,800				
60	12,300	10,200	12,000	10,000	9,900	8,500				
65	10,600	9,600	10,500	9,500	9,400	8,200				
70	9,200	9,000	9,100	9,100	8,900	7,900				
75	8,000	8,500	7,900	8,500	8,000	7,400				
80	6,900	8,000	6,900	7,800	7,000	6,700				
85	5,900	7,400	5,900	6,900	6,000	5,800				
90	5,100	6,600	5,100	6,000	5,200	5,000				
95	4,300	5,800	4,300	5,300	4,500	4,300				
100	3,600	5,100	3,700	4,600	3,800	3,700				
105	3,000	4,500	3,000	4,000	3,200	3,000				
110	2,400	3,900	2,500	3,400	2,700	2,500				
115	1,900	3,400	2,000	2,900	2,200	2,000				
120		3,000		2,500						
125		2,600		2,000						
130		2,100		1,600						
135		1,700								
* n *	2	1	1	1	1	1				
% 1	92+	0+	92+	46+	92+	100+				
2	92+	92+	92+	92+	92+	100+				
3	92+	92+	92+	92+	92+	100+				
4	46+	92+	92+	92+	92+	100+				
5	46+	92+	46+	92+	92+	100+				
ft/s	23	23	23	23	23	23				

157 ft T | K 20° | 34 ft

13,700 lbs

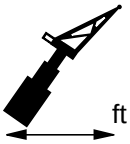
27 x 23 ft

360°

85%

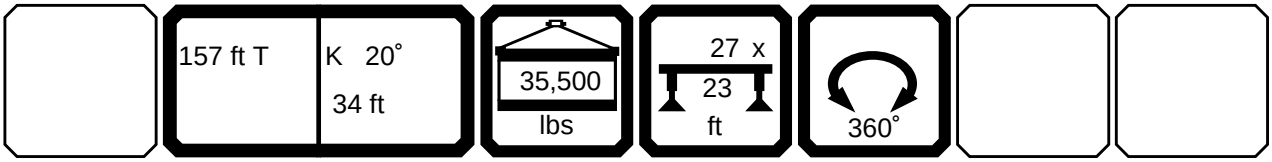
157 ft T	K 20°
	34 ft

061513 TAB 134069 20.02



ft> < lbs CODE 〉038〈 L134 0020 .x(x)

ft	125	125	138	138	148	157				
50	15,500	11,500	13,400	11,200	10,900					
55	15,100	10,800	12,800	10,600	10,400	8,800				
60	14,600	10,200	12,200	10,000	9,900	8,500				
65	13,900	9,600	11,600	9,500	9,400	8,200				
70	13,000	9,000	11,000	9,100	9,000	7,900				
75	12,100	8,500	10,500	8,700	8,600	7,600				
80	11,300	8,100	10,100	8,300	8,200	7,400				
85	10,500	7,600	9,700	7,900	7,900	7,100				
90	9,900	7,300	9,100	7,600	7,600	6,800				
95	9,100	7,000	8,600	7,200	7,300	6,500				
100	8,200	6,700	8,000	6,900	7,000	6,200				
105	7,300	6,500	7,300	6,600	6,700	6,000				
110	6,600	6,100	6,600	6,300	6,400	5,700				
115	5,900	5,800	5,900	6,000	6,000	5,400				
120	5,300	5,400	5,300	5,700	5,500	5,100				
125	4,700	5,100	4,700	5,500	4,900	4,700				
130	4,100	4,800	4,200	5,100	4,400	4,200				
135	3,500	4,500	3,700	4,600	3,900	3,700				
140	3,000	4,300	3,200	4,100	3,500	3,300				
145			2,700	3,600	3,000	2,900				
150			2,300	3,200	2,600	2,500				
155					2,200	2,100				
160					1,800	1,700				
* n *	2	1	1	1	1	1				
1	92+	0+	92+	46+	92+	100+				
2	92+	92+	92+	92+	92+	100+				
3	92+	92+	92+	92+	92+	100+				
4	46+	92+	92+	92+	92+	100+				
5	46+	92+	46+	92+	92+	100+				
%										
ft/s	23	23	23	23	23	23				



85%

157 ft T	K 20°
	62 ft

061513 TAB 134074 20.02

ft> < lbs CODE 〉049〈 L134 0021 .x(x)

ft	125	125	138	138	148	157				
60	6,200	5,800	5,900	5,700						
65	6,100	5,700	5,800	5,600						
70	5,900	5,600	5,700	5,500	5,300	5,000				
75	5,500	5,500	5,300	5,400	5,100	4,800				
80	4,700	5,300	4,600	5,200	4,600	4,400				
85	3,900	5,000	3,800	4,600	3,900	3,700				
90	3,200	4,400	3,200	3,900	3,200	3,000				
95	2,600	3,800	2,500	3,300	2,600	2,400				
100		3,200		2,700	2,100					
105		2,700		2,200						
110		2,200		1,800						
115		1,800								
* n *	1	1	1	1	1	1				
1	92+	0+	92+	46+	92+	100+				
2	92+	92+	92+	92+	92+	100+				
3	92+	92+	92+	92+	92+	100+				
4	46+	92+	92+	92+	92+	100+				
5	46+	92+	46+	92+	92+	100+				
%										
ft/s	23	23	23	23	23	23				

	157 ft T	K 20° 62 ft	0,000 lbs	27 x 23 ft	360°		

85%

157 ft T	K 20°
	62 ft

061513 TAB 134073 20.02

ft> < lbs CODE 〉048〈 L134 0021 .x(x)

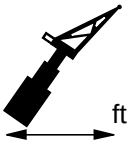
ft	125	125	138	138	148	157				
60	6,200	5,800	5,900	5,700						
65	6,100	5,700	5,800	5,600						
70	5,900	5,600	5,700	5,500	5,300	5,000				
75	5,800	5,500	5,600	5,400	5,200	4,900				
80	5,700	5,400	5,500	5,300	5,100	4,900				
85	5,600	5,300	5,400	5,200	5,100	4,800				
90	5,200	5,200	5,100	5,100	5,000	4,800				
95	4,600	5,100	4,500	5,000	4,600	4,400				
100	3,900	4,900	3,800	4,600	3,900	3,700				
105	3,300	4,500	3,200	4,000	3,300	3,100				
110	2,800	3,900	2,700	3,500	2,800	2,600				
115	2,200	3,400	2,200	3,000	2,300	2,100				
120	1,800	3,000	1,800	2,500	1,900	1,700				
125		2,600		2,100						
130		2,200		1,700						
135		1,800								
* n *	1	1	1	1	1	1				
1	92+	0+	92+	46+	92+	100+				
2	92+	92+	92+	92+	92+	100+				
3	92+	92+	92+	92+	92+	100+				
4	46+	92+	92+	92+	92+	100+				
5	46+	92+	46+	92+	92+	100+				
%										
ft/s	23	23	23	23	23	23				

	157 ft T	K 20° 62 ft	9,000 lbs	27 x 23 ft	360°		

85%

157 ft T	K 20°
	62 ft

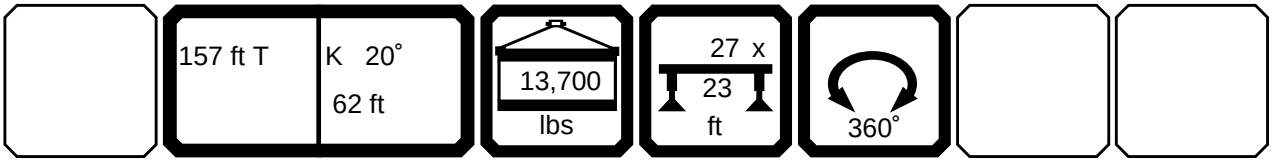
061513 TAB 134072 20.02

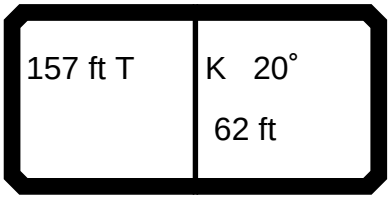


ft> < lbs

CODE 〉047〈 L134 0021 .x(x)

ft	125	125	138	138	148	157				
60	6,200	5,800	5,900	5,700						
65	6,100	5,700	5,800	5,600						
70	5,900	5,600	5,700	5,500	5,300	5,000				
75	5,800	5,500	5,600	5,400	5,200	4,900				
80	5,700	5,400	5,500	5,300	5,100	4,900				
85	5,600	5,300	5,400	5,200	5,100	4,800				
90	5,500	5,200	5,300	5,100	5,000	4,800				
95	5,300	5,100	5,100	5,100	4,900	4,700				
100	4,900	5,000	4,800	5,000	4,700	4,500				
105	4,200	4,800	4,200	4,800	4,300	4,100				
110	3,600	4,600	3,600	4,300	3,700	3,500				
115	3,100	4,200	3,100	3,800	3,200	3,000				
120	2,600	3,800	2,600	3,300	2,700	2,500				
125	2,100	3,400	2,100	2,900	2,200	2,100				
130	1,700	2,900	1,700	2,500	1,800	1,700				
135		2,500		2,100	1,400					
140		2,200		1,700						
145		1,800								
150		1,500								
* n *	1	1	1	1	1	1				
1	92+	0+	92+	46+	92+	100+				
2	92+	92+	92+	92+	92+	100+				
3	92+	92+	92+	92+	92+	100+				
4	46+	92+	92+	92+	92+	100+				
5	46+	92+	46+	92+	92+	100+				
%										
ft/s	23	23	23	23	23	23				

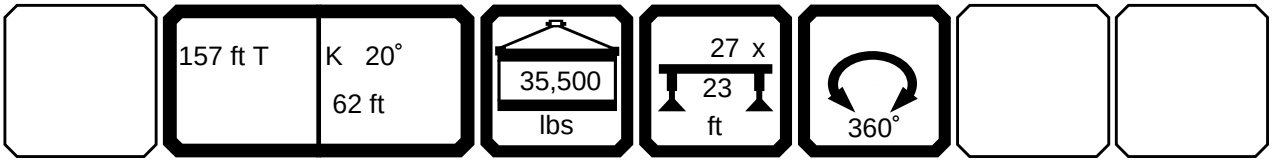




061513 TAB 134069 20.02

ft> < lbs CODE 〉044〈 L134 0021 .x(x)

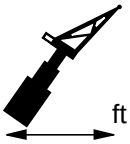
ft	125	125	138	138	148	157				
60	6,200	5,800	5,900	5,700						
65	6,100	5,700	5,800	5,600						
70	5,900	5,600	5,700	5,500	5,300	5,000				
75	5,800	5,500	5,600	5,400	5,200	4,900				
80	5,700	5,400	5,500	5,300	5,100	4,900				
85	5,600	5,300	5,400	5,200	5,100	4,800				
90	5,500	5,200	5,300	5,100	5,000	4,800				
95	5,400	5,100	5,200	5,100	4,900	4,700				
100	5,300	5,000	5,100	5,000	4,900	4,500				
105	5,200	4,800	5,000	4,800	4,800	4,400				
110	5,100	4,600	4,900	4,600	4,700	4,300				
115	5,000	4,400	4,900	4,500	4,500	4,200				
120	4,900	4,200	4,800	4,300	4,400	4,000				
125	4,900	4,100	4,800	4,100	4,200	3,900				
130	4,900	3,900	4,800	4,000	4,100	3,800				
135	4,600	3,800	4,500	3,900	3,900	3,700				
140	4,200	3,700	4,200	3,800	3,800	3,500				
145	3,700	3,600	3,700	3,700	3,700	3,400				
150	3,300	3,400	3,300	3,600	3,400	3,200				
155	2,800	3,200	2,900	3,500	3,000	2,900				
160	2,400	3,000	2,500	3,200	2,700	2,500				
165	2,000	2,800	2,100	2,900	2,300	2,200				
170	1,600	2,600	1,800	2,500	2,000	1,900				
175			1,400	2,200	1,600	1,600				
* n *	1	1	1	1	1	1				
% 1	92+	0+	92+	46+	92+	100+				
2	92+	92+	92+	92+	92+	100+				
3	92+	92+	92+	92+	92+	100+				
4	46+	92+	92+	92+	92+	100+				
5	46+	92+	46+	92+	92+	100+				
ft/s	23	23	23	23	23	23				



85%

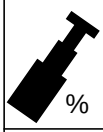
157 ft T	K 40°
	34 ft

061513 TAB 134080 20.02



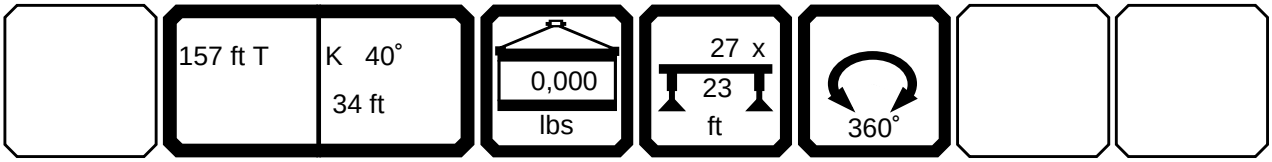
ft> < lbs CODE 〉055〈 L134 0030 .x(x)

ft	125	125	138	138	148	157				
55	10,300	10,300	10,200	10,200						
60	8,600	9,600	8,500	9,300	8,500	8,200				
65	7,100	8,500	7,100	8,000	7,200	6,900				
70	5,900	7,300	5,900	6,800	6,000	5,800				
75	4,900	6,300	4,900	5,700	5,000	4,800				
80	3,900	5,300	3,900	4,800	4,100	3,900				
85	3,100	4,500	3,100	4,000	3,300	3,100				
90	2,400	3,800	2,400	3,300	2,600	2,500				
95		3,100		2,700						
100		2,500								
* n *	1	1	1	1	1	1				



%										
1	92+	0+	92+	46+	92+	100+				
2	92+	92+	92+	92+	92+	100+				
3	92+	92+	92+	92+	92+	100+				
4	46+	92+	92+	92+	92+	100+				
5	46+	92+	46+	92+	92+	100+				

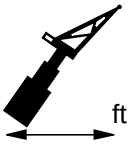
ft/s	23	23	23	23	23	23				



85%

157 ft T	K 40°
	34 ft

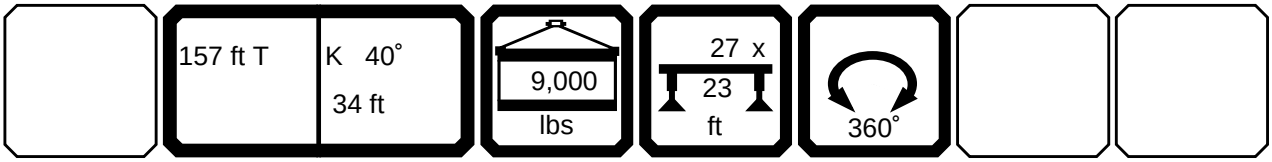
061513 TAB 134079 20.02



ft> < lbs

CODE 〉054〈 L134 0030 .x(x)

ft	125	125	138	138	148	157				
55	12,900	10,300	12,100	10,200						
60	11,800	9,800	11,300	9,600	9,500	8,400				
65	10,100	9,300	10,000	9,200	9,100	8,100				
70	8,700	8,800	8,600	8,800	8,400	7,900				
75	7,400	8,300	7,400	8,100	7,500	7,200				
80	6,300	7,800	6,300	7,200	6,500	6,300				
85	5,400	6,800	5,400	6,300	5,500	5,300				
90	4,500	6,000	4,600	5,400	4,700	4,500				
95	3,700	5,200	3,800	4,700	4,000	3,800				
100	3,000	4,500	3,100	4,000	3,300	3,200				
105	2,400	3,900	2,500	3,400	2,700	2,600				
110	1,800	3,300	1,900	2,800	2,200	2,000				
115		2,800		2,300						
120				1,900						
* n *	1	1	1	1	1	1				
1	92+	0+	92+	46+	92+	100+				
2	92+	92+	92+	92+	92+	100+				
3	92+	92+	92+	92+	92+	100+				
4	46+	92+	92+	92+	92+	100+				
5	46+	92+	46+	92+	92+	100+				
%										
ft/s	23	23	23	23	23	23				



85%

157 ft T	K 40° 34 ft

061513 TAB 134078 20.02

CODE 〉053〈 L134 0030 .x(x)

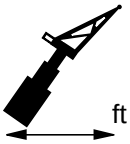
ft \ ft> < lbs	125	125	138	138	148	157				
55	13,300	10,300	12,100	10,200						
60	12,900	9,800	11,500	9,600	9,500	8,400				
65	11,600	9,300	11,000	9,200	9,100	8,100				
70	10,100	8,800	9,900	8,800	8,700	7,900				
75	8,800	8,400	8,700	8,400	8,300	7,600				
80	7,600	8,000	7,600	8,000	7,700	7,200				
85	6,500	7,600	6,600	7,400	6,700	6,500				
90	5,600	7,000	5,700	6,500	5,800	5,600				
95	4,800	6,300	4,900	5,700	5,000	4,900				
100	4,100	5,500	4,100	5,000	4,300	4,100				
105	3,400	4,800	3,500	4,300	3,600	3,500				
110	2,800	4,200	2,900	3,800	3,100	2,900				
115	2,200	3,700	2,300	3,200	2,500	2,400				
120			1,800	2,700	2,000	1,900				
* n *	1	1	1	1	1	1				
% 1	92+	0+	92+	46+	92+	100+				
2	92+	92+	92+	92+	92+	100+				
3	92+	92+	92+	92+	92+	100+				
4	46+	92+	92+	92+	92+	100+				
5	46+	92+	46+	92+	92+	100+				
ft/s	23	23	23	23	23	23				

	157 ft T	K 40° 34 ft	13,700 lbs	27 x 23 ft	360°		

85%

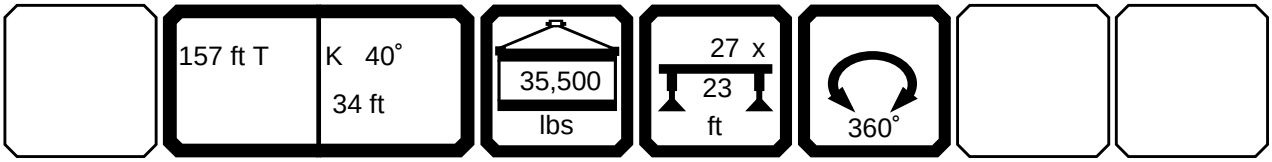
157 ft T	K 40°
	34 ft

061513 TAB 134075 20.02



ft> < lbs CODE 〉050〈 L134 0030 .x(x)

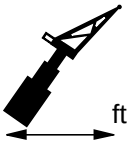
ft	125	125	138	138	148	157				
55	13,300	10,300	12,100	10,200						
60	13,100	9,800	11,500	9,600	9,500	8,400				
65	12,900	9,300	11,000	9,200	9,100	8,100				
70	12,700	8,800	10,500	8,800	8,700	7,900				
75	12,200	8,400	10,100	8,400	8,300	7,600				
80	11,400	8,000	9,700	8,100	8,000	7,300				
85	10,700	7,600	9,300	7,700	7,700	7,100				
90	10,000	7,200	9,000	7,400	7,400	6,900				
95	9,300	6,900	8,600	7,100	7,100	6,700				
100	8,600	6,700	8,200	6,900	6,900	6,400				
105	7,700	6,500	7,700	6,600	6,600	6,100				
110	6,900	6,100	7,000	6,300	6,500	5,800				
115	6,200	5,800	6,300	6,100	6,200	5,600				
120			5,600	5,800	5,800	5,300				
125					5,200	5,000				
130					4,600	4,500				
135					4,100	4,000				
140						3,500				
* n *	1	1	1	1	1	1				
1	92+	0+	92+	46+	92+	100+				
2	92+	92+	92+	92+	92+	100+				
3	92+	92+	92+	92+	92+	100+				
4	46+	92+	92+	92+	92+	100+				
5	46+	92+	46+	92+	92+	100+				
%										
ft/s	23	23	23	23	23	23				



85%

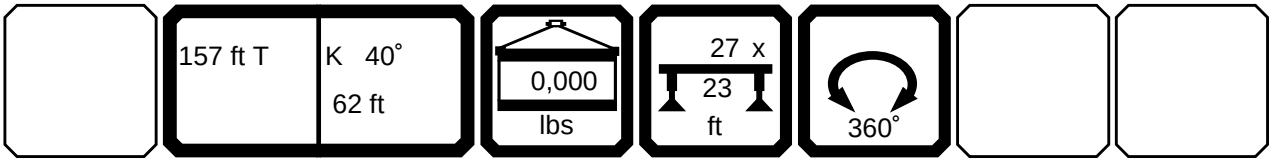
157 ft T	K 40°
	62 ft

061513 TAB 134080 20.02



ft> < lbs CODE 〉061〈 L134 0031 .x(x)

ft	125	125	138	138	148	157				
75	5,100	5,000								
80	5,000	4,900	4,900	4,800	4,600	4,300				
85	4,900	4,900	4,900	4,800	4,600	4,300				
90	4,300	4,800	4,300	4,700	4,300	4,000				
95	3,700	4,500	3,700	4,300	3,700	3,500				
100	3,000	4,000	3,000	3,600	3,100	2,900				
105	2,400	3,400	2,400	3,000	2,500	2,300				
110	1,800	2,900	1,800	2,500	2,000	1,800				
115		2,400		2,000						
120		2,000								
* n *	1	1	1	1	1	1				
1	92+	0+	92+	46+	92+	100+				
2	92+	92+	92+	92+	92+	100+				
3	92+	92+	92+	92+	92+	100+				
4	46+	92+	92+	92+	92+	100+				
5	46+	92+	46+	92+	92+	100+				
%										
ft/s	23	23	23	23	23	23				



85%

157 ft T	K 40°
	62 ft

061513 TAB 134079 20.02

ft> < lbs CODE 〉060〈 L134 0031 .x(x)

ft	125	125	138	138	148	157				
75	5,100	5,000								
80	5,000	4,900	4,900	4,800	4,600	4,300				
85	4,900	4,900	4,900	4,800	4,600	4,300				
90	4,900	4,800	4,800	4,700	4,600	4,300				
95	4,800	4,800	4,800	4,700	4,500	4,200				
100	4,700	4,700	4,600	4,700	4,500	4,200				
105	4,200	4,700	4,200	4,700	4,300	4,100				
110	3,600	4,500	3,600	4,200	3,700	3,500				
115	3,000	4,100	3,000	3,700	3,100	3,000				
120	2,500	3,600	2,500	3,100	2,600	2,500				
125	1,900	3,100	2,000	2,700	2,100	2,000				
130	1,500	2,600	1,500	2,200	1,700	1,500				
135		2,200		1,800						
140		1,800								
* n *	1	1	1	1	1	1				
% 1	92+	0+	92+	46+	92+	100+				
2	92+	92+	92+	92+	92+	100+				
3	92+	92+	92+	92+	92+	100+				
4	46+	92+	92+	92+	92+	100+				
5	46+	92+	46+	92+	92+	100+				
ft/s	23	23	23	23	23	23				

157 ft T	K 40°	9,000 lbs	27 x 23 ft	360°
	62 ft			

85%

157 ft T	K 40°
	62 ft

061513 TAB 134078 20.02

ft	ft> < lbs	CODE 〉059〈		L134 0031 .x(x)						
	125	**125**	**138**	**138**	**148**	**157**				
75	5,100	5,000								
80	5,000	4,900	4,900	4,800	4,600	4,300				
85	4,900	4,900	4,900	4,800	4,600	4,300				
90	4,900	4,800	4,800	4,700	4,600	4,300				
95	4,800	4,800	4,800	4,700	4,500	4,200				
100	4,800	4,700	4,800	4,700	4,500	4,200				
105	4,800	4,700	4,700	4,700	4,500	4,200				
110	4,400	4,500	4,400	4,600	4,400	4,200				
115	3,900	4,400	3,900	4,400	4,000	3,800				
120	3,300	4,200	3,300	4,000	3,400	3,300				
125	2,800	3,900	2,800	3,500	2,900	2,800				
130	2,300	3,400	2,300	3,000	2,400	2,300				
135	1,800	3,000	1,900	2,600	2,000	1,900				
140		2,500		2,100	1,600					
145				1,800						
150				1,400						
* n *	1	1	1	1	1	1				
1	92+	0+	92+	46+	92+	100+				
2	92+	92+	92+	92+	92+	100+				
3	92+	92+	92+	92+	92+	100+				
4	46+	92+	92+	92+	92+	100+				
5	46+	92+	46+	92+	92+	100+				
%										
ft/s	23	23	23	23	23	23				

157 ft T	K 40°	13,700 lbs	27 x 23 ft	360°
	62 ft			

85%

157 ft T	K 40°
	62 ft

061513 TAB 134075 20.02

ft> < lbs CODE 〉056〈 L134 0031 .x(x)

ft	125	125	138	138	148	157				
75	5,100	5,000								
80	5,000	4,900	4,900	4,800	4,600	4,300				
85	4,900	4,900	4,900	4,800	4,600	4,300				
90	4,900	4,800	4,800	4,700	4,600	4,300				
95	4,800	4,800	4,800	4,700	4,500	4,200				
100	4,800	4,700	4,800	4,700	4,500	4,200				
105	4,800	4,700	4,700	4,700	4,500	4,200				
110	4,700	4,500	4,700	4,600	4,500	4,200				
115	4,700	4,400	4,600	4,500	4,400	4,100				
120	4,600	4,200	4,600	4,300	4,300	4,100				
125	4,600	4,100	4,600	4,100	4,200	3,900				
130	4,600	4,000	4,600	4,000	4,100	3,800				
135	4,600	3,900	4,500	3,900	4,000	3,700				
140	4,500	3,700	4,300	3,800	3,900	3,600				
145			4,100	3,800	3,800	3,400				
150			3,700	3,700	3,700	3,200				
155			3,200	3,500	3,400	3,000				
160					3,000	2,800				
165						2,500				
170						2,100				
* n *	1	1	1	1	1	1				
1	92+	0+	92+	46+	92+	100+				
2	92+	92+	92+	92+	92+	100+				
3	92+	92+	92+	92+	92+	100+				
4	46+	92+	92+	92+	92+	100+				
5	46+	92+	46+	92+	92+	100+				
%										
ft/s	23	23	23	23	23	23				

	157 ft T	K 40° 62 ft	35,500 lbs	27 x 23 ft	360°		

Technical Data
Caractéristiques techniques

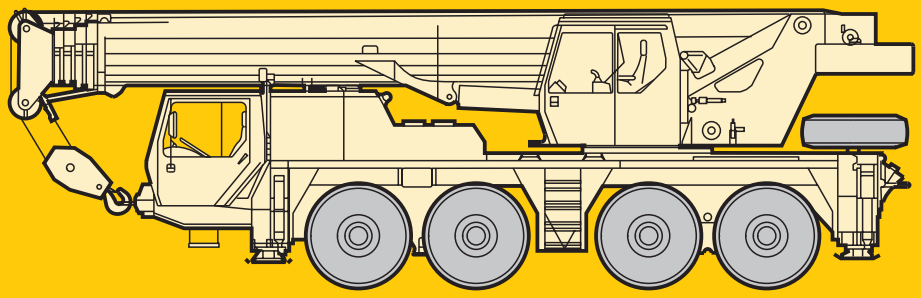
LTM 1080/1

Mobile Crane
Grue automotrice

Telescopic boom

Flèche télescopique

157 ft



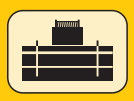
LIEBHERR

Lifting capacities on telescopic boom.
Forces de levage à la flèche télescopique.

LTM 1080/1


35 ft – 157 ft


360°


35500 lbs

85%

ft	35 ft *		47 ft	58 ft	69 ft	80 ft	92 ft	103 ft	114 ft	125 ft	136 ft	148 ft	157 ft	ft
9	183													9
10	169	149	148	137										10
11	158	141	140	131										11
12	148	133	133	126	110									12
13	139	126	126	121	107									13
14	131	120	120	116	104									14
15	124	114	114	111	101	84								15
16	117	109	109	106	98	81.5								16
17	111	104	104	102	95.5	79.5	67							17
18	105	99.5	99	97.5	93	77.5	65.5							18
20	94	90.5	90	89	87.5	73.5	63	54.5						20
22	85	83	83	82	80.5	69.5	60.5	52.4						22
24	77.5	76.5	76	75	73	66	58.1	50.4	43.5					24
26	71	70	69.5	68	65	62	55.7	48.4	42.2					26
28			64	62	58.9	56.9	53.1	46.6	41	35.5	30.3			28
30			58.6	56.3	53.3	51.6	50.1	44.9	39.8	34.5	29.6	26	20.9	30
32			54.2	51.4	48.8	47.3	46.3	43.1	38.8	33.5	28.9	25.6	20.5	32
34			50.2	47.4	45	43.7	42.9	41	37.4	32.6	28.2	25	20	34
36			46.4	44	41.7	40.5	39.9	38.7	36	31.6	27.5	24.3	19.5	36
38			42.7	40.5	38.4	37.4	36.9	36.4	34.5	30.7	26.9	23.6	19	38
40				37.4	35.4	34.5	34.2	34.1	32.9	29.8	26.2	23	18.6	40
45				31.1	29.8	29.1	28.9	29	28.5	27.4	24.1	21.2	17.5	45
50					25.2	24.7	24.6	24.9	24.6	24.6	22.3	19.7	16.4	50
55					21.2	21	21.1	21.4	21.3	21.8	20.6	18.3	15.4	55
60						18.9	18.2	18.6	18.5	19	19	17.1	14.4	60
65						17.4	15.4	17	16.2	16.8	16.8	15.9	13.5	65
70						15.9	14.1	15.8	14.3	14.9	15	14.8	12.8	70
75							12.9	14.4	13.3	13.1	13.3	13.6	12	75
80								12.9	12.4	11.5	12.3	12.2	11.3	80
85								11.4	11.7	10.8	11.5	10.6	10.5	85
90								10.2	11	10.2	10.3	9.5	9.4	90
95									10.2	9.5	9.3	8.5	8.4	95
100									9.5	8.8	8.4	7.6	7.5	100
105										8.1	7.6	6.9	6.7	105
110										7.4	6.9	6.2	6.1	110
115											6.3	5.6	5.5	115
120											5.8	5	4.9	120
125												4.5	4.4	125
130												4.1	4	130
135												3.7	3.6	135
140													3.2	140
I	0		0/ 0	46/ 0/ 0	92/ 0/ 0	92/ 0/ 0	92/ 0/ 0	92/ 0/ 0	92/ 0/ 0	92/ 0	92/46	92	100	I
II	0		46/ 0	46/ 0/ 0	46/ 0/ 0	92/ 0/ 0	92/ 0/ 0	92/92/ 0	92/92/46	92/92	92/92	92	100	II
III	0		0/ 0	0/ 0/ 0	0/ 0/ 0	0/92/ 0	46/92/46	46/92/92	92/92/92	92/92	92/92	92	100	III
IV	0		0/ 0	0/46/ 0	0/92/46	0/46/92	0/92/92	46/46/92	46/92/92	46/92	92/92	92	100	IV
% V	0		0/46	0/46/92	0/46/92	0/46/92	0/46/92	0/46/92	0/46/92	46/92	46/92	92	100	V %

* over rear / en arrière

TAB 106139/106145

Remarks referring to load charts.

1. The tabulated lifting capacities do not exceed 85% of the tipping load.
2. The crane's structural steelwork is in accordance with DIN 15018, part 3. Design and construction of the crane comply with DIN 15018, part 2, and with F.E.M. regulations.
3. The 85% overturning limit values take into account wind force 5 = wind speed 20 mph.
4. Lifting capacities are given in kips.
5. The weight of the hook blocks and hooks must be deducted from the lifting capacities.
6. Working radii are measured from the slewing centreline.
7. The lifting capacities given for the telescopic boom only apply if the folding jib is taken off.
8. Lifting capacities are subject to modifications.
9. Lifting capacities above 128 kips / 172 kips only with additional pulley block / special equipement.

Remarques relatives aux tableaux des charges.

1. Les forces de levage indiquées ne dépassent pas 85% de la charge de basculement.
2. La norme DIN 15018, 3ème partie est appliquée pour les charpentes. La construction de la grue est réalisée conformément à la norme DIN 15018, 2ème partie, et aux règles de la F. E. M.
3. A 85% de la charge de basculement, il a été tenu compte d'un vent de force 5 = vitesse de vent 20 mph.
4. Les forces de levage sont données en kips.
5. Les poids des moufles et crochets doit être soustrait des charges indiquées.
6. Les portées sont calculées à partir de l'axe de rotation.
7. Les forces indiquées pour la flèche télescopique s'entendent fléchette dépliable déposée.
8. Les forces de levage sont modifiables sans préavis.
9. Forces de levage plus de 128 kips / 172 kips seulement avec un moufle complémentaire / équipement supplémentaire.

Lifting capacities are given in kips (1,000 lbs).

Lifting capacities on telescopic boom.
Forces de levage à la flèche télescopique.

LTM 1080/1


35 ft – 157 ft


360°


18740 lbs

85%

ft	35 ft	47 ft	58 ft	69 ft	80 ft	92 ft	103 ft	114 ft	125 ft	136 ft	148 ft	157 ft	ft
10	134	134	124										10
11	127	127	119										11
12	120	120	114	99.5									12
13	113	113	110	97									13
14	108	107	105	94.5									14
15	102	102	101	91.5	76								15
16	97	96.5	95.5	89	74								16
17	92	92	90.5	85	72	61							17
18	88	87.5	85.5	80	70.5	59.6							18
20	79	78.5	76	70	66	57.1	49.6						20
22	71.5	71	66.5	61.5	58.5	54.3	47.6						22
24	64	63.5	58.4	54.5	52	50.2	45.6	39.5					24
26	56.7	56.6	51.8	48.5	46.4	45	43.6	38.4					26
28		50	46.6	43.5	41.8	40.6	39.8	36.9	32.3	27.6			28
30		44	41.8	39	37.5	36.6	36	35.1	31.4	26.9	23.6	19	30
32		39.9	37.8	35.3	34	33.3	32.9	32.1	30.5	26.3	23.2	18.6	32
34		37.3	34.3	32.2	31.1	30.6	30.3	29.7	29	25.6	22.7	18.2	34
36		34.2	31.1	29.5	28.6	28.2	28	27.5	27.2	24.9	22.1	17.7	36
38		31.1	27.9	26.9	27.1	25.8	26.4	25.3	25.3	24.2	21.5	17.3	38
40			25.1	24.5	25.8	23.6	25.2	23.3	23.6	23.3	20.9	16.9	40
45			21.6	19.7	23	20.3	22.2	20.8	19.9	19.7	19.3	15.9	45
50				17.4	20	18.1	19.2	18.7	17.4	17.9	17	14.9	50
55				15.8	17.2	16.4	16.5	16.6	15.9	16	14.8	13.8	55
60					14.7	15	14.2	14.9	14.4	14	12.9	12.6	60
65					12.7	13.1	12.6	13.5	12.9	12.2	11.2	11	65
70					11.1	12.1	11.7	11.8	11	10.5	9.6	9.5	70
75						10.9	10.6	10.3	9.5	9.1	8.3	8.2	75
80							9.3	9	8.4	8	7.2	7.1	80
85							8.4	8.1	7.4	7	6.3	6.1	85
90							7.5	7.3	6.6	6.2	5.5	5.4	90
95								6.5	5.9	5.5	4.8	4.7	95
100								5.8	5.3	4.9	4.1	4	100
105									4.7	4.3	3.6	3.5	105
110									4.1	3.8	3.1	3	110
115										3.3	2.6	2.5	115
120										2.9	2.2	2.1	120
I	0	0/ 0	46/ 0/ 0	92/ 0/ 0	92/ 0/ 0	92/ 0/ 0	92/ 0/ 0	92/ 0/ 0	92/ 0	92/46	92	100	I
II	0	46/ 0	46/ 0/ 0	46/ 0/ 0	92/ 0/ 0	92/ 0/ 0	92/92/ 0	92/92/46	92/92	92/92	92	100	II
III	0	0/ 0	0/ 0/ 0	0/ 0/ 0	0/92/ 0	46/92/46	46/92/92	92/92/92	92/92	92/92	92	100	III
IV	0	0/ 0	0/46/ 0	0/92/46	0/46/92	0/92/92	46/46/92	46/92/92	46/92	92/92	92	100	IV
% V	0	0/46	0/46/92	0/46/92	0/46/92	0/46/92	0/46/92	0/46/92	46/92	46/92	92	100	V %

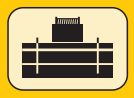
TAB 106142

Les forces de levage sont données en kips (1,000 lbs).

Lifting capacities on telescopic boom.
Forces de levage à la flèche télescopique.


35 ft – 58 ft


0°


35500 lbs[1)]
18740 lbs[2)]

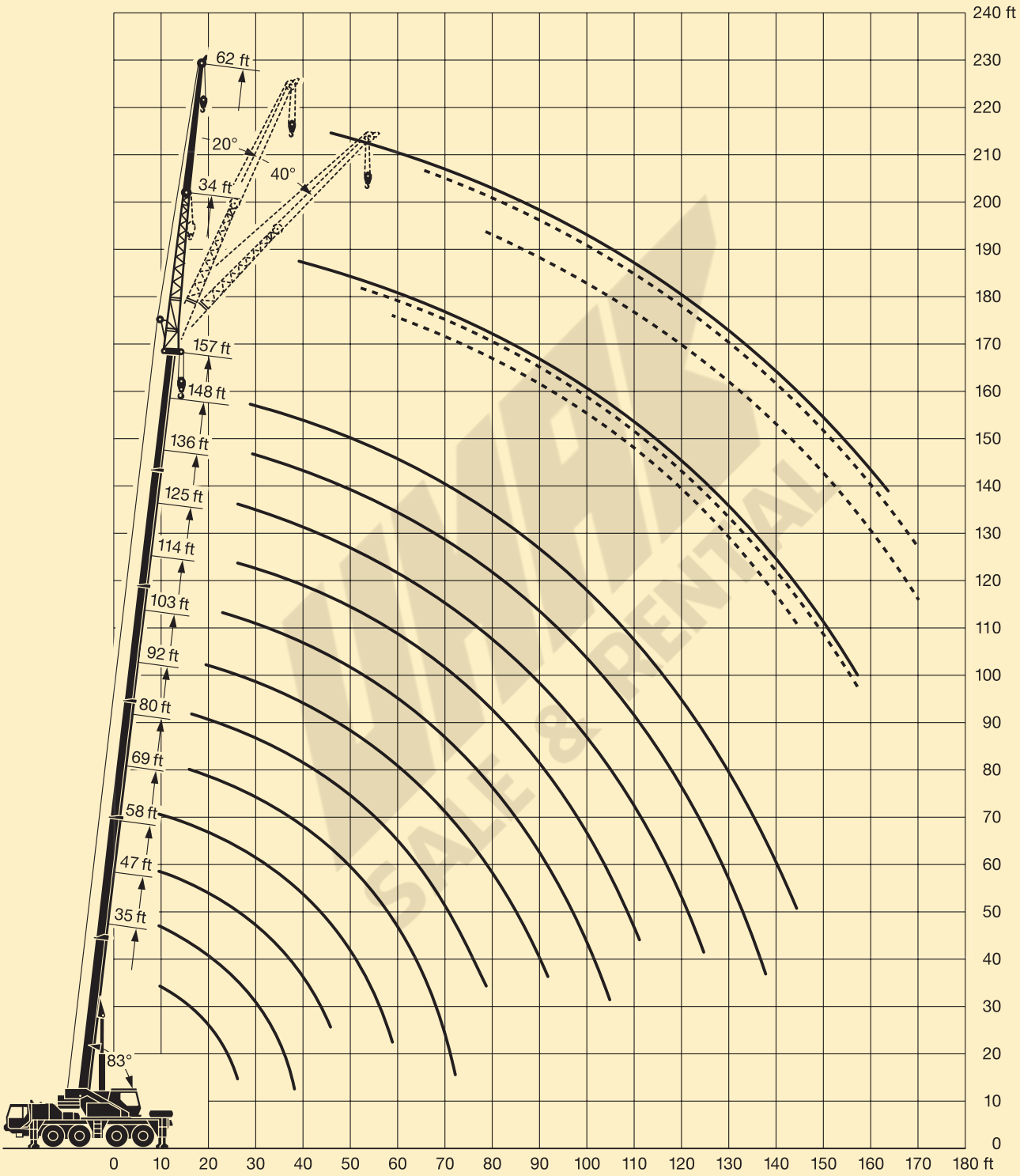
85%

ft	35 ft 1)	35 ft 2)	47 ft 1)	47 ft 2)	58 ft 1)	58 ft 2)	ft
10	39.6	37.8	41	39.3	41.8	40.1	10
11	36.9	35.2	38.4	36.7	39.2	37.5	11
12	34.5	32.9	36	34.4	36.8	35.2	12
13	32.2	30.7	33.8	32.3	34.6	33.1	13
14	30.3	28.8	31.8	30.4	32.6	31.2	14
15	28.4	27	30	28.6	30.8	29.4	15
16	26.8	25.4	28.3	27	29.2	27.8	16
17	25.3	24	26.8	25.6	27.7	26.4	17
18	23.9	22.7	25.5	24.3	26.3	25.1	18
20	21.3	20.1	22.9	21.7	23.7	22.6	20
22	19.1	18.1	20.7	19.7	21.6	20.5	22
24	17.2	16.2	18.8	17.8	19.7	18.7	24
26	15.5	14.6	17.1	16.1	18	17	26
28			15.6	14.7	16.5	15.6	28
30			14.3	13.4	15.1	14.3	30
32			13.1	12.3	14	13.2	32
34			12	11.3	12.9	12.2	34
36			11.1	10.4	12	11.3	36
38			10.2	9.5	11	10.3	38
40					10.2	9.5	40
45					8.4	7.8	45

%							
	I	0	0/ 0		46/ 0/ 0		I
	II	0	46/ 0		46/ 0/ 0		II
	III	0	0/ 0		0/ 0/ 0		III
	IV	0	0/ 0		0/46/ 0		IV
	V	0	0/46		0/46/92		V

TAB 106189 / 106191

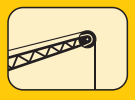
Lifting heights.
Hauteurs de levage.



Lifting capacities on the folding jib.
Forces de levage à la fléchette pliante.

LTM 1080/1


125 ft – 157 ft


34 ft – 62 ft


360°


35500 lbs

85%

ft	125 ft						136 ft						148 ft						157 ft						ft
	34 ft			62 ft			34 ft			62 ft			34 ft			62 ft			34 ft			62 ft			
	0°	20°	40°	0°	20°	40°	0°	20°	40°	0°	20°	40°	0°	20°	40°	0°	20°	40°	0°	20°	40°	0°	20°	40°	
34	21																								34
36	20.7																								36
38	20.5																								38
40	20.3			8.1			16.8						13.6						9.9						40
45	19.3			8			15.9						12.9						9.7						45
50	17.9	15.5		7.8			15.1	13.4		7.2			12.2	10.9		6.5			9.4			5.8			50
55	16.6	15.1	13.3	7.6			14.3	12.8	12.1	7			11.5	10.4		6.4			9.1	8.8		5.9			55
60	15.4	14.6	13.1	7.3	6.2		13.4	12.2	11.5	6.9	5.9		10.9	9.9	9.5	6.4			8.7	8.5	8.4	5.9			60
65	14.4	13.9	12.9	7.1	6.1		12.6	11.6	11	6.7	5.8		10.3	9.4	9.1	6.3			8.3	8.2	8.1	5.8			65
70	13.4	13	12.7	7	5.9		11.8	11	10.5	6.6	5.7		9.8	9	8.7	6.2	5.3		8	7.9	7.9	5.6	5		70
75	12.4	12.1	12.2	6.8	5.8	5.1	11	10.5	10.1	6.5	5.6		9.4	8.6	8.3	6.1	5.2		7.7	7.6	7.6	5.4	4.9		75
80	11.4	11.3	11.4	6.6	5.7	5	10.3	10.1	9.7	6.3	5.5	4.9	8.9	8.2	8	5.9	5.1	4.6	7.4	7.4	7.3	5.3	4.9	4.3	80
85	10.1	10.5	10.7	6.5	5.6	4.9	9.6	9.7	9.3	6.2	5.4	4.9	8.5	7.9	7.7	5.8	5.1	4.6	7	7.1	7.1	5.1	4.8	4.3	85
90	9	9.6	10	6.3	5.5	4.9	8.9	9.1	9	6.1	5.3	4.8	8.1	7.6	7.4	5.7	5	4.6	6.7	6.8	6.9	4.9	4.8	4.3	90
95	8	8.7	9.1	6.2	5.4	4.8	8.1	8.5	8.6	6	5.2	4.8	7.7	7.3	7.1	5.5	4.9	4.5	6.4	6.5	6.7	4.8	4.7	4.2	95
100	7.2	7.7	8.2	6	5.3	4.8	7.2	7.8	8.1	5.9	5.1	4.8	7.2	7	6.9	5.3	4.9	4.5	6.1	6.2	6.4	4.6	4.5	4.2	100
105	6.4	6.9	7.3	5.8	5.2	4.8	6.6	6.9	7.3	5.8	5	4.7	6.6	6.7	6.6	5.1	4.8	4.5	5.8	6	6.1	4.5	4.4	4.2	105
110	5.9	6.2	6.5	5.6	5.1	4.7	6.3	6.3	6.6	5.7	4.9	4.7	5.9	6.3	6.5	4.9	4.7	4.5	5.6	5.7	5.8	4.4	4.3	4.2	110
115	5.6	5.8	5.8	5.5	5	4.7	5.9	6	6.1	5.5	4.9	4.6	5.3	5.7	6	4.7	4.5	4.4	5.1	5.4	5.6	4.2	4.2	4.1	115
120	5.3	5.4		5.1	4.9	4.6	5.4	5.7	5.8	5.1	4.8	4.6	4.7	5.1	5.4	4.5	4.4	4.3	4.5	5	5.2	4	4	4.1	120
125	5	5.1		4.6	4.9	4.6	4.9	5.2		4.6	4.8	4.6	4.2	4.6	4.8	4.4	4.2	4.2	4	4.4	4.7	3.9	3.9	3.9	125
130	4.7	4.8		4.2	4.8	4.6	4.4	4.7		4.3	4.7	4.6	3.7	4.1	4.3	4.1	4.1	4.1	3.6	3.9	4.2	3.7	3.8	3.8	130
135	4.5	4.5		3.9	4.4	4.6	4	4.3		4.1	4.3	4.5	3.3	3.6	3.8	3.7	3.9	4	3.1	3.5	3.7	3.5	3.7	3.7	135
140	4.1	4.2		3.7	3.9	4.3	3.6	3.8		3.9	3.9	4.2	2.9	3.2		3.3	3.8	3.9	2.8	3.1	3.2	3.1	3.5	3.6	140
145	3.8			3.5	3.6		3.3	3.4		3.6	3.7	3.9	2.6	2.8		3	3.5	3.8	2.4	2.7		2.8	3.4	3.4	145
150	3.4			3.3	3.4		2.9	3.1		3.3	3.6	3.7	2.2	2.5		2.6	3.2	3.5	2.1	2.3		2.4	3	3.2	150
155				3.1	3.2		2.6			3	3.3	3.5	1.9	2.1		2.3	2.8	3.1	1.7	2		2.1	2.7	3	155
160				2.9	3					2.7	3		1.5	1.7		2	2.5	2.8		1.7		1.8	2.3	2.7	160
165				2.7	2.8					2.4	2.7					1.7	2.2					1.6	2	2.3	165
170				2.6	2.6					2.1	2.4					1.5	1.9					1.3	1.7	2	170
175				2.3						1.8	2.1						1.6						1.4		175
180										1.6															180

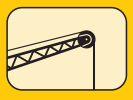
%					
I	92/ 0	92/46	92	100	I
II	92/92	92/92	92	100	II
III	92/92	92/92	92	100	III
IV	46/92	92/92	92	100	IV
V	46/92	46/92	92	100	V

TAB 106161 / 106167 / 106173

Lifting capacities on the folding jib.
Forces de levage à la fléchette pliante.

LTM 1080/1

 125 ft – 157 ft

 34 ft – 62 ft

 360°

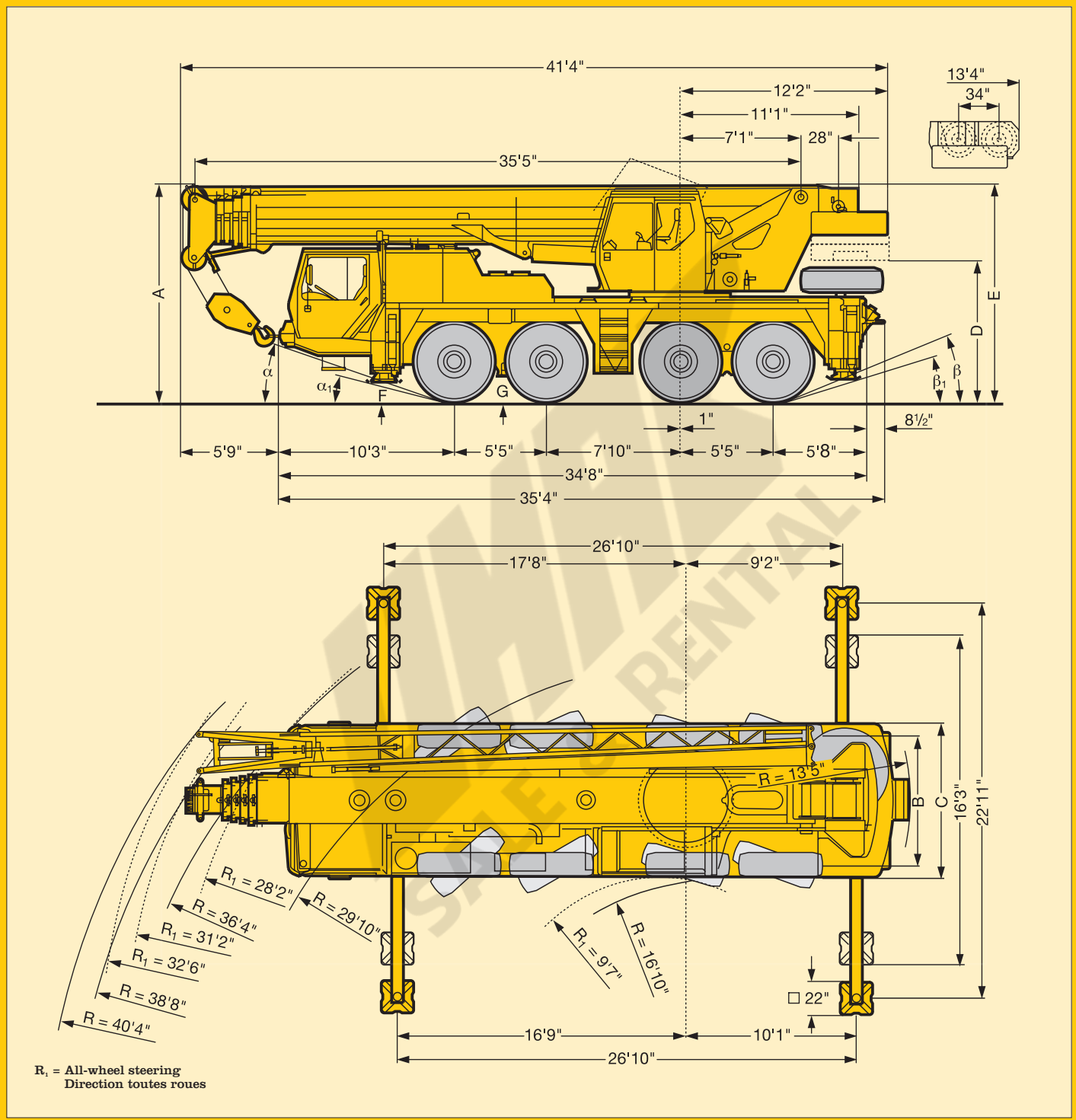
 18740 lbs

85%

ft	125 ft						136 ft						148 ft						157 ft						ft
	34 ft			62 ft			34 ft			62 ft			34 ft			62 ft			34 ft			62 ft			
	0°	20°	40°	0°	20°	40°	0°	20°	40°	0°	20°	40°	0°	20°	40°	0°	20°	40°	0°	20°	40°	0°	20°	40°	
34	19																								34
36	18.9																								36
38	18.7																								38
40	18.4			7.4			15.2						12.4						9						40
45	17.5			7.3			14.4						11.7						8.9						45
50	15.7	14.1		7.1			13.7	12.2		6.6			11.1	9.9		5.9			8.6			5.3			50
55	13.7	13.7	12.1	6.9			12.8	11.6	11	6.4			10.5	9.4		5.8			8.2	8		5.3			55
60	11.9	13.1	11.9	6.7	5.6		11.7	11	10.4	6.2	5.3		9.9	9	8.7	5.8			7.9	7.7	7.7	5.4			60
65	10.3	11.4	11.7	6.5	5.5		10.2	10.5	10	6.1	5.2		9.4	8.6	8.2	5.7			7.6	7.5	7.4	5.3			65
70	9	10	10.7	6.3	5.4		8.9	9.7	9.6	6	5.2		8.7	8.2	7.9	5.6	4.8		7.3	7.2	7.1	5.1	4.5		70
75	8.3	8.7	9.5	6.2	5.3	4.6	8.4	8.7	9	5.9	5.1		7.8	7.8	7.6	5.5	4.8		7	6.9	6.9	4.9	4.5		75
80	7.8	7.6	8.3	6	5.2	4.6	7.7	7.6	8.3	5.8	5	4.5	6.8	7.4	7.3	5.4	4.7	4.2	6.6	6.7	6.7	4.8	4.4	3.9	80
85	7.3	6.9	7.2	5.9	5.1	4.5	6.8	7.2	7.2	5.6	4.9	4.4	5.9	6.7	7	5.3	4.6	4.2	5.7	6.4	6.5	4.6	4.4	3.9	85
90	6.5	6.6	6.5	5.5	5	4.5	6	6.5	6.7	5.4	4.8	4.4	5.2	5.9	6.3	5.2	4.5	4.1	4.9	5.7	6.1	4.5	4.3	3.9	90
95	5.8	6.2	6.3	5	4.9	4.4	5.2	5.8	6.2	5	4.7	4.3	4.5	5.1	5.6	4.8	4.5	4.1	4.2	4.9	5.5	4.3	4.3	3.9	95
100	5.1	5.6	5.9	4.7	4.8	4.4	4.6	5.1	5.5	4.7	4.6	4.3	3.8	4.4	4.9	4.3	4.4	4.1	3.6	4.2	4.7	4	4.1	3.8	100
105	4.5	4.9	5.2	4.5	4.7	4.3	4	4.5	4.8	4.5	4.6	4.3	3.2	3.8	4.2	3.7	4.4	4.1	3	3.6	4.1	3.5	4	3.8	105
110	4	4.4	4.6	4.3	4.2	4.3	3.5	3.9	4.2	4	4.2	4.2	2.7	3.3	3.6	3.2	4.1	4.1	2.5	3.1	3.5	3	3.9	3.8	110
115	3.5	3.9	4.1	4	4	4.1	3	3.4	3.7	3.5	4	4.1	2.3	2.8	3.1	2.7	3.7	4	2.1	2.6	3	2.5	3.5	3.8	115
120	3.1	3.4		3.5	3.8	3.8	2.6	3	3.2	3	3.8	3.9	1.8	2.3	2.6	2.3	3.2	3.8		2.1	2.5	2.1	3	3.6	120
125	2.7	3		3.1	3.7	3.7	2.2	2.5		2.6	3.3	3.7		1.8	2.1	1.9	2.7	3.3			2		2.5	3.2	125
130	2.3	2.5		2.8	3.3	3.6	1.9	2.2		2.3	2.9	3.4		1.4	1.7	1.5	2.3	2.9			1.5		2.1	2.8	130
135	1.9	2.1		2.4	2.9	3.3	1.5	1.8		1.9	2.5	3					1.9	2.5					1.7	2.3	135
140	1.6	1.8		2.1	2.6	2.9				1.6	2.2	2.6					1.5	2.1						1.9	140
145				1.8	2.2						1.9	2.2													145
150				1.5	1.9						1.5	1.9													150
155					1.6							1.5													155
I	92/ 0						92/46						92						100						I
II	92/92						92/92						92						100						II
III	92/92						92/92						92						100						III
IV	46/92						92/92						92						100						IV
V %	46/92						46/92						92						100						V %

TAB 106158 / 106164 / 106170

Dimensions.
Encombrement.



R₁ = All-wheel steering
Direction toutes roues

	A	Dimensions / Encombrement										
		A	B	C	D	E **	F	G	α	α_1	β	β_1
16.00 R 25	12'8"	12'4"	7'7"	9'	9'6"	12'8"	13 1/3"	15 1/3"	19°	16°	23°	16°

* lowered / abaissé

** with folding jib / avec fléchette pliante

Weights.
Poids.

Axle Essieu	1	2	3	4	Total weight Poids total
lbs	26400	26400	26400	26400	105600[1)]

[1)] with 18740 lbs counterweight / avec contrepoids 18740 lbs

Load (kips) Forces de levage kips	No. of sheaves Poulies	No. of lines Brins	Weight lbs Poids lbs
176	7	14	950
128	5	10	730
84	3	7	880
35	1	3	520
12.5	–	1	240

Working speeds.
Vitesses.

	1	2	3	4	5	6	R_1	R_2	%
mph	6.0	9.2	14.4	22.4	32.9	49.7	6	14.4	35 %
mph	3.9	6	9.3	14.5	21.2	33	3.9	6	60 %
	16.00 R 25								

Drive Mécanismes	infinitely variable en continu	Rope diameter / Rope length Diamètre du câble / Longueur du câble	Max. single line pull Effort au brin maxi.
1	0 – 426 ft/min single line ft/min au brin simple	2/3" / 820'	12800 lbs
2	0 – 426 ft/min single line ft/min au brin simple	2/3" / 690'	12800 lbs
360°	0 – 2.0 rpm		
	approx. 48 seconds to reach 83° boom angle env. 48 s jusqu'à 83°		
	approx. 240 seconds for boom extension from 35 ft – 157 ft env. 240 s pour passer de 35 ft – 157 ft		

Crane carrier.

LTM 1080/1

Frame:	Liebherr designed and manufactured, box-type, torsion resistant design of high-tensile fine grained structural steel.
Outriggers:	4-point support, all-hydraulic horizontal and vertical operation.
Engine:	6-cylinder Diesel engine, make Liebherr, type D 9406 TI-E, watercooled, 320 kW (435 HP) at 2100 min^{-1} acc. to ECE-R 24.03 and 2001/27/EG (Euro 3), max. torque 1900 Nm at 1100 – 1400 min^{-1}, engine management with Liebherr data bus. Fuel tank: 400 l.
Transmission:	ZF power shift gear, with torque converter, lock-up and integrated off-road ratio, additional activation of front wheel drive, 6 forwards and 2 reverse speeds.
Axles:	All axles steered. Axles 1, 3 and 4 with planetary gears and differential locks.
Suspension:	All axles with hydropneumatic suspension and hydraulic locking facility.
Tyres:	8 tyres. Tyre size: 16.00 R 25.
Steering:	Front axles mechanically steered, with hydraulic power assistance and stand-by steering pump. Rear axles hydraulically steered. All axles steered hydrostatically from crane cab. Steering acc. to EC directive 70/311/EEC.
Brakes:	Service brake: All-wheel servo-air brake, dual circuit system. Hand brake: Spring-loaded, acting on all wheels of axles 2, 3 and 4. Sustained-action brake: Exhaust retarder with additional Liebherr braking system Brakes acc. to EC directive 71/320/EEC.
Driving cab:	Two-men driving cab, steel sheet design, with dipping varnish and powder coating. With control elements and instruments for driving.
Electrical system:	Control of the electrical and electronical components by modern data bus technique. 24 Volt DC, 2 batteries, lighting according to traffic regulations.

Crane superstructure.

Frame:	Liebherr-made torsion resistant, welded construction of high-tensile structural steel, linked to carrier by a three-row roller slewing ring for 360° continuous rotation.
Crane drive:	Diesel-hydraulic with 1 double axial piston variable displacement pump with automatic capacity control, 1 double gear pump, driven by the carrier Diesel engine, open oil circuits with electrically controlled "load sensing", operation of 4 movements simultaneously.
Crane control:	By 2 control levers (joystick type) and by electronic speed variation of Diesel engine, electric pilot control with stepless control of all crane motions. Liebherr data bus technique for data transfer.
Hoist gear:	Axial piston fixed displacement motor, hoist drum with integrated planetary gear and spring-loaded static brake, actuation by open oil circuit.
Luffing gear:	1 differential ram with pilot operated brake valve.
Slewing gear:	Hydraulic motor, planetary gear with spring-loaded static brake, actuation by open oil circuit. Continuous control of slewing speed.
Crane cab:	All-steel construction, fully galvanized, with safety glass, heater, operating and control elements. Cab tiltable backwards.
Safety devices:	LICCON safe load indicator, hoist limit switch, safety valves against rupture of pipes and hoses.
Telescopic boom:	Buckling resistant and torsion-proof design of high tensile steel with oviform boom profile, 1 base section and 5 telescopic sections. All telescopic sections extendable hydraulically and independently from one another. Rapid-cycle telescoping system "TELEMATIK". Boom length: 35 ft – 157 ft.
Counterweight:	18740 lbs basic counterweight.
Electric system:	Control of the electrical and electronical components by modern data bus technique.

Complementary equipment.

Folding jib:	34 ft – 62 ft long, for mounting on telescopic boom at 0°, 20° and 40°.
2nd hoist gear:	For two-hook operation, or with folding jib in case main hoist shall remain reeved.
Additional counterweight:	16760 lbs for a total counterweight of 35500 lbs.
Drive 8 x 8:	Axle 2 additionally driven.

Other equipments available on request.

Châssis porteur.

LTM 1080/1

Châssis:	Fabrication Liebherr, construction en caisson indéformable, en acier à haute résistance à grains fins.
Stabilisateurs:	Calage en 4 points, à telescopage horizontal et vérinage entièrement hydrauliques.
Moteur:	Diesel 6 cylindres, marque Liebherr, type D 9406 TI-E, refroidi par eau, puissance 320 kW (435 ch) à 2100 min^{-1} selon ECE-R 24.03 et 2001/27/EG (Euro 3), couple max. 1900 Nm à 1100 – 1400 min^{-1}, gestion électronique par Liebherr bus de données. Réservoir à carburant: 400 l.
Boîte de vitesse:	ZF à changement de rapports en charge avec convertisseur de couple, lock-up et étage gamme terrain integré et actionnement additionnel de l'entraînement de l'essieu avant. 6 rapports avants et 2 rapports arrières.
Essieux:	Tous les essieux sont directeurs. Les essieux 1, 3 et 4 avec planétaires et blockages de différentiels.
Suspension:	Tous les essieux sont suspendus hydropneumatiquement et blocable hydrauliquement.
Pneumatiques:	8 roues. Taille: 16.00 R 25.
Direction:	Direction mécanique à assistance hydraulique des essieux avants. Pompe de secours. Direction des essieux arrières enclenchable hydrauliquement. Direction hydrostatique de tous les essieux à commande depuis la cabine du grutier. Direction selon directive CE 70/311/CEE.
Freins:	Frein de service: servo-frein pneumatique à deux circuits indépendants agissant sur toutes les roues. Frein à main: par cylindres à ressorts, agissant sur les roues des essieux 2, 3 et 4. Frein à régime continu: Ralentisseur sur échappement avec système de freinage additionnel Liebherr. Freins selons directive CE 71/320/CEE.
Cabine:	Cabine conducteur bi-place en tôle d'acier revêtue anti-corrosion par bain de cataphorèse, peinte par poudrage polyester et cuisson au four comportant tous les organes de commande et de contrôle nécessaire à la conduite du véhicule.
Installation électrique:	Composants électriques et électroniques reliés entre eux par bus de données moderne. Courant continu 24 Volts, 2 batteries, éclairage conforme au code de la route.

Partie tournante.

Châssis:	Construction mécanosoudée en tôle d'acier à haute résistance à grains fins. Reliée au porteur par une couronne d'orientation à 3 rangées de rouleaux. Rotation totale 360°.
Entraînement:	Diesel hydraulique avec 1 pompe double à débit variable et regulation de puissance automatique, 1 pompe à engrenages double, entraînés par le moteur Diesel du porteur, circuits hydrauliques ouverts avec "load sensing", régulé électriquement. 4 mouvements simultanés practicables.
Commande:	Par deux manipulateurs (type manche à balai) dans la cabine du grutier, et par variation électronique du régime du moteur Diesel, servo-commande électrique avec régulation progressive en continu de tous les mouvements en simultané. Technique de transmission par bus de données Liebherr.
Treuil:	Moteur hydraulique à cylindree constante, treuil à réducteur planétaire incorporé et frein d'arrêt à ressort, en circuit hydraulique ouvert.
Relevage de flèche:	1 vérin différentiel à soupape pilotage de freinage.
Orientation:	Moteur hydraulique, réducteur planétaire, frein d'arrêt commandé par ressort en circuit hydraulique ouvert. Vitesse d'orientation réglable en continu.
Cabine de grue:	Entièrement en tôle d'acier avec vitrage de sécurité, chauffage, tous les instruments de commande et de contrôle. Cabine inclinable sur l'arrière.
Sécurités:	Contrôleur de charge LICCON, fin de course crochet haut, clapets de sécurité en cas de ruptures de flexibles.
Flèche télescopique:	Construction en acier à haute résistance à grains fins à profil oval à haute résistance au flambage, 1 élément de base et 5 éléments télescopiques. Chaque élément télescopable indépendamment de l'autre. Système de télescope «Télématik» séquentiel rapide. Télescope: 35 ft à 157 ft.
Contrepoids:	Contrepoids de base 18740 lbs.
Circuit électrique:	Composants électriques et électroniques reliés entre eux par bus de données moderne.

Equipement optionnel.

Fléchette pliante:	34 ft à 62 ft de long, pour montage à la flèche télescopique à 0°, 20° ou 40°.
Deuxième treuil:	Pour le levage avec 2 crochets ou pour le travail avec fléchette pliante lorsque le câble de levage principale reste mouflé.
Contrepoids complémentaire:	16760 lbs pour une masse totale de 35500 lbs.
Entraînement 8 x 8:	Essieu 2 est entraîné additionnellement.

Autres équipements supplémentaires sur demande.

Please contact
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