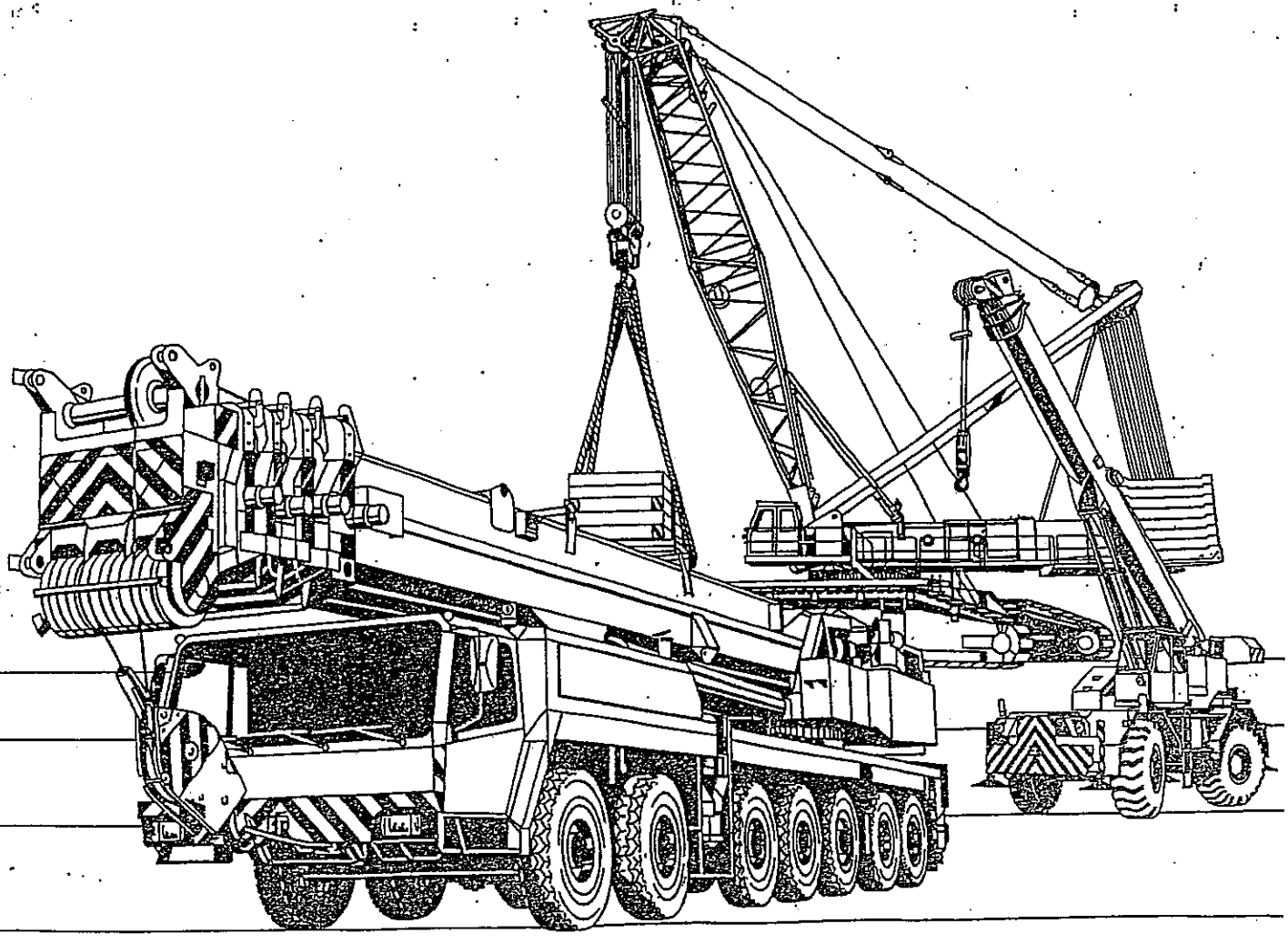
1-3

LTM 1090/1

Traglasttabellen
Load charts



LIEBHERR

LIEBHERR

TELESCOPIC BOOM- MOBILE CRANE

TYPE LTM 1090/1

Load charts
and notes for using the load charts

crane number	**0022808**
date	**10, 24, 1995**

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DANGER: The regulations in the "Operating Instructions" for crane operations are decisive. If these are not observed, there is a risk of ACCIDENTS!

1. Explanations

1.1 The load capacity value in the load charts are indicated in metric tons [t].

1.2 The working radius [m] is the horizontal distance between the center of gravity of the load from the slewing axis of the crane superstructure as measured from the ground. This also applies when the crane is subjected to loads; i.e., this includes boom flexure.

1.3 Boom positions other than those specified in the load capacity tables are prohibited.

1.4 The boom must only be moved in those ranges for which load capacity values are given, even without a load, as otherwise the crane can topple. In normal operations, this is prevented by the overload safety device. When "Assembly" is engaged, (with the assembly key-operated switch), the boom must only be luffed or lowered within the specified working radius ranges.

1.5 The given load capacities include the weight of the slinging tackle, hoisting and take-up tackle. The possible weight of the load to be hoisted is thus less than the weights above.

1.6 The number values in the row "Extension condition of the telescopic section in percent"of the load charts indicate how far the individual telescopic sections must be extended in order to reach a certain boom length (0 = completely retracted, 100 = completely extended). Any extension conditions other than those indicated are prohibited.

1.7 If the crane is equipped with tires of size 14.00-25, an additional central ballast is mounted on the crane chassis.

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 (simultaneously on both sides) to the precise dimension specified in the applicable 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 he 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.

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

3.1 The cranes Overload Safety Device LICCON must be programmed for the operating mode "freestanding on tires", that means, part III of this booklet contains load charts for this equipment mode.

3.2 The telescopic boom may be extended to a maximum length of 19.1 m.
To slew the superstructure to the working position "over rear" the crane must be supported and horizontally aligned before raising the telescopic boom from its rest. This procedure requires that the sliding outrigger arms are extended to a support base for which there are load charts in this booklet and secured with pins. The telescopic boom must be completely retracted. The Overload Safety Device LICCON must be set to the appropriate and corresponding operating mode. The same procedure must be carried out in order to return the crane from the working position "freestanding, working over rear" back to driving condition.

3.2 The ground beneath the crane must be in a condition to securely bear the maximum operating geight 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 operation	air pressure for crane operation "freestanding on tires"
14.00-25	10 bar	10 bar
16.00-25	9 bar	10 bar

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

4. Driving with a 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.

5.1 if the crane is unsupported and the slewing platform is rotated out of the crane's longitudinal axis. Before slewing the superstructure, the crane must be supported;

5.2 if the loads, boom lengths and radiiindicated in the appropriate load chart are not strictly adhered to;

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

5.4 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.

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

5.6 if in operating condition "crane supported":

5.6.1 the crane is not propeerly supported on all 4 hydraulic supports;

5.6.2 the crane is not adjusted horizontally;

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

5.6.4 the sliding arms are not secured with pins;

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

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

5.7.1 the telescopic boom is extended to a length of more than 19.1 m;

5.7.2 the slewing platform is not positioned in vehicle's longitudinal axis over rear;

5.7.3 the axle suspension is not blocked;

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

5.7.5 the ground is not level an not without inclination;

5.7.6 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 4 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**

7.1 Winch 1 (main hoisting gear)
Winch 1 is designed for a maximum rope tension of 78.8 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)
The information given under point 7.1 applies here also. If crane is equipped with winch 2, the weight of counterweight is reduced by 1.0 t.

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. 78.8 kN, only 726 kN (74 t) can be pulled with a 10-fold line reeving, instead of 788 kN (79 t).

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.

9. Hook blocks and load hooks

load [t]	number of pulleys	tare weight [t]
90,0	7	1,00
80,8	5	0,80
53,0	3	0,45
23,4	1	0,33
7,9	0	0,19

10. Working platform

10.1 If the crane is equipped with a working platform, refer to Chapter II for working radius tables for operation with a working platform. Never exceed or undershoot the working range specified in the working radius tables.

10.2 The maximum permisible burden and number of persons which the working platform can carry is stated on the identification plate of the platform. These limits must be observed under all circumstances.

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.

11.1 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 (see separate operating instructions "LICCON Overload Safety Device for Liebherr Mobile Cranes").

11.2 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.

11.3 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.

11.4 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.

11.5 Gear cam limit switches on the cable winches ensure that 3 safety turns remain on the rope drums. When the final cable 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 cable has been changed, then the corresponding limit switch must be reset before resuming operation.

11.6 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.

12.1 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 thereforestronglyrecommend, 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.

capacity a folding

13.1 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.

13.2 If the folding fly jib is mounted on the telescopic boom, the possible loads which the boom can lift are reduced according to the values given in the table below.(Lifting capacities in metric tons [t]. T- = Telescopic boom lengths in meters [m]

Position of folding fly jib	T-11,6	T-15,3	T-19,1	T-22,8	T-26,5
complete folding fly jib lateral at boom pivot section	0,83	0,60	0,48	0,40	0,35
K-6,6 on telescopic boom head section, rest at boom pivot section	1,86	1,69	1,59	1,53	1,48
K-10,6 on telescopic boom head section, rest at boom pivot section	2,49	2,25	2,11	2,01	1,94
K-18,8 on telescopic boom head section	2,65	2,40	2,25	2,15	2,07

Position of folding fly jib	T-30,2	T-34,0	T-37,7	T-44,0
complete folding fly jib lateral at boom pivot section	0,30	0,27	0,24	0,21
K-6,6 on telescopic boom head section, rest at boom pivot section	1,44	1,41	1,39	1,36
K-10,6 on telescopic boom head section, rest at boom pivot section	1,89	1,85	1,81	1,77
K-18,8 on telescopic boom head section	2,02	1,97	1,94	1,89

14.1 Crane operation is permissible up to the wind velocity stated in the load chart 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.**

14.2 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**

14.3 Example:

- Weight of load to be lifted	m	=	50.0 t
- Permissible wind velocity acc. to load capacity table	v	=	9.0 m/s
- Actual wind surface of load:	A_{Wr}	=	100.0 m^2
- Permiss. load wind surface acc. to Diag. 1	A_{Wz}	=	55.0 m^2
- Diagram 2 yields for v = 9 m/s the impact pressure	p	=	50.0 N/m^2

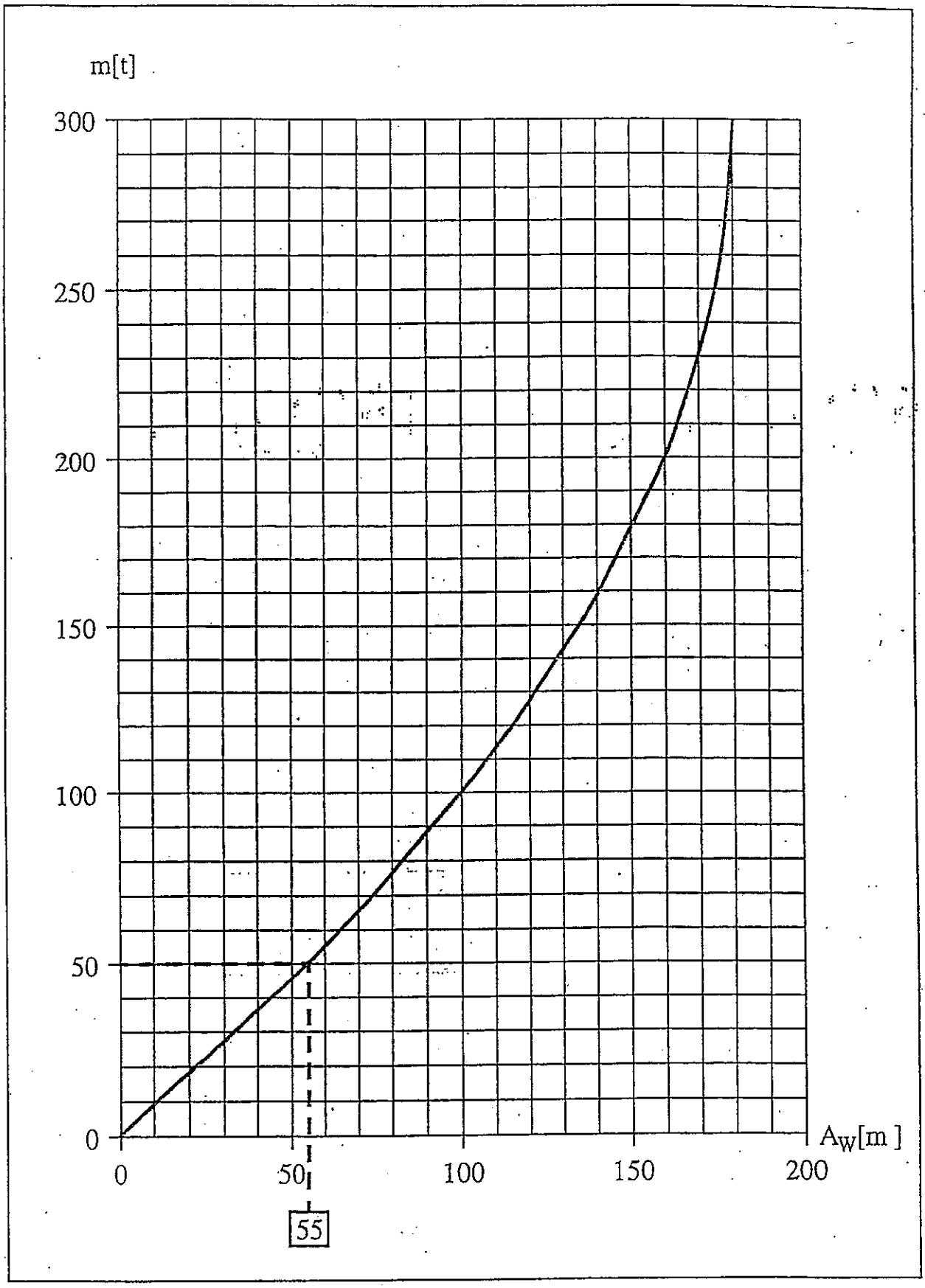
Hence a load with the permissible wind surface $A_{Wz} = 55\ m^2$ is influenced by a force F:

F = impact pressure p x Windfläche $A_{Wz} = 50\ N/m^2 \times 55\ m^2 = 2750\ N$

For the actual wind surface $A_{Wr} = 100\ m^2$, a permissible impact pressure p results for the same force F:

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

For $p = 27.5\ N/m^2$, Diagram 2 yields a maximum permissible wind velocity of v = 6.7 m/s


m[t]
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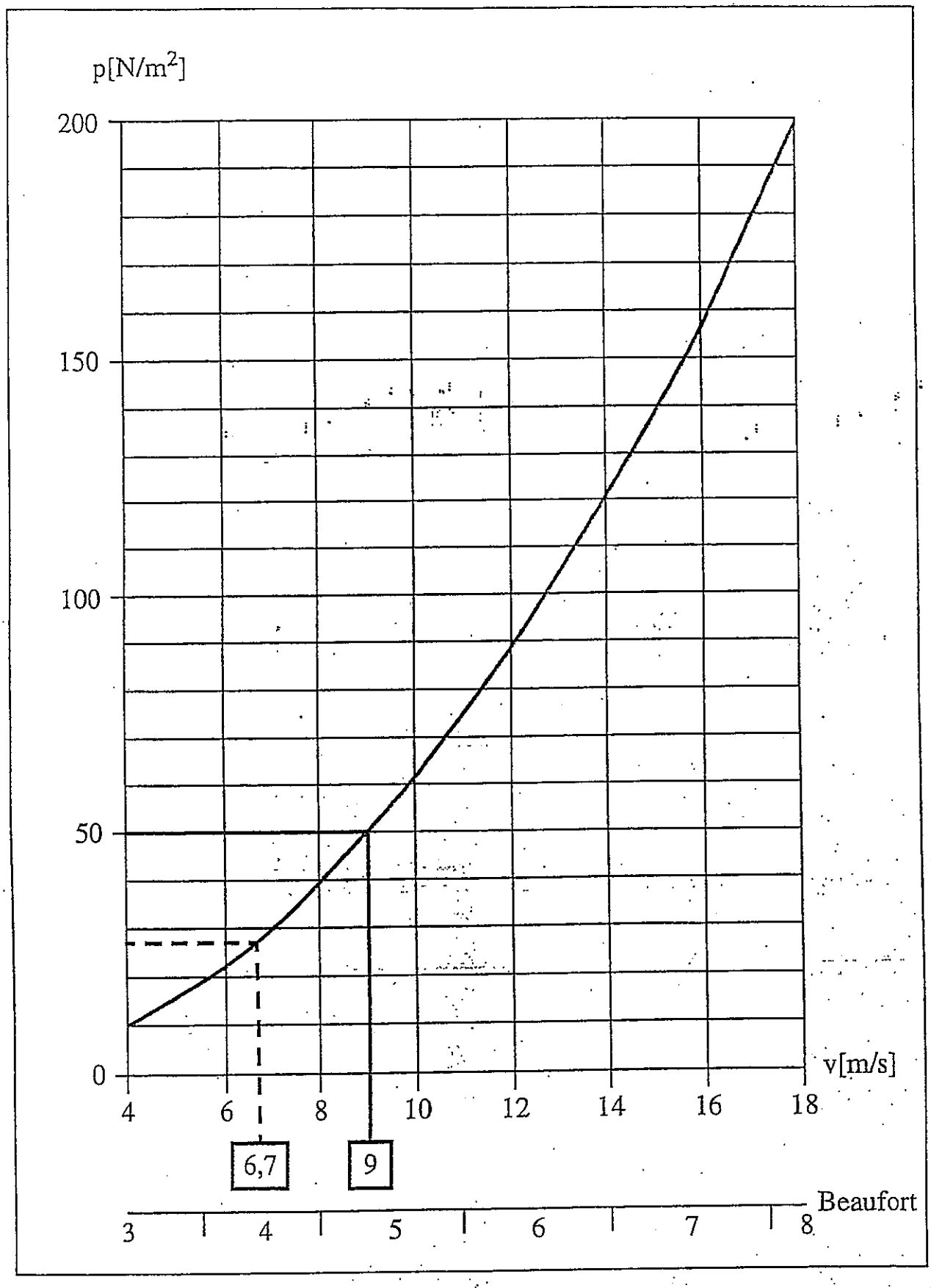
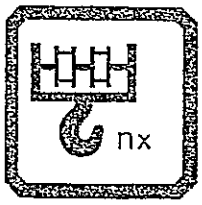
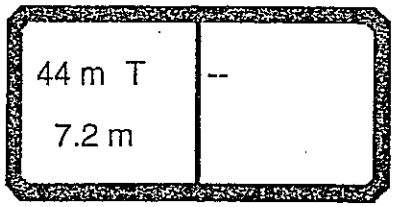
250
200
150
100
50
0
0
50
100
150
200
A_W[m]
55


p[N/m²]
200
150
100
50
0
4
6
8
10
12
14
16
18
v[m/s]
6,7
9
Beaufort
3
4
5
6
7
8



→ 2



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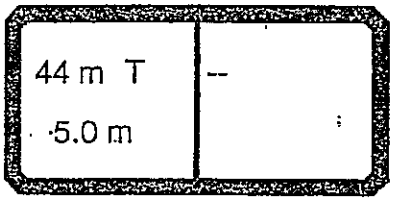

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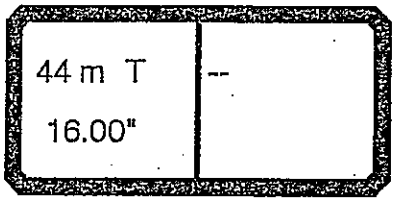

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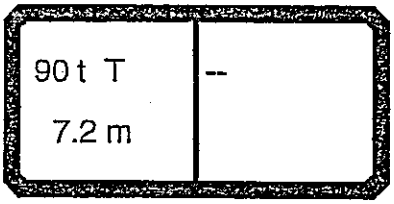

→ 42

nx	t
1	7.9
2	15.7
3	23.4
4	30.9
5	38.4
6	45.7
7	53.0
8	60.1
9	67.1
10	74.0
11	80.8
12	87.5
13	88.0

0022808 TAB 90397 01.04

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3,5	74,0
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5,0	52,0
6,0	39,5
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8,0	24,2
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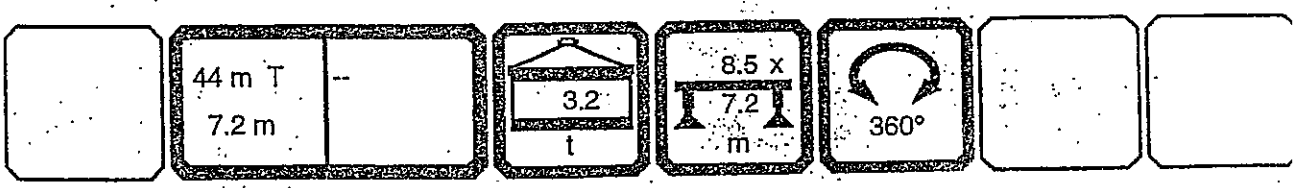
2	0
3	0
4	0
%	
m/s	14,3



7.2 m

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TAB 90396 01.04

CODE 〉015〈 TB90 0000.x(x)

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3,5	74,0													
4,0	66,0													
4,5	59,0													
5,0	53,0													
6,0	40,5													
7,0	32,5													
8,0	25,4													
* n *	10													
1	0													
2	0													
3	0													
4	0													
m/s	14,3													

%

44 m T
7.2 m
--

4.4 t

8.5 x 7.2 m

360°

m> <t

CODE 〉014〈 TB90 0000.x(x)

m	11,6	15,3	15,3	19,1	19,1	19,1	22,8	26,5	26,5	30,2	34,0	34,0	37,7	41,4
3,0	80,0													
3,5	73,0	56,0	54,0	51,0	49,5	33,5								
4,0	65,0	58,0	55,0	51,0	51,0	35,0	45,0							
4,5	57,0	49,5	51,0	44,0	43,0	38,5	39,0							
5,0	48,5	41,5	43,0	37,5	36,5	39,0	33,5	31,0	20,0					
6,0	36,0	31,0	32,5	28,6	27,4	29,7	25,6	24,1	20,5	21,2	19,8	17,2		
7,0	28,2	24,2	25,6	22,6	21,5	23,6	20,3	19,3	21,0	19,0	18,7	18,1	17,5	13,9
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9,0		16,1	17,3	15,1	14,2	16,1	13,5	13,1	16,0	13,2	13,2	15,4	13,1	13,0
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16,0				4,1	3,4	4,9	3,6	3,5	6,1	4,0	4,4	6,4	4,6	4,8
18,0							2,2	2,3	4,5	2,8	3,2	5,1	3,4	3,7
20,0								1,3	3,5	1,8	2,2	3,9	2,5	2,8
22,0									2,7	1,0	1,4	3,1	1,7	2,0
24,0												2,5	1,1	1,4
26,0												2,0		
28,0												1,5		
30,0												1,1		
* n *	11	8	8	7	7	6	6	5	3	3	3	3	3	2
1	0	46	0	46	92	0	92	92	0	92	92	0	92	92
2	0	0	46	46	0	92	46	92	92	92	92	92	92	92
3	0	0	0	0	0	0	0	0	46	23	46	92	69	92
4	0	0	0	0	0	0	0	0	46	23	46	92	69	92
%														
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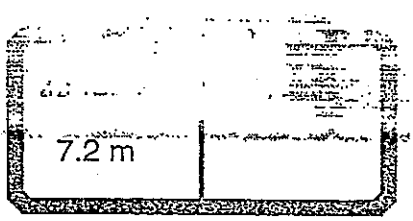

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4,0 4,5														
5,0 6,0														
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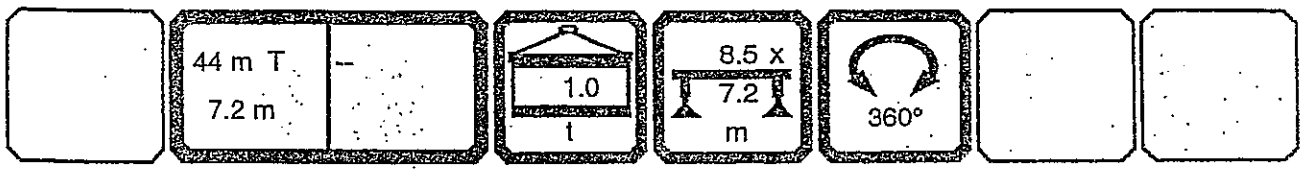
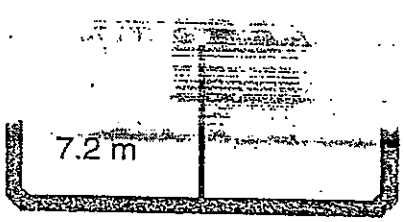
9,0 10,0	12,3 10,8													
12,0 14,0	8,1 6,1													
16,0 18,0	4,7 3,6													
20,0 22,0	2,7 1,9													
24,0 26,0	1,3													
28,0 30,0														
* n *	2													
1 2 3 4 %	100 100 100 100													
m/s	11,1													





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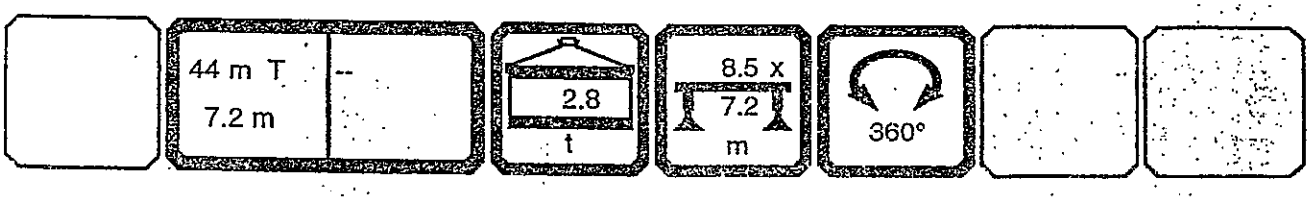
m> <t

CODE 〉013〈 TB90 0000.x(x)

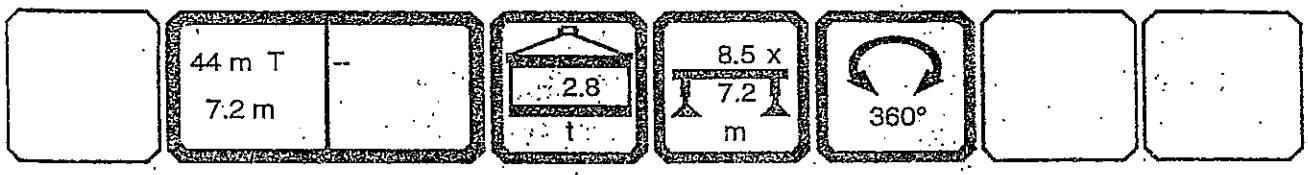
m	11,6	15,3	15,3	19,1	19,1	19,1	22,8	26,5	26,5	30,2	34,0	34,0	37,7	41,4
3,0	81,0													
3,5	73,0	56,0	54,0	51,0	49,5	33,5								
4,0	65,0	58,0	55,0	51,0	51,0	35,0	45,0							
4,5	58,0	53,0	55,0	47,5	46,0	38,5	42,0							
5,0	51,0	44,5	46,5	40,5	39,0	40,5	36,0	32,5	20,0					
6,0	38,5	33,5	35,0	31,0	29,7	32,0	27,7	26,1	20,5	21,2	19,8	17,2		
7,0	30,5	26,2	27,6	24,5	23,4	25,5	22,1	21,0	21,0	20,7	20,1	18,1	17,5	13,9
8,0	23,8	21,3	22,5	19,9	18,9	21,0	18,0	17,2	20,3	17,2	17,0	16,9	16,6	14,5
9,0		17,6	18,8	16,6	15,6	17,5	14,9	14,4	17,3	14,5	14,4	15,8	14,2	14,1
10,0		14,6	15,7	14,0	13,0	14,9	12,5	12,1	14,9	12,3	12,4	14,5	12,3	12,3
12,0		9,9	10,9	10,1	9,2	11,0	8,8	8,6	11,4	9,0	9,2	11,4	9,2	9,3
14,0				7,1	6,3	7,9	6,3	6,1	8,8	6,6	6,9	9,0	7,0	7,2
16,0				4,9	4,2	5,7	4,3	4,4	7,0	4,8	5,2	7,2	5,4	5,6
18,0							2,9	3,0	5,3	3,5	3,9	5,8	4,1	4,4
20,0								2,0	4,1	2,5	2,9	4,5	3,1	3,4
22,0								1,1	3,2	1,6	2,0	3,7	2,3	2,6
24,0										1,0	1,4	3,0	1,6	1,9
26,0												2,4	1,1	1,3
28,0												1,9		
30,0												1,5		
* n *	12	8	8	7	7	6	6	5	3	3	3	3	3	2
1	0	46	0	46	92	0	92	92	0	92	92	0	92	92
2	0	0	46	46	0	92	46	92	92	92	92	92	92	92
3	0	0	0	0	0	0	0	0	46	23	46	92	69	92
4	0	0	0	0	0	0	0	0	46	23	46	92	69	92
m/s	14,3	14,3	14,3	12,8	12,8	12,8	12,8	12,8	12,8	12,8	12,8	12,8	12,8	11,1

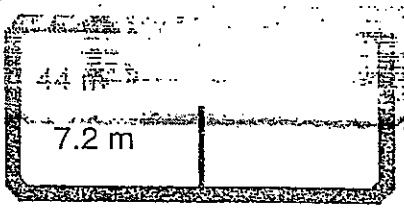


0022808 TAB 90394 01.04

m> <t CODE 〉013〈 TB90 0000.x(x)

m	44,0													
3,0														
3,5														
4,0														
4,5														
5,0														
6,0														
7,0														
8,0	12,3													
9,0	12,3													
10,0	11,9													
12,0	9,1													
14,0	7,0													
16,0	5,5													
18,0	4,2													
20,0	3,3													
22,0	2,5													
24,0	1,8													
26,0	1,3													
28,0														
30,0														
* n *	2													
1	100													
2	100													
3	100													
4	100													
%														
m/s	11,1													

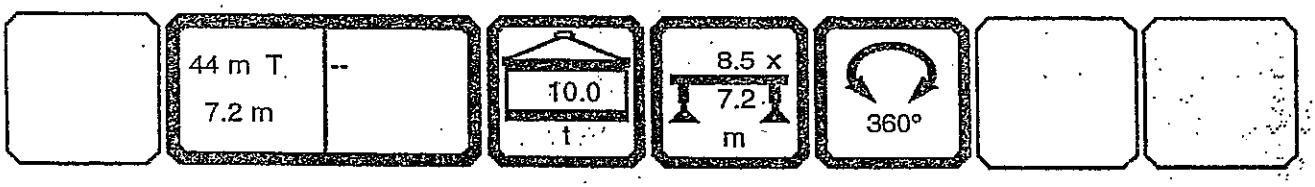


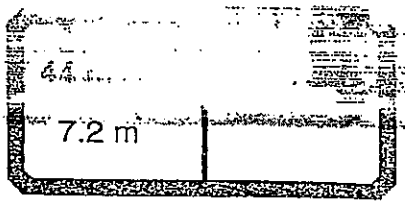


0022808 TAB 90393 01.04

CODE 〉012〈 TB90 0000.x(x)

m	11,6	15,3	15,3	19,1	19,1	19,1	22,8	26,5	26,5	30,2	34,0	34,0	37,7	41,4
3,0	81,0													
3,5	74,0	56,0	54,0	51,0	49,5	33,5								
4,0	68,0	58,0	55,0	51,0	51,0	35,0	45,0							
4,5	62,0	60,0	57,0	53,0	49,0	38,5	42,5							
5,0	56,0	55,0	55,0	52,0	46,5	40,5	40,0	32,5	20,0					
6,0	45,0	43,5	44,5	40,0	39,0	37,5	36,0	31,5	20,5	21,2	19,8	17,2		
7,0	36,0	34,5	35,5	32,0	31,0	33,0	29,2	27,8	21,0	21,5	20,1	18,1	17,5	13,9
8,0	29,9	28,2	29,5	26,5	25,5	27,5	24,2	23,2	22,7	22,8	20,5	16,9	17,9	14,5
9,0		23,6	24,9	22,3	21,3	23,2	20,4	19,6	20,9	19,5	19,3	15,8	17,0	14,8
10,0		19,7	20,8	19,0	18,1	20,0	17,4	16,8	19,4	16,8	16,8	14,8	15,9	14,2
12,0		13,9	14,9	14,2	13,4	15,0	13,0	12,7	15,3	12,9	13,0	13,0	12,9	12,8
14,0				10,5	9,8	11,2	10,0	9,7	12,3	10,1	10,3	11,6	10,3	10,4
16,0				7,9	7,2	8,6	7,5	7,6	9,9	8,0	8,3	10,2	8,4	8,5
18,0							5,6	5,8	8,0	6,4	6,7	8,5	6,8	7,0
20,0								4,4	6,5	4,9	5,3	7,1	5,6	5,8
22,0								3,2	5,3	3,8	4,1	5,9	4,4	4,8
24,0										2,9	3,3	4,9	3,5	3,9
26,0										2,2	2,6	4,1	2,9	3,2
28,0											2,0	3,6	2,3	2,6
30,0												3,0	1,8	2,1
32,0													1,3	1,6
34,0														1,2
* n *	12	8	8	7	7	6	6	5	3	3	3	3	3	2
1	0	46	0	46	92	0	92	92	0	92	92	0	92	92
2	0	0	46	46	0	92	46	92	92	92	92	92	92	92
3	0	0	0	0	0	0	0	0	46	23	46	92	69	92
% 4	0	0	0	0	0	0	0	0	46	23	46	92	69	92
m/s	14,3	14,3	14,3	12,8	12,8	12,8	12,8	12,8	12,8	12,8	12,8	12,8	12,8	11,1



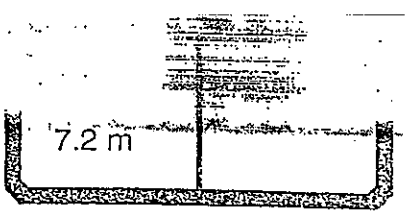


0022808 TAB 90393 01.04

CODE 〉012〈 TB90 0000.x(x)

m	m> <t													
	44,0													
3,0 3,5														
4,0 4,5														
5,0 6,0														
7,0 8,0	13,1													
9,0 10,0	12,7 12,3													
12,0 14,0	11,4 10,2													
16,0 18,0	8,3 6,9													
20,0 22,0	5,7 4,7													
24,0 26,0	3,8 3,1													
28,0 30,0	2,5 2,0													
32,0 34,0	1,6 1,2													
* n *	2													
% 1 2	100 100													
% 3 4	100 100													
m/s	11,1													

	44 m T 7.2 m	--	10.0 t	8.5 x 7.2 m	360°	

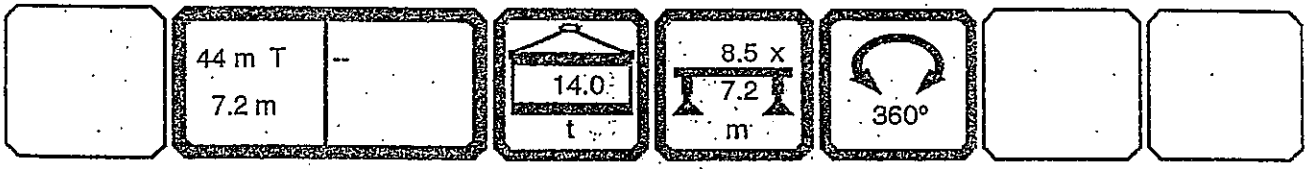


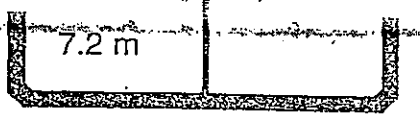
0022808 TAB 90392 01.04

CODE 〉011〈 TB90 0000.x(x)

m> <t

m	11,6	15,3	15,3	19,1	19,1	19,1	22,8	26,5	26,5	30,2	34,0	34,0	37,7	41,4
3,0	82,0													
3,5	75,0	56,0	54,0	51,0	49,5	33,5								
4,0	69,0	58,0	55,0	51,0	51,0	35,0	45,0							
4,5	63,0	60,0	57,0	53,0	49,0	38,5	42,5							
5,0	57,0	56,0	57,0	52,0	46,5	40,5	40,0	32,5	20,0					
6,0	47,5	46,5	47,0	45,0	41,5	37,5	36,0	31,5	20,5	21,2	19,8	17,2		
7,0	38,5	37,5	38,5	36,5	35,0	33,5	32,5	28,8	21,0	21,5	20,1	18,1	17,5	13,9
8,0	32,0	31,0	32,0	30,0	29,1	30,5	27,6	26,3	22,7	23,6	20,5	16,9	17,9	14,5
9,0		26,2	27,1	25,5	24,5	26,4	23,4	22,5	20,9	22,0	19,4	15,8	17,0	14,8
10,0		22,3	23,2	21,9	21,0	22,8	20,1	19,4	19,4	19,4	18,1	14,8	15,9	14,2
12,0		16,1	17,1	16,4	15,6	17,2	15,3	14,8	16,9	15,0	15,0	13,0	14,0	12,8
14,0				12,3	11,6	13,1	11,8	11,6	14,2	11,9	12,0	11,6	12,1	11,4
16,0				9,5	8,7	10,2	9,0	9,2	11,5	9,6	9,8	10,4	9,9	10,0
18,0							6,9	7,2	9,3	7,8	8,1	9,3	8,2	8,3
20,0								5,6	7,7	6,2	6,6	8,4	6,8	7,0
22,0								4,3	6,4	4,9	5,3	7,0	5,6	5,9
24,0										3,9	4,3	6,0	4,5	4,9
26,0										3,1	3,5	5,1	3,7	4,0
28,0											2,8	4,3	3,1	3,4
30,0												3,7	2,5	2,8
32,0													2,0	2,3
34,0														1,9
36,0														1,4
38,0														
* n *	12	8	8	7	7	6	6	5	3	4	3	3	3	2
1	0	46	0	46	92	0	92	92	0	92	92	0	92	92
2	0	0	46	46	0	92	46	92	92	92	92	92	92	92
3	0	0	0	0	0	0	0	0	46	23	46	92	69	92
% 4	0	0	0	0	0	0	0	0	46	23	46	92	69	92
m/s	14,3	14,3	14,3	12,8	12,8	12,8	12,8	12,8	12,8	12,8	12,8	12,8	12,8	11,1





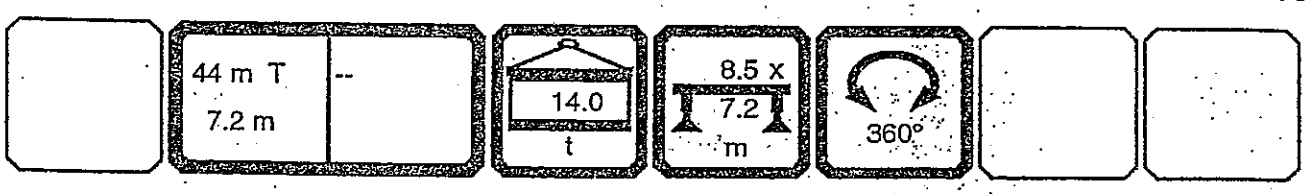
0022808

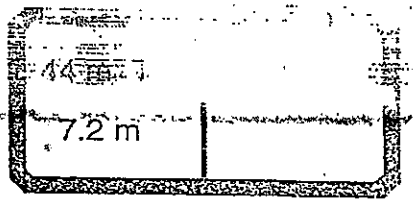
TAB 90392 01.04

CODE 〉011〈 TB90 0000.x(x)

m> <t

m	44,0													
3,0														
3,5														
4,0														
4,5														
5,0														
6,0														
7,0														
8,0	13,1													
9,0	12,7													
10,0	12,3													
12,0	11,4													
14,0	10,5													
16,0	9,6													
18,0	8,2													
20,0	6,9													
22,0	5,8													
24,0	4,8													
26,0	4,0													
28,0	3,3													
30,0	2,8													
32,0	2,3													
34,0	1,9													
36,0	1,4													
38,0	1,1													
* n *	2													
1	100													
2	100													
3	100													
4	100													
%														
m/s	11,1													

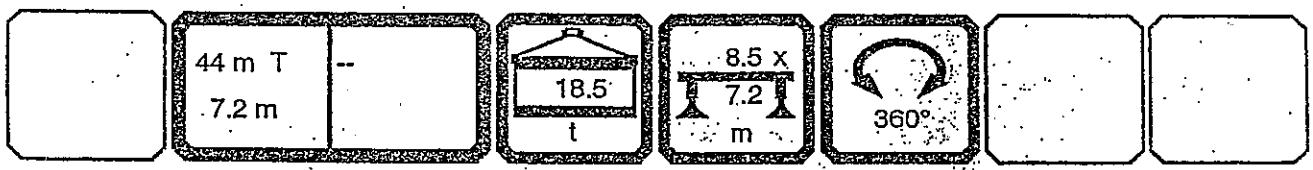


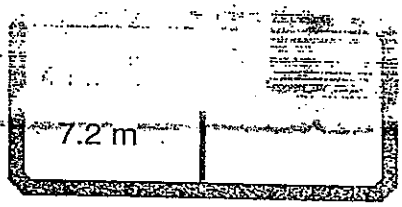


0022808 TAB 90391 01.04

CODE)010(TB90 0000.x(x)

m	m> <t	11,6	15,3	15,3	19,1	19,1	19,1	22,8	26,5	26,5	30,2	34,0	34,0	37,7	41,4
3,0		82,0													
3,5		75,0	56,0	54,0	51,0	49,5	33,5								
4,0		69,0	58,0	55,0	51,0	51,0	35,0	45,0							
4,5		63,0	60,0	57,0	53,0	49,0	38,5	42,5							
5,0		59,0	57,0	58,0	52,0	46,5	40,5	40,0	32,5	20,0					
6,0		49,0	48,0	49,0	47,5	41,5	37,5	36,0	31,5	20,5	21,2	19,8	17,2		
7,0		41,5	40,5	41,5	40,5	37,5	33,5	32,5	28,8	21,0	21,5	20,1	18,1	17,5	13,9
8,0		34,5	33,5	34,5	33,5	33,0	30,5	29,6	26,3	22,7	23,6	20,5	16,9	17,9	14,5
9,0			28,4	29,3	28,4	27,7	27,7	26,8	24,1	20,9	22,0	19,4	15,8	17,0	14,8
10,0			24,4	25,3	24,4	23,7	25,1	23,1	22,2	19,4	20,4	18,1	14,8	15,9	14,2
12,0			18,5	19,3	18,5	17,8	19,2	17,7	17,2	16,9	17,3	15,9	13,0	14,0	12,8
14,0					14,3	13,6	15,1	13,9	13,7	14,9	13,9	14,0	11,6	12,4	11,4
16,0					11,2	10,4	11,9	10,7	11,0	13,1	11,3	11,5	10,4	11,1	10,3
18,0								8,4	8,6	10,8	9,3	9,6	9,3	9,7	9,2
20,0									6,9	9,0	7,5	8,0	8,4	8,2	8,3
22,0									5,5	7,6	6,1	6,6	7,6	6,8	7,1
24,0											5,0	5,4	7,0	5,7	6,0
26,0											4,0	4,4	6,1	4,7	5,0
28,0												3,7	5,3	4,0	4,2
30,0													4,6	3,4	3,6
32,0														2,8	3,1
34,0															2,6
36,0															2,1
38,0															
40,0															
* n *		12	8	8	7	7	6	6	5	3	4	3	3	3	2
%	1	0	46	0	46	92	0	92	92	0	92	92	0	92	92
	2	0	0	46	46	0	92	46	92	92	92	92	92	92	92
	3	0	0	0	0	0	0	0	0	46	23	46	92	69	92
	4	0	0	0	0	0	0	0	0	46	23	46	92	69	92
m/s		14,3	14,3	14,3	12,8	12,8	12,8	12,8	12,8	12,8	12,8	12,8	12,8	12,8	11,1



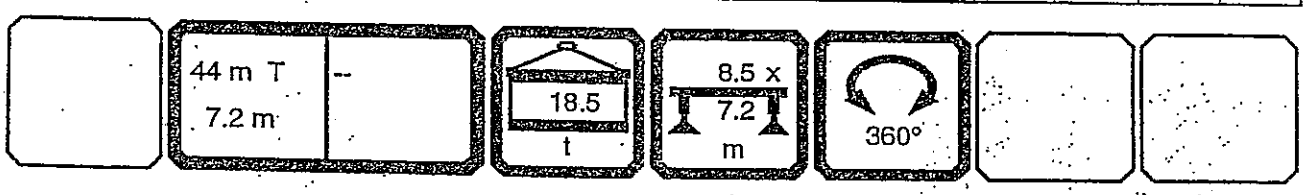


0022808

TAB 90391 01.04

CODE 〉010〈 TB90 0000.x(x)

m	m> <t
44,0	
3,0	
3,5	
4,0	
4,5	
5,0	
6,0	
7,0	
8,0	13,1
9,0	12,7
10,0	12,3
12,0	11,4
14,0	10,5
16,0	9,6
18,0	8,5
20,0	7,4
22,0	6,5
24,0	5,6
26,0	4,9
28,0	4,1
30,0	3,6
32,0	3,0
34,0	2,6
36,0	2,1
38,0	1,7
40,0	1,4
* n *	2
1	100
2	100
3	100
4	100
%	
m/s	11,1



CODE 〉002〈 TB90 0000.x(x)

m	m> <t 11,6
3,0	88,0
3,5	79,0
4,0	70,0
4,5	63,0
5,0	57,0
6,0	47,5
7,0	40,0
8,0	34,0
* n *	13
1	0
2	0
3	0
4	0
%	
m/s	14,3

0022808

TAB 90388 01.04

m> <t

CODE 〉001〈 TB90 0000.x(x)

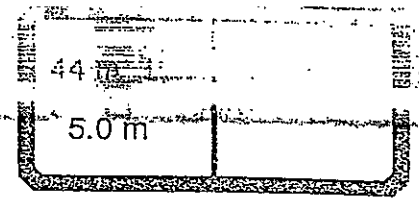
m	11,6														
3,0	88,0														
3,5	79,0														
4,0	70,0														
4,5	63,0														
5,0	59,0														
6,0	49,0														
7,0	41,5														
8,0	35,5														
* n *	13														
1	0														
2	0														
3	0														
4	0														
%															
m/s	14,3														

44 m T
7.2 m
--

18,5 t

8,5 x 7.2 m

0 °

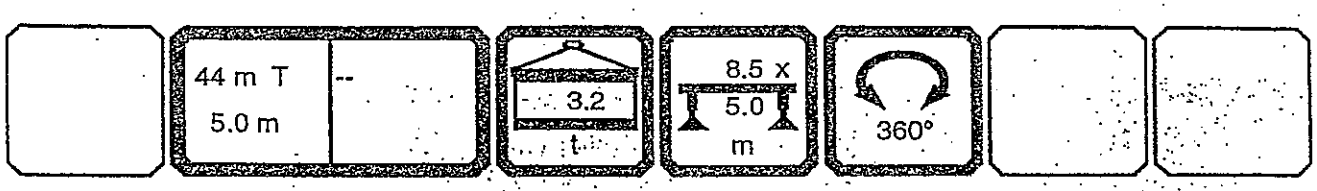


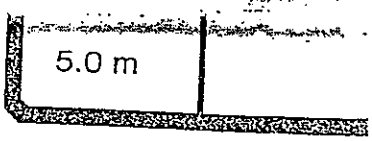
0022808 TAB 90404 01.04

m> <t CODE 〉026〈 TB90 0200.x(x)

m	11,6													
3,0	68,0													
3,5	56,0													
4,0	44,5													
4,5	36,5													
5,0	30,5													
6,0	22,9													
7,0	17,8													
8,0	14,1													
* n *	10													
1	0													
2	0													
3	0													
4	0													
m/s	14,3													

%



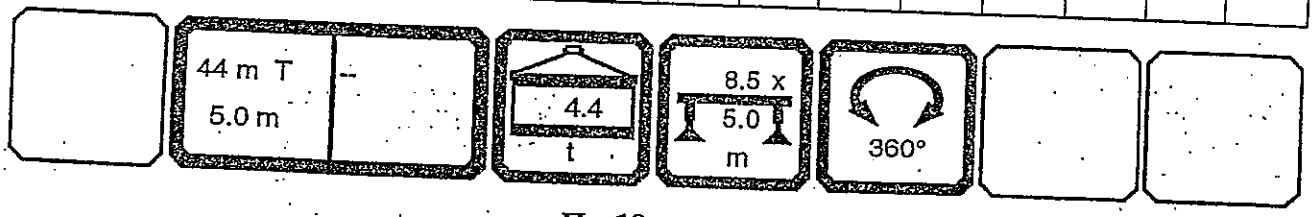


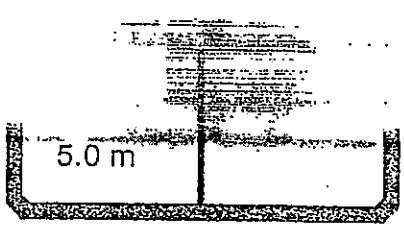
0022808

TAB 90403 01.0

CODE 〉025〈 TB90 0200.x(x)

m	m> <t
	11,6
3,0	69,0
3,5	59,0
4,0	47,0
4,5	38,5
5,0	32,5
6,0	24,4
7,0	19,1
8,0	15,1
* n *	10
% 1	0
% 2	0
% 3	0
% 4	0
m/s	14,3



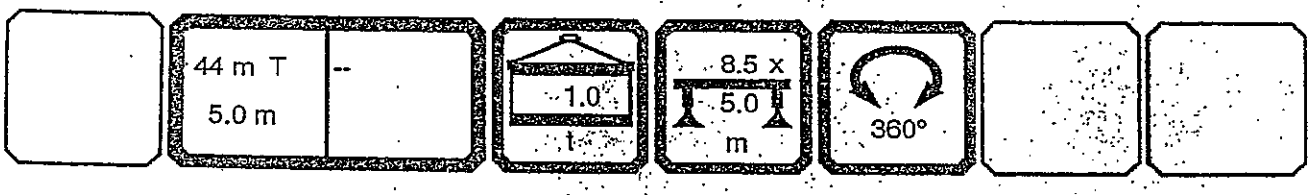


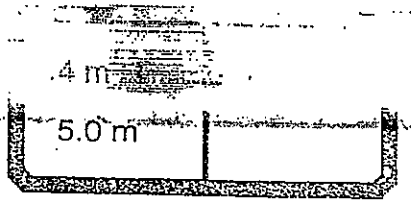
0022808

TAB 90402 01.04

m> <t CODE 〉024〈 TB90 0200.x(x)

m	11,6	15,3	15,3	19,1	19,1	19,1	22,8	26,5	26,5	30,2	34,0	34,0	37,7	41,4
3,0	67,0													
3,5	50,0	40,5	42,5	35,5	34,0	33,5								
4,0	39,5	32,5	34,5	29,1	27,7	30,5	25,1							
4,5	32,5	27,0	28,6	24,3	23,1	25,6	21,1							
5,0	27,1	22,7	24,2	20,7	19,5	21,9	18,0	16,8	20,0					
6,0	20,0	16,7	18,1	15,4	14,4	16,5	13,4	12,7	15,9	12,7	12,5	14,9		
7,0	15,5	12,7	14,0	11,9	10,9	12,9	10,3	9,8	12,8	10,0	10,0	12,3	9,9	9,8
8,0	12,2	9,9	11,1	9,3	8,3	10,2	7,9	7,6	10,5	7,9	8,1	10,3	8,1	8,1
9,0		7,8	9,0	7,3	6,4	8,3	6,1	5,9	8,7	6,3	6,6	8,7	6,6	6,7
10,0		6,2	7,3	5,8	4,9	6,7	4,7	4,6	7,3	5,1	5,4	7,4	5,5	5,6
12,0		3,7	4,7	3,6	2,7	4,4	2,6	2,6	5,2	3,1	3,5	5,5	3,7	3,9
14,0				2,1	1,2	2,9	1,2	1,2	3,7	1,7	2,1	4,1	2,4	2,6
16,0						1,6			2,6		1,1	3,0	1,4	1,7
18,0									1,7			2,2		
20,0									1,0			1,5		
* n *	9	6	6	5	5	5	4	3	3	2	2	2	2	2
% 1	0	46	0	46	92	0	92	92	0	92	92	0	92	92
2	0	0	46	46	0	92	46	92	92	92	92	92	92	92
3	0	0	0	0	0	0	0	0	46	23	46	92	69	92
4	0	0	0	0	0	0	0	0	46	23	46	92	69	92
m/s	14,3	14,3	14,3	12,8	12,8	12,8	12,8	12,8	12,8	12,8	12,8	12,8	12,8	11,1





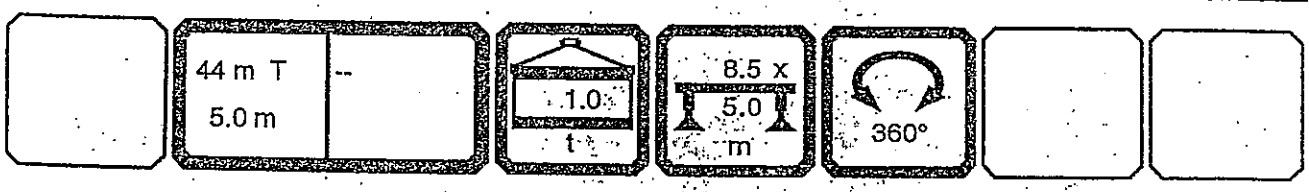
0022808

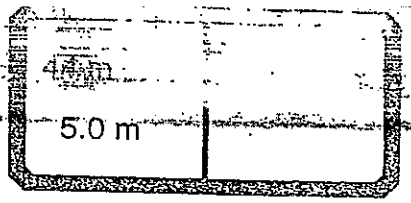
TAB 90402 01.04

m> <t

CODE 〉024〈 TB90 0200.x(x)

m	44,0													
3,0														
3,5														
4,0														
4,5														
5,0														
6,0														
7,0														
8,0	7,8													
9,0	6,5													
10,0	5,4													
12,0	3,7													
14,0	2,5													
16,0	1,6													
18,0														
20,0														
* n *	1													
1	100													
2	100													
3	100													
% 4	100													
m/s	11,1													





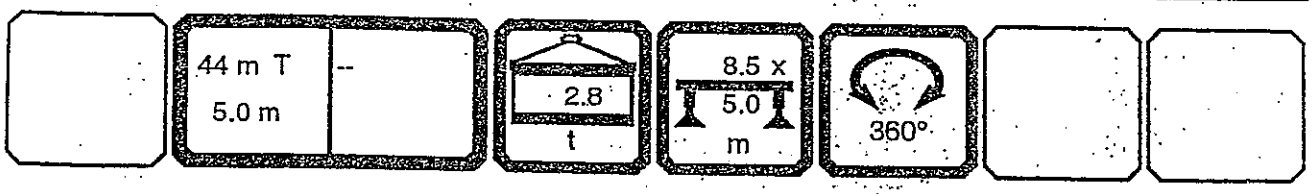
0022808

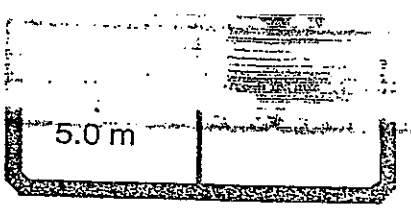
TAB 90401 01.04

CODE 〉023〈 TB90 0200.x(x)

m> <t

m	11,6	15,3	15,3	19,1	19,1	19,1	22,8	26,5	26,5	30,2	34,0	34,0	37,7	41,4
3,0	68,0													
3,5	55,0	45,0	47,0	39,5	38,0	33,5								
4,0	43,5	36,0	38,0	32,0	31,0	33,5	27,9							
4,5	36,0	30,0	31,5	27,1	25,8	28,3	23,6							
5,0	30,0	25,3	26,8	23,1	21,9	24,3	20,2	18,9	20,0					
6,0	22,3	18,8	20,2	17,4	16,3	18,5	15,3	14,4	17,6	14,3	14,1	16,5		
7,0	17,4	14,5	15,8	13,5	12,5	14,5	11,8	11,3	14,3	11,4	11,4	13,7	11,2	11,1
8,0	13,8	11,4	12,7	10,7	9,8	11,7	9,3	8,9	11,8	9,2	9,3	11,5	9,3	9,2
9,0		9,2	10,3	8,6	7,7	9,5	7,4	7,1	9,9	7,5	7,7	9,8	7,7	7,8
10,0		7,4	8,5	6,9	6,1	7,8	5,8	5,7	8,3	6,1	6,3	8,4	6,4	6,6
12,0		4,6	5,6	4,5	3,7	5,4	3,6	3,5	6,1	4,0	4,3	6,3	4,5	4,7
14,0				2,9	2,1	3,6	2,0	2,0	4,4	2,5	2,9	4,8	3,1	3,3
16,0						2,3			3,2	1,4	1,8	3,6	2,0	2,3
18,0									2,3			2,7	1,2	1,4
20,0									1,6			2,0		
22,0									1,0			1,4		
* n *	10	6	7	6	5	5	4	3	3	2	2	3	2	2
1	0	46	0	46	92	0	92	92	0	92	92	0	92	92
2	0	0	46	46	0	92	46	92	92	92	92	92	92	92
3	0	0	0	0	0	0	0	0	46	23	46	92	69	92
% 4	0	0	0	0	0	0	0	0	46	23	46	92	69	92
m/s	14,3	14,3	14,3	12,8	12,8	12,8	12,8	12,8	12,8	12,8	12,8	12,8	12,8	11,1





0022808

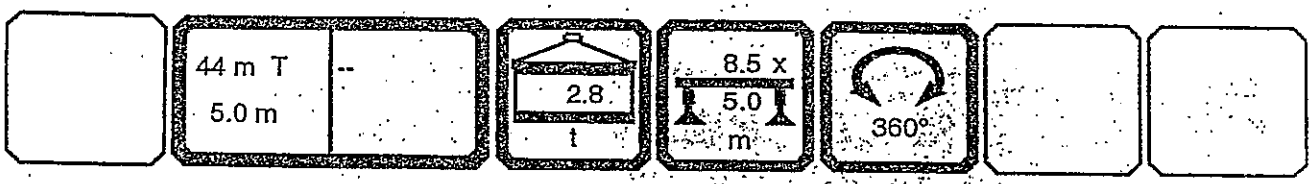
TAB 90401 01.04

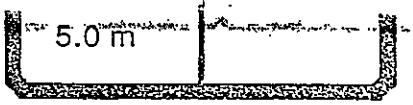
m> <t

CODE 〉023〈 TB90 0200.x(x)

m	44,0													
3,0														
3,5														
4,0														
4,5														
5,0														
6,0														
7,0														
8,0	8,9													
9,0	7,5													
10,0	6,3													
12,0	4,5													
14,0	3,2													
16,0	2,2													
18,0	1,4													
20,0														
22,0														
* n *	2													
1	100													
2	100													
3	100													
4	100													
m/s	11,1													

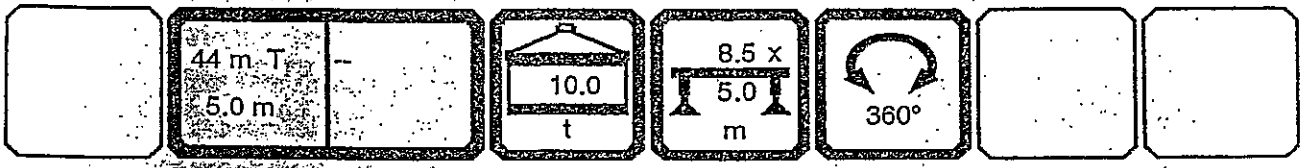
%





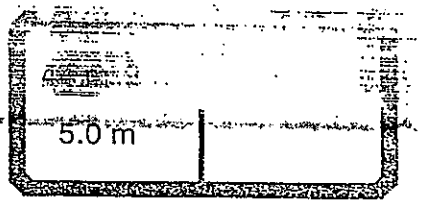
m> <t CODE 〉022〈 TB90 0200.x(x)

m	11,6	15,3	15,3	19,1	19,1	19,1	22,8	26,5	26,5	30,2	34,0	34,0	37,7	41,4
3,0	70,0													
3,5	63,0	56,0	54,0	51,0	49,5	33,5								
4,0	57,0	50,0	52,0	45,0	43,5	35,0	39,5							
4,5	49,0	42,0	43,5	38,0	37,0	38,5	33,5							
5,0	41,5	36,0	37,5	33,0	31,5	34,0	29,3	27,4	20,0					
6,0	31,5	27,3	28,7	25,3	24,2	26,4	22,7	21,5	20,5	21,0	19,8	17,2		
7,0	25,1	21,6	22,9	20,2	19,2	21,2	18,1	17,3	20,3	17,2	16,9	18,1	16,5	13,9
8,0	20,0	17,5	18,8	16,5	15,5	17,5	14,8	14,2	17,1	14,3	14,2	16,4	14,0	13,8
9,0		14,5	15,7	13,7	12,8	14,6	12,2	11,8	14,6	12,0	12,0	14,2	11,9	11,9
10,0		12,2	13,2	11,5	10,6	12,4	10,2	9,9	12,6	10,2	10,3	12,4	10,3	10,3
12,0		8,2	9,2	8,3	7,5	9,1	7,2	7,0	9,6	7,4	7,7	9,6	7,7	7,9
14,0				5,9	5,2	6,7	5,1	5,0	7,5	5,4	5,7	7,7	5,9	6,1
16,0				4,1	3,4	4,8	3,5	3,5	5,9	3,9	4,3	6,2	4,5	4,7
18,0							2,3	2,3	4,5	2,8	3,2	5,0	3,4	3,6
20,0								1,4	3,5	1,9	2,3	3,9	2,5	2,8
22,0									2,7	1,2	1,5	3,2	1,8	2,0
24,0												2,6	1,2	1,4
26,0												2,1		
28,0												1,6		
30,0												1,2		
* n *	10	8	8	7	7	6	6	4	3	3	3	3	3	2
% 1	0	46	0	46	92	0	92	92	0	92	92	0	92	92
% 2	0	0	46	46	0	92	46	92	92	92	92	92	92	92
% 3	0	0	0	0	0	0	0	0	46	23	46	92	69	92
% 4	0	0	0	0	0	0	0	0	46	23	46	92	69	92
m/s	14,3	14,3	14,3	12,8	12,8	12,8	12,8	12,8	12,8	12,8	12,8	12,8	12,8	11,1



CODE 〉022〈 TB90 0200.x(x)

m	m> <t
	44,0
3,0 3,5	
4,0 4,5	
5,0 6,0	
7,0 8,0	13,1
9,0 10,0	11,5 10,0
12,0 14,0	7,6 5,9
16,0 18,0	4,6 3,5
20,0 22,0	2,7 2,0
24,0 26,0	1,4
28,0 30,0	
* n *	2
1 2	100 100
3 4	100 100
%	
m/s	11,1

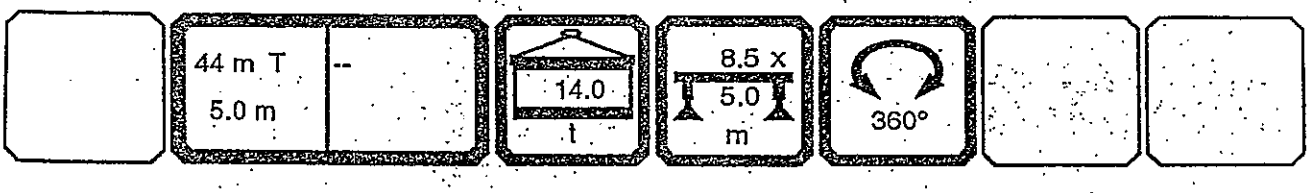


0022808 TAB 90399 01.04

CODE 〉021〈 TB90 0200.x(x)

m> <t

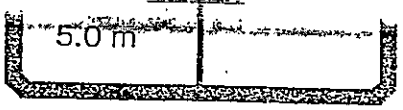
m	11,6	15,3	15,3	19,1	19,1	19,1	22,8	26,5	26,5	30,2	34,0	34,0	37,7	41,4
3,0	71,0													
3,5	64,0	56,0	54,0	51,0	49,5	33,5								
4,0	58,0	57,0	55,0	51,0	51,0	35,0	45,0							
4,5	53,0	49,0	50,0	44,0	43,0	38,5	39,5							
5,0	47,5	42,0	43,5	38,0	37,0	39,5	34,5	32,0	20,0					
6,0	36,5	32,0	33,5	29,7	28,6	31,0	26,9	25,4	20,5	21,2	19,8	17,2		
7,0	29,4	25,6	26,8	23,9	22,9	24,9	21,7	20,7	21,0	20,4	20,0	18,1	17,5	13,9
8,0	23,4	21,0	22,2	19,7	18,8	20,7	17,9	17,2	20,0	17,1	16,9	16,9	16,6	14,5
9,0		17,5	18,7	16,5	15,6	17,5	14,9	14,4	17,2	14,5	14,5	15,8	14,3	14,2
10,0		14,8	15,8	14,0	13,2	14,9	12,6	12,2	14,9	12,4	12,5	14,6	12,4	12,4
12,0		10,2	11,2	10,4	9,6	11,3	9,2	9,0	11,5	9,3	9,5	11,5	9,5	9,6
14,0				7,6	6,9	8,3	6,8	6,7	9,2	7,1	7,4	9,3	7,5	7,6
16,0				5,5	4,8	6,2	5,0	5,0	7,4	5,4	5,7	7,6	5,9	6,1
18,0							3,6	3,6	5,8	4,1	4,4	6,3	4,6	4,9
20,0								2,6	4,6	3,1	3,4	5,1	3,6	3,9
22,0								1,7	3,7	2,2	2,6	4,1	2,8	3,1
24,0										1,5	1,9	3,4	2,1	2,4
26,0											1,3	2,8	1,6	1,8
28,0												2,3	1,1	1,3
30,0												1,9		
* n *	10	8	8	7	7	6	6	5	3	3	3	3	3	2
% 1	0	46	0	46	92	0	92	92	0	92	92	0	92	92
% 2	0	0	46	46	0	92	46	92	92	92	92	92	92	92
% 3	0	0	0	0	0	0	0	0	46	23	46	92	69	92
% 4	0	0	0	0	0	0	0	0	46	23	46	92	69	92
m/s	14,3	14,3	14,3	12,8	12,8	12,8	12,8	12,8	12,8	12,8	12,8	12,8	12,8	11,1



m> <t

CODE 〉021〈 TB90 0200.x(x)

m	44,0
3,0	
3,5	
4,0	
4,5	
5,0	
6,0	
7,0	
8,0	13,1
9,0	12,7
10,0	12,0
12,0	9,4
14,0	7,4
16,0	5,9
18,0	4,7
20,0	3,8
22,0	3,0
24,0	2,3
26,0	1,7
28,0	1,2
30,0	
* n *	2
1	100
2	100
3	100
4	100
%	
m/s	11,1



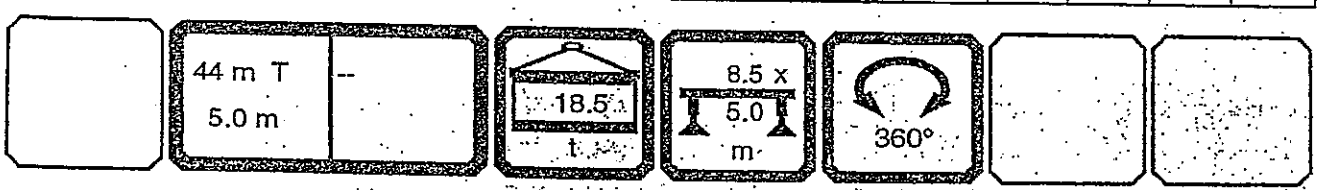
0022808

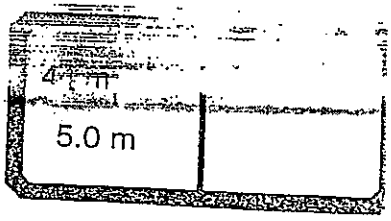
TAB 90398 01.04

CODE 〉020〈 TB90 0200.x(x)

m> <t

m	11,6	15,3	15,3	19,1	19,1	19,1	22,8	26,5	26,5	30,2	34,0	34,0	37,7	41,4
3,0	72,0													
3,5	65,0	56,0	54,0	51,0	49,5	33,5								
4,0	59,0	58,0	55,0	51,0	51,0	35,0	45,0							
4,5	54,0	53,0	54,0	51,0	49,0	38,5	42,5							
5,0	49,5	48,5	49,5	44,5	43,0	40,5	40,0	32,5	20,0					
6,0	40,0	37,5	38,5	34,5	33,5	35,5	31,5	29,8	20,5	21,2	19,8	17,2		
7,0	32,5	29,9	31,0	28,0	27,0	29,1	25,6	24,4	21,0	21,5	20,1	18,1	17,5	13,9
8,0	27,2	24,7	25,9	23,3	22,3	24,2	21,3	20,4	22,7	20,2	19,9	16,9	17,9	14,5
9,0		20,8	22,0	19,7	18,8	20,6	18,0	17,3	20,1	17,3	17,2	15,8	16,9	14,8
10,0		17,6	18,6	16,9	16,0	17,7	15,3	14,8	17,5	15,0	15,0	14,8	14,8	14,2
12,0		12,4	13,4	12,7	11,9	13,5	11,5	11,2	13,7	11,4	11,6	13,0	11,6	11,6
14,0				9,4	8,7	10,1	8,8	8,6	11,0	8,9	9,1	11,0	9,2	9,3
16,0				7,1	6,4	7,8	6,6	6,6	9,0	7,0	7,3	9,1	7,4	7,6
18,0							4,9	5,0	7,2	5,5	5,8	7,7	6,0	6,2
20,0								3,8	5,9	4,2	4,6	6,4	4,9	5,1
22,0								2,7	4,8	3,3	3,6	5,3	3,9	4,2
24,0										2,5	2,9	4,4	3,1	3,4
26,0										1,8	2,2	3,7	2,5	2,8
28,0											1,6	3,2	1,9	2,2
30,0												2,6	1,5	1,7
32,0													1,0	1,3
* n *	10	8	8	7	7	6	6	5	3	3	3	3	3	2
1	0	46	0	46	92	0	92	92	0	92	92	0	92	92
2	0	0	46	46	0	92	46	92	92	92	92	92	92	92
3	0	0	0	0	0	0	0	0	46	23	46	92	69	92
% 4	0	0	0	0	0	0	0	0	46	23	46	92	69	92
m/s	14,3	14,3	14,3	12,8	12,8	12,8	12,8	12,8	12,8	12,8	12,8	12,8	12,8	11,1





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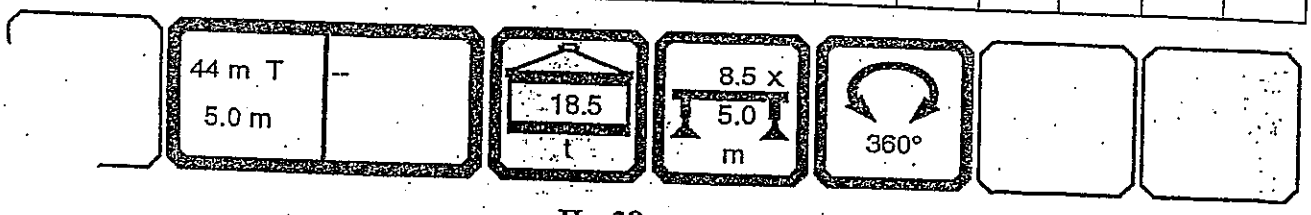
TAB 90398 01.04

CODE 〉020〈 TB90 0200.x(x)

m> <t

m	44,0
3,0	
3,5	
4,0	
4,5	
5,0	
6,0	
7,0	
8,0	13,1
9,0	12,7
10,0	12,3
12,0	11,3
14,0	9,1
16,0	7,4
18,0	6,1
20,0	5,0
22,0	4,1
24,0	3,3
26,0	2,7
28,0	2,1
30,0	1,7
32,0	1,2
* n *	2
1	100
2	100
3	100
4	100
%	
m/s	11,1



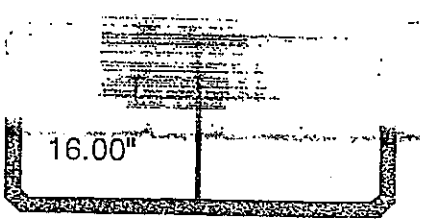
m> <t

CODE 〉044〈 TB90 0100.x(x)

m	11,6	15,3	19,1
3,0	22,4		
3,5	18,3	18,5	18,6
4,0	14,7	14,8	14,9
4,5	11,9	12,1	12,2
5,0	9,8	10,0	10,0
6,0	6,7	6,9	7,0
7,0	4,6	4,8	4,8
8,0	3,0	3,2	3,3
9,0		2,0	2,1
* n *	3	3	3
1	0	0	0
2	0	46	92
3	0	0	0
4	0	0	0
%			
m/s	14,3	14,3	12,8

CODE 〉043〈 TB90 0100.x(x)

m	m> <t 11,6	15,3	19,1
3,0	22,6		
3,5	20,2	20,3	20,3
4,0	16,7	16,9	17,0
4,5	13,7	13,9	14,0
5,0	11,4	11,6	11,6
6,0	8,0	8,2	8,3
7,0	5,7	5,9	5,9
8,0	4,0	4,2	4,2
9,0		2,9	2,9
10,0		1,9	1,9
* n *	3	3	3
1	0	0	0
2	0	46	92
3	0	0	0
4	0	0	0
%			
m/s	14,3	14,3	12,8



16.00"

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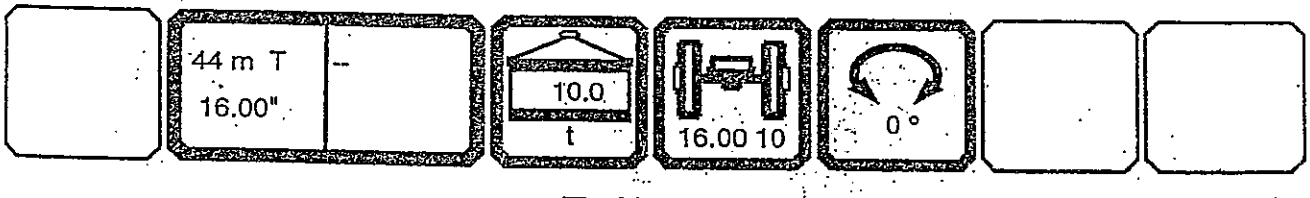
TAB 90449 01.04

m> <t

CODE 〉042〈 TB90 0100.x(x)

m	11,6	15,3	19,1
3,0	23,7		
3,5	21,2	21,3	21,3
4,0	19,1	19,1	19,1
4,5	17,2	17,3	17,3
5,0	15,7	15,7	15,7
6,0	13,0	13,1	13,1
7,0	10,2	10,3	10,4
8,0	7,9	8,0	8,1
9,0		6,3	6,3
10,0		4,9	5,0
12,0		2,9	2,9
14,0			1,5
* n *	4	3	3
% 1	0	0	0
% 2	0	46	92
% 3	0	0	0
% 4	0	0	0
m/s	14,3	14,3	12,8



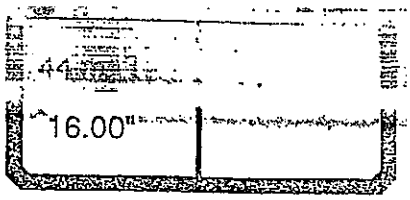
44 m T
16.00"

--

10.0
t

16.00 10

0 °



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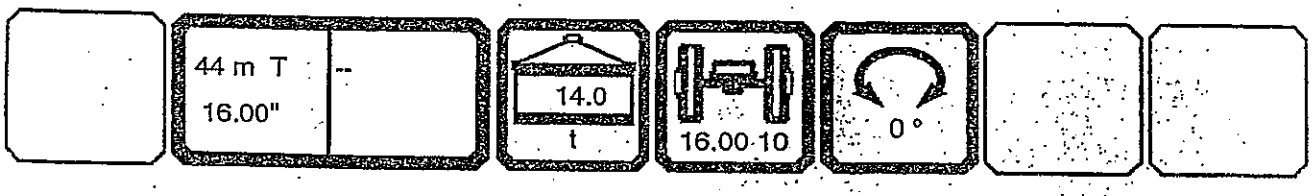
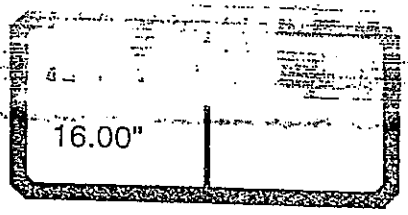
TAB 90448 01.04

CODE 〉041〈 TB90 0100.x(x)

m	m> <t	11,6	15,3	19,1
3,0		24,3		
3,5		21,8	21,8	21,8
4,0		19,6	19,6	19,7
4,5		17,7	17,8	17,8
5,0		16,1	16,2	16,2
6,0		13,4	13,5	13,5
7,0		11,3	11,4	11,4
8,0		9,6	9,7	9,7
9,0			8,2	8,2
10,0			6,6	6,6
12,0			4,3	4,3
14,0				2,7
* n *		4	3	3
%	1	0	0	0
	2	0	46	92
	3	0	0	0
	4	0	0	0
m/s		14,3	14,3	12,8





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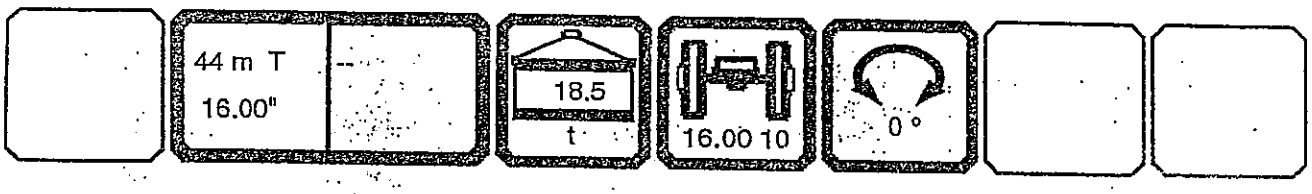
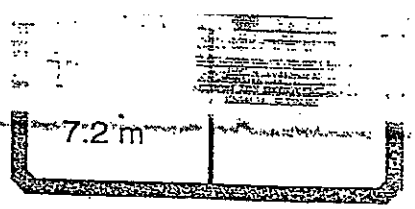
TAB 90447 01.04

CODE 〉040〈 TB90 0100.x(x)

m> <t

m	11,6	15,3	19,1
3,0	24,9		
3,5	22,3	22,4	22,4
4,0	20,1	20,2	20,2
4,5	18,2	18,3	18,3
5,0	16,6	16,6	16,6
6,0	13,8	13,9	13,9
7,0	11,7	11,8	11,8
8,0	9,9	10,0	10,0
9,0		8,6	8,6
10,0		7,4	7,4
12,0		5,4	5,4
14,0			4,0
16,0			2,6
* n *	4	3	3
1	0	0	0
2	0	46	92
3	0	0	0
4	0	0	0
m/s	14,3	14,3	12,8





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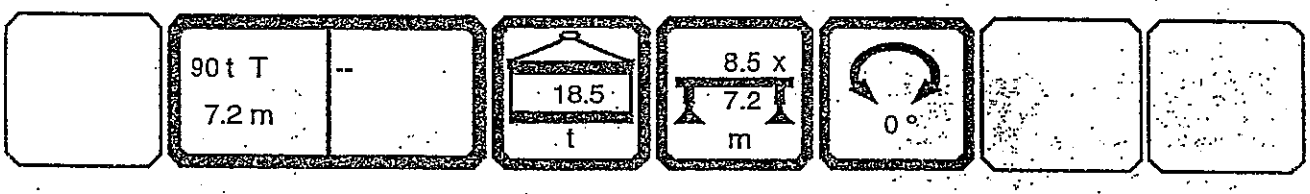
TAB 90388 01.00

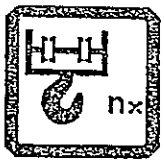
CODE 〉999〈 TB90 0400.x(x)

m	m> <t													
	11,6													
3,0	90,0													
3,5	79,0													
4,0	70,0													
4,5	63,0													
5,0	59,0													
6,0	49,0													
7,0	41,5													
8,0	35,5													
* n *	13!													
1	0													
2	0													
3	0													
4	0													
m/s	14,3													



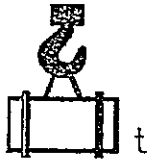
III - Supplement

Explanation of symbols LTM 1090/1



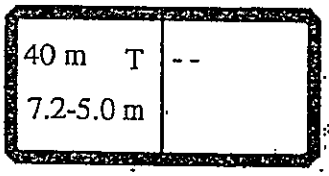
Hoisting rope reeving

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 metric tons [t]

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.

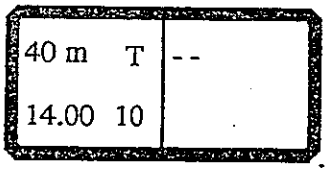


Operating mode

2part symbol

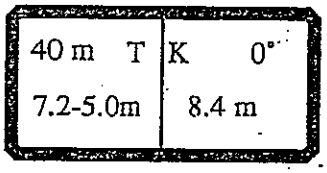
left side = Main boom mode

- Length of the main boom — ex.: 40m
- Main boom type — ex.: T=Telescopic boom
- Supporting base area — ex.: 7.2-5.0m = supporting base area 8.1 m x 7.2 m or 8.1 m x 5.0 m



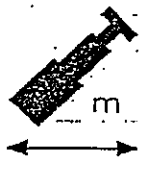
ex.: 2.3m = supporting base area 8.1 m x 2.3 m

crane freestanding on tires — ex.: 14.00 10 = crane on tires 14.00-25 tire pressure 10 bar



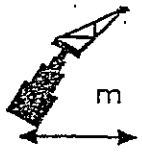
right side = Additional jib mode

- 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.: 8.3 m



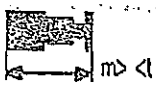
Working radius of the telescopic boom

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 " m> <t" means that all lenggths are given in meters [m] and all weights are given in metric tons [t]. Other possible units of measurement are feet [ft] and pounds [lbs] (lifting capacities in [kips] = 1000 lbs).

CODE > 03 <

Short code

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

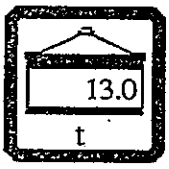
* n *

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.

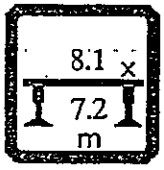
Extension conditions of the telescopic boom sections

Indications i percent for the individual telescopic sections (Tele 1 / Tele 2 / Tele 3 / Tele 4). Indication 0 = completely retracted, 100 = completely extended. Extension conditions other than those specified in the load charts are prohibited.



Counterweight

In this symbol, the size of the counterweight is indicated in metric tons [t] which must be on the crane superstructure in order to achieve the values of the given load chart.In diesem Symbol ist die Größe des Gegengewichts in Tonnen [t] angegeben, das sich am Kranoberwagen befinden muß, um die Werte der vorliegenden Tabelle erreichen zu können.



Crane operations "Crane supported"

Indication of the support base (ex.: 6.2 m 4.4 m = length 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.: 14.00= 14.00-25
Indication of required tire pressure ex.: 10= 10 bar

Slewing range

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

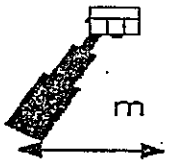
360° = unlimited slewing permissible
!0° = working range to the rear
0° = working range to the rear

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 [m/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.

Working radius with the working platform



The working radius for operations with the working platform concern the pulley assembly in the boom head and are measured from the slewing midpoint. By variably positioning the working platform, their working radii are correspondingly larger.

Working radius range

Indication of the permissible working radius range in the working radius tables for crane operations with working platform.