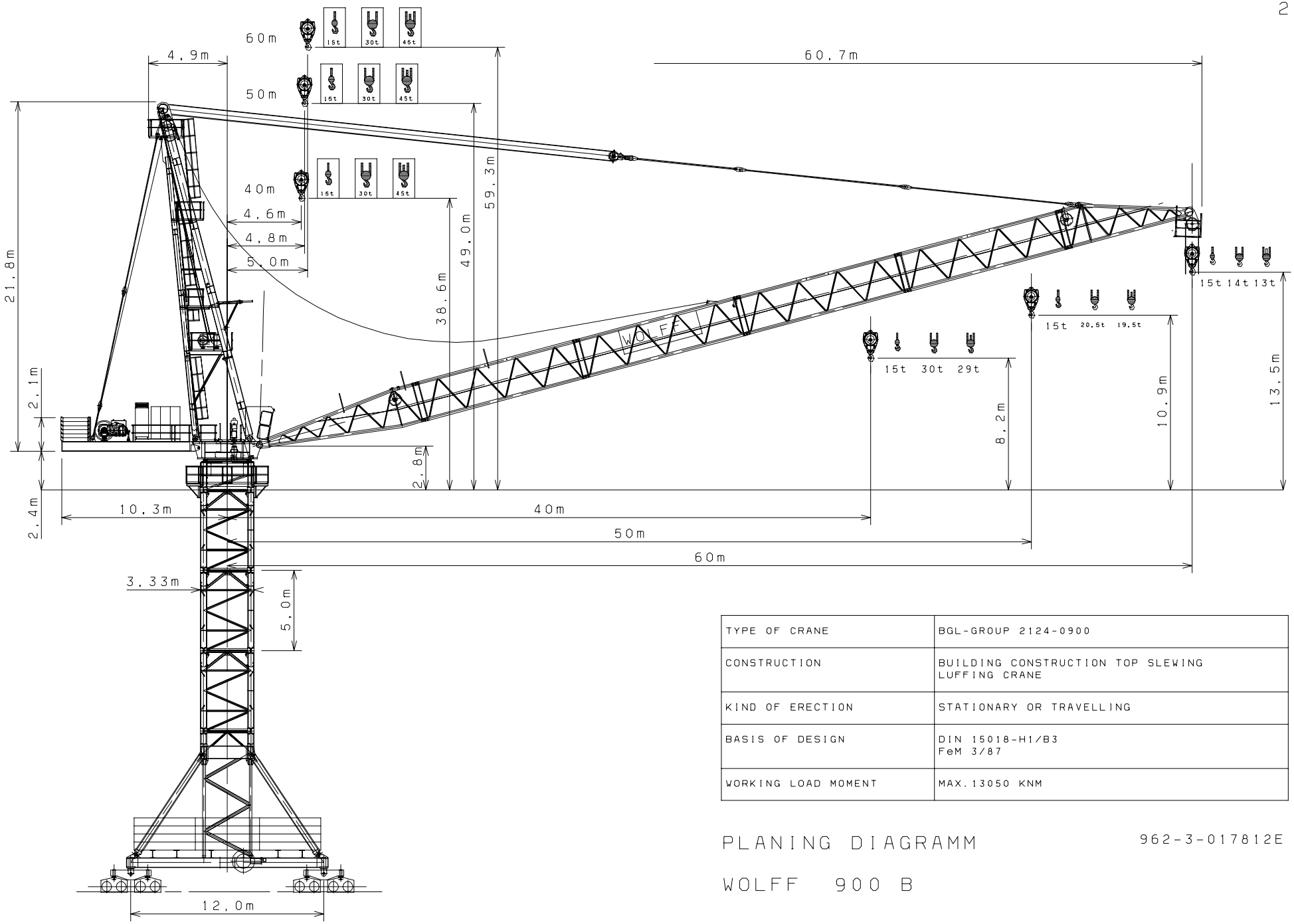


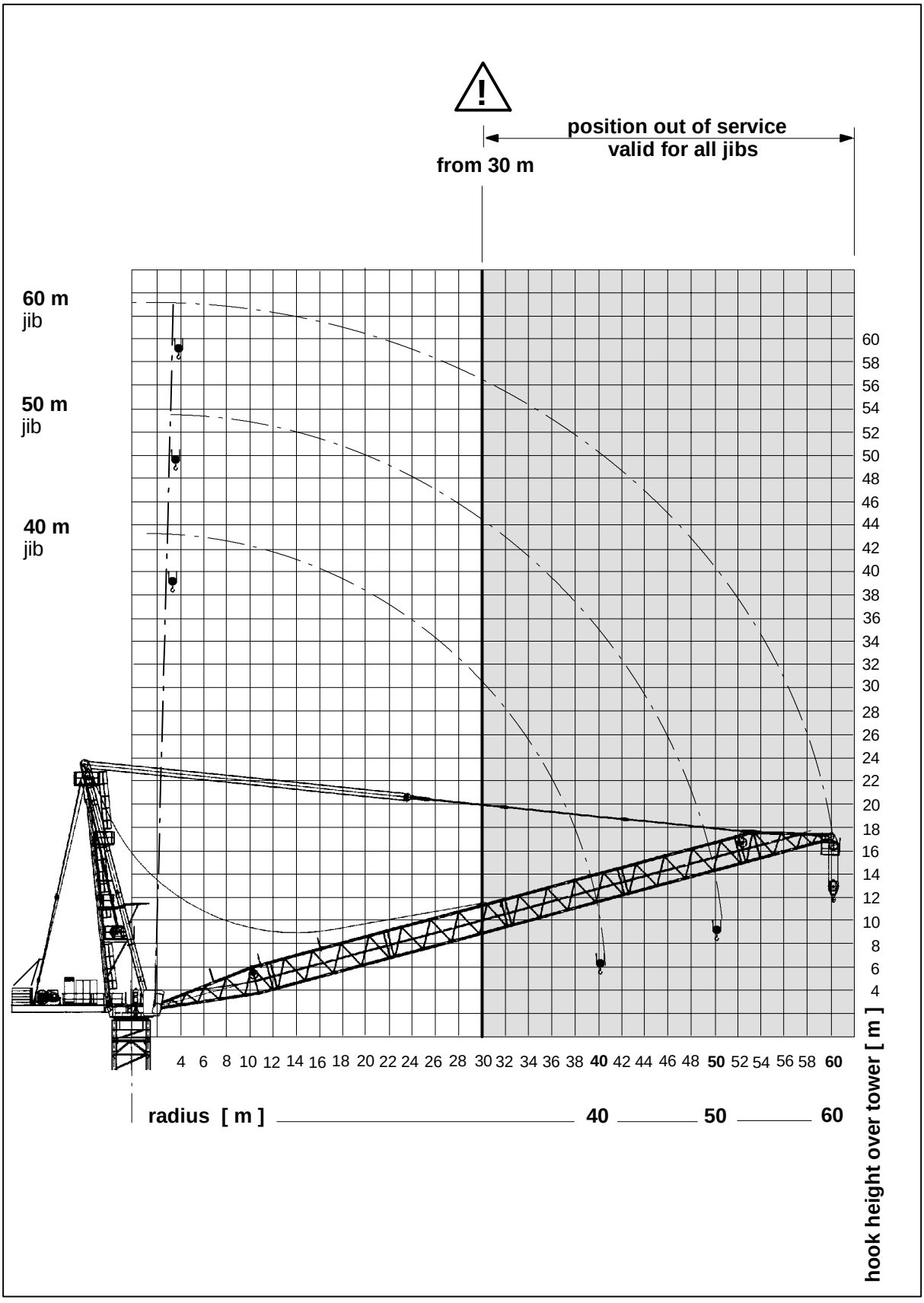
TYPE OF CRANE	BGL-GROUP 2124-0900
CONSTRUCTION	BUILDING CONSTRUCTION TOP SLEWING LUFFING CRANE
KIND OF ERECTION	STATIONARY OR TRAVELLING
BASIS OF DESIGN	DIN 15018-H1/B3 FeM 3/87
WORKING LOAD MOMENT	MAX. 13050 KNM

PLANING DIAGRAMM

962-3-017812E

WOLFF 900 B

2.1.2 **Hook positions**



2.2.1.1 **Load capacity table**

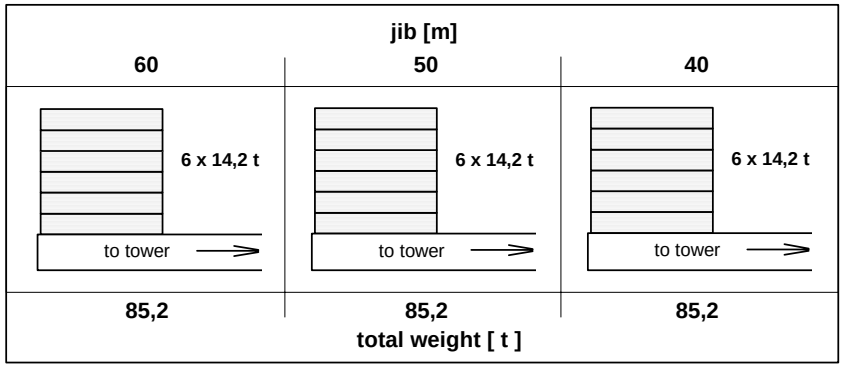
radius [m]				30	35	40	45	50	55	60	load capacity [t]
length of jib [m]	60	5,0 – 26,5	45,0	38,3	31,1	25,7	21,4	18,1	15,3	**13,0**	
	50	4,8 – 28,0		41,1	33,4	27,6	23,1	**19,5**			
	40	4,6 – 29,0		43,0	35,0	**29,0**					

radius [m]				30	35	40	45	50	55	60	load capacity [t]
length of jib [m]	60	5,0 – 38,0	30,0	30,0	30,0	27,8	23,2	19,5	16,5	**14,0**	
	50	4,8 – 39,5		30,0	30,0	29,4	24,5	**20,5**			
	40	4,6 – 40,0		30,0	30,0	**30,0**					

radius [m]				30	35	40	45	50	55	60	load capacity [t]
length of jib [m]	60	5,0 – 60,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	**15,0**	
	50	4,5 – 50,0		15,0	15,0	15,0	15,0	**15,0**			
	40	4,0 – 40,0		15,0	15,0	**15,0**					

The load capacities refer to a height of tower of 45,0 m. With greater tower heights the safe working load will be minimized by the additional weight of the hoisting cable (with 3 fall operation = 15,12 kg per meter hook path, with 2 fall operation = 10,08 kg per meter hook path, with 1 fall operation = 5,04 kg per meter hook path).

Arrangement of counterweights



962-4-015533E

2.2.1.2 **Load capacity table**

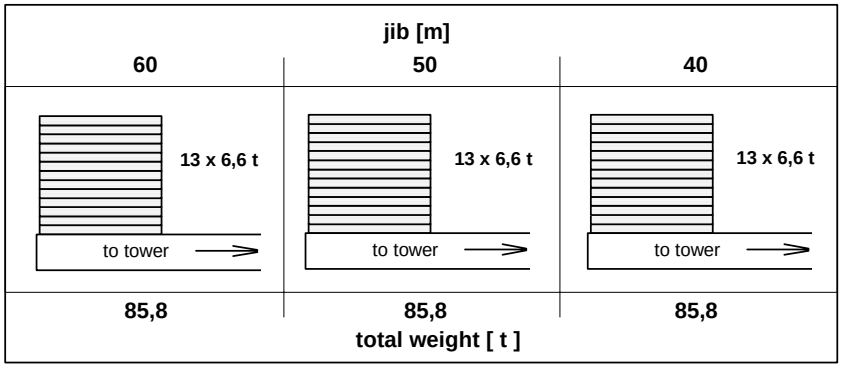
radius [m]				30	35	40	45	50	55	60	load capacity [t]
length of jib [m]	60	5,0 – 26,5	45,0	38,3	31,1	25,7	21,4	18,1	15,3	**13,0**	
	50	4,8 – 28,0		41,1	33,4	27,6	23,1	**19,5**			
	40	4,6 – 29,0		43,0	35,0	**29,0**					

radius [m]				30	35	40	45	50	55	60	load capacity [t]
length of jib [m]	60	5,0 – 38,0	30,0	30,0	30,0	27,8	23,2	19,5	16,5	**14,0**	
	50	4,8 – 39,5		30,0	30,0	29,4	24,5	**20,5**			
	40	4,6 – 40,0		30,0	30,0	**30,0**					

radius [m]				30	35	40	45	50	55	60	load capacity [t]
length of jib [m]	60	5,0 – 60,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	**15,0**	
	50	4,5 – 50,0		15,0	15,0	15,0	15,0	**15,0**			
	40	4,0 – 40,0		15,0	15,0	**15,0**					

The load capacities refer to a height of tower of 45,0 m. With greater tower heights the safe working load will be minimized by the additional weight of the hoisting cable (with 3 fall operation = 15,12 kg per meter hook path, with 2 fall operation = 10,08 kg per meter hook path, with 1 fall operation = 5,04 kg per meter hook path).

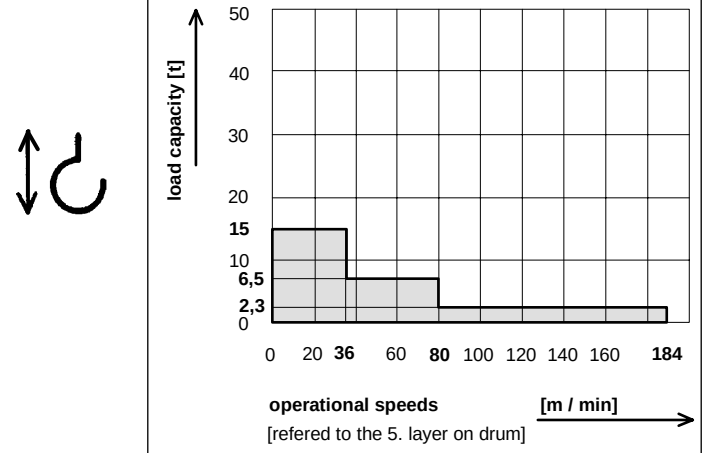
Arrangement of counterweights

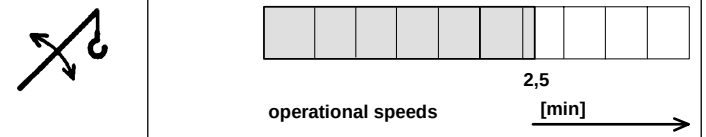


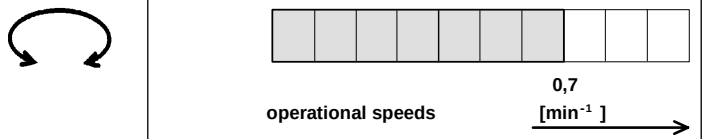
962-4-015534E

2.2.2.1 **Operational speeds** 400 V, 50 Hz

drive [type]	operational speeds load capacity [1 fall operation]	max. lift [m]	output [kW]	total output [kVA]
Hw	hoisting	440	110	280 total output for a simultaneity factor of 0,8
Ew	jib UP - DOWN		110	
Dw	slewing		2 x 12,5	



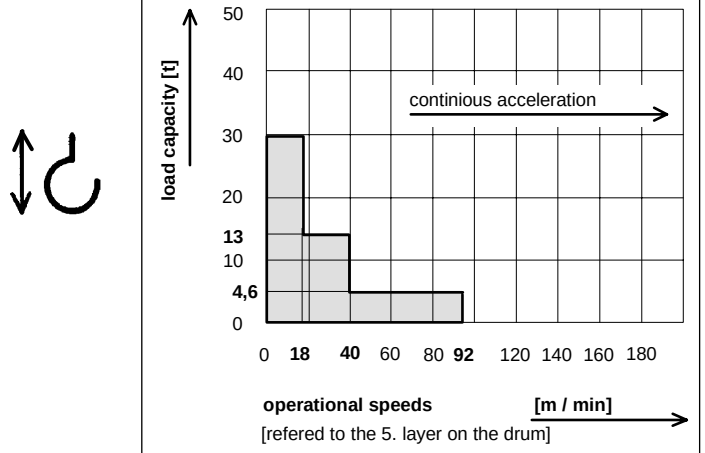


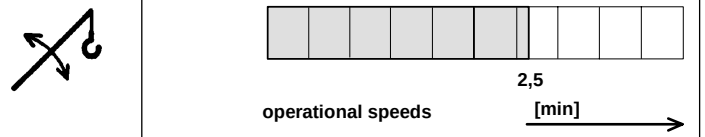


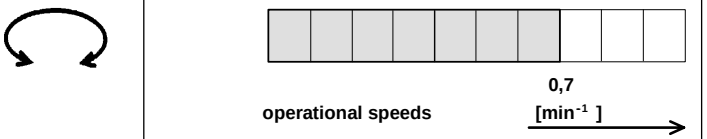
962-4-011407E

2.2.2.2 **Operational speeds** 400 V, 50 Hz

drive [type]	operational speeds load capacity [2 fall operation]	max. lift [m]	output [kW]	total output [kVA]
Hw	hoisting	220	110	280 total output for a simultaneity factor of 0,8
Ew	jib UP - DOWN		110	
Dw	slewing		2 x 12,5	



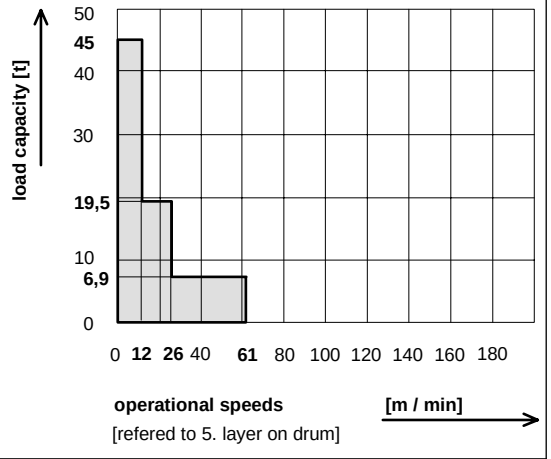


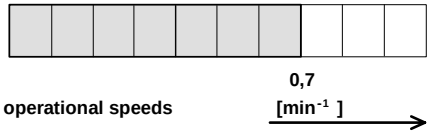


962-4-011408E

2.2.2.3 **Operational speeds** 400 V, 50 Hz

drive [type]	operational speeds load capacity [3 fall operation]	max. lift [m]	output [kW]	total output [kVA]
Hw	hoisting	220	110	280 total output for a simultaneity factor of 0,8
Ew	jib UP - DOWN		110	
Dw	slewing		2 x 12,5	





2.2.3.1 **Load capacity [kg] data given for distances in meters** DIN 15018 / H1 - B3

radius [m]	length of jib [m] 40	50	60
25,0	15000	15000	15000
26,0	15000	15000	15000
27,0	15000	15000	15000
28,0	15000	15000	15000
29,0	15000	15000	15000
30,0	15000	15000	15000
31,0	15000	15000	15000
32,0	15000	15000	15000
33,0	15000	15000	15000
34,0	15000	15000	15000
35,0	15000	15000	15000
36,0	15000	15000	15000
37,0	15000	15000	15000
38,0	15000	15000	15000
39,0	15000	15000	15000
40,0	15000	15000	15000
41,0		15000	15000
42,0		15000	15000
43,0		15000	15000
44,0		15000	15000
45,0		15000	15000
46,0		15000	15000
47,0		15000	15000
48,0		15000	15000
49,0		15000	15000
50,0		15000	15000
51,0			15000
52,0			15000
53,0			15000
54,0			15000
55,0			15000
56,0			15000
57,0			15000
58,0			15000
59,0			15000
60,0			15000

The load capacity refer to a height of tower of 45,0 m.
With greater heights of tower the safe working load will be minimized by the additional weight of the hoisting cable = 5,04 kg per meter.

2.2.3.2 **Load capacity [kg] data given for distances in meters** **DIN 15018 / H1 - B3**

radius [m]	length of jib [m] 40	50	60
25,0	30000	30000	30000
26,0	30000	30000	30000
27,0	30000	30000	30000
28,0	30000	30000	30000
29,0	30000	30000	30000
30,0	30000	30000	30000
31,0	30000	30000	30000
32,0	30000	30000	30000
33,0	30000	30000	30000
34,0	30000	30000	30000
35,0	30000	30000	30000
36,0	30000	30000	30000
37,0	30000	30000	30000
38,0	30000	30000	30000
39,0	30000	30000	28880
40,0	30000	29400	27800
41,0		28340	26810
42,0		27310	25840
43,0		26320	24930
44,0		25370	24050
45,0		24500	23200
46,0		23610	22410
47,0		22780	21640
48,0		21990	20910
49,0		21230	20200
50,0		20500	19500
51,0			18880
52,0			18250
53,0			17650
54,0			17070
55,0			16500
56,0			15970
57,0			15450
58,0			14950
59,0			14470
60,0			14000

The load capacity refer to a height of tower of 45,0 m.
With greater heights of tower the safe working load will be minimized by the additional weight of the hoisting cable = 10,08kg per meter.

2.2.3.3 **Load capacity [kg] data given for distances in meters** **DIN 15018 / H1 - B3**

radius [m]	length of jib [m] 40	50	60
25,0	45000	45000	45000
26,0	45000	45000	45000
27,0	45000	45000	43940
28,0	45000	45000	41930
29,0	45000	43000	40060
30,0	43000	41100	38300
31,0	41250	39390	36680
32,0	39550	37760	35150
33,0	37950	36220	33710
34,0	36440	34770	32360
35,0	35000	33400	31100
36,0	33690	32120	29880
37,0	32420	30900	28740
38,0	31220	29750	27660
39,0	30080	28650	26630
40,0	29000	27600	25700
41,0		26620	24730
42,0		25680	23850
43,0		24780	23010
44,0		23930	22200
45,0		23100	21400
46,0		22320	20700
47,0		21570	20000
48,0		20850	19330
49,0		20160	18680
50,0		19500	18100
51,0			17470
52,0			16890
53,0			16340
54,0			15810
55,0			15300
56,0			14810
57,0			14330
58,0			13870
59,0			13430
60,0			13000

The load capacity refer to a height of tower of 45,0 m.
With greater heights of tower the safe working load will be minimized by the additional weight of the hoisting cable = 15,12 kg per meter.

2.2.7.1 **Tower configuration**

for a free standing stationary crane without climbing device on a concrete foundation

Slewing part:

tower elements	height of tower [m]	not climbable	climbable
1	5,0	TV 33-5	KTS 33
2	10,0	TV 33-5	TV 33-5
3	15,0	TV 33-5	TV 33-5
4	20,0	TV 33-5	TV 33-5
5	25,0	TV 33-5	TV 33-5
6	30,0	TV 33-5	TV 33-5
7	35,0	TV 33-5	TV 33-5
8	40,0	TV 33-5	TV 33-5
9	45,0	TV 33-5	TV 33-5
10	50,0	TV 33-5	TV 33-5
11	55,0	TV 33-5	TV 33-5
12	60,0	TV 33-5	TV 33-5
13	65,0	TV 33-5	TV 33-5
14	70,0	TV 33-5	TV 33-5
15	75,0	TV 33-5	TV 33-5
16	80,0	TV 33-5	TV 33-5
17	85,0	TV 33-5	TV 33-5
18	90,0	TV 33-5	TV 33-5

90,0 m height of tower

90,0 m height of tower

climbing tower piece KWH 33

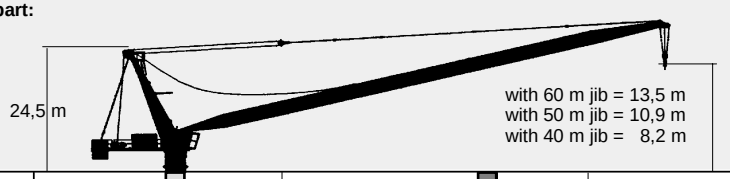
For data regarding foundation anchors see section 12.

Each tower element in its indicated position may be used as a basic tower element for static cranes with its corresponding height under hook.

2.2.9.1 **Tower configuration**

for a free standing stationary crane without climbing device on a cross frame

Slewing part:



tower elements	height of tower [m]	KRE 4120 not climbable	KRE 4120 climbable
1	5,0	TV 33-5	KTS 33
2	10,0	TV 33-5	TV 33-5
3	15,0	TV 33-5	TV 33-5
4	20,0	TV 33-5	TV 33-5
5	25,0	TV 33-5	TV 33-5
6	30,0	TV 33-5	TV 33-5
7	35,0	TV 33-5	TV 33-5
8	40,0	TV 33-5	TV 33-5
9	45,0	TV 33-5	TV 33-5
10	50,0	TV 33-5	TV 33-5
11	55,0	TV 33-5	TV 33-5
12	60,0	TV 33-5	TV 33-5
13	65,0	TV 33-5	TV 33-5
14	70,0	TV 33-5	TV 33-5
15	75,0	TV 33-5	TV 33-5
16	80,0	TV 33-5	TV 33-5
17	85,0	8,7 m	8,7 m
18	90,0		

88,7 m height of tower

88,7 m height of tower

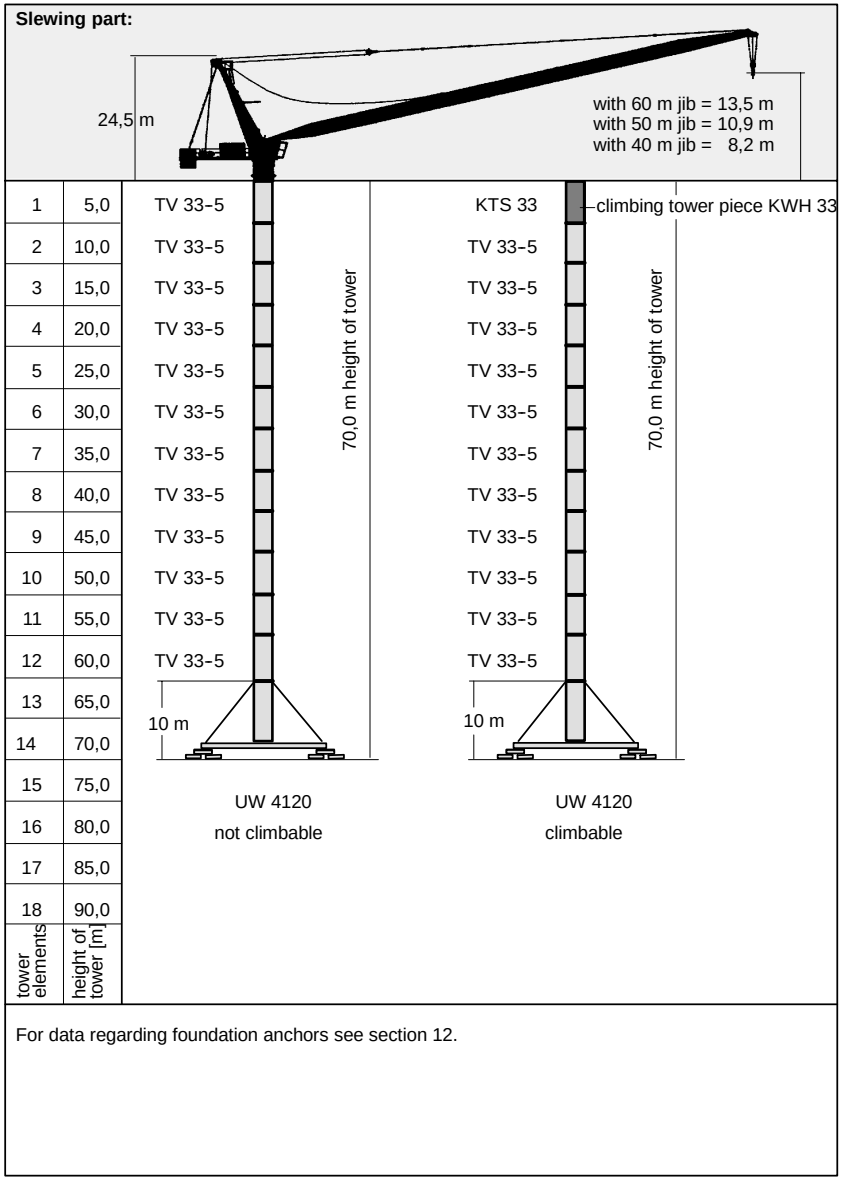
climbing tower piece KWH 33

For data regarding foundation anchors see section 12.

2.2.10.1 **Tower configuration**

for a travelling crane without climbing device

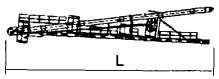
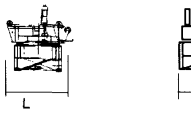
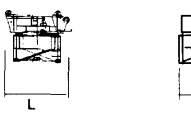
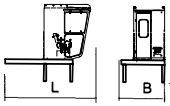
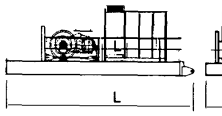
Slewing part:



tower elements	height of tower [m]
1	5,0
2	10,0
3	15,0
4	20,0
5	25,0
6	30,0
7	35,0
8	40,0
9	45,0
10	50,0
11	55,0
12	60,0
13	65,0
14	70,0
15	75,0
16	80,0
17	85,0
18	90,0

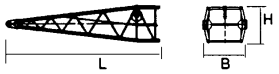
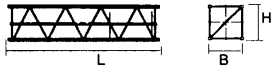
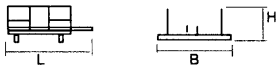
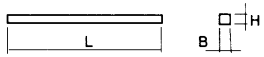
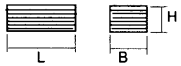
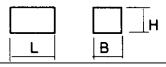
⚠ For data regarding foundation anchors see section 12.

2.3.1 **Colli list**

Item	pcs.	Designation	Colli	L (m)	W (m)	H (m)	weight (kg)	volume (m^3)
1	1	tower top complete with platforms and diverse bracing parts		24,6	3,25	4,6	49550	367,8
item 1 disassembled		tower top upper part with platforms and diverse bracing parts		21,65	3,00	3,75	24700	243,6
		Tower top upper part with platforms and diverse bracing parts and folded braces		21,65	3,00	3,06	24700	198,8
		tower top lower part with slewing scaffold, KDV, slewing drives and slip ring system		4,60	3,25	4,48	24850	67,0
		tower top lower part with unmounted slewing drive motors, deposited on the slewing scaffold		4,60	3,25	3,38	24850	50,5
2	1	driver's cabin with driver's cabin suspension		3,75	2,33	3,31	1300	28,9
3	1	counterjib, complete with bracing parts		8,62	3,0	3,02	15430	78,1

Loose and small parts can be distributed depending on the available space.

2.3.2 **Colli list**

Item	pcs.	Designation	Colli	L (m)	W (m)	H (m)	weight (kg)	volume (m^3)
5	1	jib part **1** with pins and pin support		10,7	3,05	2,54	3820	82,9
6	1	jib part **2** with pins		10,6	2,48	2,48	2780	65,2
7	1	jib part **3** with pins and sign WOLFF		10,6	2,48	2,70	3020	71,0
8	1	jib part **4** with pins and assembly platform		8,7	2,48	3,61	4200	77,9
9	1	assembly platform for jib bracing		2,55	2,6	1,55	300	10,3
10	1	hook block 15t (small part)		0,97	0,45	,045	600	0,2
11	1	hook block 30t (small part)		0,90	0,30	1,96	1200	0,53
12	1	hook block 45t (small part)		0,90	0,40	1,96	1800	0,71
13	1	jib bracings		8,33	0,21	0,25	980	0,44
14	1	standard handrail (loose parts)		2,55	1,1	1,8	460	5,05
15	1	box (small parts)		1,6	0,9	0,8	370	1,15

Loose and small parts can be distributed depending on the available space.

2.5.1 **Assembly weights**

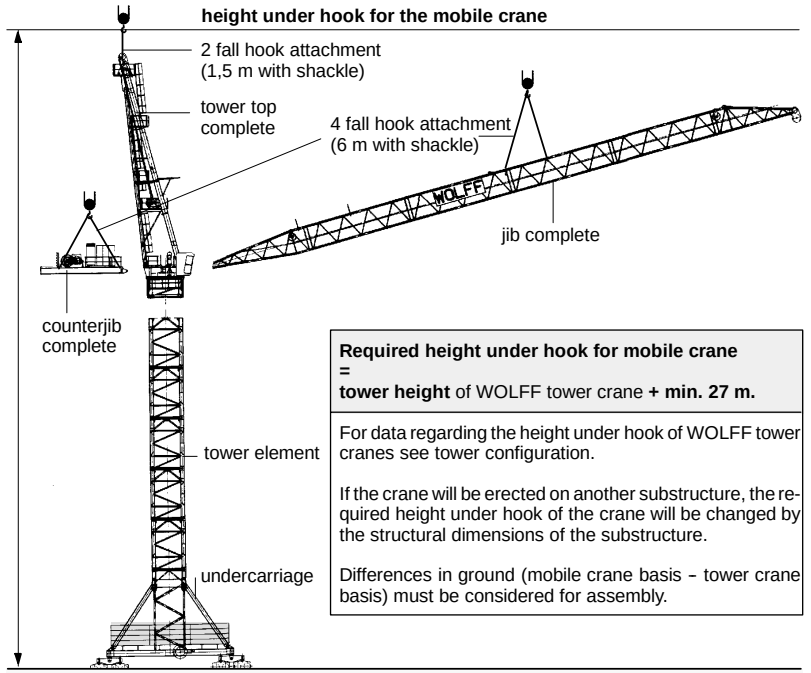
Tower top with integrated derricking drive, with all other mechanical parts, platforms and standrad handrails		**24 700 kg**
Tower top – lower part Slewing frame and lower part of tower top connected by ball race bearing, with 2 slewing drives, mechanical parts and standard handrails		**24 850 kg**
Driver's cabin with driver's cabin suspension and standard handrails		**1 200 kg**
Counterjib with hoisting drive, switch cabinet, resistors, bracings, standard handrails with damper		**15 430 Kg**
Jib 60,0 m (consisting of jib parts 1/2/3/2/2/4) with mechanical parts,bracing latches, pigeon trestles, assembly trestles – bracing latches, assembly bracing ropes, assembly rope guidances and assembly platform – jib part 4.		**21 150 kg**
Jib 50,0 m (consisting of jib part 1/2/3/2/4) with mechanical parts,bracing latches, pigeon trestles, assembly trestles – bracing latches, assembly bracing ropes, assembly rope guidances and assembly platform – jib part 4.		**18 320 kg**
Jib 40,0 m (consisting of jib part 1/2/3/4) with mechanical parts,bracing latches, pigeon trestles, assembly trestles – bracing latches, assembly bracing ropes, assembly rope guidances and assembly platform – jib part 4.		**15 490 kg**
Hook block 45 t	1 800 kg	
30 t		**1 200 kg**
15 t	600 kg	
Counterweights	6 x 14,2 t	**85 200kg**
Tower element TV 33 – 5		**9 870 kg**
Assembly platform for the assembly of the tower elements TV 33 – 5		**1 600 kg**

2.5.2 Assembly weights

Cross frame element KRE 4120 complete		**58 200 kg**
cross frame base with presure plate,	19 220 kg	
base mast part with switch cabinet	18 290 kg	
diagonal struts	8 040 kg	
central ballast support type 1	7 040 kg	
central ballast support type 2	4 760 kg	
box with small parts	330 kg	
assembly platforms and ladders	520 kg	
Undercarriage UW 4120 complete		**74 900 kg**
undercarriage base with subframes	34 500 kg	
base mast part with switch cabinet	18 290 kg	
diagonal struts	8 040 kg	
central ballast support type 1	7 040 kg	
central ballast support type 2	4 760 kg	
box with small parts	330 kg	
holding device for motor cable drum	1 365 kg	
assembly platforms and ladders	520 kg	

2.5.3 Required height under hook for mobile crane

Danger!
Use suspension ropes with sufficient capacity and observe suspension plan!



Required height under hook for mobile crane
=
tower height of WOLFF tower crane **+ min. 27 m.**

For data regarding the height under hook of WOLFF tower cranes see tower configuration.

If the crane will be erected on another substructure, the required height under hook of the crane will be changed by the structural dimensions of the substructure.

Differences in ground (mobile crane basis – tower crane basis) must be considered for assembly.

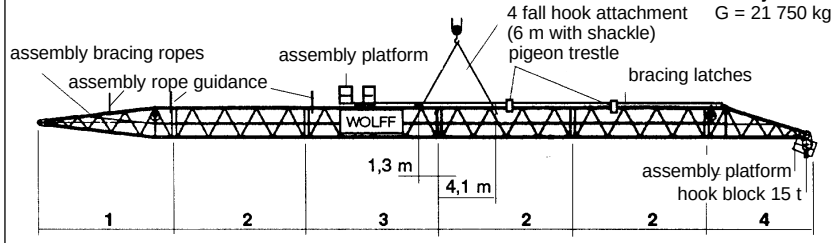
2.6.1.1 **Jib - Suspension plan 60m to 40 m jib** **1 fall operation**

Danger!
The jib must be balanced and safely hang in horizontal position. The suspension points are to be marked, remove old marks.There mustn't be any loose parts on the jib

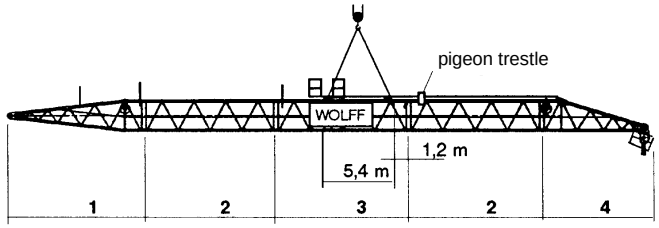
The parts of the jib are labeled with a building part identification at the top chord.

Lengths: jib part **1/2/3/4** = 10,0 m

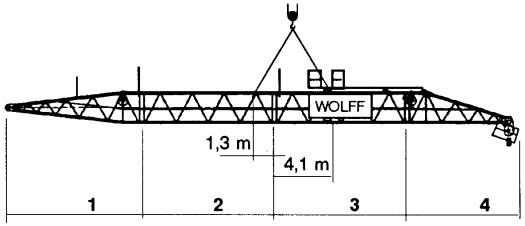
jib 60 m
G = 21 750 kg



jib 50 m
G = 18 920 kg



jib 40 m
G = 16 060 kg



962-4-011428E

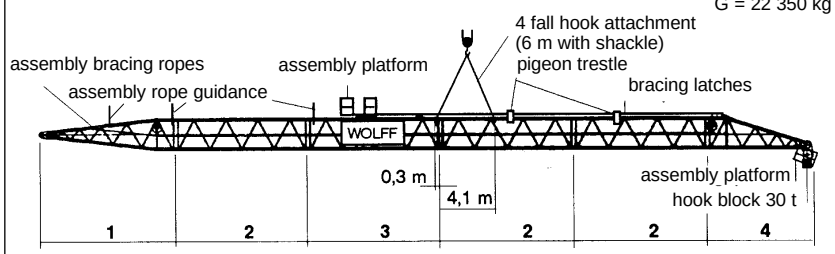
2.6.1.2 **Jib - Suspension plan 60m to 40 m jib** **2 fall operation**

Danger!
The jib must be balanced and safely hang in horizontal position. The suspension points are to be marked, remove old marks.There mustn't be any loose parts on the jib

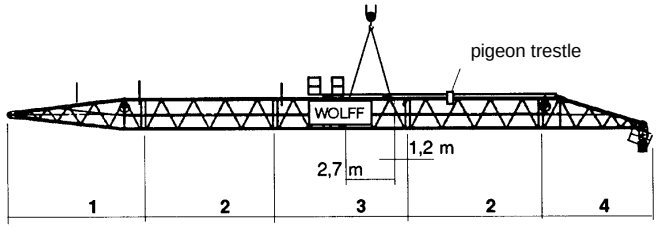
The parts of the jib are labeled with a building part identification at the top chord.

Lenghts: jib part **1/2/3/4** = 10,0 m

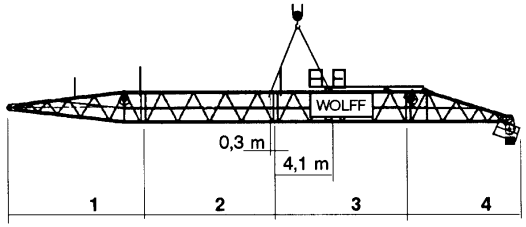
jib 60 m
G = 22 350 kg



jib 50 m
G = 19 520 kg



jib 40 m
G = 16 690 kg



962-4-011521E

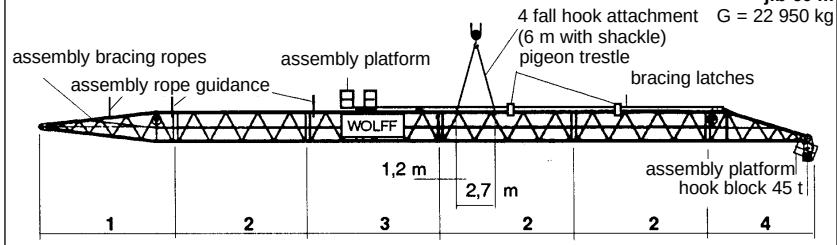
2.6.1.3 **Jib - Suspension plan 60m to 40 m jib** **3 fall operation**

Danger!
The jib must be balanced and safely hang in horizontal position. The suspension points are to be marked, remove old marks.There mustn't be any loose parts on the jib

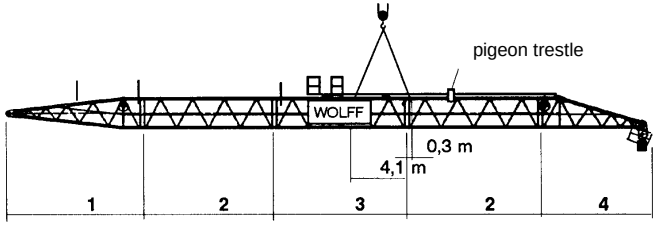
The parts of the jib are labeled with a building part identification at the top chord.

Lengths: jib part **1/2/3/4** = 10,0 m

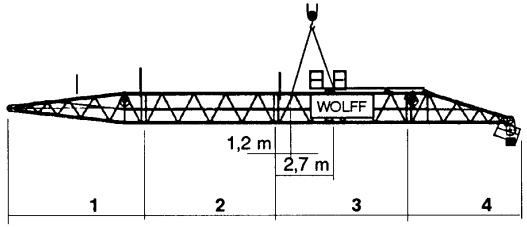
jib 60 m
G = 22 950 kg



jib 50 m
G = 20 120 kg



jib 40 m
G = 17 290 kg



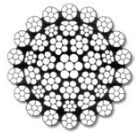
2.7.1.1 **Hoisting rope**

Cable Ø = 32 mm $^{+4\%}_{+2\%}$

design according to FEM 3 / 87
kind of operation M 4

First equipment

CASAR EUROLIFT -
non-twisting,
flexible hoisting rope
with compressed outer strands
with compressed steel cable core



nominal strength	**=**	**1770,0 N/mm²**
calc. breaking strength	**=**	**1025,5 kN**
min. breaking strength	**=**	**843,4 kN**
weight per meter	**=**	**5,04 kg**

Design

langs-lay rope, left handed,
made from blank cable wire.

middle space factor	=	0,720
middle spinning loss factor	=	0,82
middle weight factor	=	0,87
total twist number	=	280

number of carrying wires in the outer strands
is to be judged by the state of wear according to
DIN 15020 Bl. 2 / ISO DIS 4309
= **126**

Basic equipment

cable length 320 m	**for crane with:**	**operation .... 2 fall** **radius ..... 60 m** **tower height . 40 m**

By lengthening the hook path by 1 tower element TV 33 - 5 the necessary cable length increases by **5,0 m** for **operation in 1 fall**, by **10,0 m** for **operation in 2 falls** and by **15,0 m** for **operation in 3 falls**.

Attention!
A wire cable is a complexe machine element.
Conventional cable design frequently doesn't meet the requirements of modern rope drives. Short service life is the result.

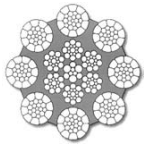
2.7.1.2 Derricking rope

Cable Ø = 28 mm + 4% + 2%

design according to FEM 3 / 87
kind of operation M 4

First equipment

CASAR TURBOPLAST –
cable with 8 strands, made
of compressed outer strands



nominal strength	**=**	**1770,0**	**N/mm²**
calc. breaking strength	**=**	**717,2**	**kN**
min. breaking strength	**=**	**617,3**	**kN**
weight per meter	**=**	**3,525**	**kg**

Design

langs–lay rope, left handed,
made from blank cable wire

middle space factor	=	0,665
middle spinning loss factor	=	0,85
middle weight factor	=	0,87
total twist number	=	327

number of carrying wires in the outer strands
is to be judged by the state of wear according to
DIN 15020 Bl. 2 / ISO DIS 4309
= **208**

Basic equipment

cable length 250 m	**for crane with: 30 m – 60 m jib**

! **Attention!**
A wire cable is a complexe machine element.
Conventional cable design frequently doesn't meet the requirements of modern rope drives. Short service life is the result.

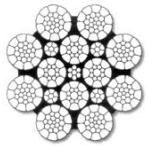
2.7.1.3 Assembly bracing ropes

Cable Ø = 28 mm + 4% + 2%

design according to FEM 3 / 87
kind of operation M 4

First equipment

CASAR TURBOLIFT –
cable with 8 strands
in non–overlapped double
parallel construction, made
out of compressed strands



nominal strength	**=**	**196,0**	**N/mm²**
calc. breaking strength	**=**	**886,2**	**kN**
min. breaking strength	**=**	**742,4**	**kN**
weight per meter	**=**	**3,798**	**kg**

Design

ordinary lay rope, right handed,
made from zinced cable wires.

each with 2 pressed in DEMAG thimbles with clevis, size 6

middle space factor	=	0,734
spinning loss factor	=	0,83
weight factor	=	0,84
total twist number	=	311

number of carrying wires in the outer strands
is to be judged by the state of wear according to
DIN 15020 Bl. 2 / ISO DIS 4309
= **208**

Basic equipment

cable length 2 x 39,0 m	**for crane with: 30 m – 60 mjib**

! **Attention!**
The assembly bracing ropes are used and changed paired.
Exactly keep the same length. Cable length from center of thimble hole
to center of thimble hole = 39,5 m.

! **Attention!**
A wire cable is a complexe machine element.
Conventional cable design frequently doesn't meet the requirements of modern rope drives. Short service life is the result.

2.8.1 **Exterior climbing gear KWH 33**

The Wolff Tower crane 900 B can increase or decrease the height of its tower by means of the exterior climbing gear KWH 33 .

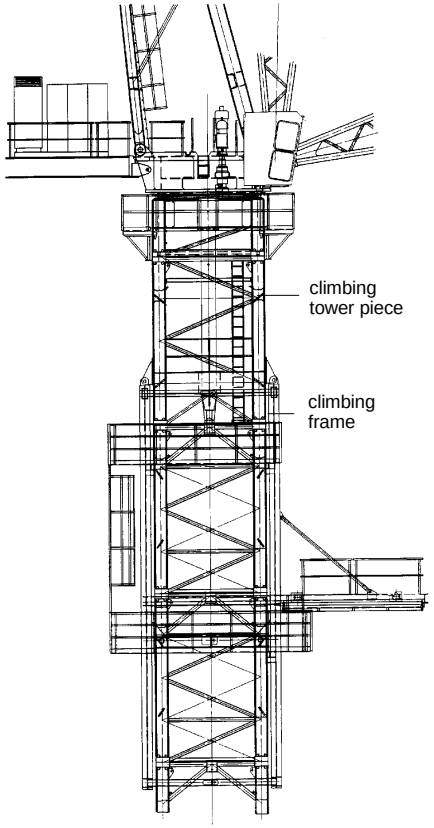
! **Attention!**
To enable assembly of the climbing gear KWH 33, it is necessary that the climbing tower piece is already mounted below the slewing part of the WOLFF tower crane 900 B

Min. height with stationary erection:

3 TV 33 – 5 + climbing tower piece

Min. height with travelling erection:

undercarriage + 3 TV 33 – 5 + climbing tower piece



2.8.2 **Table of balancing weights**

* The balancing weights indicated are gross weights of the tower elements or load. .

** The indicated radius refers to the centre of the tower and shall be treated as standard value. Exact balancing will be achieved by travelling of jib with tower element or load and may be checked by travelling apart free of mismatch at the joints of the tower.

60 m jib		
balance 14,0 t	at	39,0 m radius

60 m jib		
balance 14,0 t	at	36,0 m radius

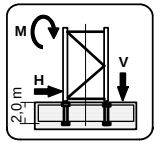
60 m jib		
balance 14,0 t	at	31,0 m radius

⚠ **Danger!**
The climbing gear is an auxiliary device for assembly and mustn't stay at the WOLFF tower crane under normal working conditions.

3.1.1 **Foundation loads according DIN**

Inclusive all dynamic factors,theory order II. taken into account for stationary tower crane on a concrete foundation according to tower configuration without climbing gear

M = moment **H** = horizontal load **V** = vertical load

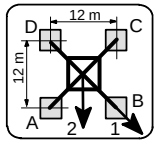


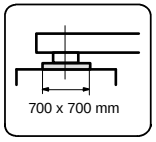
Foundation loads **Jib length 40 - 60 m**

Tower height	**Crane in service** torque moment **1300** kNm			**Crane out of service**			**Assembly**		
[m]	**M** [kNm]	**H** [kN]	**V** [kN]	**M** [kNm]	**H** [kN]	**V** [kN]	**M** [kNm]	**H** [kN]	**V** [kN]
10	9980	57	2732	333	192	2042	415	29	1037
15	10546	61	2842	808	211	2142	572	33	1131
20	11131	65	2952	2048	229	2242	751	38	1225
25	11733	69	3062	3386	247	2342	951	42	1319
30	12351	73	3172	4820	265	2442	1174	46	1413
35	12982	78	3282	6349	284	2542	1419	50	1507
40	13625	83	3392	7970	302	2642	1686	54	1601
45	14277	86	3502	9681	320	2742	1978	58	1695
50	14936	90	3612	11480	338	2842	2293	62	1789
55	15599	94	3722	13362	357	2942	2634	67	1883
60	16265	98	3832	15325	375	3042	3000	71	1977
65	16931	102	3942	17364	393	3142	3394	75	2071
70	17594	107	4052	19477	409	3242	3816	79	2165
75	18251	111	4162	21644	422	3342	4267	83	2259
80	18899	115	4272	23850	435	3442	4750	87	2353
85	19537	119	4382	26088	449	3542	5267	92	2447
90	20160	123	4492	28354	463	3642	5819	96	2541

3.3.1.1 **Centerballasts and Cornerloads DIN 15019**

for a stationary tower crane on a
cross frame element without climbing gear



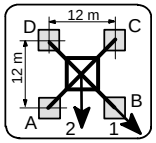


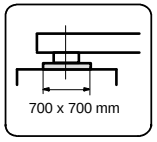
KRE 4120 **Cornerdistance 12,0 m x 12,0 m** **Jib length 40 m**

Tower height	Centerballast	Jib position	Crane in service torque moment: **1300** kNm Cornerloads				Horizontal force	Jib position	Crane out of service torque moment: 0 kNm Cornerloads				Horizontal force
			A	**B**	**C**	**D**			**A**	**B**	**C**	**D**	
[m]	[t]		[kN]	[kN]	[kN]	[kN]	[kN]		[kN]	[kN]	[kN]	[kN]	[kN]
8,7	0,0	1	684	1242	684	125	60	1	557	791	557	323	160
		2	1079	1079	289	289		2	723	723	392	392	
13,7	0,0	1	709	1284	709	133	64	1	582	775	582	389	173
		2	1115	1115	302	302		2	718	718	446	446	
18,7	0,0	1	733	1327	733	140	68	1	607	754	607	459	187
		2	1153	1153	313	313		2	711	711	502	502	
23,7	0,0	1	758	1372	758	144	72	1	632	724	632	539	205
		2	1192	1192	324	324		2	697	697	566	566	
28,7	0,0	1	783	1419	783	146	76	1	656	688	656	625	223
		2	1233	1233	333	333		2	678	678	634	634	
33,7	0,0	1	808	1469	808	146	80	1	681	716	681	646	241
		2	1275	1275	340	340		2	706	706	656	656	
38,7	0,0	1	832	1521	832	144	84	1	706	813	706	598	260
		2	1319	1319	345	345		2	782	782	630	630	
43,7	0,0	1	857	1575	857	139	89	1	731	917	731	544	278
		2	1365	1365	349	349		2	862	862	599	599	
48,7	0,0	1	882	1632	882	132	93	1	755	1026	755	484	296
		2	1412	1412	352	352		2	947	947	564	564	
53,7	0,0	1	907	1691	907	122	97	1	780	1142	780	418	314
		2	1461	1461	352	352		2	1036	1036	524	524	
58,7	0,0	1	931	1754	931	109	101	1	805	1265	805	344	333
		2	1513	1513	350	350		2	1130	1130	479	479	
63,7	5,0	1	969	1832	969	105	105	1	842	1408	842	276	351
		2	1579	1579	358	358		2	1242	1242	442	442	
68,7	25,0	1	1043	1951	1043	135	109	1	917	1596	917	238	369
		2	1685	1685	401	401		2	1397	1397	437	437	
73,7	45,0	1	1118	2074	1118	162	114	1	992	1792	992	191	387
		2	1794	1794	442	442		2	1558	1558	425	425	
78,7	70,0	1	1205	2214	1205	197	118	1	1079	2010	1079	148	406
		2	1918	1918	492	492		2	1737	1737	421	421	
83,7	95,0	1	1293	2358	1293	227	122	1	1166	2237	1166	95	424
		2	2046	2046	539	539		2	1923	1923	409	409	
88,7	125,0	1	1392	2520	1392	264	126	1	1266	2487	1266	45	442
		2	2190	2190	595	595		2	2129	2129	403	403	

3.3.1.2 **Centerballasts and Cornerloads DIN 15019**

for a stationary tower crane on a
cross frame element without climbing gear



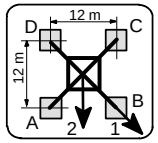


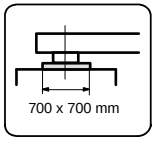
KRE 4120 **Cornerdistance 12,0 m x 12,0 m** **Jib length 50 m**

Tower height	Centerballast	Jib position	Crane in service torque moment: **1300** kNm Cornerloads				Horizontal force	Jib position	Crane out of service torque moment: 0 kNm Cornerloads				Horizontal force
			A	**B**	**C**	**D**			**A**	**B**	**C**	**D**	
[m]	[t]		[kN]	[kN]	[kN]	[kN]	[kN]		[kN]	[kN]	[kN]	[kN]	[kN]
8,7	0,0	1	690	1264	690	116	64	1	564	736	564	392	178
		2	1096	1096	285	285		2	685	685	442	442	
13,7	0,0	1	715	1307	715	123	69	1	589	714	589	463	191
		2	1134	1134	296	296		2	677	677	500	500	
18,7	0,0	1	740	1352	740	127	73	1	613	688	613	539	205
		2	1173	1173	307	307		2	666	666	561	561	
23,7	0,0	1	765	1399	765	130	77	1	638	651	638	625	223
		2	1214	1214	316	316		2	648	648	629	629	
28,7	0,0	1	789	1449	789	130	81	1	663	716	663	610	241
		2	1256	1256	323	323		2	700	700	625	625	
33,7	0,0	1	814	1500	814	128	85	1	688	813	688	562	259
		2	1299	1299	329	329		2	776	776	599	599	
38,7	0,0	1	839	1554	839	124	89	1	712	916	712	508	278
		2	1344	1344	333	333		2	857	857	568	568	
43,7	0,0	1	864	1610	864	117	93	1	737	1026	737	448	296
		2	1392	1392	336	336		2	941	941	533	533	
48,7	0,0	1	888	1669	888	107	98	1	762	1142	762	382	314
		2	1440	1440	336	336		2	1030	1030	493	493	
53,7	0,0	1	913	1731	913	95	102	1	787	1264	787	309	333
		2	1491	1491	335	335		2	1124	1124	449	449	
58,7	10,0	1	963	1821	963	105	106	1	836	1419	836	254	351
		2	1570	1570	356	356		2	1248	1248	424	424	
63,7	30,0	1	1038	1939	1038	136	110	1	911	1606	911	216	369
		2	1675	1675	400	400		2	1403	1403	419	419	
68,7	50,0	1	1112	2061	1112	164	114	1	986	1802	986	170	387
		2	1783	1783	441	441		2	1563	1563	409	409	
73,7	70,0	1	1187	2187	1187	187	118	1	1061	2006	1061	115	406
		2	1894	1894	480	480		2	1729	1729	392	392	
78,7	95,0	1	1274	2329	1274	219	122	1	1148	2231	1148	64	424
		2	2020	2020	528	528		2	1914	1914	382	382	
83,7	125,0	1	1374	2490	1374	258	127	1	1248	2480	1248	15	442
		2	2163	2163	585	585		2	2119	2119	376	376	
88,7	155,0	1	1474	2655	1474	292	131	1	1303	2783	1303	0	460
		2	2309	2309	638	638		2	2331	2331	363	363	

3.3.1.3 **Centerballasts and Cornerloads DIN 15019**

for a stationary tower crane on a
cross frame element without climbing gear



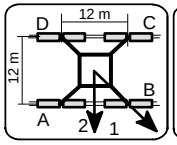


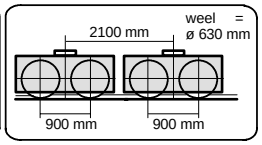
KRE 4120 **Cornerdistance 12,0 m x 12,0 m** **Jib length 60 m**

Tower height [m]	Centerballast [t]	Jib position	Crane in service torque moment: **1300** kNm Cornerloads A [kN]	B [kN]	C [kN]	D [kN]	Horizontal force [kN]	Jib position	Crane out of service torque moment: 0 kNm Cornerloads A [kN]	B [kN]	C [kN]	D [kN]	Horizontal force [kN]
8,7	0,0	1	683	1092	683	274	64	1	571	544	571	597	191
		2	972	972	394	394		2	552	552	589	589	
13,7	0,0	1	708	1134	708	281	68	1	595	610	595	580	204
		2	1009	1009	406	406		2	606	606	585	585	
18,7	0,0	1	733	1177	733	288	72	1	620	681	620	559	217
		2	1047	1047	418	418		2	663	663	577	577	
23,7	0,0	1	757	1222	757	293	77	1	645	758	645	531	235
		2	1086	1086	429	429		2	725	725	564	564	
28,7	0,0	1	782	1268	782	296	81	1	670	842	670	497	254
		2	1125	1125	439	439		2	791	791	548	548	
33,7	0,0	1	807	1315	807	299	85	1	694	935	694	453	272
		2	1166	1166	448	448		2	865	865	524	524	
38,7	0,0	1	832	1363	832	300	89	1	719	1043	719	395	290
		2	1207	1207	456	456		2	948	948	490	490	
43,7	0,0	1	856	1412	856	300	93	1	744	1155	744	332	309
		2	1250	1250	463	463		2	1035	1035	453	453	
48,7	0,0	1	881	1463	881	299	97	1	769	1273	769	264	327
		2	1293	1293	469	469		2	1125	1125	412	412	
53,7	0,0	1	906	1515	906	296	102	1	793	1397	793	190	345
		2	1337	1337	475	475		2	1220	1220	367	367	
58,7	50,0	1	1056	1693	1056	418	106	1	943	1650	943	236	363
		2	1507	1507	604	604		2	1443	1443	443	443	
63,7	70	1	1130	1798	1130	463	110	1	1018	1835	1018	201	382
		2	1602	1602	658	658		2	1595	1595	440	440	
68,7	90	1	1205	1903	1205	507	114	1	1093	2024	1093	161	400
		2	1699	1699	711	711		2	1751	1751	434	434	
73,7	115	1	1292	2023	1292	562	118	1	1180	2231	1180	128	418
		2	1809	1809	776	776		2	1923	1923	436	436	
78,7	145	1	1392	2156	1392	628	122	1	1280	2457	1280	102	436
		2	1932	1932	852	852		2	2112	2112	447	447	
83,7	170	1	1479	2278	1479	681	126	1	1367	2675	1367	59	455
		2	2044	2044	915	915		2	2292	2292	442	442	
88,7	210	1	1604	2446	1604	762	131	1	1492	2936	1492	47	473
		2	2200	2200	1008	1008		2	2513	2513	470	470	

3.4.2.1 **Centralballast and Cornerload acc. to DIN 15019**

for a travelling tower crane on
undercarriage without climbing gear



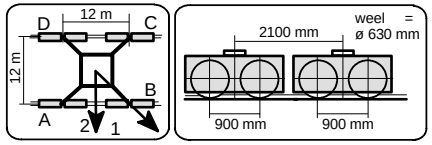


UW 4120 **Corner distance 12 m x 12 m** **Jib 40 m**

Tower height [m]	Centerballast [t]	Jib position	Crane in service torgue moment: **1300** kNm Cornerloads A [kN]	B [kN]	C [kN]	D [kN]	Horizontal force [kN]	Jib position	Crane out of service torque moment: 0 kNm Cornerloads A [kN]	B [kN]	C [kN]	D [kN]	Horizontal force [kN]
10,0	0,0	1	726	1284	726	167	60	1	599	833	599	365	160
		2	1121	1121	331	331		2	765	765	434	434	
15,0	0,0	1	751	1326	751	175	64	1	624	817	624	431	173
		2	1157	1157	344	344		2	760	760	488	488	
20,0	0,0	1	775	1369	775	182	68	1	649	796	649	501	187
		2	1195	1195	355	355		2	753	753	544	544	
25,0	0,0	1	800	1414	800	186	72	1	674	766	674	581	205
		2	1234	1234	366	366		2	739	739	608	608	
30,0	0,0	1	825	1461	825	188	76	1	698	730	698	667	223
		2	1275	1275	375	375		2	720	720	676	676	
35,0	0,0	1	850	1511	850	188	80	1	723	758	723	688	241
		2	1317	1317	382	382		2	748	748	698	698	
40,0	0,0	1	874	1563	874	186	84	1	748	855	748	640	260
		2	1361	1361	387	387		2	824	824	672	672	
45,0	0,0	1	899	1617	899	181	89	1	773	959	773	586	278
		2	1407	1407	391	391		2	904	904	641	641	
50,0	0,0	1	924	1674	924	174	93	1	797	1068	797	526	296
		2	1454	1454	394	394		2	989	989	606	606	
55,0	0,0	1	949	1733	949	164	97	1	822	1184	822	460	314
		2	1503	1503	394	394		2	1078	1078	566	566	
60,0	0,0	1	973	1796	973	151	101	1	847	1307	847	386	333
		2	1555	1555	392	392		2	1172	1172	521	521	
65,0	5,0	1	1011	1874	1011	147	105	1	884	1450	884	318	351
		2	1621	1621	400	400		2	1284	1284	484	484	
70,0	25,0	1	1085	1993	1085	177	109	1	959	1638	959	280	369
		2	1727	1727	443	443		2	1439	1439	479	479	

3.4.2.2 **Centerballast and Cornerloads acc. to DIN 15019**

for a travelling tower crane on undercarriage without climbing gear

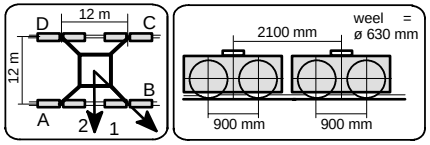


UW 4120 — **Corner distance 12 m x 12 m** — **Jib 50 m**

Tower height [m]	Centerballast [t]	Jib position	Crane in service torque moment: **1300** kNm Cornerloads A [kN]	B [kN]	C [kN]	D [kN]	Horizontal force [kN]	Jib position	Crane out of service torque moment: 0 kNm Cornerloads A [kN]	B [kN]	C [kN]	D [kN]	Horizontal force [kN]
10,0	0,0	1	732	1306	732	158	64	1	606	778	606	434	178
		2	1138	1138	327	327		2	727	727	484	484	
15,0	0,0	1	757	1349	757	165	69	1	631	756	631	505	191
		2	1176	1176	338	338		2	719	719	542	542	
20,0	0,0	1	782	1394	782	169	73	1	655	730	655	581	205
		2	1215	1215	349	349		2	708	708	603	603	
25,0	0,0	1	807	1441	807	172	77	1	680	693	680	667	223
		2	1256	1256	358	358		2	690	690	671	671	
30,0	0,0	1	831	1491	831	172	81	1	705	758	705	652	241
		2	1298	1298	365	365		2	742	742	667	667	
35,0	0,0	1	856	1542	856	170	85	1	730	855	730	604	259
		2	1341	1341	371	371		2	818	818	641	641	
40,0	0,0	1	881	1596	881	166	89	1	754	958	754	550	278
		2	1386	1386	375	375		2	899	899	610	610	
45,0	0,0	1	906	1652	906	159	93	1	779	1068	779	490	296
		2	1434	1434	378	378		2	983	983	575	575	
50,0	0,0	1	930	1711	930	149	98	1	804	1184	804	424	314
		2	1482	1482	378	378		2	1072	1072	535	535	
55,0	0,0	1	955	1773	955	137	102	1	829	1306	829	351	333
		2	1533	1533	377	377		2	1166	1166	491	491	
60,0	10,0	1	1005	1863	1005	147	106	1	878	1461	878	296	351
		2	1612	1612	398	398		2	1290	1290	466	466	
65,0	30,0	1	1080	1981	1080	178	110	1	953	1648	953	258	369
		2	1717	1717	442	442		2	1445	1445	461	461	
70,0	50,0	1	1154	2103	1154	206	114	1	1028	1844	1028	212	387
		2	1825	1825	483	483		2	1605	1605	451	451	

3.4.2.3 **Centerballast and Cornerloads acc. to DIN 15019**

for a travelling tower crane on undercarriage without climbing gear



UW 4120 — **Corner distance 12 m x 12 m** — **Jib 60 m**

Tower height [m]	Centerballast [t]	Jib position	Crane in service torque moment: **1300** kNm Cornerloads A [kN]	B [kN]	C [kN]	D [kN]	Horizontal force [kN]	Jib position	Crane out of service torque moment: 0 kNm Cornerloads A [kN]	B [kN]	C [kN]	D [kN]	Horizontal force [kN]
10,0	0,0	1	725	1134	725	316	64	1	613	586	613	639	191
		2	1014	1014	436	436		2	594	594	631	631	
15,0	0,0	1	750	1176	750	323	68	1	637	652	637	622	204
		2	1051	1051	448	448		2	648	648	627	627	
20,0	0,0	1	775	1219	775	330	72	1	642	723	642	601	217
		2	1089	1089	460	460		2	705	705	619	619	
25,0	0,0	1	799	1264	799	335	77	1	687	800	687	573	235
		2	1128	1128	471	471		2	767	767	606	606	
30,0	0,0	1	824	1310	824	334	81	1	712	884	712	539	254
		2	1167	1167	481	481		2	833	833	590	590	
35,0	0,0	1	849	1357	849	341	85	1	736	977	736	495	272
		2	1208	1208	490	490		2	907	907	566	566	
40,0	0,0	1	876	1405	876	342	89	1	761	1085	761	437	290
		2	1249	1249	498	498		2	990	990	532	532	
45,0	0,0	1	898	1454	898	342	93	1	786	1197	786	374	309
		2	1292	1292	505	505		2	1077	1077	495	495	
50,0	0,0	1	923	1505	923	341	97	1	811	1315	811	306	327
		2	1335	1335	511	511		2	1167	1167	454	454	
55,0	0,0	1	948	1557	948	338	102	1	835	1439	835	232	345
		2	1379	1379	517	517		2	1262	1262	409	409	
60,0	50,0	1	1098	1735	1098	460	106	1	985	1692	985	278	363
		2	1549	1549	646	646		2	1485	1485	485	485	
65,0	70	1	1172	1840	1172	505	110	1	1060	1877	1060	243	382
		2	1644	1644	700	700		2	1637	1637	482	482	
70,0	90	1	1247	1945	1247	549	114	1	1135	2066	1137	203	400
		2	1741	1741	753	753		2	1793	1793	476	476	