CONCISE MANUAL

TOWER CRANE STT293

TABLE OF CONTENTS

(909) 222-0202 www.reliablecraneservice.com 260 North Smith Ave. Corona, CA 92880

(909) 222-0202 www.reliablecraneservice.com 260 North Smith Ave. Corona, CA 92880

CHAPTER 1. TECHNICAL DATA

1.1. SPECIFICATIONS

1.1.1. CRANE 18 t

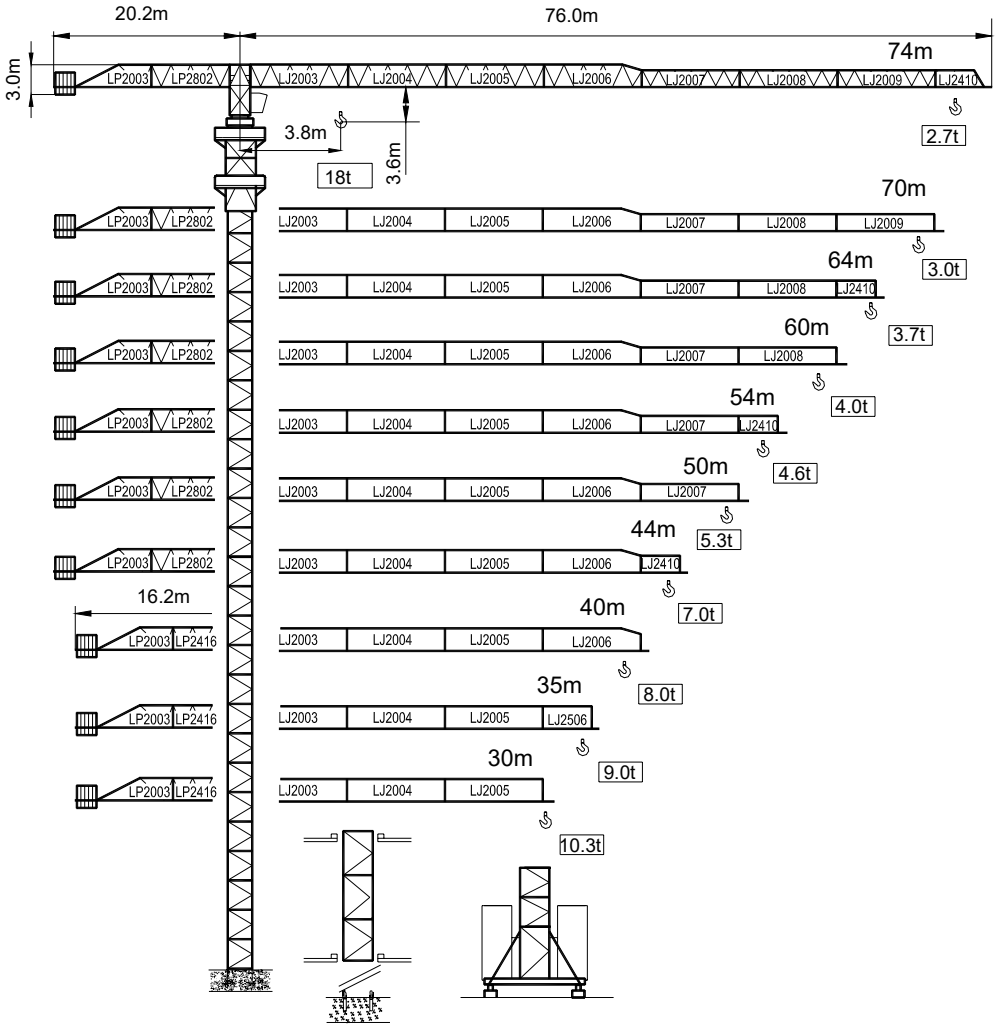
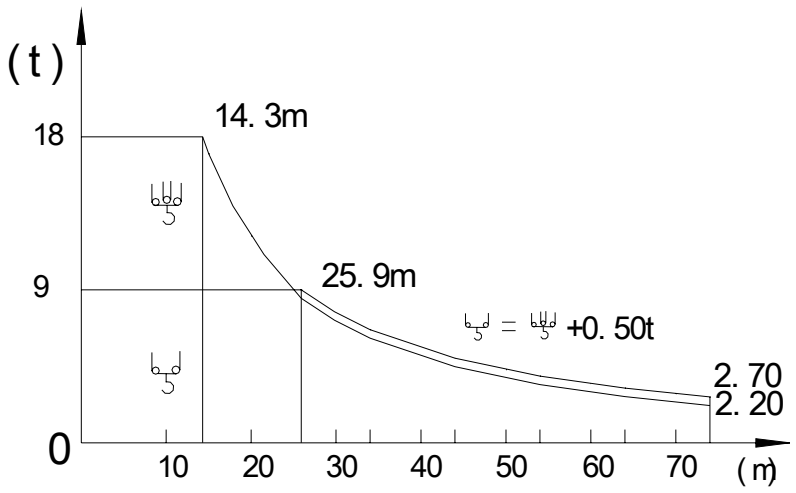


Fig. 1.1.1-1

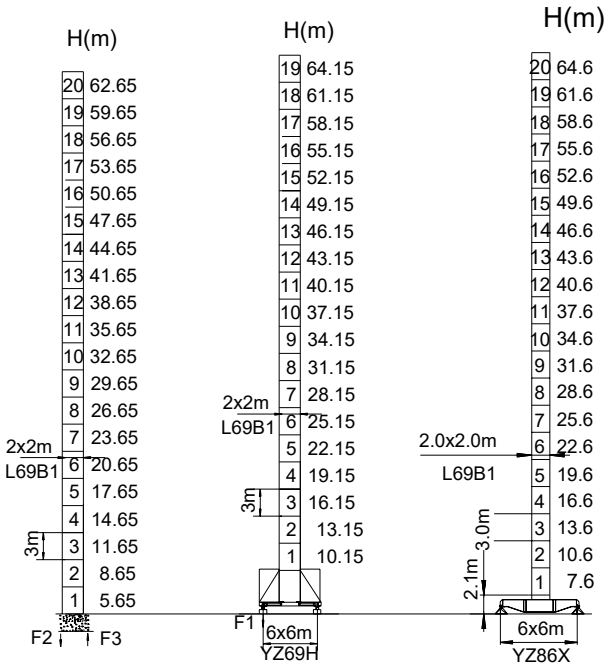
NOTE: **The mast sections are also available in 5500-mm or standard 3000-mm lengths**

Table 1.1.1-1

R	Fall	R(max) m	C(max) t	30	35	40	44	50	54	60	64	70	74
74	**IV**	14.3	18.00	7.02	6.23	5.05	4.48	3.80	3.43	2.98	2.72	2.39	**2.20**
	II	25.9	9.00	7.66	6.73	5.55	4.98	4.30	3.93	3.48	3.22	2.89	**2.70**
70	**IV**	14.6	18.00	7.42	6.41	5.25	4.66	3.96	3.58	3.11	2.84	**2.50**	
	II	26.7	9.00	7.92	6.91	5.75	5.16	4.46	4.08	3.61	3.34	**3.00**	
64	**IV**	15.7	18.00	8.30	7.03	5.83	5.19	4.42	4.01	3.49	**3.20**		
	II	29.1	9.00	8.80	7.53	6.33	5.69	4.92	4.51	3.99	**3.70**		
60	**IV**	15.7	18.00	8.30	7.00	5.84	5.20	4.43	4.02	**3.50**			
	II	29.1	9.00	8.80	7.51	6.34	5.70	4.93	4.52	**4.00**			
54	**IV**	15.7	18.00	8.40	7.08	5.95	5.30	4.52	**4.10**				
	II	29.6	9.00	8.90	7.57	6.45	5.80	5.02	**4.60**				
50	**IV**	16.3	18.00	8.60	7.44	6.30	5.62	**4.80**					
	II	31.0	9.00	9.00	7.94	6.80	6.12	**5.30**					
44	**IV**	18.2	18.00	10.10	8.53	7.28	**6.50**						
	II	35.0	9.00	9.00	9.00	7.78	**7.00**						
40	**IV**	18.5	18.00	10.35	8.76	**7.50**							
	II	35.9	9.00	9.00	9.00	**8.00**							
35	**IV**	18.5	18.00	10.35	**8.80**								
	II	35.0	9.00	9.00	**9.00**								
30	**IV**	18.5	18.00	**10.35**									
	II	30.0	9.00	**9.00**									



- Freestanding



- Anchorage

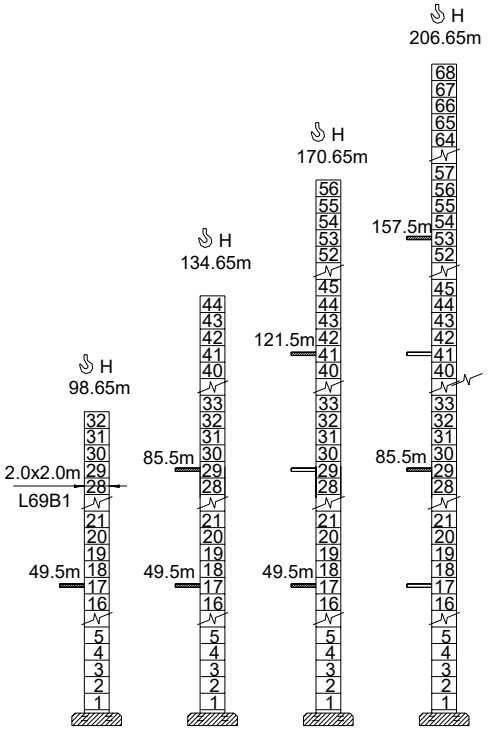


Fig. 1.1.1-2

Table 1.1.1-2

	●	■			●	■
F2	195 t	191 t		**F1**	105 t	103 t
F3	122 t	187 t				
⚭	117 t			⚭	117 t	

● In service ■ Out of service ⚭ Crane weight without load or ballast with longest jib and at maximum height

Crane mechanism specifications

Table 1.1.1-3

Name		**code**	**m/min**	**t**	**m/min**	**t**		**kW**
Hoisting	18 t	75LFV45	0—38 0—46 0—76	9.00 6.00 3.00	0—19 0—23 0—38	18.0 12.00 6.00	550 m >550 m*	75
Trolleying		7.5DFV08	0→69					7.5
Slewing		RTC290	0—0.8 rpm					2 x 145 Nm
		YMD100	0—0.8 rpm					2x10.5
Travelling		RT	12.5-25					4x2.6/5.2

* Please consult us

1.1.2. CRANE 12 t

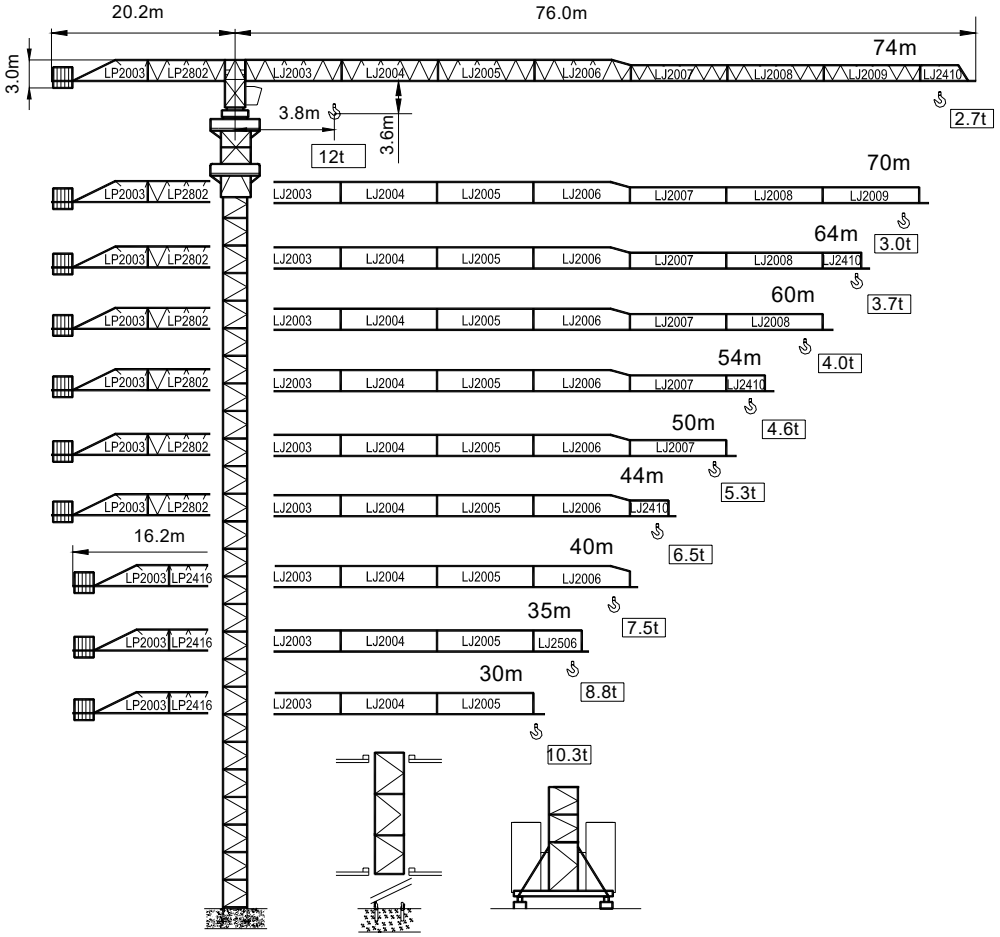
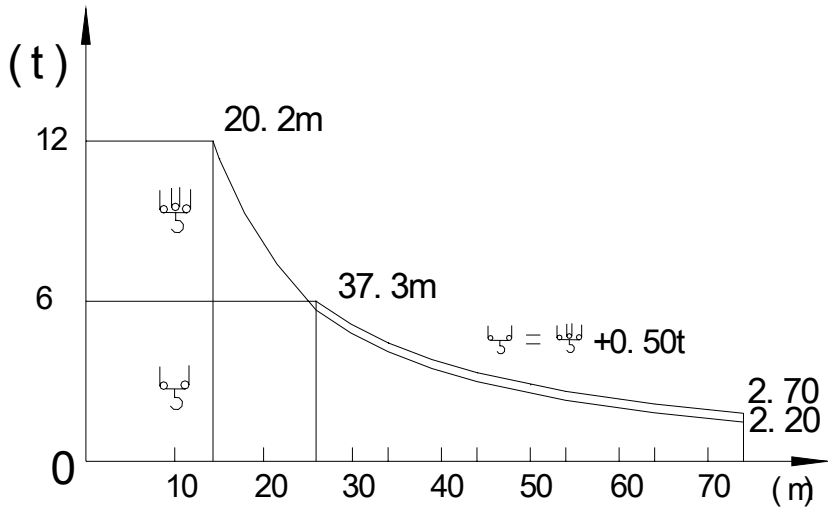


Fig. 1.1.2-1

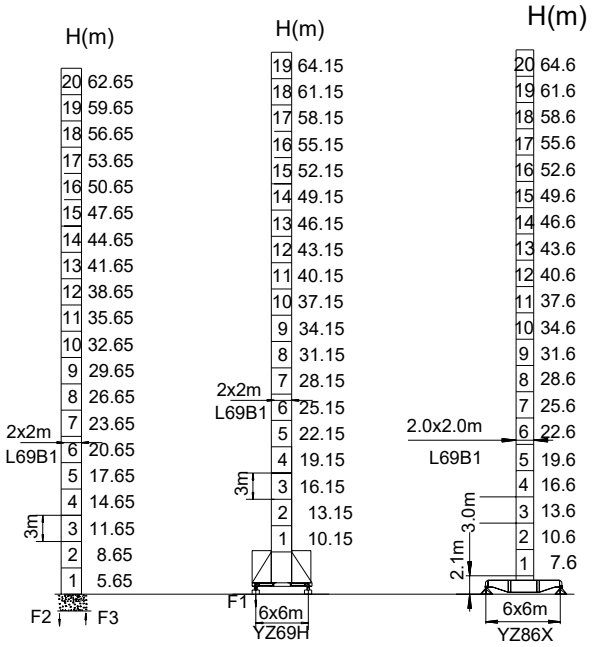
ATTENTION: The mast sections can be supplied in 5500-mm or standard 3000-mm lengths.

Table 1.1.2-1

R	Fall	R(max) m	C(max) t	30	35	40	44	50	54	60	64	70	74
74	IV	20.2	12.0	7.50	6.21	5.05	4.48	3.80	3.43	2.98	2.72	2.39	**2.20**
	II	37.3	6.0	6.00	6.00	5.55	4.98	4.30	3.93	3.48	3.22	2.89	**2.70**
70	IV	20.7	12.0	7.72	6.40	5.25	4.66	3.96	3.58	3.11	2.84	**2.50**	
	II	38.5	6.0	6.00	6.00	5.75	5.16	4.46	4.08	3.61	3.34	**3.00**	
64	IV	22.3	12.0	8.43	7.03	5.83	5.19	4.42	4.01	3.49	**3.20**		
	II	41.9	6.0	6.00	6.00	6.00	5.69	4.92	4.51	3.99	**3.70**		
60	IV	22.1	12.0	8.37	6.98	5.84	5.20	4.43	4.02	**3.50**			
	II	42.0	6.0	6.00	6.00	6.00	5.70	4.93	4.52	**4.00**			
54	IV	22.3	12.0	8.46	7.06	5.95	5.30	4.02	**4.10**				
	II	42.7	6.0	6.00	6.00	6.00	5.80	5.02	**4.60**				
50	IV	23.2	12.0	8.88	7.43	6.26	5.62	**4.80**					
	II	44.8	6.0	6.00	6.00	6.00	6.00	**5.30**					
44	IV	25.9	12.0	10.10	8.50	7.17	**6.50**						
	II	44.0	6.0	6.00	6.00	6.00	**6.00**						
40	IV	26.4	12.0	10.35	8.74	**7.50**							
	II	40.0	6.0	6.00	6.00	**6.00**							
35	IV	26.4	12.0	10.35	**8.80**								
	II	30.0	6.0	6.00	**6.00**								
30	IV	26.4	12.0	**10.35**									
	II	30.0	6.0	**6.00**									



- Freestanding



- Anchorage

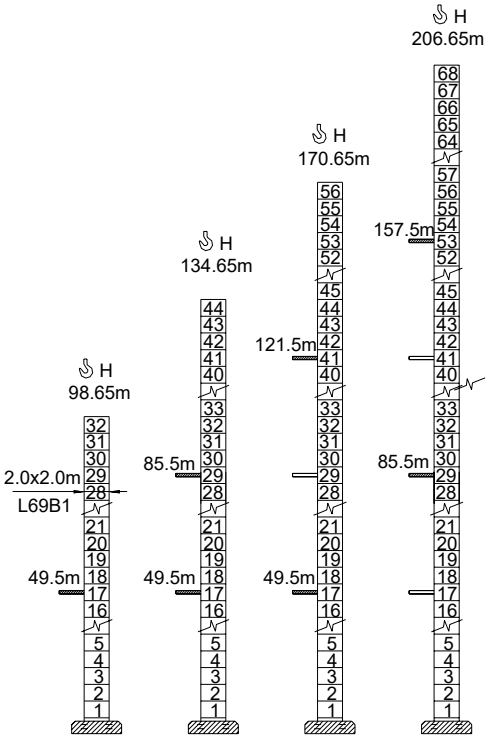


Fig. 1.1.2-2

Table 1.1.2-2

	●	■			●	■
F2	195 t	191 t		**F1**	105 t	103 t
F3	122 t	187 t				
⛑	117 t			⛑	117 t	

● In service ■ Not in service ⛑ Crane weight without load or ballast with longest jib and at maximum height.

Crane mechanism specifications

Name		**Code**	**m/min**	**t**	**m/min**	**t**		**kW**
Hoisting		55LFV30	0—44 0—53 0—88	6.0 3.0 1.5	0—22 0—27 0—44	12.0 9.0 3.0	570 m >570 m*	55
Trolleying		7.5 DFV08		0→69				7.5 Nm
Slewing		RTC290		0—0.8 rpm				2x 145 Nm
		YMD100		0—0.8 rpm				2x10.5
Travelling		RT		12.5-25				4x2.6/5.2

1.2. PREPARING THE CONSTRUCTION SITE

1.2.1. SPACE REQUIREMENTS FOR ASSEMBLY

1.2.1.1. INTRODUCTION

This brochure provides the dimensions of the space requirements for the crane.

They consist of two sets:

- The entire crane with indication of the most important dimensions.
- The crane is shown in three parts:
  - Foundation anchors and undercarriage
  - Mast composition
  - Range and jib length

Based on the provided dimensions, you can prepare the assembly of the crane.

ATTENTION: The provided dimensions do not take account of sagging under load or any manufacturing tolerances.

1.2.2. DIMENSIONS

1.2.2.1. TOTAL CRANE DIMENSIONS

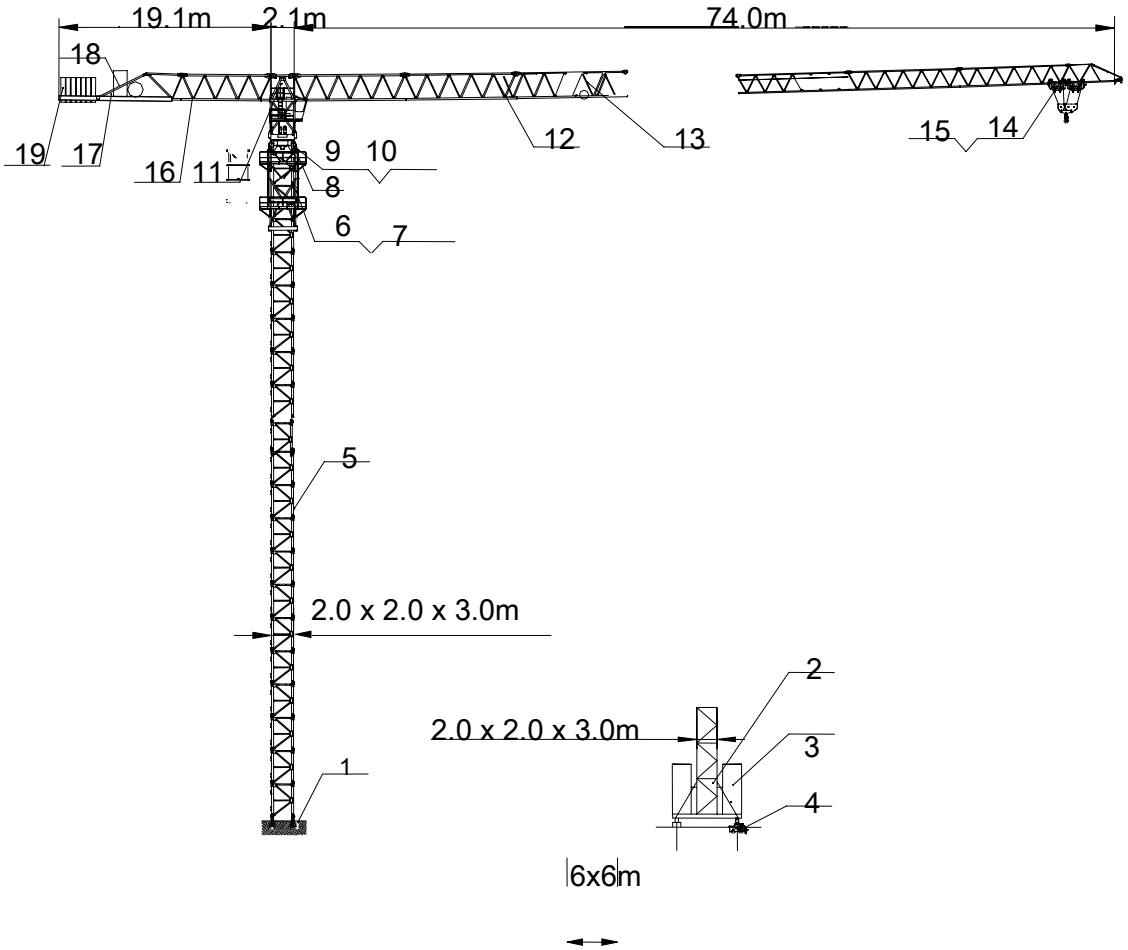


Fig. 1.2.2.1-1

No.	Name	No.	Name
1	Foundation anchors	11	Cabin mast
2	Brace strut	12	Jib
3	Central ballast[1] (undercarriage)	13	Trolley mechanism
4	Bogie	14	Trolley
5	Mast section	15	Hook assembly
6	Telescoping cage	16	Counter-jib
7	Climbing frame mechanism	17	Hoist mechanism
8	Fixed slewing ring section	18	Electric control system
9	Rotating slewing ring section	19	Counterweight[1]

NOTE: The mast sections are also available in 5500-mm lengths.

[1] To be supplied by user

1.2.2.2. DIMENSIONS EN WEIGHT PARTS

1.2.2.2-1. Undercarriage

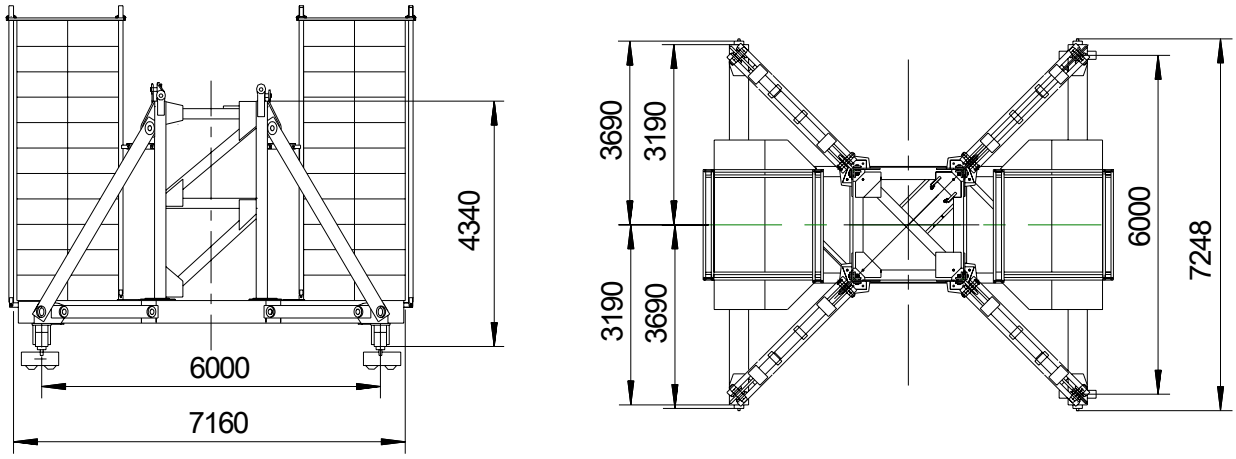


Fig: 1.2.2.3.1-1

.

.Dimensions and weight

1.2.2.2-2. Foundation anchors

.

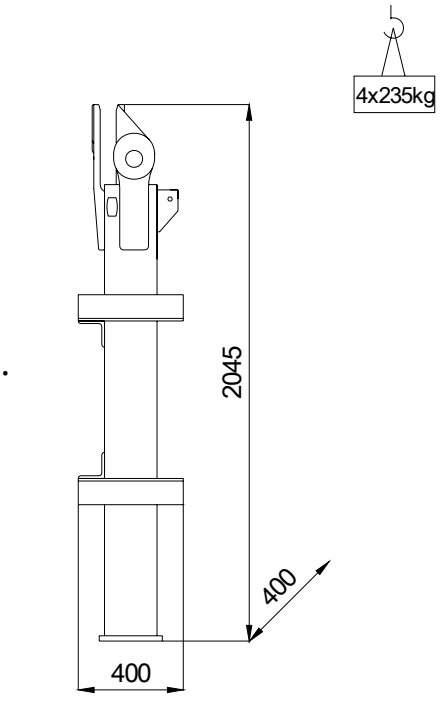


Fig. 1.2.2.2.2-1

1.2.2.2-3. Wheelbase complete

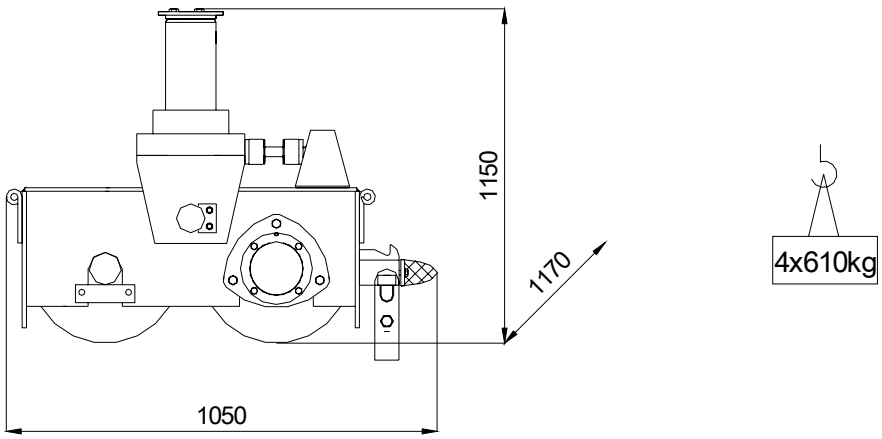
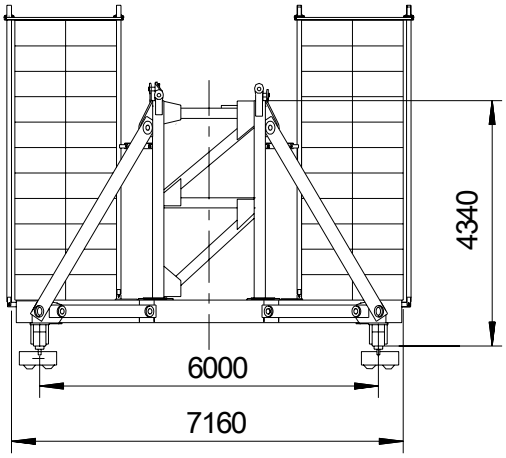


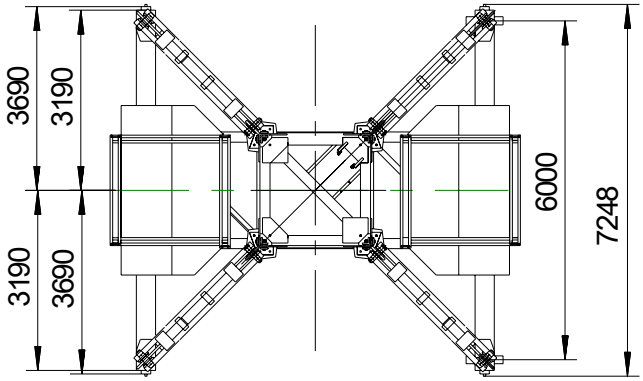
Fig 1.2.2.2.3-1

1.2.2.2.4. Central ballast and foundation cross

1.2.2.2.4.1. Foundation cross composition

- Standard type





- YZ86X (refer to pg 59)

- YZ69H (refer to pg 59)

ATTENTION: Central ballast blocks and bogies are not included in the weight.

1.2.2.2.4.2. Parts

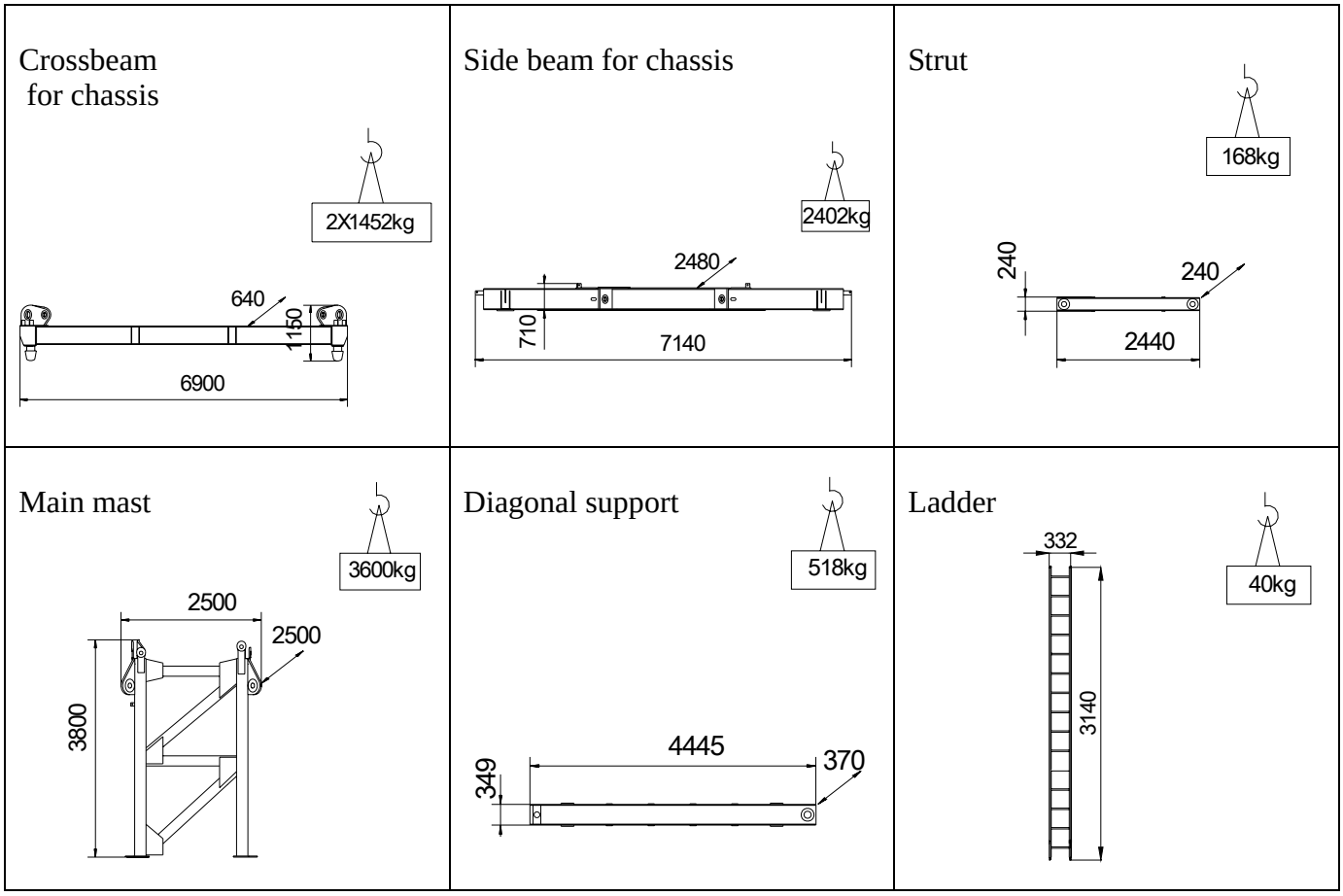
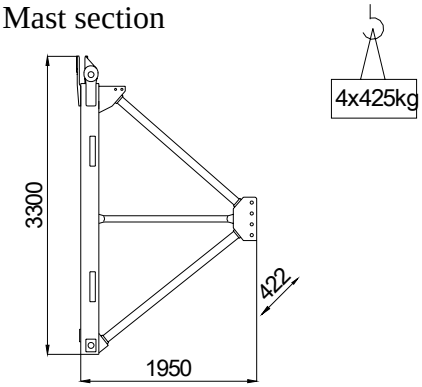


Fig. 1.2.2.2.4.2-1

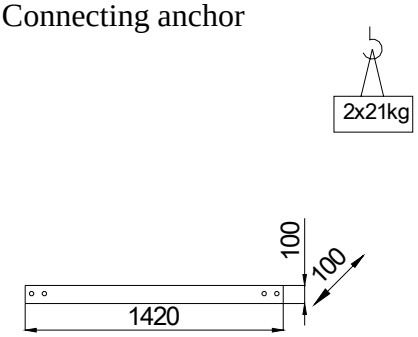
NOTE: The mast sections (main mast) are also available in 5500-mm lengths

1.2.2.2.5. Mast

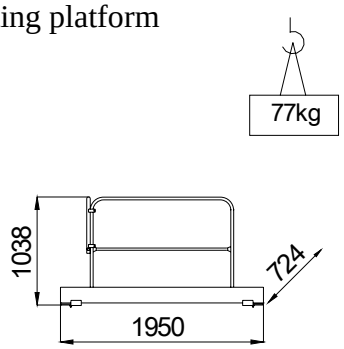
Mast section



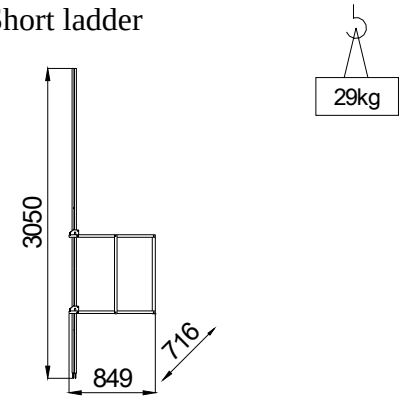
Connecting anchor



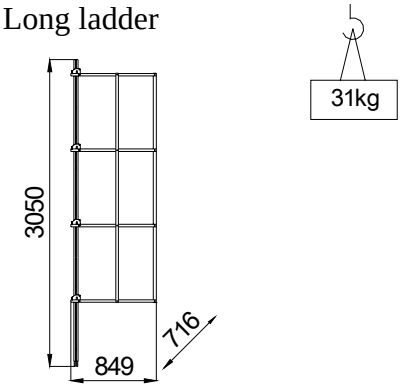
Resting platform



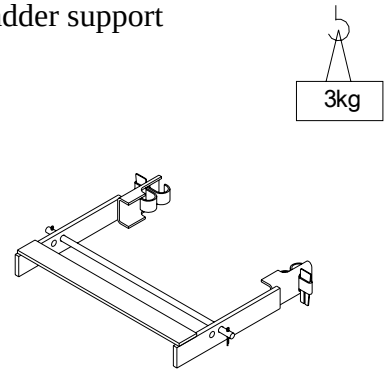
Short ladder



Long ladder



Ladder support



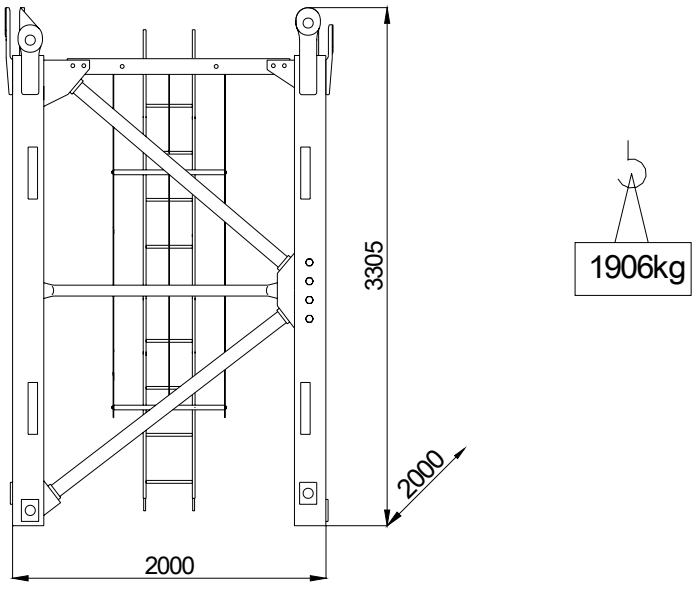
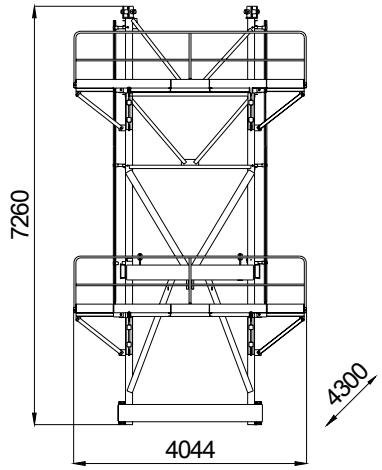


Fig 1.2.2.2.5-1

NOTE: The ladder sections (main mast) must be modified if 5500-mm mast lengths are used.

1.2.2.2.6. Climbing cage



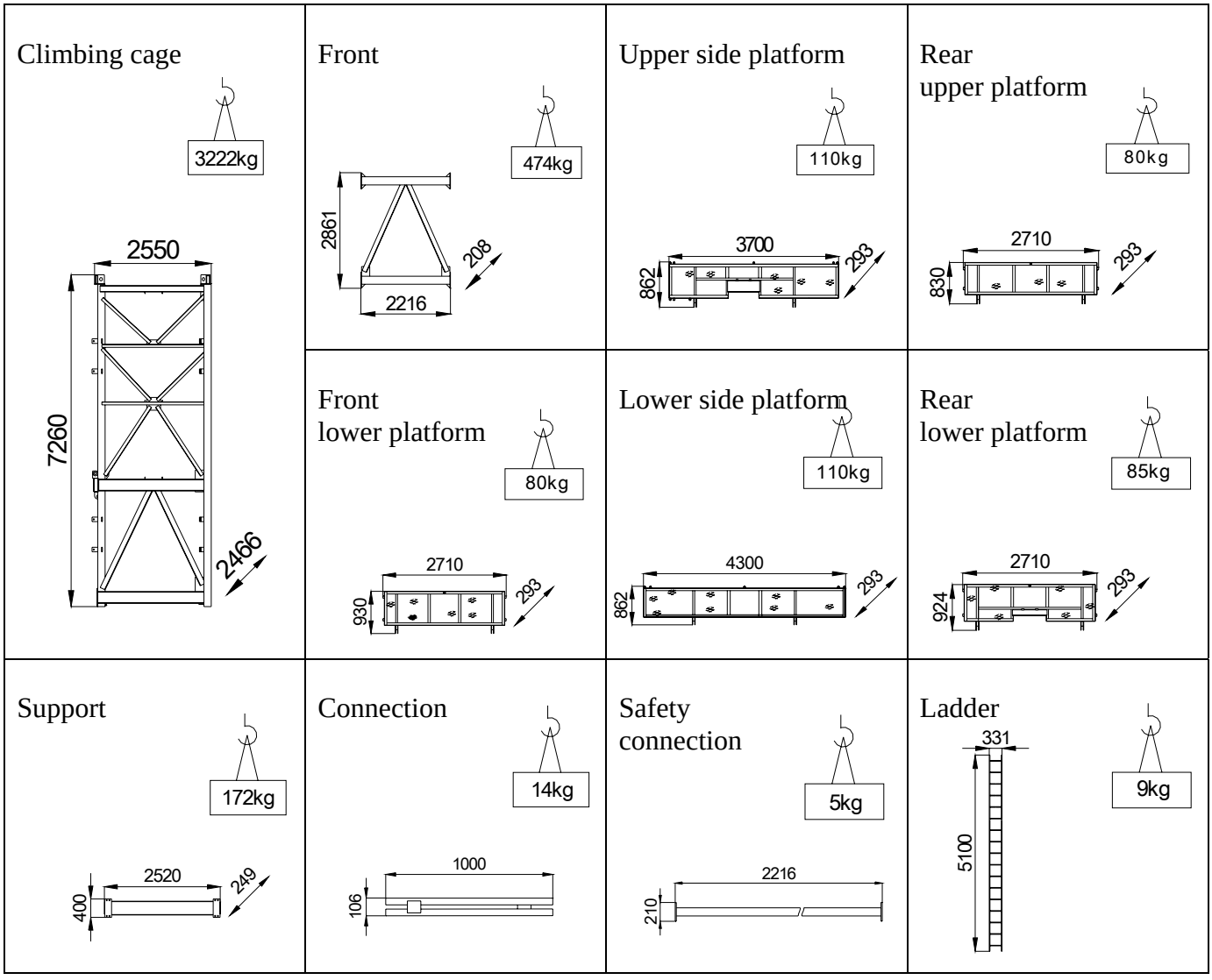


Fig. 1.2.2.2.6-1

1.2.2.2.7. Slewing unit

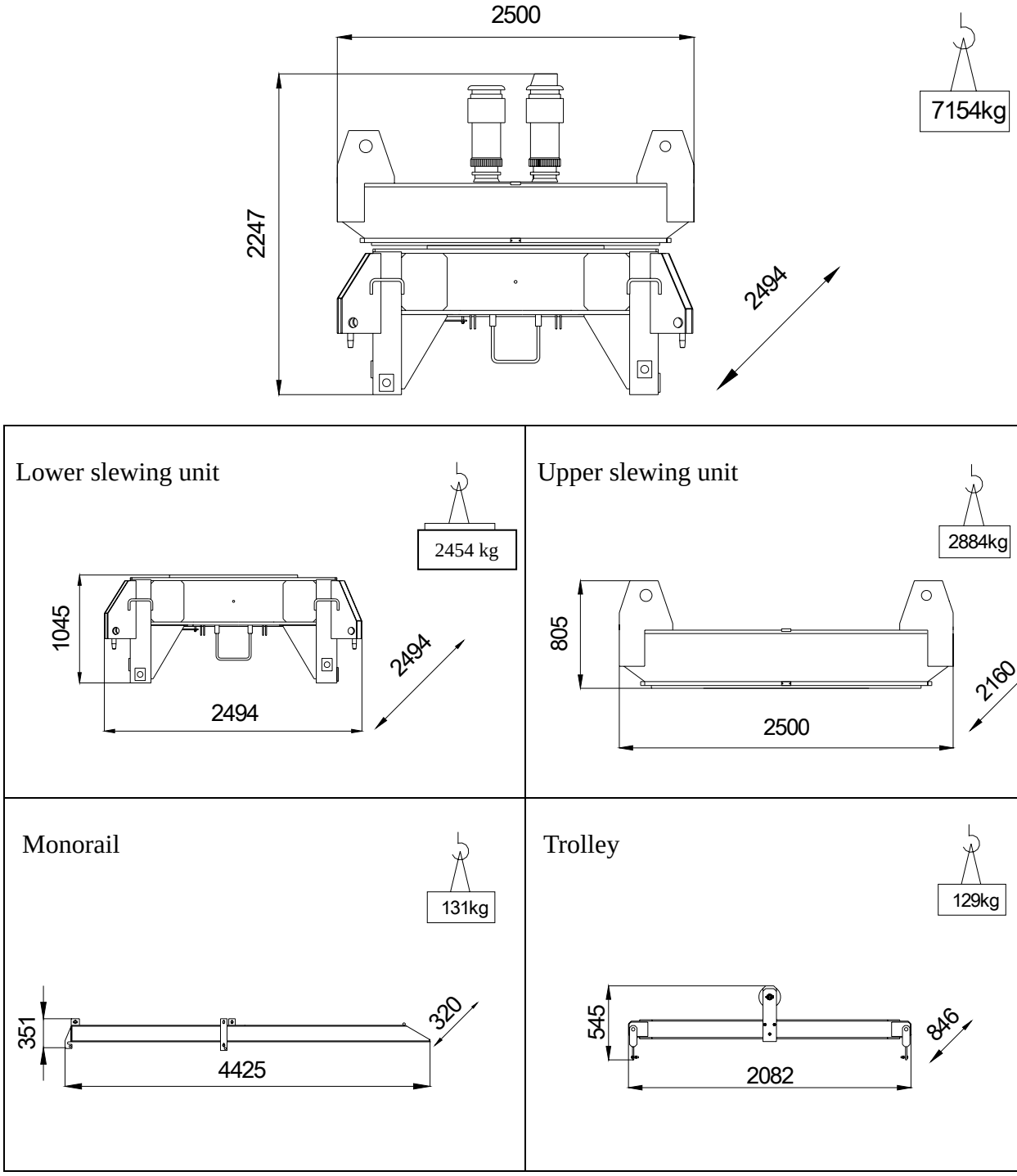


Fig. 1.2.2.2.7-1

1.2.2.2.8. Mast top

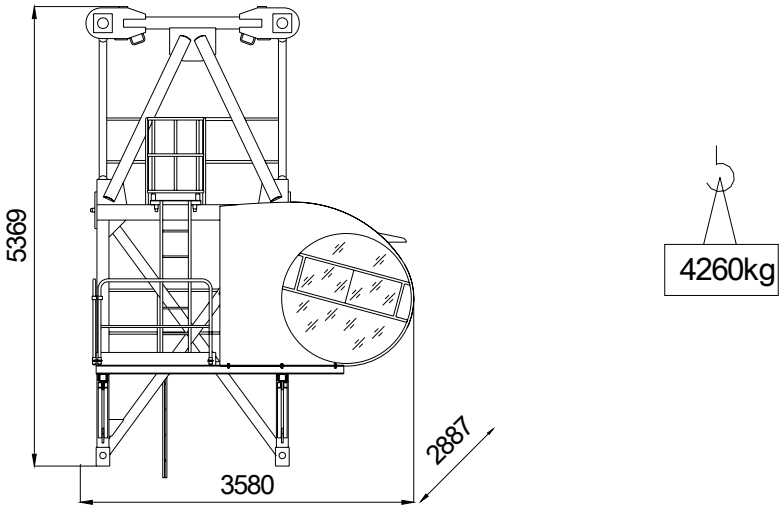
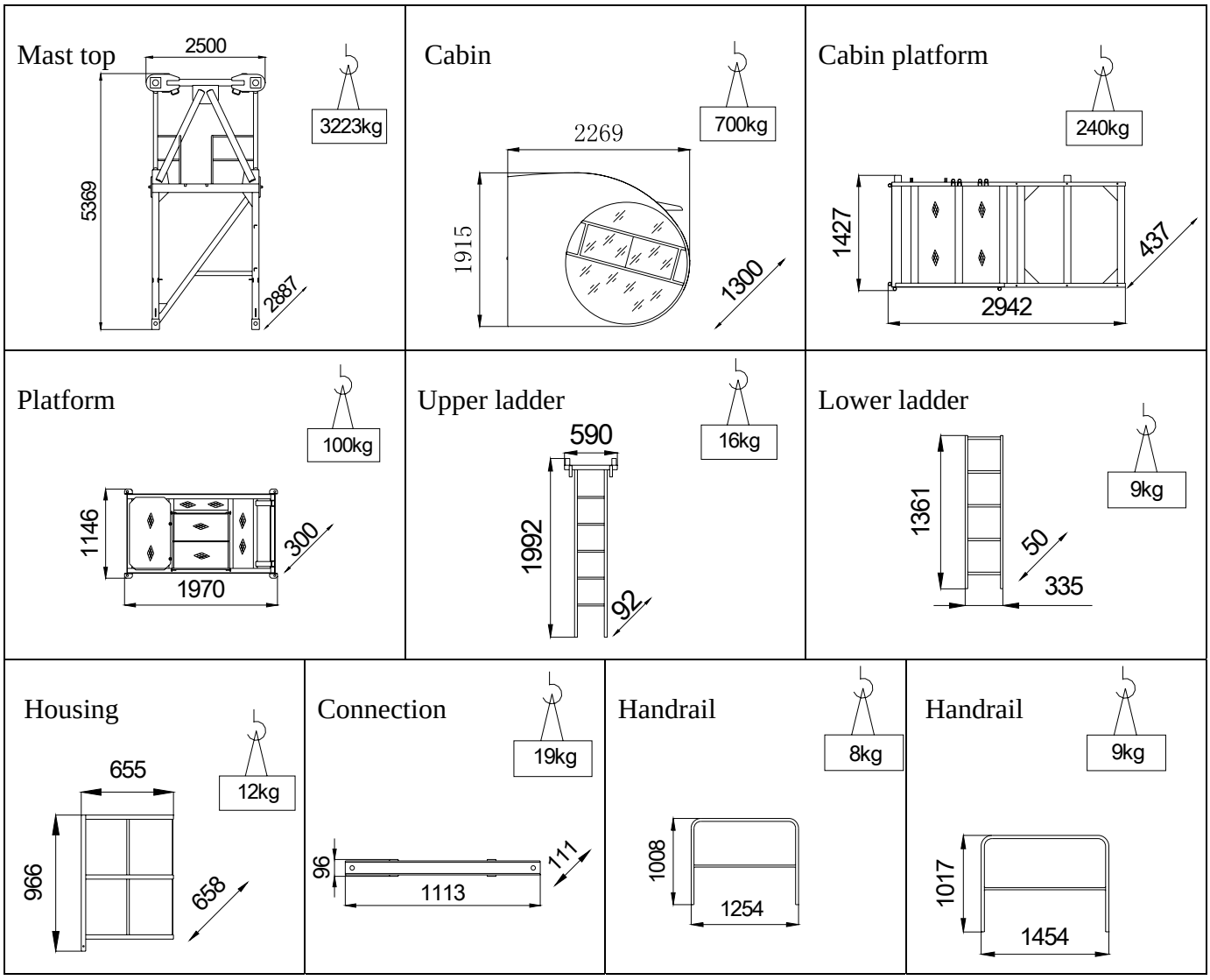
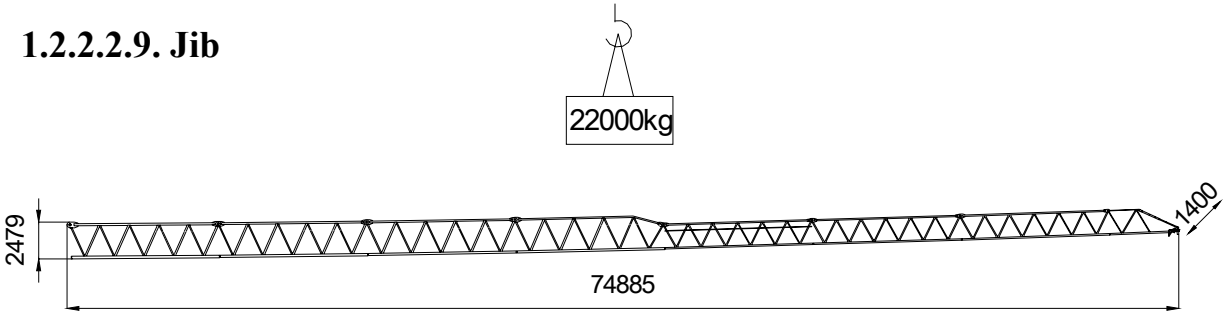


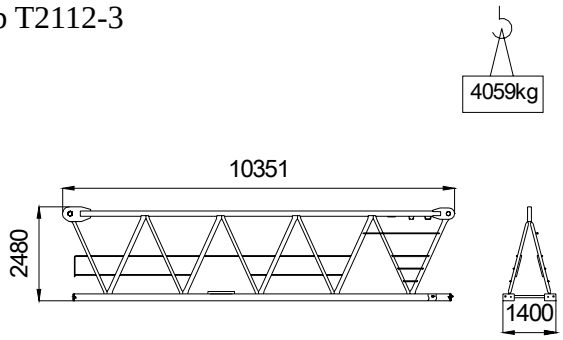
Fig. 1.2.2.2.8-1



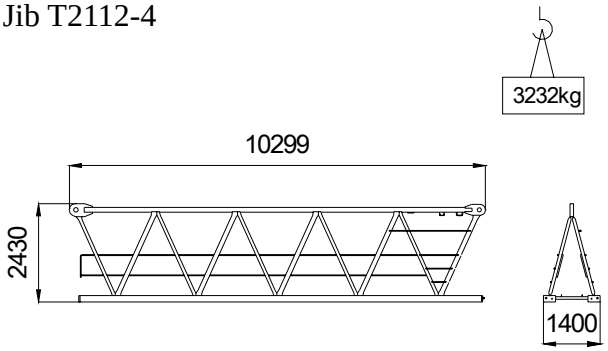
1.2.2.2.9. Jib



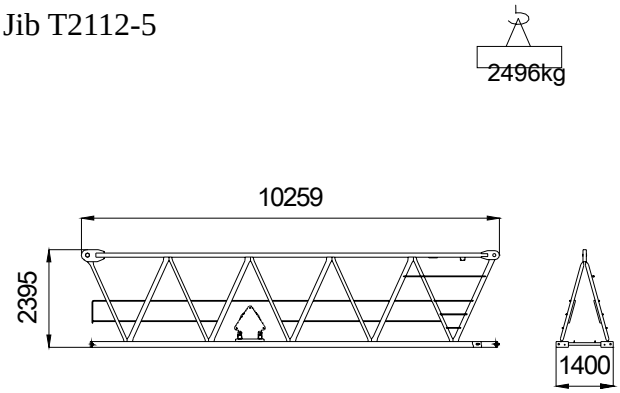
Jib T2112-3



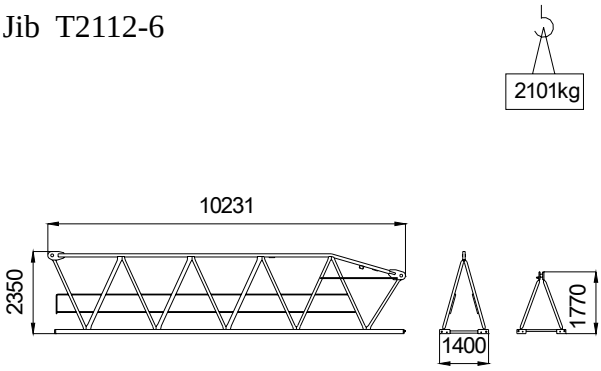
Jib T2112-4



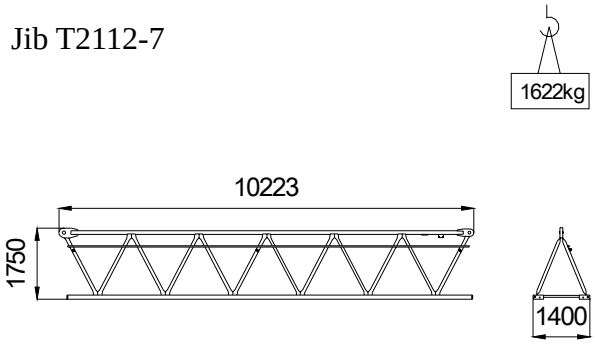
Jib T2112-5



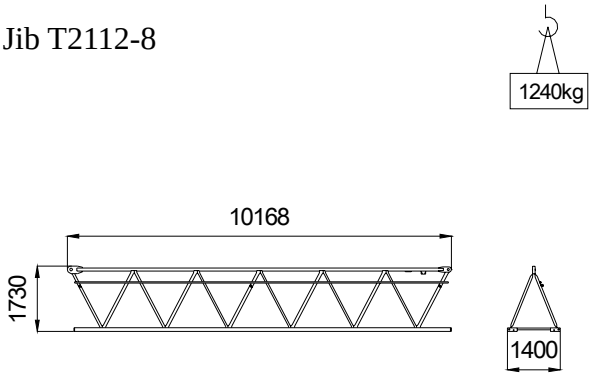
Jib T2112-6



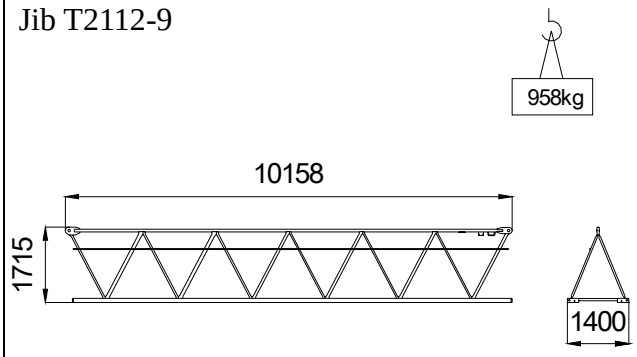
Jib T2112-7



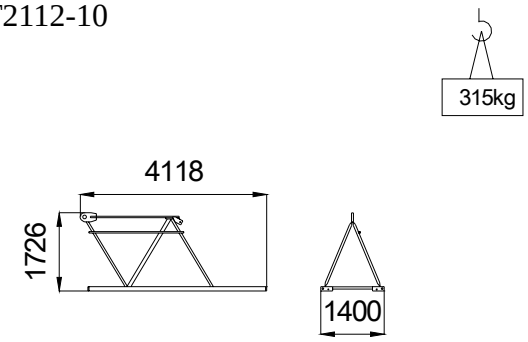
Jib T2112-8



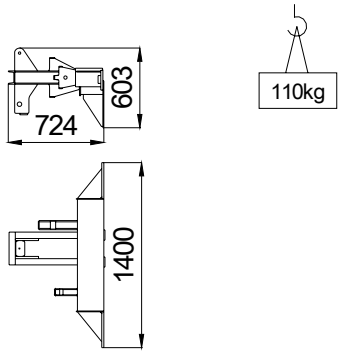
Jib T2112-9



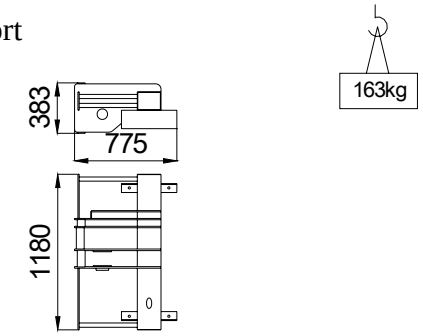
Jib T2112-10



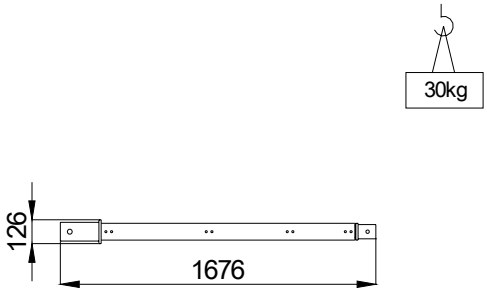
Jib nose T2112-11



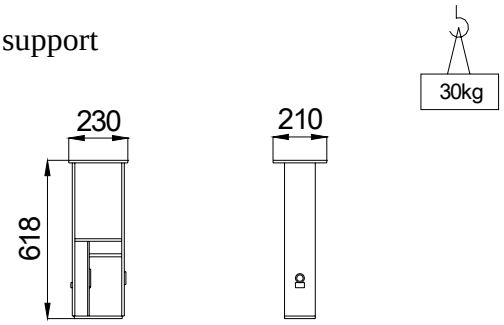
Pulley support



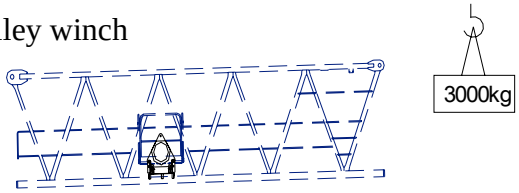
Strut



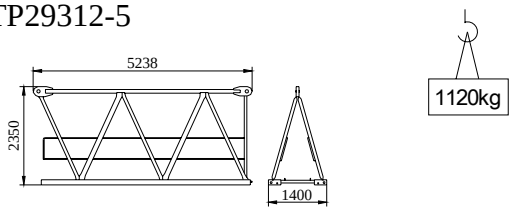
Pulley support



Trolley winch



Jib TP29312-5



Use when the jib length is 35m , it's special configuration

Fig. 1.2.2.2..9-1

1.2.2.2.10. Trolley and hook

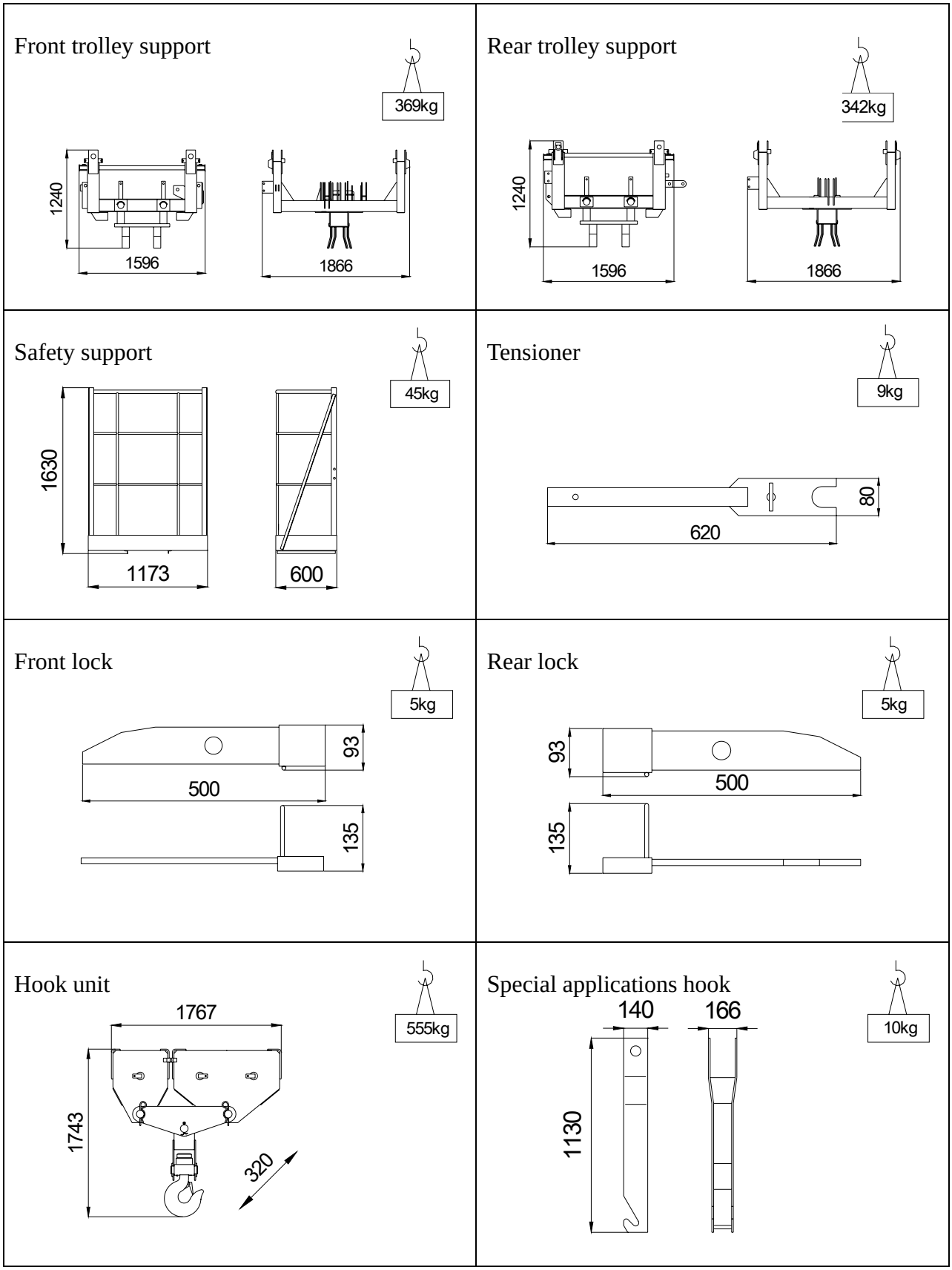
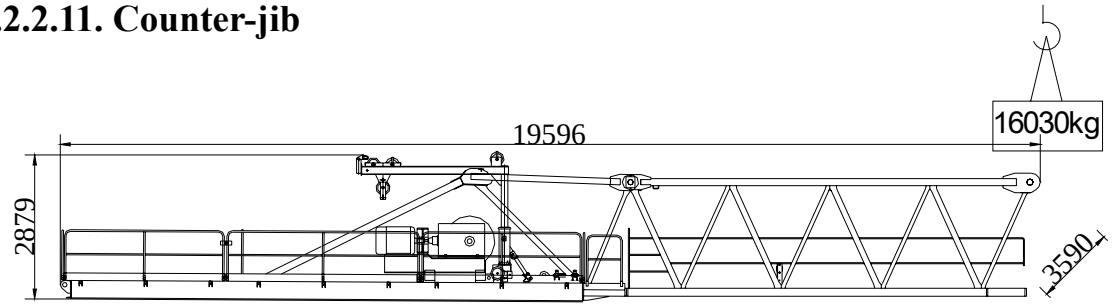
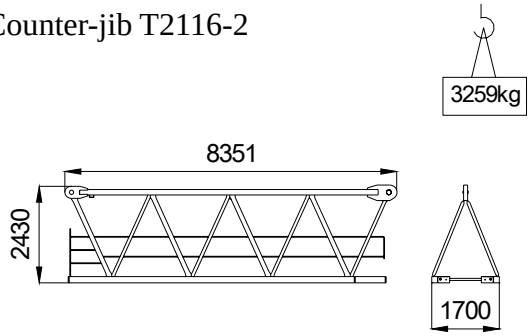


Fig. 1.2.2.2.10-1

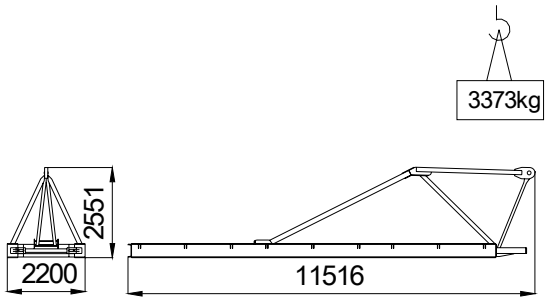
1.2.2.2.11. Counter-jib



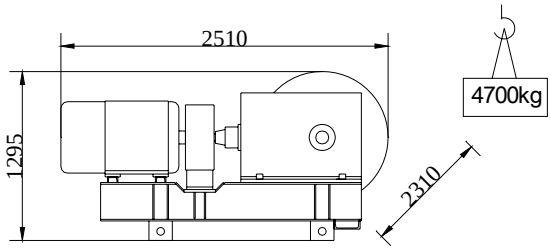
Counter-jib T2116-2



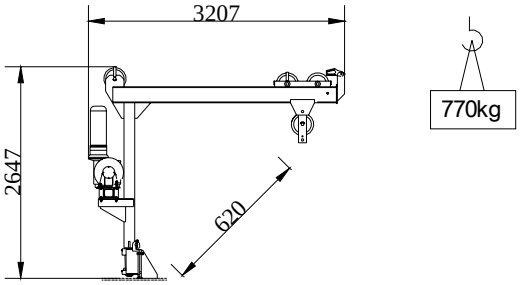
Counter-jib ballast support T2116-3



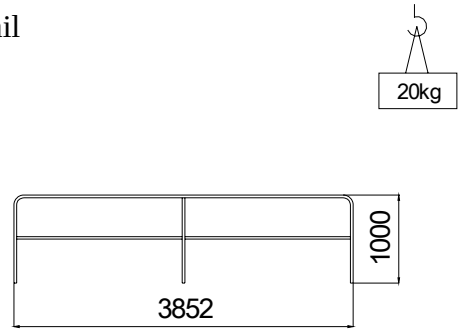
Hoisting winch



Lifting device for service



Handrail



Handrail

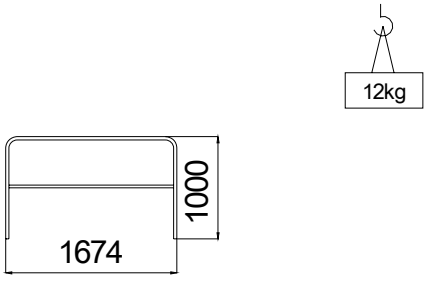


Fig. 1.2.2.2.11-1

1.3. CONCRETE FOUNDATION FOR FOUNDATION ANCHORS

1.3.1. PREPARATION

TO BE PREPARED BY CLIENT:

The concrete foundation of the foundation anchors must be executed on basis of the parameters in. **Table 1.3.2-1**

ATTENTION: The listed parameters are minimum values to be observed,

taking account of the stability requirements of the crane

Please contact us in case of deviating conditions.[2]

[2] Jinlong Europe – Zandvoorstraat 10/6 – 2800 Mechelen – Belgium – Tel.:++32/15 28 54 54 – Fax: ++32/15 20 96 80.
and
Jinlong Europe UK & Ireland • 2nd Floor, Titan Court, 3 Bishop Square – Hatfield - AL10 9NA Hertfordshire - U.K.
Tel: ++ 44/1707 226 522 – Fax: ++44/1707 226 001

1.3.2. INSTALLATING THE CRANE FOUNDATION

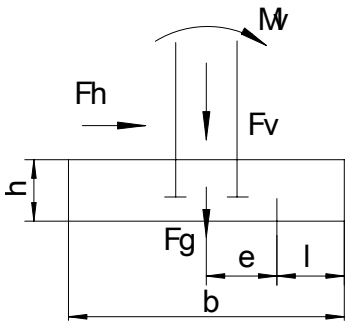
The foundation anchors are mounted by means of:

- **4** foundation anchors and **8** associated pins
- **1** foundation framework and **8** associated pins
- **1** standard mast section
- **1** plumb line or measuring device

- Check the framework for any deformation during transport. The difference between respectively the diagonals and the bearing surface heights may be at the most 2 mm.
- Install the foundation anchor on the reinforcement and adjust by means of filling plates.
- Check perpendicularity in both directions after assembly of the lower mast section on the framework. Adjust if necessary.
- Pour the concrete block and wait until it is completely hardened before removing the mast section and the framework

1.3.3. GROUNDPRESSURE AND CHOICE OF THE FUNDATION

1.3.3.1. STANDARD CONFIGURATION



$$e = \frac{M_v + F_h \cdot h}{F_v + F_g} \le \frac{b}{3}$$

$$p_B = \frac{2(F_v + F_g)}{3bl} \le [p_B]$$

Mt:	Torque (kNm)	**Mv:**	Overturning moment (kNm)
Fv:	Crane weight (kN)	**Fh:**	Horizontal forces (kN)
L:	Jib length (m)	**n:**	Mast section number
YM:	Type of concrete blocks	**Fg:**	Concrete block weight (kN)
ES:	In service	**HS:**	Out of service
e:	Offset (m)	**b:**	Concrete block dimensions (m)
p_B:	Soil pressure (kN/m^2)	**$[p_B]$:**	Admissible soil pressure (kN/m^2)
H:	Max free standing heigh (m)		

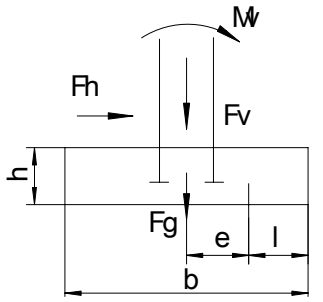
Table 1.3.3.1-1

H (m)	n		E s										H s									
			L(m)										L(m)									
			74	70	64	60	54	50	44	40	35	30	74	70	64	60	54	50	44	40	35	30
62.65	20	Mv	4296	4370	4591	4522	4528	4576	4795	4773	4773	4773	5132	5033	4861	4846	4660	4544	4228	4118	4118	4118
		Fh	42	42	42	42	42	41	41	41	41	41	152	151	150	150	148	148	147	146	146	146
		Fv	1207	1194	1178	1158	1125	1122	1085	1072	1072	1072	1027	1014	998	978	945	942	905	892	892	892
Mt			503	503	503	503	503	503	503	503	503	503	0	0	0	0	0	0	0	0	0	0

Table 1.3.3.1-2

H	n	YM	173N	206N	235N	270N	307N
62.65	20	**Fg**	1730	2060	2350	2700	3070
		p_B	3.0	2.1	1.7	1.5	1.3
		b	6.0	6.5	7.0	7.5	8.0
		h	2.0	2.0	2.0	2.0	2.0

1.3.3.2. CONFIGURATION MAST LENGTH 5500MM-L69S MAST



$$e = \frac{M_v + F_h \cdot h}{F_v + F_g} \le \frac{b}{3}$$

$$p_B = \frac{2(F_v + F_g)}{3bl} \le [p_B]$$

	Torsional moment(kN.m)
	Overturning moment(kN.m)
P	Weight of crane(kN)
Fh	Horizontal reaction(kN)
Q	Mass of foundation concrete(kN)
e	excentricity(m)
p_B	Pressure on ground(kN/m^2)
$[p_B]$	Permissible ground pressure(kN/m^2)
L	Max.hook radius
H	Hook height
n	Number of section
A	number

H (m)	n		IN SERVICE L(m)								OUT OF SERVICE L(m)							
			74	70	64	60	54	50	44	40	74	70	64	60	54	50	44	40
63.1	11	Mv	4193	4033	4042	3927	3866	3878	4132	4157	5958	5663	5255	5218	4934	4814	4474	4376
		Fh	42	42	42	41	41	40	40	40	159	158	157	156	153	152	150	150
		P	1067	1064	1050	1032	997	989	1001	988	947	944	930	912	877	869	881	868
57.6	10	Mv	3892	3736	3746	3635	3578	3591	3843	3869	4913	4626	4232	4200	3938	3824	3498	3406
		Fh	39	39	39	39	38	38	37	37	147	146	145	144	141	140	139	138
		P	1034	1031	1017	999	964	956	968	954	914	911	897	879	844	836	848	834
52.1	9	Mv	3620	3466	3478	3369	3317	3331	3582	3608	3970	3691	3309	3282	3041	2934	2621	2534
		Fh	37	37	36	36	35	35	35	35	135	135	133	133	129	129	127	126
		P	1001	998	984	965	931	923	934	921	881	878	864	845	811	803	814	801
46.6	8	Mv	3373	3222	3236	3129	3081	3097	3346	3373	3121	2850	2480	2458	2238	2136	1837	1786
		Fh	34	34	34	33	33	33	32	32	124	123	121	121	118	117	115	115
		P	968	965	951	932	898	889	901	888	848	845	831	812	778	769	781	768
41.1	7	Mv	3151	3002	3018	2913	2870	2886	3135	3163	2362	2098	1740	1722	1522	1533	1742	1786
		Fh	31	31	31	31	30	30	29	29	112	111	110	109	106	105	104	103
		P	934	931	917	899	864	856	868	855	814	811	797	779	744	736	748	735
35.6	6	Mv	2952	2805	2823	2719	2681	2698	2947	2975	1688	1430	1426	1413	1471	1533	1742	1786
		Fh	29	29	28	28	27	27	27	27	100	99	98	97	94	93	92	91
		P	901	898	884	866	831	823	835	821	781	778	764	746	711	703	715	701
30.1	5	Mv	2775	2631	2649	2548	2514	2532	2781	2809	1092	1139	1426	1413	1471	1533	1742	1786
		Fh	26	26	26	25	25	25	24	24	88	88	85	86	83	82	80	79
		P	868	865	851	832	798	790	801	788	748	745	731	712	678	670	681	668
24.6	4	Mv	2619	2477	2497	2397	2368	2368	2635	2665	914	1139	1426	1413	1471	1533	1742	1786
		Fh	23	23	23	23	22	22	21	21	77	76	75	74	71	70	68	68
		P	835	832	818	799	765	756	768	755	715	712	698	679	645	636	648	635
Mt			**500**	**500**	**500**	**500**	**500**	**500**	**500**	**500**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

1.3.4. DIMENSIONAL FEATURES OF THE FOUNDATION ANCHORS

The foundation anchors are placed symmetrically in the foundation block and are to form a 2-by-2 m square, based on the dimensions of the mast to be erected (see **Fig. 1.3.4-1**).

The distance between the topside of the mounting plate and the topside of the foundation block must be 150 mm.

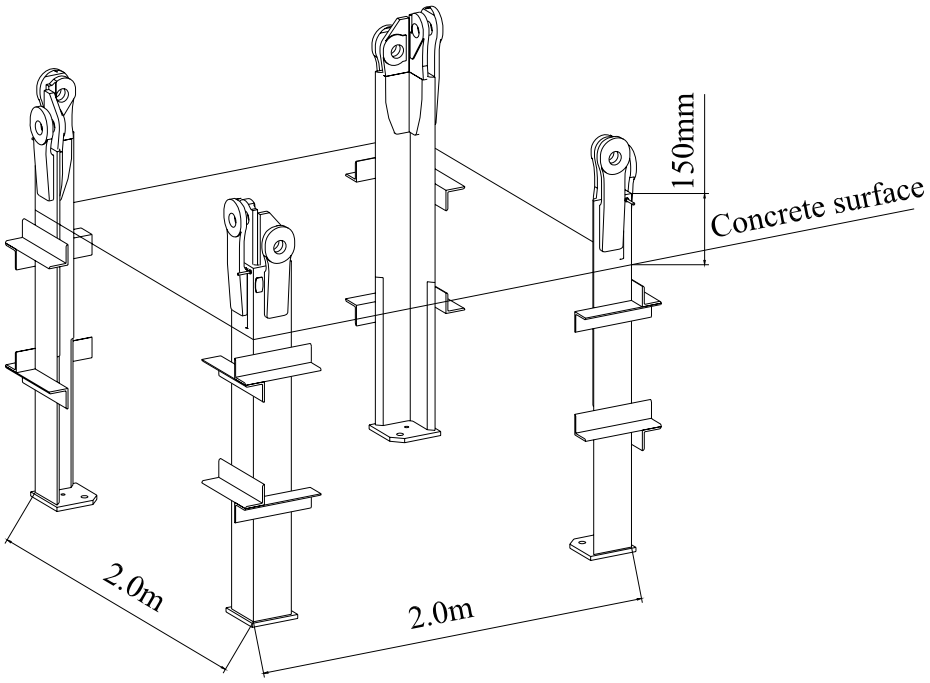


Fig. 1.3.4-1

ATTENTION: Cutting or reducing the reinforcement in the foundation is prohibited.

1.4. COUNTER-JIB BALLAST

1.4.1. INTRODUCTION

The counter-jib ballast consists of various reinforced concrete blocks **A, B or C**. The counter-jib ballast is governed by the length of the jib. These blocks are suspended one by one at the rear of the counter-jib.

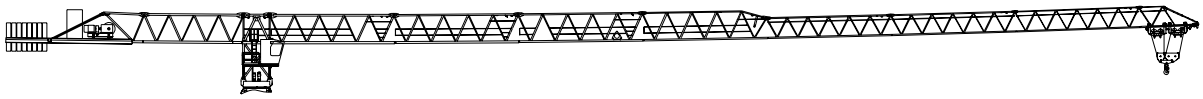
The ballast is to be supplied by the client in accordance with **Fig. 1.4.2-1**. During installation, care must be taken to ensure that they cannot be chipped or become loose while operating the crane.

Composition and structural dimensions are dealt with in .1.4.2

The admissible tolerance is $^{+50}_{0}$ kg per block. To allow for concrete density changes, alter dimension X to bring the blocks within the indicated tolerance.

We recommend weighing the concrete blocks and marking their weight with paint on a visible side of the block.

1.4.2. COUNTER-JIB BALLAST DIMENSIONS

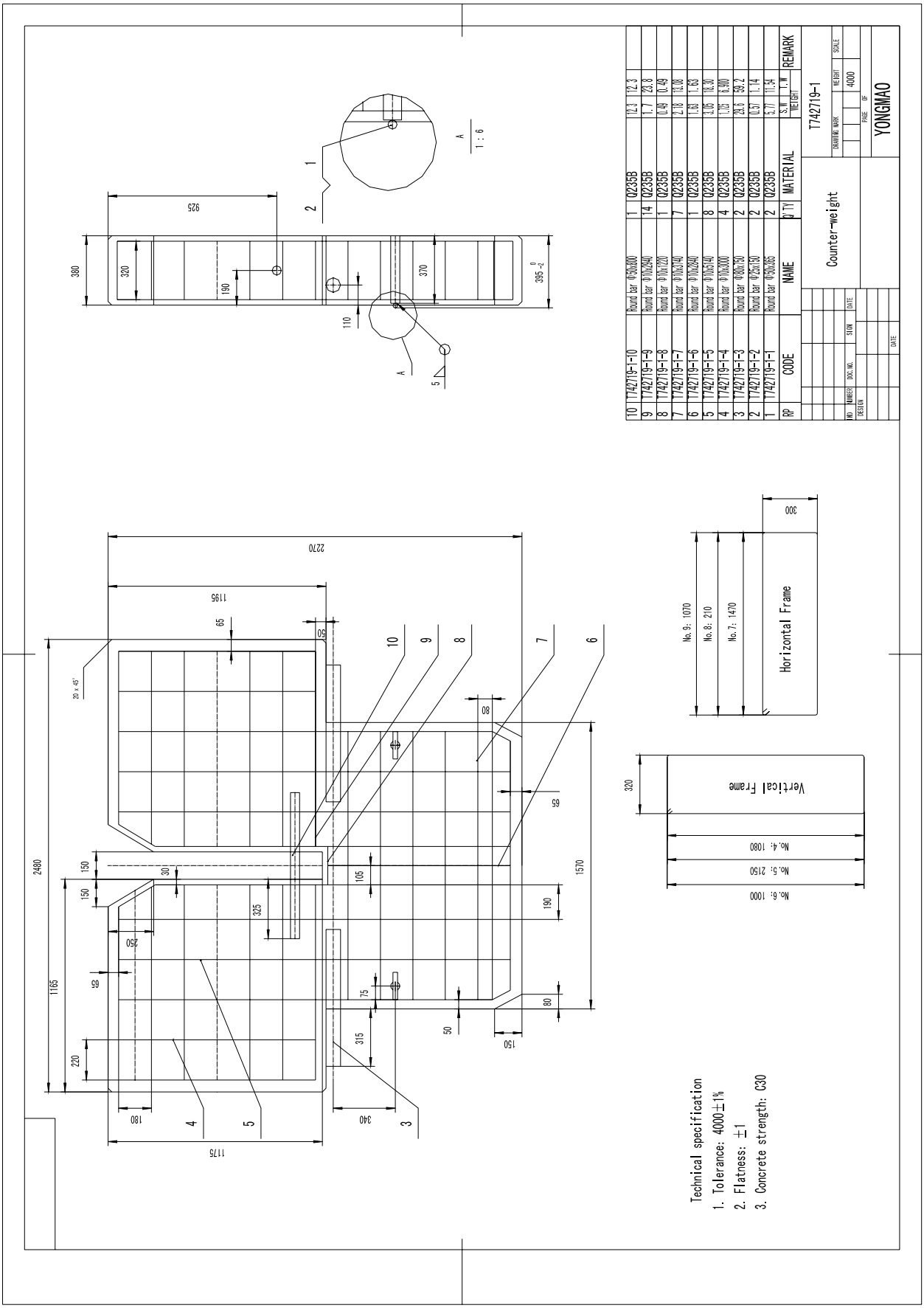


Length of jib		30	35	40	44	50	54	60	64	70	74
Length of counter jib		16.2	16.2	20.2	20.2	20.2	20.2	20.2	20.2	20.2	20.2
During working and telescoping	Blocks	2A+C	2A+B+C	3A+C	3A+B	4A+C	4A+C	5A	5A+C	5A+B+C	6A
	Weight (kg)	9000	11000	13000	14000	17000	17000	20000	21000	23000	24000

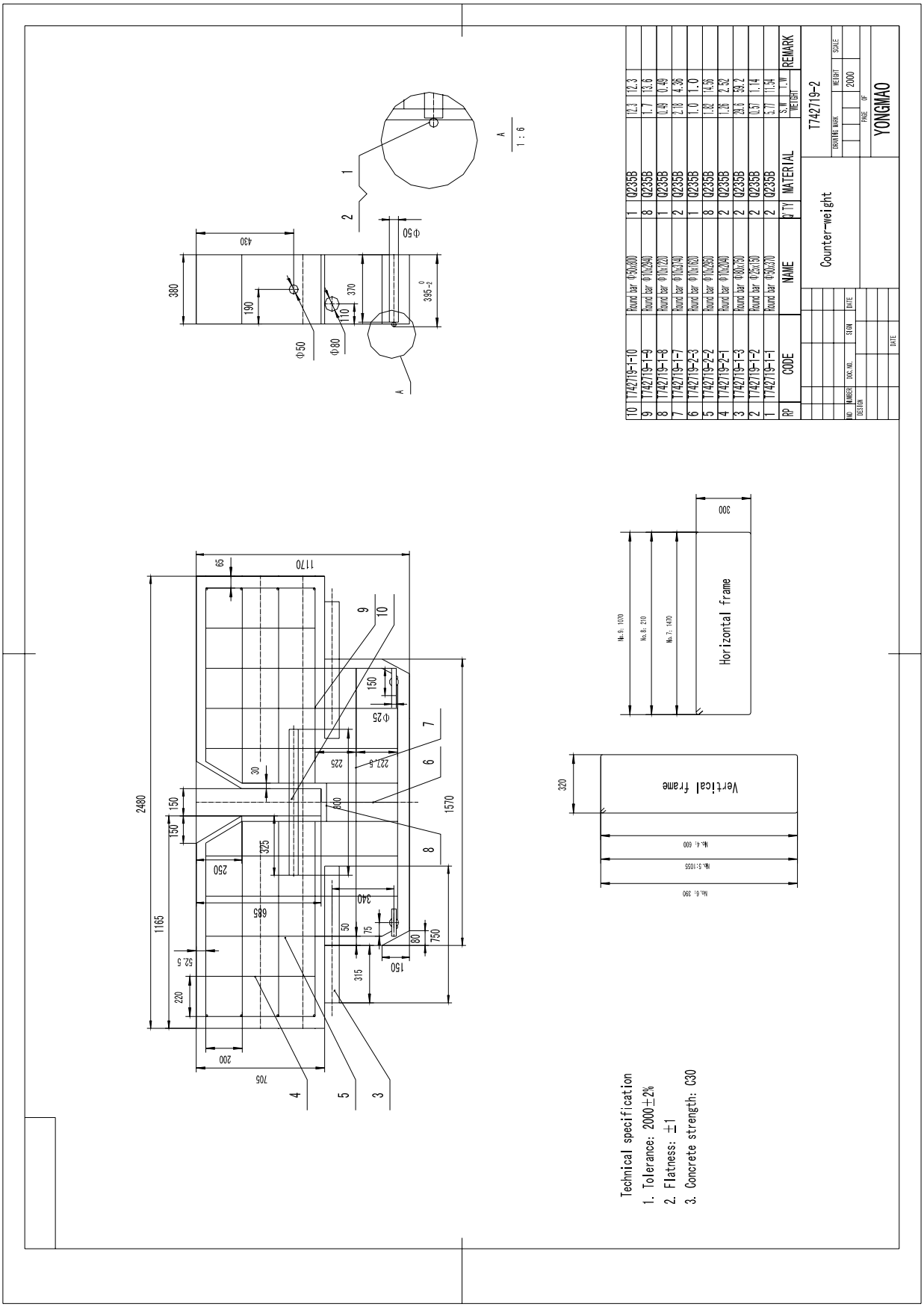
Block type	Density (t/m^3)	Weight (kg)	Tolerance
A	2.4	4000	±1%
B	2.4	2000	±2%
C	2.4	1000	±2%

Fig. 1.4.2-1

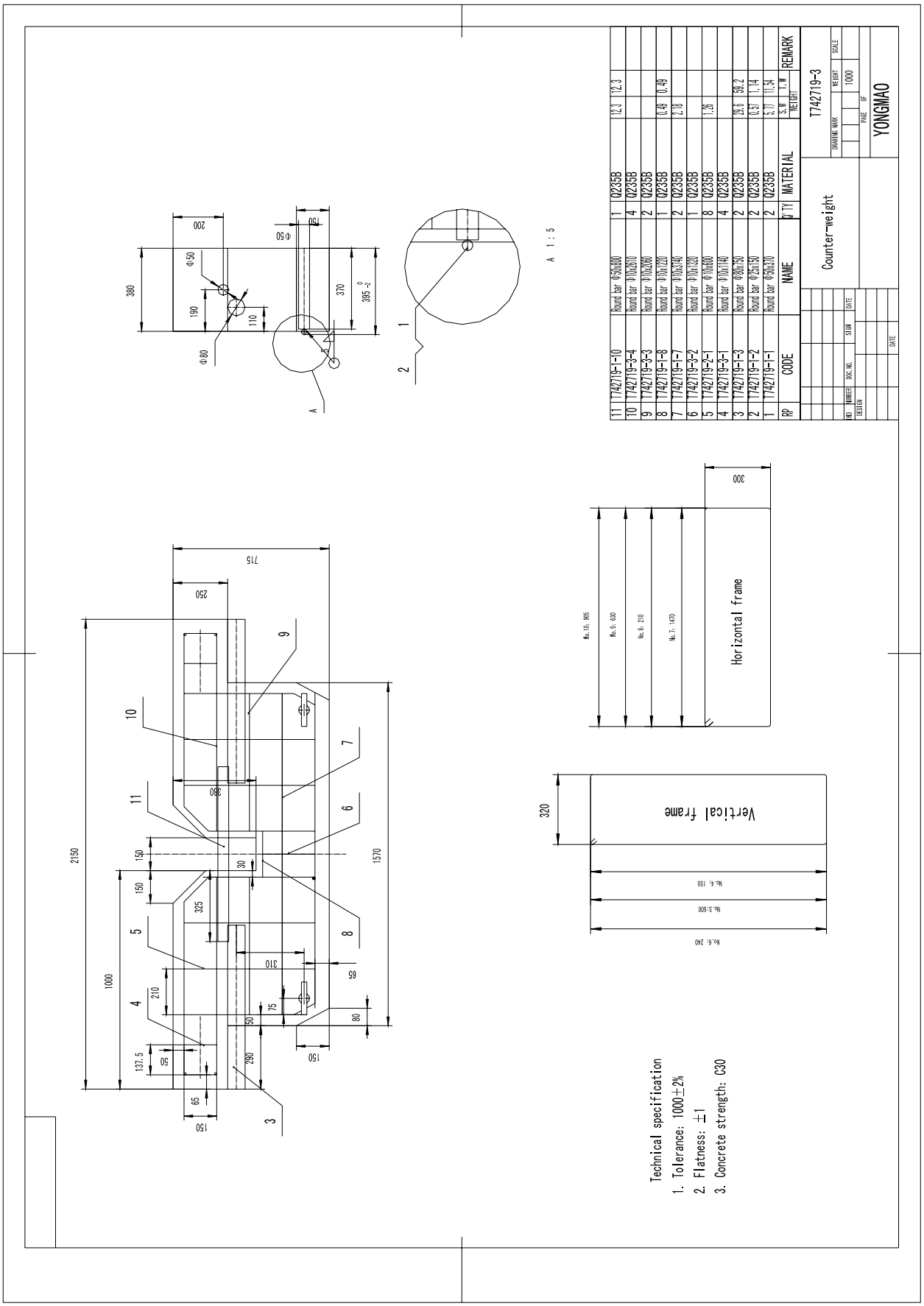
Counterweight A 4000 kg (**Figure T742719-1**)

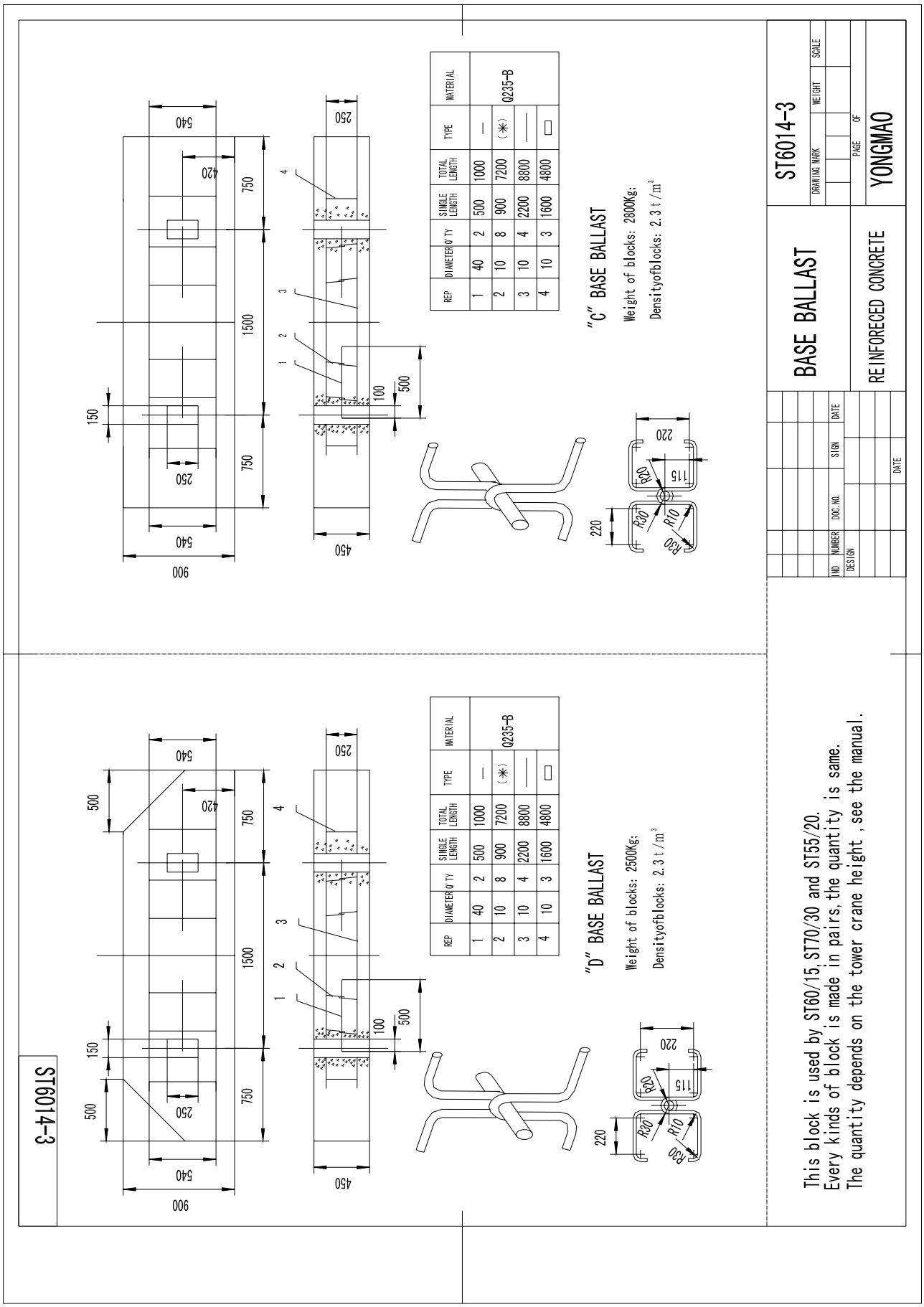


Counterweight B 2000 kg (**Figure T742719-2**)



Counterweight C 1000 kg (**Figure T742719-3**)





1.5. REEVING (SEE 1.5.1-1)

1.5.1. FROM DUAL REEVING TO SINGLE REEVING

- Bring the trolley against the jib foot and fasten it.
- Lower the hoist hook down the ground (vertical position).
- Remove the connecting pin (**8**), connecting arm (**5**) and single hook block (**4**).
- Reinstall the connecting pin (**8**) on the single hook block and secure it with cotter pins.

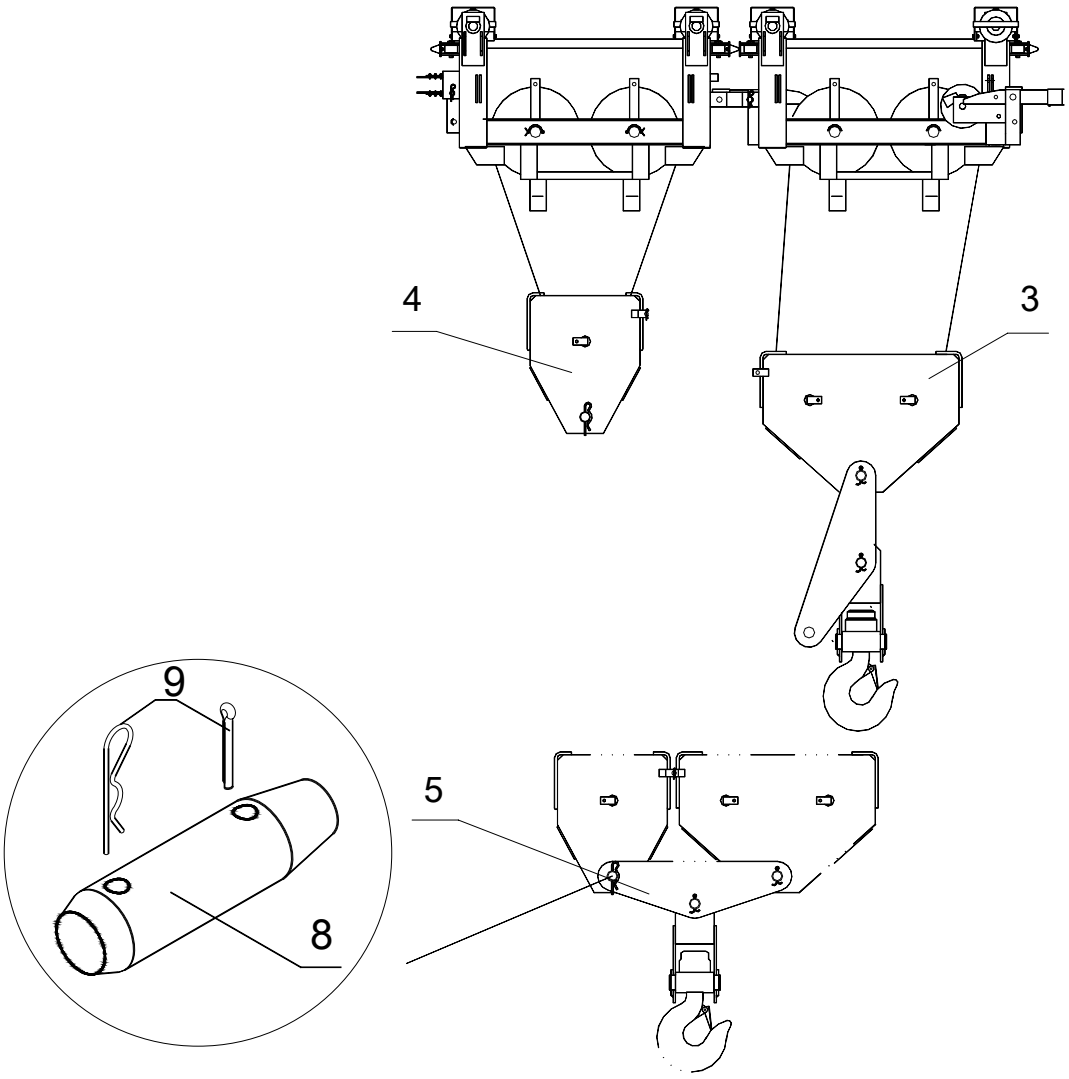


Fig. 1.5.1-1

- Hoist the single hook block (**4**) against the trolley (jib) (see **Fig.)**.
- Remove the trolley connection pin (**8**) between both trolleys (**1**) and (**2**).
- When the trolley (**2**) is being run out, both trolleys become separated.
- Reinstall the connecting pin (**8**) and cotter pins (**9**) on the rear trolley.

This concludes the transition from dual (4-rope) reeving to single (2-rope) reeving.

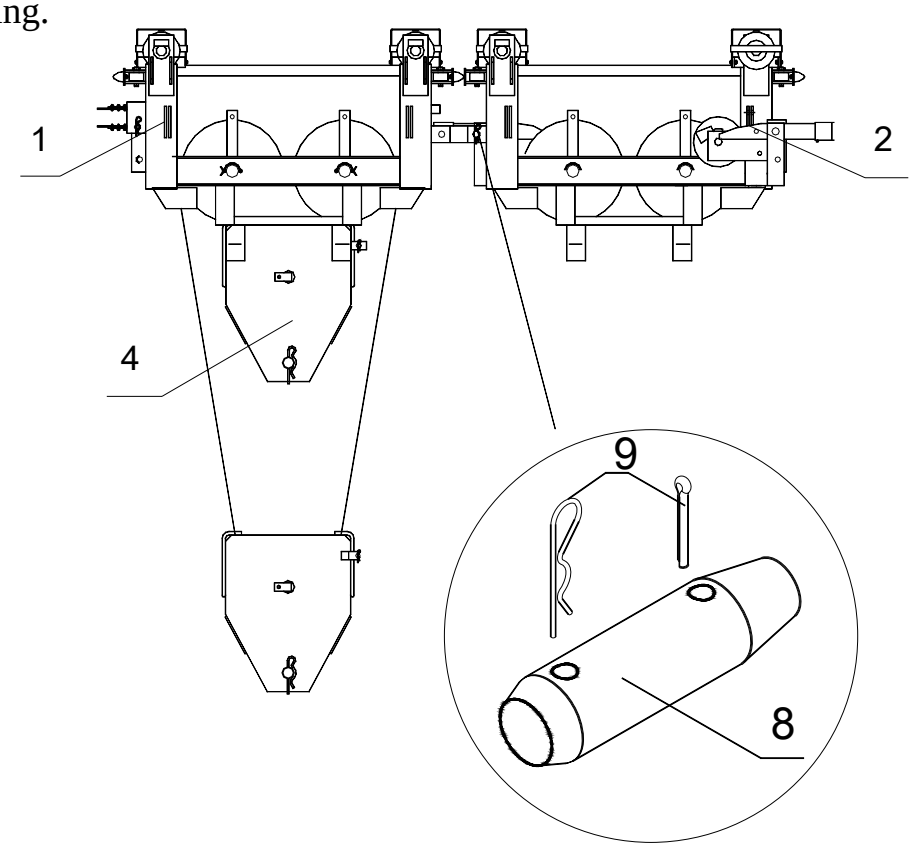


Fig. 1.5.1-2

ATTENTION:

- **If operating a significant amount of time with single reeving, the following periodic maintenance must be performed.**
- **Convert to dual reeving; let the trolley run a few times over the entire jib length while veering and hoisting the load hook over the entire hoisting height.**
- **Revert to single (2-rope) reeving**

1.5.2. FROM SINGLE REEFING TO DUAL REEFING

- Bring the front trolley (**2**) against the rear trolley (**1**) (opposite the jib foot).
- Press the switch button on the operating panel.
- Connect both trolleys with the connecting pin (**8**) and secure it with the cotter pins (**9**).
- Lower the single hook block (**4**) down to the ground.
- Connect both hook blocks (**4** and **3**) by means of the fittings (**8**, **9** and **10**) (see **Fig. 1.5.2-1**).
- This concludes the transition from single to dual reeving.

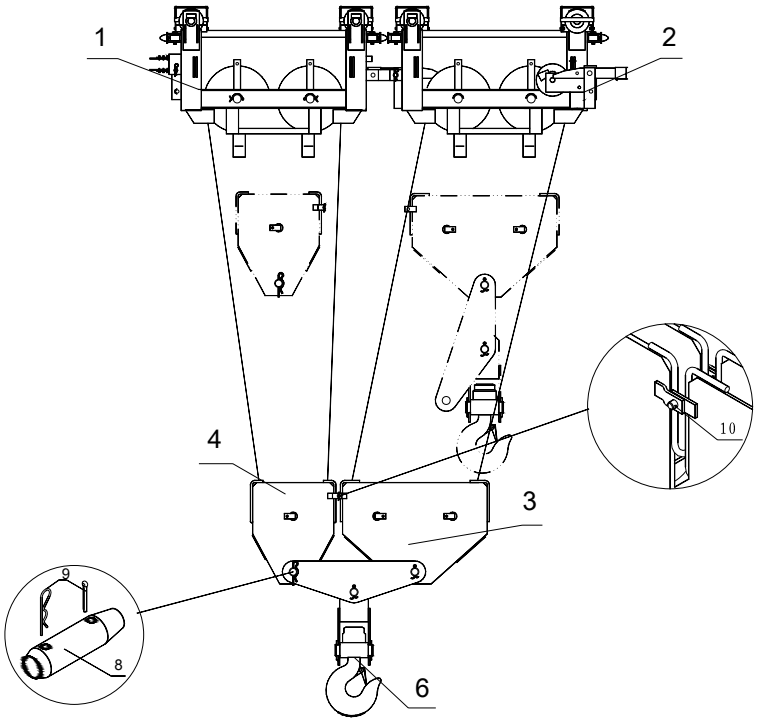


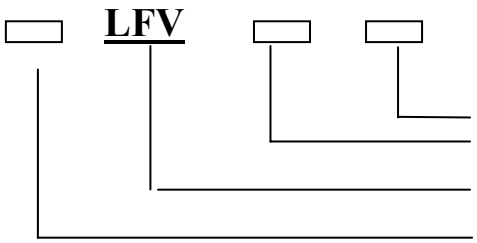
Fig. 1.5.2-1

ATTENTION:

- **Working in single reeving configuration with cranes installed above freestanding mast height**.
- The crane is designed to work with single reeving up to the maximum freestanding height.
- In case of higher heights, an imbalance can occur. Please contact us on this. In that case, the hook blocks must be ballasted, which will lead to diminished hoisting capacities.

CHAPTER 2. WINCH UNIT

2.1. EXPLANATION OF THE SYMBOLS:



(EX. 75LFV45)

Speed code, D for high speed motor
Load capacity of single wire
Frequency controlled
Motor power in kW

2.2. COMPOSITION OF THE WINCH UNIT:

The LFV winch unit consists of the following components:
See **Fig. 2.2-1.**

- Frequency controlled motor (1)
- Brake mechanism (2)
- Gearbox (3)
- Hoisting drum (4)
- Limiter (5)
- Motor ventilator (6)
- Support base (7)

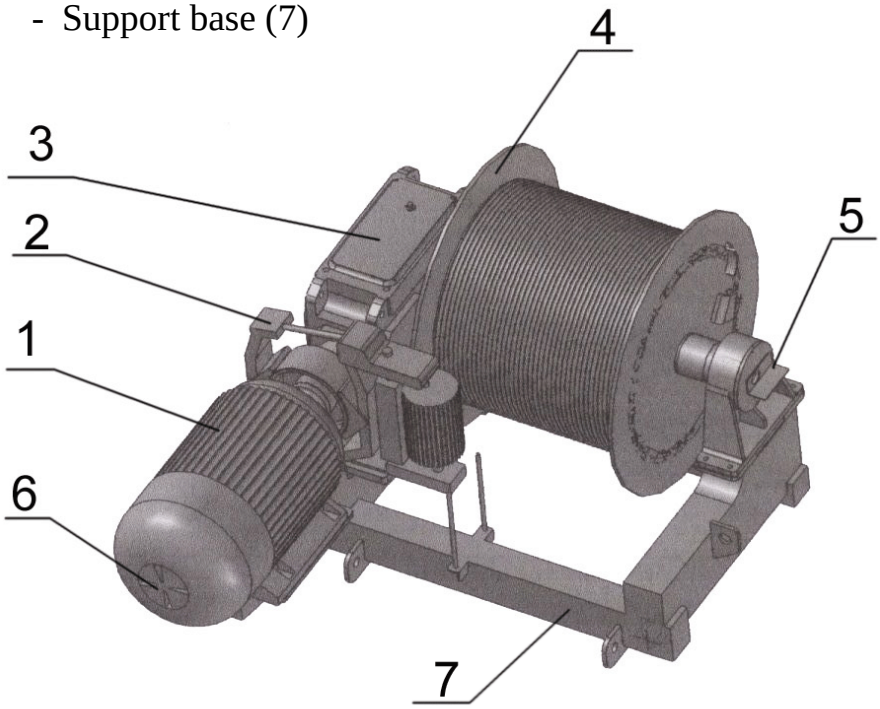
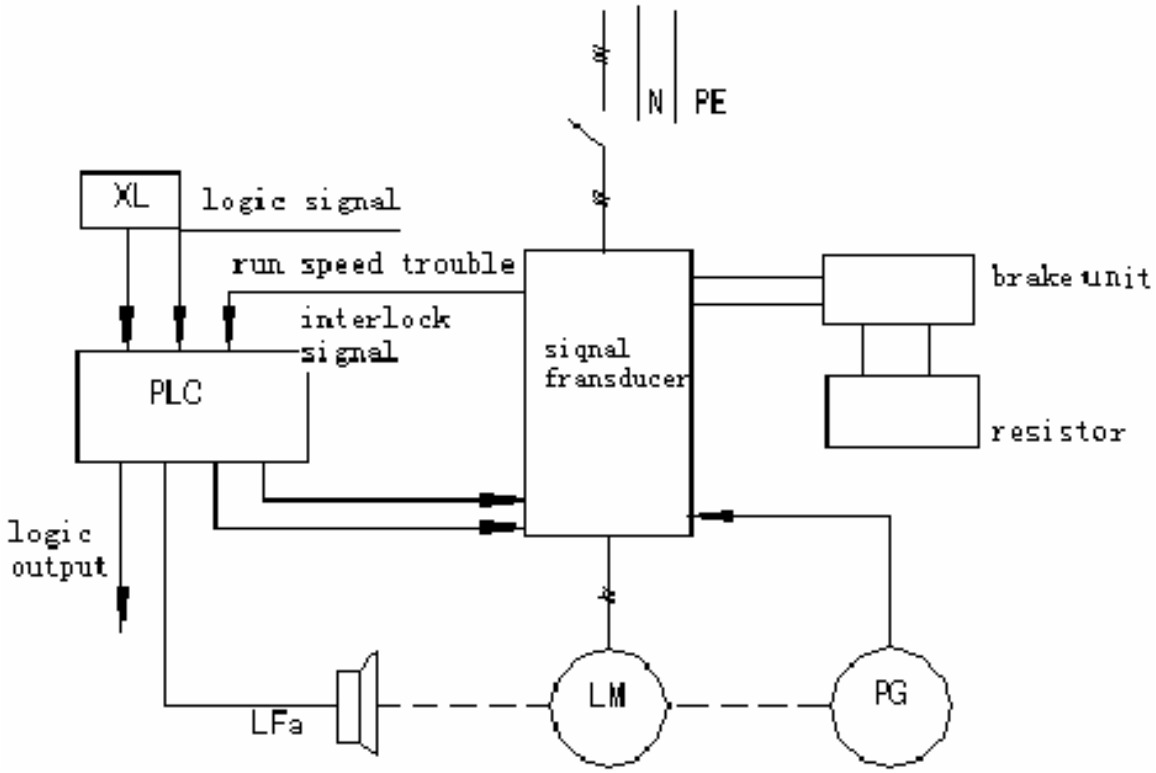


Fig. 2.2-1

2.3. OPERATING PRINCIPLE

The LFV frequency controlled system allows conversion of the 3-phase supply (through an AC transformer) to a frequency controlled supply voltage.

Schematic electric diagram:



XL Joystick
PLC Programmable logic controller
Lfa Brake
PG Transformer
LM Hoisting motor frequency converter

2.4. SPARE PARTS AND MAINTENANCE

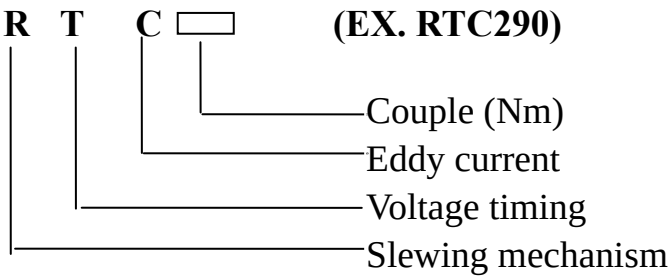
2.4.1. PROGRAMMABLE LOGIC CONTROLLER

The PLC must be checked regularly for proper working.

Part	Description	Parameter
Supply voltage	PLC voltage	L.N: AC 220V
Control panel	Dust-free ambient temperature and humidity	0°C~55°C 30% ~ 85% RH
I/O voltage	Operating voltage Input/output voltage	DC24V
Connecting conditions	Actual connecting parameters	
Battery backup	Replace the batteries regularly	+/- 3 year

CHAPTER 3. SLEWING MECHANISM

3.1. EXPLANATION OF THE SYMBOLS:



3.1.1. DESCRIPTION:

Select the slewing speed suitable for the required movement. Gradually increase or decrease the slewing speed. Slow down gradually instead of stopping the load abruptly with the slew brake.

The slew brake may only be used to position the jib during hoisting at wind speeds < 13 m/s (46 km/h).

Avoid simultaneous slewing and hoisting to prevent damage to the hoist rope (rope twisting risk).

3.2. SLEWING MECHANISM

3.2.1. DESCRIPTION

The slewing mechanism RTC consists of:

- Motor with squirrel-cage armature turning at constant speed in the desired direction.
- Electrodynamics coupling/brake to perform the speed changes.
- A gearwheel in which the clutch engages directly on the slewing ring.
- Safety brakes mounted on the electrodynamics coupling/brake.
- Techno-dynamo, for speed control.
- Slewing limiter.
- The crane can be put in weathervaning both manually and electrically.

3.2.2. OPERATION

- Make the motor run in the desired direction.
- The brake releases.
- The electrodynamic brake inductor is supplied with direct current.
- An amperage change in the inductor produces a speed change. In that way, the desired speed can be obtained by means of the control box.

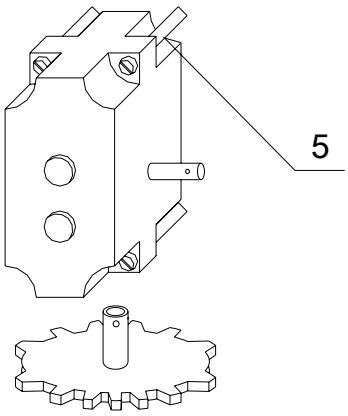
AT STANDSTILL:

- The power supply to the motor is switched off, power is supplied to the inductor of the electrodynamic brake and the jib is brought to a stop;
- The safety brake only locks when, in case of necessity, the operator presses the slewing brake button (XRFS).

ATTENTION: Stopping the jib by counter-slewing is prohibited.

At the end of the workday, the jib must be placed in weathervaning.

1. Motor
2. Gearbox
3. Weathervaing smechanism
4. Slewing ring
5. Limit switch
6. Eddy current brake



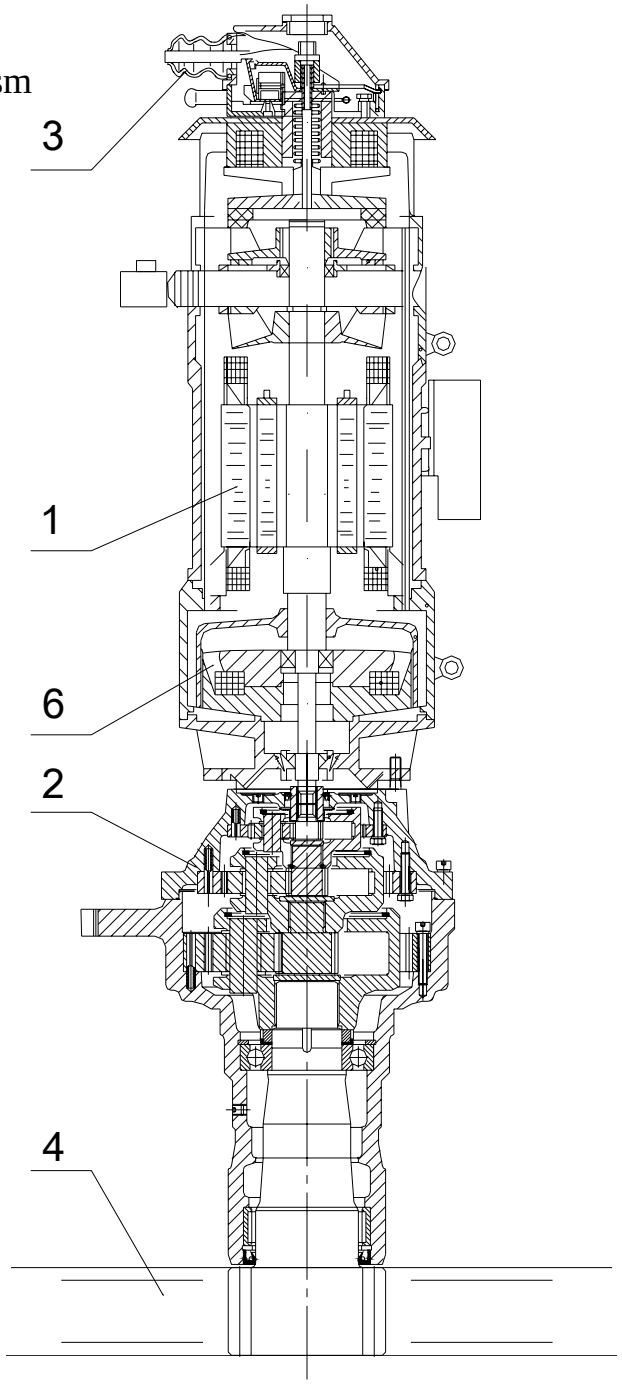
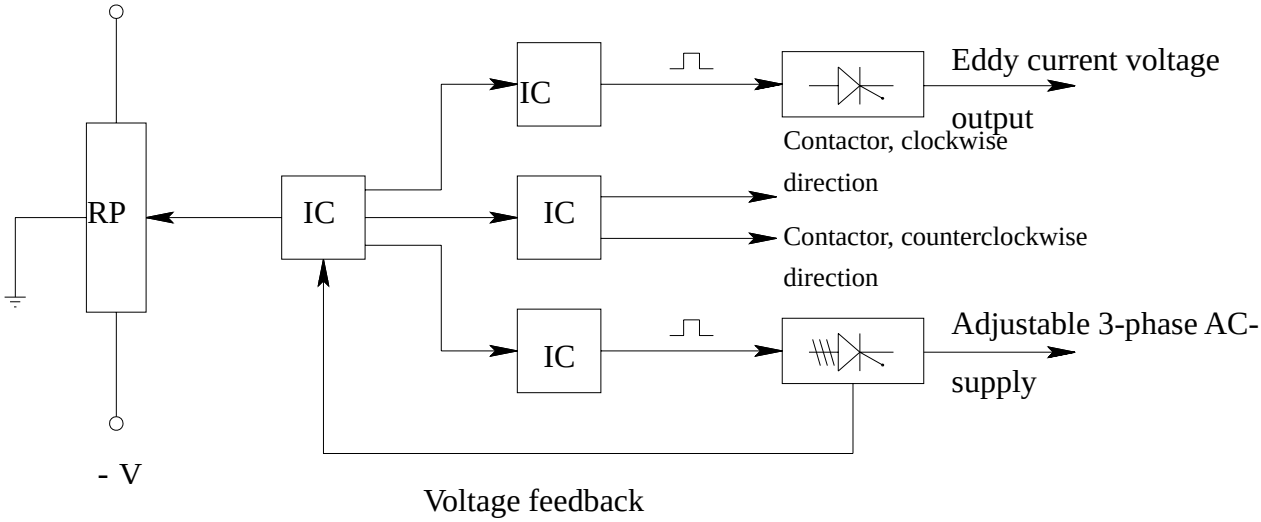


Fig. 3.2.2-1

3.3. RTC SCHEMATIC DIAGRAM



Functional diagram

Name

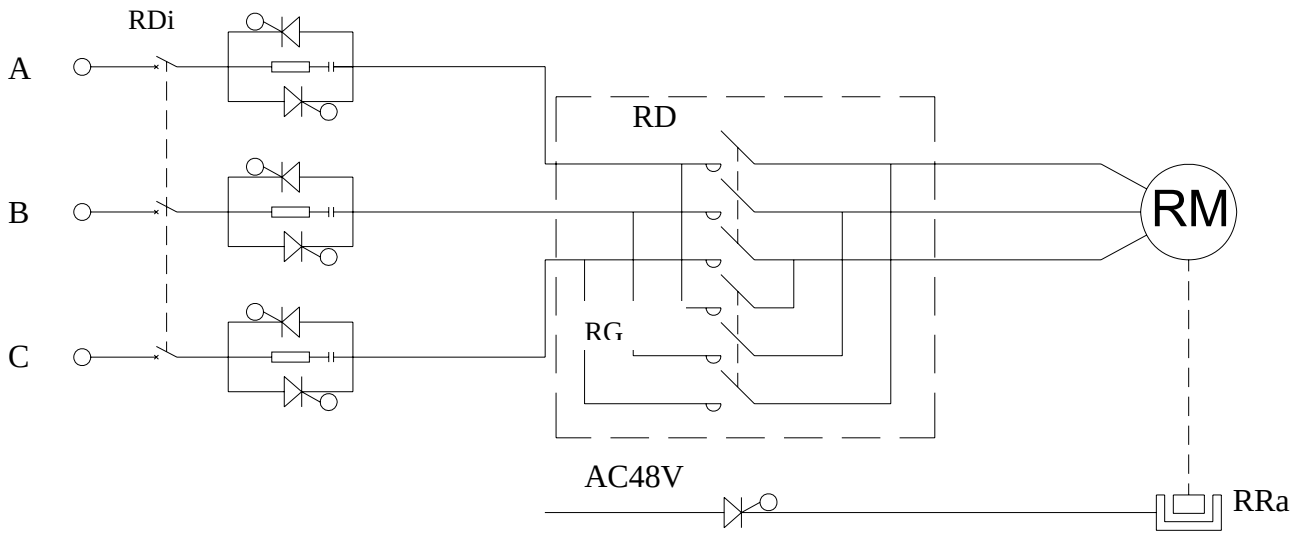
RP: Potentiometer

IC: Signal amplifier

Operation: The control signal of the potentiometer RP (slewing mechanism RTC) is converted through the amplifier IC to a single and three-phase AC-voltage that directly controls the driving motor.

The slewing direction is controlled through a separate signal.

Wiring diagram



3.4. MALFUNCTIONS

- The slewing mechanism is provided with an electronic control device that:
  - Controls slewing acceleration and deceleration;
  - Prevents changing of the slewing direction by a control error;
- If a malfunction occurs, working with the crane must be stopped and its cause must be eliminated.

Table 3-4-1

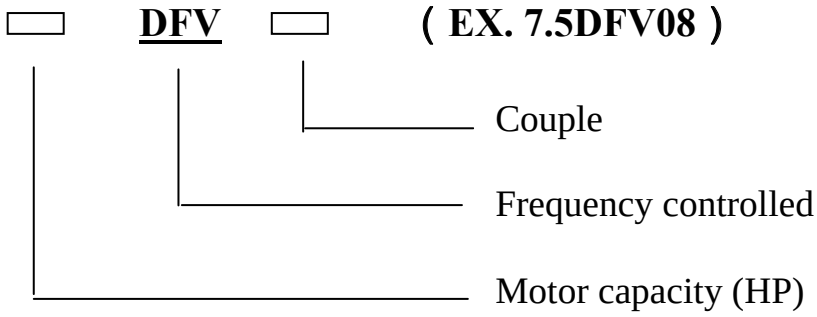
Operation	Normal	Abnormal
Slewing movement from “0” position on joystick.	Slewing starts gradually up to its maximum speed.	Slewing starts abruptly. The tower deforms.
Slewing movement towards “0” position.	The slewing movement slows down and stops after 7-10 seconds.	Slewing stops instantly. The tower deforms.
Shunt bridging.	Free slewing.	Slewing stops suddenly.

NOTE: These malfunctions can have the following causes:

- **Incorrect connection of the 380 VAC/48 VAC power supply; excessive voltage fluctuations;**
- **Potentiometer and joystick are not compatible or are incorrectly adjusted with reference to the resistance (O-R/2);**
- **Check if the inverter is intact and operates properly within the parameters;**
- **Check the connections of each part for damage and/or improper tightening;**
- **Check if the control box still works within the given parameters.**

CHAPTER 4. TROLLEY WINCH

4.1. SYMBOLS



ATTENTION: **The trolley speed must be selected according to the distance to be run. Increase and decrease speeds gradually.**

Composition of the trolley winch

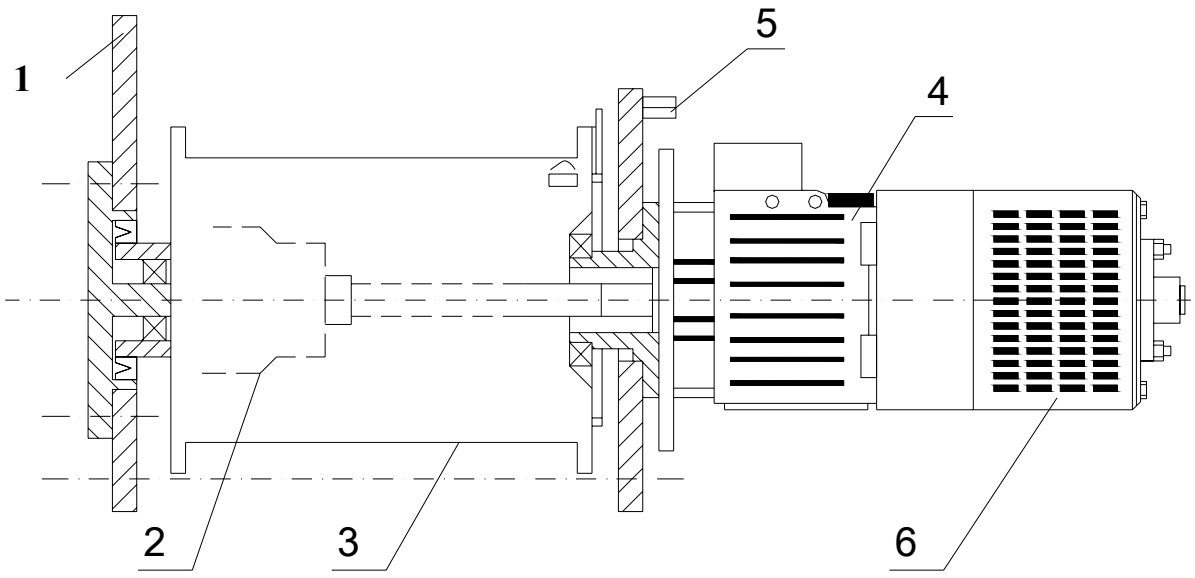


Fig 4.1-1

1. Outside support board
2. Reductor
3. Drum
4. Motor
5. Limiter
6. Brake

4.2. TROLLEY BRAKE(ZIE FIG. 6-4-1)

4.2.1. DESCRIPTION:

The electromagnetic brake starts operating as soon as the power supply is cut. Brake clearance in the active range is automatically adjusted.

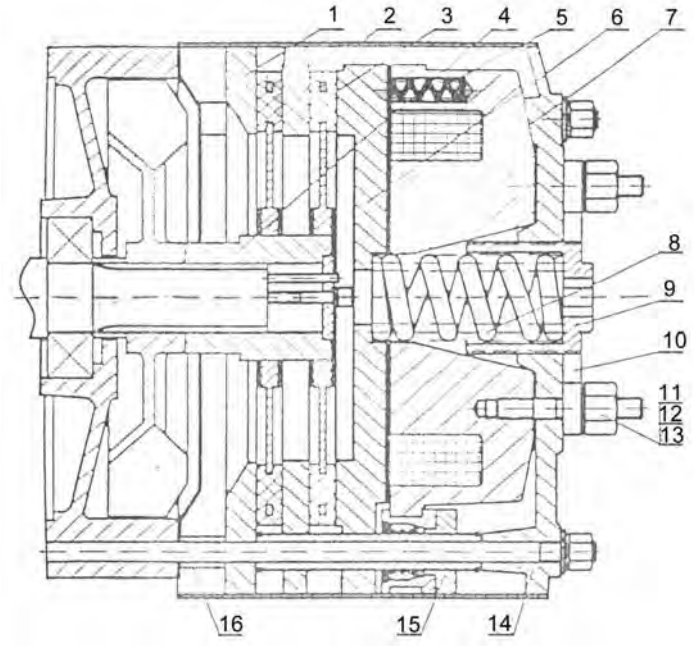


Fig. 4.2.1-1

1. Fixed brake disc
2. Two sided brake disc
3. Brake clearance
4. Spindle
5. Spring
6. Pressure disc
7. Electromagnet
8. Brake pressure spring
9. Spring pressure regulating cylinder
10. Brake cylinder joke

11-12-13. Fittings

14. Cover
15. Brake complete
16. Protection

Brakes:

When the current is cut, the electromagnetic attractive force disappears. The brake spring **(8)** pushes the pressure disc **(6)** back on the brake disc **(1-2)**. This closes the brake.

Releasing the brake:

When the brake coil **(7)** is energized, the pressure disc **(6)** is attracted and the brake pressure spring **(8)** is pressed in. By this, the brake discs (**1** and **2**) open up.

Brake clearance:

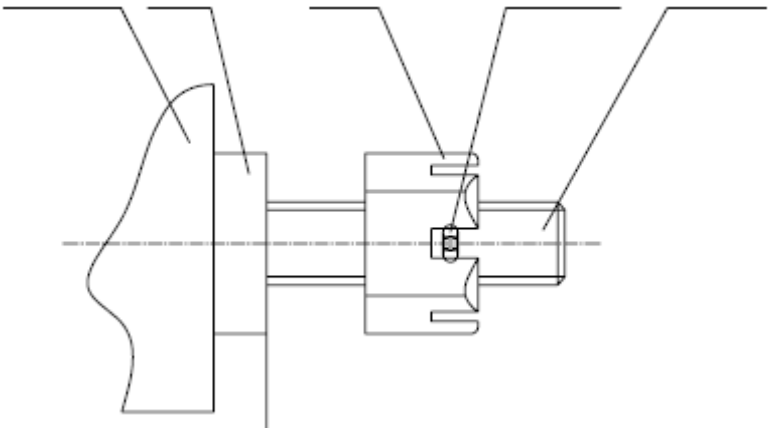
Check the brake clearance for soiling (oil - grease). Normal brake clearance is 0.8 to 1.2 mm.

Brake moment adjustment:

Factory-set

Releasing the brake manually:

The brake can be released manually by loosening the brake yoke (**9** and **10**).



ATTENTION: Working with a manually released brake is not permitted.

4.2.2. PROGRAMMED MAINTENANCE

- Every 200 hours or once a month:
- Check brake clearance and brake moment, as well as the condition of the brake discs. Normal brake clearance is normally 0.8 to 1.2 mm.
- Attention: replace brake discs before they are completely worn.
- Check if there is any foreign matter in the brake and if it is free from oil and grease.

ATTENTION: The brake must immediately be inspected if:

- It does not work properly

- It is overheating

- Abnormal vibrations are noticed

- Braking torque is insufficient

Bigge Crane and Rigging Co.
10700 Bigge Avenue
San Leandro, CA 94577
Phone: (888) 337-BIGGE or (510) 638-8100
Fax: (510) 639-4053
Email: towers@bigge.com
Web site: www.biggetowercrane.com