佳尔华
JARLWAY

JTL85C5（3615）

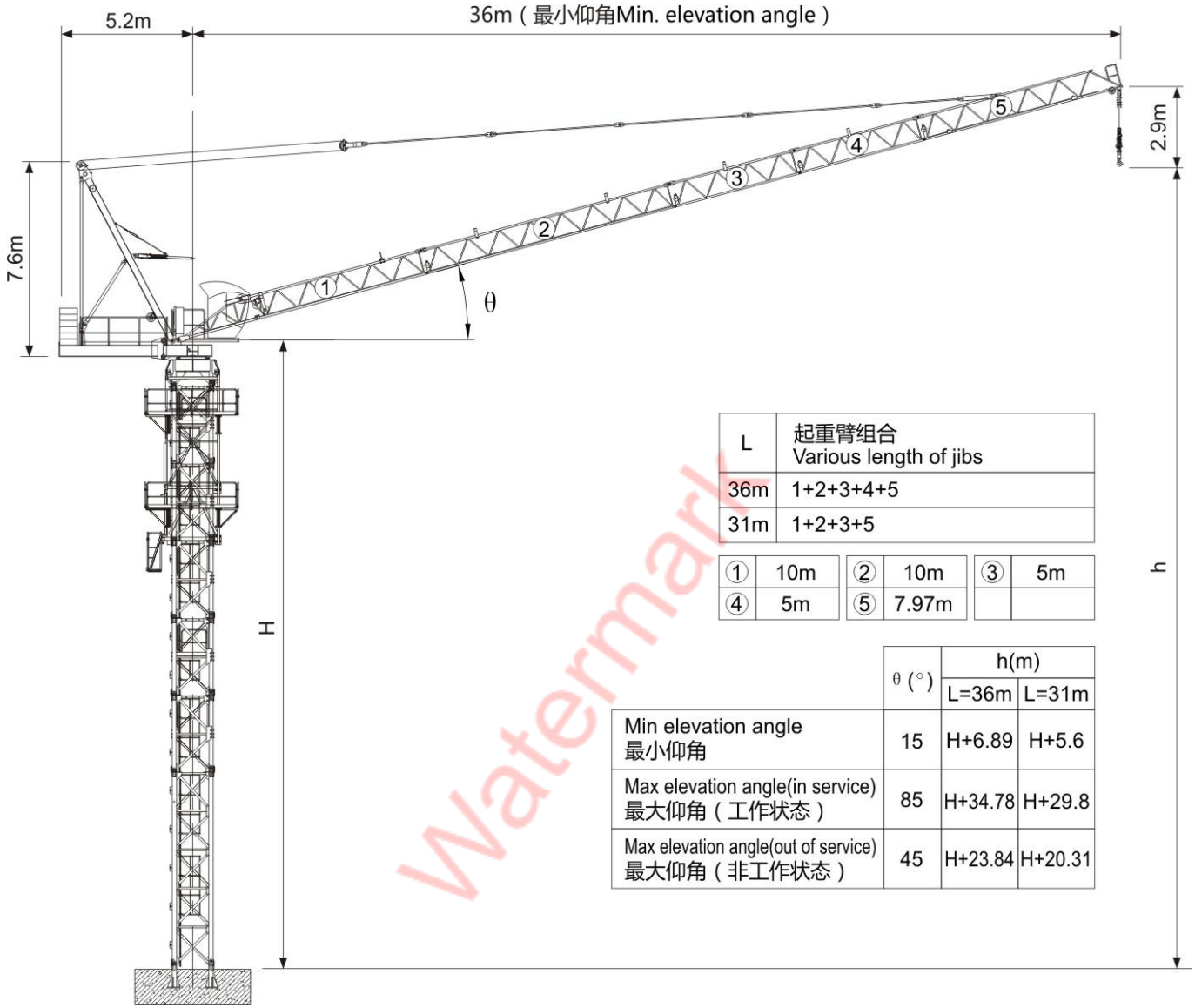
使用手册

USER MANUAL

CONTENT

1、SUMMARIAE

1.1、TECHNICAL PARAMETERS

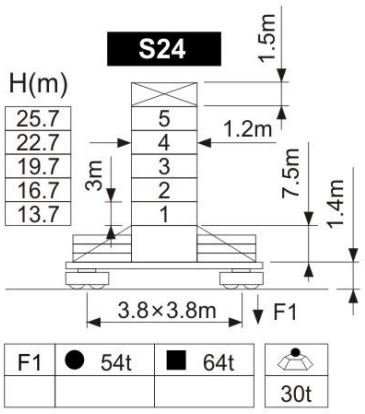


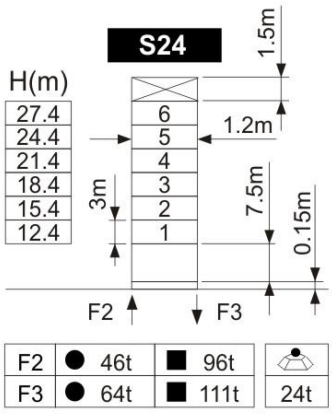
L	起重臂组合 Various length of jibs
36m	1+2+3+4+5
31m	1+2+3+5

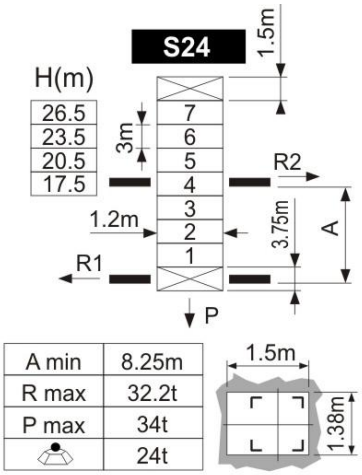
①	10m	②	10m	③	5m
④	5m	⑤	7.97m		

	θ (°)	h(m)	
		L=36m	L=31m
Min elevation angle 最小仰角	15	H+6.89	H+5.6
Max elevation angle(in service) 最大仰角（工作状态）	85	H+34.78	H+29.8
Max elevation angle(out of service) 最大仰角（非工作状态）	45	H+23.84	H+20.31

1.2、MAST







● 工作状态 In service　**F** 反力 Reactions　■ 非工作状态 Out of service　自重 Without load and ballast with longest jib and maximum height

1.3、THE LIFTING CHARACTERISTICS

36m			17m	18m	20m	22m	24m	26m	28m	30m	32m	34m	36m
2falls	2.5t	3.2m~28m	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.2	1.9	1.7	1.5
4falls	5t	3.2m~18m	5	5	4.1	3.5	3.1	2.7	2.3	2.0	1.8	1.6	1.4

31m			17m	18m	20m	22m	24m	26m	28m	31m
2falls	2.5t	3.2m~28m	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.2
4falls	5t	3.2m~18m	5	5	4.1	3.5	3.1	2.7	2.4	2.1

1.4、TECHNOLOGY PERFORMANCE TABLE

起升 Hoisting	25LVF13	2 falls	m/min	0~43	0~70	18.5kW	绕绳量 Drum capacity
			t	2.5	1.25		360m
		4 falls	m/min	0~21.5	0~35		>360m※
			t	5	2.5		

变幅 Trolleying	24LFV15	1.5min	24kW
回转 Slewing	RCV95	0~0.8r/min	95Nm
行走 Traveling	RT324	0~25m/min	2×5.2kW
380V(±5%) 50Hz	60kVA		

※ 请联系我们 Please consult us　△可选 Option

2、INSTALLATION ON FIXING ANGLES

2.1.GENERAL NOTES

There are two types of fixing angles:

- Not reusable fixing angles; they are set into the concrete block.
- Reusable fixing angles; they are fixed onto the concrete block by means of the rods.

The choice of the concrete block and the loads and reactions applied on fixing angles are given in later chapters.

2.1.1.FITTING THE FIXING ANGLES

A bad mounting of the fixing angles may cause serious troubles when using the crane (perpendicularity not observed, warpage of the fitting surfaces of the mast).

The fitting elements (frame, standard mast section) recommended in the operating method can be supplied at the same time as the as the fixing angles and before the crane.

NOTE: The frame is only used for fitting the fixing angles.

2.1.2.EXECUTION OF THE CONCRETE BLOCKS

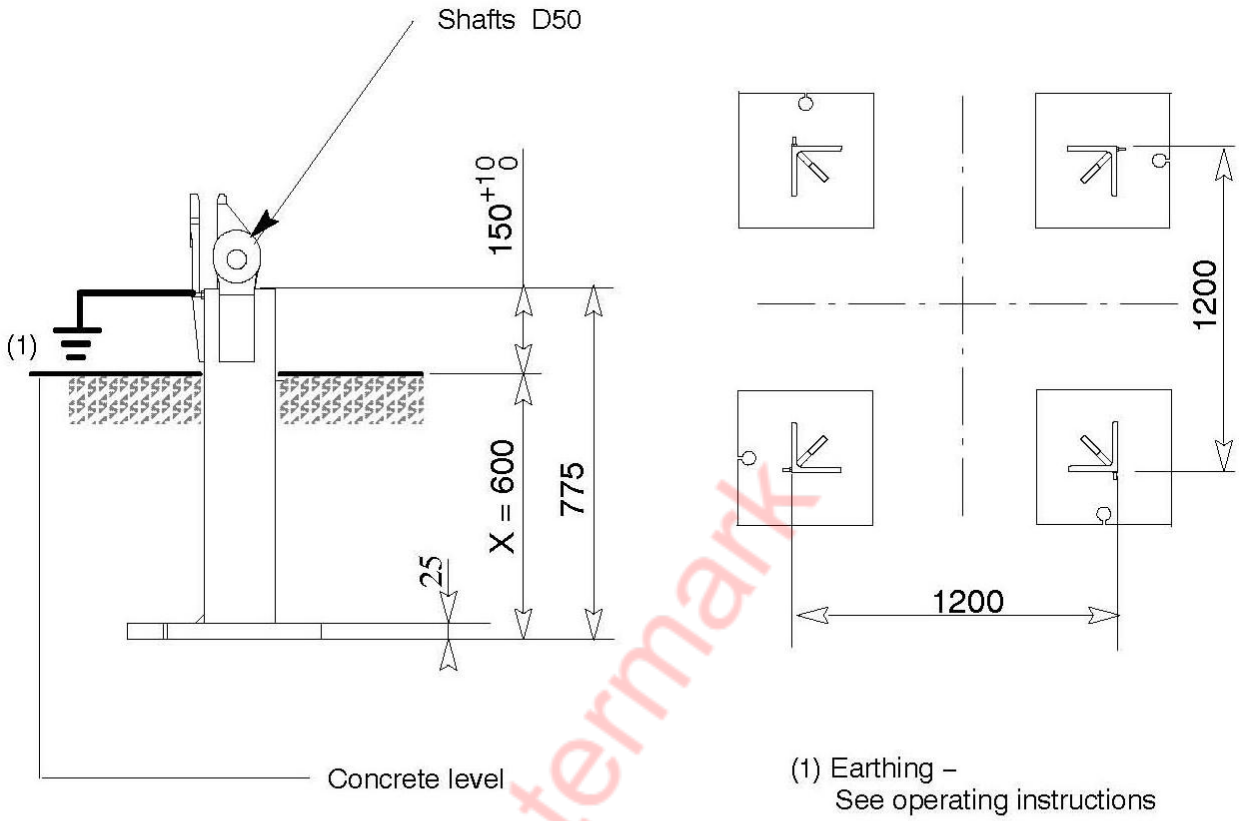
The plans described on following pages are in compliance with the maximum loads given for each case.

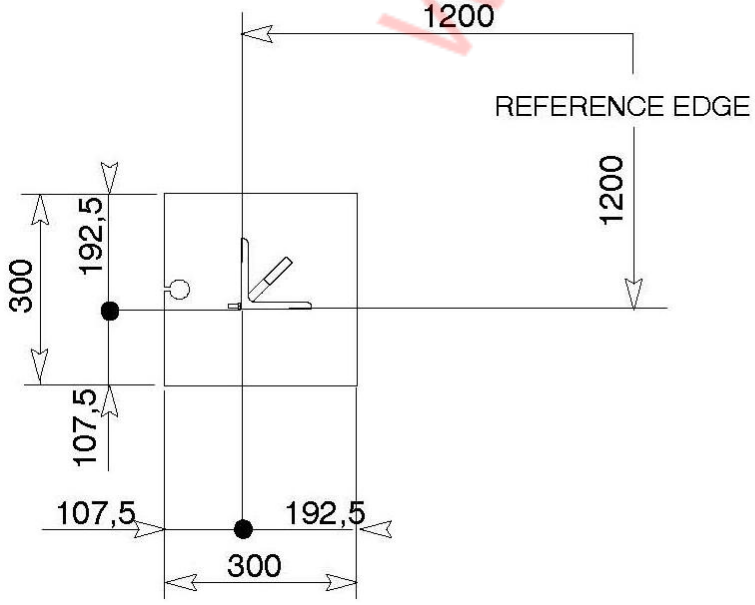
IMPORTANT: The reinforcement is given on the following pages as an indication and can be carried out differently, if necessary, under the responsibility of a competent specialist.

2.2. FITTING THE NOT REUSABLE FIXING ANGLES

2.2.1. DIMENSIONS OF THE FIXING ANGLES

1.2m





Dimensions in mm

2.2.2. SETTING INTO CONCRETE OF THE FIXING ANGLES

In order to set perfectly into concrete the fixing angles, following components are necessary:

- 4 fixing angles and 8 shafts
- 1 basic mast (template)
- 1 sighting device

The fixing angles and the basic mast can be supplied before the delivery of the crane.

The fixing angles must be symmetrically set into concrete with regard to the axes of the concrete block and form a square according to the dimension of the masts to be fitted.

Tolerance of surface evenness: 1/400 of the mast cross-section

Near the fixing angle, NEVER CUT REINFORCING STEELS NOR REDUCE THEIR NUMBER GIVEN.

Take care that fixing angles are correctly earthed (see Operating Instructions).

IMPORTANT: When assembling the fixing angles and the basic mast, make sure that the bearing surfaces of boring and shafts are clean free from any smear.

- Outside or inside the ditch, arrange the fixing angles (1) by observing their distance (Detail A – Figure 1).
- Pin-connect the template (2) to the fixing angles (1) by means of 4x2 shafts (3) .Lock the shafts (3) using the pins (4);fix the pins with split pins(Detail B,C-Figure 1)

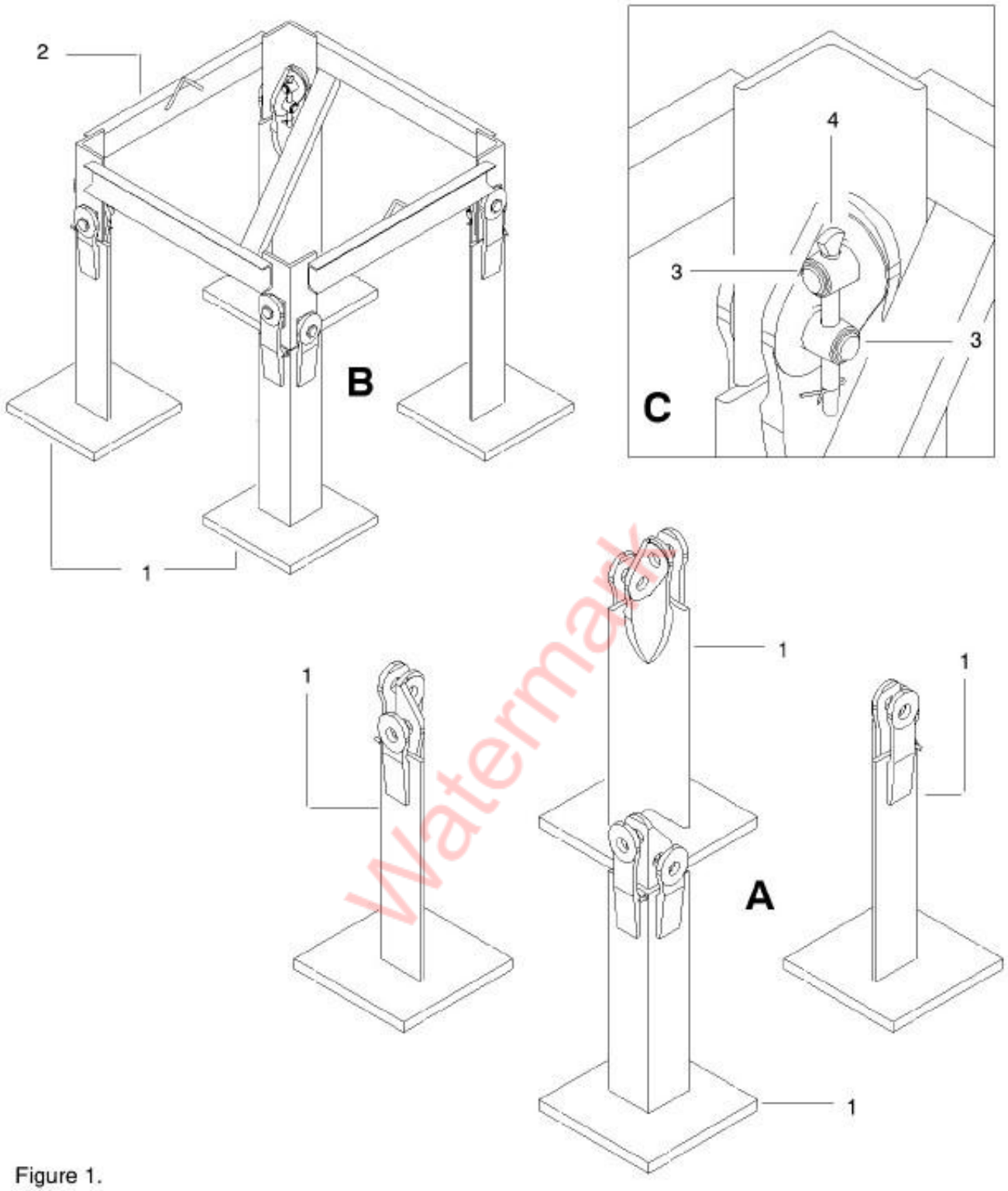


Figure 1.

- Position the assembly comprising the fixing angles, basic mast section in the reinforcement arranged in the ditch and carry out an adjustable wedging(1) under the plates of the fixing angles (Detail A – Figure 2).

IT IS ESSENTIAL TO OBSERVE THE DIMENSION OF 150mm (Detail B – Figure 2).

- Check the perpendicularity of the assembly by means of the sighting device.
- Pour the concrete block and wait that it is completely before erection the crane.

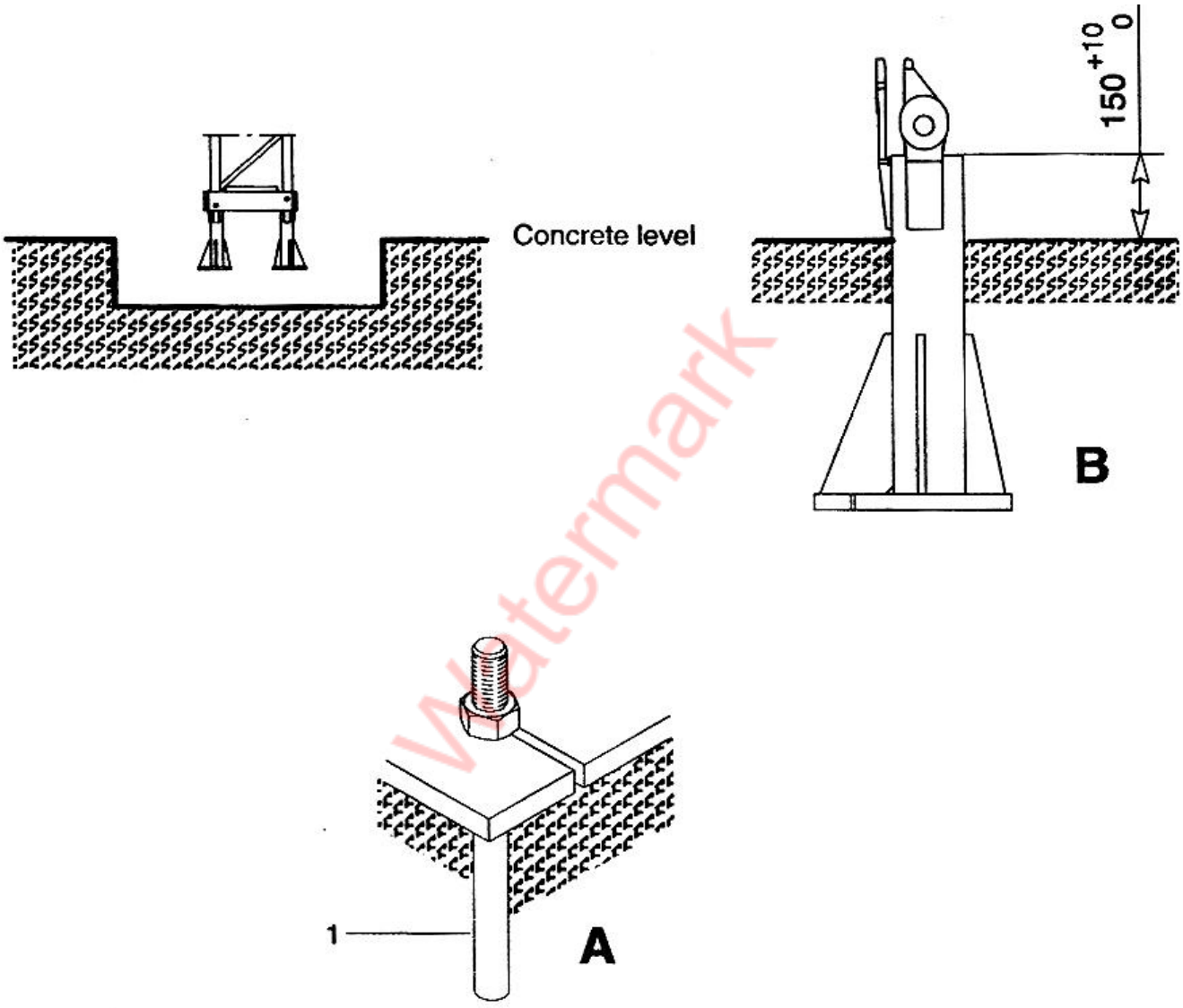
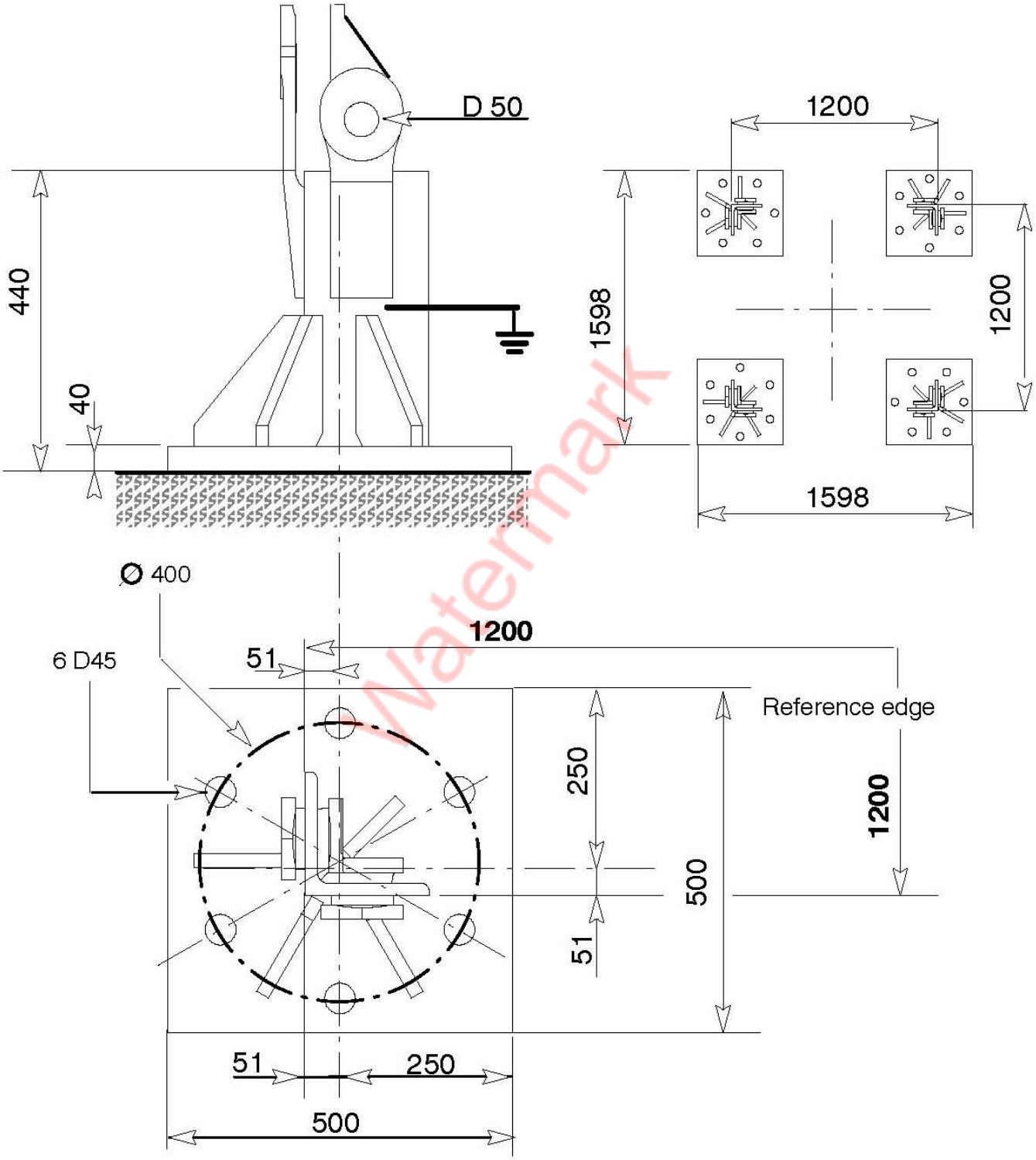


Figure 2

3. FITTING THE NOT REUSABLE FIXING ANGLES

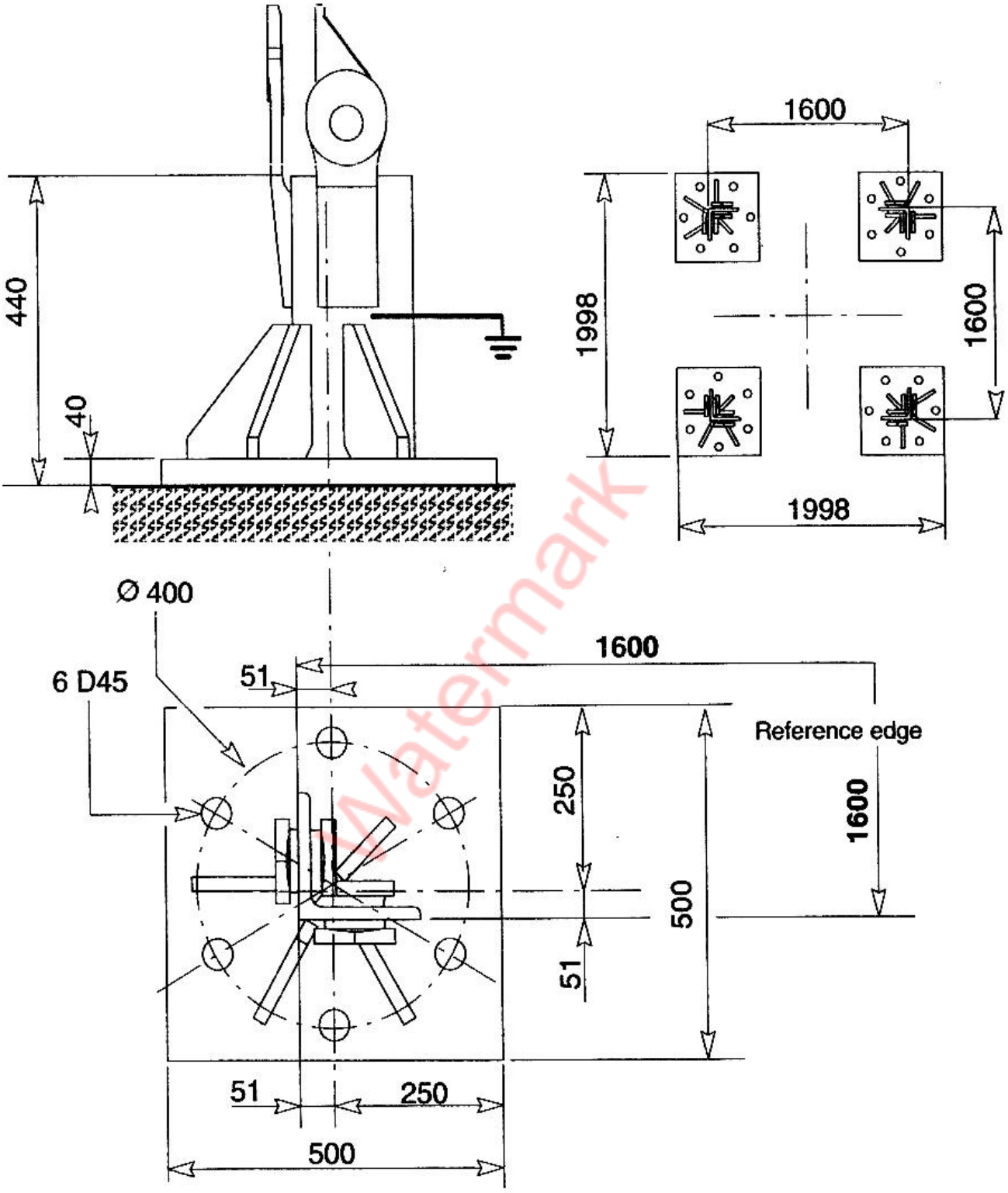
3.1. DIMENSIONS OF THE FIXING ANGLES

1.2m

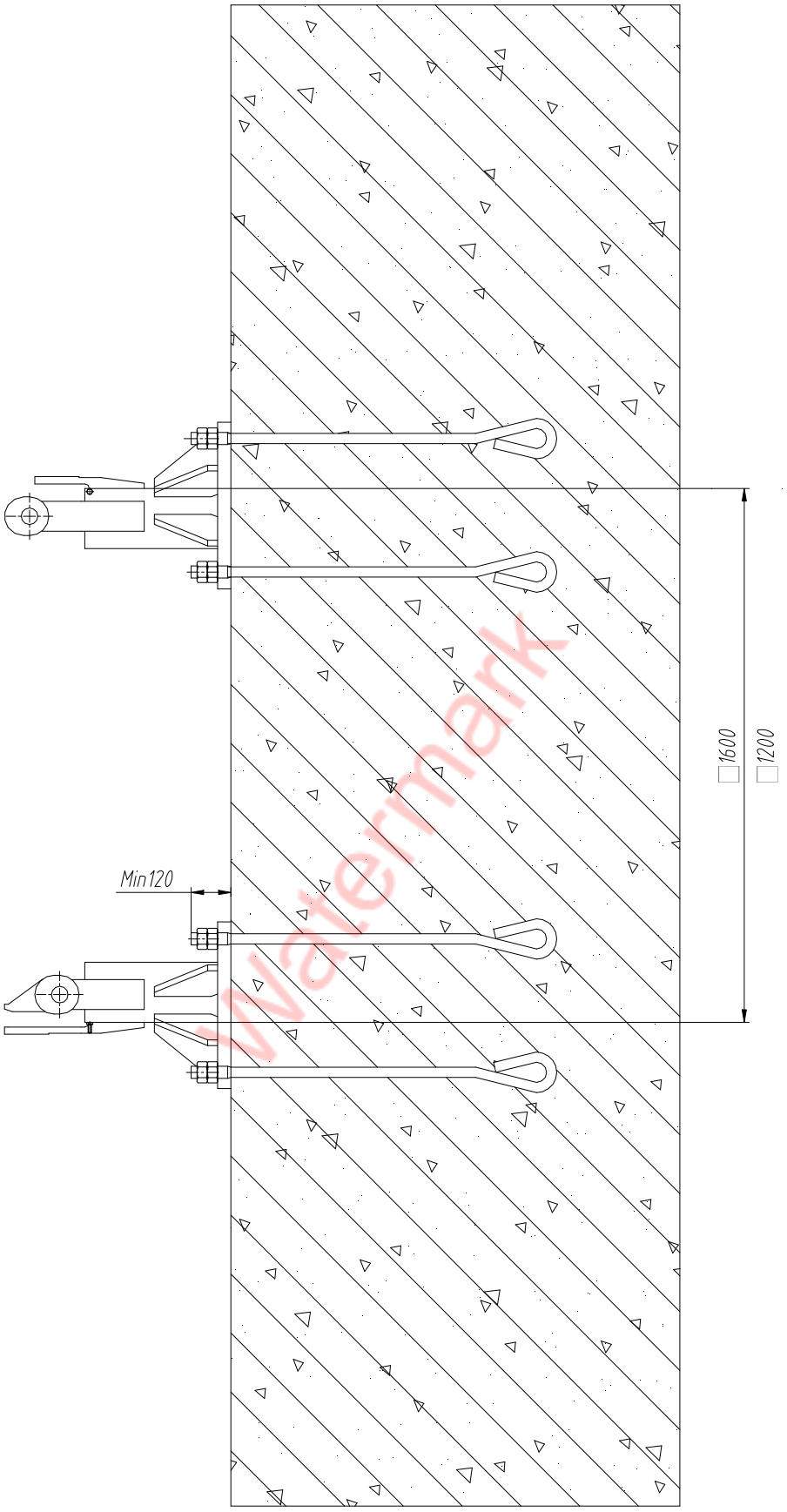


Dimensions in mm

1.6m



Dimensions in mm



3.2. FITTING THE FIXING ANGLES

The dimension, number and fitting of the fixing rods of the fixing angles onto the concrete block (or any other structure ...) are on the user's responsibility.

It is possible to use the constructor's standard of concrete blocks for the information's of mass, dimensions and ground pressure. The concrete blocks are defined for the plate-type fixing angles. Therefore, it is COMPULSORY to adapt them to the reusable fixing angles and to the connecting method between the fixing angles and the concrete block. The adaptation of the reusable fixing angles to these concrete blocks is on the user's responsibility (the reinforcement type is to be adapted to the fixing rods used).

Near the fixing angle, NEVER CUT REINFORCING STEELS NOR -REDUCE THEIR NUMBER GIVEN.

The fixing angles can be supplied before the delivery of the crane in order to use them as positioning jig for the fixing rods of the fixing angles. The template can also be supplied before the delivery of the crane.

The template is only used for fitting the fixing angles.

Take care that the fixing angles are correctly earthed.

3.2.1. Determination OFA FIXING

Compression and shearing forces applied on the fixing angles for the various working heights. These information's allow carrying out the calculation of the fitting of the fixing angles adapted to your case of use, knowing that the shearing force is always taken up by two fixing angles.

In general, it can be indicated that, in case of fixing by screw connections or by high-strength tie rod, dass10-9 (elastic limit of 90 kg/mm2), a correct assembling will be obtained by observing the following data,

that is to say:

- F - maximum static load under tensile strength on 1fixing angle.
- Fe - the capacity corresponding to the elastic limit of the tie rod.
- Definition of the number of rods (N) to be used per fixing angle.

$$\frac{F}{0{,}3\ Fe} = \text{N to be rounded}$$

The number of the rods is always 6 and symmetrical with respect to the upright.

NOTE: Considering a permissible load per rod, equal t00,30f the elastic Limit, taking up the moment graven by the shearing force and the various dynamic coefficients are integrated.

- Priestess Fp to be applied on the high-strength rod (Fp = 0,5 Fe)

IMPORTANT: Besides these information’s concerning the number and the quality of the rods, choosing and fitting workmanlike the fixings are entirely on the user's responsibility.

3.2.2. FITTING THE RODS

Fitting the rods varies depending on the number of rods used:

- 6 rods - use the holes1,2,3,4,5,6 (Figure 1)

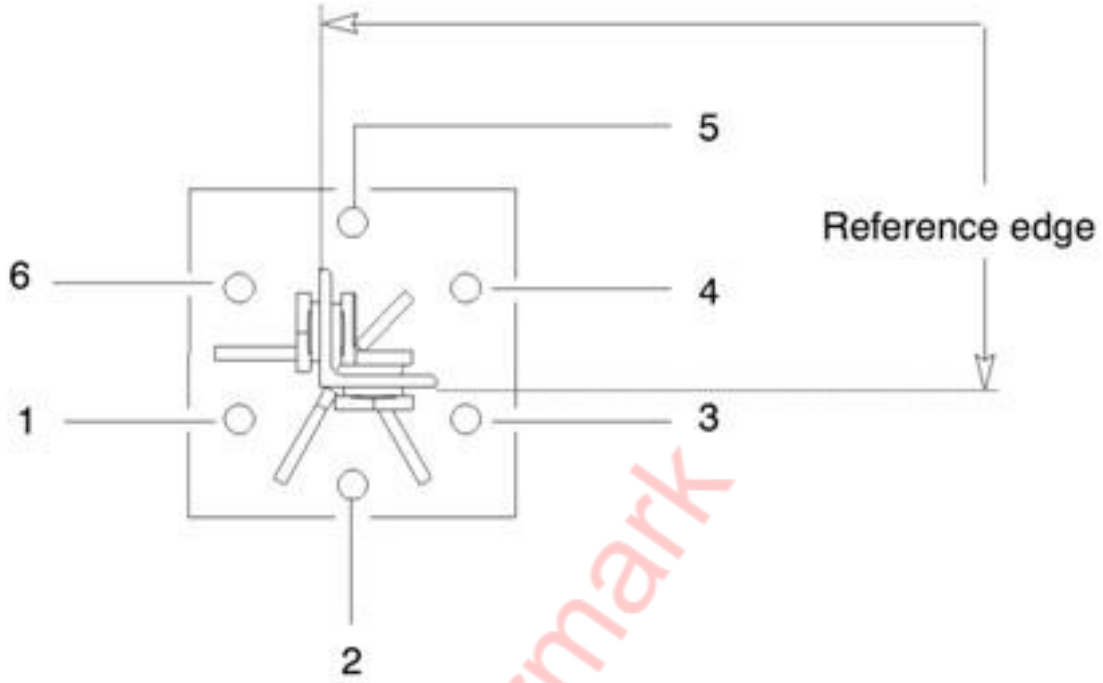


Figure 1

3.2.3. FITTING THE FIXING ANGLES

- Arrange the fixing angles (1) by observing their distance (Detail A - Figure 2).

- Pin-connect the template (2) to the fixing angles (1) by means of 4 x 2 shafts (3). Lock the shafts (3) using the pins (4); fix the pins with split pins (Detail B, C - Figure 2).

- Tighten the nuts of the fixing rods according to the supplier's instructions.

- Check the surface evenness of the fixing angles by means of the sighting device. The sighting reference is to be taken at the top (a) of the template uprights (2) (Detail C - Figure 2).

Tolerance of surface evenness: 1/400 of the mast cross-section

IMPORTANT. When assemblage the fixing angles and template, make sure that the bearing surfaces of borings and shafts are clean and free from any smear.

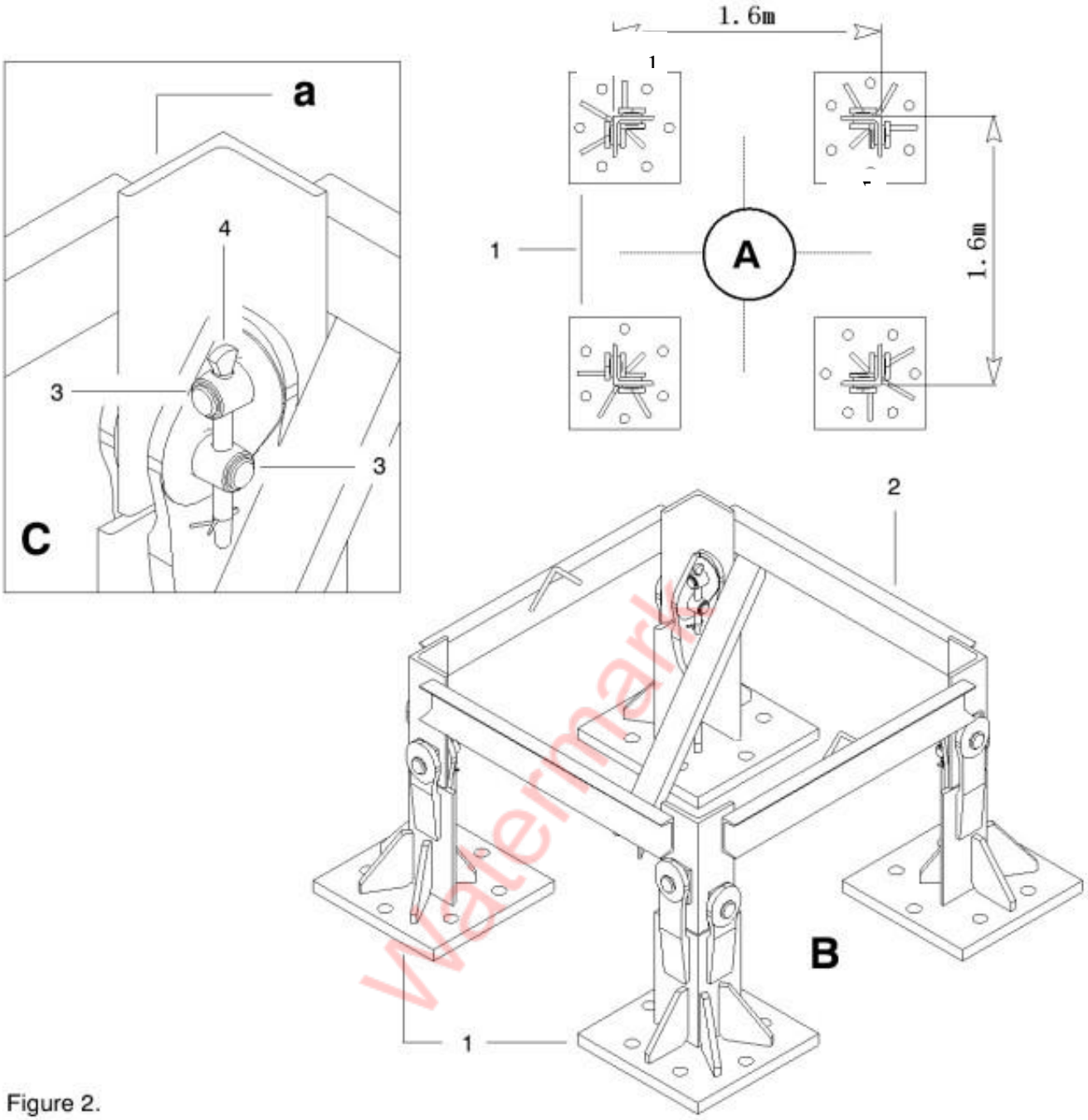


Figure 2.

4、CONCRETE BLOCK

Brief introduction of forces

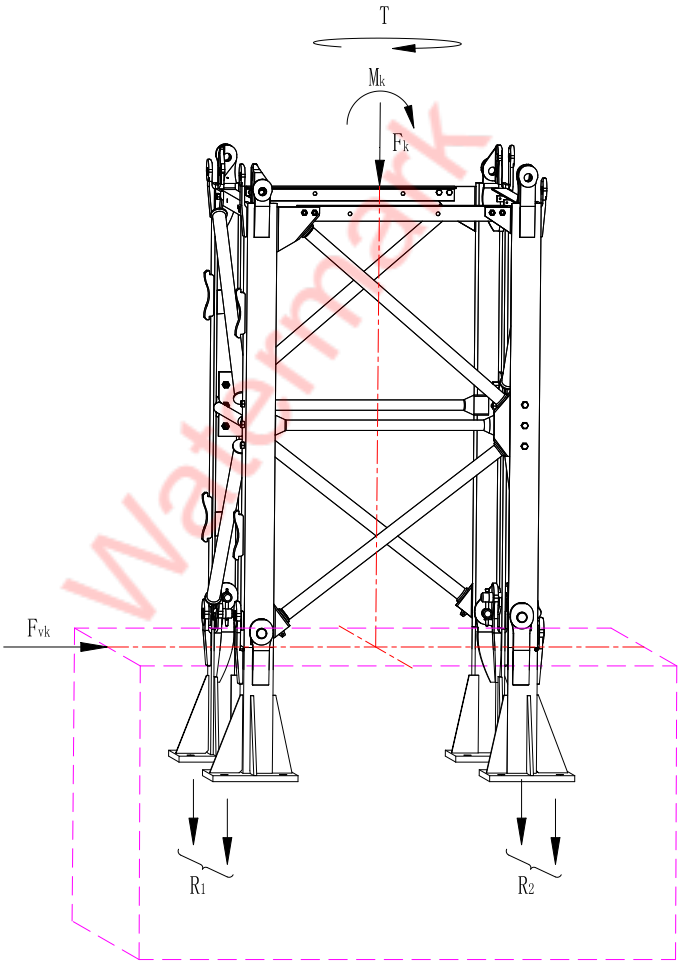
T： Torque exerted to foundation

M_k： Moment load exerted to foundation

F_k： Vertical load exerted to foundation

F_{vk}： Horizontal load exerted to foundation

R_1 和 R_2： Reaction exerted by Fixing angles when hoist jib is parallel to tower mast



1. JIB LENGTH 36M

Mast composition	Tower height (m)	In service (wind pressure 250Pa)					Out of service (wind pressure1100Pa)				
		F_k(kN)	F_{vk}(kN)	M_k(kN·m)	R_1(kN)	R_2(kN)	F_k(kN)	F_{vk}(kN)	M_k(kN·m)	R_1(kN)	R_2(kN)
1+0	7.65	322.2	14.4	858.7	-554.5	876.7	272.2	57.4	622.9	-383.0	655.2
1+1	10.65	329.7	15.1	903.3	-587.9	917.6	279.7	60.7	801.4	-528.0	807.7
1+2	13.65	337.2	15.9	950.2	-623.2	960.4	287.2	64.1	989.9	-681.3	968.6
1+3	16.65	344.7	16.6	999.3	-660.3	1005.1	294.7	67.4	1188.4	-843.0	1137.7
1+4	19.65	352.2	17.4	1050.6	-699.4	1051.6	302.2	70.7	1396.8	-1012.9	1315.1
1+5	22.65	359.7	18.2	1104.2	-740.3	1100.1	309.7	74.0	1615.2	-1191.1	1500.9
1+6	25.65	367.2	18.9	1160.1	-783.2	1150.4	317.2	77.3	1843.5	-1377.6	1694.9

2. JIB LENGTH 31M

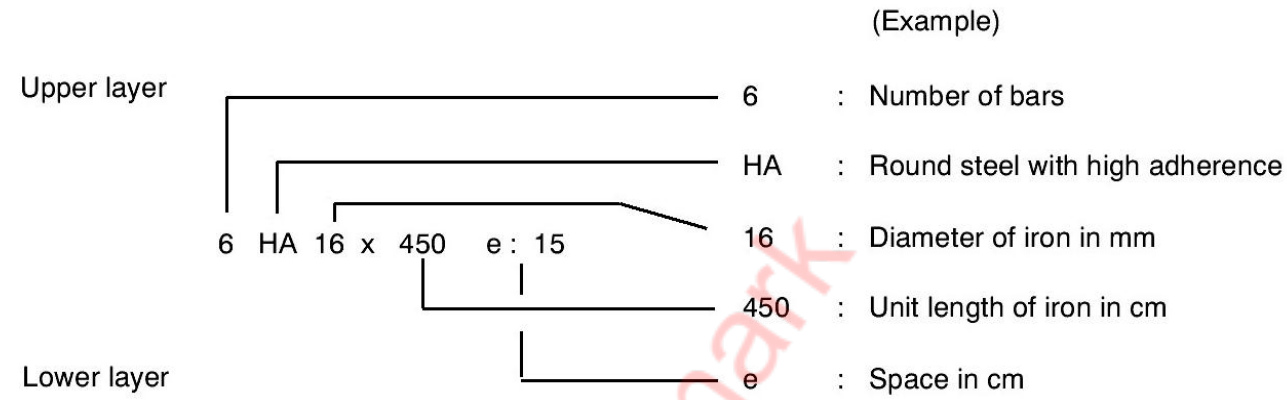
Mast composition	Tower height(m)	In service (wind pressure 250Pa)					Out of service (wind pressure1100Pa)				
		F_k(kN)	F_{vk}(kN)	M_k(kN·m)	R_1(kN)	R_2(kN)	F_k(kN)	F_{vk}(kN)	M_k(kN·m)	R_1(kN)	R_2(kN)
1+0	7.65	317.4	13.3	781.6	-492.6	810.0	267.4	55.3	426.0	-221.3	488.7
1+1	10.65	324.9	14.1	823.0	-523.4	848.3	274.9	58.6	598.1	-360.9	635.9
1+2	13.65	332.4	14.9	866.7	-556.1	888.5	282.4	61.9	780.1	-508.9	791.3
1+3	16.65	339.9	15.6	912.7	-590.6	930.6	289.9	65.2	972.1	-665.1	955.1
1+4	19.65	347.4	16.4	961.0	-627.1	974.5	297.4	68.5	1174.1	-829.7	1127.1
1+5	22.65	354.9	17.1	1011.5	-665.4	1020.4	304.9	71.9	1386.0	-1002.5	1307.5
1+6	25.65	362.4	17.9	1064.2	-705.7	1068.1	312.4	75.2	1607.9	-1183.7	1496.1

EXPLANATION AND SYMBOLS

Designation of a concrete block (M24N).

- M: Concrete block
- 54: Weight of the concrete block in tons.
- N: Internal coding

The reinforcement of a concrete block is composed of an upper and a lower reinforcing cage connected by pins. Each cage comprises two crossed layers.



ep: pin

D: density

V: volume in m^3

L: length in cm

l: width in cm

H: height in cm

1LH : First upper layer

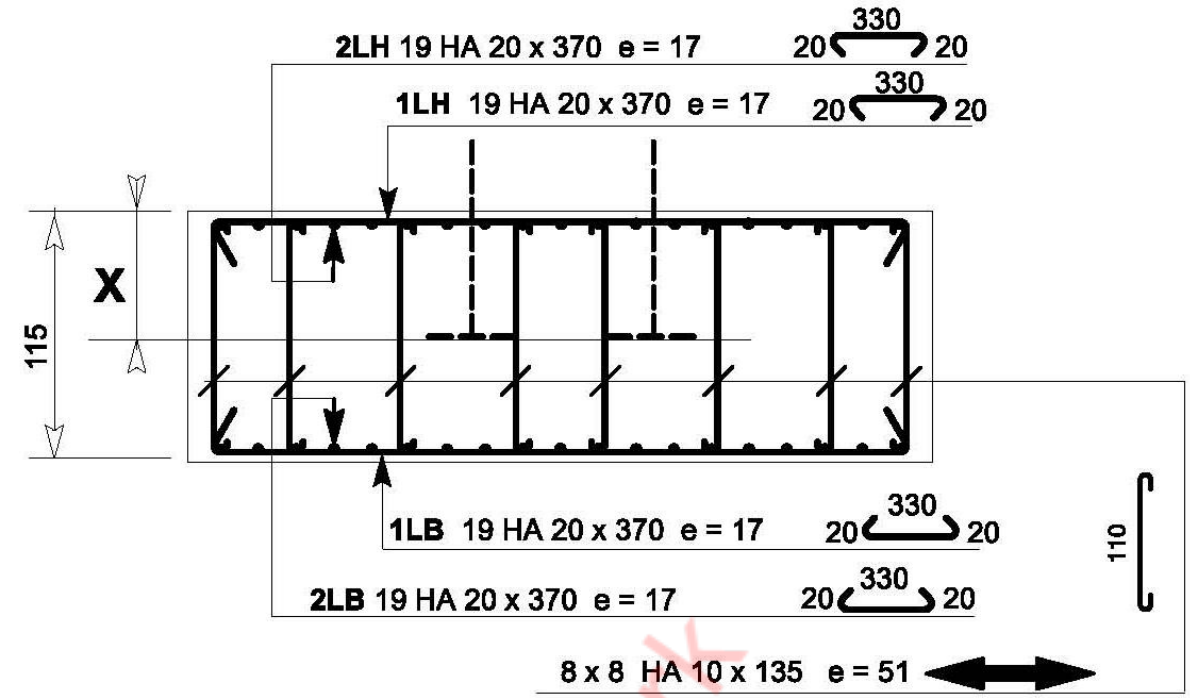
1LB : First lower layer

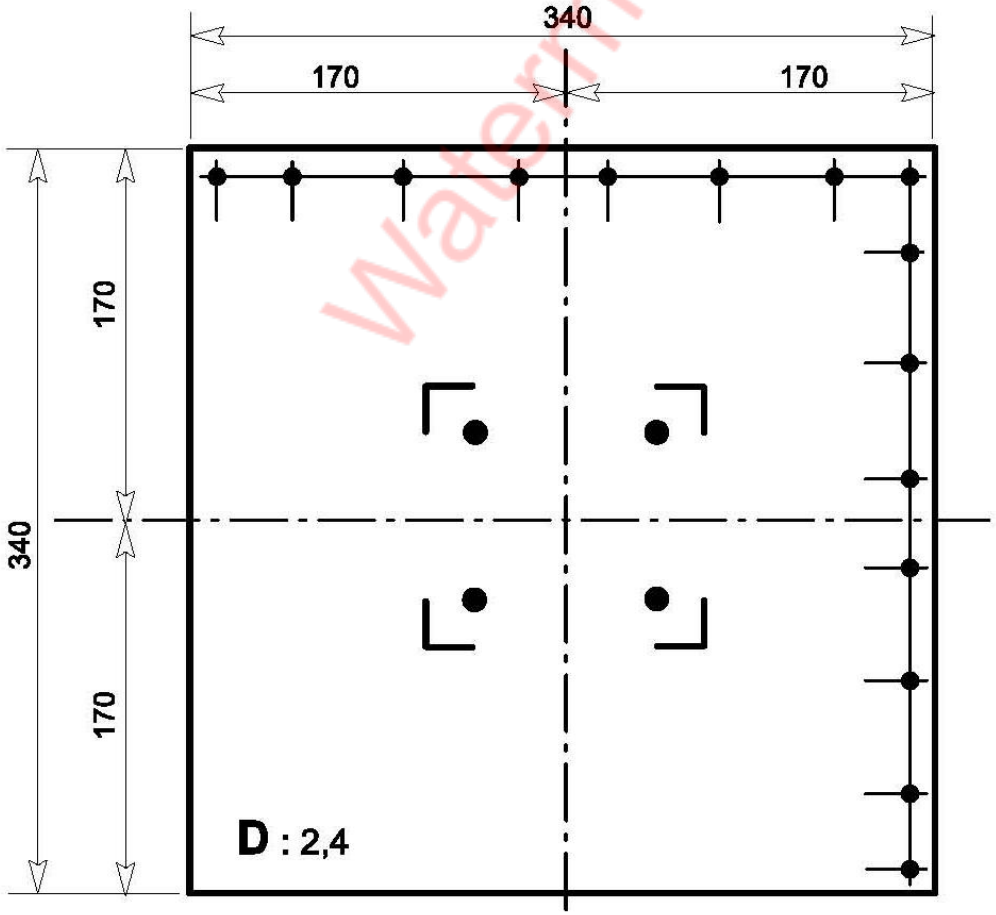
2LH : Second upper layer

2LB : Second lower layer

In both directions

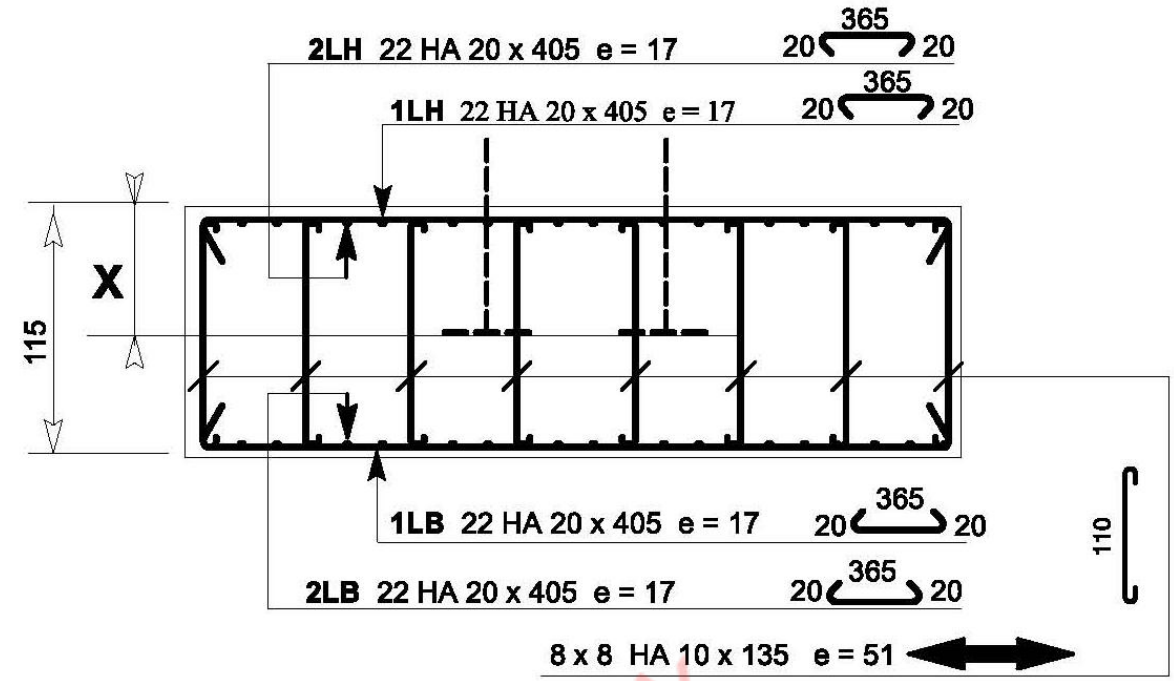
(M31N)

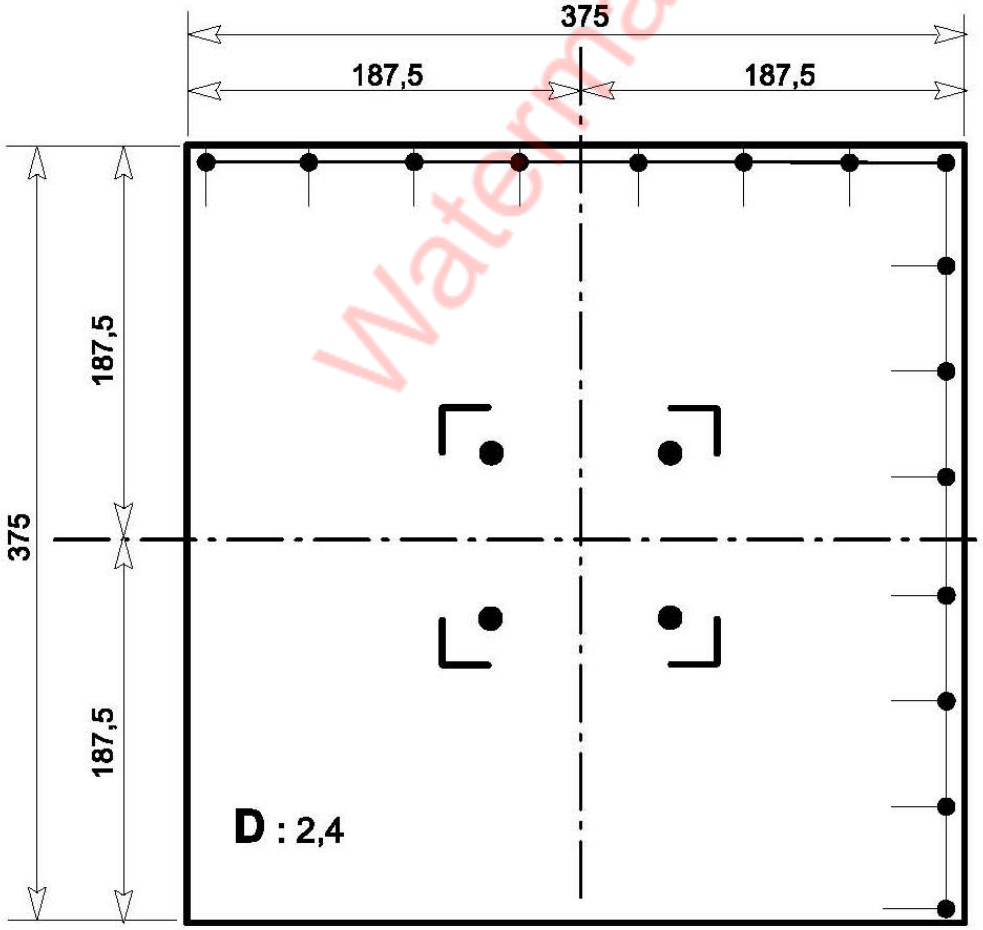




L : 340 l : 340 h : 115 V : 13,3 m^3

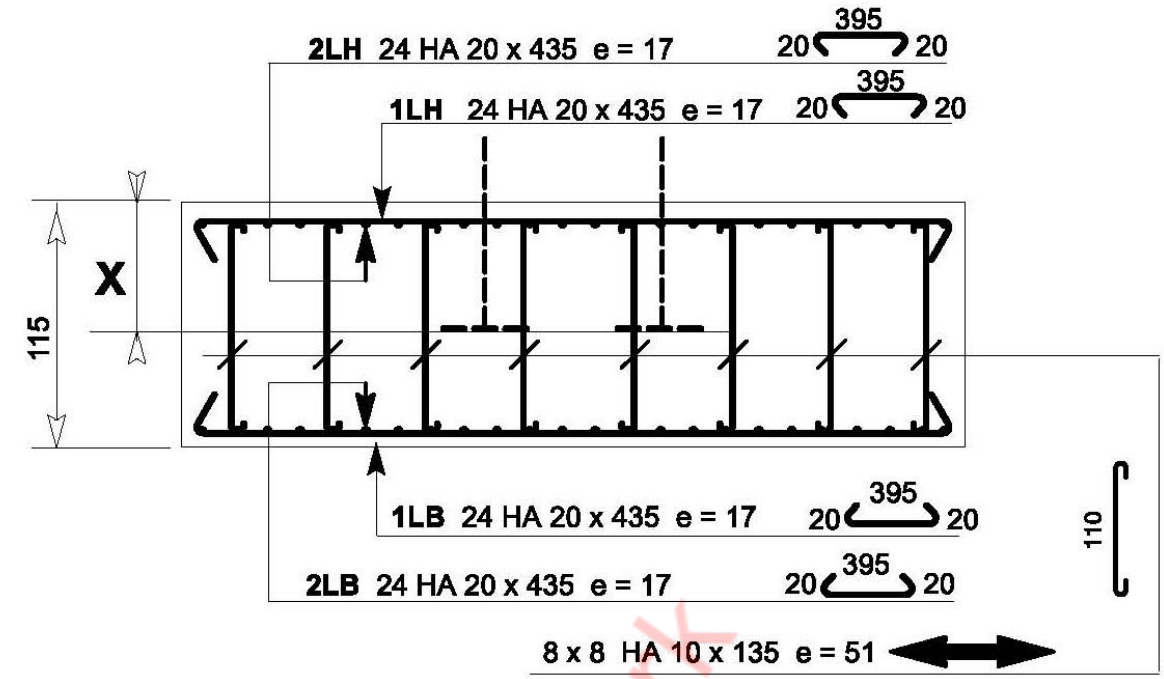
(M38N)

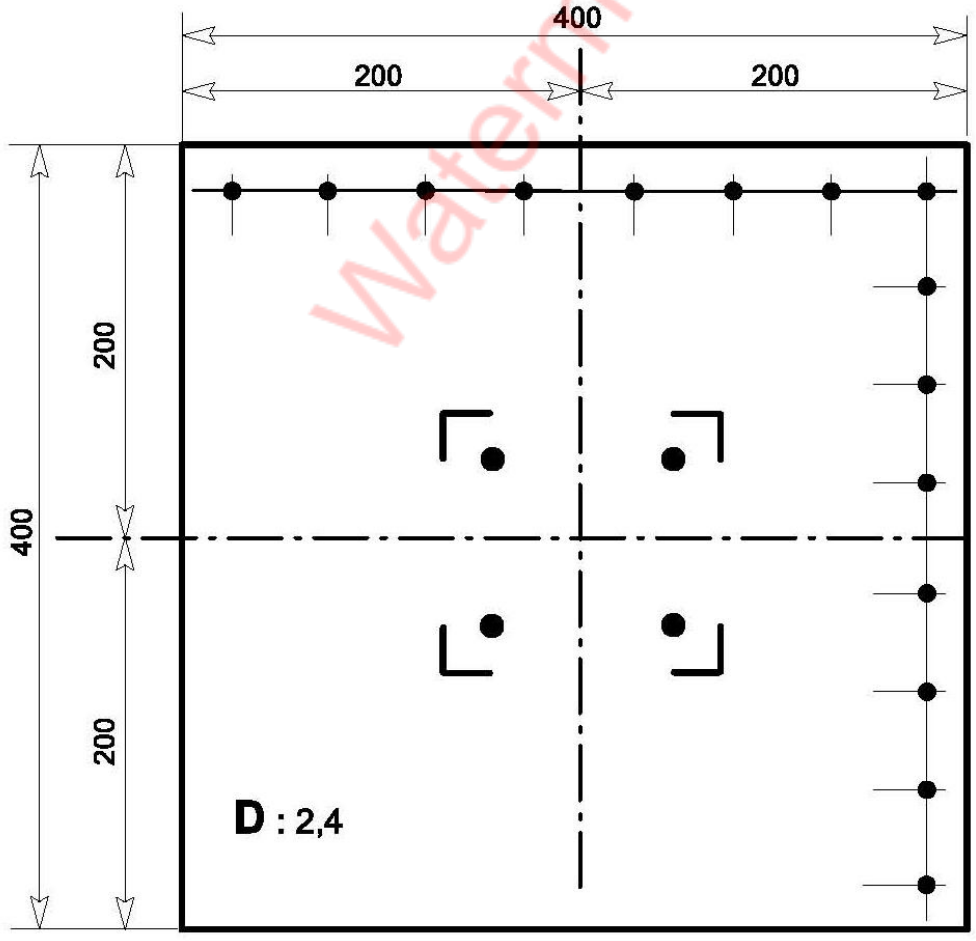




L : 375 l : 375 h : 115 V : 16,2 m^3

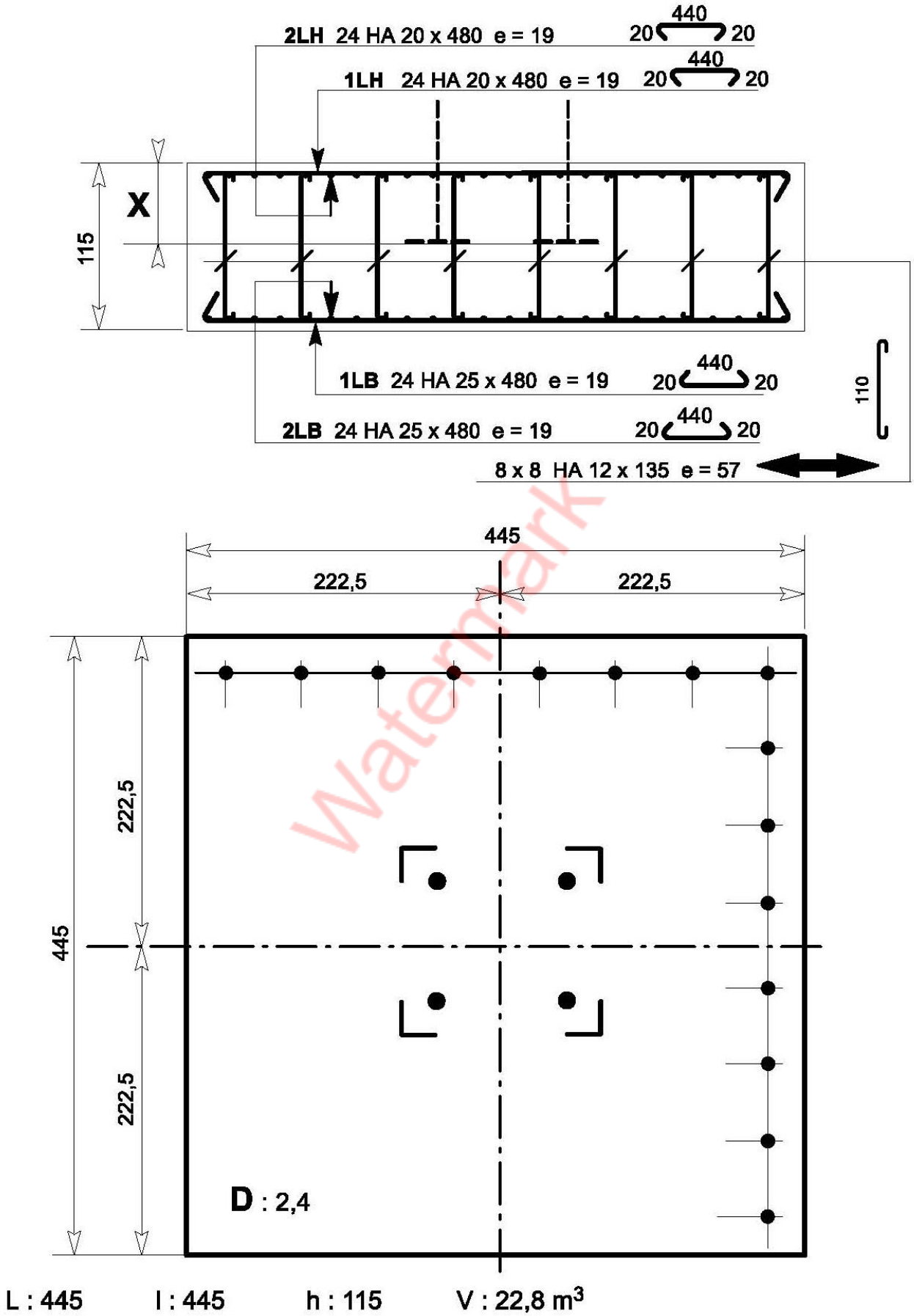
(M44N)



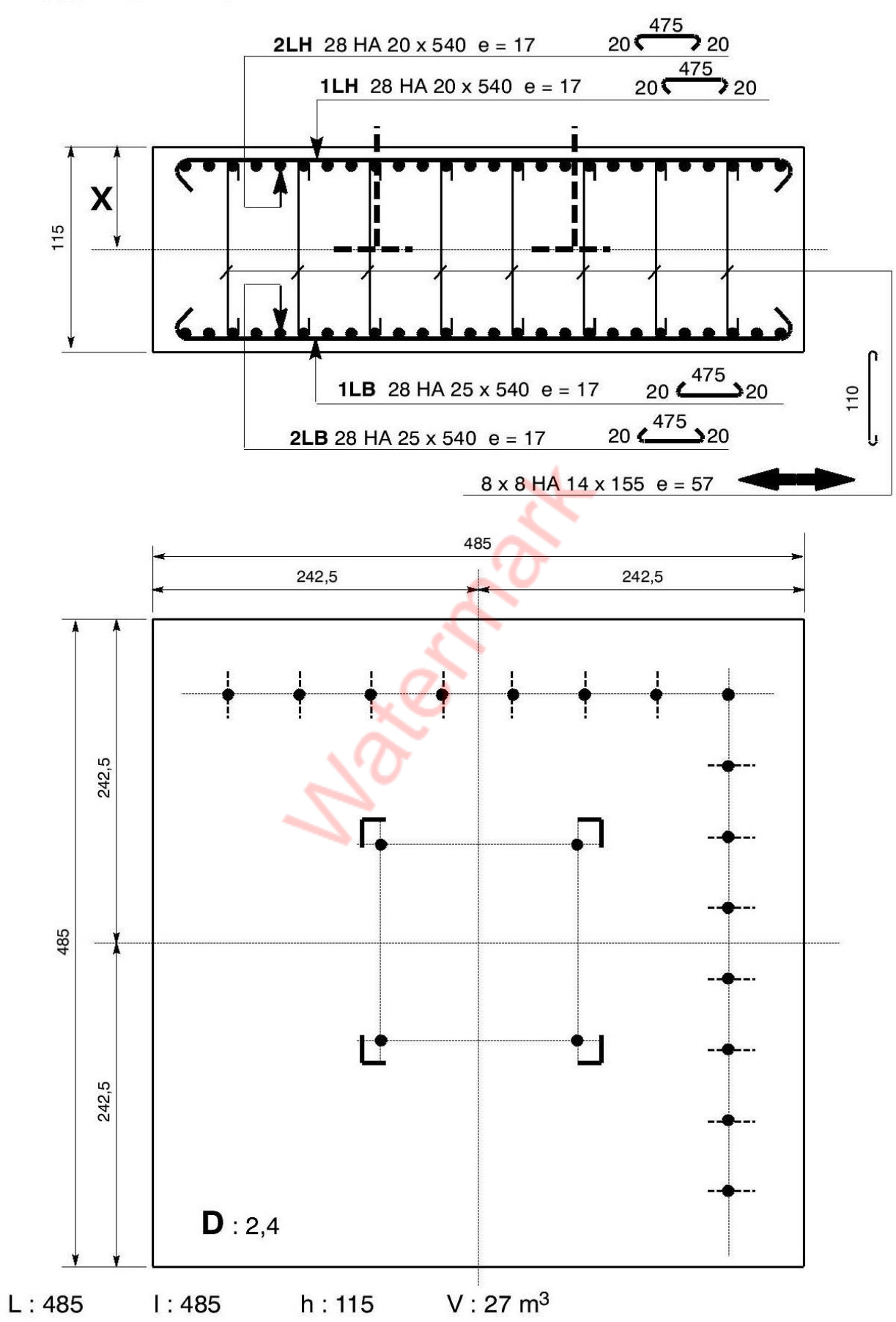


L : 400 l : 400 h : 115 V : 18,4 m^3

(M54N)



(M65N)



Pressure under the concrete blocks

H - Hook height in m-See data

PS - Ground pressure in 10N/ cm2

M - Type of concrete block

1.2m

H（m）	M31N	M38N	M44N	M54N	M65N
	PS	PS	PS	PS	PS
9	2.2	1.6	1.3	1.0	0.9
12	2.4	1.7	1.4	1.1	0.9
15	2.6	1.8	1.5	1.1	0.9
18	2.8	1.9	1.6	1.2	1.0
21	*	2.1	1.7	1.2	1.0
24	*	2.3	1.8	1.3	1.1
27	*	3.0	2.2	1.5	1.2

COUNTER WEIGHTS

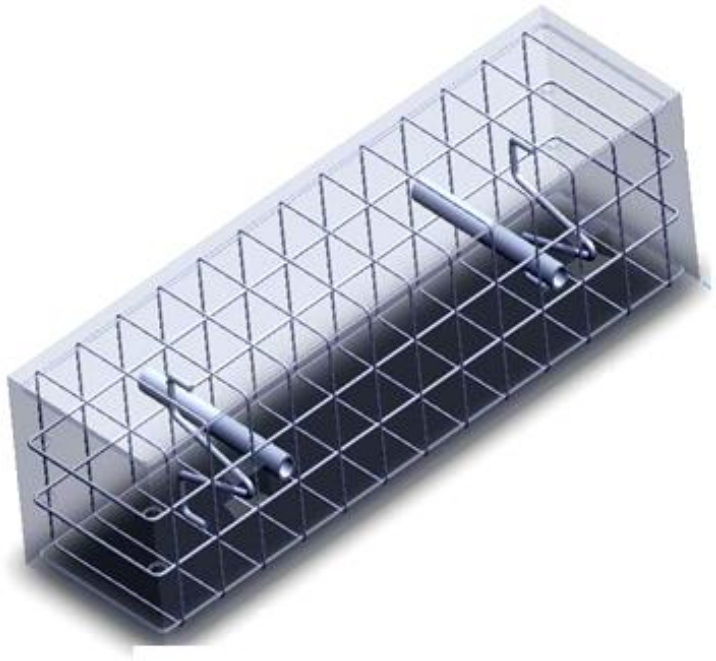
1）TYPE AND QUANTITY

The following table indicates exact ballast value of counter jib, which varies according to the jib length.

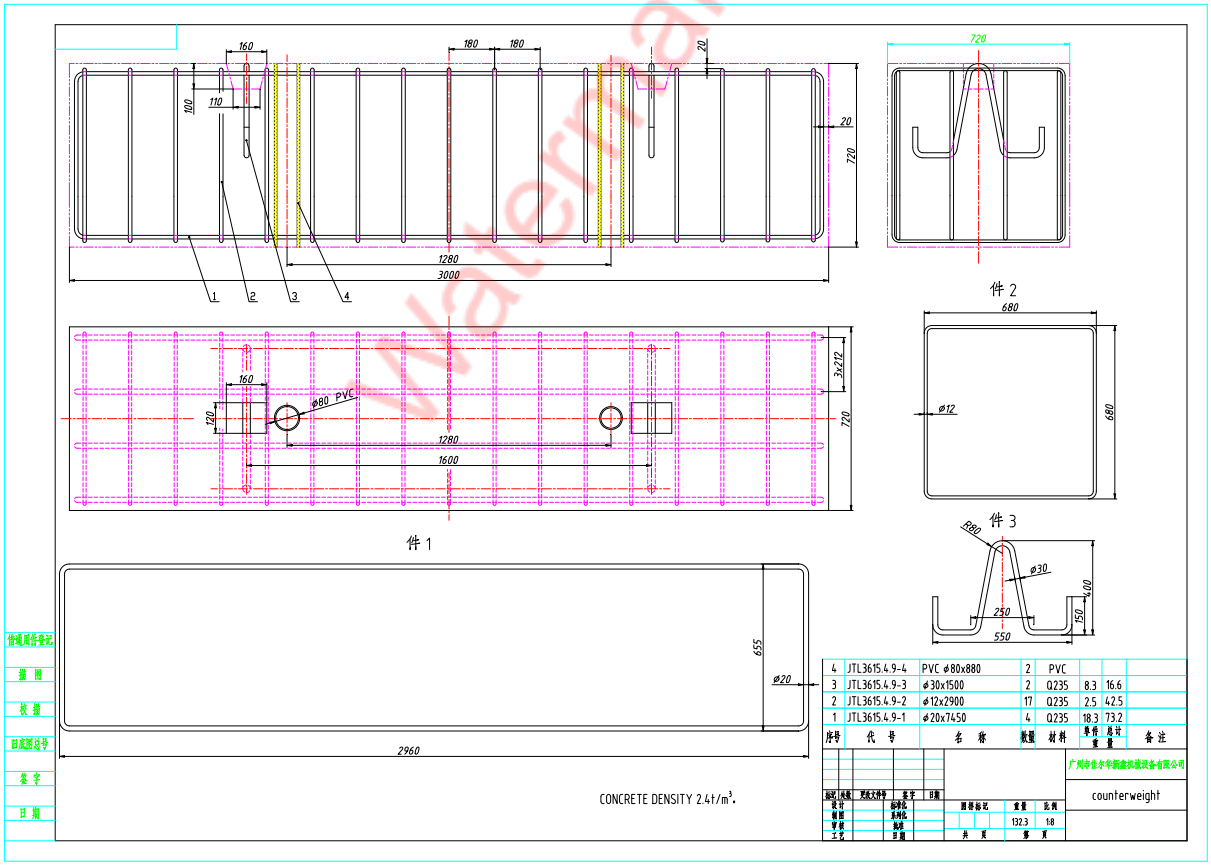
36-31m Jib

COUNTER WEIGHT	JTL3615
WEIGHT	3760 [kg]
Qty.	2

2） Counterweights Configuration



3） COUNTER WEIGHT DRAWING （3760kg）



5、CRANE TOWER

5.1、SUMMARIZE

The dimensions and weights given in the tables on the following pages correspond to:

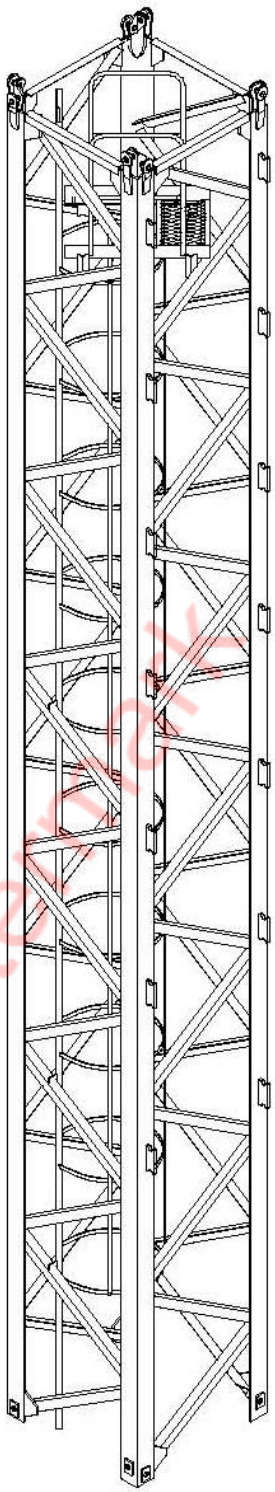
- The first line of each group indicates the dimensions and the weight of the component assembled with the parts as they are shown in the drawing.

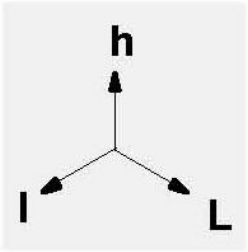
- The following lines indicate the dimensions and weights of the main parts according to representation.

- The direction of dimensions L, l and h with respect to the mark concerns the main parts only.

IMPORTANT: The sum of the weights of the main parts is lower than the weight of the equipped component because the weight of pins, bolts, small accessories, etc. is not taken into account.

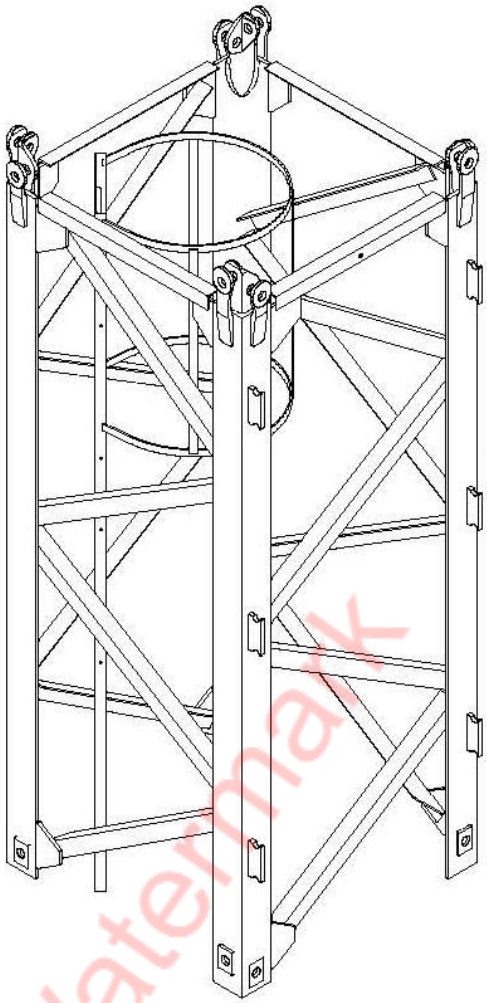
5.1.1、TOWER SECTION SR24J

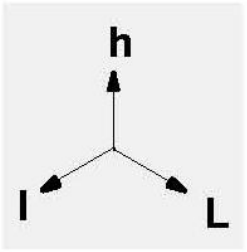




Designation	L	I	h	P(kg)
Basic mast	1200	1200	7500	1730

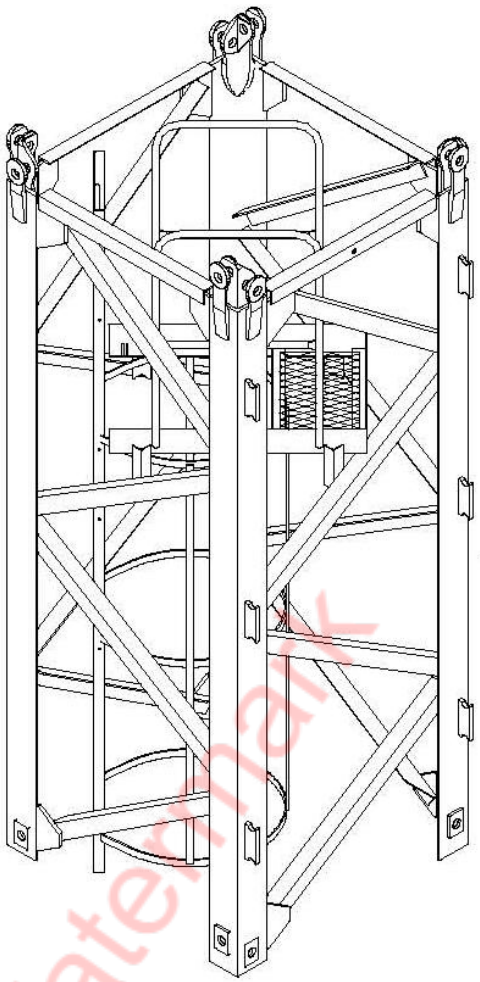
5.1.2、TOWER SECTION S24A1

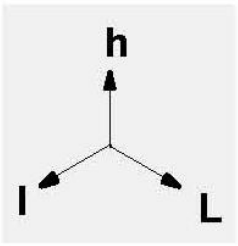




Designation	L	I	h	P(kg)
Mast S24A1	1200	1200	3000	748

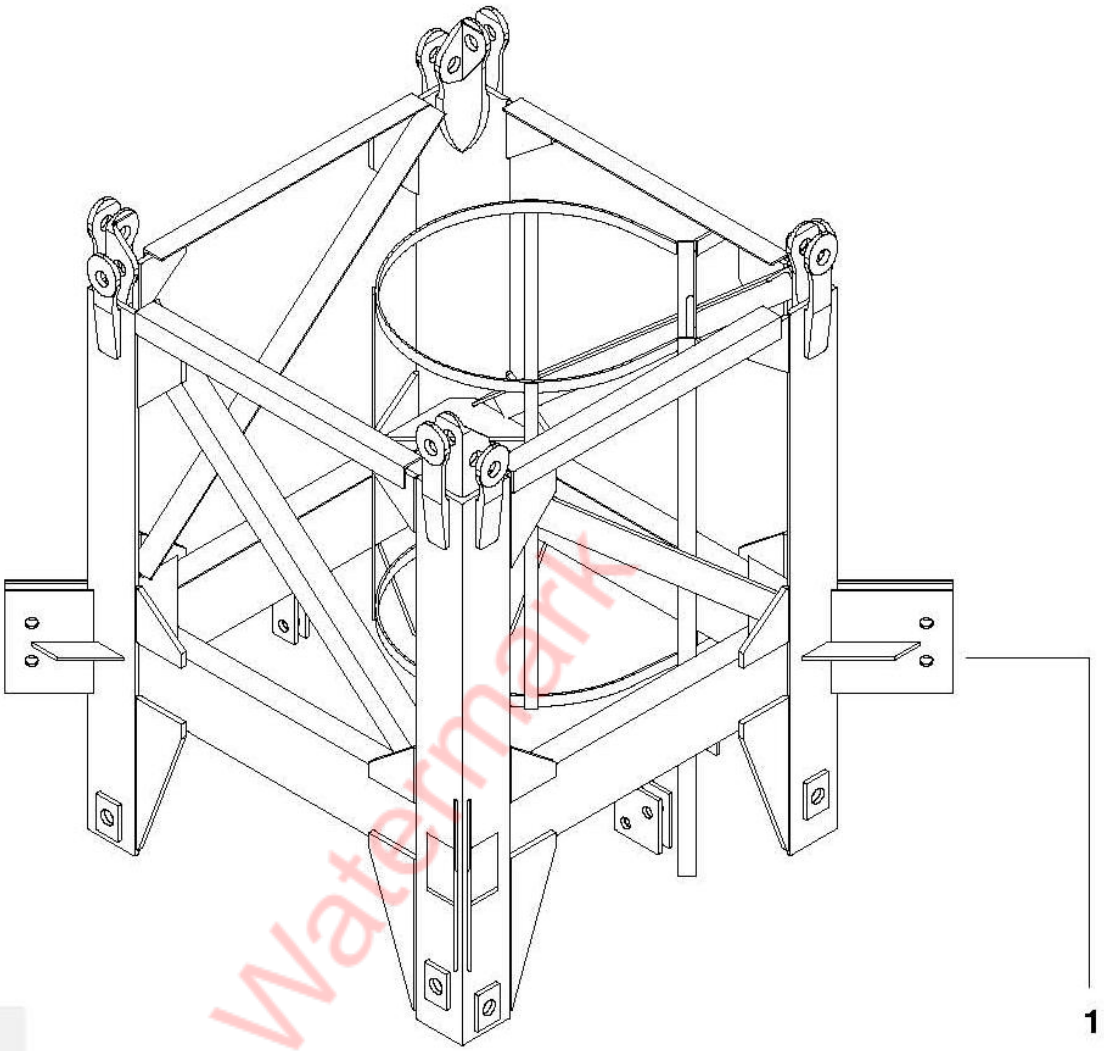
5.1.3、TOWER SECTION S24A2

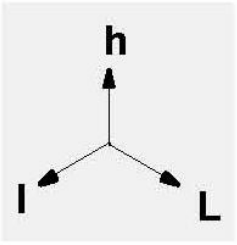




Designation	L	I	h	P(kg)
Mast S24A2	1200	1200	3000	773

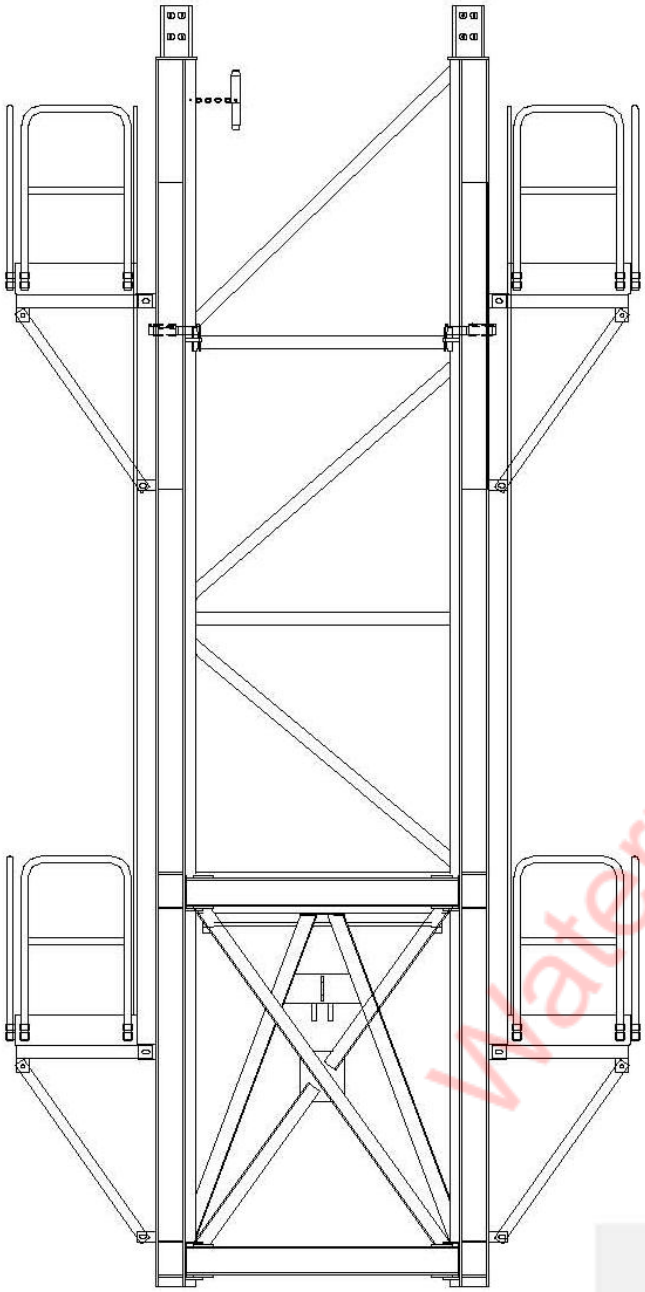
5.1.4、 TELESCOPING MAST

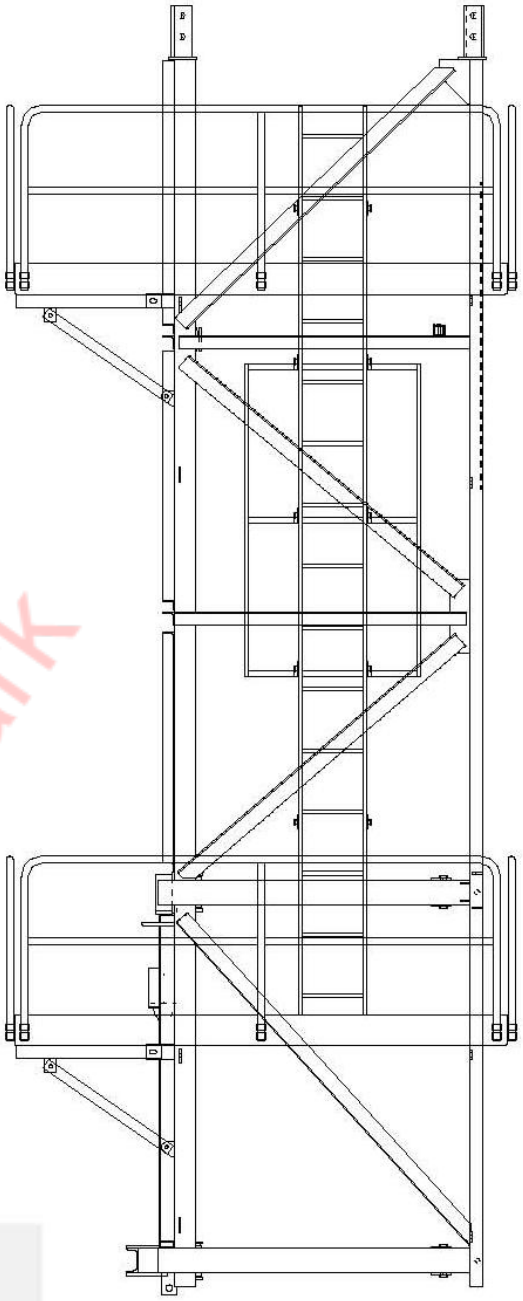


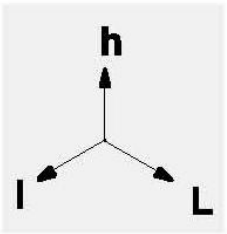


Designation	L	I	h	P(kg)
TELESCOPING MAST	1200	1200	1500	600

5.1.5 、Telescopic cage

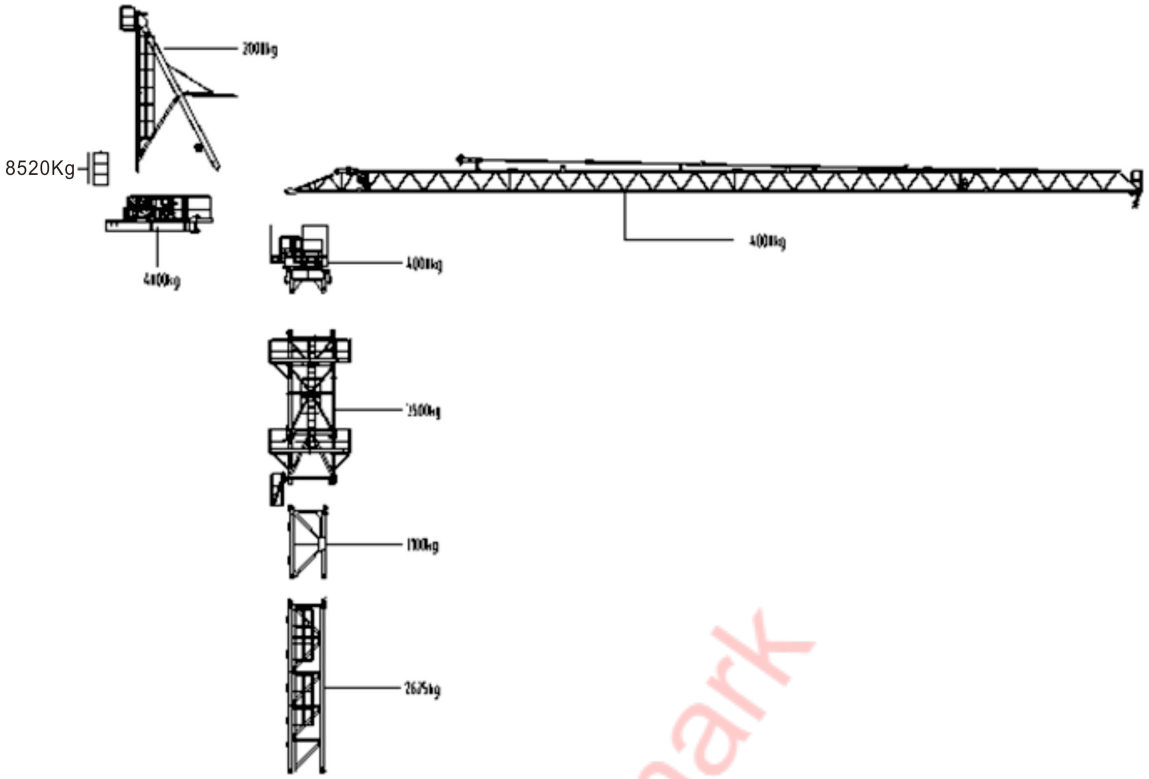






Designation	L	I	h	P(kg)
Telescopic cage	1733	1620	6260	1900

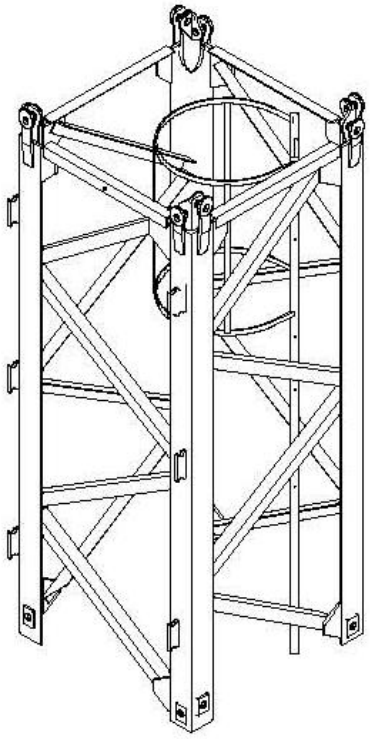
5.1.6、 Description-weights



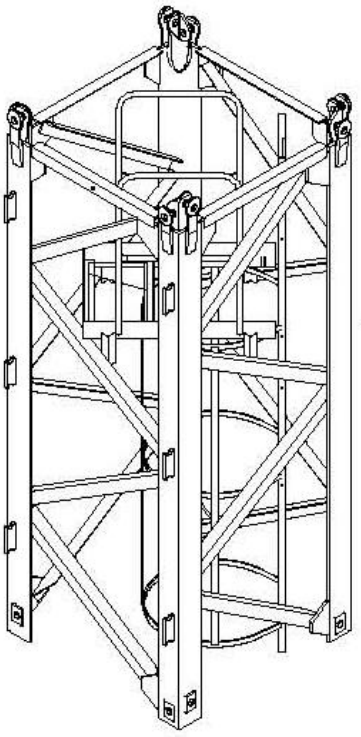
5.1.7、 ACCESS

The monoblock mast accesses are welded into the mast sections.

In any case of mast composition with 3 m mast sections, the mast sections S24 A1 with a simple access (1) must be alternated with the mast sections S24 A2 equipped with an access with resting platform (2), in order to obtain a distance of 9 m between the resting platforms.

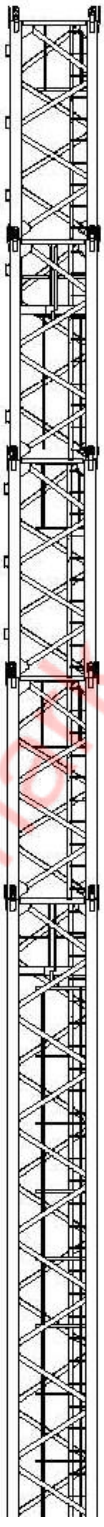


1



2

A



1

2

1

1

5.1.8、 FISHPLATING

− Ensure the cleanness of the bearing surfaces of the holes and shafts which must be freed from old grease and burrs.

− Introduce the headed shaft (1), drive in until it abuts against the fishplates (2). Proceed in the same way for the second headed shaft (3) (Detail A − Figure 1).

− The shafts (1) and (3) are locked by means of a pin (4); block the pin (4) using a split pin (5) (Detail B − Figure 1).

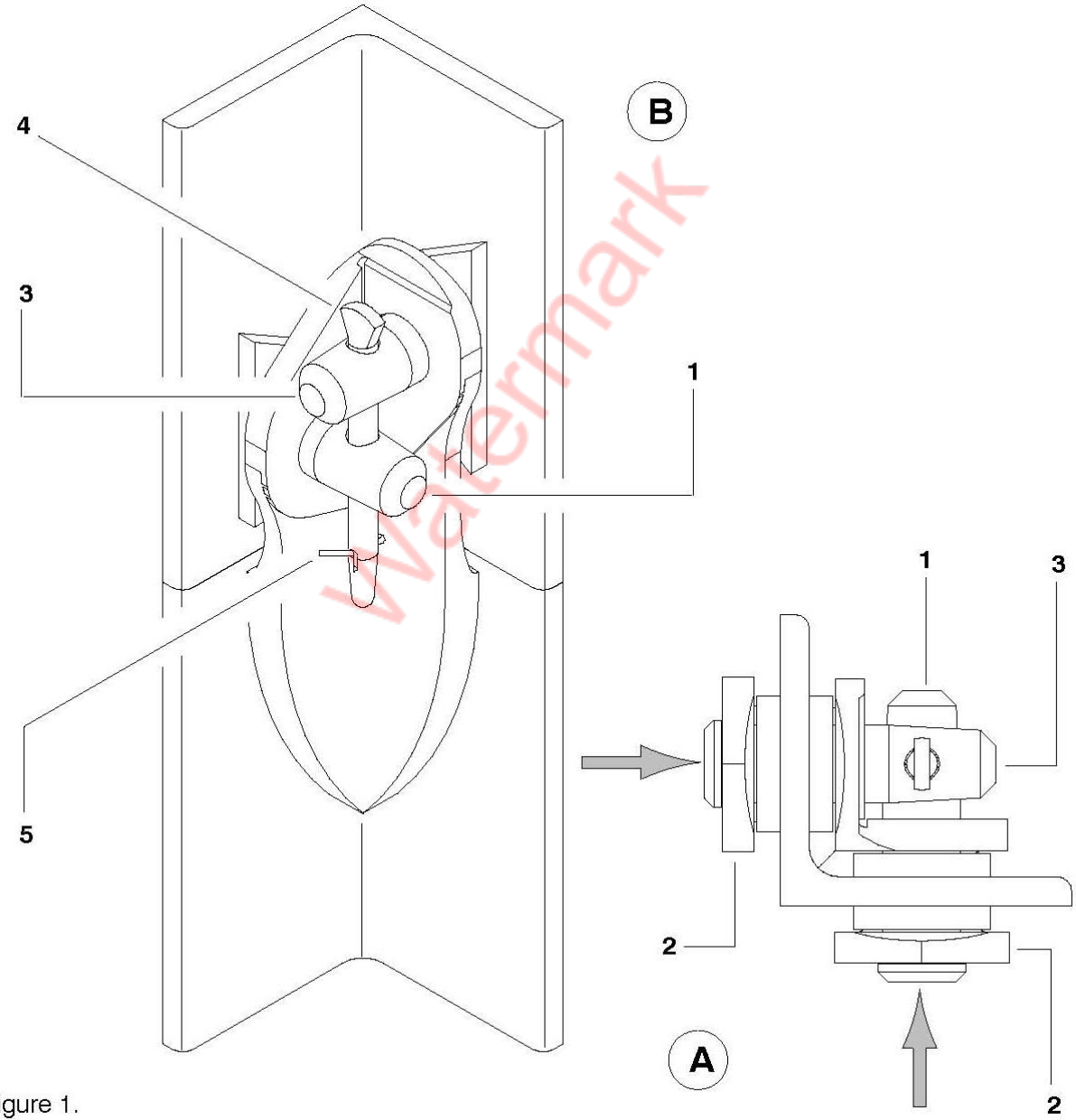


Figure 1.

1.2m mast section

Check that the basic mast assembly is equipped with the telescoping yoke and the cylinder. Otherwise Place the cylinder piston rod side downwards between the cage and the basic mast and pin it onto the telescopic cage.

Position the telescoping yoke and pin it onto the cylinder.

Depending on the type of transport two cases may occur:

1 The eat—Walks are dismantled.

Get hold of the packages of cat—walks and grab rails.

Fit the supports(1)onto the cage using the Ml2×35 bolts.

Position the cat—walk (2) and fix it by means of a Ml2×35 bolt at (3)and at (4)in the articulated fork by means of a 20x90 shaft.

Pin the supports and the cat—walk at(5)using Ml2×35 bolts.

Place the cat-walks (6)and(7), connect them with the cage and the supports (1)by means of Ml2×35 bolts.

Fit slings onto the basic mast as shown in fig. A and put it upright.

Position the cat—walk (8) and connect it with the cage and the sup ports (1) using M12×35 bolts.

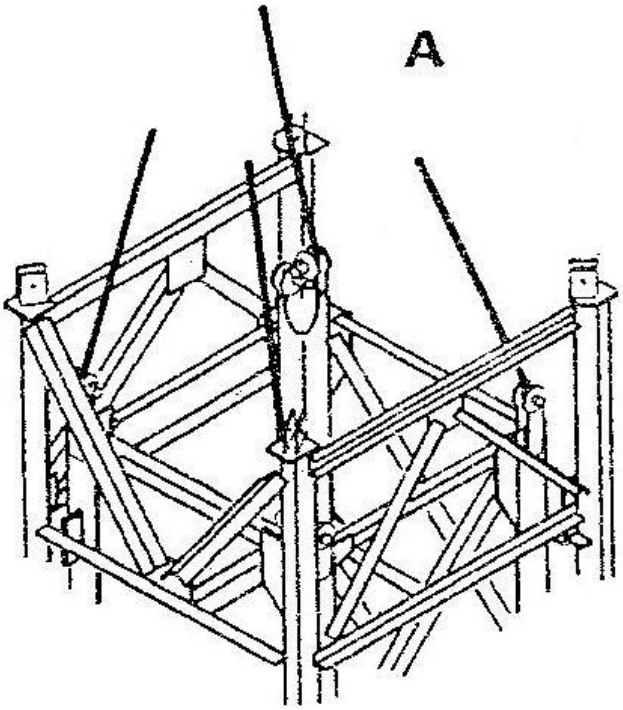
it the grab rails(9)and split—pin them at(10).

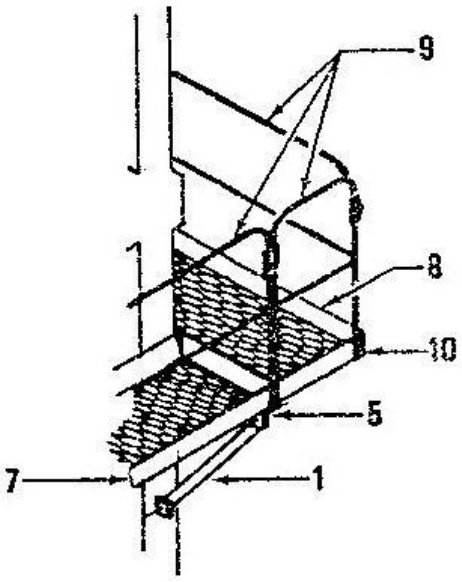
Assemble the grab rails together by means of the fixing brackets(11).

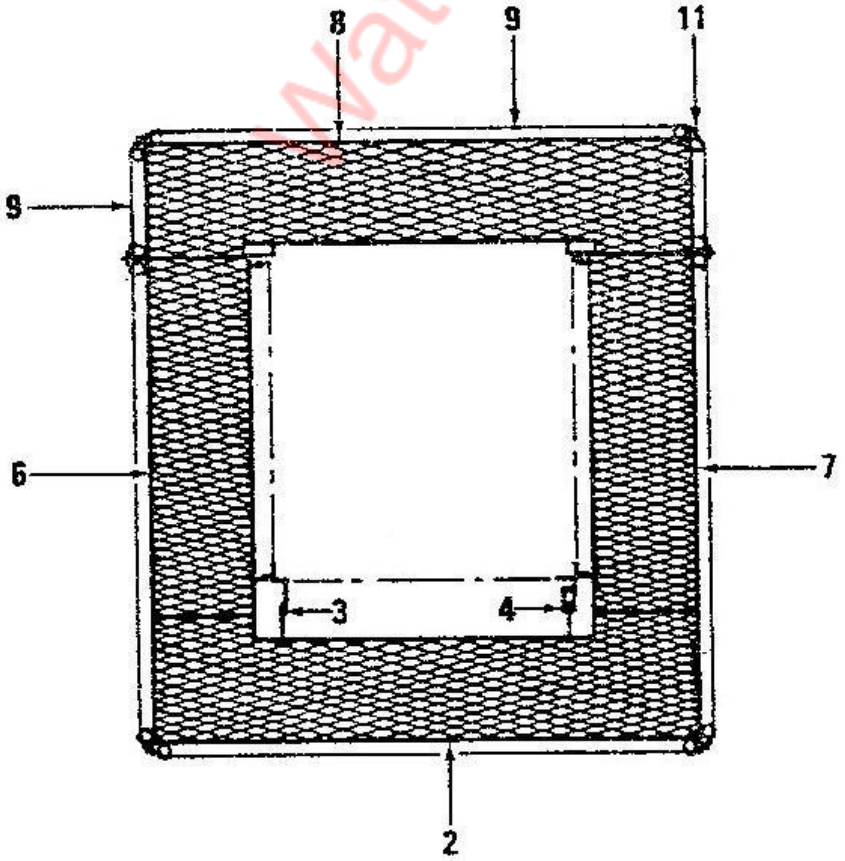
2 The cat-walks(2), (6)and(7)are folded back against the basic mast.

Unfold the cat—walk (2) then the cat—walks (6) and (7) and fit them Using Ml2×35 bolts.

Fit slings onto the basic. mast according to fig. A, put it upright and mount the cat—walk(8)and the grab rails(9)as in the first case.



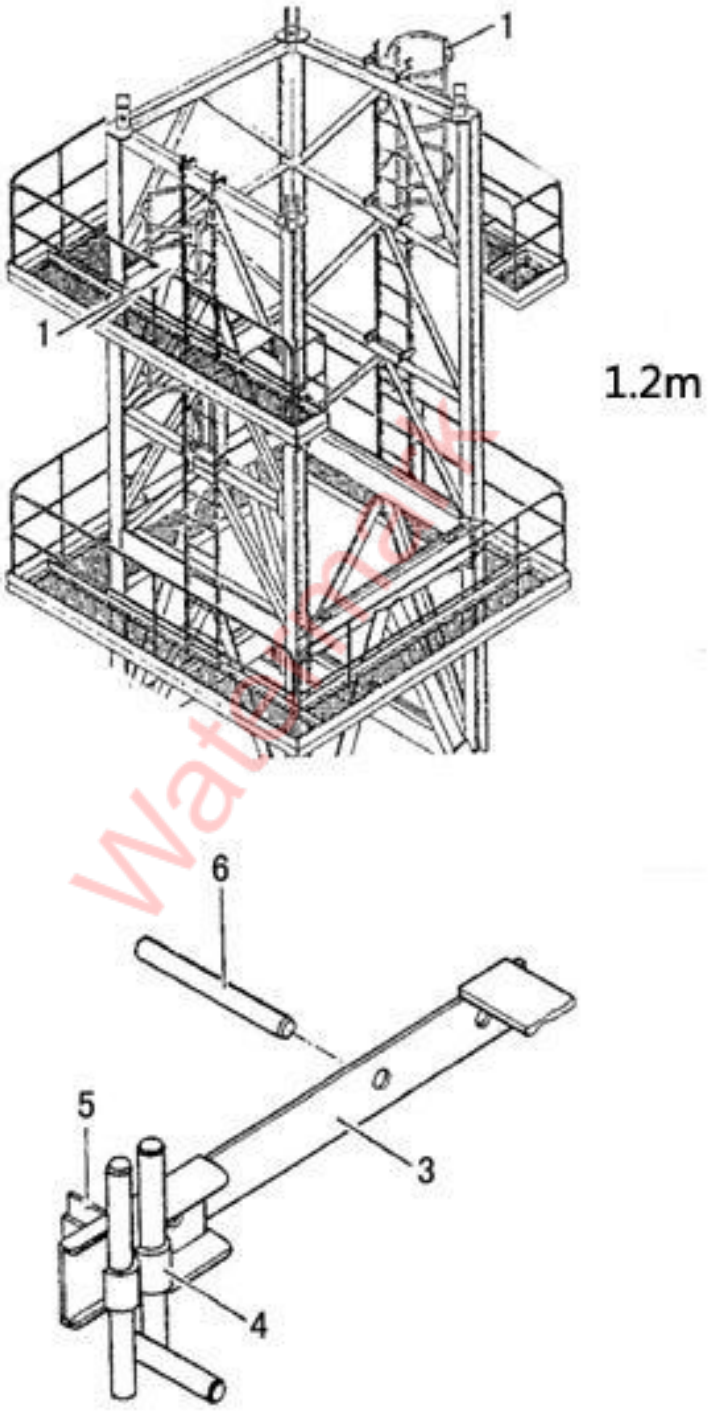




Fitting the telescopic cage ladders

When the Ladders had been removed for transport:

1.2m mast Fit the 4.5m ladders (1) using ladder fittings (3)、fixing brackets (4)、wedges (5) and pins (6).



5.2、 MAST COMPOSITION

5.2.1 Mast composition

5.2.2 Assembling the mast panels

5.2.1、 Mast composition

This manual specifies the various masts with which the machines stated in the following tables are fitted.

The crane towers are made up of telescopable mast elements with different sections or lengths. They are:

a)Masts with pin—connections—section 1.6m

The mast types a and b are defined .

Give details about assembling the masts of 1.6 section using shafts.

These mast compositions are valid only for free standing heights on fixing—angles or on chassis.

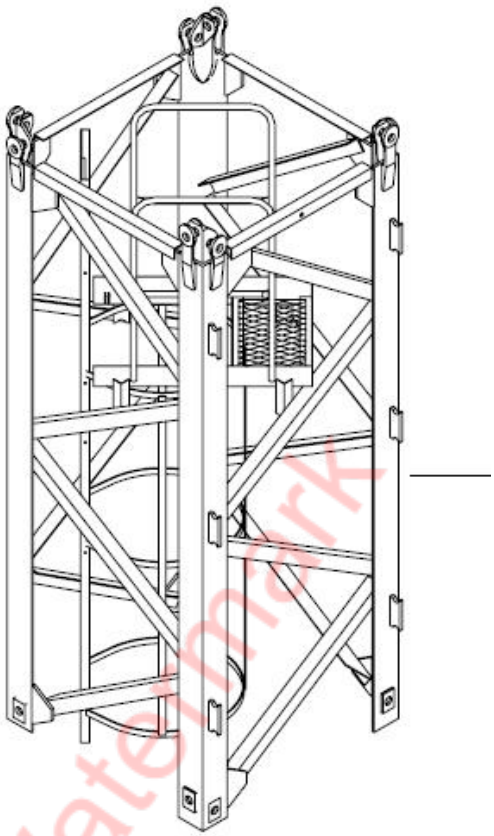
For greater heights the mast is generally reinforced at its base according to the indications.

For climbing cranes，see special brochure.

For all other cases which are not mentioned，consult our After—Sales：Service.

5.2.2 、ASSEMBLING THE MAST PANELS

For panels of masts S24 ,The assembling of masts between each other is by means of 8 shafts (5)connected 2×2 by 4 pins(6)and equipped with a set of accesses as described.



5.3、 FITTING THE ACCESSES

5.3.1 Introduction

5.3.2 Use of the accesses (table)

5.3.3 Fitting

5.3.1、 INTRODUCTI0N

The fitting of the accesses in the mast sections is carried out oil the ground}thus allowing， when telescoping， to lift up the complete equipped mast sections onto the introducing rails.

Three access types are used；they comprise：

--Access A：a ladder with back loop

--Access D：a ladder with hack loop and landing—place

--Access E：a ladder with hack loop and platform

Latter，fitted on the last mast section to be telescoped，allows the towerhead to be reached.

The table next shows for each crane height the distribution of each of these access types．h should be observed that，when the final working height is attained in several phases，the access of the last mast section will be adapted when telescoping．Live the equipment detail of the various access types.

5.3.2、 FITTING THE ACCESSES

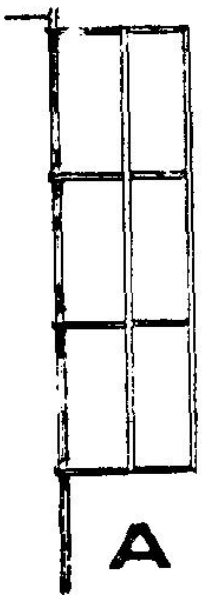
All the ladders are fitted on the mast panels equipped with the telescoping lugs.

The A and D accesses must be positioned according to the Instructions given in the following tables.

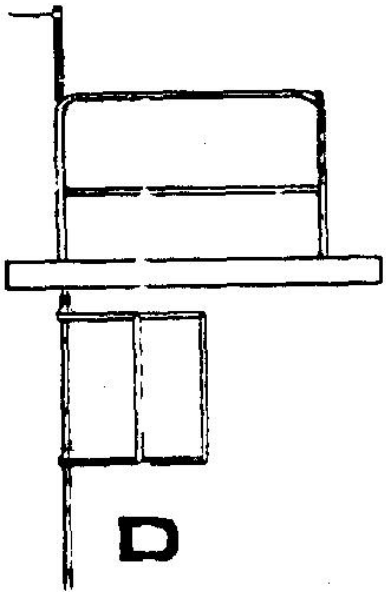
Follow fig: Jarlway standard

Find out the table you are concerned with.

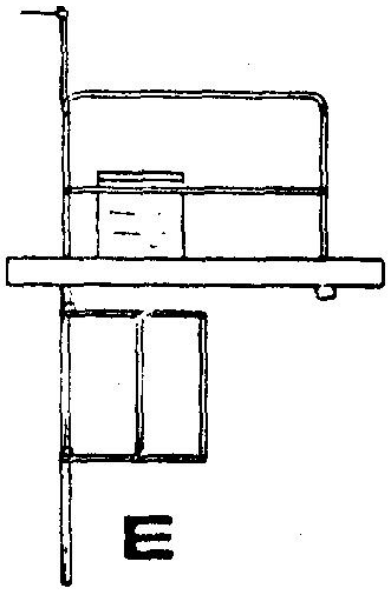
Note: If there are any special requirements for the fitting of the accesses in certain regions and countries, please consult us.



A



D



E

1+27+1																											E
1+26+1																										E	A
1+25+1																									E	D	D
1+24+1																								E	A	A	A
1+23+1																							E	A	A	A	A
1+22+1																						E	D	D	D	D	D
1+21+1																					E	A	A	A	A	A	A
1+20+1																				E	A	A	A	A	A	A	A
1+19+1																			E	D	D	D	D	D	D	D	D
1+18+1																		E	A	A	A	A	A	A	A	A	A
1+17+1																	E	A	A	A	A	A	A	A	A	A	A
1+16+1																E	D	D	D	D	D	D	D	D	D	D	D
1+15+1															E	A	A	A	A	A	A	A	A	A	A	A	A
1+14+1														E	A	A	A	A	A	A	A	A	A	A	A	A	A
1+13+1													E	D	D	D	D	D	D	D	D	D	D	D	D	D	D
1+12+1												E	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
1+11+1											E	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
1+10+1										E	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
1+9+1									E	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
1+8+1								E	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
1+7+1							E	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
1+6+1						E	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
1+5+1					E	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
1+4+1				E	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
1+3+1			E	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
1+2+1		E	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
1+1+1	E	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
1+0+1	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
1+	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27

5.3.3、 FITTING

A

ACCESS

Put the mast section upright.

Fit the ladder support(1)on the mast gussets usingφ10 shaft(2)； split—pin.

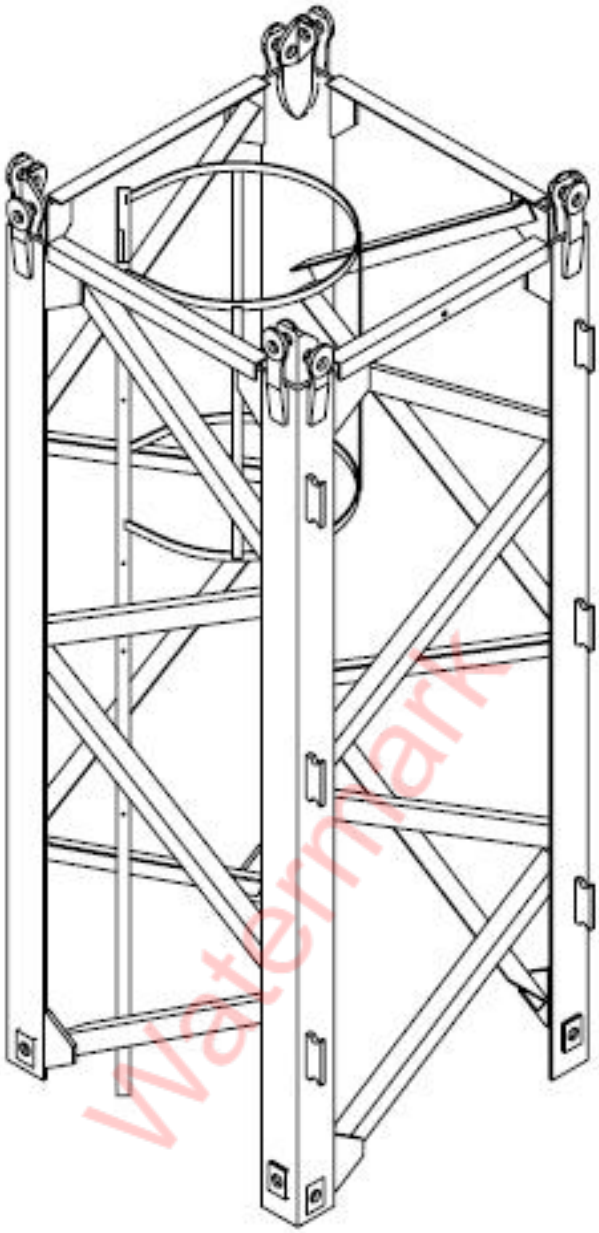
Cheek that the ladder ends(3)are clean(no earth or other matters in the holes)and not crooked.

Manually introduce the ladder(with the back loops folded hack)into the mast section.

Position the ladder top onto the ladder support(1). Introduce the two fixing brackets(4)， insert wedges(5)， drive them in and bend the ends(6)outwards.

Unfold the back loops(7).

In order to prevent the ladder from swinging in the mast when fittin9，block it using a cord or a steel wire.



D

ACCESS

Put the mast section upright．Then fit the ladder support (1) on the mast gussets using φ10 shaft(2)；split—pin．

Checks that the ladder ends (3) are clean (no earth or other matters in the holes) and not crooked.

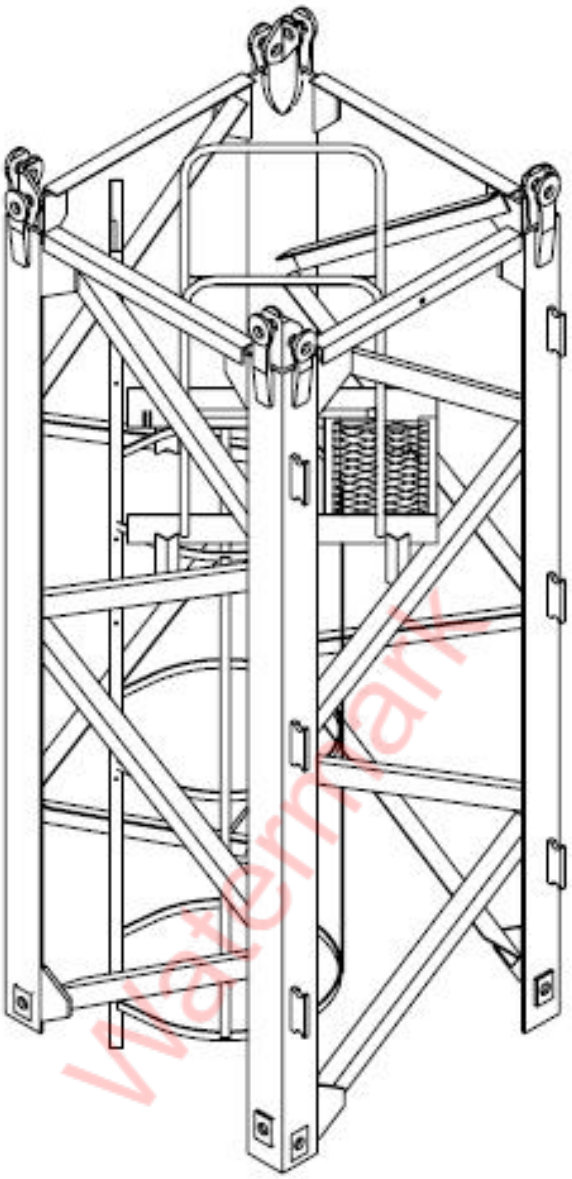
Manually introduce the ladder(with the back loops folded back)into the mast section．

Position the ladder top onto the ladder support(1)，Introduce the two fixing brackets(4)，insert wedges(5)，drive them in and bend the ends (6)outwards．

Unfold the back loops(7)．

Fit the landin9—place(8)in the mast section(opening on the ladder side)using clamps(9)and bolts(10)．Fit the grab rails．

In order to prevent the ladder from swinging in the mast when fittin9，block it using a cord or a steel wire



E

ACCESS

Place the mast section upright.

Position ladder top (1) between supports(2).

Fit the fixing brackets (3)，introduce wedges(4)，drive them in and Bend out ends(5). Fold down the back loop.

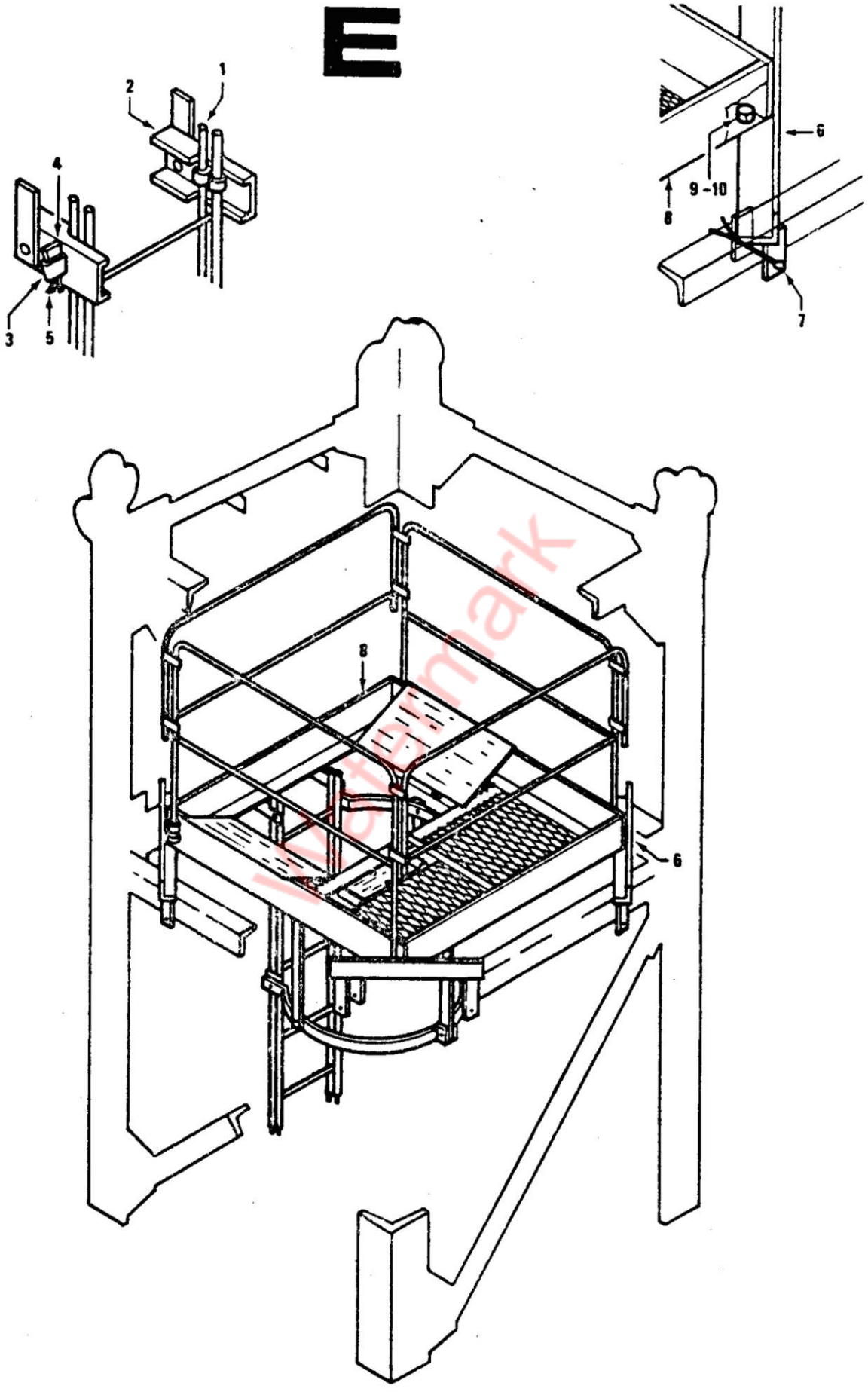
Mount the four platform supports (6) and immobilize them on the mast section using 8 split pins(7).

Fit platform(8)(opening 0n the ladder side)， then fix it on its supports(6)by means of blots(9)and washers(10).

Mount the grab rails.

In order to prevent the ladder from oscillating in the mast whilst fitting， immobilize it by means as a cord or a steel wire.

E



6、INSTALLATION

ERECTION SEQUENCES

General requirement

Installation practitioner must comprehend fully this manual in advance and prepare for a detailed scheme of installation consisting working procedure, solution for emergency and plan of deployment of staff.

Practitioner must be qualified under state regulation.

Job site for installation must be fully investigated and planned with layout of all components. Use mobile crane of proper capacity (hoist height and span) and be aware of obstacles around the job site like power transmitting wire and buildings.

Installation should be allowed only when wind speed is below 13.0m/sec at 20.00m height.

Check whether preparation of foundation is in conformity with safety norm.

Ensure the quantity and completeness of all parts according to Packing List and Service Manual. Inspect the major structure and connecting parts for quality to avoid damages and deforming during transportation. Solve all problems before execution of installation.

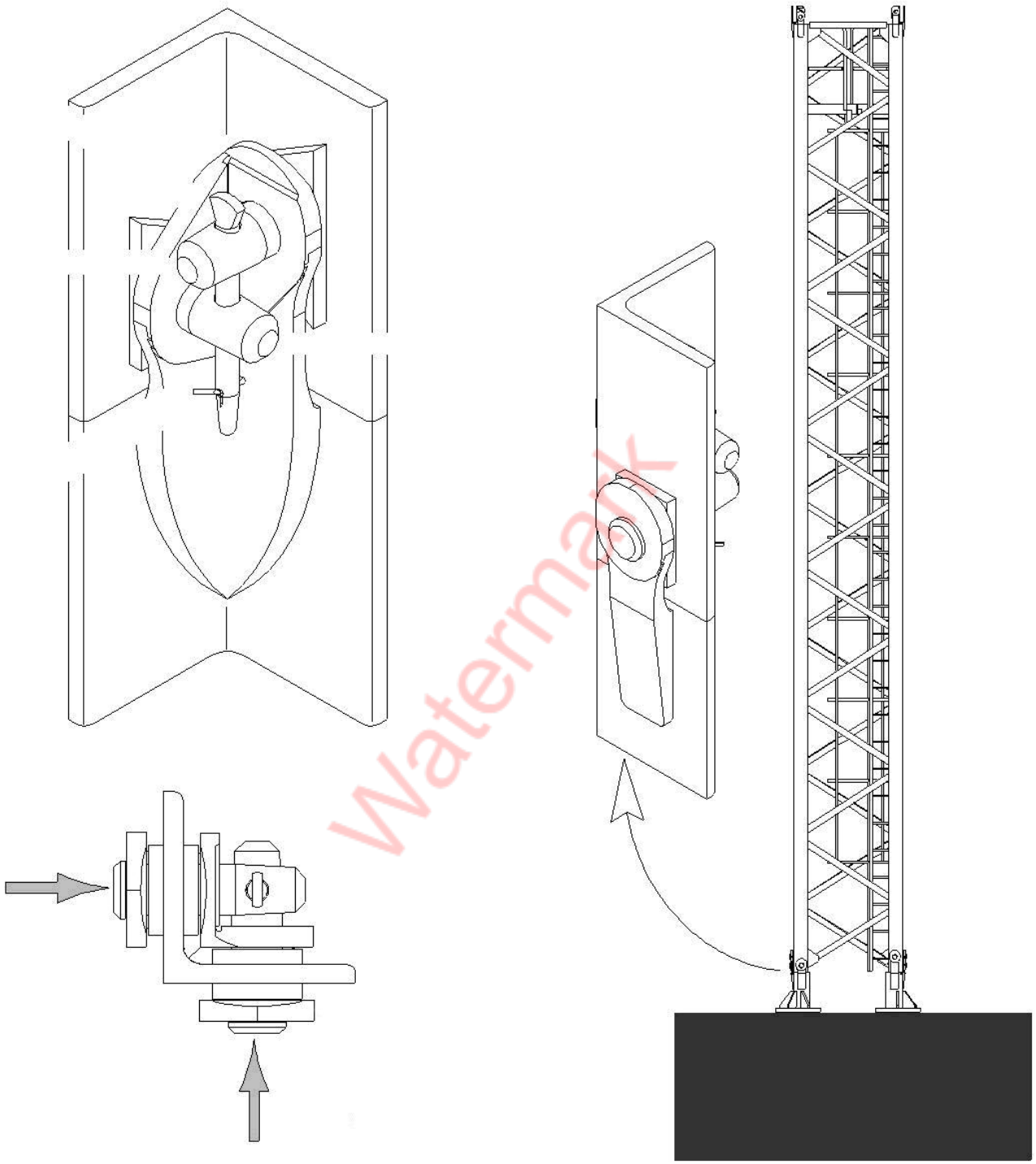
Strictly comply with the regulation contained in the Safety Guide and Service Manual, especially pay attention to the working procedure and sequences.

During erection, all staff should strictly follow the director order and be right in position, especially when telescoping is being conducted.

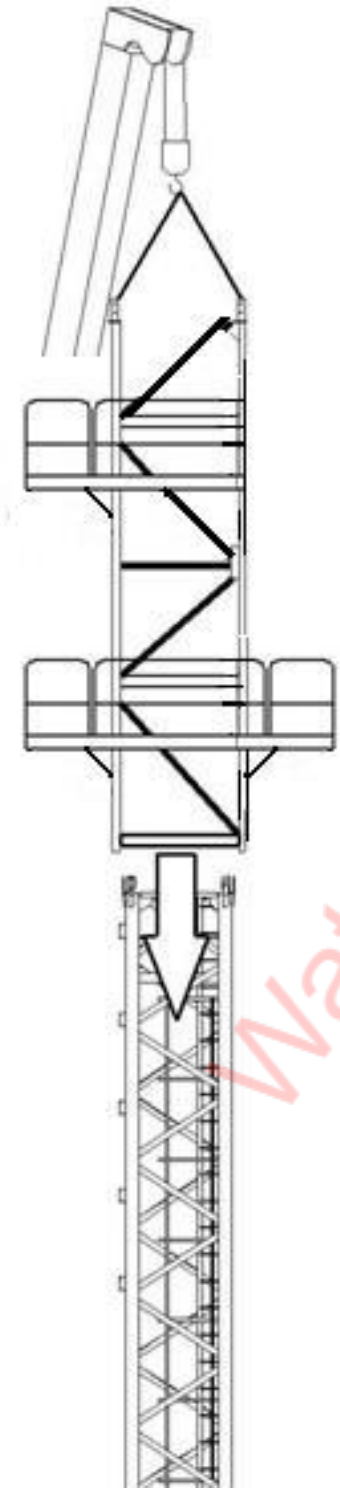
Erection and operation of cranes without Erection Permission and quality Certificate is strictly prohibited. He who breach the safety regulation and damages the original structure will be held legally responsible.

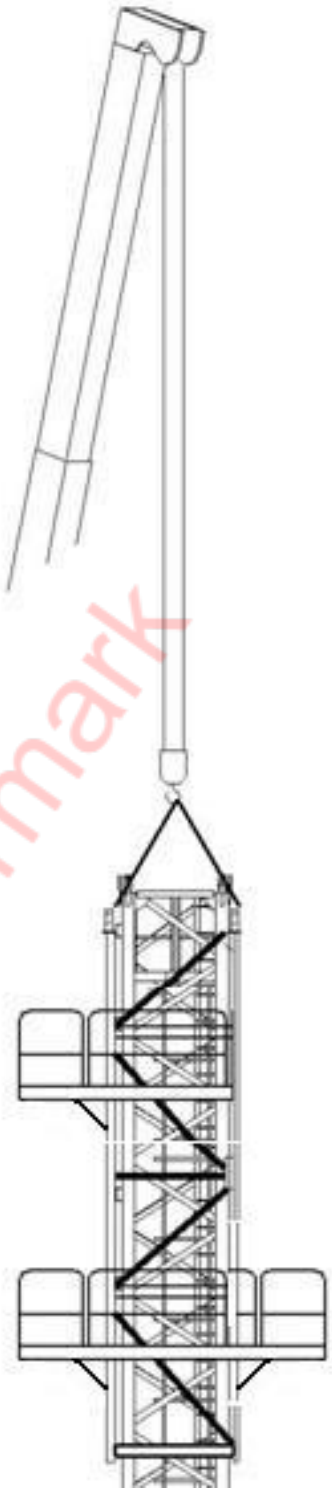
Before put into service, the crane has to pass the testing and obtain approval after erection completes.

6.1、Fitting the Basic mast unit

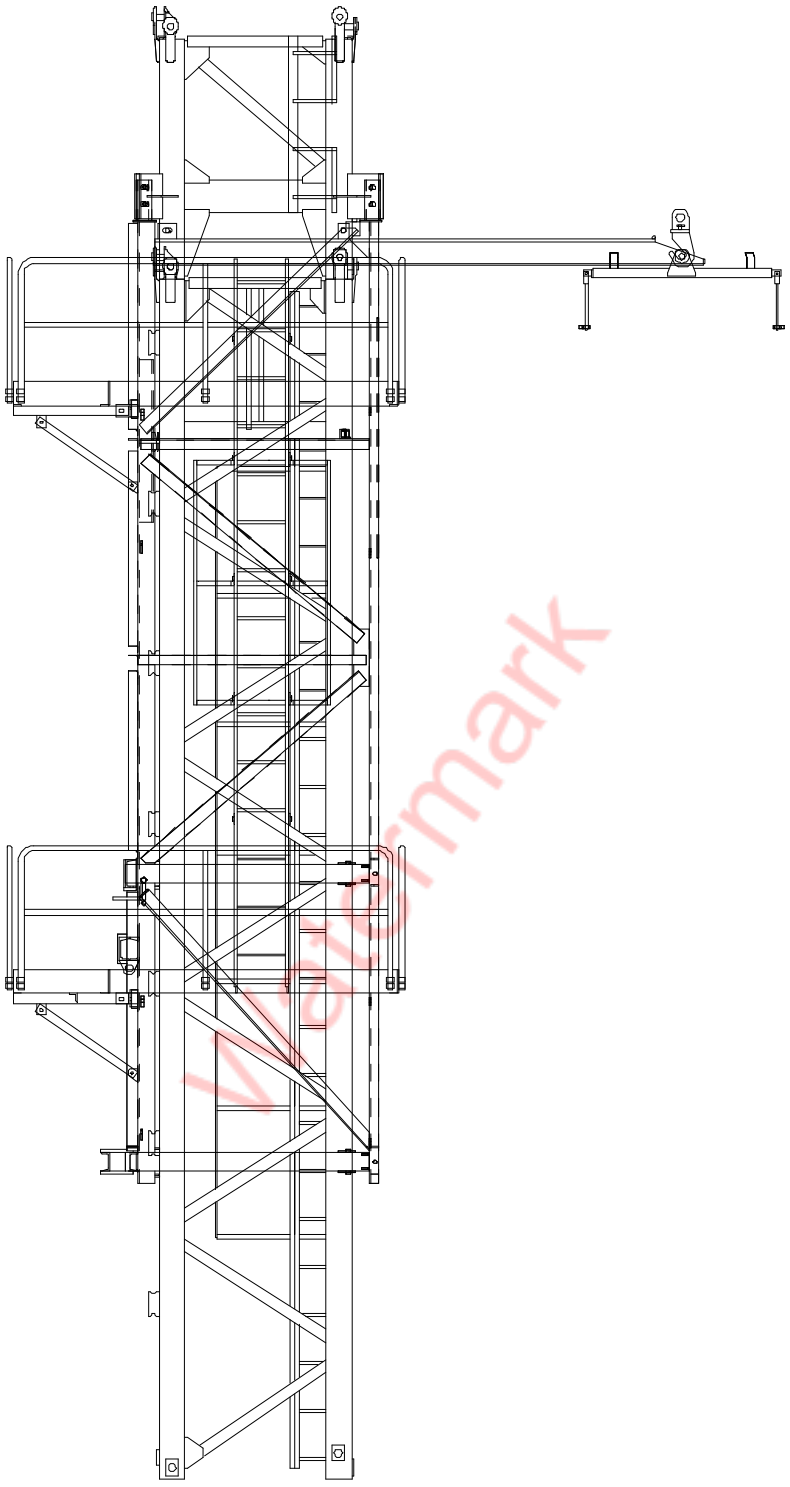


6.2、Fitting the telescoping cage



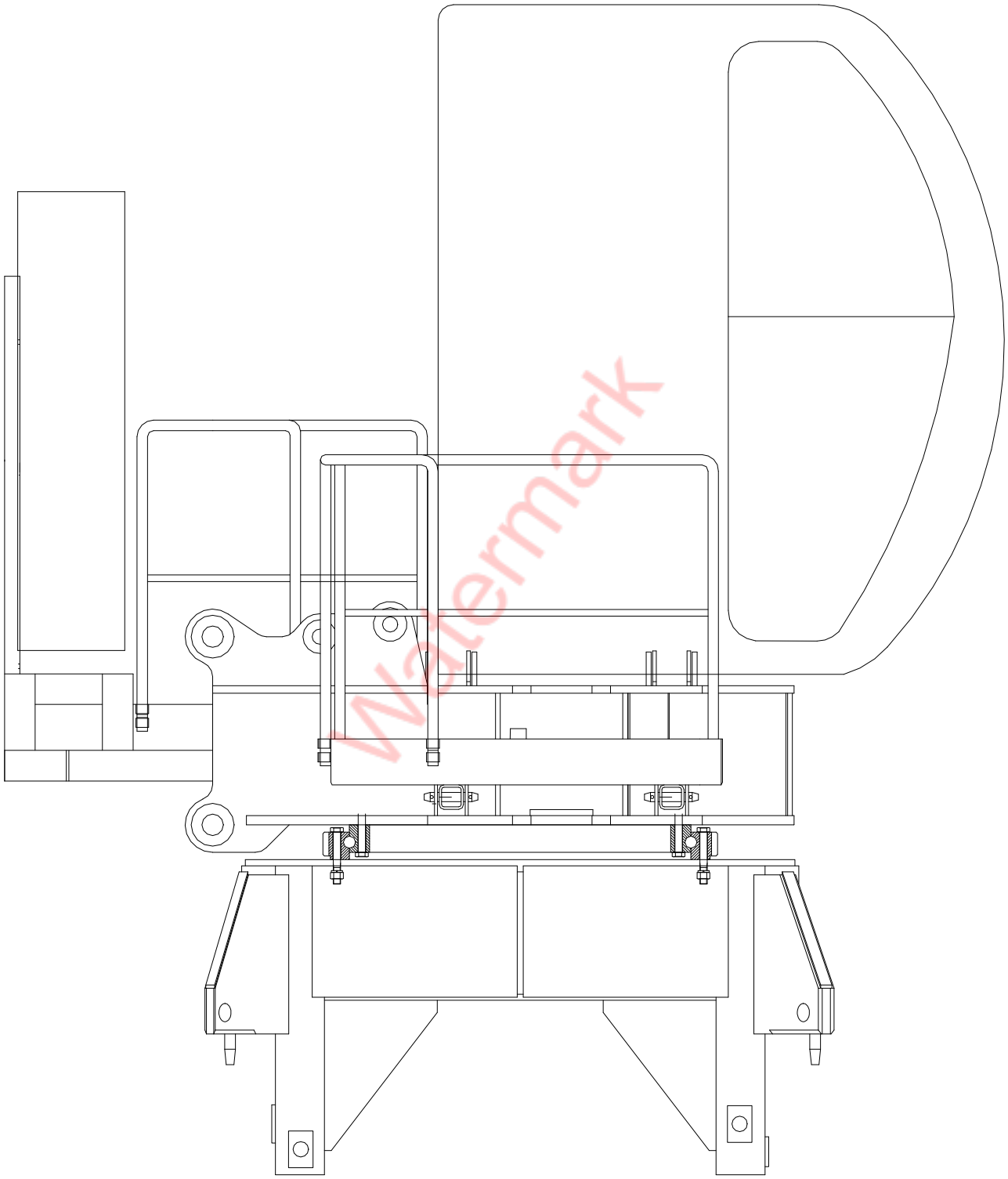


6.2.b、Fitting the 1.5m telescoping section(reserved for the use of 1.2m mast).



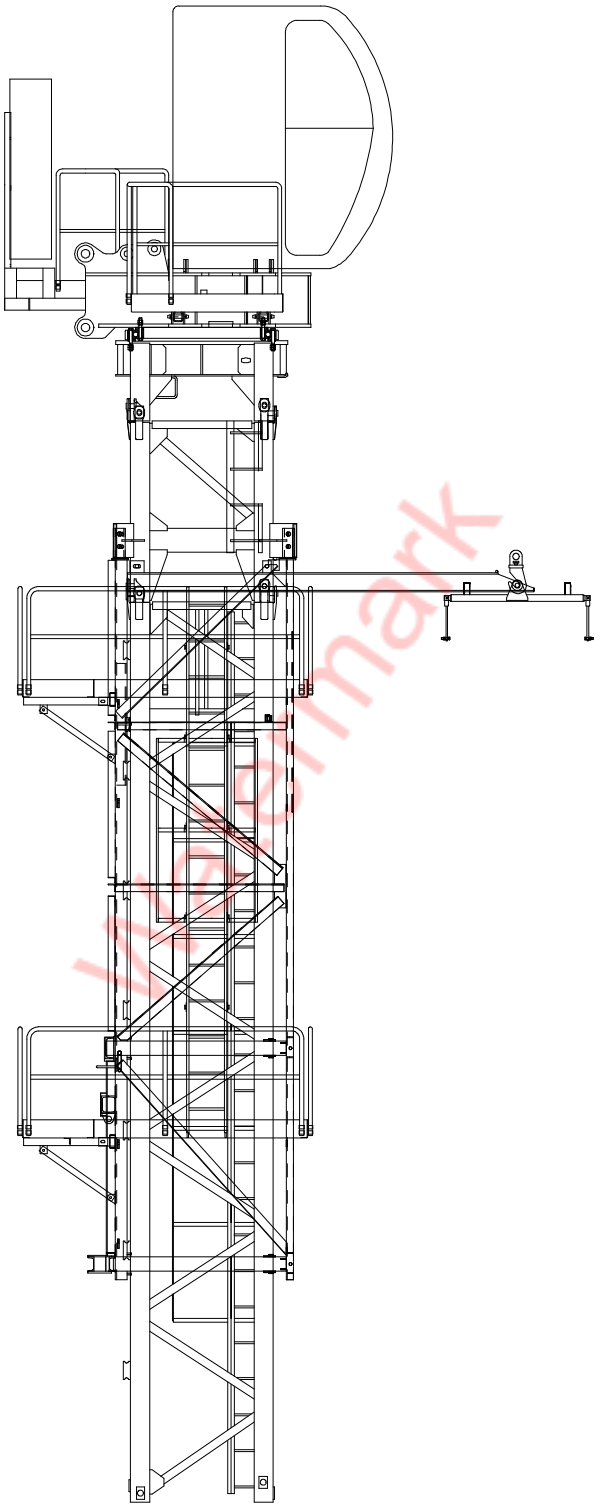
6.3、Fitting the Slewing unit and Counter-jibs.

6.3.1、 Assemble the Slewing unit



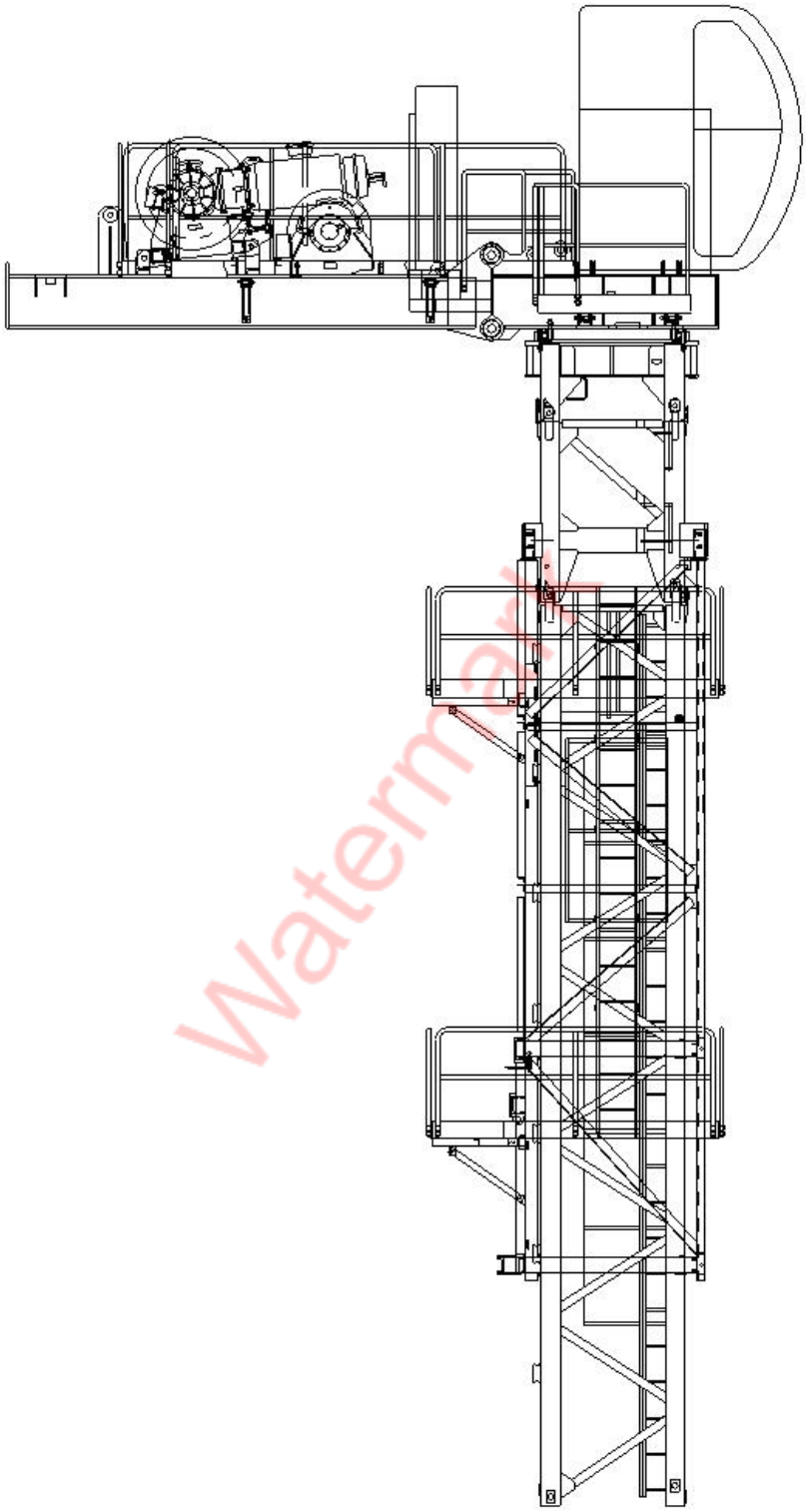
6.3.2、 Fitting the Slewing unit

1.2m

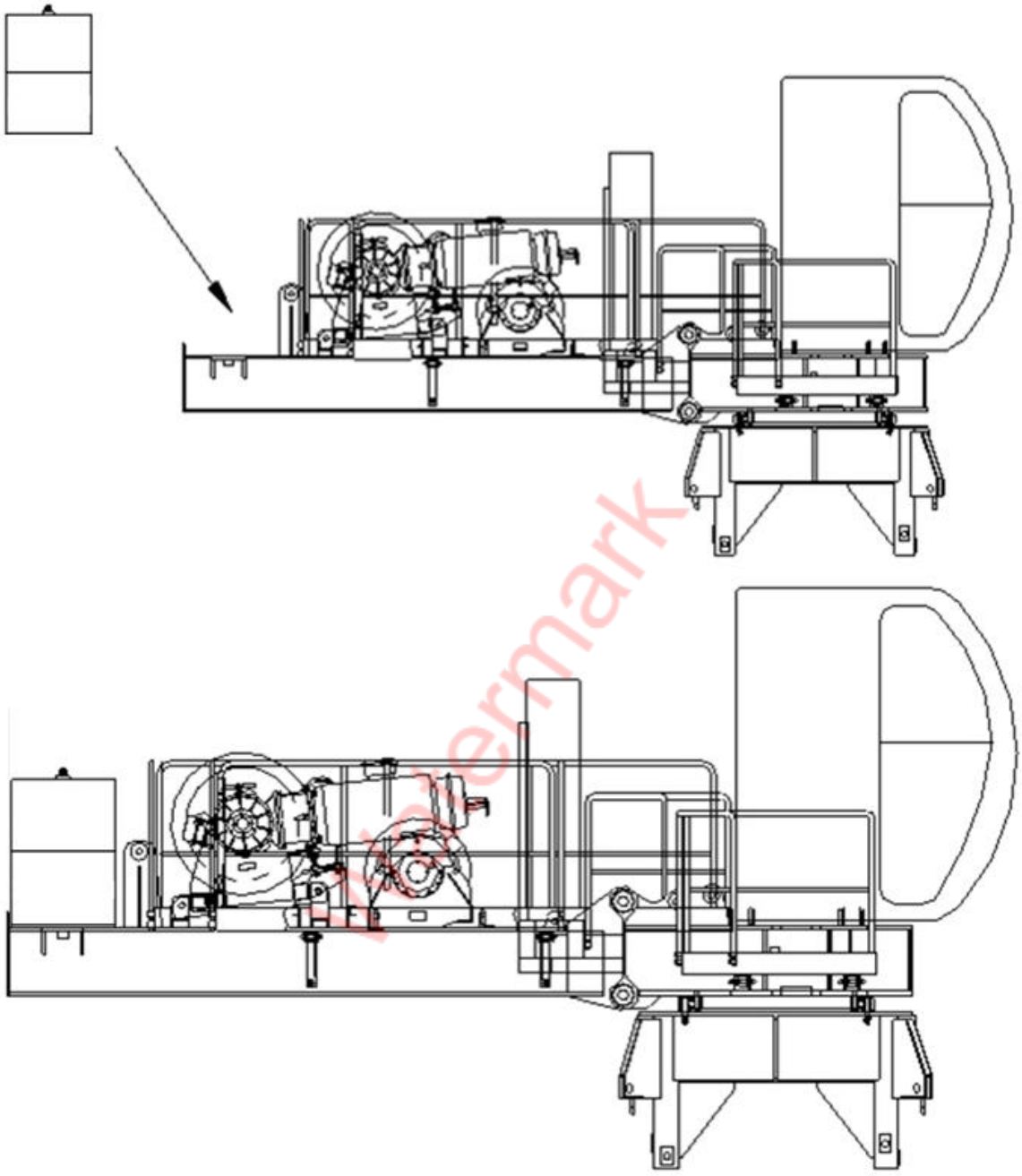


6.3.3、 Lift the counter-jibs

1.2m

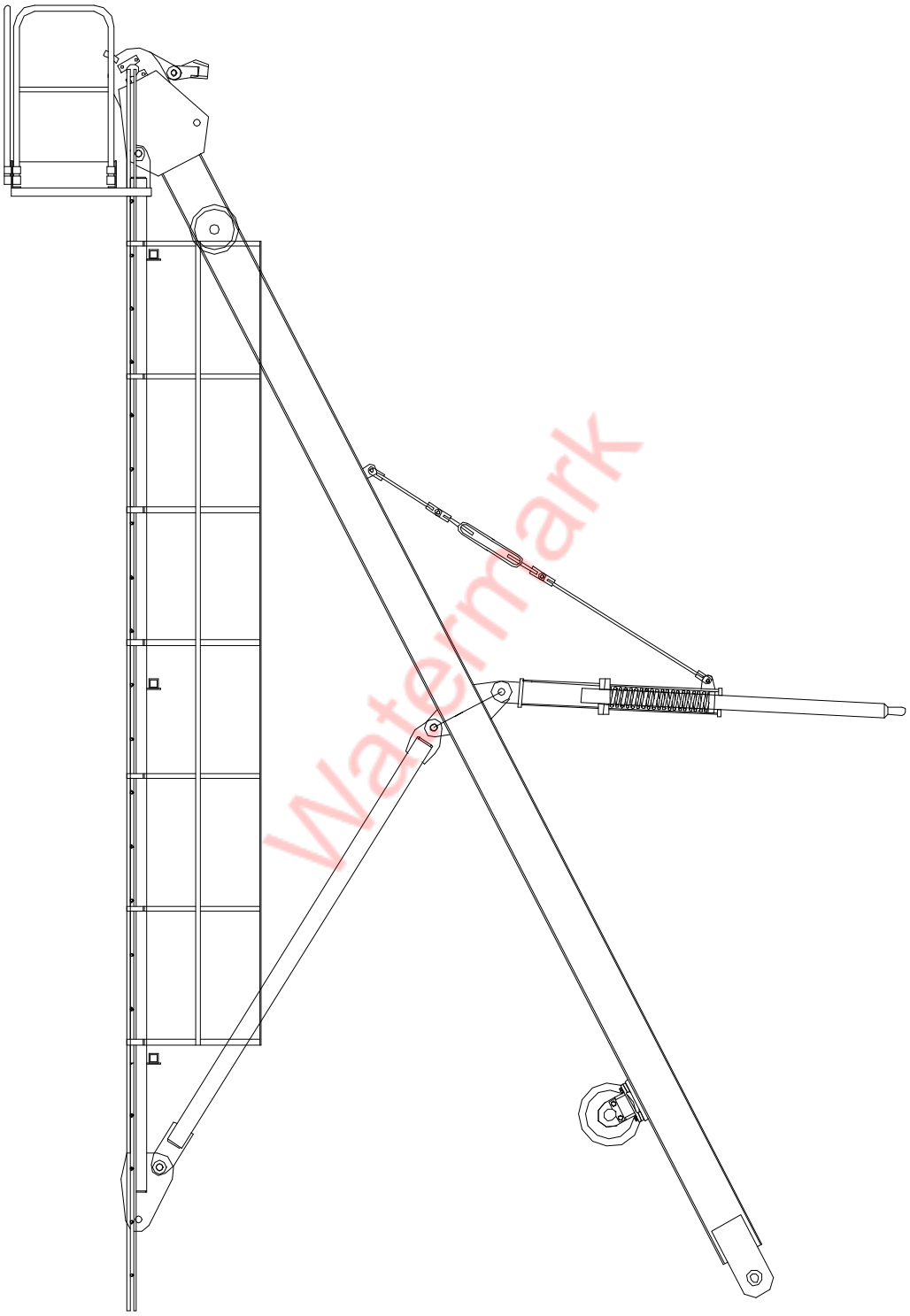


6.3.4、Mount and fix the counter ballast blocks to the counter jib

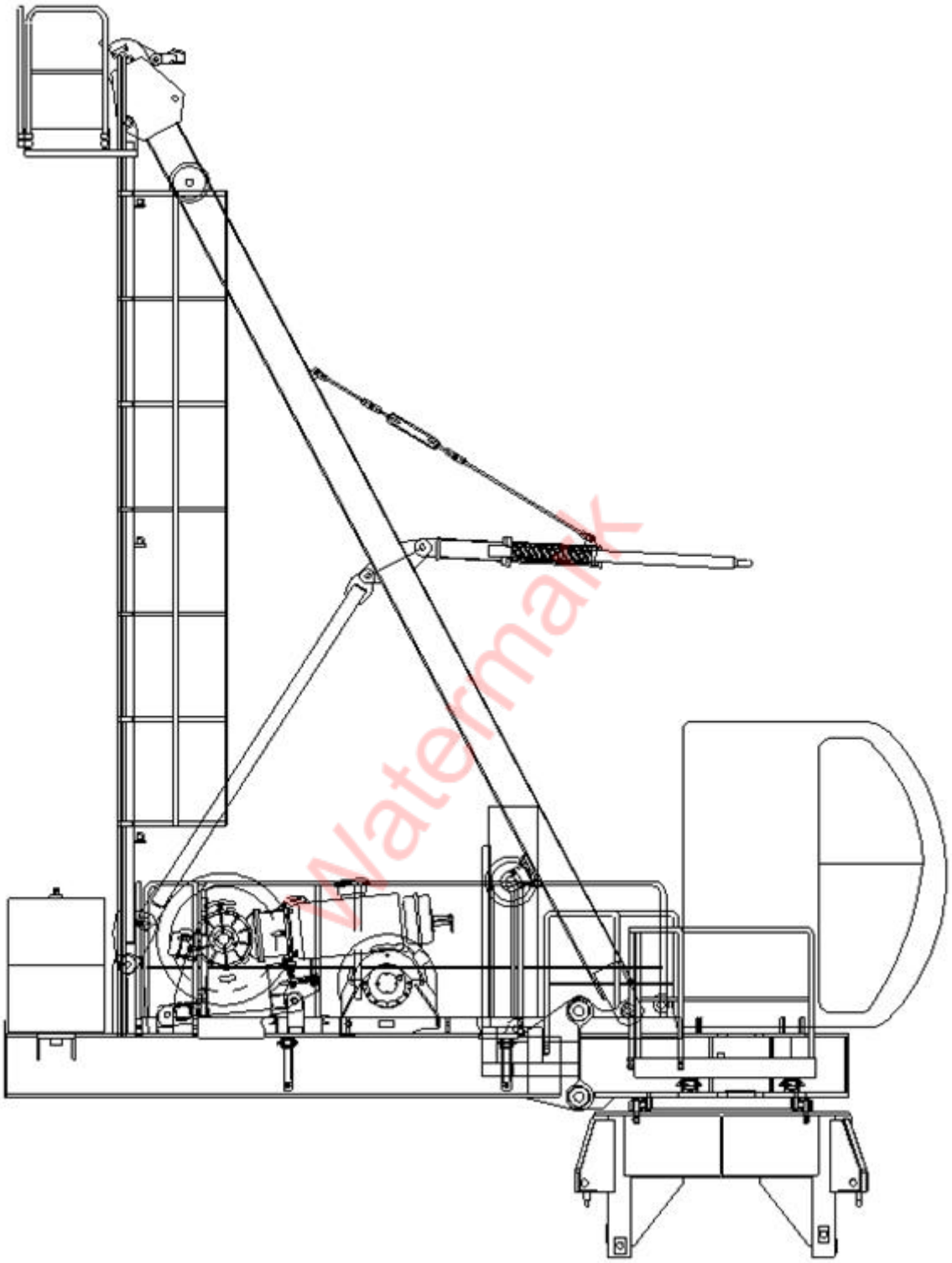


6.3.5、Fitting A-frame

6.3.5.1、Assemble the A farm included ladder and platform



6.3.5.2、 Lift and fit the A-frame to the Counter-Jibs

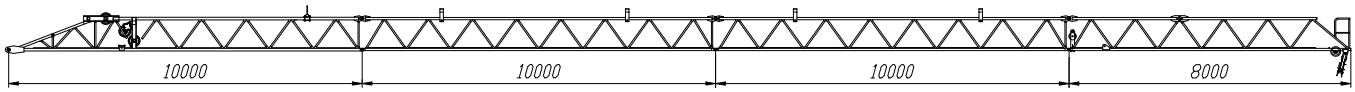


6.3.6、Connect power to the mechanisms, control cabinet, operator's cabin and other electrical components and check their performance

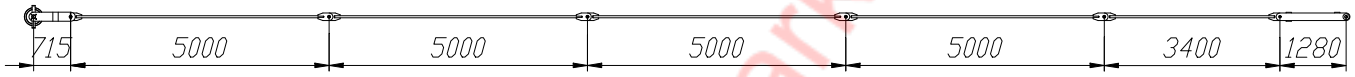
6.3.7、Reel the wire rope onto the hoist and trolley drums

6.3.8、Fitting the Jibs

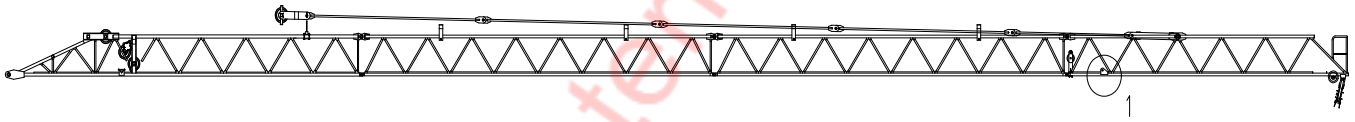
6.3.8.1 、Assemble the jib on the ground(36m)



6.3.8.2、 The tie bar assembly as follow



6.3.8.3、 Assemble the jib and tie bar on the ground.

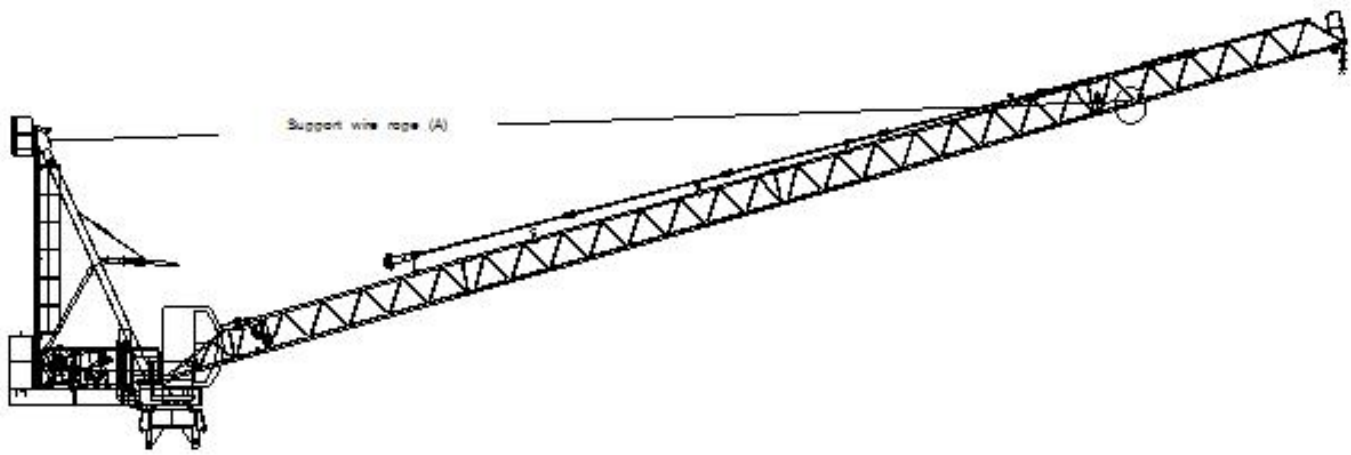


6.3.8.4 、Fit the Support wire rope (A) on point 1, and the other end fit on the root of jib.

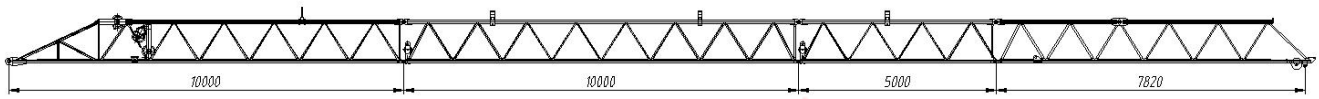
6.3.8.5 、Lift and connect the jib to the Slewing unit and fit the support rope to the fix point in the A-frame.

6.3.8.6 、Lay the jib, tighten the (A)

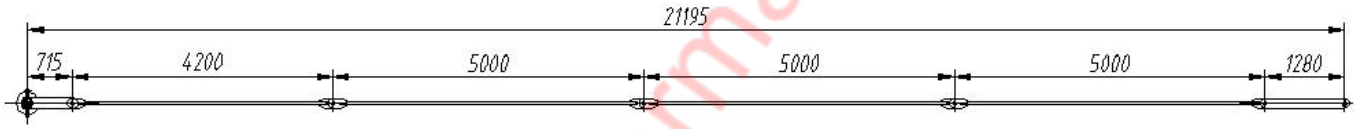
6.3.8.7 、After inspection of everything, the mobile crane hired for erection can be dismissed.



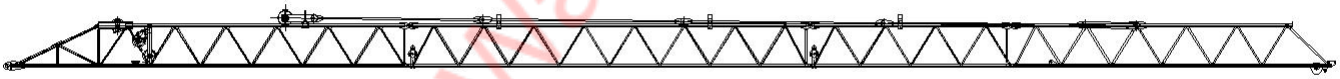
6.3.8.8.1 、Assemble the jib on the ground(31M)



6.3.8.8.8.2 The tie bar assembly as follow



6.3.8.8.8.3 Assemble the jib and tie bar on the ground.

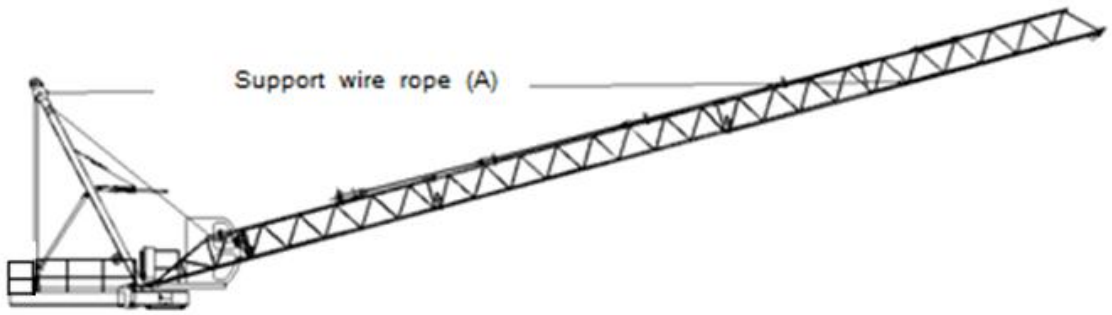


6.3.8.8.8.4 Fit the Support wire rope (A) on point 1, and the other end fit on the root of jib.

6.3.8.8.5 Lift and connect the jib to the Slewing unit and fit the support rope to the fix point in the A-frame.

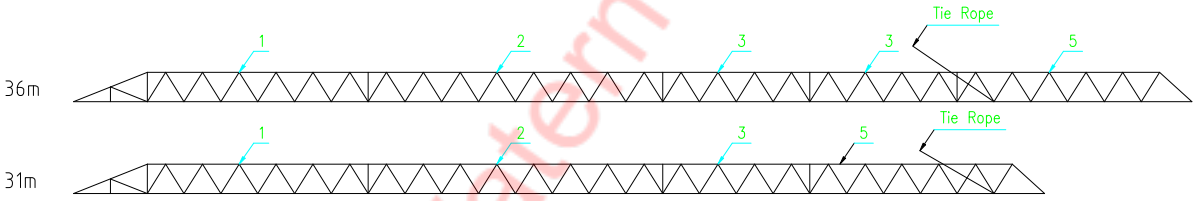
6.3.8.8.6 Lay the jib, tighten the (A)

6.3.8.8.7 After inspection of everything, the mobile crane hired for erection can be dismissed.

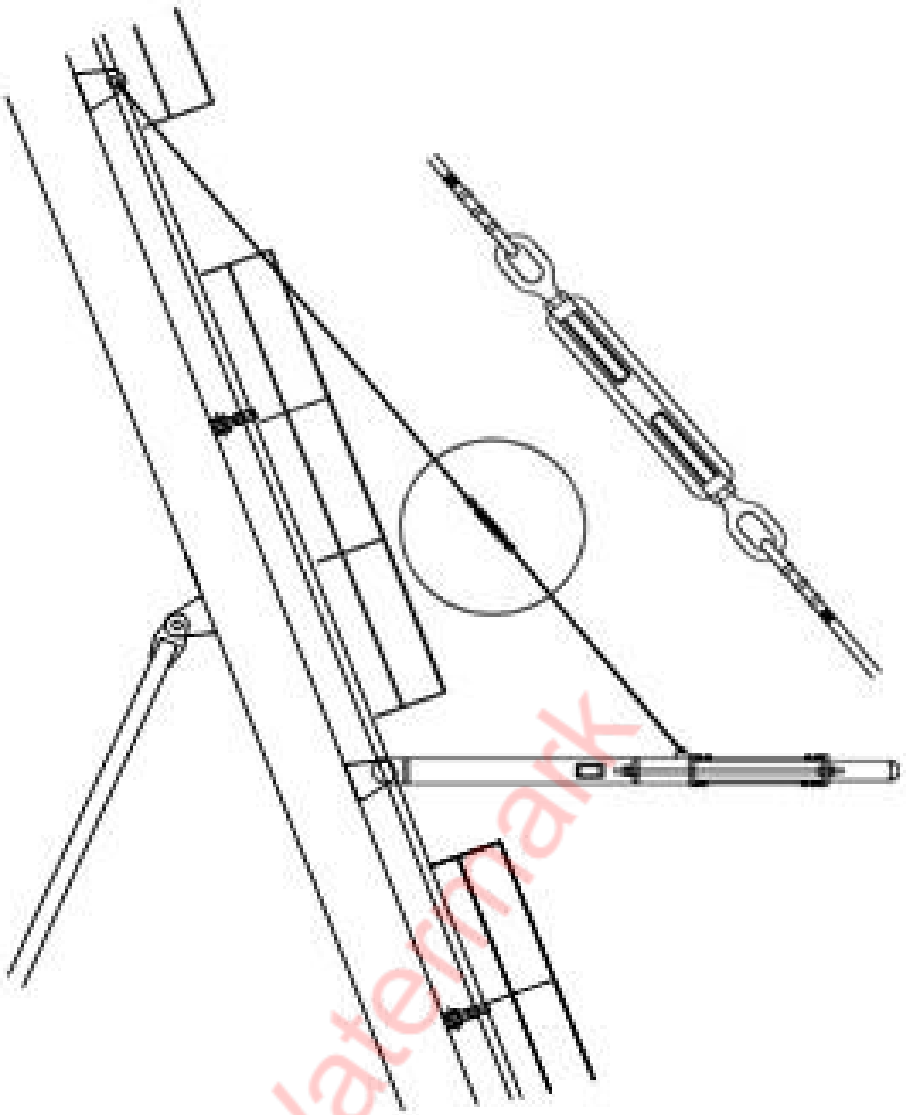


The number and positioning of the tie-ropes for jib assembly varies according to the jib length chosen:

JTL3615	Jib Tie Rope	
JIB（m）	Tie Rope D20　L3500	Jib Section Position
36	—	NO.5 jib section
31	—	NO.5 jib section

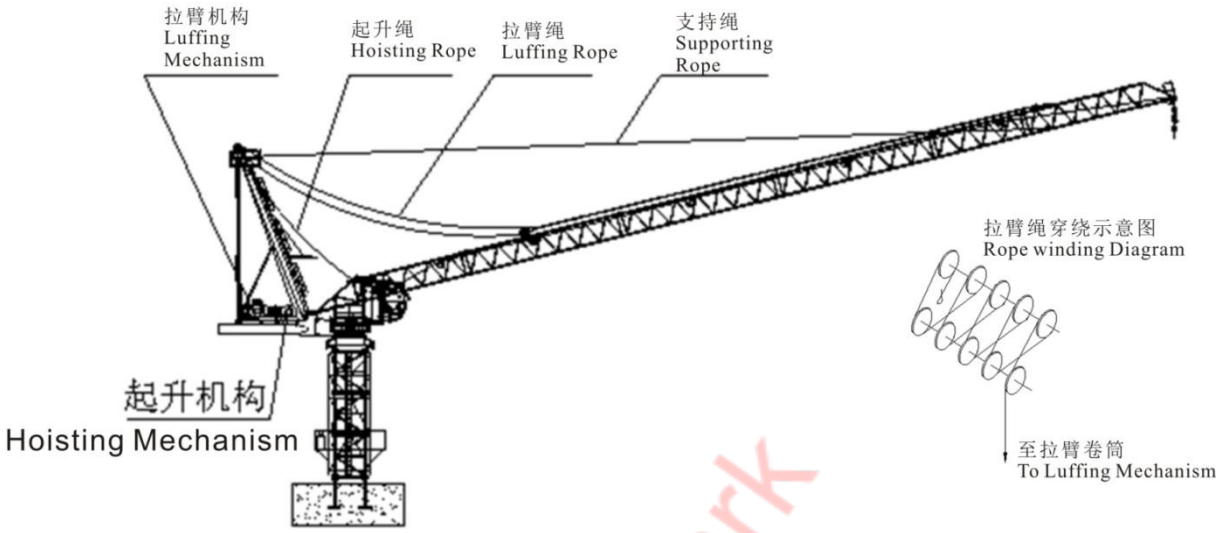


6.3.9、Install the anti-retroversion support rod to the fount support bar of the A frames and adjust the screw buckle to fit the wire rope length of both sides.



6.3.10、Reeling the wire ropes

6.3.10.1、Reel the trolley wire rope into the crown pulley block using the drum and fix the rope end. Start the trolley mech. to tighten the rope and disconnect the support wire rope (A) and put it in the platform of counter-jib.

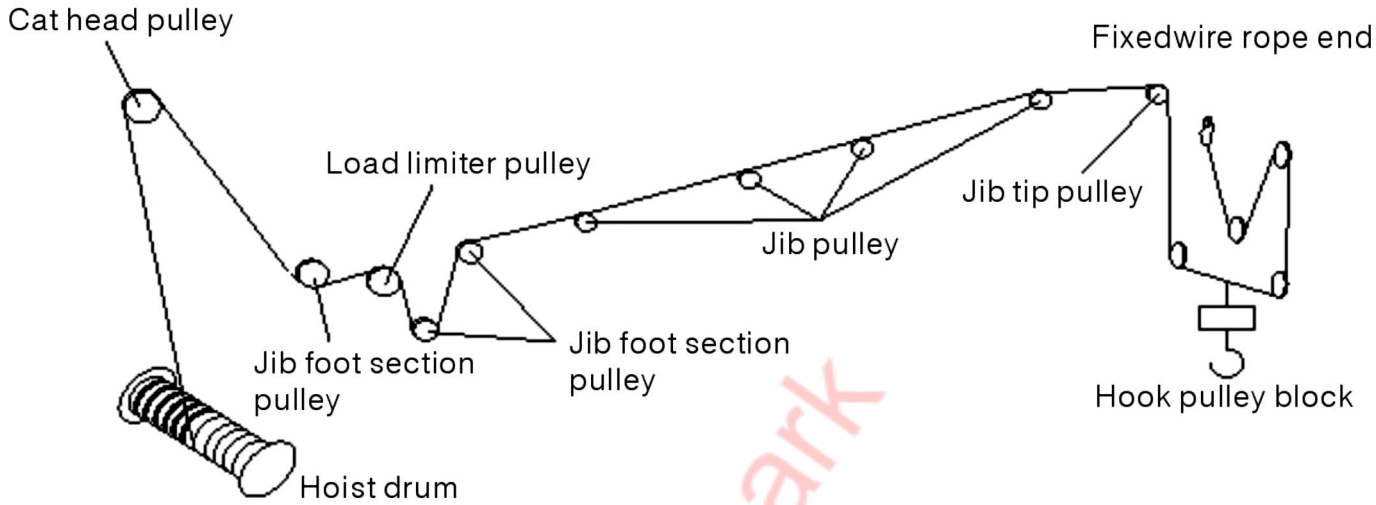


Reeling of trolley and hoist wire reeling rope reeling

Wire rope reeling indication

6.3.11、Use the hoist drum to Reel the hoist wire rope into the top guide pulley then into the jib foot, load limiter and guide pulley and finally the jib tip pulley and hook pulley block via the support wheel.

REEVING THE HOISTING ROPE AS FOLLOW



6.3.11.1、 Fitting of wire rope

6.3.11.1.1 、Use guide rope to introduce the trolley wire rope. F ix the trolley wire rope end

to the pulley block support by means of bushing after it goes through the last pulley of the pulley block.

6.3.11.1.2、 methods to reel the hoist wire rope.

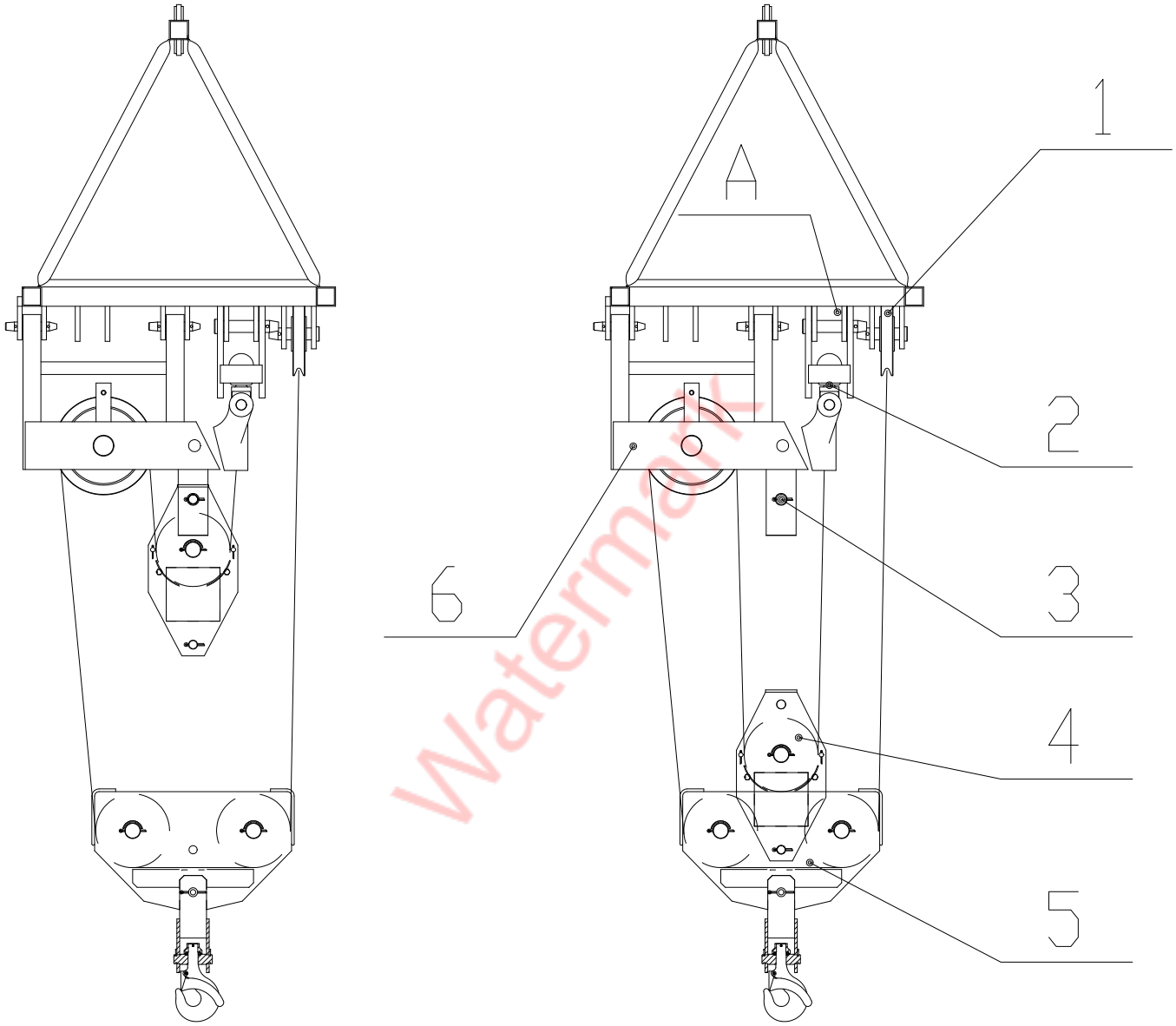
a）When the jib is still placed on the ground, wind the wire rope onto the hoist drum then guide it through the guiding pulley on the A frame, then down into the jib guiding wheel and load limiter pulley then the jib tip guiding pulley and finally the hook pulley block temporarily fixed onto the jib tip. Tie the rope end to the jib tip. Then when the jib is lifted tighten the hoist wire rope on the drum to suit the hoist height.

b）After the jib is completed lifted and fixed onto the tower, reel the wire rope in the air. Method a) is more preferred.

Notice: Rotatable stress releaser should be connected to the fixed end in case that non-rotator wire rope is used, or otherwise such device is forbidden.

Work slowly when stretch the trolley wire rope and pay attention to the intervention or blocking between travelling pulley block pull rod and the jib. Remove any fixation made prior to the operation.

6.3.12、Check the trolley motion for smoothness. Make sure there is no wire rope blockage and the well working of anti-retroversion device and travel limiter and the reliability of the part- line changing



1、Guiding pulley

2、Stress releaser for non-rotatory rope；

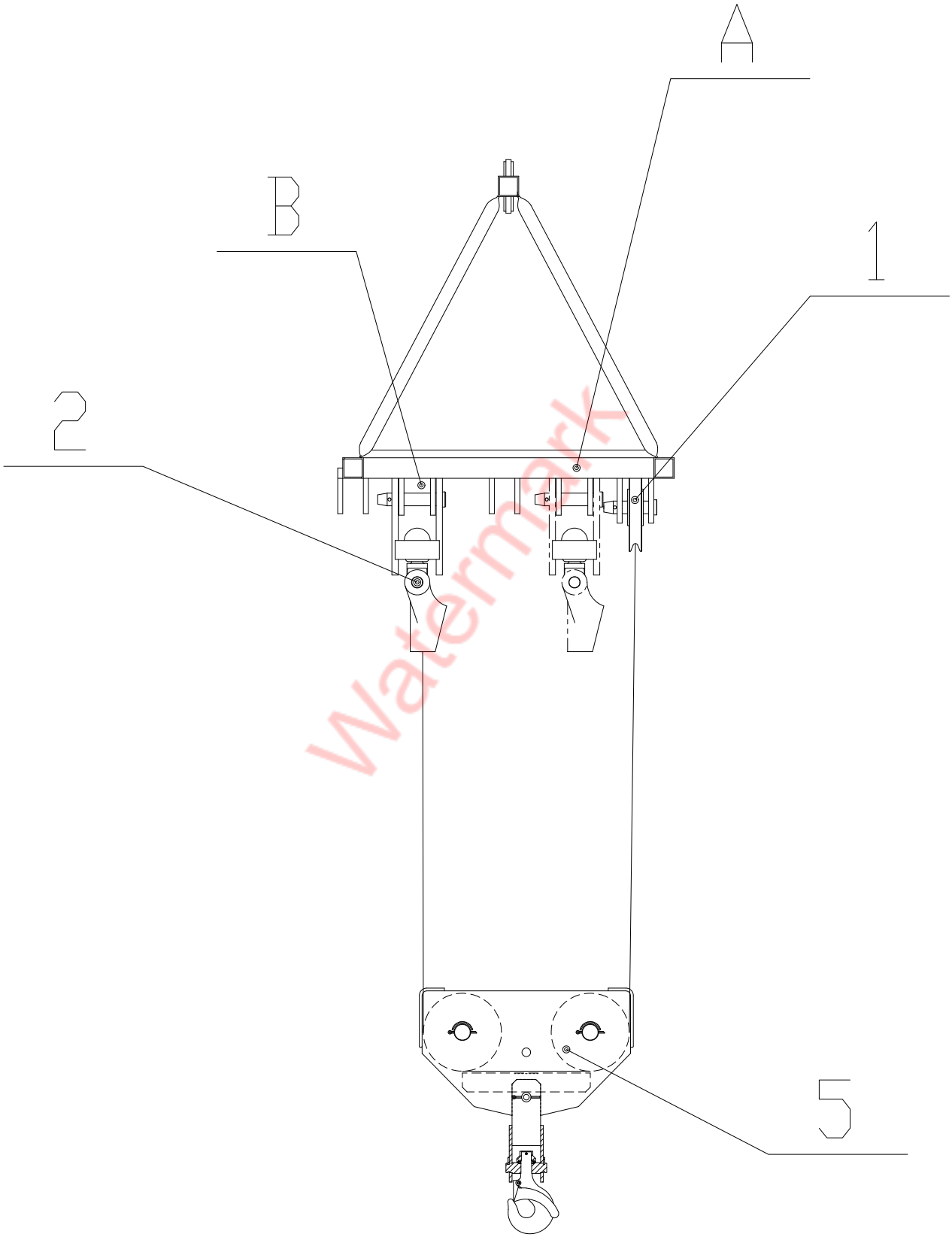
3、Fixing bolt for single pulley block；

4、Single pulley block

5、Hook pulley block

6、Swingable suspender

Note: Remove the Swingable suspender(6) when the crane is only using 2 fall and the Stress releaser for non-rotatory rope(2) should be moved from position A to B.



6.3.13、 Pre-operation inspection

Check if connecting parts are correctly and securely installed and pins and split pins well placed pre-tightening force for bolts sufficient or not

Check if there is any intervention or conflict against surrounding objects, or any occurrence of breaking, bending or deforming of wire rope, and the reliability of the tip fixation.

Security of all platforms ladders and grab rails.

Check counter ballast block for correct installation and match to the jib length.

Check tower for perpendicularity and jib for deflection.

Connect the main supply and control cable to check for wiring correctness according to electrical diagram. Check if earthling resistance is up to the requirement.

Check safety device

Lubricate all parts

7、TELESCOPING

TELESCOPING 1.2m

7.1、ASSEMBLING THE TELESCOPIC CAGE

7.1.1、GENERAL NOTES

_ The telescoping assembly consists of main parts remaining on the crane and of a certain number of accessories used during telescoping only.

_ For fitting the telescoping assembly, three cases are possible:

_ Fitting of the complete assembly during normal erection of the crane

_ Partial fitting for increase in height

_ Partial fitting for dismantling the crane

_ The following pages describe the fitting of the telescoping assembly after normal erection of the crane.

7.1.2、 FITTING OUT THE TELESCOPIC CAGE

_ Fitting out the telescopic cage is carried out with the cage in horizontal position; if the telescopic cage

must be put in upright position, it has to be anchored by guy ropes.

_ For assembling the main parts of the telescoping equipment, refer to the corresponding detailed spare

parts brochure.

7.1.2.1、 FITTING THE HYDRAULIC UNIT AND CYLINDER

_ Install the hydraulic unit (1) onto the rear platform (2).

_ Introduce the cylinder (3) into the through hole (4) of the lower telescopic cage frame (piston rod downward).

_ Pin−connect the cylinder (3) with the telescopic cage gussets using shaft (5).

_ Connect the pipes (6) to the hydraulic unit (1) − See Operating Instructions.

_ Fill the hydraulic unit with oil, carry out the electrical connections and bleed the hydraulic circuits by operating the cylinder without load as shown in the Operating Instructions. Then top up the hydraulic unit.

_ Fit the telescoping yoke (7) onto the lugs of the basic mast and extend the cylinder in order to pin it to the yoke fork by means of shaft (8); then fix with split−pin.

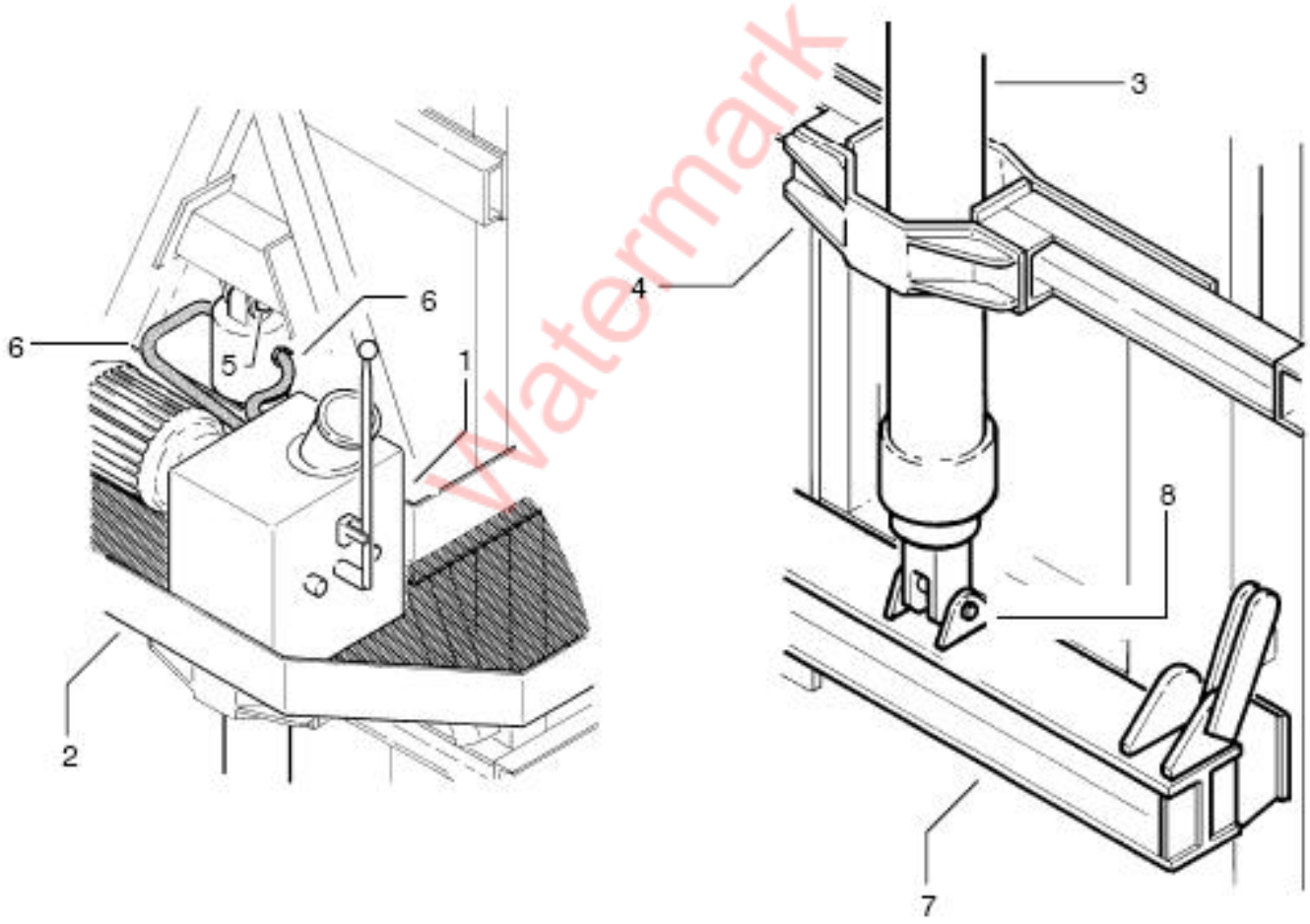


Figure 1

7.2、 GENERAL INSTRUCTIONS

_ The slewing crane part must be balanced compulsorily when the telescoping assembly is lifted or being lifted and during the introduction of a mast section.

_ The wind speed is limited to 60 km/h.

_ It is forbidden:

〇to slew the jib,

〇to operate the hoist winch (Hoisting or Lowering) when the telescoping assembly is lifted or being lifted,

〇to move the trolley(s) when the telescoping assembly is lifted or being lifted,

〇to keep the telescoping assembly resting on the cylinder.

_ Use of the safety pins when telescoping:

〇The telescopic cage is equipped with 4 pins of which the diameter has been reduced by 2 mm in order to make their fitting easier.

〇These pins, connected to the telescopic cage by means of a chain, are ONLY TO BE USED FORTELESCOPING. They ensure the connection between the fixed towerhead or connecting mast and the last telescoped mast section on each mast level.

〇They must be fitted on the lateral sides.

〇At the end of telescoping and before disconnecting telescopic cage/fixed towerhead or connecting mast and lowering the telescopic cage, they must be replaced by the normal mast shafts.

〇IT IS STRICTLY FORBIDDEN TO CARRY OUT ANY HOISTING OPERATION BEFORE PLACING THE NORMAL WORKING SHAFTS.

_ Interruption of telescoping:

〇The last mast section must be pin−connected to the crane tower with the normal shafts.

〇The towerhead or the connecting mast must be pin−connected to the last mast section of the crane tower with the normal working shafts.

〇The balancing load must be laid down.

〇There is no mast section hanging from the monorail trolley. The latter must be lowered to the ground.

〇The pulley block must be raised under the trolley.

○Move the trolley away enough so that the pulley block cannot get caught by the monorail(s) when the crane is weathervaning.

○ Observe the conditions for keeping the telescopic cage at the top of the mast.

○For SHIFT END, observe the instructions given in the OPERATING INSTRUCTIONS.

7.3、HANDLING THE TELESCOPIC CAGE

The weight of the equipped telescopic cage may exceed the maximum load permitted for the crane. For handling the telescopic cage, reduce its equipment so that this maximum load is not exceeded.

FITTING THE TELESCOPIC CAGE BY SELF−MOUNTING

_ This operation can only be carried out with a crane the maximum load of which exceeds the weight of the package to be handled.

LOWERING THE TELESCOPIC CAGE BY MEANS OF THE HOOK

_ This operation can only be carried out with a crane the maximum load of which exceeds the weight of the complete telescopic cage.

_ FOR CRANES WHOSE MAXIMUM LOAD IS INFERIOR, it is possible to lay down the hydraulic unit, the hydraulic cylinder and the telescoping yoke in order to reduce the weight of the assembly to be handled without exceeding the maximum load of the crane.

_ If, despite of removing the accessories, the weight is higher than the maximum load of the crane, THE TELESCOPIC CAGE MUST COMPULSORILY BE LOWERED AGAIN BY MEANS OF THE

HYDRAULIC CYLINDER.

7.4、 FITTING THE ACCESSORIES

7.4.1、FITTING THE MONORAIL

The monorail is fitted onto the telescoping mast. This operation can be carried out:

_ In the air, before telescoping or telescoping down.

_ On the ground, before fitting the connecting mast.

7.4.1.1、 FITTING THE MONORAIL IN THE AIR

Fitting the monorail is carried out by means of the telescoping hook.

_ Fit the plates (1) by means of the shafts (2) onto the gussets (3) of the telescoping mast. Fit the shafts (4) onto the plates (1) (Figure 1 − Detail A).

_ Using the telescoping hook (5), pick up the monorail (6) by the round bar (7) (Detail B − Figure 1) and fix a cord on the other end.

_ Lift until the cord can be taken; for this, use the telescoping grab.

_ Using the cord, raise and pin−connect the monorail to the plates (1) by means of the shaft (4) (Detail C − D − E − Figure 1).

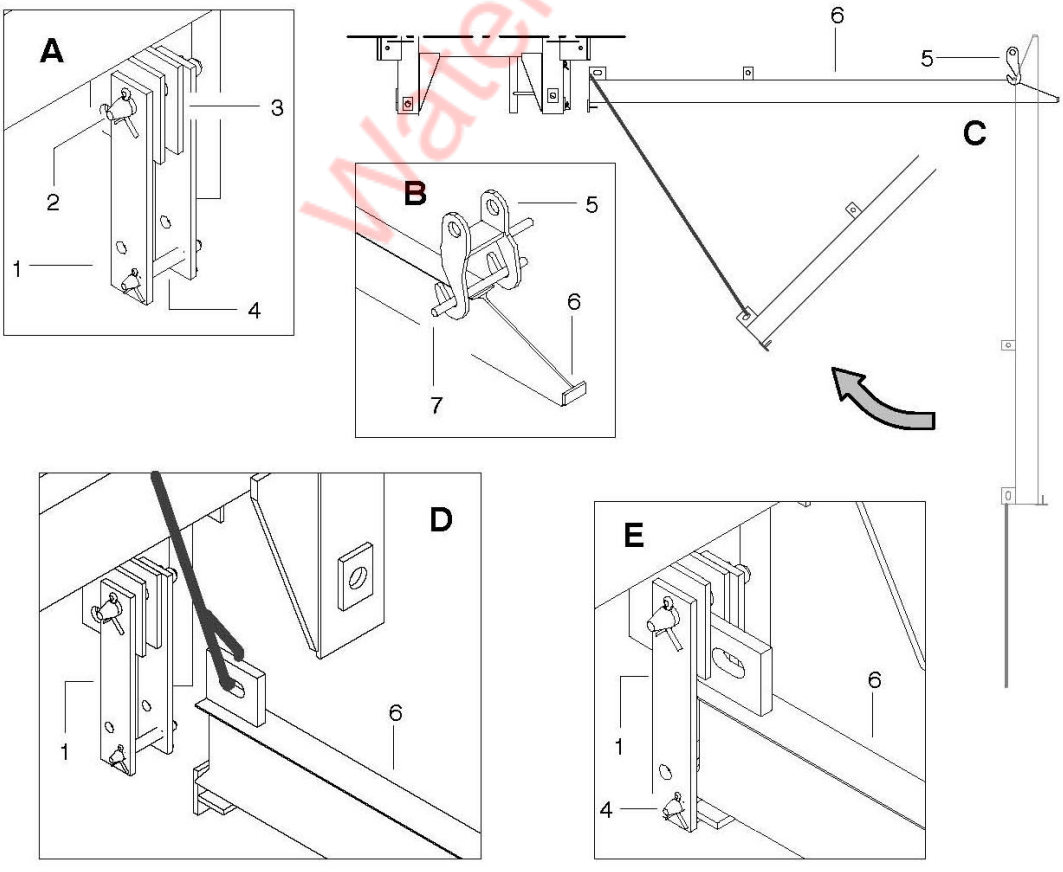


Figure 1

_ Operate “Trolley in” until the monorail (6) can be pinned to the gussets (8) by means of the shaft (9) (Detail A − Figure 2), then to the gussets (3) by means of the shaft (10) (Detail B − Figure 2).

_ Remove the shaft (4), then raise the plates (1) and refit the shaft (4) as well as the shaft (11) (Detail C − Figure 2).

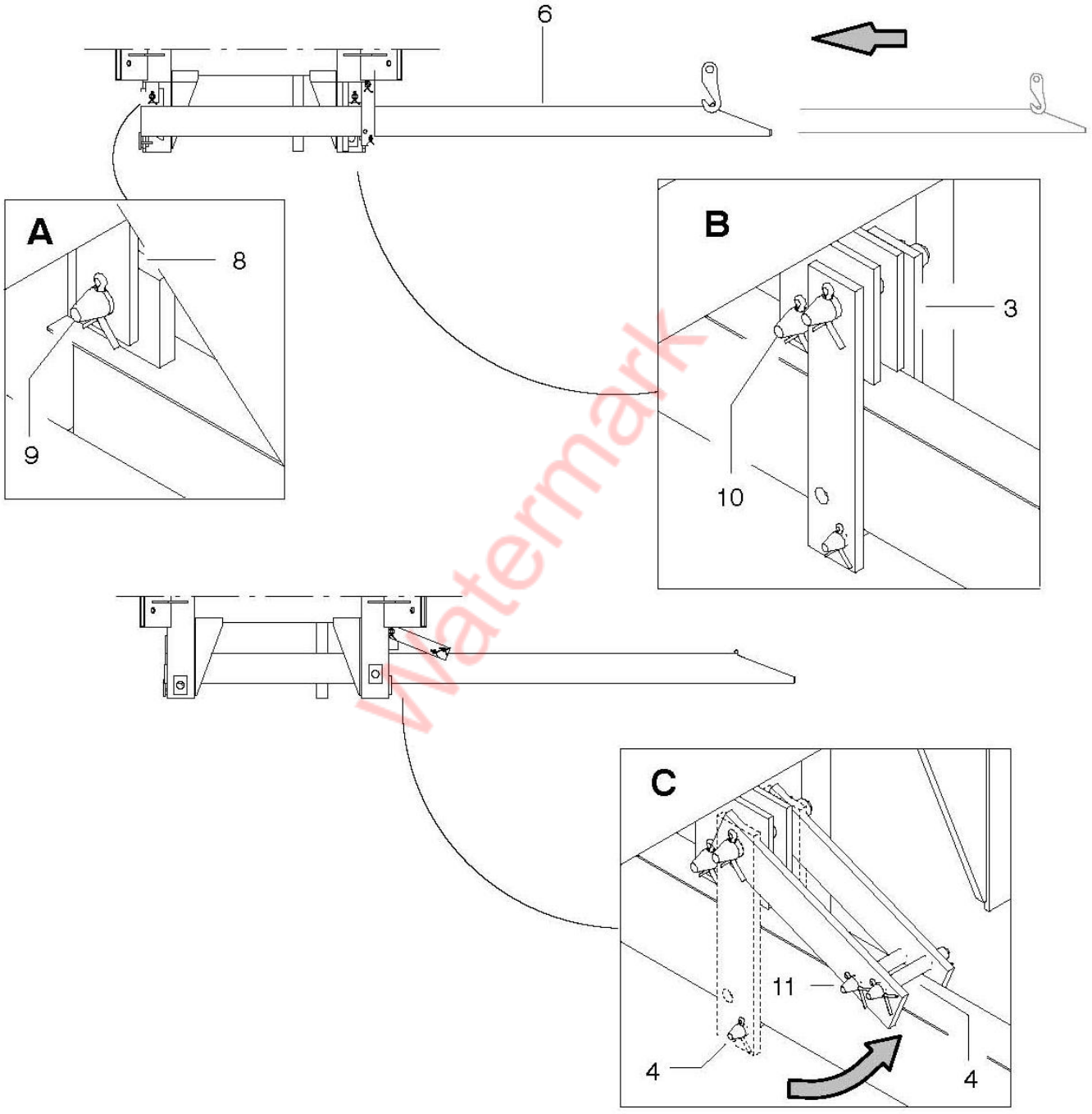


Figure 2

7.4.1.2、 FITTING THE MONORAIL ON THE GROUND

The fitting operations are identical with those of fitting in the air (paragraph 4. 1. 1.), on the other hand, handling of the monorail will be carried out by means of the mobile crane and a sling instead of the telescoping hook.

7.5、 BALANCING FOR TELESCOPING

7.5.1、GENERAL INSTRUCTIONS

Balancing for telescoping is carried out in two phases:

_ Theoretical, by hanging a load at a given radius.

_ Practical, by adjusting the position of working radius the jib.

We remind that it is strictly forbidden to SLEW the jib/to MOVE the jib/to OPERATE the hoist winch (hoisting or lowering).

when the telescoping assembly is lifted or being lifted.

7.5.2、 PARTICULAR INSTRUCTIONS

The good working order of the telescoping assembly (cylinder and telescopic cage) needs that the center of gravity of the lifted crane part is located in the cylinder axis. Make sure too, that one mast section is hanging from the monorails before proceeding balancing.

Move the jib, possibly equipped with an appropriate load, to be determined by user on the job site.

The indicated distances are theoretical; they especially depend on the actual weight of the counter−jib ballast. Make sure that this ballast weight corresponds to the used lengths of counter−jib and jib.

Furthermore, the wind has a considerable action on the crane balance, telescoping is no longer allowed beyond 60 km/h.

7.6、1.20 M TELESCOPING SEQUENCES

7.6.1、 GENERAL NOTES

The whole telescoping operations are carried out from the cage catwalks.

7.6.2、 PRINCIPLE

The telescoping sequence comprises a series of operations which are repeated several times:

_ Fit the monorail trolley (1) onto a mast section (2) chosen according to the mast composition.

_ Hang the monorail trolley (1) from the telescoping hook (3), raise the assembly and hook the trolley (1) to the monorail (4) making sure that the telescoping lugs of the mast are located on the crane side (Figure 1).

_ Free the telescoping hook and suspend the balancing load.

_ The crane is in balancing position.

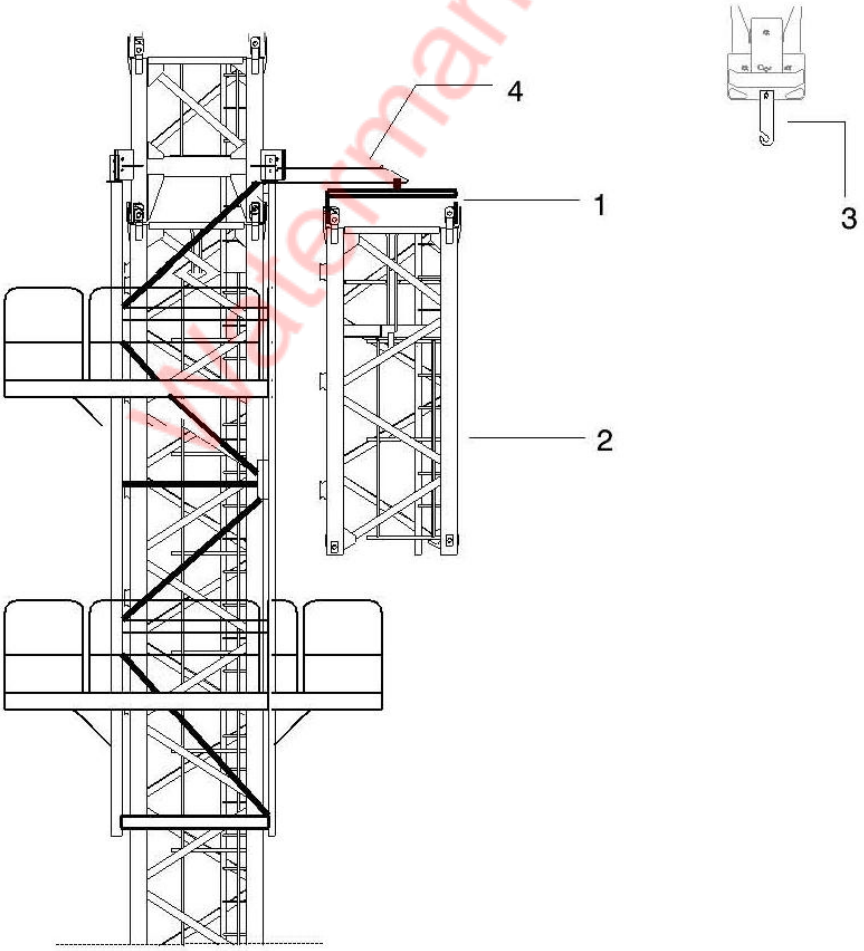


Figure 1

_ Shut the telescopic cage locks (Detail A − Figure 2).

_ Remove the shafts connecting the basic mast to the connecting mast for telescoping.

_ Operate the lever of the hydraulic unit in the “up” direction. Slowly telescope until the telescoping connecting mast feet just leave the fishplates of the basic mast (Detail B − Figure 2).

_ If required, readjust the balancing given in chapter by manoeuvring the jib trolley. The exact balancing position is found by verifying the alignment of the telescopic connecting mast feet with the basic mast fishplates and checked by reading the minimum pressure required for telescoping on the pressure gauge of the hydraulic unit. After balancing, open the locks (Detail C − Figure 2).

_ Telescope until the telescopic cage pawls (5), kept away from the mast, are above the lugs (d) of the basic mast (Detail D − Figure 2).

_ Slowly operate the hydraulic unit lever in “down” direction in order to rest the pawls (5) onto the lugs (d) (Detail D − Figure 2).

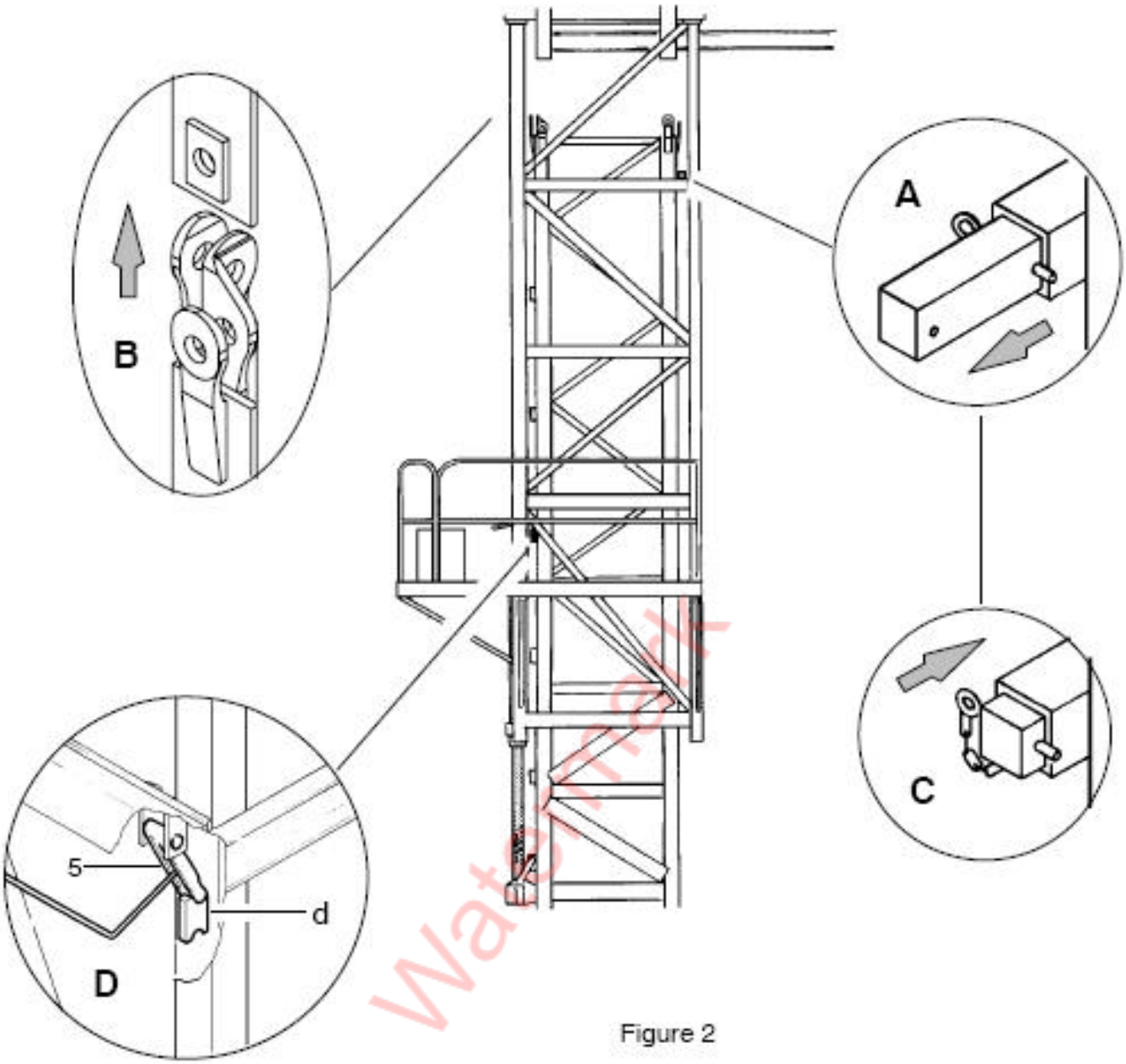


Figure 2

_ After resting the telescopic cage by means of its pawls onto the lugs (d), pull the hydraulic unit lever in the “down” direction, the yoke (6) rises and hangs up onto the next lugs (b) above (Detail A – Figure 3).

_ Operate the hydraulic unit lever in the “up” direction, the cylinder extends and the pawls (5), resting on the lugs (d), rise to the lugs (e) (Detail B − Figure 3).

_ Operate the lever in the “down” direction in order to rest the pawls (5) onto the lugs (e) (Detail B − Figure 3).

Very Important !

When the forks of climbing cage are fully placed on the lugs of tower and bear the load of the entire climbing part, MAKE SURE THE SAFETY-PINS CONNECTING THE LUGS ARE PULLED OUT before withdraw the hydraulic ram.

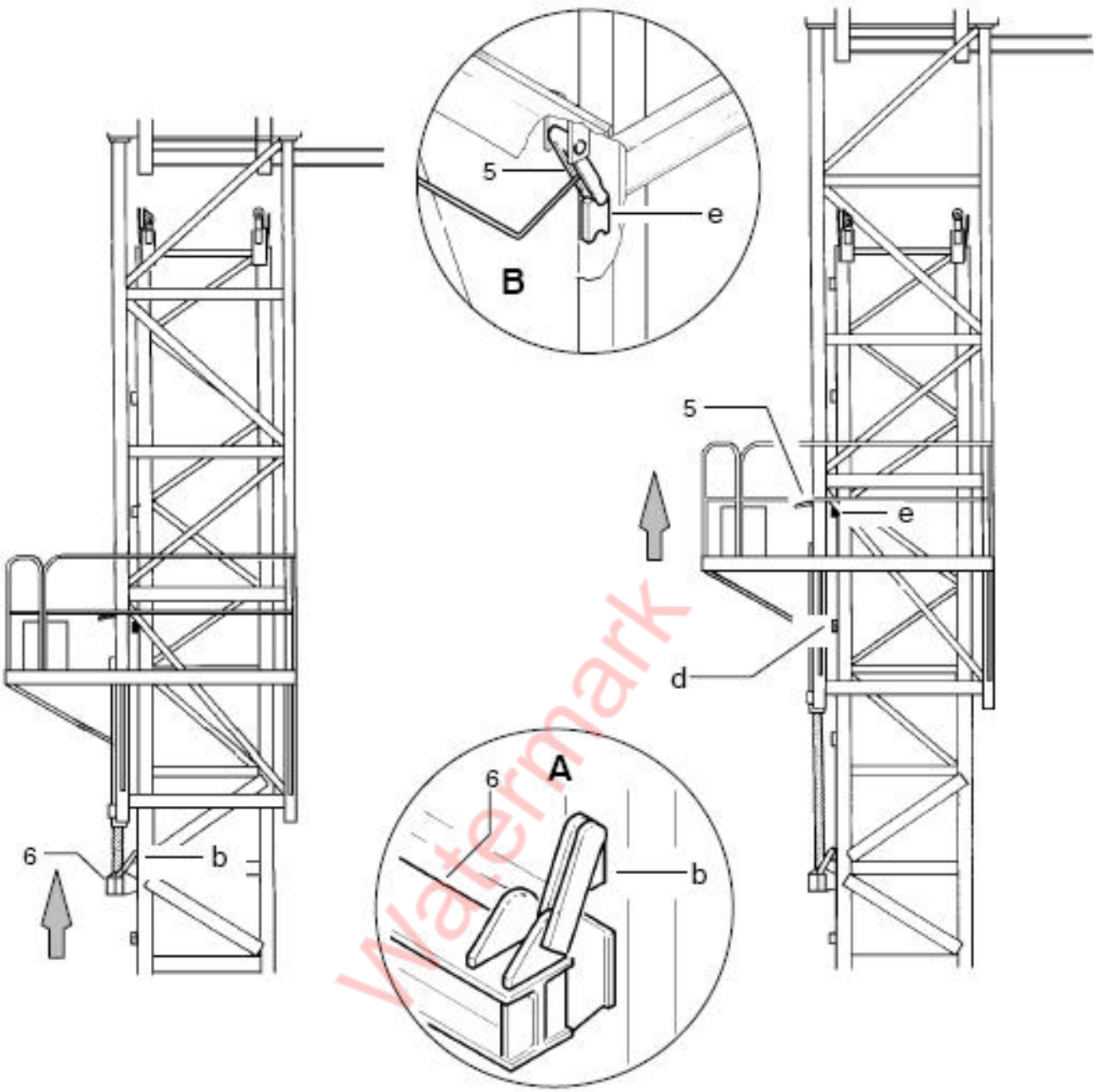


Figure 3

_ After resting the telescopic cage by means of its pawls onto lugs(e), pull the hydraulic unit lever in the “down” direction, the yoke (6) rises and hangs up onto the lugs (c) (Detail A − Figure 4).

_ Then push the lever in the “up” direction, the telescopic cage rises and the pawls which are resting up to now on the lugs (e) come to rest onto the next lugs (f) above (Detail B − Figure 4).

_ From that moment, operate the hydraulic unit lever in the “down” direction, the cylinder retracts, the yoke (6) leaves the lugs (c) in order to come to hang up onto the next lugs (d) above.

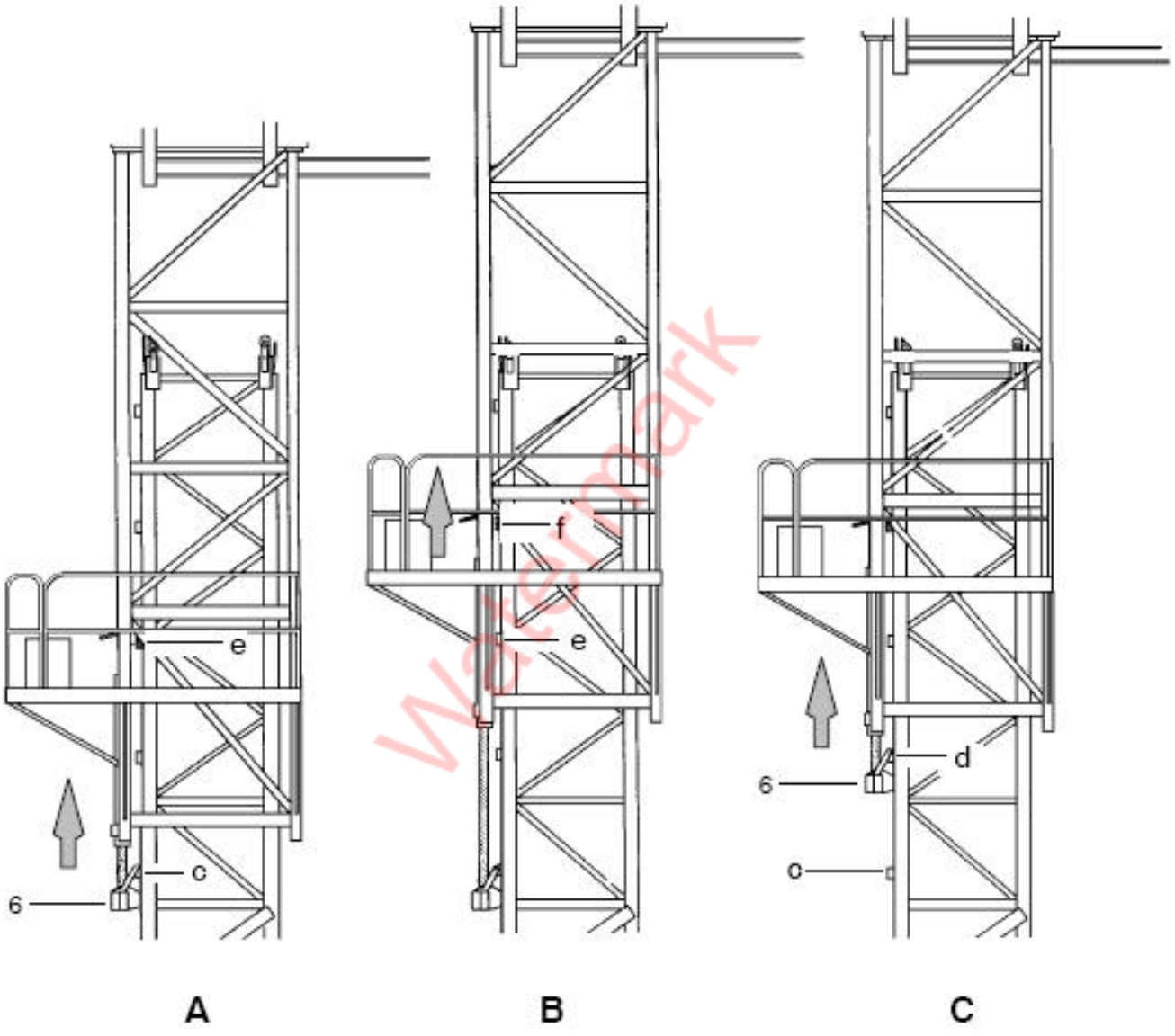


Figure 4

_ After hooking the telescoping yoke onto lugs (d), push the hydraulic unit lever in the “up” direction in order to allow the pawls to be supported on lugs (g) without however enabling the telescopic cage rollers to come out (Detail A − Figure 5).

_ Do not raise the yoke onto the next lugs above.

_ The crane is now in the required position for introducing the mast section into the telescopic cage.

_ Introduce the mast section (2) into the telescopic cage using a grab provided for this purpose (Detail B − Figure 5).

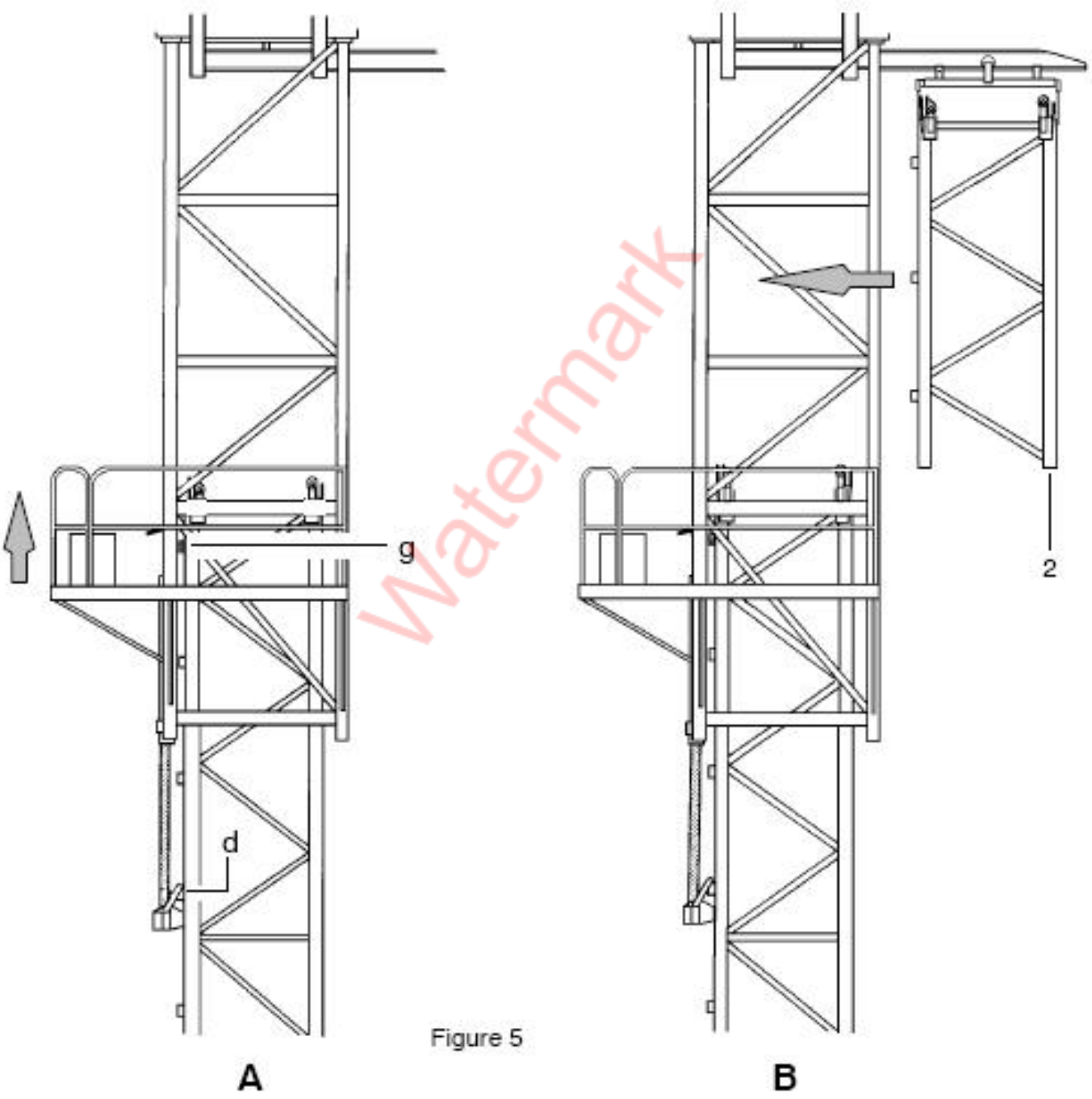


Figure 5

_ Having introduced the mast section into the telescopic cage, pull slightly the hydraulic unit lever in the “up” direction in order to free the pawls of the telescopic cage from the mast lugs.

_ Maintain the pawls far from the masts and operate the hydraulic unit lever in “down” direction.

_ Make sure that the mast section engages properly into the fishplates of the basic mast (Detail A − Figure 6); pin−connect by means of 4 x 2 shafts (7), 1 pin (8) and 1 safety pin (9) (Detail B − Figure 6).

_ Continue lowering and make sure that the telescoping mast engages properly into the fishplates of the mast fitted before (Detail A − Figure 6); pin−connect at (10) by means of 4 safety shafts.

_ Free the monorail trolley (1) from the mast section and bring it out onto the monorail.

_ Lower and place the balancing load on the ground in order to free the telescoping hook.

_ Using the telescoping hook, lower the monorail trolley in order to fit it, if required, onto a new mast section.

_ Repeat this telescoping procedure as often as necessary to reach the desired height.

_ At each first cylinder stroke, do not forget to remove the safety pins linking the telescopic connecting mast to the masts.

_ THE LAST MAST SECTION MUST BE FIXED: TO THE MAST ON THE ONE HAND TO THE TOWERHEAD FEET ON THE OTHER HAND.

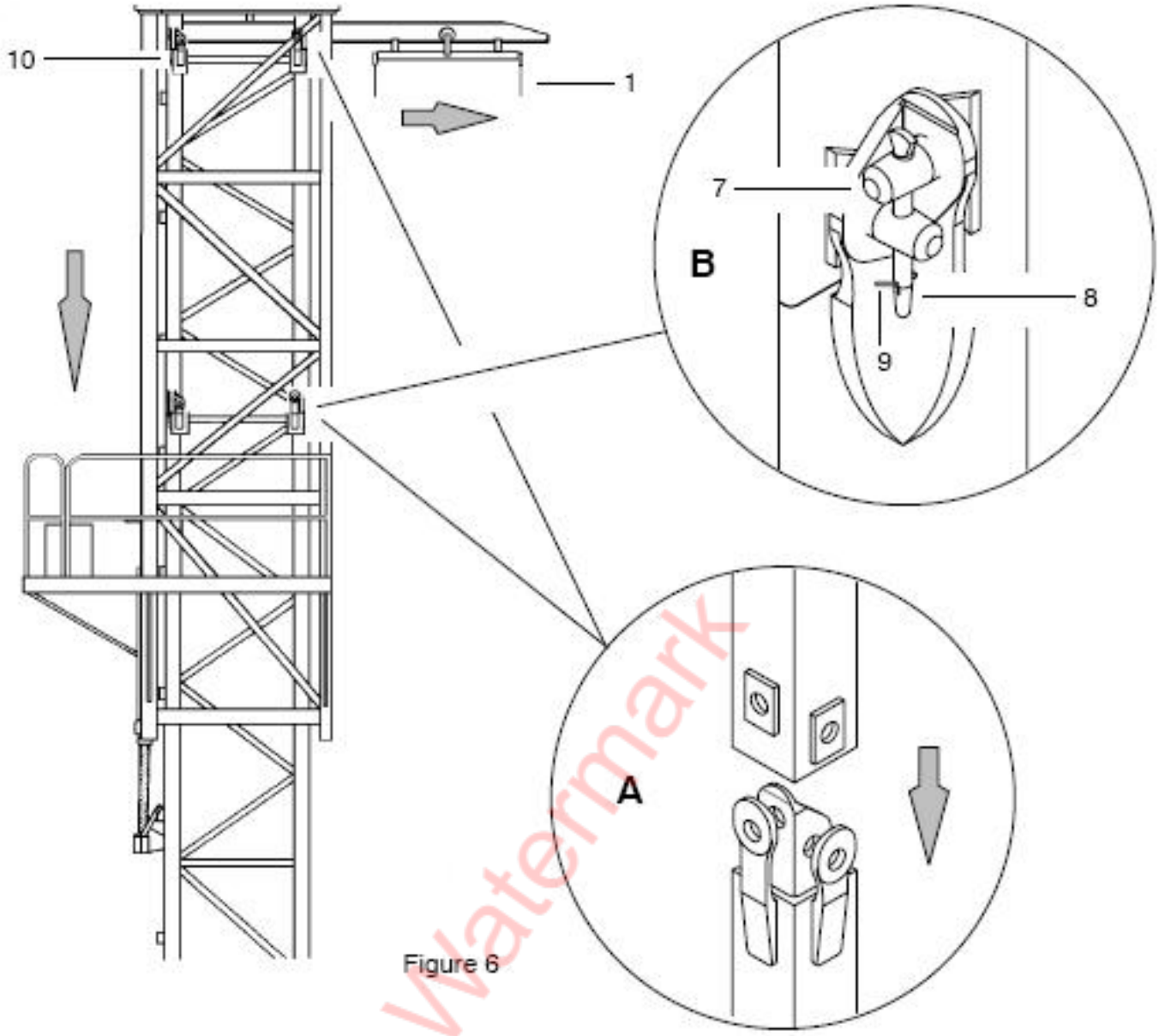


Figure 6

7.6.3、END OF TELESCOPING

7.6.3.1、 GENERAL INSTRUCTIONS

Having completed telescoping, the telescopic cage must be dismantled or

_ lowered as low as possible:

○ For cranes on chassis, the telescopic cage is lowered to the level of the first mast section above the chassis.

○ For cranes on cross−shaped base, the telescopic cage is lowered to the level of the base ballast.

○ For cranes on fixing angles, the telescopic cage is lowered to the mast section placed above the fixing angles by keeping space enough to reach the access ladders of the crane tower.

○ For very high cranes (anchored or guyed crane), the telescopic cage is always lowered to the level of the last anchorage.

_ Fold down the monorails alongside the masts.

7.6.4、 FOLDING DOWN THE MONORAIL

_ In order not to hinder the trolley manoeuvring at minimum radius, it is necessary to fold down the monorail alongside the crane tower.

_ Equip the pulley block with the telescoping hook if it had been removed, take off the shafts (a) and (b) of the monorail support plates (1) (Detail A － Figure 1).

_ Fold down the plates (1) in vertical position and pin shaft (a) (Detail B － Figure 1).

_ Hook up the monorail at the round bar (2).

_ Unpin shafts (c) and (d) (Detail C － Figure 1).

_ Operate ”Trolley out” until the monorail is hooked on to shaft (a).

_ Insert shaft (b) (Detail D － Figure 1).

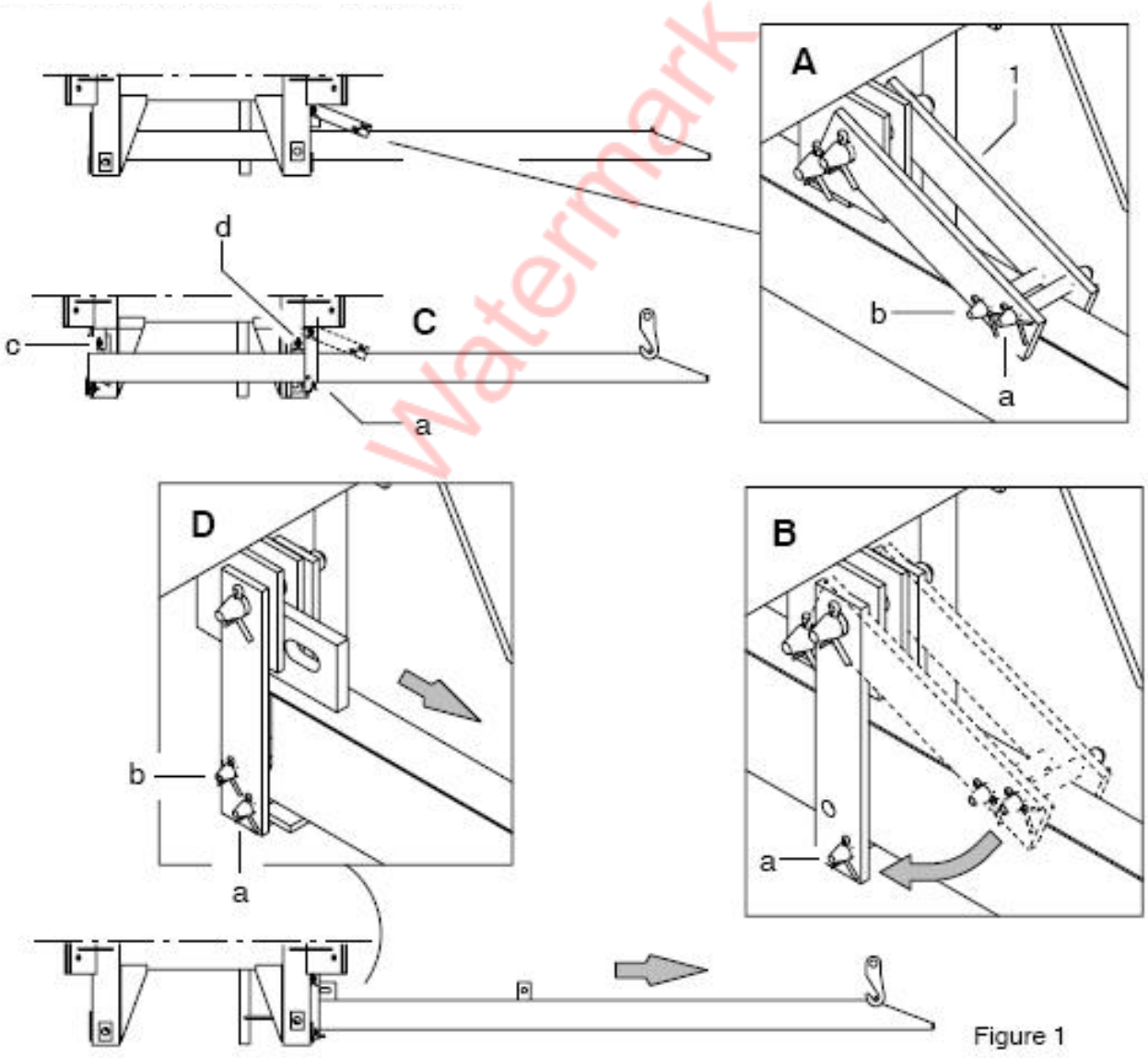


Figure 1

_ Lower the pulley block, the monorail folds down alongside the mast, free the hook (Detail A – Figure 2).

NOTE: When the monorail is to be completely dismantled for use on another machine, continue the operations from the moment of hooking up the monorail at the round bar (2) (Detail B – Figure 2).

_ Fasten the monorail on the crane side by means of a cord.

_ Remove shaft (a) (Detail C – Figure 2).

_ Slacken the cord and lower slowly (Detail D – Figure 2).

_ Using the crane, lower and place the monorail on the ground.

_ Take off the monorail support plates (1) and the shafts (a–b–c–d–e) which will be reused.

_ Remove the telescoping hook and equip the pulley block with the standard hook.

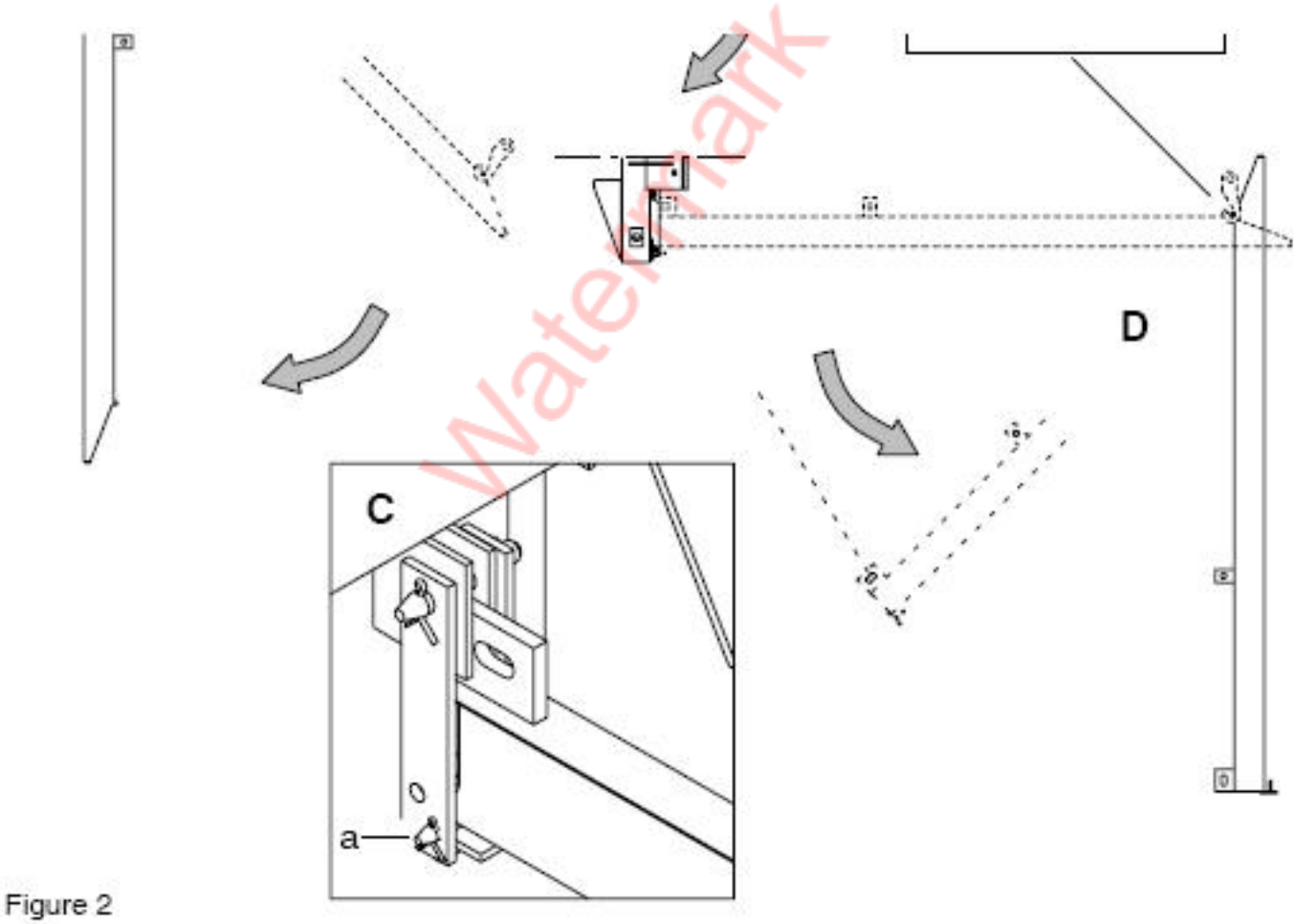


Figure 2

7.6.5、 LOWERING THE TELESCOPIC CAGE

_ Using the crane, lower the telescoping yoke and the cylinder to the ground.

_ Sling the telescopic cage at the cylinder support beam (Detail A – Figure 1) and hook it on the

load hook. Use a sling of sufficient lenght.

_ Tighten the sling but not too much.

_ Check that the mast sections are pinned together and linked to the telescoping mast.

_ Remove the shafts (1) connecting the telescopic cage to the telescoping mast.

_ Release the safety locks.

_ In order to carry out the lowering operation in safety, the personnel does not remain on the cage, but works from inside the mast using the normal accesses.

_ Slacken the rope, the cage must lower by its dead weight.

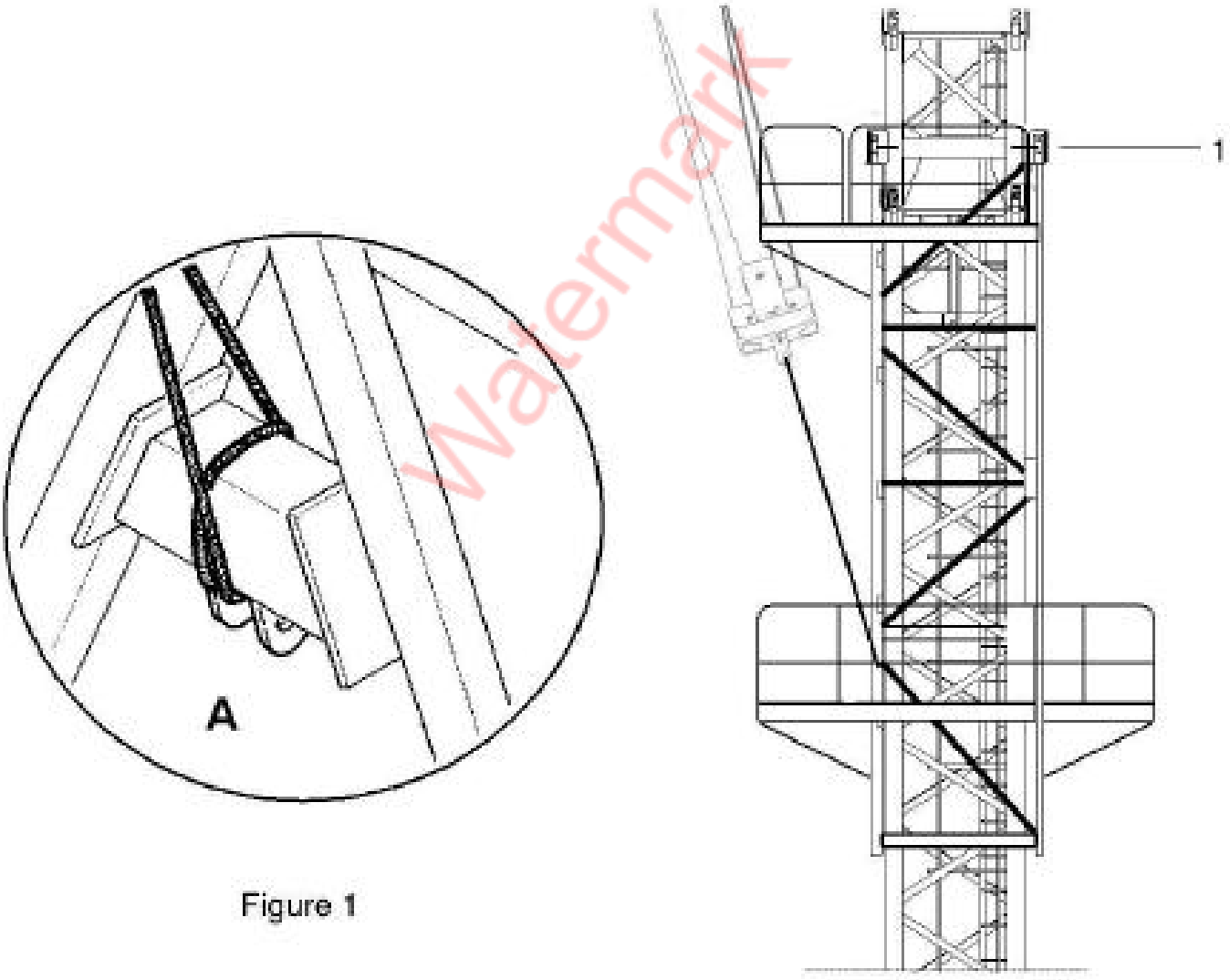


Figure 1

CAUTION:

_ During this operation, counterbalance as much as possible the lateral forces due to the sling tension so as to prevent the telescopic cage from getting blocked on the mast. The weight of the hydraulic unit contributes to this balance.

_ Release the safety locks at each passage over the lugs and continue lowering the telescopic cage until it reaches the lowest position on the basic mast (Figure 2).

_ Rest the telescopic cage onto a set of lugs or onto planks if the mast section is not equipped with lugs.

_ Remove the hydraulic unit and store it away with the cylinder and the telescoping yoke.

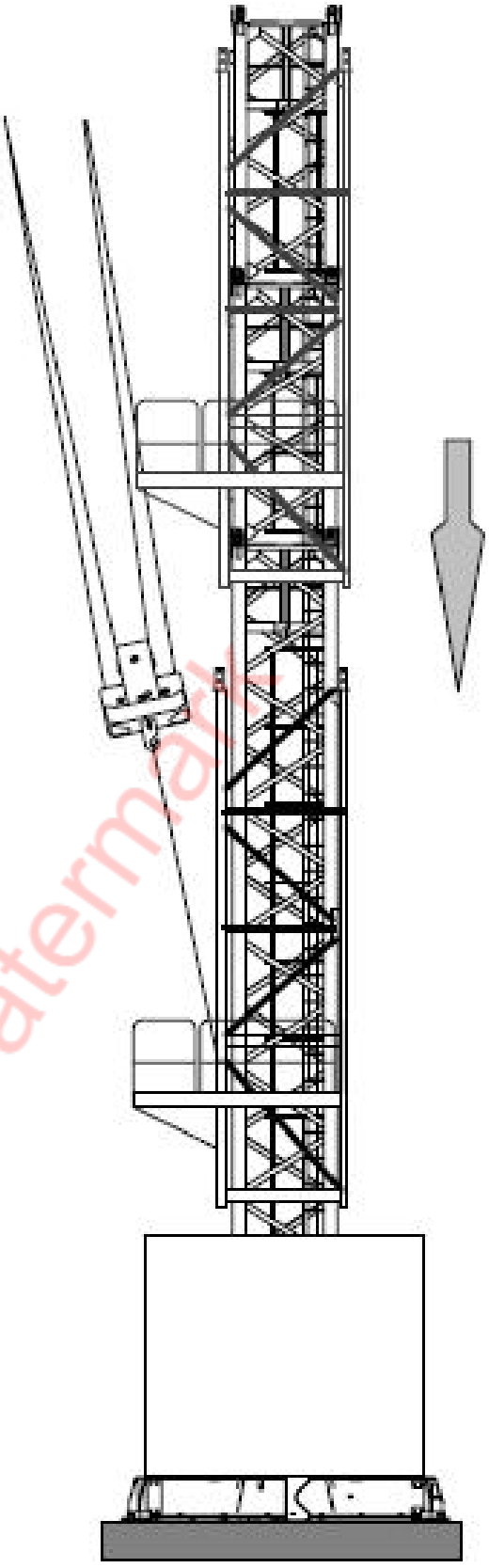


Figure 2

8、ANCHORAGE FRAME

ANCHORAGE FRAME 1.2m

8.1、DIMENSIONS AND WEIGHTS

8.1.1、 GENERAL NOTES

The dimensions and weights given in the tables on the following pages correspond to:

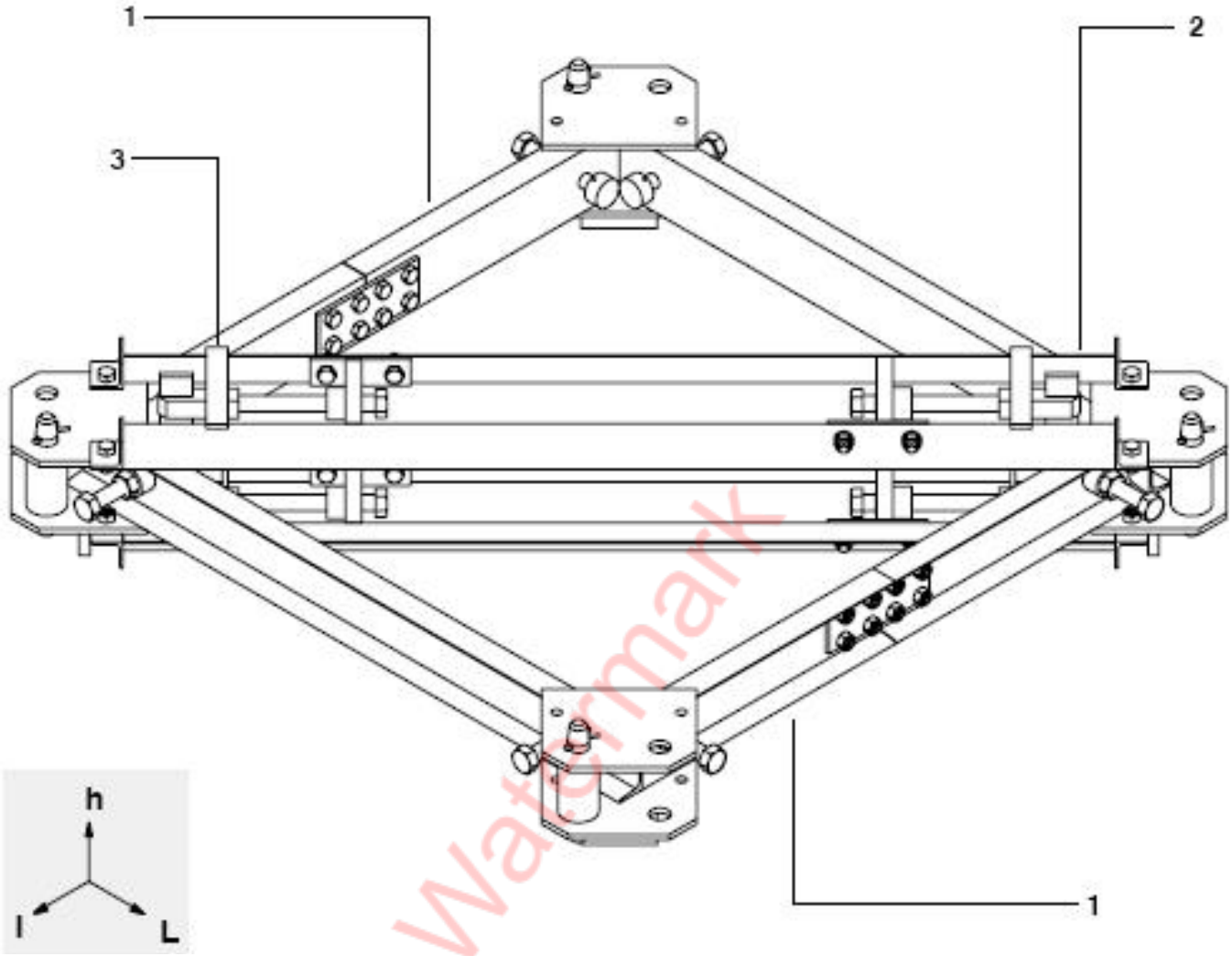
− The first line of each group indicates the dimensions and the weight of the component assembled with the parts as they are shown in the drawing.

− The following lines indicate the dimensions and weights of the main parts according to representation.

− The direction of dimensions L, l and h with respect to the mark concerns the main parts only.

IMPORTANT: The sum of the weights of the main parts is lower than the weight of the equipped component because the weight of pins, bolts, small accessories, etc. is not taken into account.

8.1.2、DIMENSIONS AND WEIGHT OF THE ANCHORAGE FRAME 1.2m



Mark	Qty	Designation	L	I	h	P(kg)
	1	Anchorage frame 1,2m	1715	1715	265	1415
1	2	Half anchorage frame 1,2m	1700	850	280	646.5
2	4	Diagonal	1950	275	60	13.5
3		Tightening stop+screw				6.5

8.2、ANCHORAGE

8.2.1、GENERAL NOTES

Beyond the free standing height of rail−mounted or static crane, the crane must be connected either to the ground by anchorage by guy ropes or to the building by rigid anchorages.

For each utilization of anchorages on cranes with chassis, please consult us.

The present brochure deals only with the rigid anchorages to the building. For anchorages by guy ropes please consult our After−Sales−Service. In addition, the device is described in another brochure.

The mast compositions, the position of the anchorages as well as the loads applied on the frames are indicated in the chapter.

8.2.2、GENERAL INSTRUCTIONS

− Positioning the crane:

- When it is a crane on rail−mounted chassis, move it in its static position, tighten the rail clamps and disconnect the travelling gear. Consult us in order to know the special conditions for this installation.

- In certain cases it is necessary to telescope an additional mast section so that the anchorage frame can be fitted.

VERY IMPORTANT:

Under these conditions the crane is no longer normally autonomous, and it is forbidden to work and to let the crane free out of service.

When telescoping check the perpendicularity of the crane in both planes in order to avoid any variation of distance between crane tower and building.

8.2.3、 DESCRIPTION AND FITTING THE FRAMES

8.2.3.1、DESCRIPTION

A complete frame is composed of:

− 2 unequipped half frames (1) and (2)

− These two half frames are linked together by means of 2x2 fishplates (3) which are fixed with 2 x 8 fishplate bolts H20 x 53 (4) (Detail A − Figure 1).

− 4 bracings (5) linked together by means of 4 screw bolts HM 20x40 (6), and then bolted onto the half frames using 4 x 2 fishplate bolts H20 x 48 (7) (Detail B − Figure 1).

Each half frame has 4 holes (8) in order to allow the fixing of the connecting beams with the building. Fit the shafts 40 x 175L (9) and the spacers (10) on the half frames and fix them with split pins.

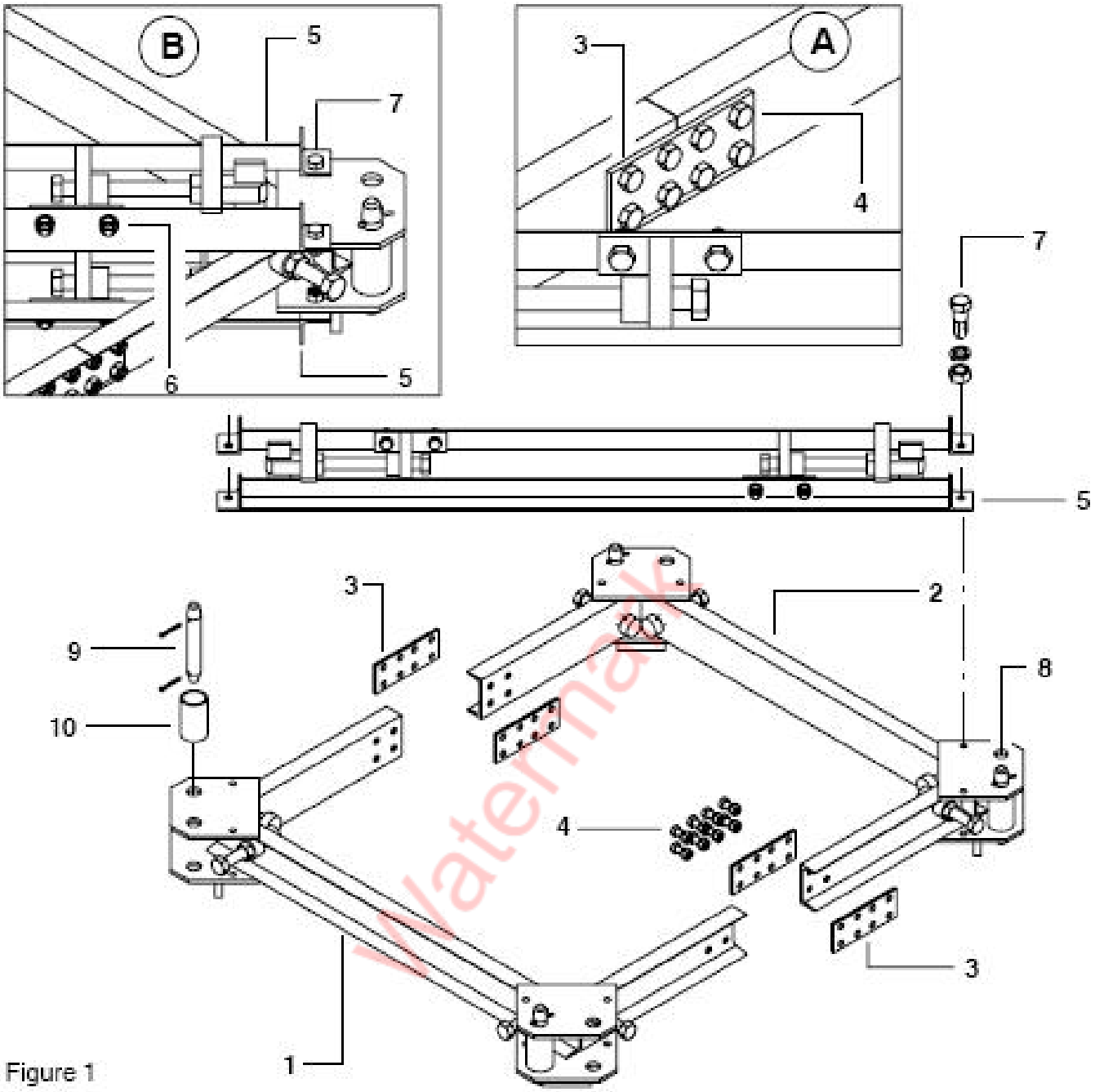
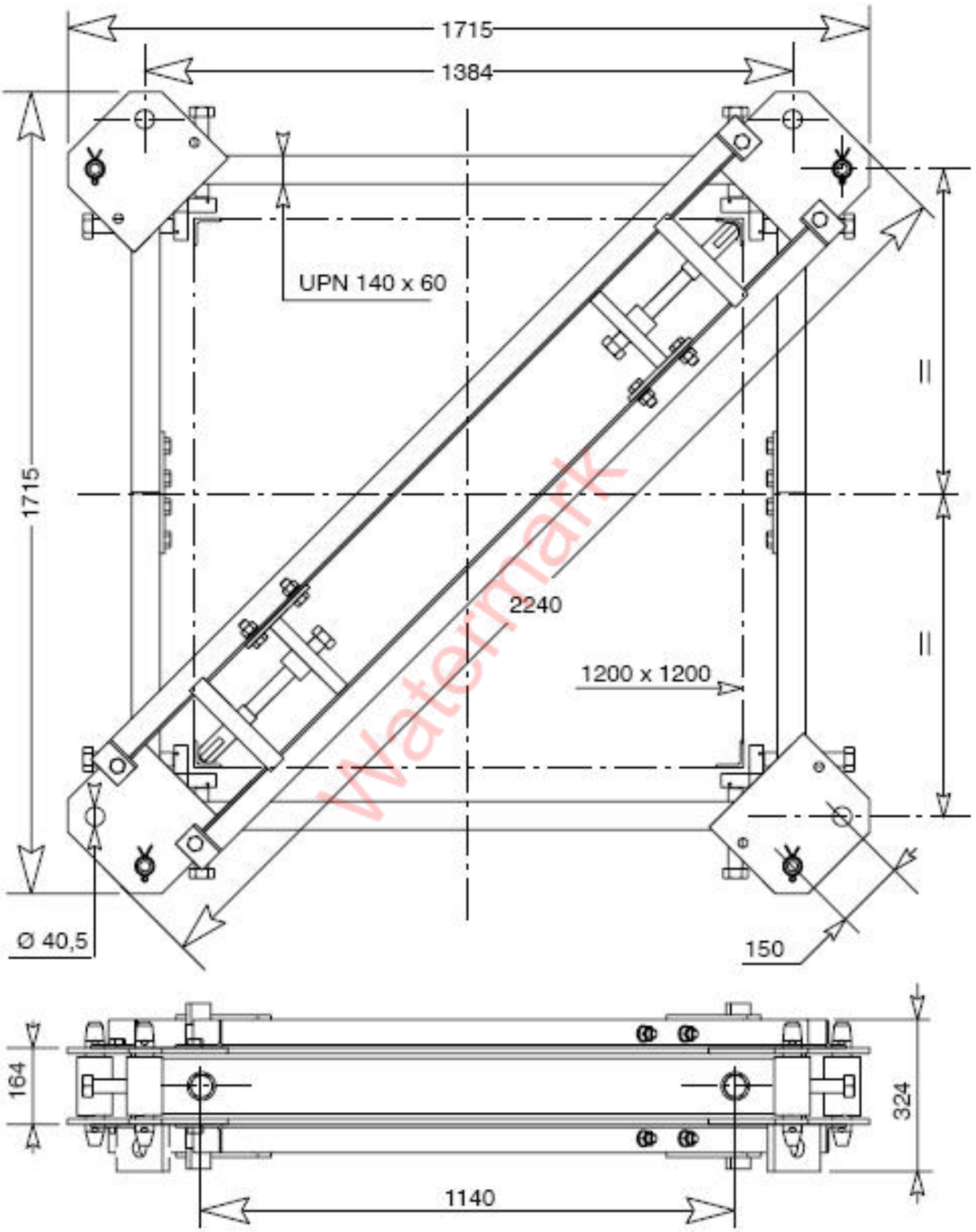


Figure 1

8.2.3.2、 MAIN DIMENSIONS OF THE ANCHORAGE FRAME 1.2m



8.2.3.3、 DIFFERENT TYPES OF RECOMMENDED RIGID ANCHORAGES

ANCHORAGE TO A BUILDING USING AN A−FRAME AND 2 ROPES.

− The A−frame can be constructed of 2 profiles channel or 2 symmetrical angle irons or, which is better, of 2 tubes or 2 reinforced symmetrical angle irons, avoiding the cross−bracing. The ropes arranged on either side of the A−frame should make angles between 30 and 60° with the wall. The ideal solution is to have 2 symmetrical angles 45° (Detail A − Figure 2).

ANCHORAGE TO A BUILDING USING AN A−FRAME AND A BEAM.

− The A−frame is the same as for the above solution. The beam which can be made of the same profiles as the A−frame, should be at the correct length in order to form an angle with the wall, which is neither too closed nor too open (Detail B − Figure 2).

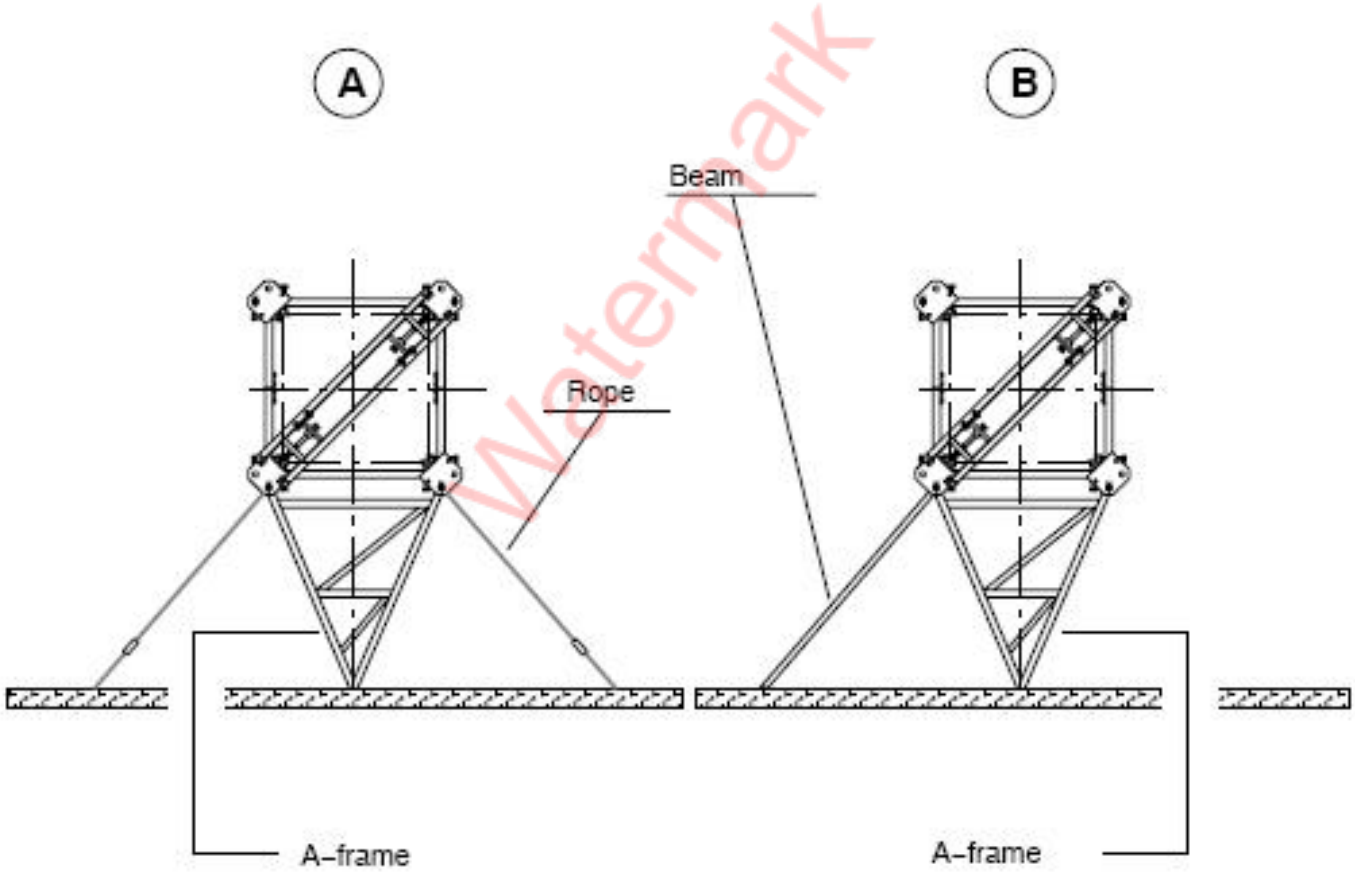


Figure 2

8.2.3.3.1、ANCHORAGE TO A BUILDING USING 3 BEAMS.

− The requirements for fabrication of the parts and their arrangements are similar to those mentioned

on the preceding page (Detail C − Figure 3).

ANCHORAGE TO A BUILDING USING 2 BEAMS AND 2 ROPES.

− Beams: For details of construction, see above case.

− Ropes: Fitted inside the beams, they complete a device which, if possible, should be arranged symmetrically with respect to the axis of the crane (Detail D − Figure 3).

Note: When fitting the various anchorage devices, the beams and the ropes are connected to the crane by means of a frame which surrounds the mast. Tightening the rope is ensured by various models of tensioners.

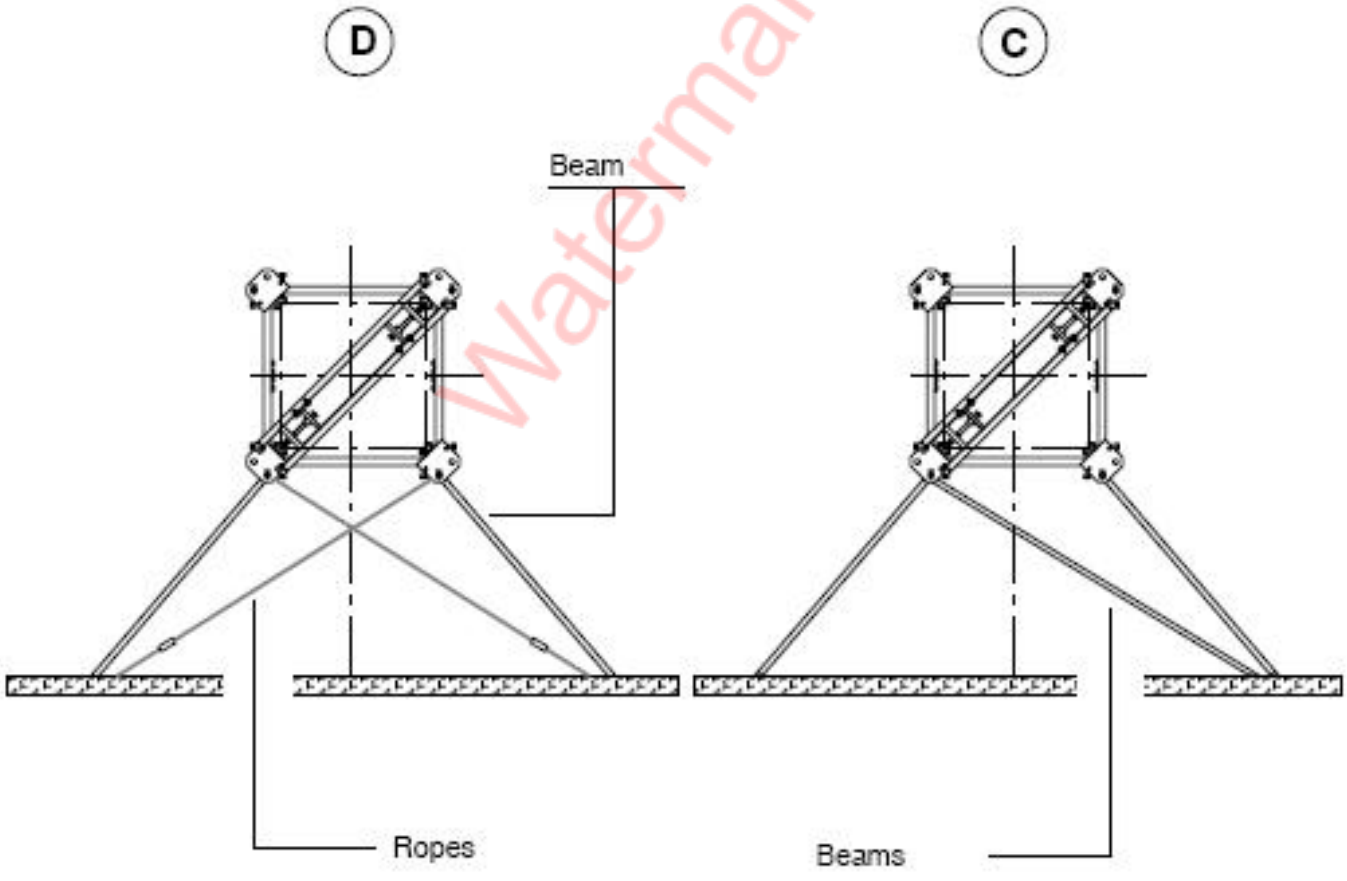


Figure 3

8.2.3.4、FITTING THE FRAMES ONTO THE MAST SECTIONS

Fitting the frames onto the mast section is carried out as close as possible to the fishplates. In this position they allow taking up the loads given in later.

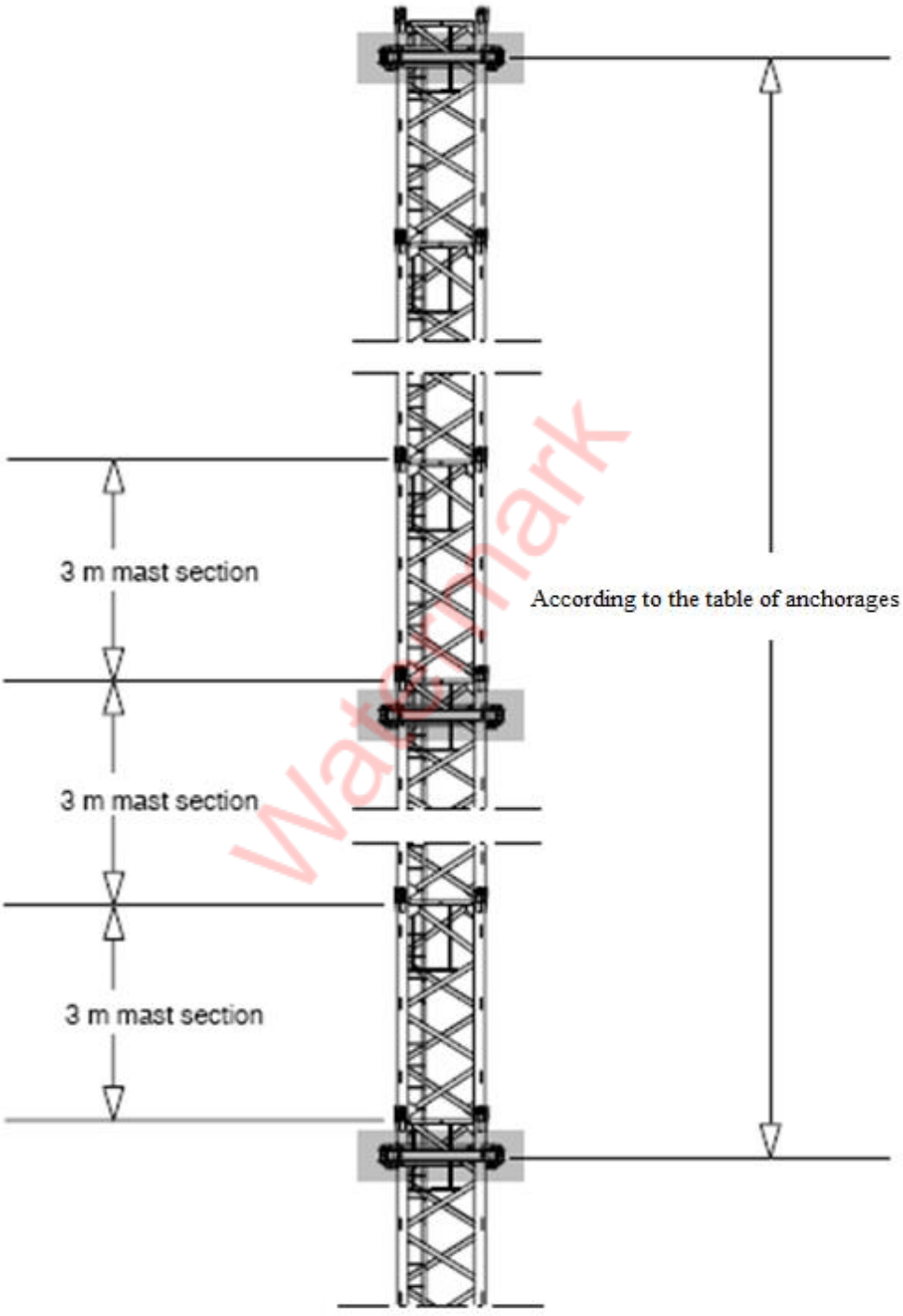


Figure 4

8.2.3.5、 FITTING A FRAME

− Fix the half frame (1) by means of the slings (2) (Detail A − Figure 1).

− Raise the half frame and position it on the masts at right angle to its anchorage point; see position in chapter. Maintain it in this position by means of the slings.

− Sling the second half frame (3), lift it, position it at the level of the first one connect them together by means of the 2x8 fishplates (4) and lock it by means of the 2x8 fishplate bolts H20x53 (5) (Detail B − Figure 1).

− As soon as the half frames are connected together, lock them onto the mast section by means of the blocking round bars (6) by operating the screws (7). The blocking round bars are locked on the screws (7) by means of the split pins (8) (Detail C − Figure 1). Maintain the half frame in the position by means of the slings.

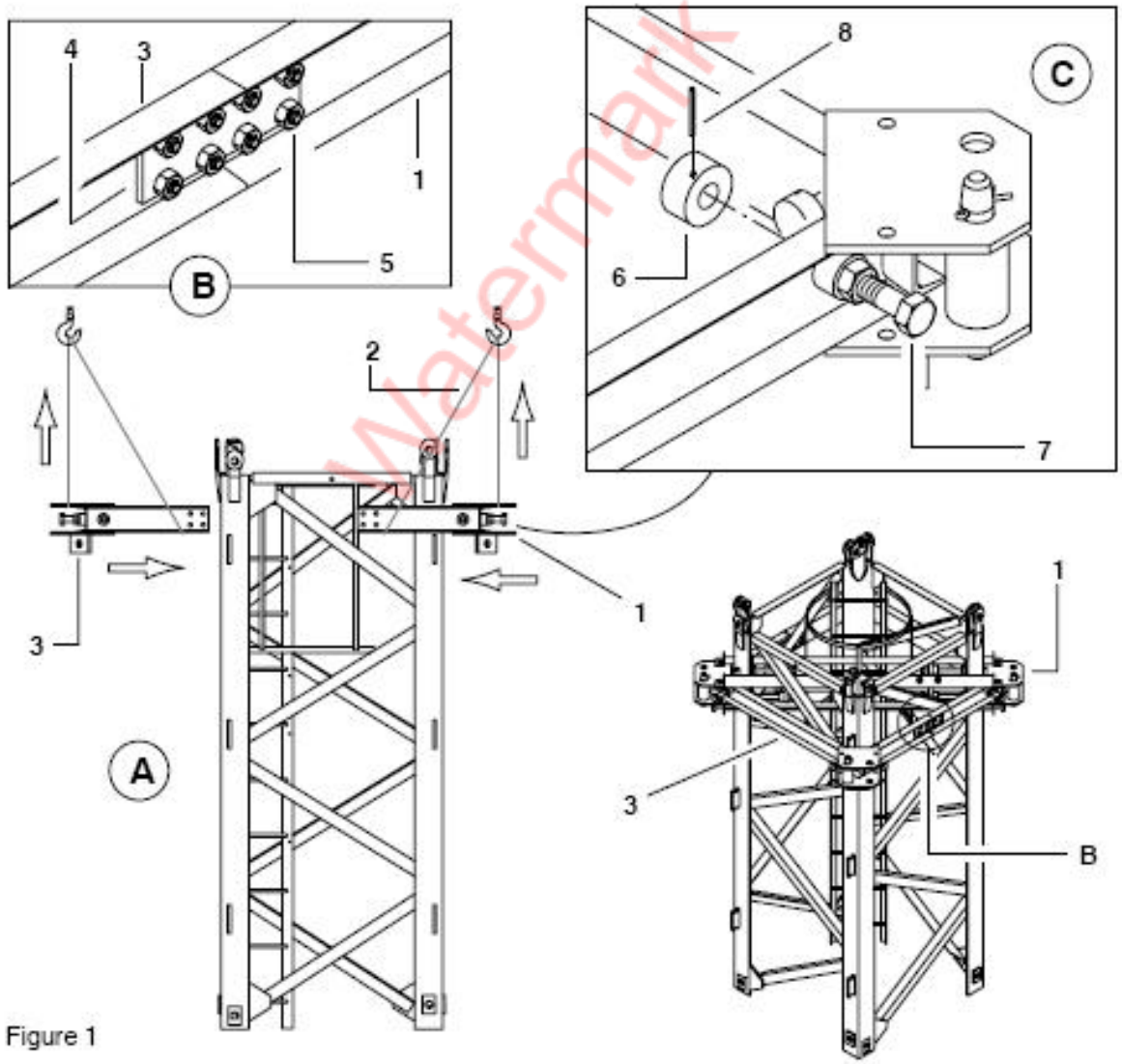


Figure 1

8.2.3.6、 FITTING THE DIAGONAL BRACINGS

− Introduce the diagonal bracing (9) on the half frames and pin−connect it by means of the 2 fishplate bolts H 20x48 (10) (Detail A − Figure 2).

− Proceed in the same way for the diagonal bracing (11) (Detail A − Figure 2).

− Link the 2 diagonal bracings (9) and (11) together and pin−connect them using 2x2 screw bolts HM 20x40 (12) (Detail B − C − Figure 2).

− Fit into the bracings the tightening stops (13) as well as the screws (14) and the nuts (15) (Detail B − Figure 2).

− For fitting the diagonal bracings (16) located under the frame, observe the preceding operations (Detail A − C − Figure 2).

− By operating the screws (14), lock the tightening stops (13) in the mast uprights (Detail B − Figure 2).

− Readjust the locking of the frame onto the mast section; for this, tighten the blocking round bars (17) by operating the screws (18) (Detail A − D − Figure 2).

− Fix the frame to the anchorage device provided by the customer by means of the 4 shafts 40x175L (19), the spacers (20) and the split pins (21) (Detail C − Figure 2).

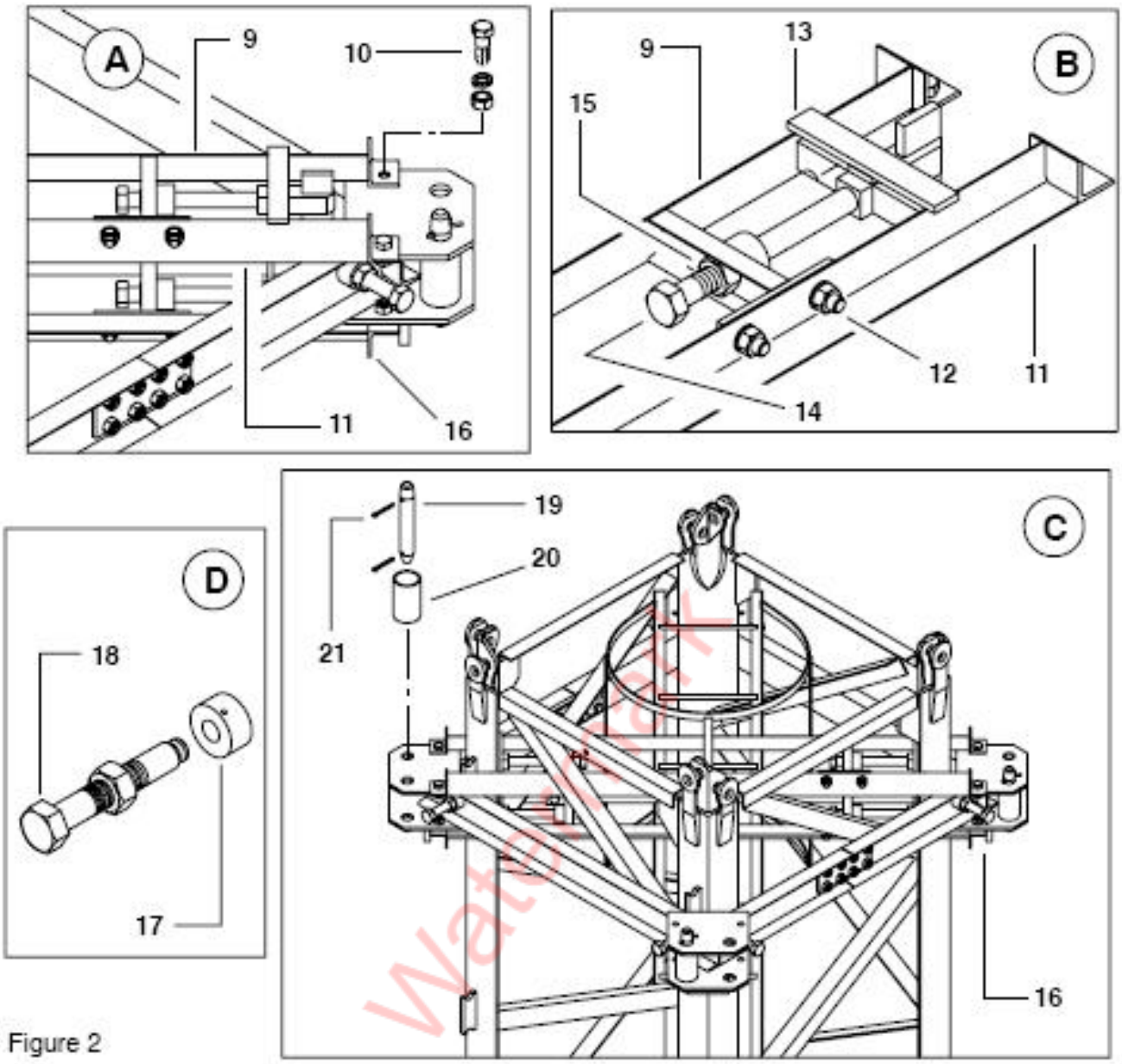
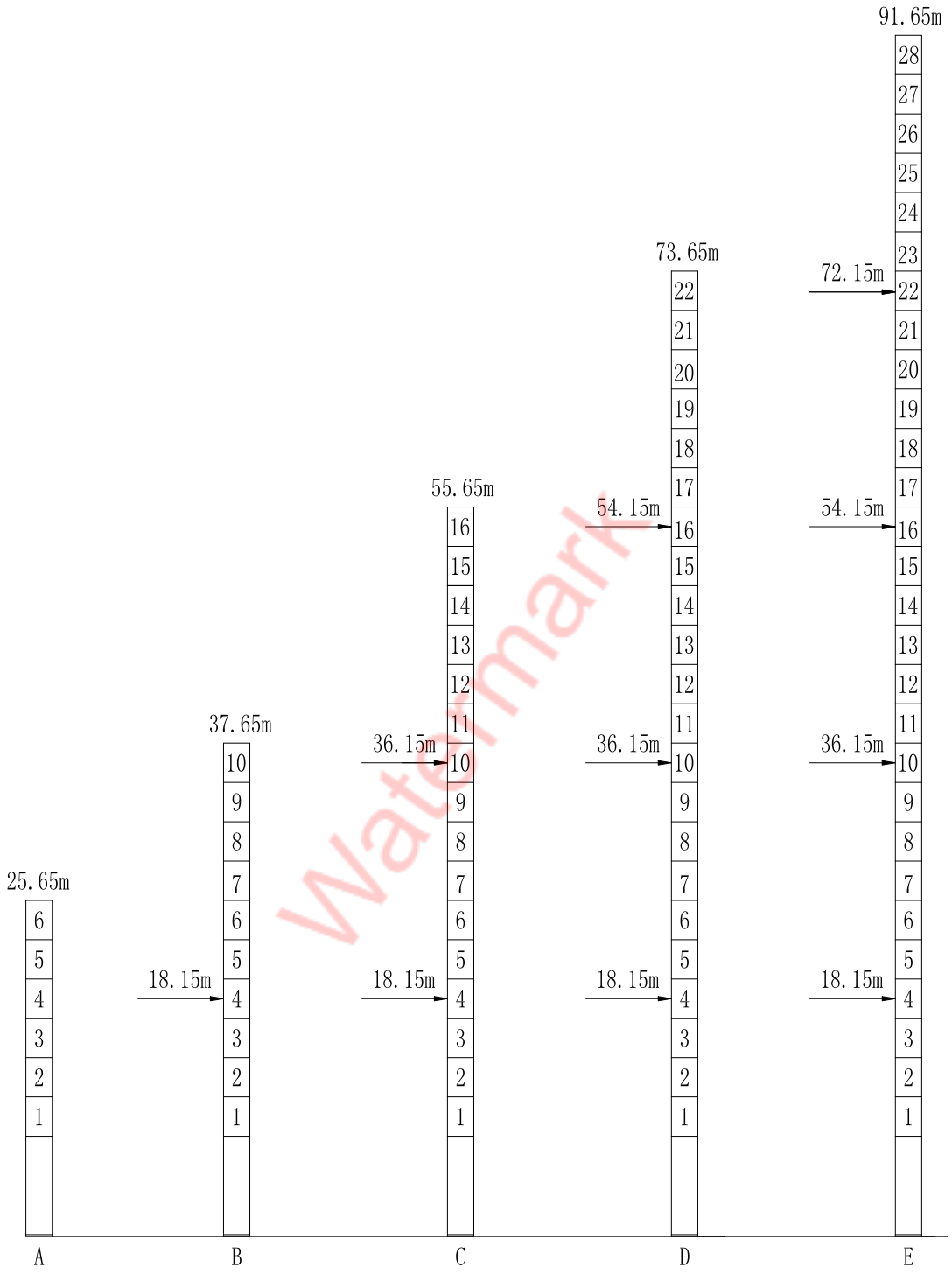


Figure 2

JTL8C5

1.2m Mast composition



	In service	Wall tie reaction(KN)				
	Mast height(m)	Wall tie height(m)	1st	2nd	3rd	4th
1st	37.65	18.15	-105.4	-	-	-
2nd	55.65	36.15	96.4	-93.3	-	-
3rd	73.65	54.15	-31.9	90.9	-92.4	-
4th	91.65	72.15	2.6	-30.3	90.5	-92.4
		Max reaction(KN)	-105.4	-93.3	-92.4	-92.4

	Out of service	Wall tie reaction(KN)				
	Mast height(m)	Wall tie height(m)	1st	2nd	3rd	4th
1st	37.65	18.15	-200.4	-	-	-
2nd	55.65	36.15	125.8	-186.2	-	-
3rd	73.65	54.15	-55.8	114.6	-184.7	-
4th	91.65	72.15	-5.8	-60.8	128.6	-201.6
		Max reaction(KN)	-200.4	-186.2	-184.7	-201.6

9、CLIMBING INSIDE THE BUILDING

1.2m

9.1、GENERAL NOTES

The dimensions and weights given in the tables on the following pages correspond to:

_ The first line of each group indicates the dimensions and the weight of the component assembled with the parts as they are shown in the drawing.

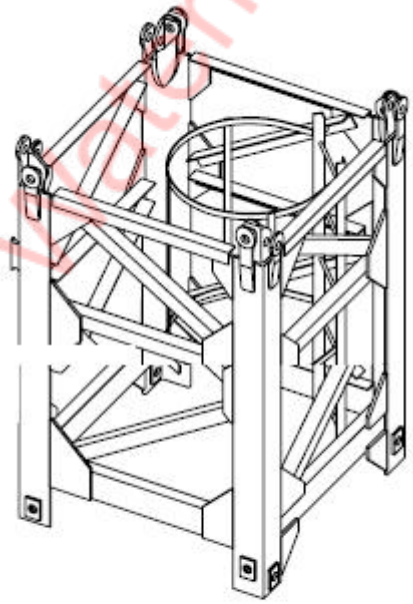
_ The following lines indicate the dimensions and weights of the main parts according to representation.

_ The direction of dimensions L, l and h with respect to the mark concerns the main parts only.

IMPORTANT: The sum of the weights of the main parts is lower than the weight of the equipped component

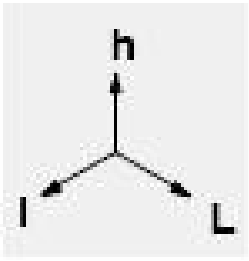
because the weight of pins, bolts, small accessories, etc. is not taken into account.

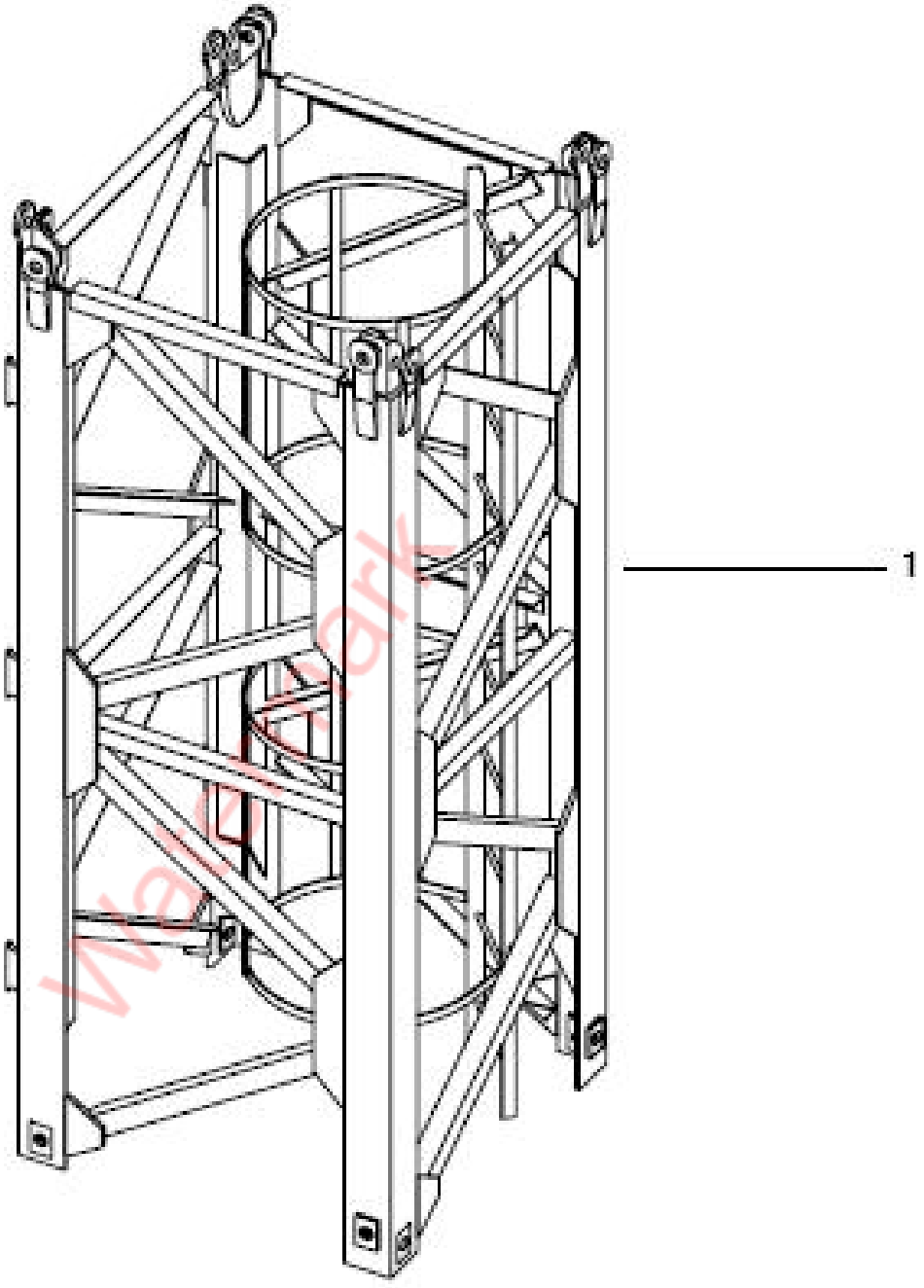
9.1.1、CLIMBING TOWER SECTION



Designation	L	I	h	P(kg)
Climbing tower section	1200	1200	1500	550

9.1.2、 TOWER SECTION S24H





Designation	L	I	h	P(kg)
Tower section S24H	1200	1200	3000	1000

-Positioning the crane on rail-mounted chassis, move it in its station, tighten the clamps and disconnect the travelling gear. Consult us in order to know the special conditions for this installation.

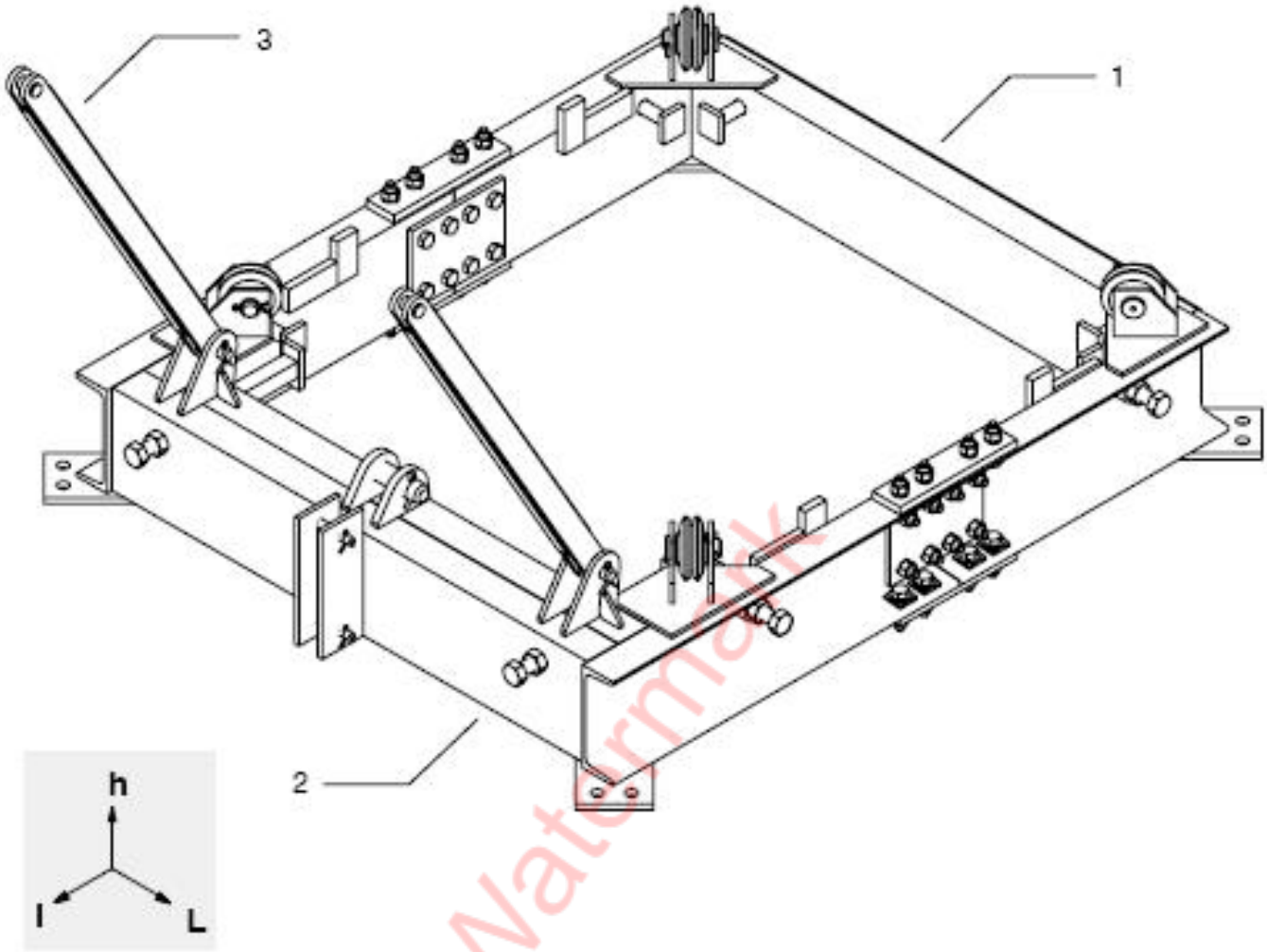
-In certain cases it is necessary to telescope an additional mast so that the anchorage frame can be fitted.

Very important：

Under these conditions the crane is no longer normally autonomous, and it is forbidden to work and to let the crane free out of service.

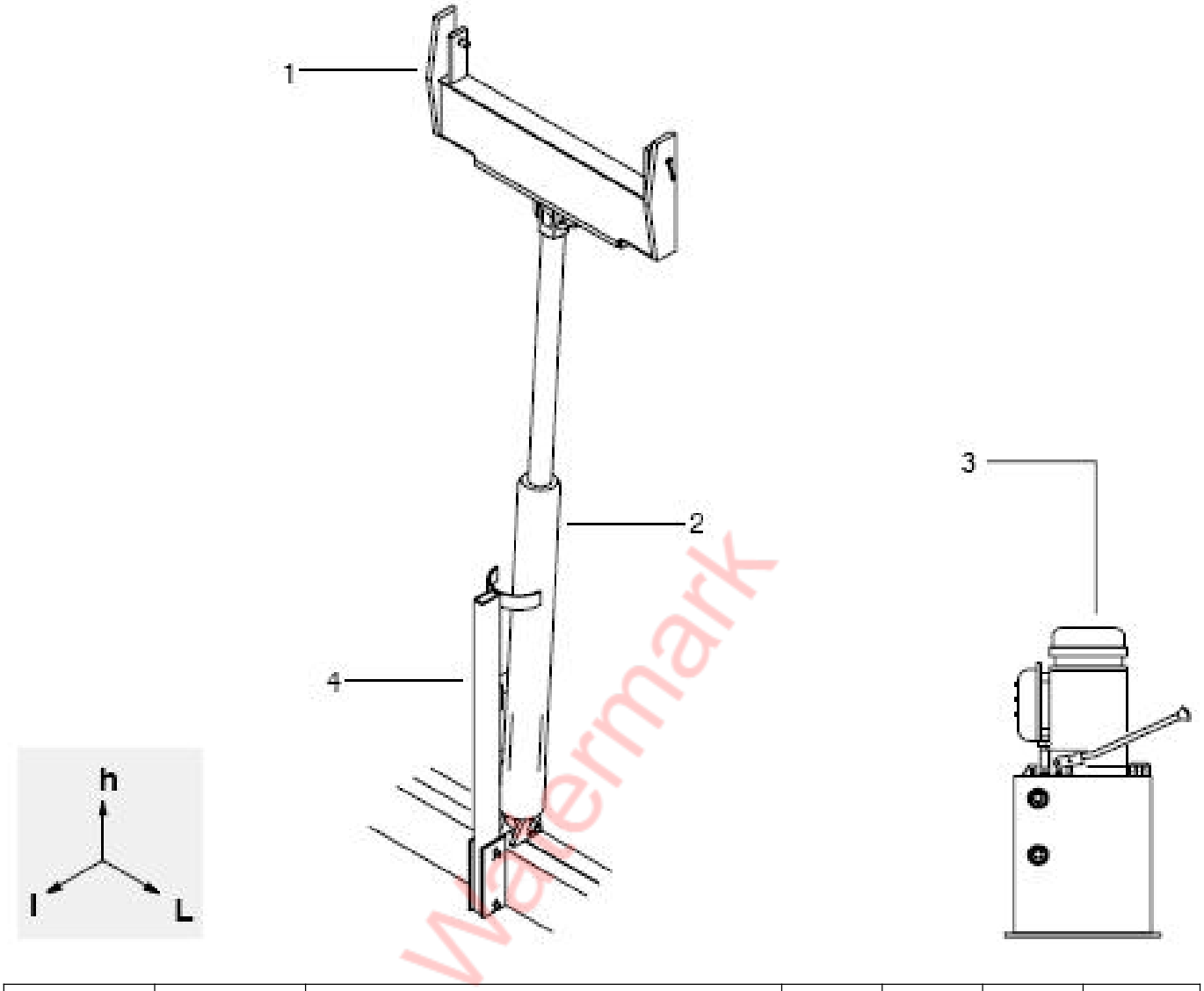
When telescoping check the perpendicularity crane in both planes in order to avoid any variation of distance between crane tower and building.

9.1.3、 EQUIPPED CLIMBING COLLAR



Mark	Qty	DESIGNATION	L	I	h	P(kg)
	1	Equipped climbing collar	1770	2000	430	473
1	1	Front half climbing collar	1770	885	350	165
2	1	Rear half climbing collar	1770	1115	425	235
3	2	Link	1130	65	72	

9.1.4、 CLIMBING EQUIPMENT



Mark	Qty	DESIGNATION	L	I	h	P(kg)
1	1	Equipped telescoping yoke	1240	140	685	131
2	1	Hydraulic cylinder 125X90 C1190 (without oil)	1740	205	205	202
3	1	Hydraulic unit (without oil)				190
4	1	Cylinder stop	240	220	1440	21.5

9.2、 INSTALLATION

9.2.1、OPENING IN THE FLOORS

Provide for a sufficient opening in each floor in order not to hinder the passage of the crane.

Therefore, it is essential to observe the dimensions indicated in (Detail A − Figure 1) .

Climbing inside the building can be carried out in two different ways:

_ either onto two support beams (1) provided for this purpose and prepared by the customer according to the reactions given in the DATA SHEET (Detail B − Figure 1).

_ or directly onto the floor. In this case, these floors must take up the vertical and horizontal reactions given in the DATA SHEET. The climbing collars will be blocked onto the floors by means of threaded rods or equivalent accessories (Detail C − Figure 1).

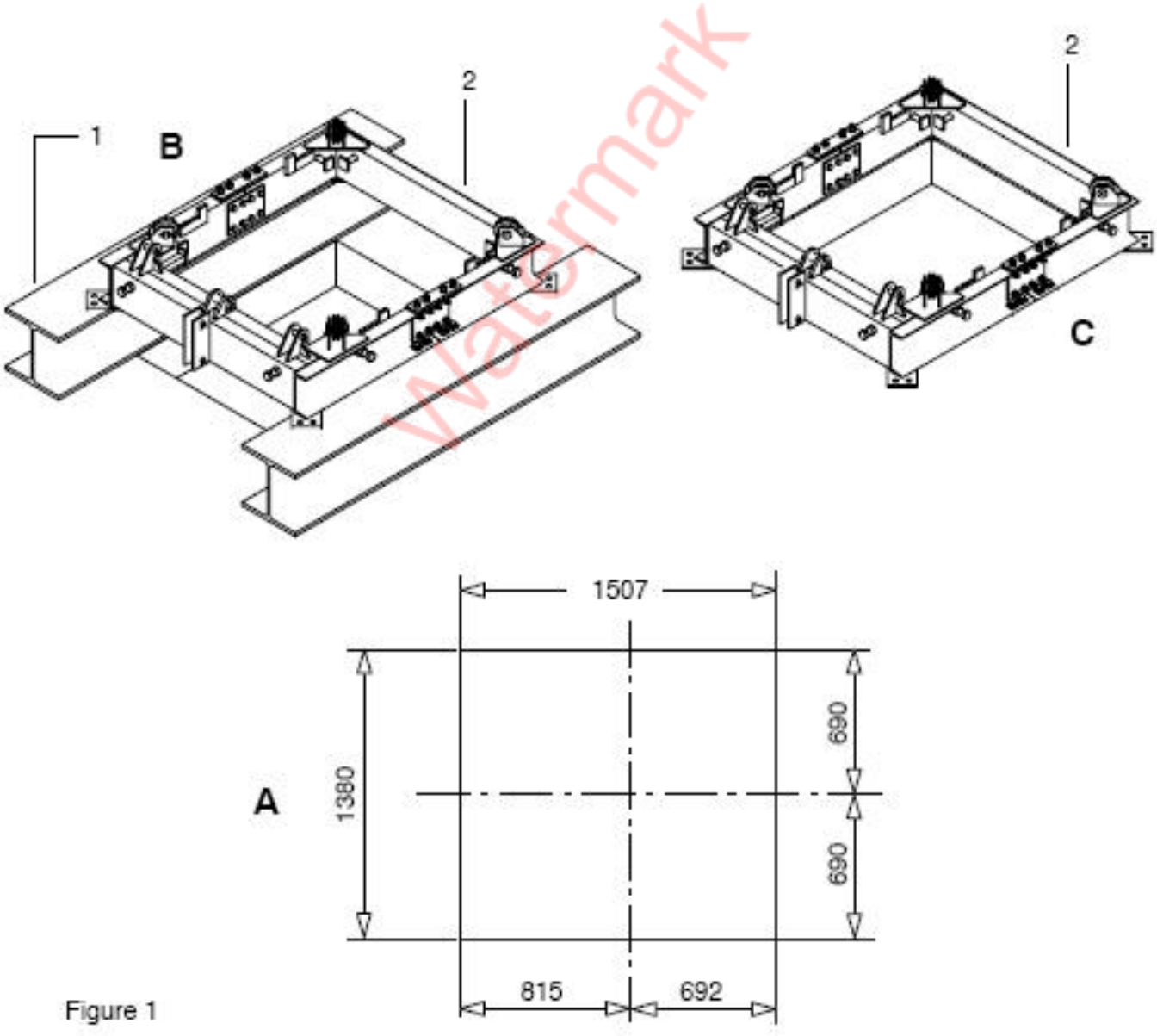


Figure 1

9.2.2、 FIXING THE CLIMBING COLLARS

Carry out the drilling of the floor or the support beams.

For this, align to the drilling dimensions of the climbing collar.

Drilling of the floors or the support beams: 4 x 2 holes Ø 28 according to (Figure 2).

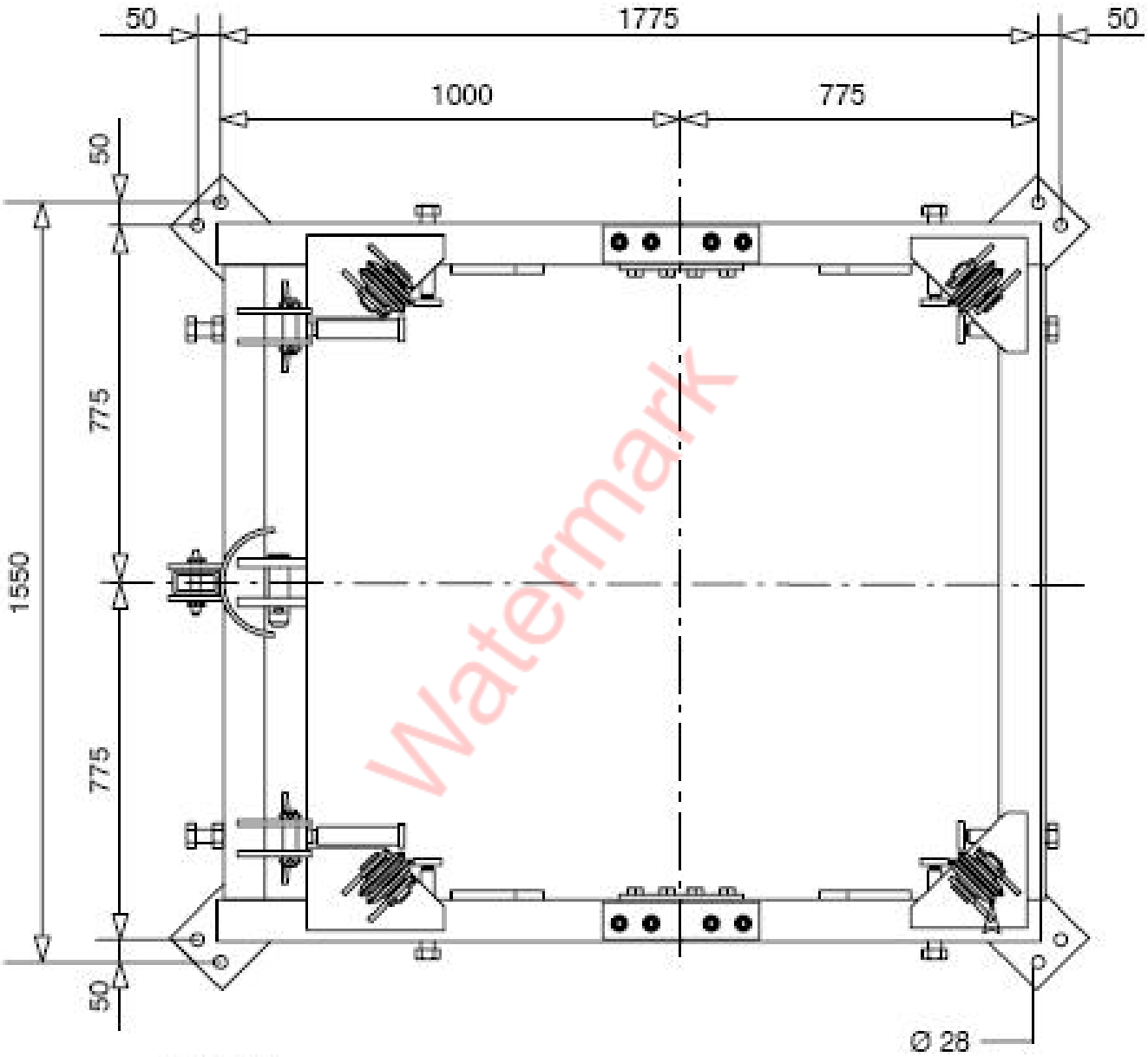


Figure 2

9.2.3、 COMPOSITION OF THE CRANE TOWER

The composition of the crane tower and the minimum distance between the climbing collars are given in the DATA SHEET.

COMPULSORY:

The reinforced mast section (1) must always be located just opposite to the second climbing collar (2).

This must be COMPULSORILY taken into account for placing it during the erection of the crane tower (Detail A − Figure 1).

For the actual minimum dimensions, see DATA SHEET.

In order to avoid any incident during telescoping and operating the crane, install a floor (3) onto the lower collar of the basic mast (Detail A − Figure 1).

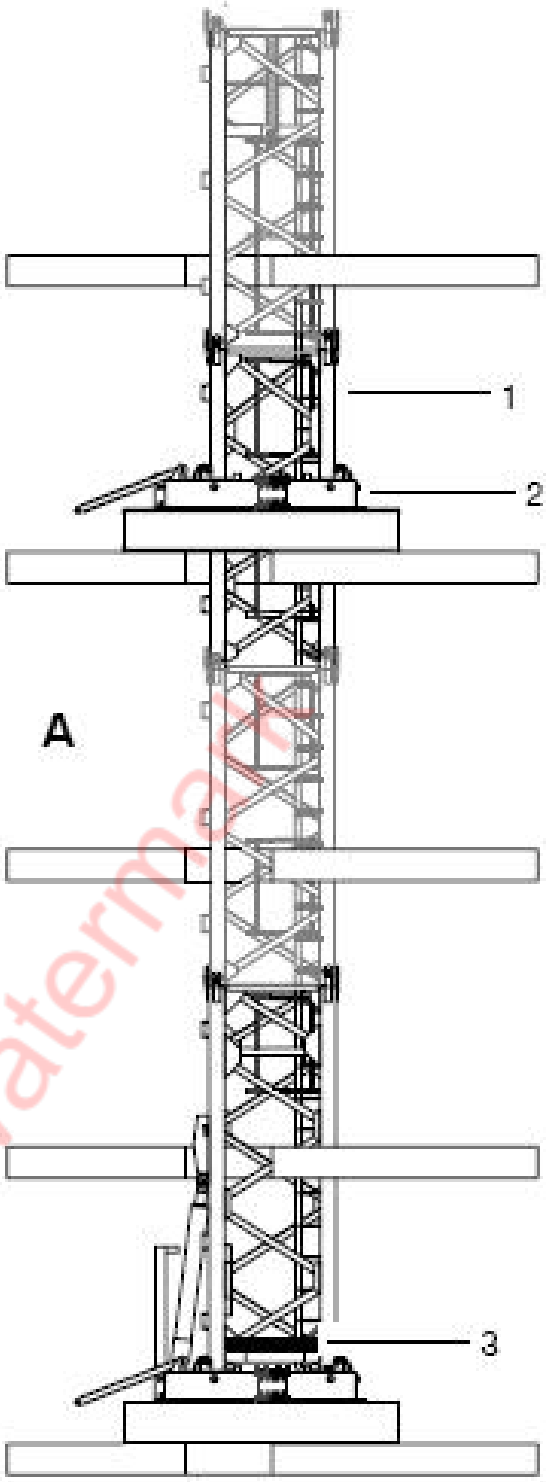


Figure 1

9.2.4、ASSEMBLING THE CLIMBING COLLARS

_ Three climbing collars are required, two for working and one in waiting position.

_ Each collar is composed of two parts which are fitted around the mast and assembled by fishplatings (Detail A − Figure 1):

_ a front half collar (1) (Detail B − Figure 1)

_ a rear half collar (2) (Detail B − Figure 1).

_ The internal dimensions of the collars correspond to the minimum opening to be carried out in each floor. Therefore, observe the dimensions given in paragraph and the positions with respect to the crane axis.

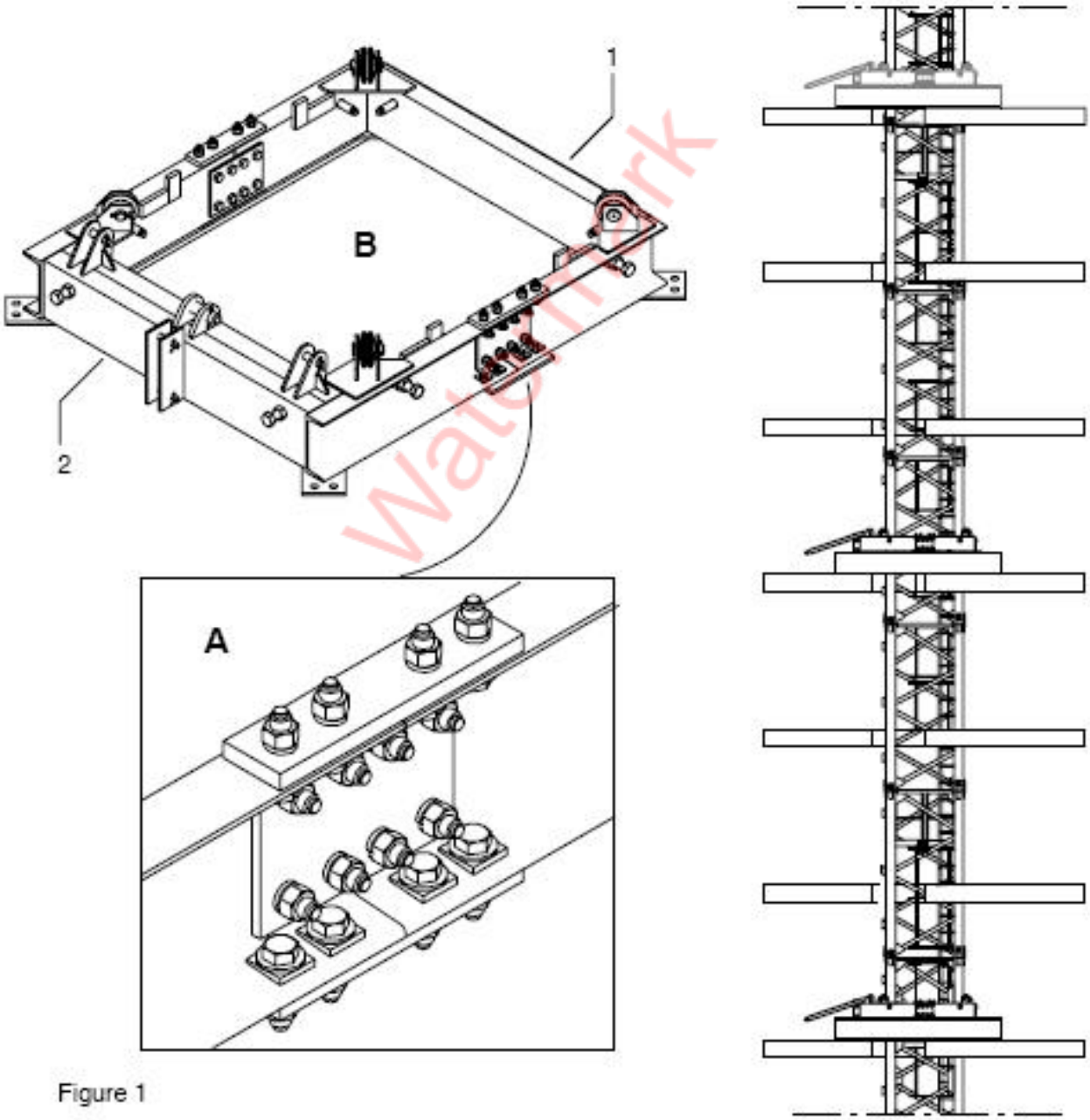


Figure 1

9.2.5、 FITTING THE CLIMBING COLLARS

There are two assembling possibilities:

_ Assembling recommended:

○ The beams (1) are placed under the fishplatings (2) (Detail A − Figure 2). The lower fishplates (3) are suppressed (Detail B − Figure 2), a wedging (4) under the fishplatings compensates the thickness of the collar gussets (Detail C − Figure 2).

_ Possible assembling:

○ The beams (1) are placed in the opposite direction to the fishplatings (2) (Detail D − Figure 2). The fishplatings are complete with the lower fishplates (3) (Detail B − Figure 2).

_ In no circumstances the beams (1) and the wedges (4) must exceed inside the collars.

_ Provide the drilling of the beams for fixing the collars.

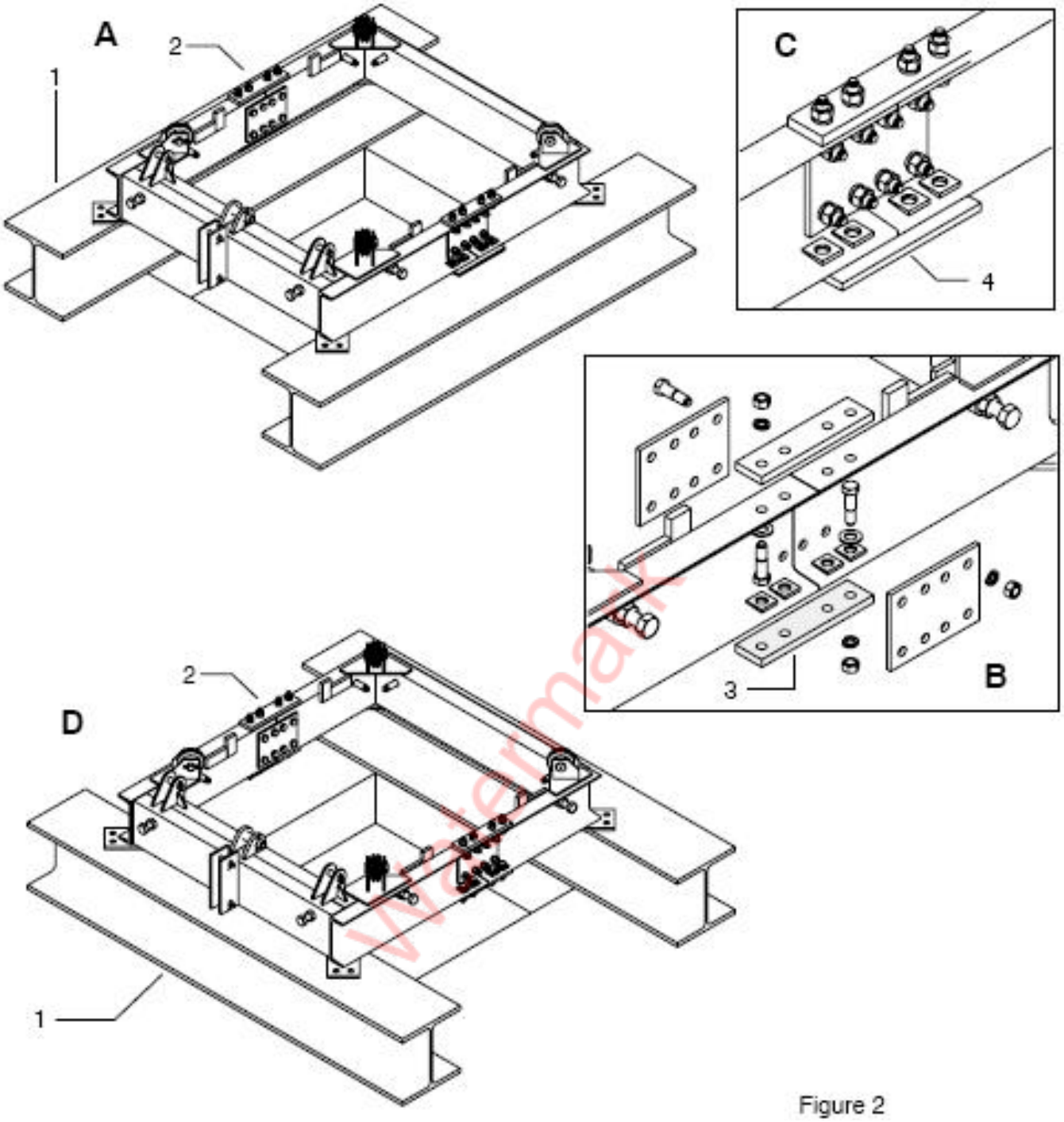


Figure 2

9.2.6、 MOUNTING THE CLIMBING COLLARS

_ The position of the climbing collars is determined depending on the chosen intermediate slab (during working, the second collar must be compulsorily at right angle of the reinforced mast section).

_ Two climbing collars are necessary for the first telescoping sequence, the third will be kept in waiting position.

_ Check before fitting the collars, that the slabs are dry enough.

_ Fitting consists in positioning the half collars around the crane tower and fishplating them together (according to the fitting paragraph 2. 5.).

_ The half collar equipped with the cylinder fixing gussets must be compulsorily placed on the telescoping lug side.

_ Fit rigidly the collars to the building, either by bolting directly to the slab or by means of the support beams.

_ Fit onto each collar the links (1) by means of the shafts (2) and fix with split pins (Detail A – Figure 3).

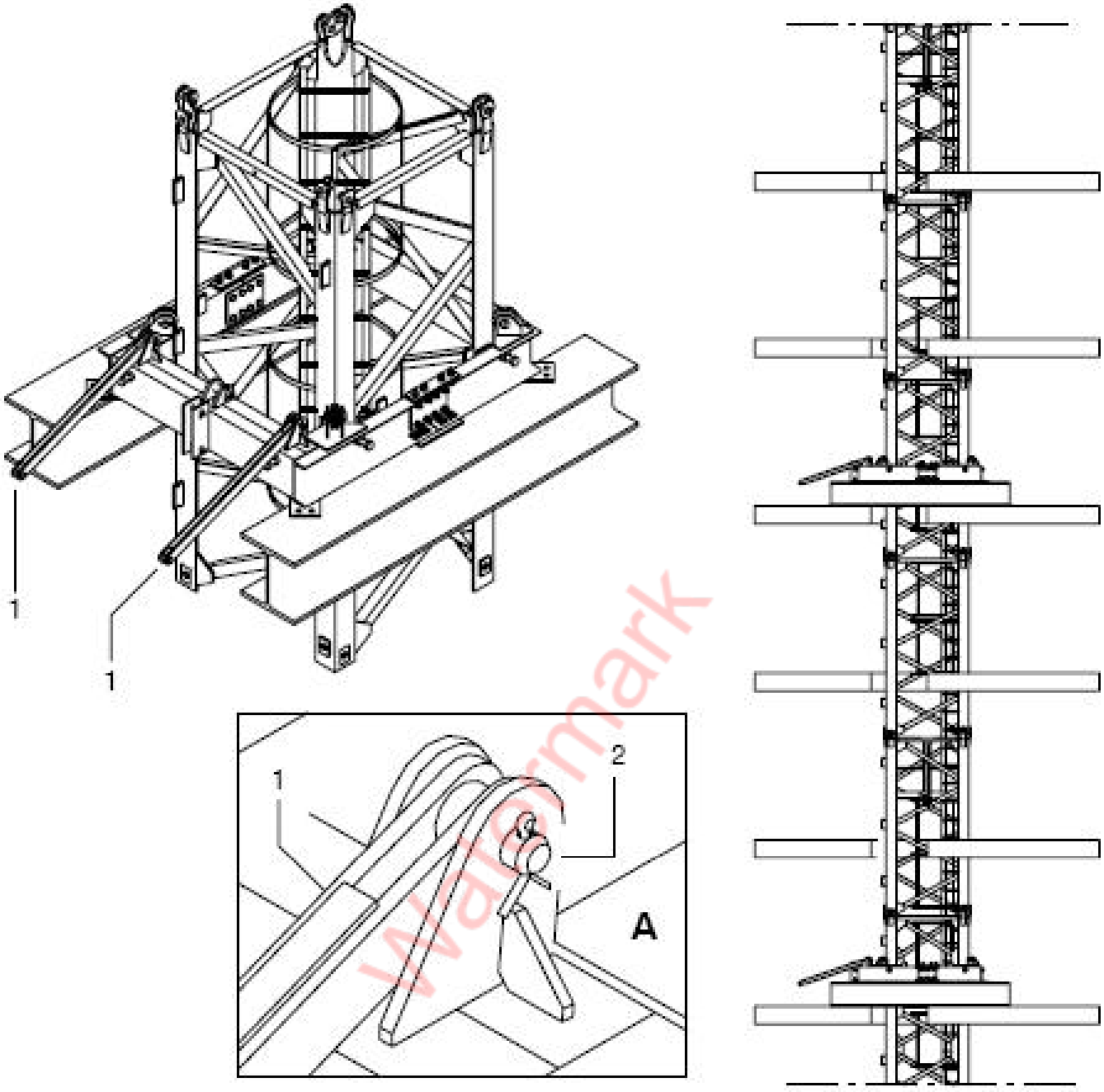


Figure 3

9.2.7、 COLLAR EQUIPMENT FOR CLIMBING

_ Fit the cylinder stop (1) onto the collar by means of the shafts (2); fix with split pins (Detail A – Figure 4).

_ Fit the telescoping cylinder (3) by means of the shaft (4), fix with split pin (Detail B − Figure 4).

For choosing the cylinder to be used, see ”SPARE PARTS CATALOGUE”.

For its putting into service, adjustments and utilization, see ”OPERATING

INSTRUCTIONS”.

_ Fit the telescoping yoke (5) onto the cylinder by means of the shaft (6); fix with split pin (Detail B − Figure 4).

_ At each fitting of the hydraulic unit, cylinder and telescoping yoke onto the upper collar, do not forget to dismantle and to refit the cylinder stop.

_ Carry out the connection between the cylinder and the hydraulic unit.

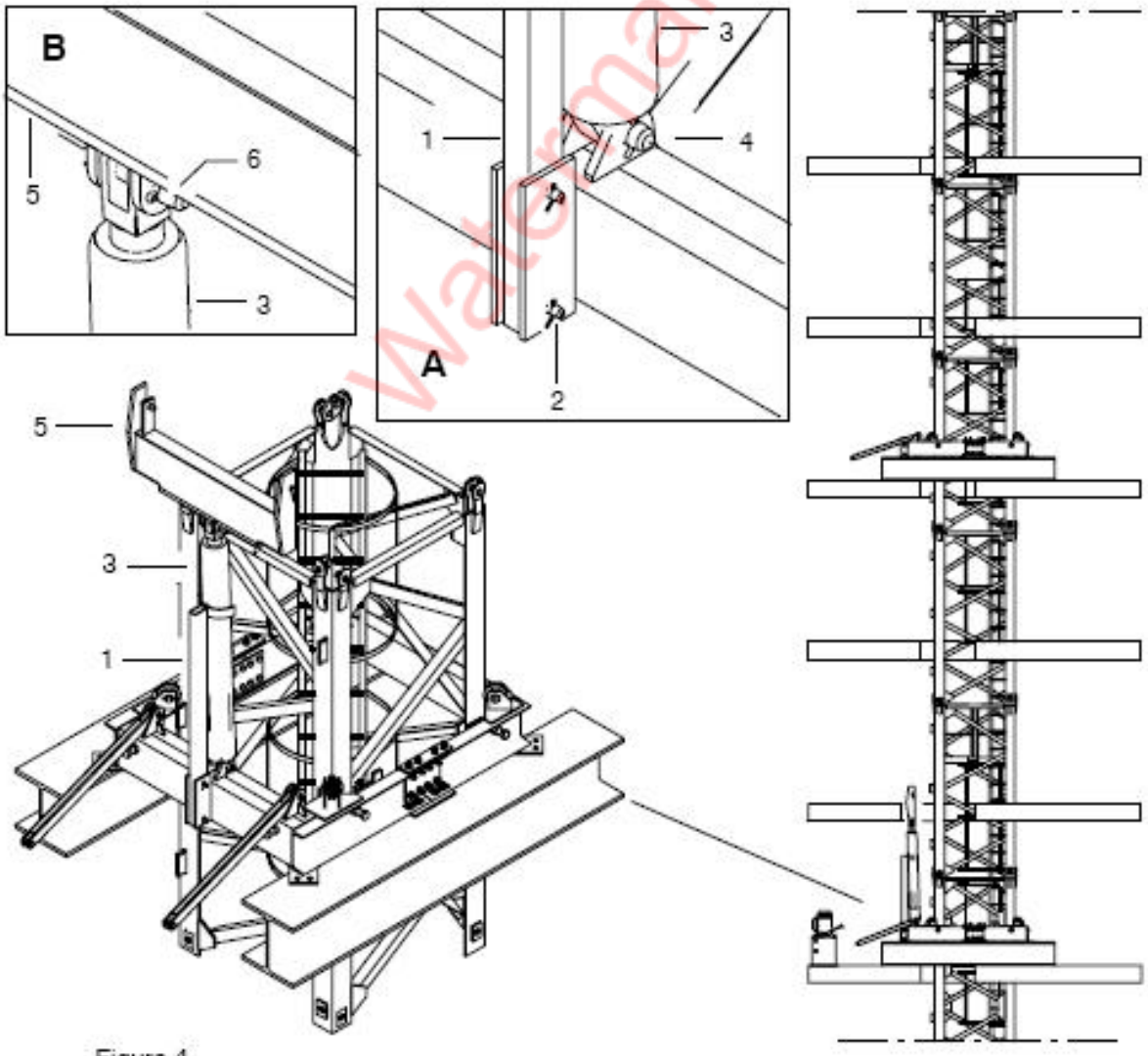


Figure 4

9.3、BALANCING THE CRANE FOR TELESCOPING

9.3.1、 SPECIAL INSTRUCTIONS

For a correct operation of the climbing equipment, it is essential that the center of gravity of the lifted crane part is in the axis of the cylinder.

This condition is fulfilled by moving the jib trolley (with appropriate load, if required) to the balancing position.

This operation is determined by user on the job site.

The given distances are theoretical; they depend in particular on the actual weight of the counter−jib ballast.

Make sure that this weight corresponds to the jib and counter−jib lengths used.

The balancing position is obtained by checking the play of the guiding rollers of the upper climbing collar and by reading the minimum pressure required for telescoping on the pressure gauge of the hydraulic unit.

DURING THE BALANCING OPERATIONS, IT IS FORBIDDEN:

− TO SLEW THE JIB,

− TO MOVE THE JIB TROLLEY,

− TO OPERATE HOISTING OR LOWERING.

9.4、TELESCOPING

9.4.1、 GENERAL INSTRUCTIONS

In order to avoid any risk of accident, the telescoping operations must be carried out carefully and by observing the following orders:

IT IS FORBIDDEN:

_ TO SLEW THE JIB

_ TO MOVE THE TROLLEY.

_ TO OPERATE HOISTING OR LOWERING when the crane part is being lifted.

BESIDE THE TELESCOPING OPERATIONS:

_ Never let the telescoping assembly rested on the cylinder.

_ Telescoping can only be carried out with a wind not exceeding 60 km/h.

After each climbing operation, check the perpendicularity of the crane.

9.4.2、 FIRST TELESCOPING SEQUENCE

Rest the yoke (1) under a set of telescoping lugs (2) welded on the mast section (Detail A − Figure 1).

Lock the yoke (1) by means of the shafts (3), split pins (4), fixing flanges (5) and screws (6) (Detail B and C − Figure 1).

Slew the crane jib in opposite direction to the telescoping cylinder and move the trolley to the balancing position.

Withdraw the shafts (7) connecting the part to be telescoped to the crane part remaining on the ground (mast section or fixing angles). Extend the cylinder (8) in order to disengage the base of the crane part to be telescoped (Detail D − Figure 1) (These operations are to be carried out only during the first telescoping sequence).

Verify the balancing position of the crane; for this, it is necessary to check the play of the rollers of the upper climbing collar. If necessary, readjust this balancing position by moving the trolley forward or backward.

- If the play is on the jib side, the trolley must be moved backward ⇐ (direction of jib foot).
- If the play is opposite to the jib, the trolley must be moved forward ⇒ (direction of jib nose).

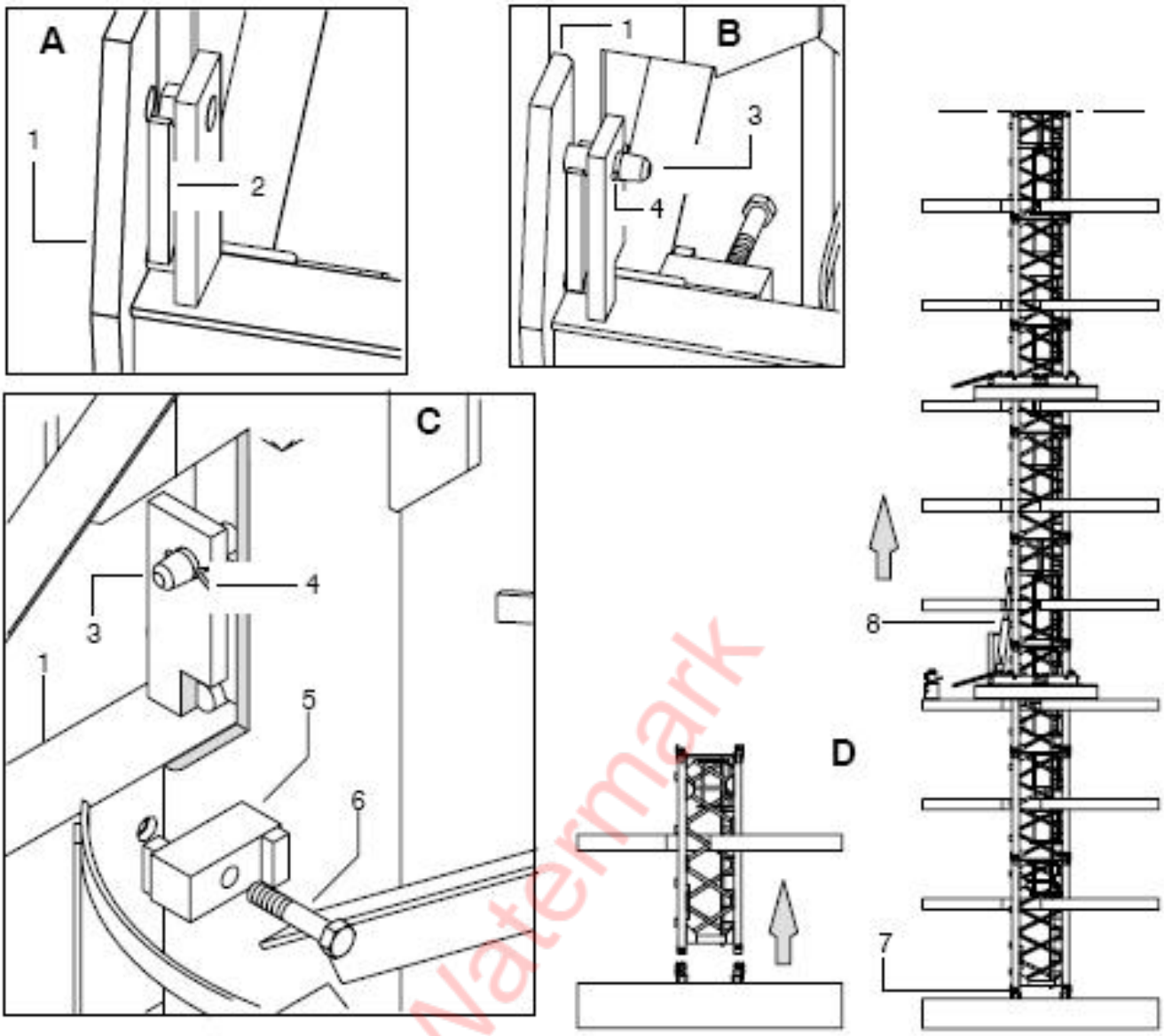


Figure 1

Having finished balancing, continue extending the cylinder (1) in order to allow folding down the connecting links (2) under the lugs (3) (Detail A − Figure 2).

Lower again in order to rest the lugs (3) onto the links (2) (Detail B − Figure 2).

Unlock the telescoping yoke (4) by withdrawing the shafts (5) and the fixing flanges (6) (Detail C – Figure 2). Retract the cylinder (1) and lock again the telescoping yoke (4) onto the set of lugs below.

Extend the cylinder (1) for a new stroke. Repeat these operations as often as necessary in order to bring the crane tower base on the level of the first telescoping collar.

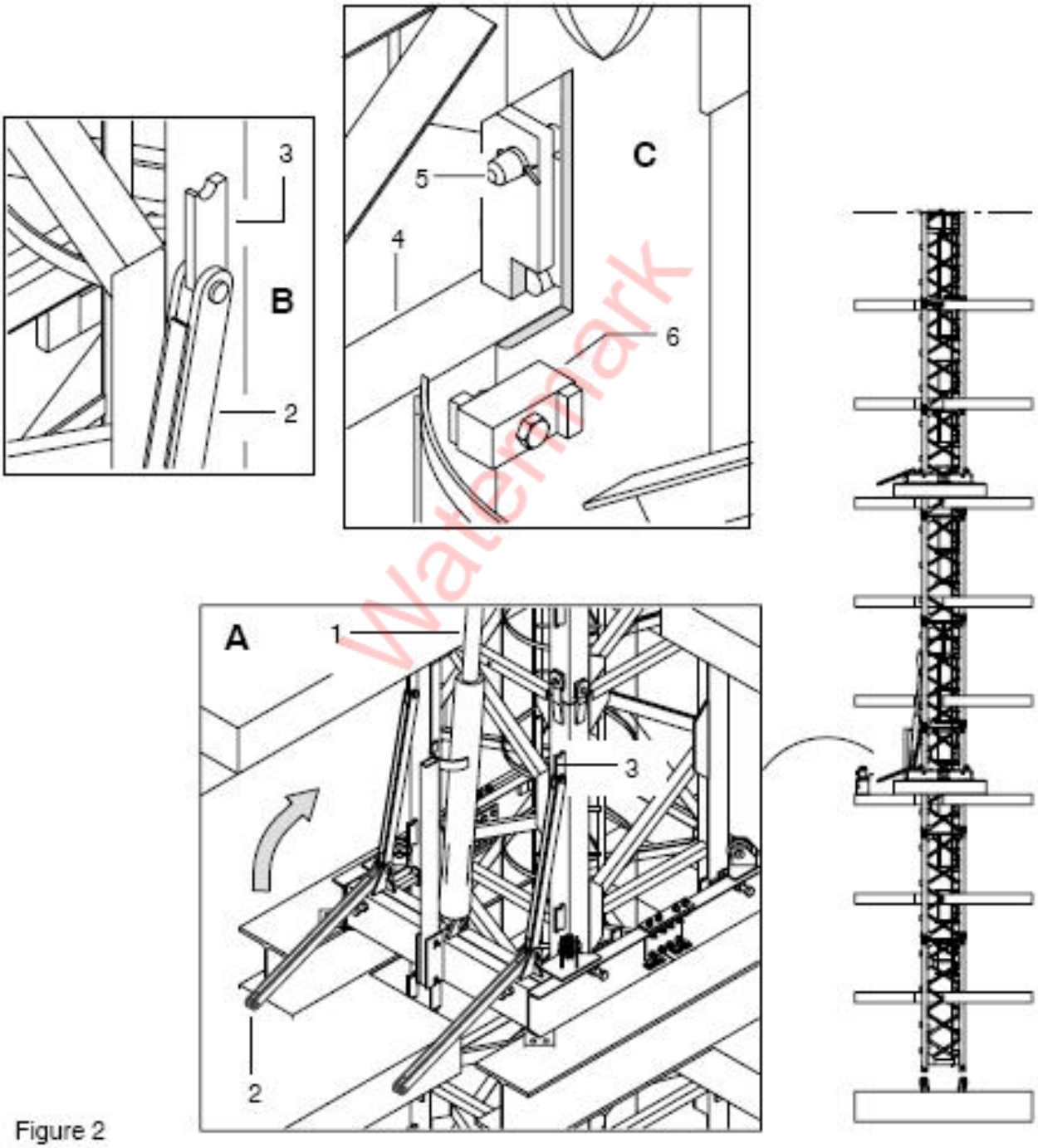
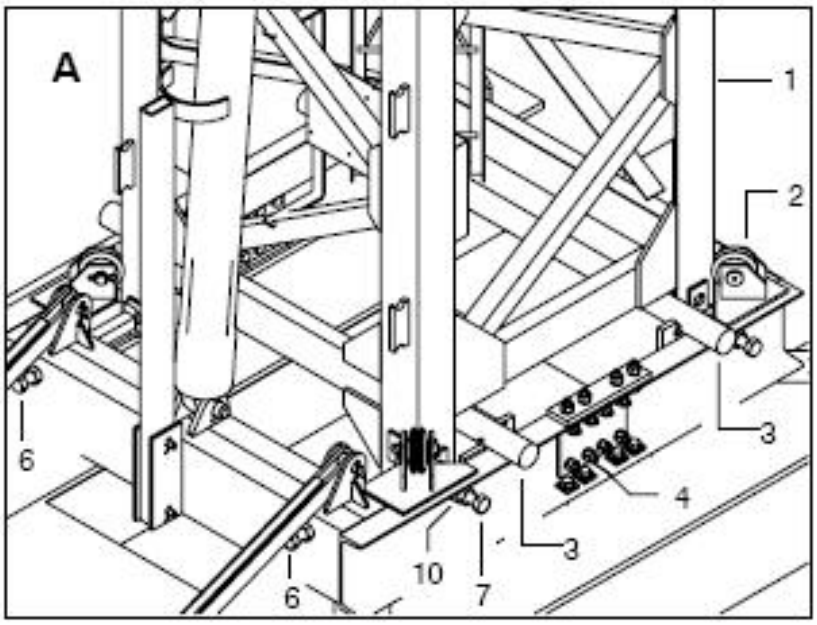


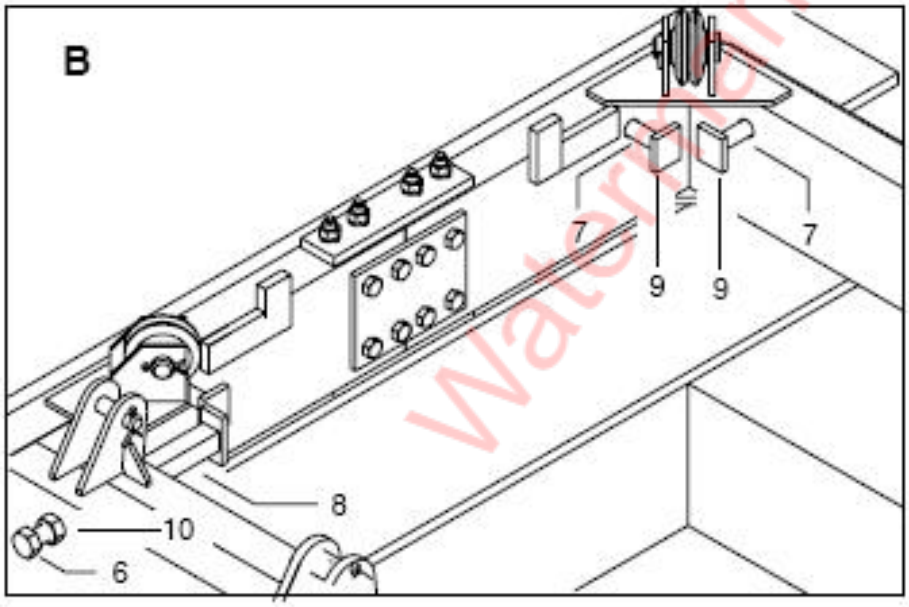
Figure 2

When the telescoping sequence is finished, telescope slowly and take care that the resting shafts (3) can be inserted between the collar (4) and the base collar of the basic mast (1) of the crane; fix with split pins (Detail A − Figure 3).

Lower again until the crane comes to rest onto the resting shafts (3) (Detail A − Figure 3).

Lock compulsorily the screws (6) and (7) onto the collars (4) and (5) by inserting the wedges (8) and (9) between the screws and the mast section. Per collar, there are 2 long wedges (8) fitted on the cylinder side with the screws (6), and 6 short wedges (9) fitted with the screws (7) on the three other sides. Then lock the counternuts (10) of the screws (6) and (7) (Detail A and B − Figure 3).





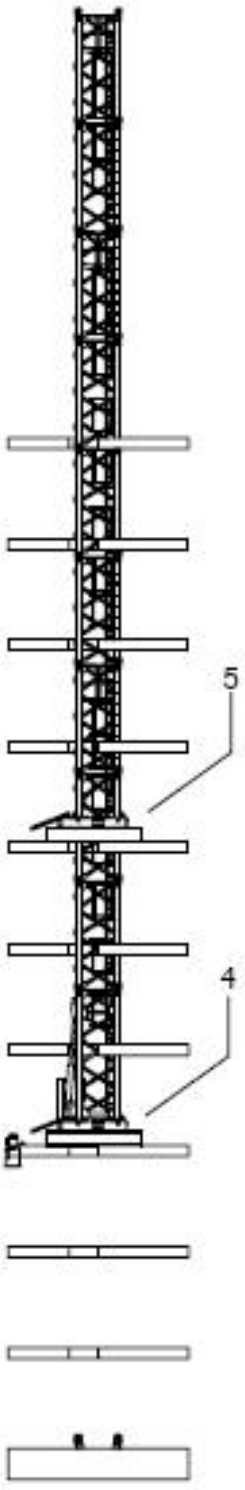


Figure 3

9.4.3、THE FOLLOWING TELESCOPING SEQUENCES

Having checked that the slab is dry enough, fit the third collar (1) depending on the chosen intermediate slab.

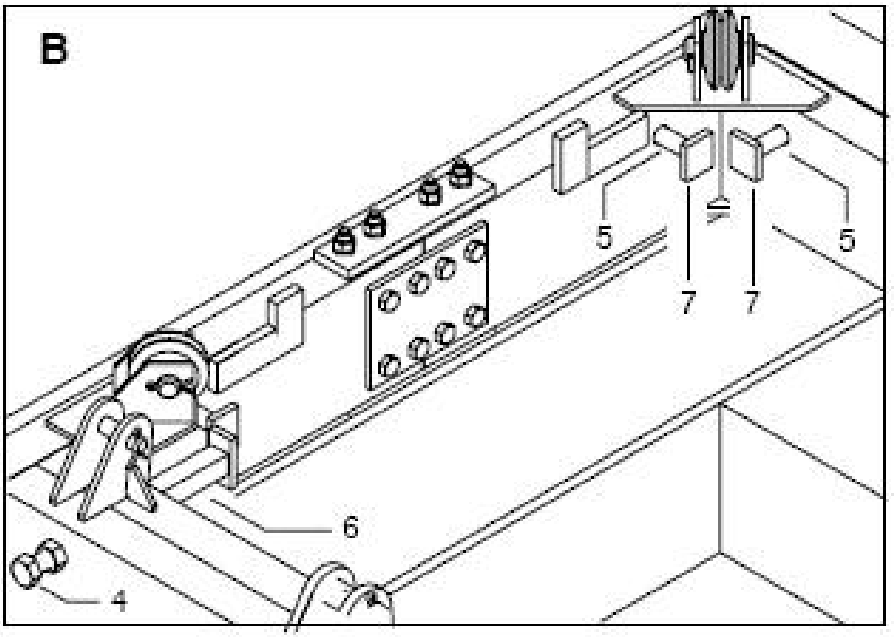
Refit the hydraulic unit, the hydraulic cylinder, the telescoping yoke as well as the cylinder stop onto the next collar above (2) (Detail A − Figure 4).

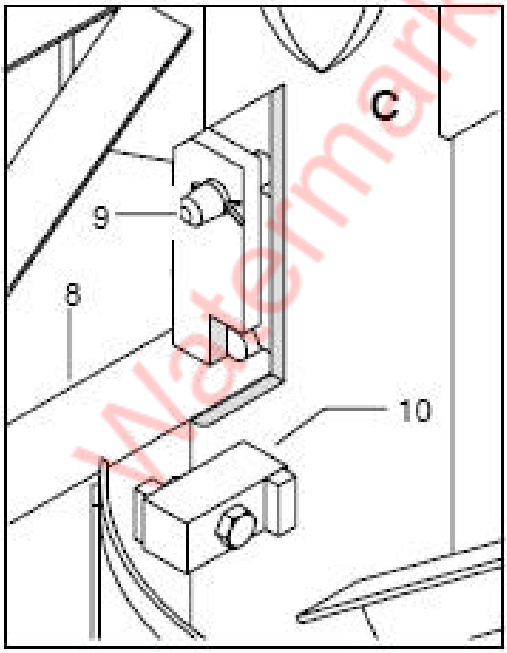
Loosen the screws (4) and (5) on the collars (2) and (3) and remove the wedges (6) and (7) (Detail B − Figure 4).

Rest the yoke (8) under a set of lugs and lock it by means of the shafts (9), their split pins and the fixing flanges (10) (Detail C − Figure 4).

Put the cylinder under pressure and balance it. Repeat the preceding operations until the telescoping phase is finished (see paragraph 4. 2.).

As soon as the crane has left the lower collar (3), dismantle the latter and put it in waiting position until the next telescoping sequence where it will be fitted on a slab above the second collar by observing the chosen intermediate slab.





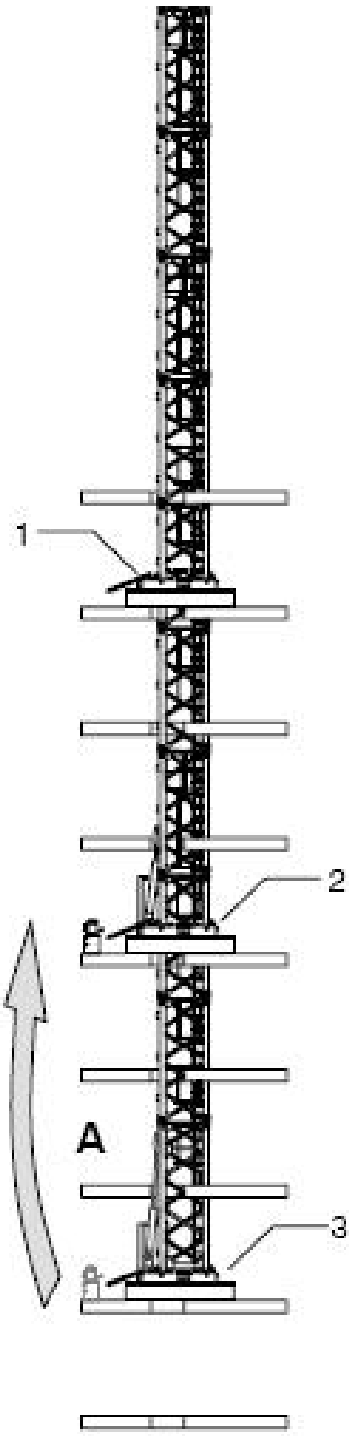
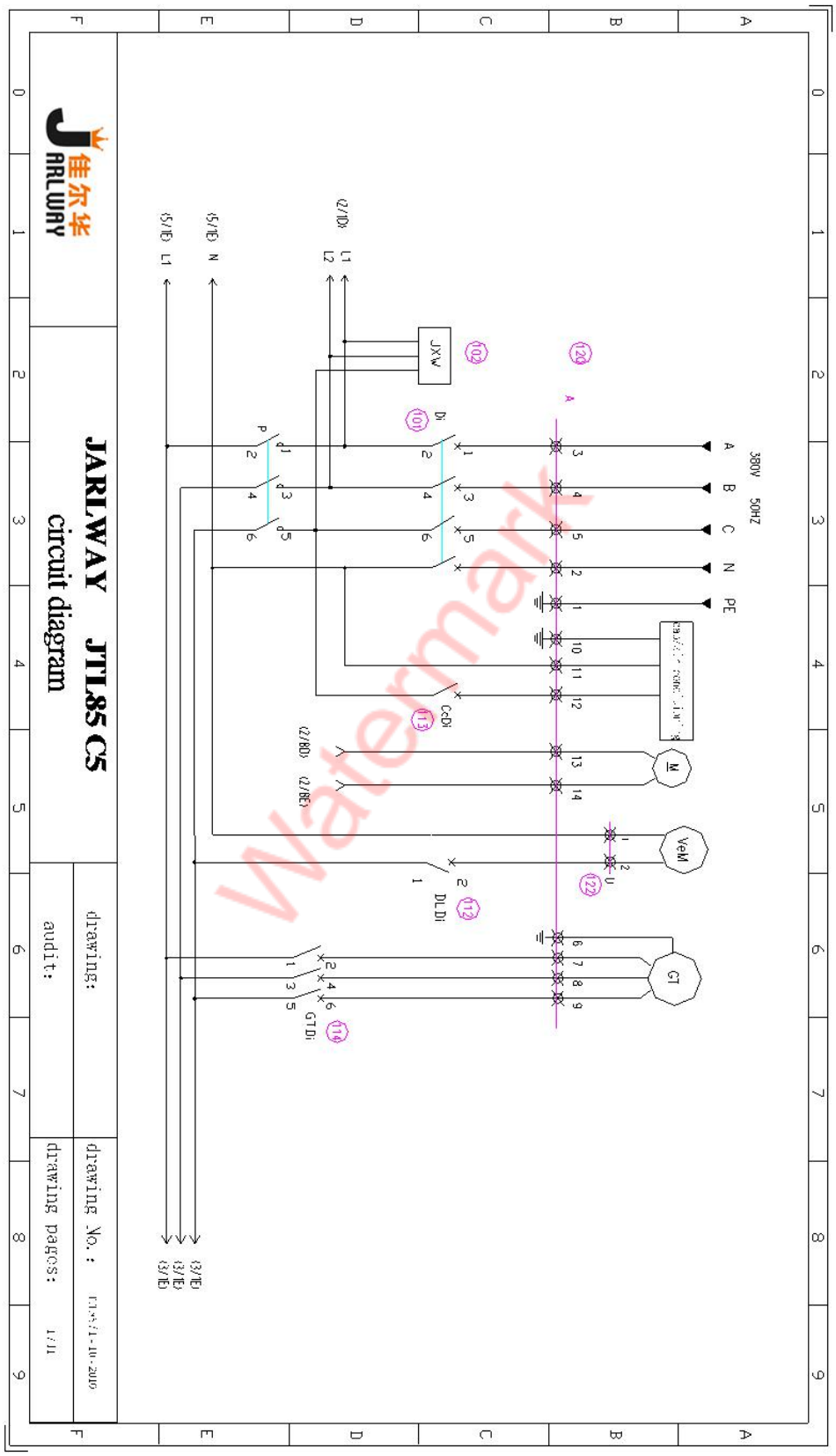
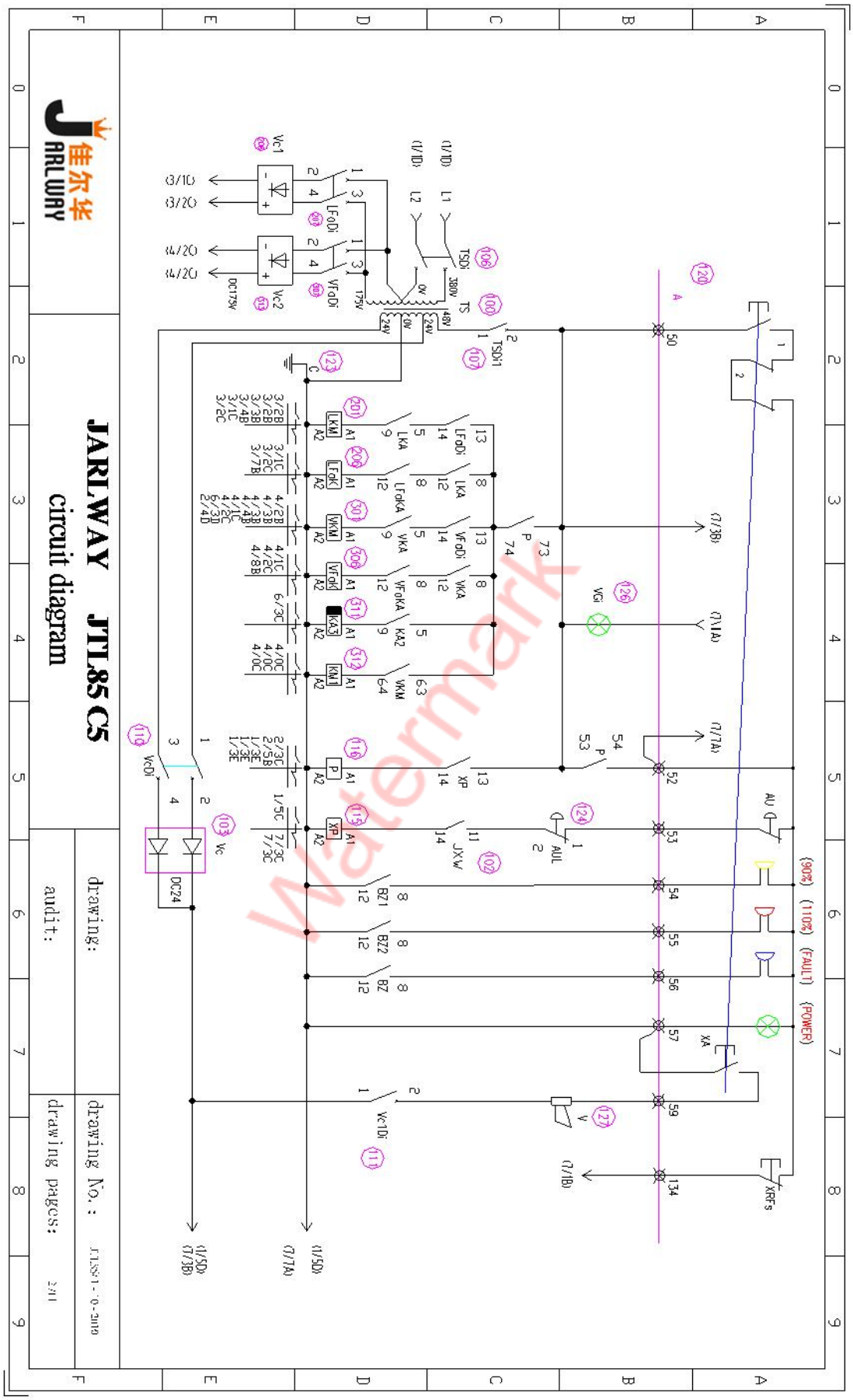


Figure 4

10、ELECTRICAL DIAGRAM

Control electrical diagram

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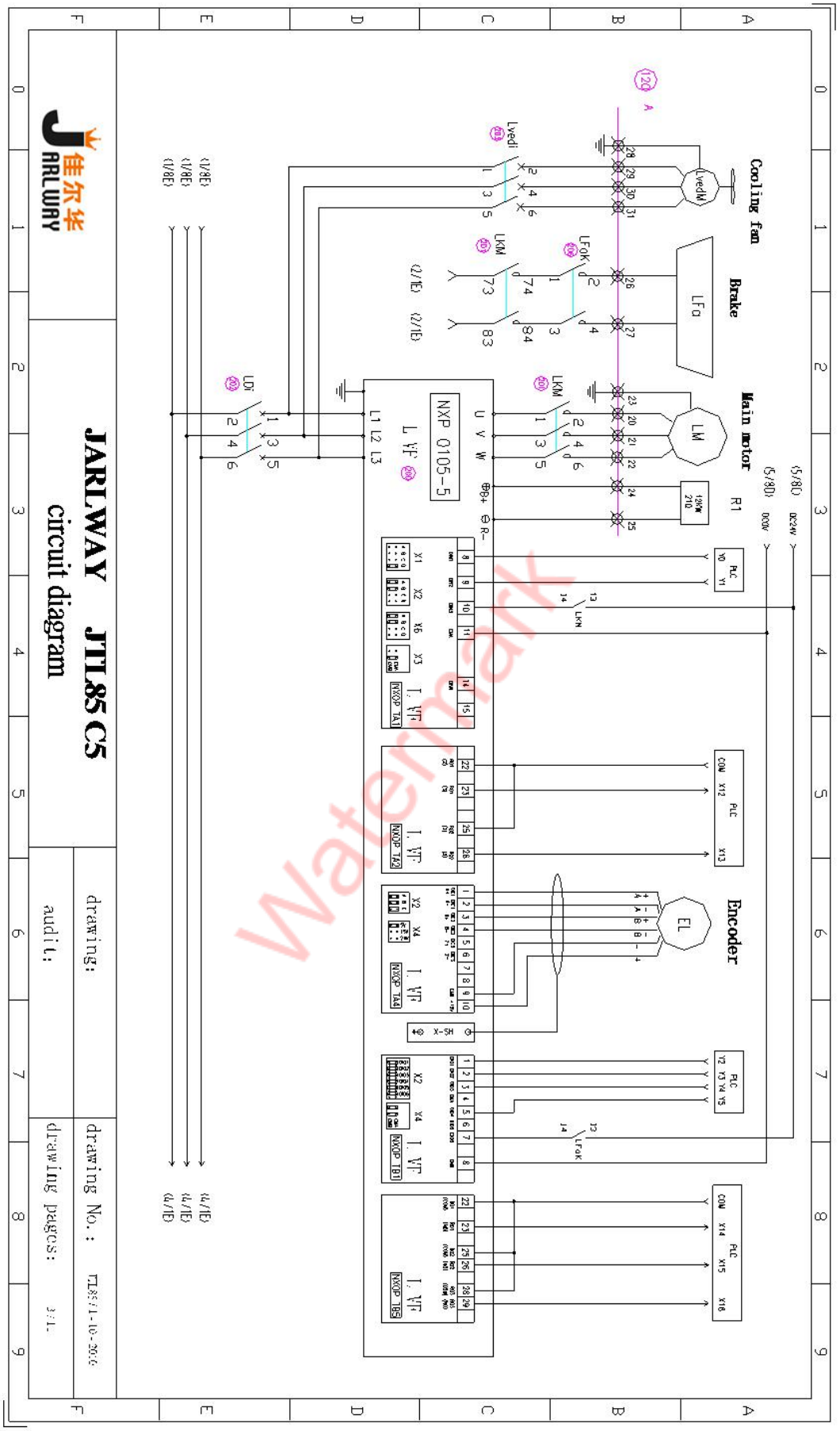
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Brake
Main motor
Encoder
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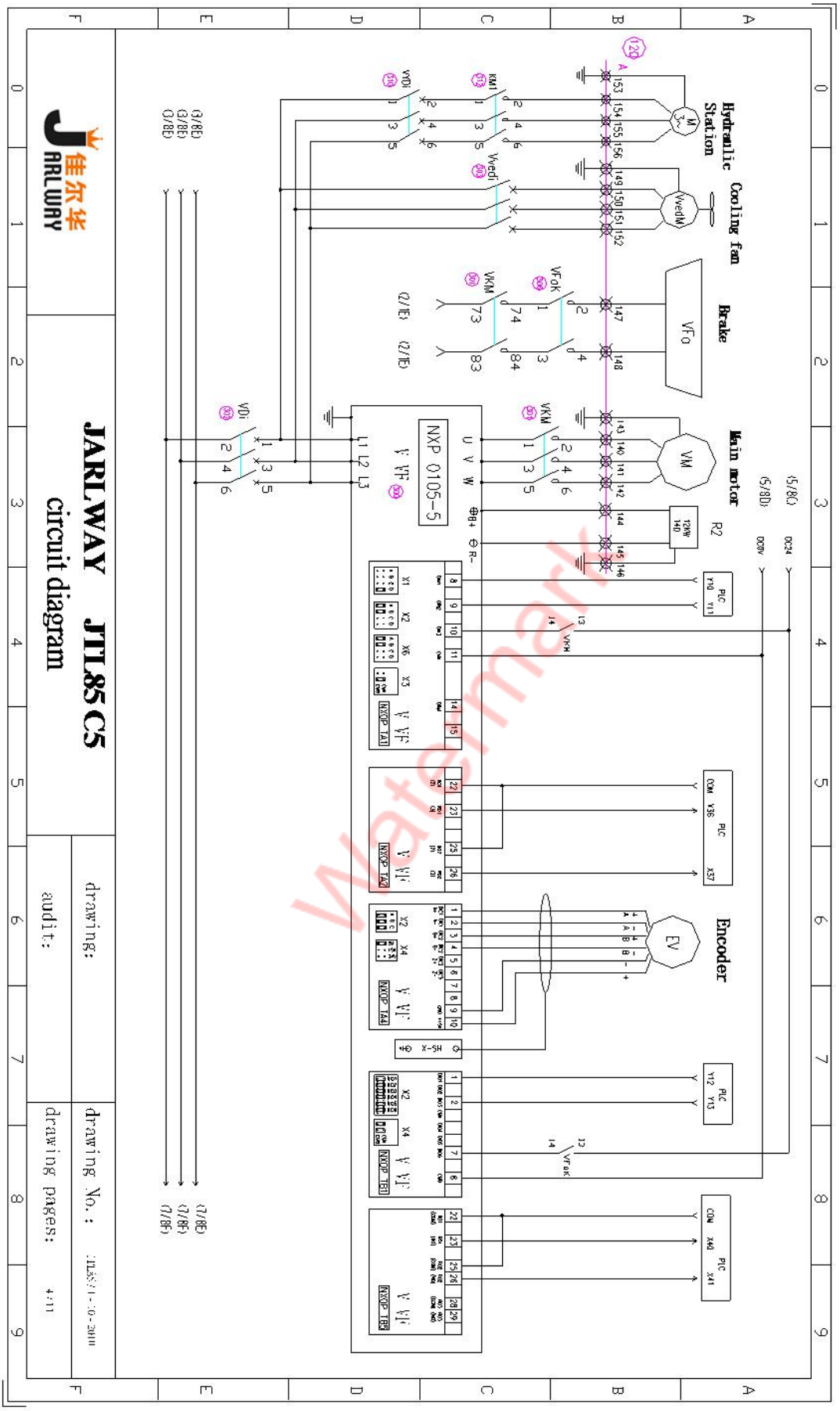
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Cooling fan
Brake
Main motor
Encoder
NXP 0105-5
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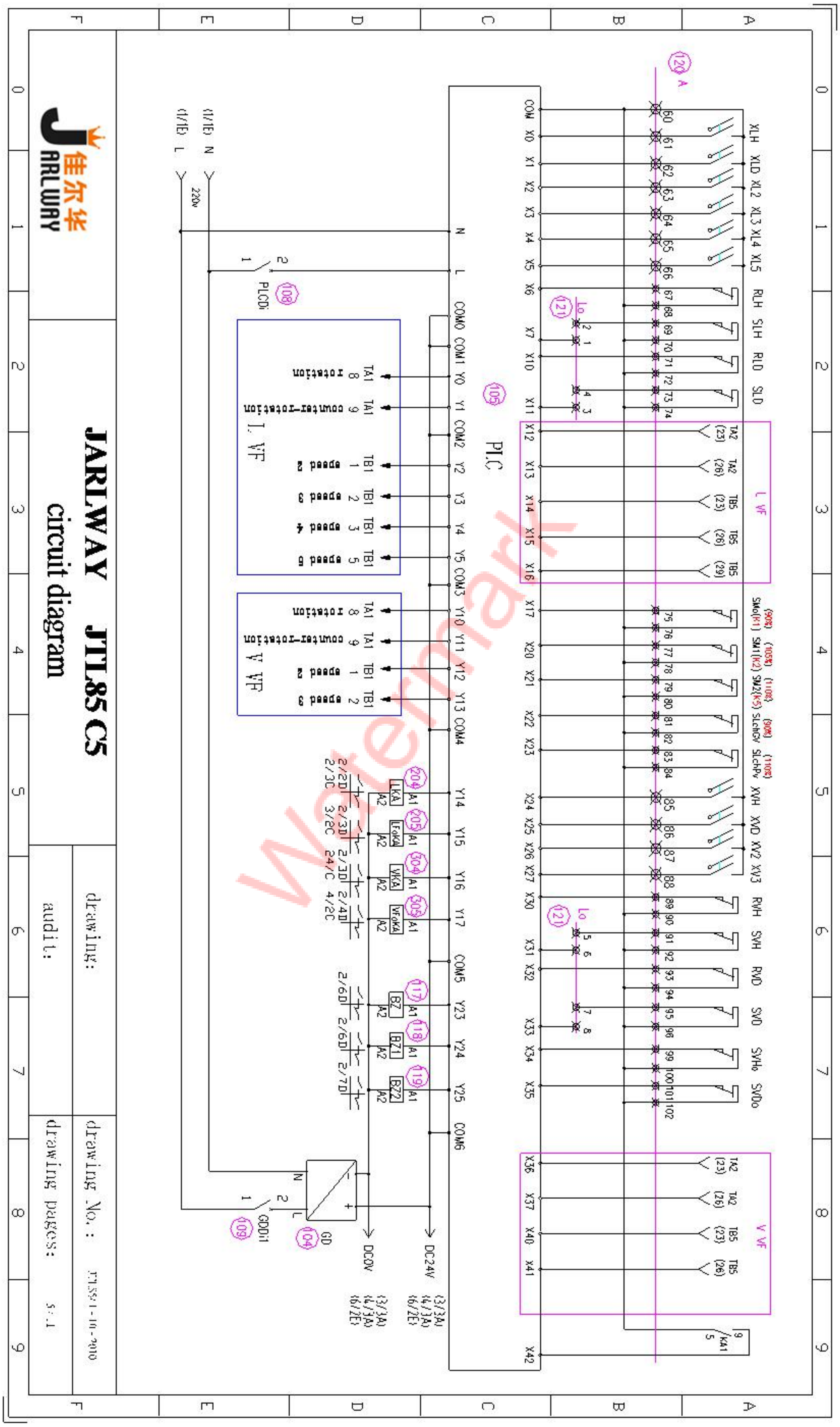
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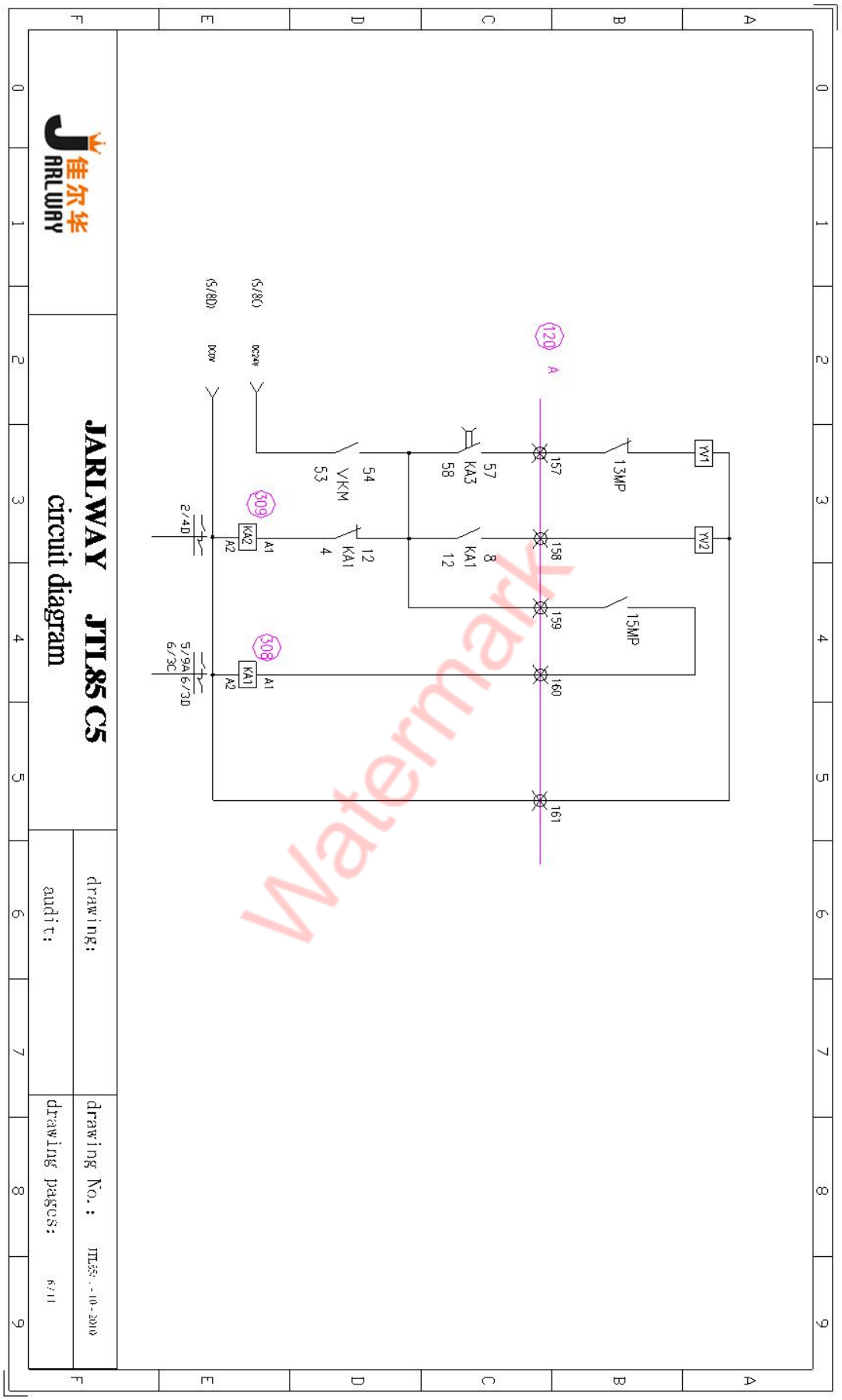
DC0V
rotation
counter-rotation
speed 2
speed 3
speed 4
speed 6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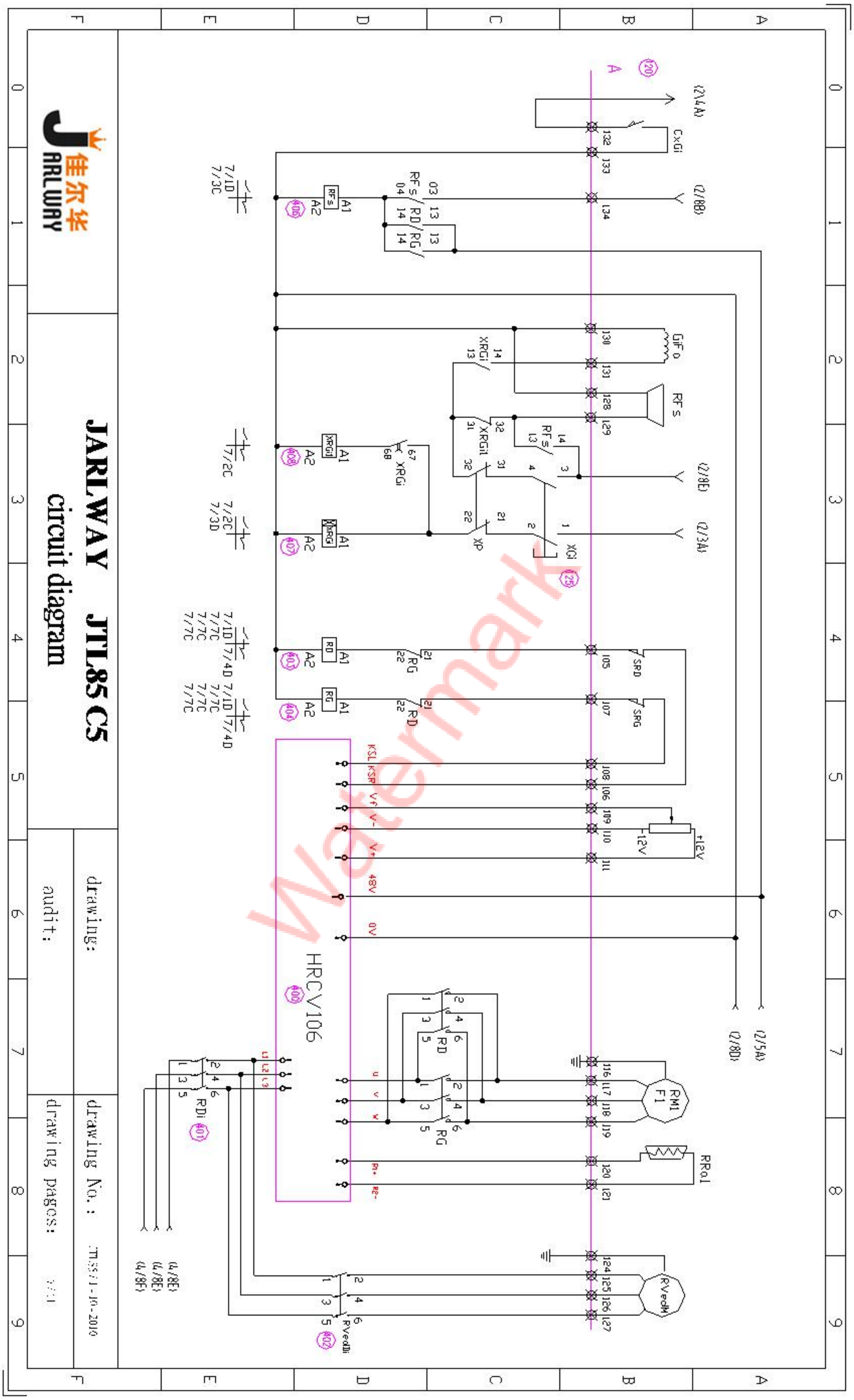

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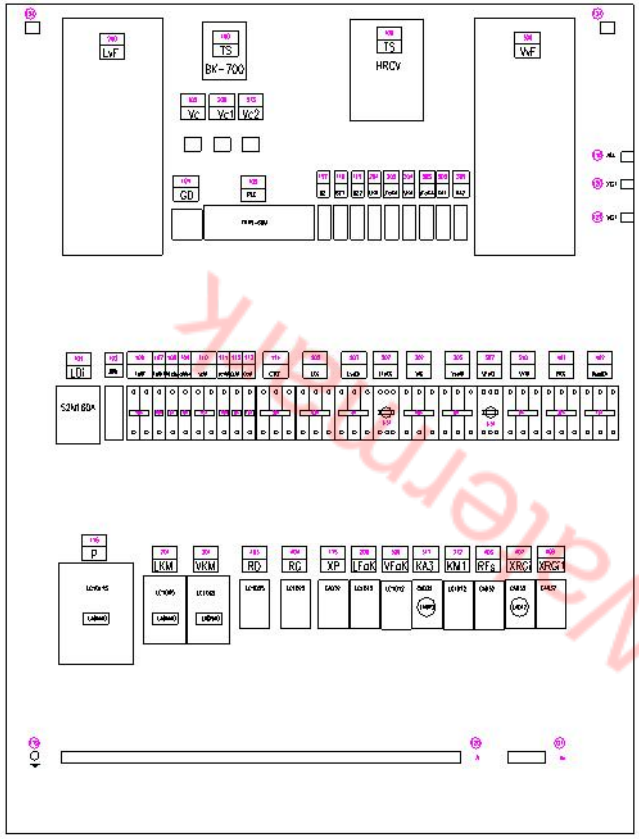

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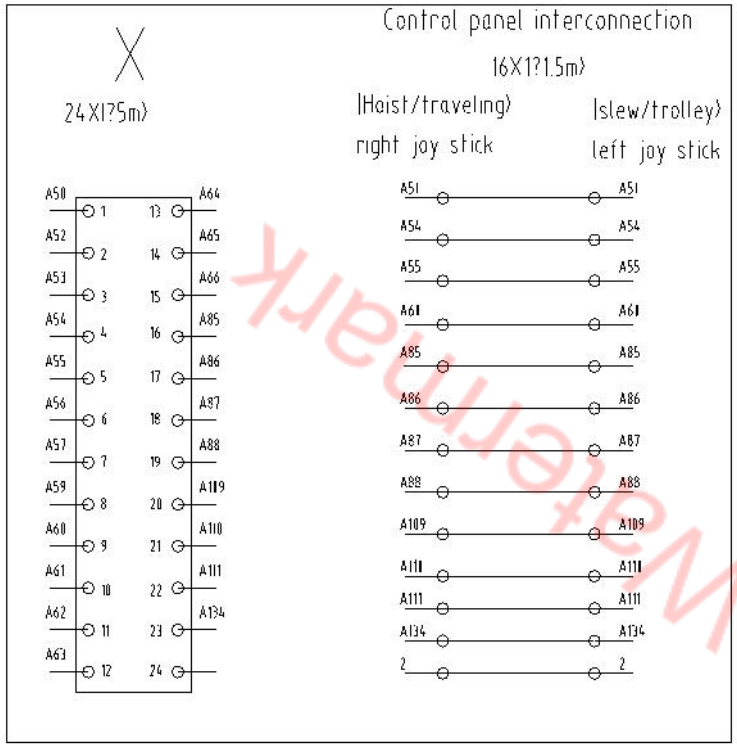

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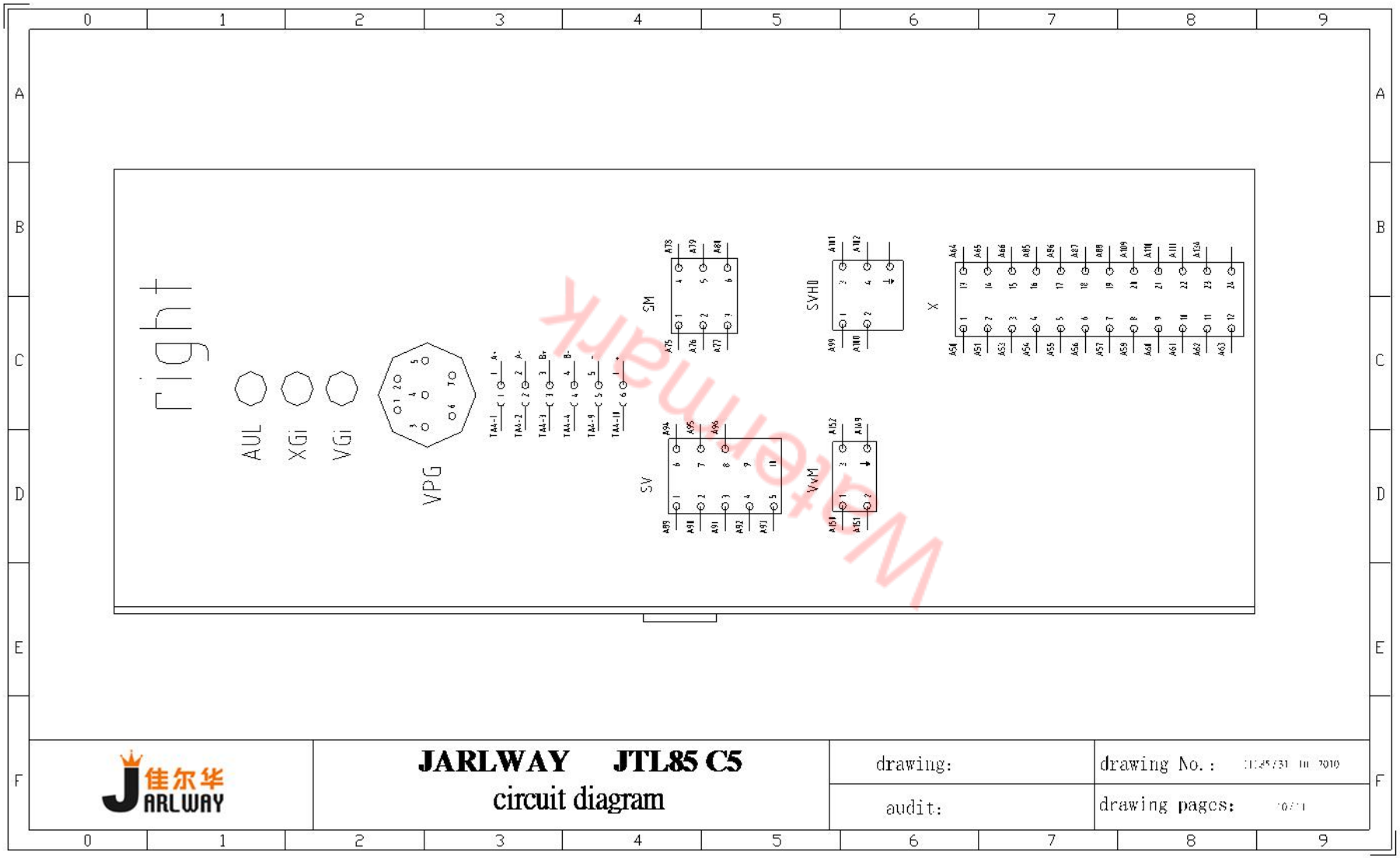

JARLWAY 佳尔华	**JARLWAY JTL85 C5** circuit diagram	drawing:	drawing No.:
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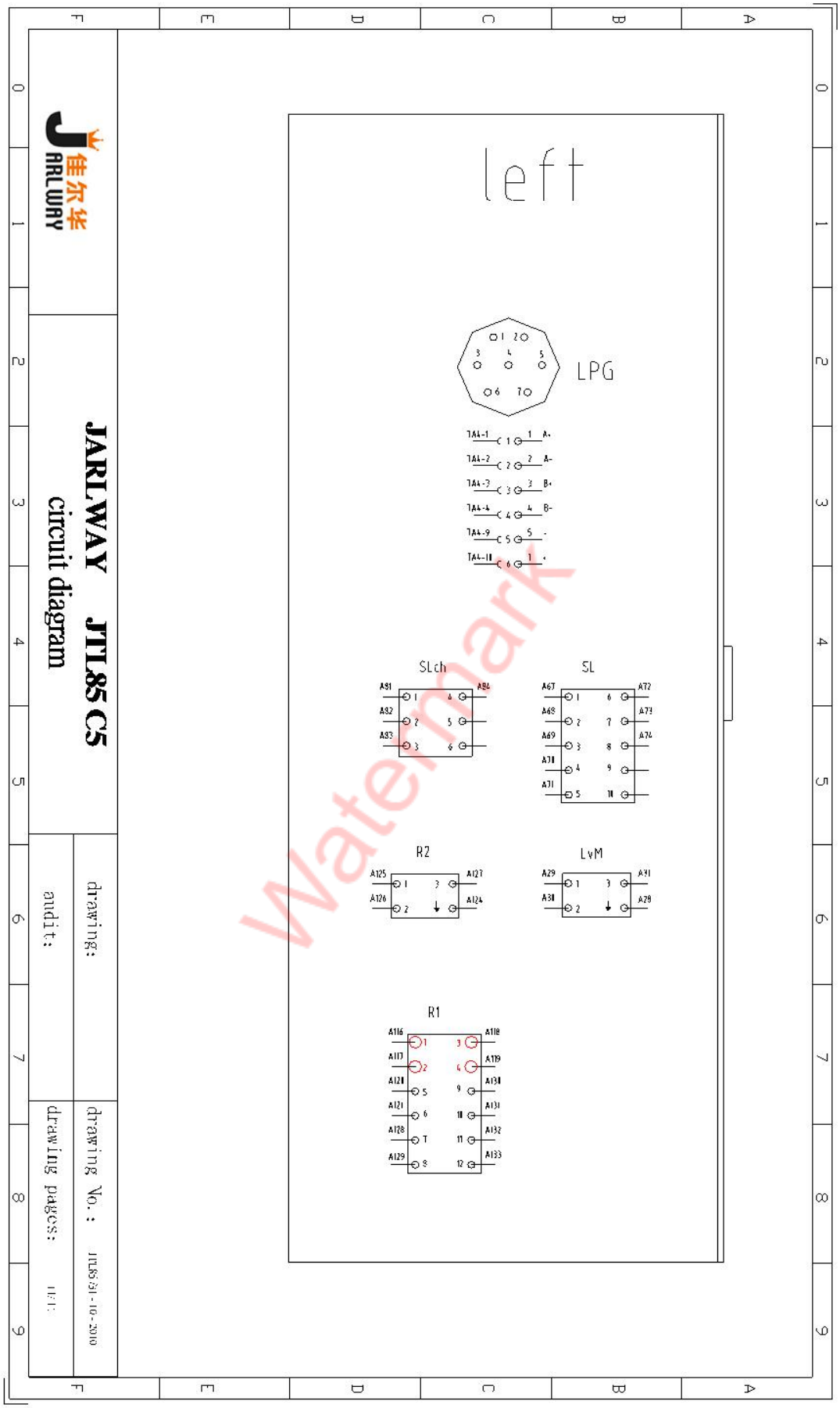
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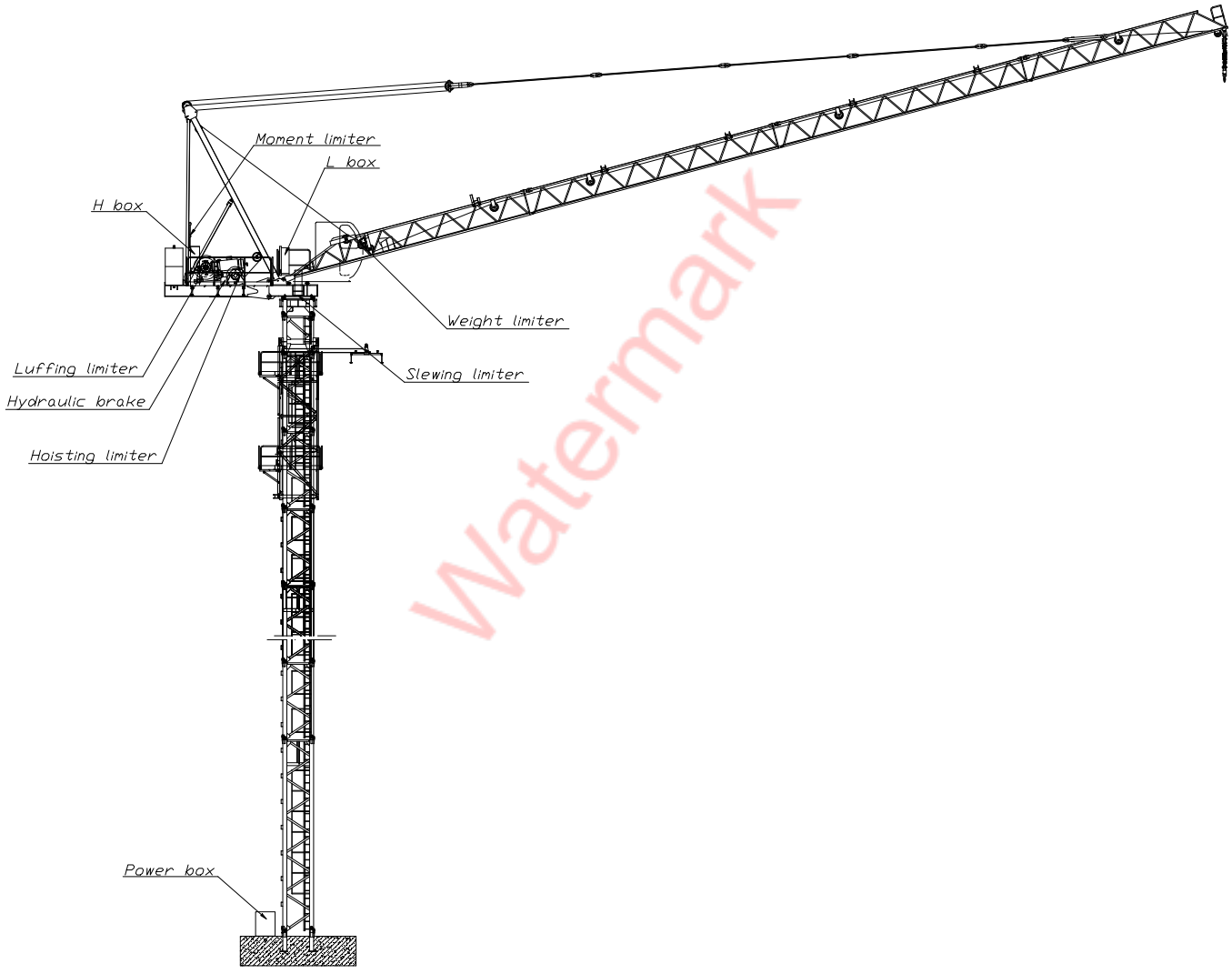
11、SAFETY DEVICE TESTING AND INSPECTION

Safety devices of this luffing crane feature overload protection, accident prevention, travel limit and emergency protection. However, being incorrectly installed or adjusted, these devices may not only malfunction but also increase the risk of hazards. Make sure the instruction and requirement stipulated in this manual are strictly observed and followed.

When typhoon warning, unclench the weather cock, Luffing jib must be set in 60° ~ 65° .

Electrical and mechanism limiter switch chart



11.1、Load moment limiter

Installed on the A frame, the limiter will be extended by the pull force imposed on it in proportion to the varying load moment. The distance between the 2 steel bars welded on the limiter will change and activate the load moment limiter and adjustable contact mounted on the bars to realize the limit function. Note K1 and K2, K5 for torque limiter contacts.

Attention please：When the crane load for MSWL 90%, contact K1 cut off, hoisting mechanism may not lifting and decline rate; Only 1-4 speed fluctuation, Arm no 3 speed prone function, which only reached 1-2 speed. fluctuation

When the crane load for MSWL 105% and contacts K2 cut off, lifting mechanism not only rise function decline function (1-4 speed), Arm, only agencies cannot lift (1-2 speed).

When the crane load for 110% MSWL, K5 contacts, lifting mechanism not only rise function decline function (1-4 speed), Arm agencies cannot decline, lift, namely stop action.

MSWL for the Max Safety Working Load .

11.2、Load limiter(most ascendant)

Load limiter is installed inside the jib and its function is to limit the Max Safety Working Load MSWL and make sure that objects of different weights are lifted at corresponding allowable speed.

Open the load limiter, there are 4 pairs of switches and contact, 2 of which are usually used, respectively named LCHGV and SLCHPV, the other 2 as back up for the purpose of alerting and over-speed restriction.

When the crane load for 90% MSWL, contacts SLCHGV cut off, hoisting mechanism and function may not quickly.

When the crane load for 110% MSWL, contacts SLCHPV cut off without lifting mechanism, function, only to decrease (1-4 speed), arm, only agencies cannot lift.

Either the load moment limiter or the load limiter, after adjustment up to the standard, needs to be locked in the contact to avoid the influence of the oscillation.

Never adjust the limiter or change their configuration at will or otherwise it will cause severe accidents.

Digital safety device can be used on this luffing crane.

11.3、Travel limiter

（1）Hoist height limiter

The limiter works by rotation limiter mounted on the hoist drum restraining the rounds of rotation to prevent over winding or under winding, to prevent the hook from hitting the ground and lead to lessening of wire rope and arrangement disorder of wire rope on the drum.

Refer to hoist winch user's guide for adjustment method.

（2） Lifting limit:

Lifting:

When contacts RLH cut off, lifting mechanism not rise high.

When contacts SLH cut off, lifting mechanism cannot rise.

Drop:

When contacts RLD cut off, hoisting mechanism, not only low speed.

When contacts SLD cut off, lifting mechanism cannot decline.

（3） Slewing limiter

Mounted on the slewing ring. The toothed ring drives the input pinion on the rotation limiter to keep the slewing under 3 rounds and protect the cable from distortion and breakage.

Adjustment: remove the cover, touch the contact when the jib slews to identify the contact position where the jib is directed left and right. Slew the jib by 1.5 rounds rightward and rotate the rightward cam to halt the slewing motion by pressing the contact against the limit switch. Slew the jib leftward by 3 rounds and rotate the leftward cam to halt the left slewing motion by pressing the contact against the corresponding limit switch.

Repeat the procedure by 3 times before setting completes.

The slewing limiter will stop function when the tower crane is out of service. Release the slewing brake and put the crane into manual brake condition, the tower crane will not slew by more than 3 rounds inspire of winds in any directions. Manually restrain the free slewing of jib in out of service mode is strictly prohibited.

Additionally, user should pay attention to abnormality of counter jib motion in face of wind due to excessive number of boards or banners hung on the counter jib.

（4） Radius limiter and anti-retroversion device

2 radius limiter are installed on this luffing crane.

①The radius limiter installed on the trolley drum will limit the jib movement within 150-850. This limiter shares the same working principle and adjustment method with any ordinary corner limiters. Identify the stop and decelerate contact and the relevant direction before proceed with the adjustment.

Drop:

When the plane dropped to arm 19 °, contacts RVH, no arm hoisting speed.

When the arm frame has 15 °, Yang SVH contacts, arm agencies cannot lift.

Up:

When the arm frame lift 81 degrees, contacts, arm RVD cut off is no speed.

When the arm rack up 85°,SVD contacts, arm agencies cannot decline.

②Radius limiter installed on the slewing upper part only limits the jib's max elevation angle to be less than 850 and the jib's min elevation angle to be less than 140.

When the arm has 86 ° plane supine, arm up to limit, contacts SVHO cut off.

When the plane dropped to 14 ° arm for moving arm dropped off limits, SVDO contacts.

Anti-retroversion device not only limits the maximum elevation angle but also serve very good buffering as for preventing the oscillation of jib rebounds. Check after installation its reliability of the contact point with the jib section.

（4） Wire rope anti-escaping device

It is inevitable that the hoist wire rope be loosened and escape from pulley during hoist movement. The wire rope will be wear and break when tightened again. Therefore, there is anti-escaping device on every pulley which functions in the way that the block rod and outer diameter of pulley retain maximum clearance of 20% of the wire rope diameter. Make sure the clearance is within this limit.

（5） anti-escaping pallet on hook

Make sure that the wire rope comes into the hook inlet smoothly. Never move the pallet and the wire rope will never escape from the hook.

（6） Obstacle indication lamp

At night or during cloudy or misty weather, install obstacle lamp to avoid tower crane crash with flying objects,

Solar-powered lamp and regular checking are recommended

（7） Anemoscope

Install the right anemoscope in accordance with instruction when height under hook reaches 50m

12、TOWER CRANE DISMANTLING

Generally speaking, remove the inverse process is installed. Just below special attention should remove the tip to the user.

A) with jack-up set out in mast, must check whether to find the right balance, set down process is an obstacle, hysteresis and jack-up beams and jack-up footfall is reliable, contact the supporting equilibrium, hydraulic guide-and remember not depend on whether the increased oil cylinder force down).

B) To use, but after attachment disassembled, supporting only in part of cantilever minimum height concrete-encased section, just can dismantle.

C) Should be hoist boom in weight after discharge.

D) whether remove hoist boom, balance, must use hang down to install crane parts, and then connect down to pin shaft or other related parts.

E) Disassembled, rotary organization should be under braking condition (don't use vane).

F) Is removed, should keep the assemblies and components, fittings, like components, should marker.