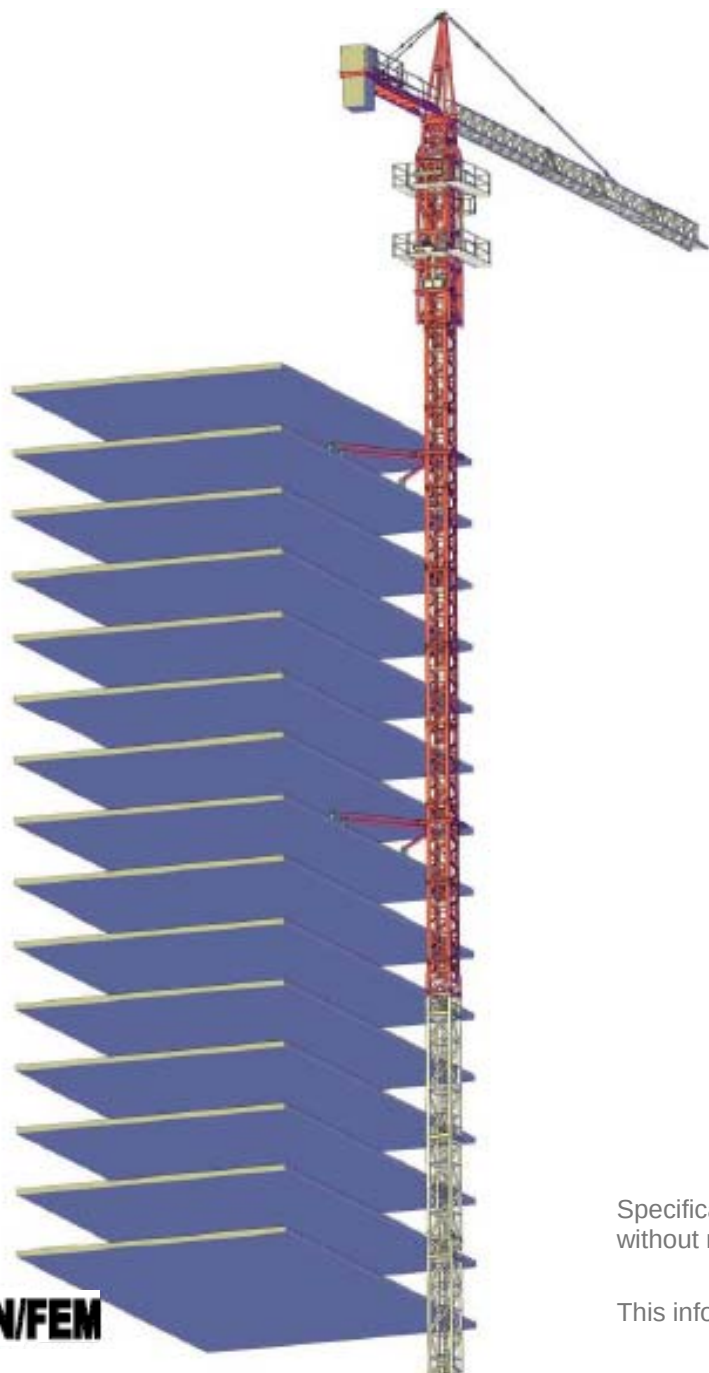




External Climbing SM 110 Crane Models:

S-46, S-52, TL 50 y TL55



The external climbing system, allows to the tower crane lifted supported by the building frame in construction, by the tie collar, taking in advance for this issue the growth of the frames of the floor slabs, that allows a future external climbing procedure or stages of the whole tower crane, climbing by a sequence that allows to reach great heights from an initial free standing height with the need to implement the tower mast configuration with additional tower mast sections.

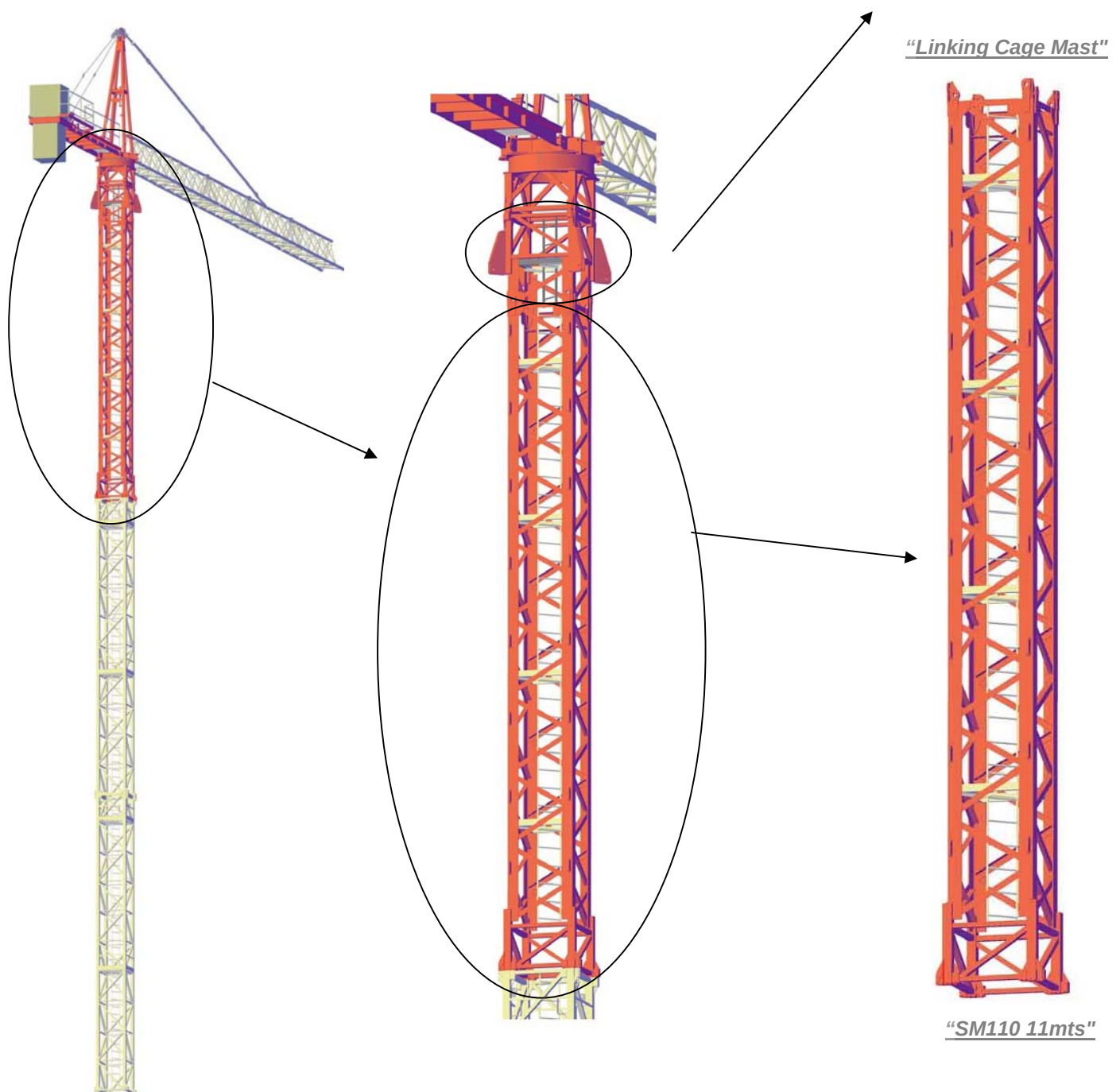
Specifications subject to modification without notice.

This information is supplied without liability.

DIN/FEM

Initial Assembly of the Tower & Climbing Accessories

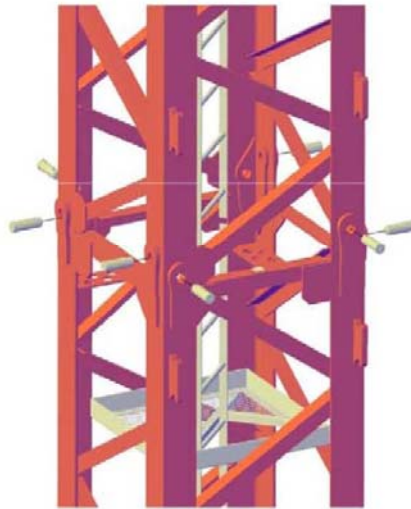
The external climbing procedure, consisting of tie frames, being responsible for the transmission of the efforts and the reactions of the tower crane directly to the floors of the building, both are out of service or not. Such reactions are the result of an engineering calculation corresponding to several factors specific to each project and for each job site.



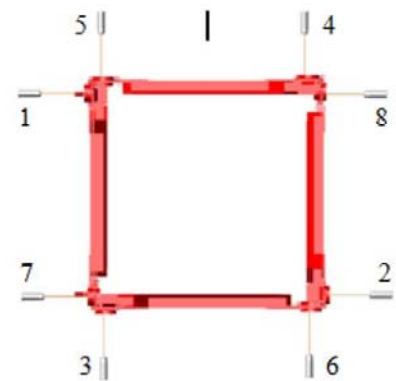
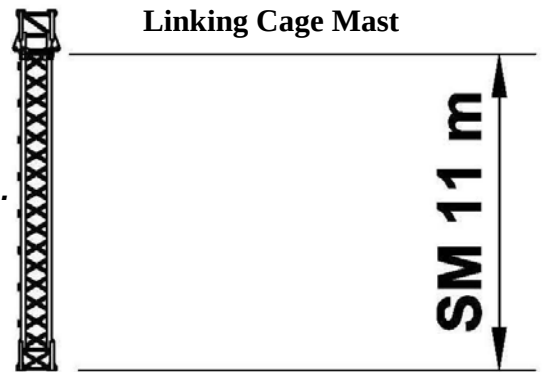
Assembly details

Therefore, Initial climbing set consists:

- Tower Mast Section SM 110 of 11 usable tower meters.
- Linking Cage Mast, 1.5 usable tower meters.



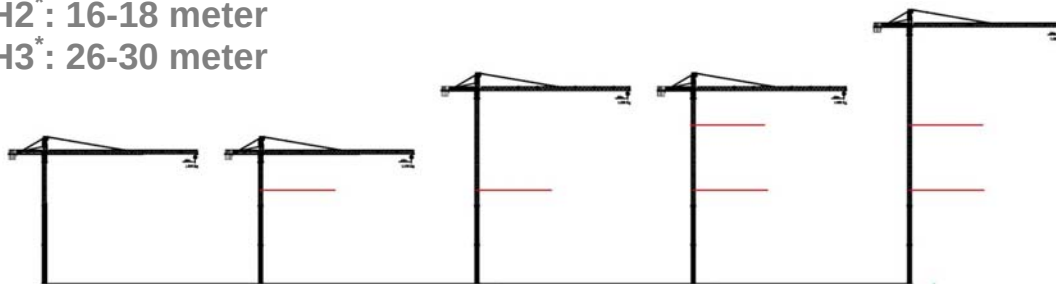
Coupling system of the tower mast sections
meanwhile pins of Ø 50 x 170 mm



Assembly sequence

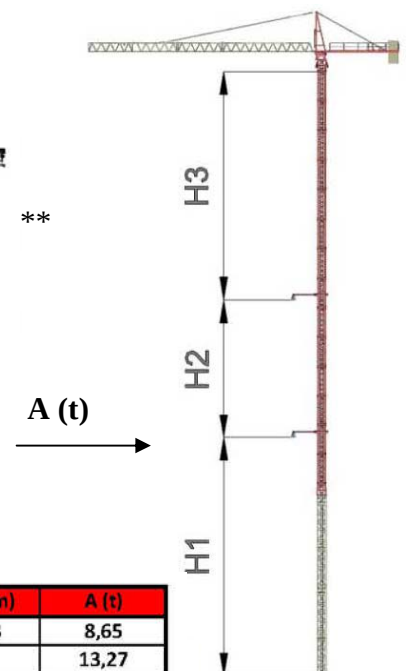
Erection Phases and Maximum Distances

- H1*: 26-28 meter
H2*: 16-18 meter
H3*: 26-30 meter



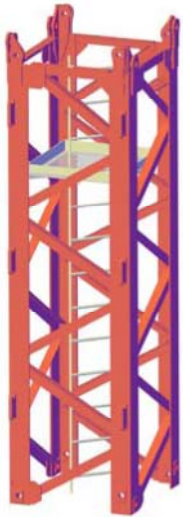
- H1:** Distance amongst the beginning of the tower till first tie frame.
H2: Distance amongst tie frame collars.
H3: Free height from the last tie frame.

	Mt (tm)	A (t)
In Service	18,23	8,65
Out of Service	-	13,27



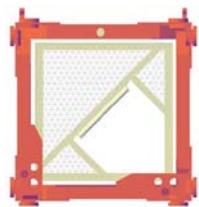
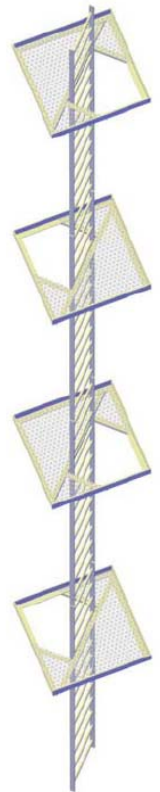
* The given distances are theoretical, always must be checked by the Technical Department of the manufacturer.
**For further information please go through the proper chapter from the manufacturer manual.

**External
Climbing
SM110**



The climbing sequence is an iterative procedure, which should take account of all technical and safety conditions and considerations, must be led by a "qualified" work team.

During the climbing process, the mast sections used is the SM 110, allowing the tower raising, supported on the building frame. The useful height for each climbing tower mast is 3.85 x 1.10m.



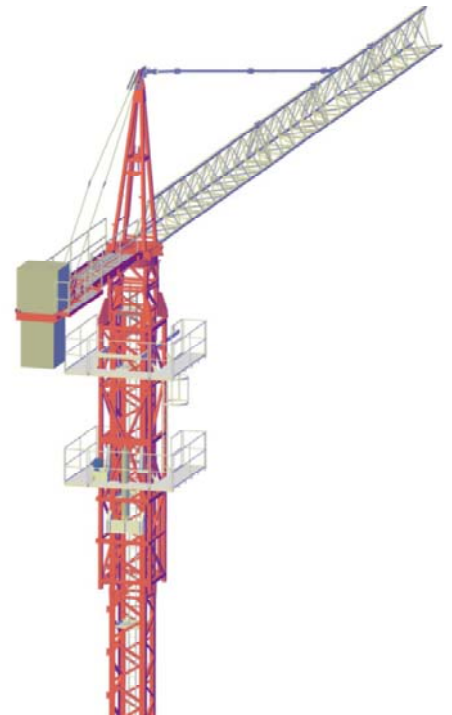
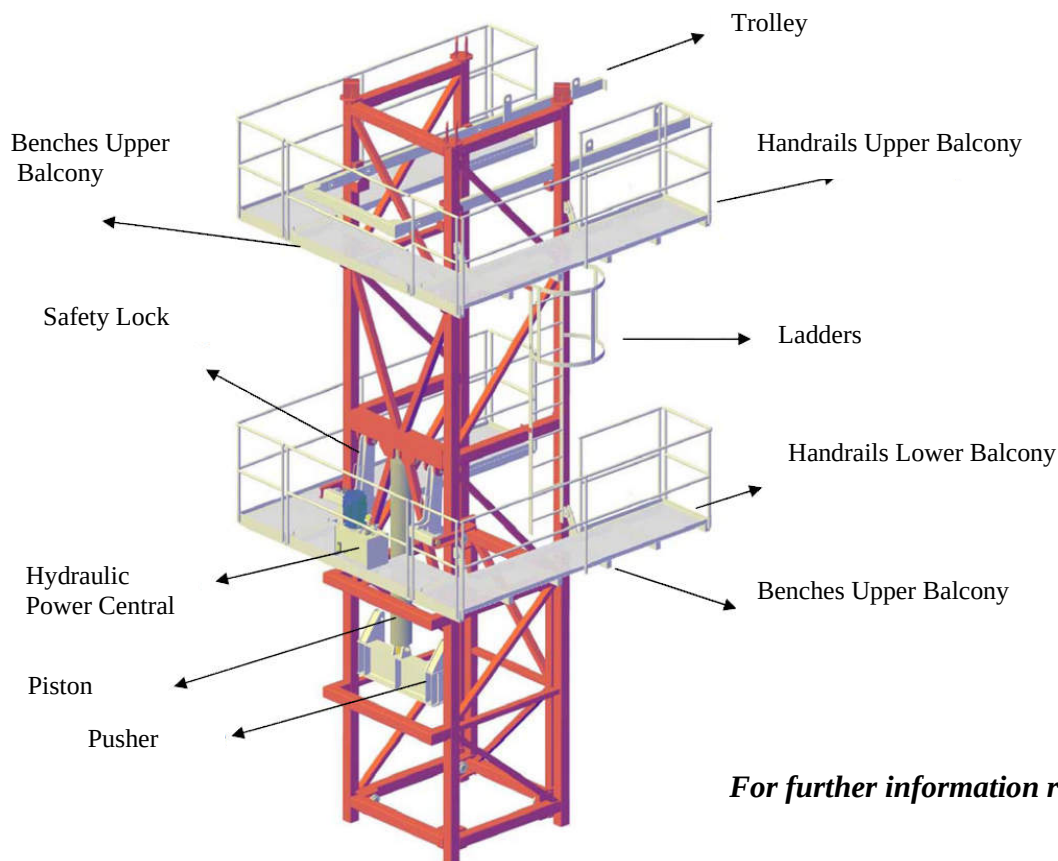
Tower Mast SM110 Round Type



Tower Mast SM110 Square Type

Climbing tower mast sections type SM 110, morphologically divided into two types, identified by a round or square plate that allows us to ensure correct installation directions of the stairs in accordance with the normative in value.

The structure that allows, this growth is the Climbing Cage.



For further information refer to the manufacturer manual.

Consideration of the sense for the foundation of the anchors.



When performing the foundation of the anchors, must take into account the orientation of the anchors, to prevent problems with the sense of the ladder, and with the pusher for the climbing of the mast section, so that once the work has been finished, can proceed to dismantle the tower crane on itself.



For tower mast with lower link



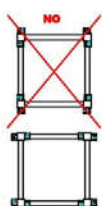
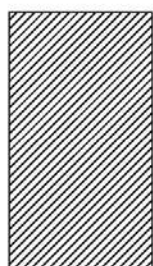
For tower mast SM 11 m

Failure to consider or not address this consideration, the sense of the orientation of the anchor, in relation to the building, only in those cranes in which it will proceed to the climbing process, may cause a disadvantage that can not be removed, therefore, would require auxiliary mediums for this, as a “derrick” from the roof, or in extreme cases an helicopter will be requested.

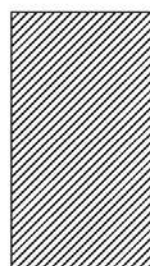
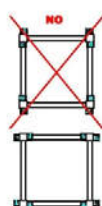
FOR THE PROPER POSITIONING OF THE TOWER MAST SECTIONS AND THE WORK PALTFORMS, THE ASSEMBLY PROCEDURE MUST BE DONE AS FOLLOWS:

The positioning of the anchor, type **S51** or **S52R** must be such that the wide of it becomes always perpendicular to the face of the building on which we will brace.

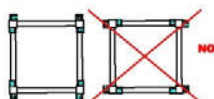
OPTION A



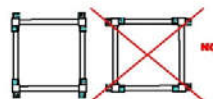
OPTION B



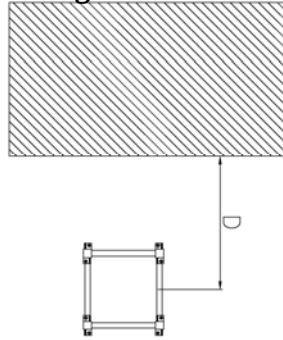
OPTION C



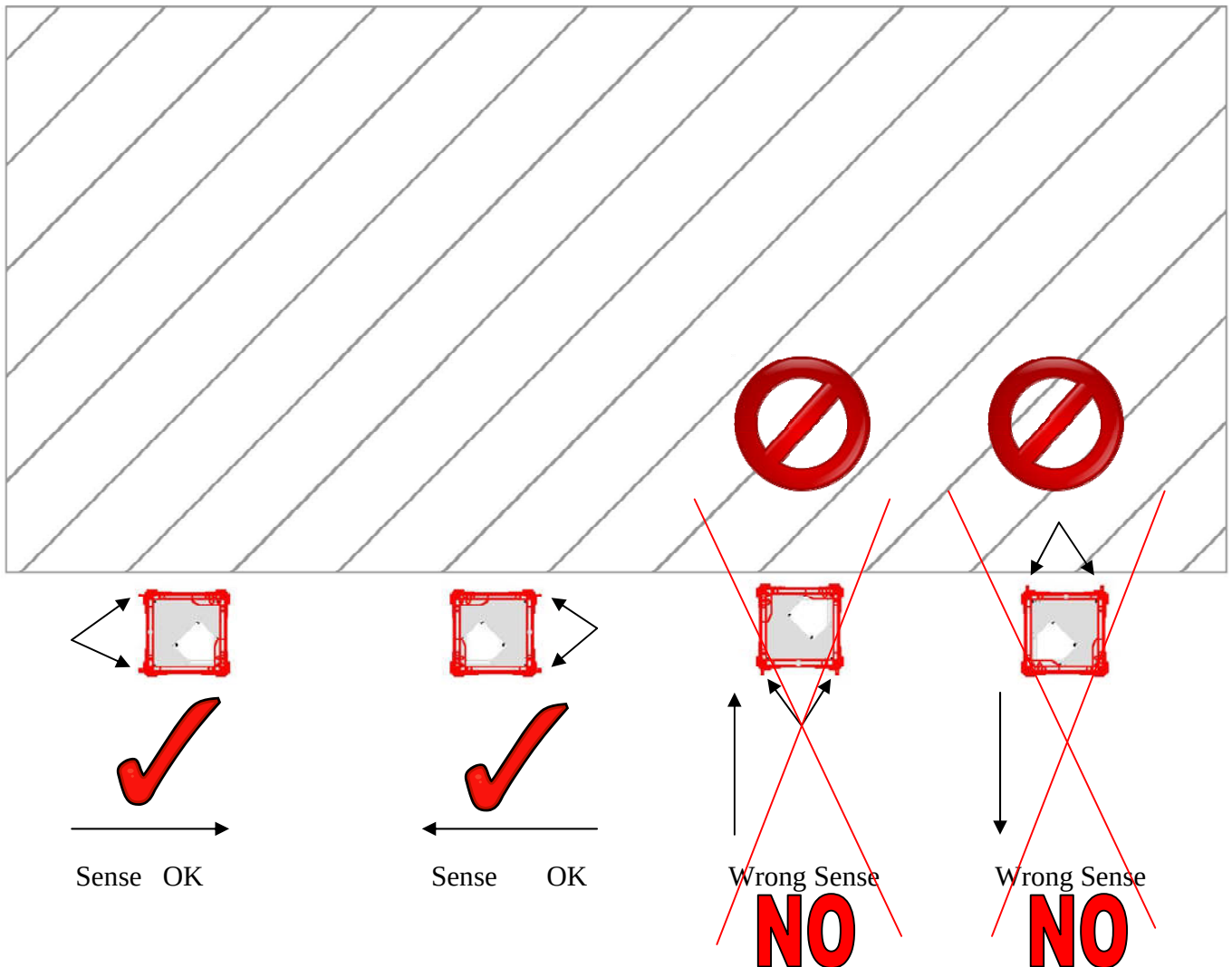
OPTION D



The distance D, from the centre of the tower crane till the outside facade of the building must be amongst 3 and 3.5 meters, **for longer and shorter distances ask to the manufacturer.**

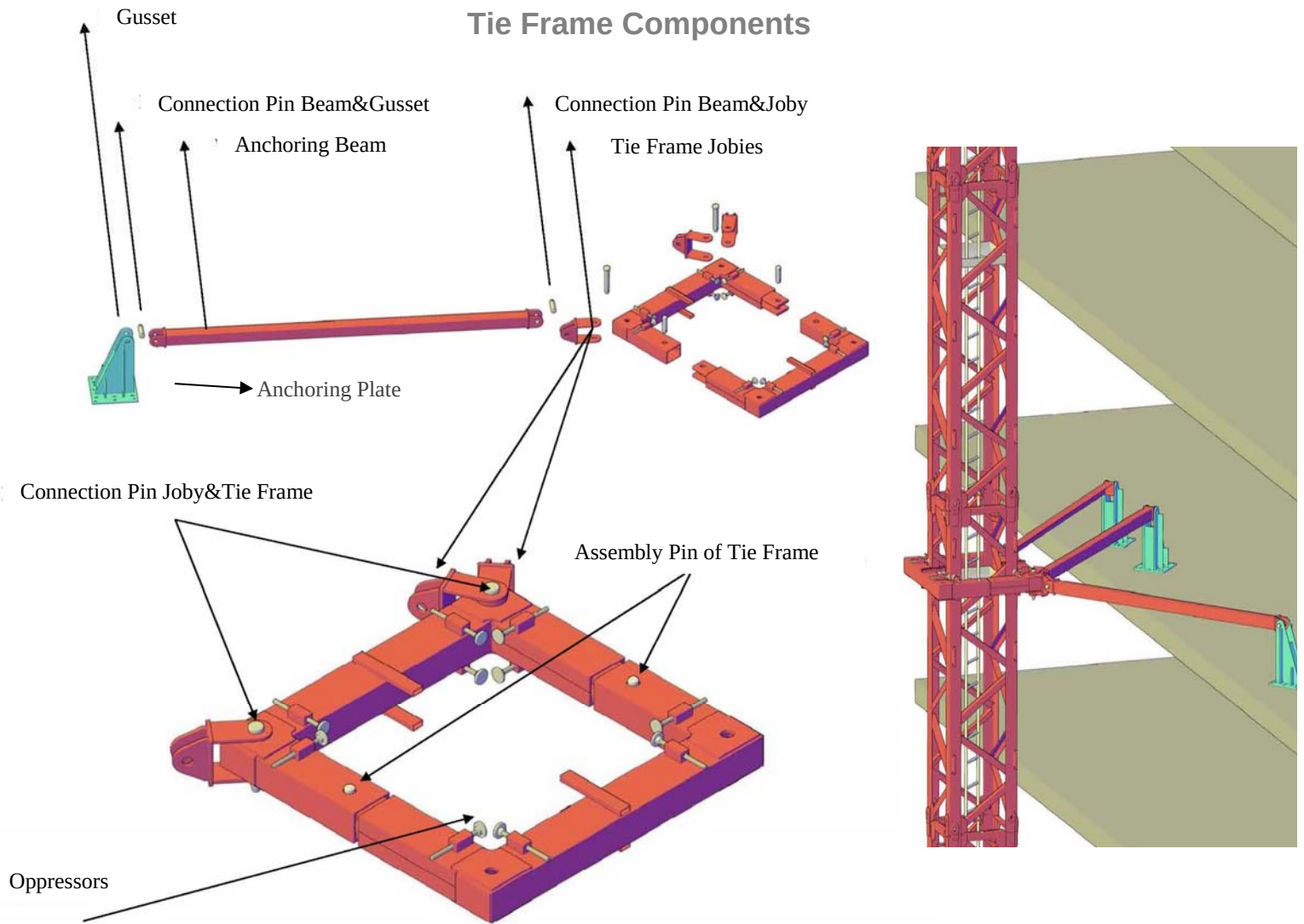


PUSHERS OF THE TOWER MAST SECTIONS MUST BE PLACED PARALEL ALWAYS IN RELATION TO THE BUILDING.



The four senses can allow the erection and the growth of the tower... but the matter occurs in the dismantling procedure, where the both firsts allow the process, while the two left ones, cannot be dismantled by themselves due to the jib or counterjib will crash with the existent building.

Tie Frame Components



Anchoring Gussets*** : can be cut on height, to size for assuring the horizon ability of the anchoring beams, for a correct transmission of the efforts.

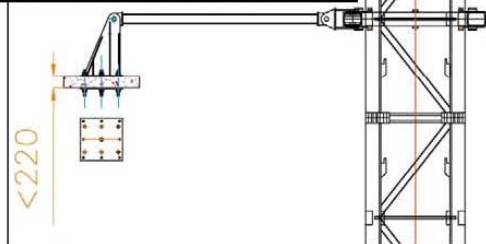
Tips: the tips must be weld in the jobsite, due to allow to cut to size the anchoring beams, according with the need of each project, directly in the jobsite, working out each irregularity or amend during the development of the project.

Anchoring beams: Standard lenght 6 meters, can be cut to size, in the job site.

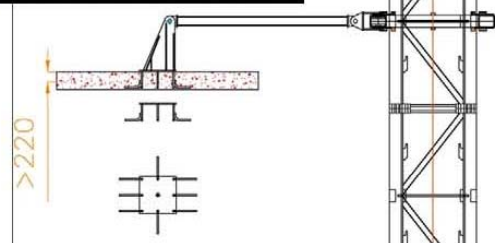


*** The type and height of the anchoring gussets, are determinate by a preliminary study of the project.

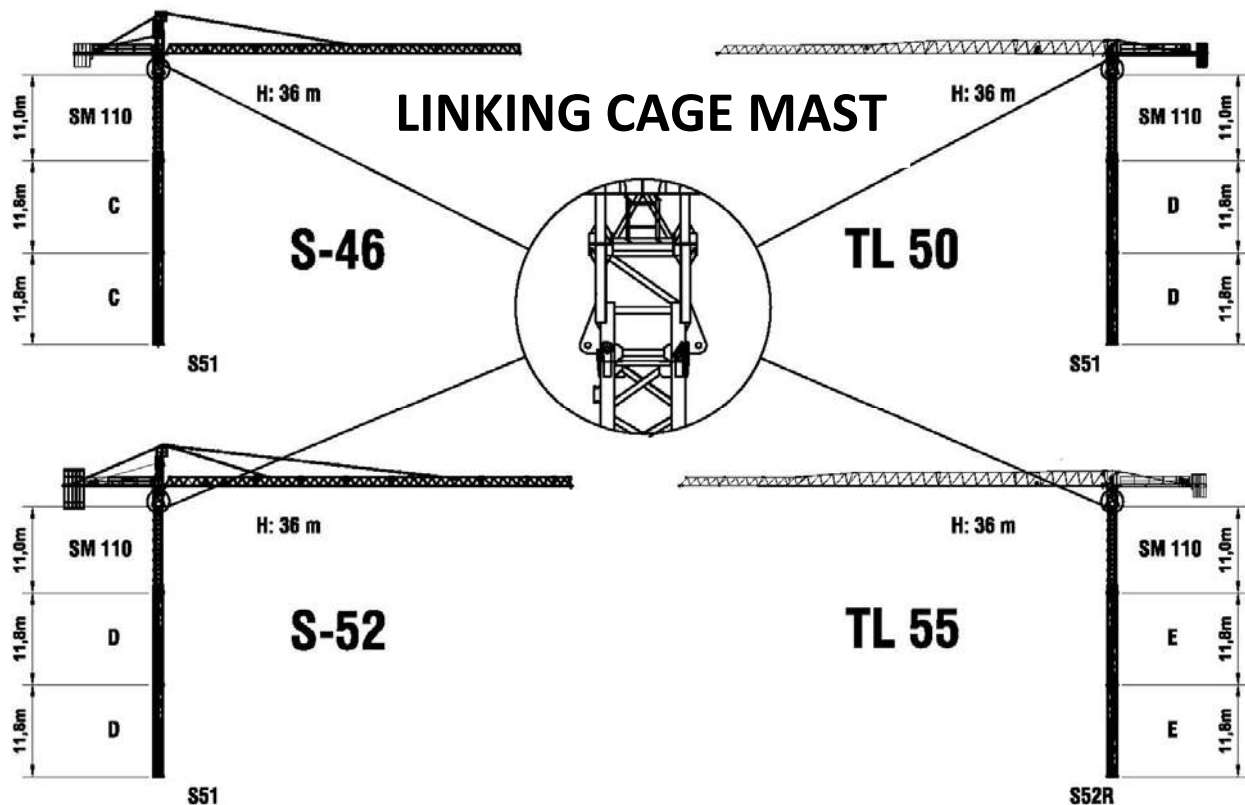
Plates and counter plates for slabs <220mm



Plates for slabs >220mm

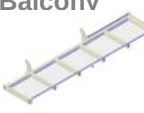
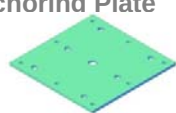
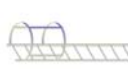
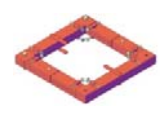


Configurations and Basic Heights According to the Model of Tower Crane.



For different free standing height for initial erection, refer to the Technical Department.

Weight & Dimensions

Element	Weight (kg)	Dimensions (mm)	Element	Weight (kg)	Dimensions (mm)
Piston 	390	Ø220 x 2300	Climbing Cage 	2425	8100x1760x1965
Trolley 	150	336 x 4000 x 1360	Frontal Cover 	325	1810x1350x330
Pusher 	150	1120 x 275 x 650	SM110 	1420	4095x1150x2150
Safety Lock 	70	370 x 430 x 850	Linking Cage Mast 	875	1500x1650x1650
Hydraulic Power Central 	190	570 x 320 x 700	SM110 11mts 	4260	11245x1150x2150
Big Balconv 	105 c/u Total 420 kg	830 x 3450 x 330	Gusset 	50kg C/U	420x340x850
Small Balcony 	60 c/u Total 120 kg	1965 x 655 x 130	Anchoring Plate 	40 kg C/U	500x500x20
Handrails 	140 (2 sets)	Tipo 1: 700 x 1090 Tipo 2: 3385 x 1090 Tipo 3: 1100 x 1090 Tipo 4: 1710 x 1090	Joby 	40 kg per set	450x160x290
Ladders 	30	780 x 720 x 2395	Tie Frame 	690	1700x1700x260

Different options of shipment for loading the climbing system for **40' HC**:



Shipment A): Tower Mast Section SM110 11 m + 6 Climbing Tower Mast Section SM110 Linking Cage Mast

Shipment B): Climbing Cage SM110 + 6 Tower Mast Section SM 110 + 2 Tie Frames + Climbi Accessories

Shipment C): 12 Climbing Tower Mast Section SM 110 (useful tower mast height 46 m)

**External
Climbing
SM110**