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SC 1015 BOX

Technical book

Soucieux de la qualité de ses produits, SATECO se réserve le droit d'en modifier sans préavis les caractéristiques



DT. 32.01.06

Dated: 15.09.2020

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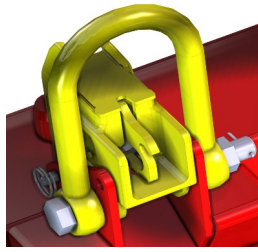
32.00 General description of SC 1015 BOX



For more understanding some pictures of this chapter are presented without stability.



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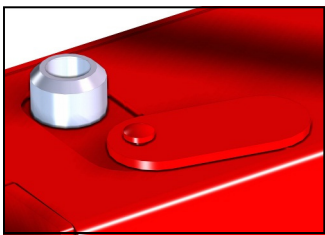


Universal high tie rod blocks

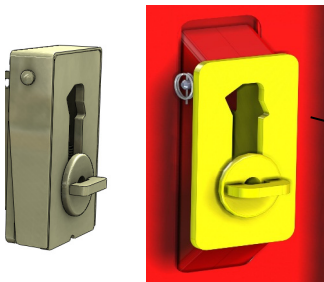
Counter railing

Working board with enlarged access hatch
Platform

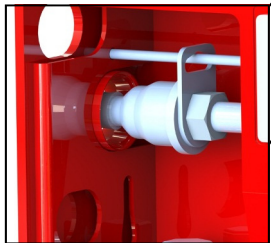
Working board lock with centralized lock
Gate



High assembling for superposition



Universal block / low and intermediate detensioning unit*



Assembling in juxtaposition



Low assemblage for superposition



sateco
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Manutention handle

Ladder and step

SC1015 Box presentation

D.T. SC 1015 BOX



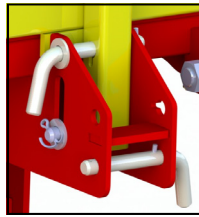
Guard rail



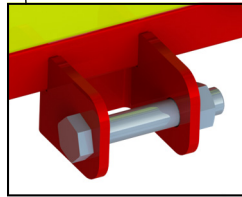
High storage for the tie rods



Assembling pin



Fixing piece of guard rail and crutch



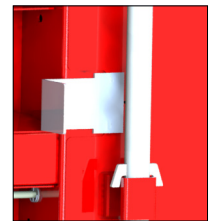
Lug for stabilizer



Plumb line steel plate



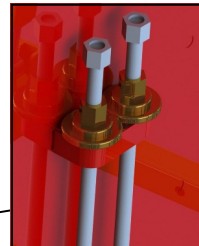
Hook to hold accessories



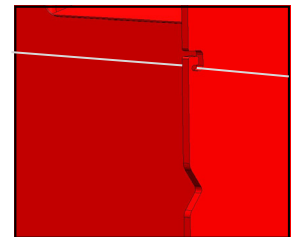
Plumb line steel plate on panel height 3m



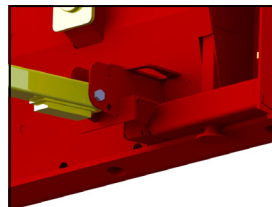
Sliding handle of crutch



Low storage for tie rods

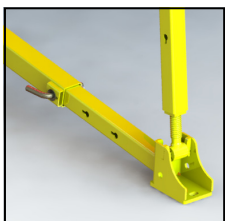


Notch to adjust the verticality

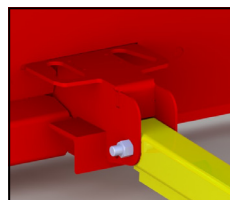


Reinforcement wide crowbar

Version "Narrowed footing" see sheet 32.01.15



Support shoe of low part of crutch



Fixing piece of low brace bar



Upper extended screw jack

* : Items available in option

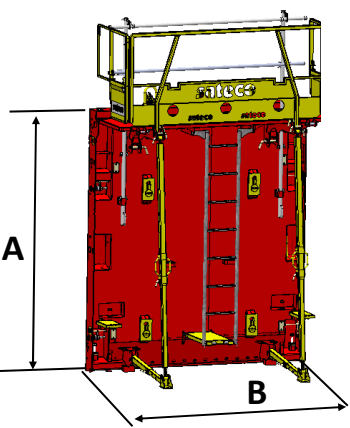
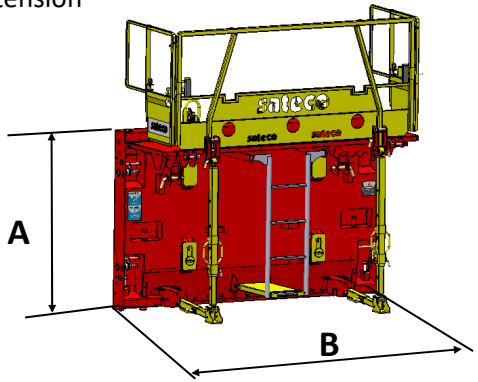
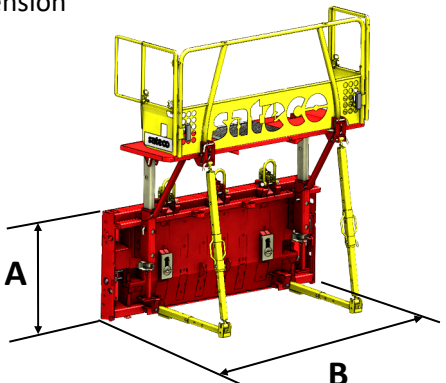
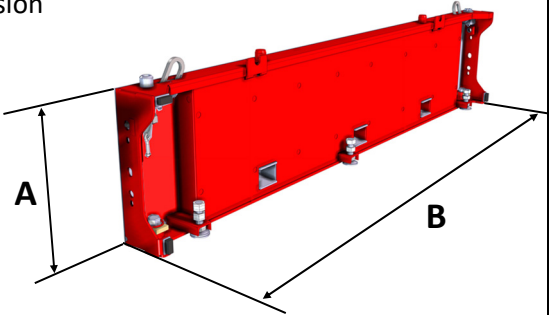


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Sheet: 32.00.00 ind.02

Panels range

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Type	A (mm)	B (mm)	Weight - steel thick. 5mm (Kg)
Panel 	2800	2400	1090
	2800	1200	629
	2800	900	474
	2800	600	345
	2800	300	191
Lower extension 	1500	2400	690
	1500	1200	445
	1500	900	373
	1500	600	203
	1500	300	120
Lower extension 	1000	2400	690
	1000	1200	439
	1000	900	372
	1000	600	260
	1000	300	136
Upper extension 	500	2400	111
	500	1200	58
	500	900	47
	500	600	38
	500	300	22

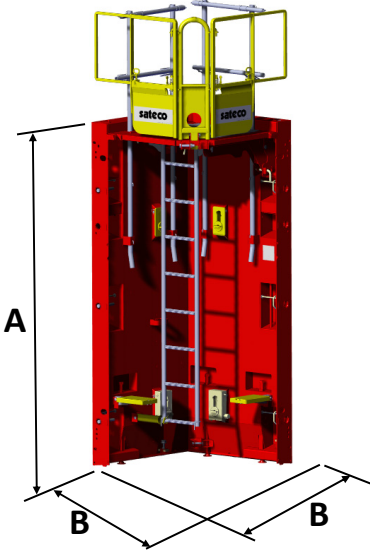
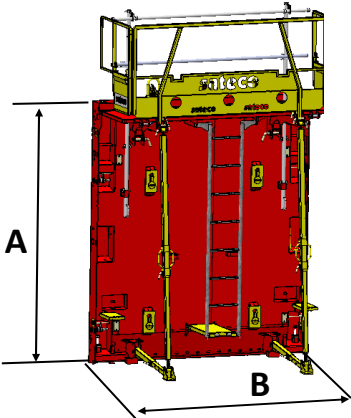


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Panels range (continued)

D.T. SC 1015 BOX



Type	A (mm)	B (mm)	Weight - steel thick. 5mm (Kg)
Inner angle panel 	2800	1140	961
	1500	1140	825
	1000	1140	393
	500	1140	101
	3000	1140	1018
Panel 	3000	2400	1145
	3000	1200	655
	3000	900	495
	3000	600	360
	3000	300	192

All the panels with crutches are available, in version "narrowed footing" see sheet 38RS.01.05



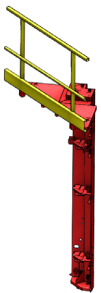
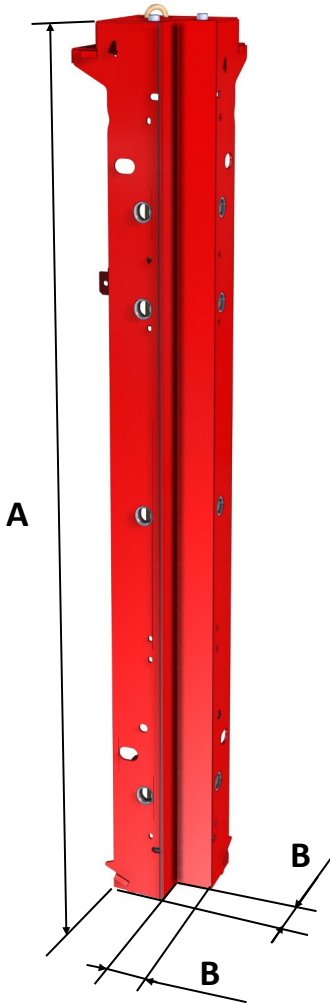
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Panels range (continued)

D.T. SC 1015 BOX



Type	Wall thickness (mm)	A (mm)	B (mm)	Weight - Steel thick. 5mm (Kg)
Outer angle panel**	150	2800	90	178.3
	160	2800	100	181.1
	180	2800	120	210.5
	200	2800	140	218.5
	150	1500	90	83.4
	160	1500	100	85.3
	180	1500	120	88.4
	200	1500	140	93.2
	150	1000	90	62.4
	160	1000	100	64.1
	180	1000	120	67
	200	1000	140	69.4
	150	500	90	16.3
	160	500	100	17.7
	180	500	120	17.1
	200	500	140	20.3
	150	3000	90	181
	160	3000	100	185.9
	180	3000	120	213
	200	3000	140	221



** : Outer angle panels are SC9015 products



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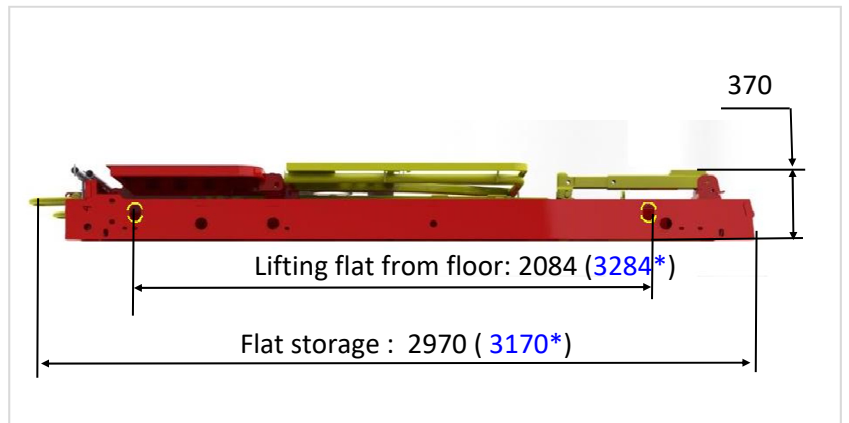
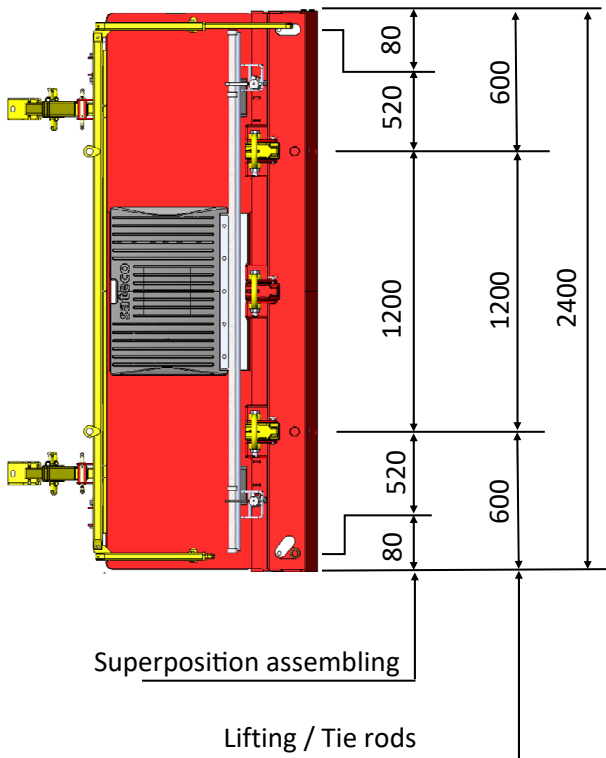
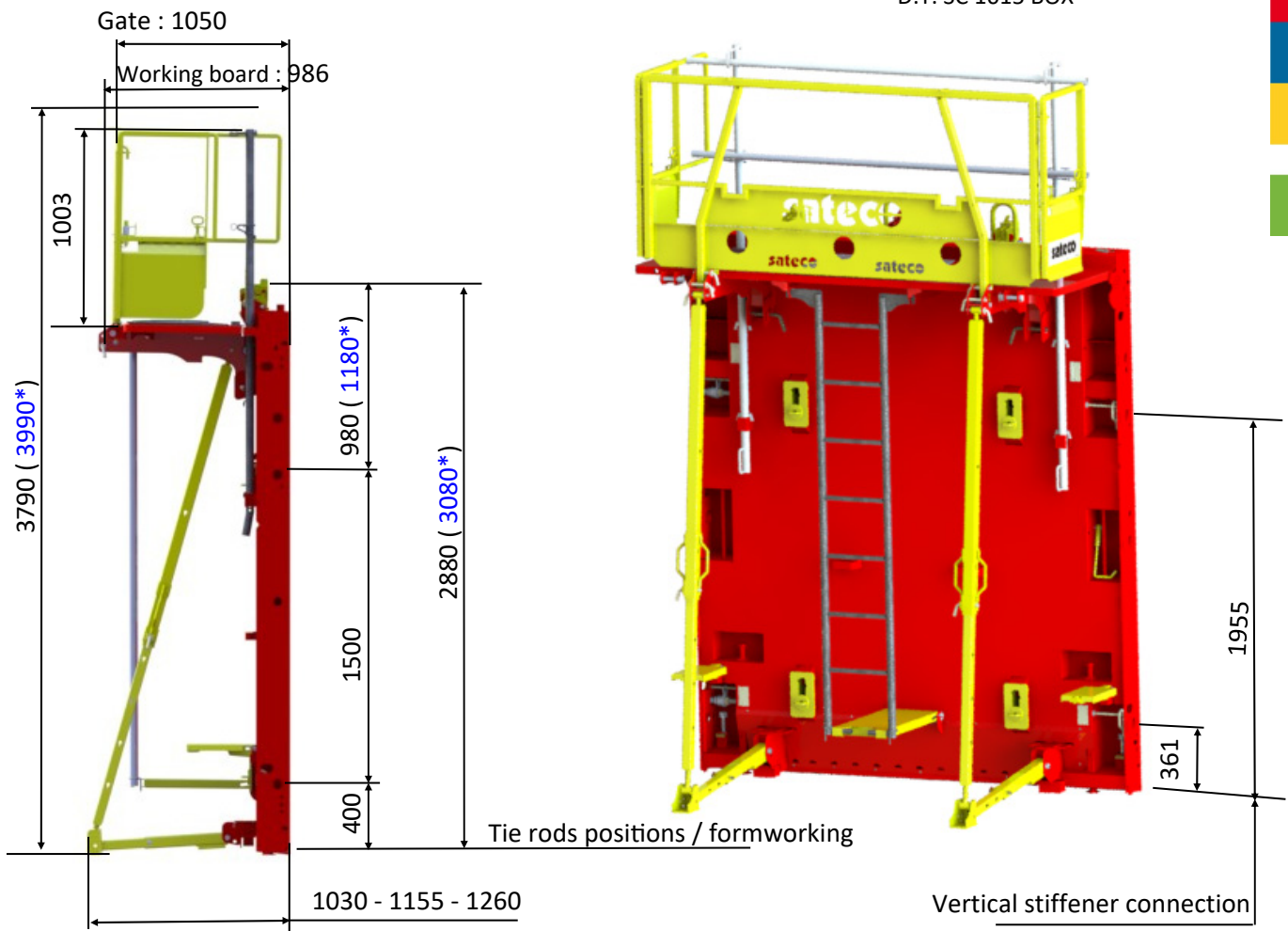


Main dimension features



Panel height 2800 - width 2400

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** values for panel height 3m

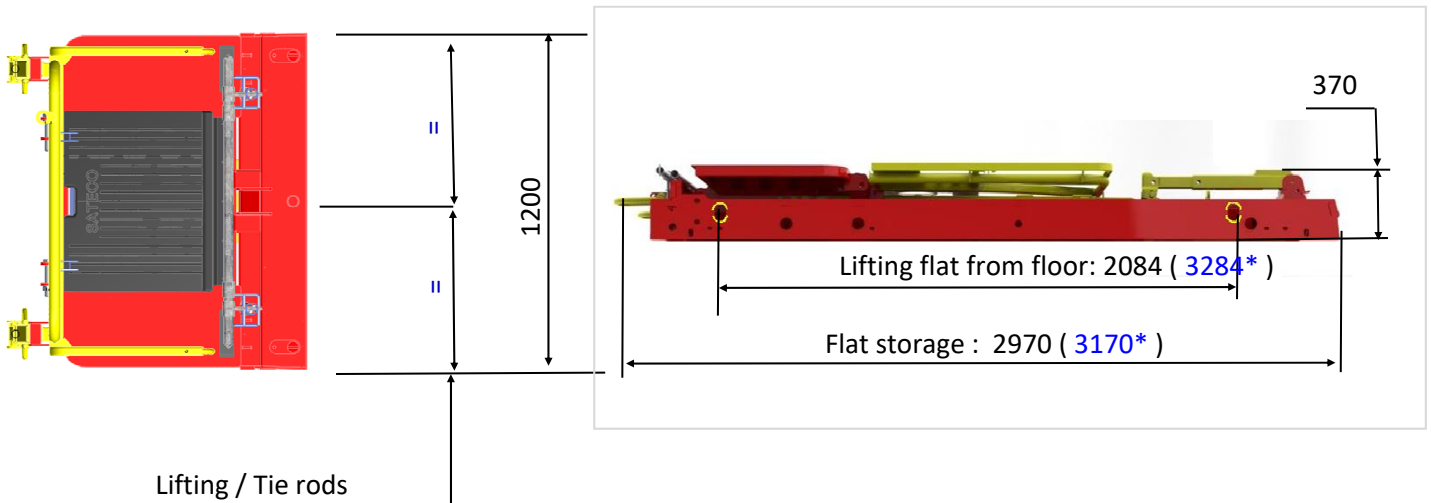
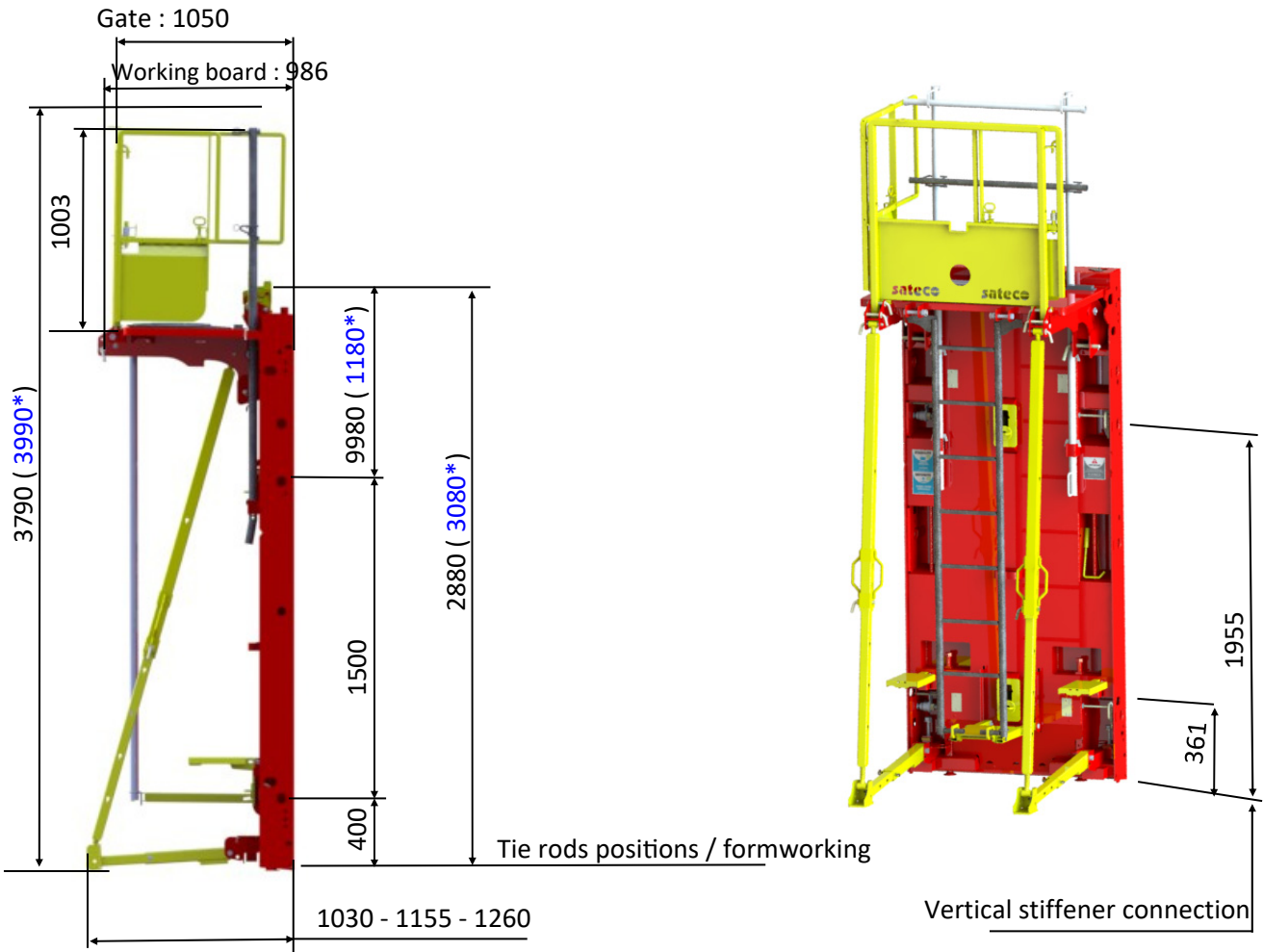


NOUS AVONS UN MONDE À BÂTIR

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Panel height 2800 - width 1200

D.T. SC 1015 BOX



** values for panel height 3m

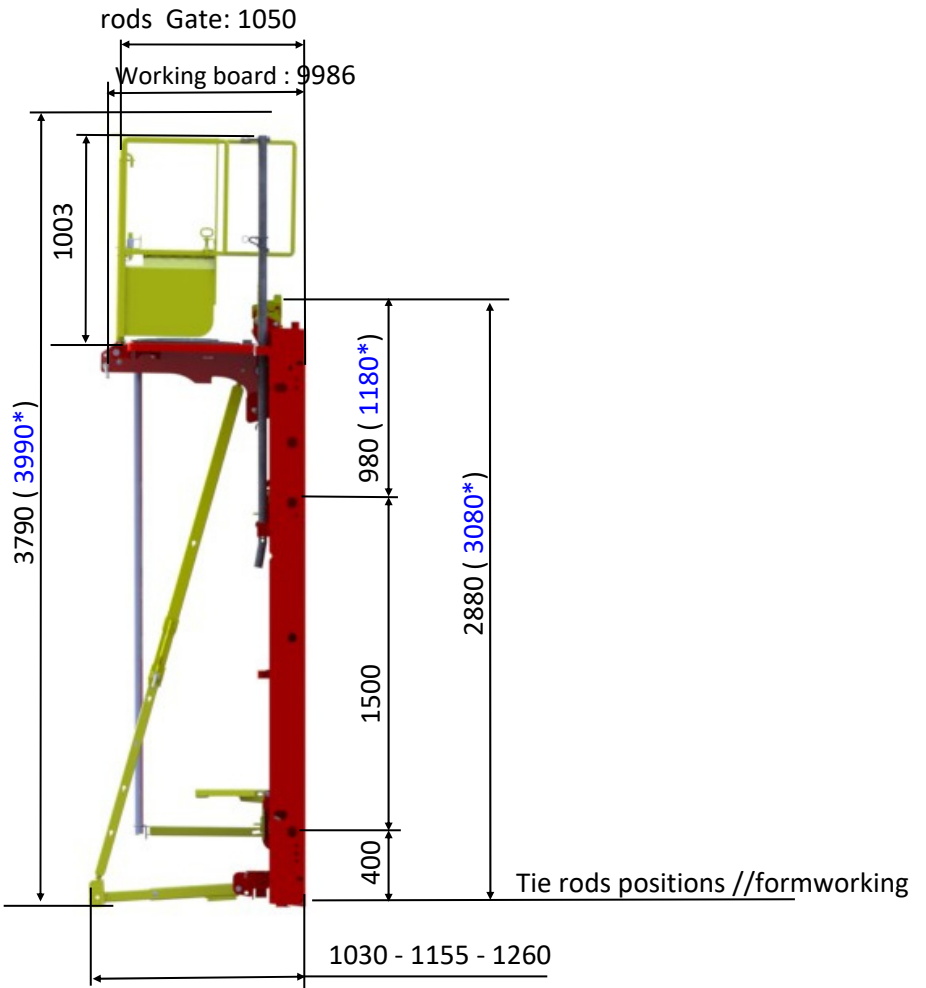
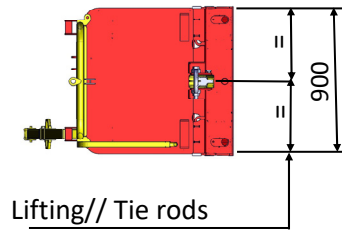
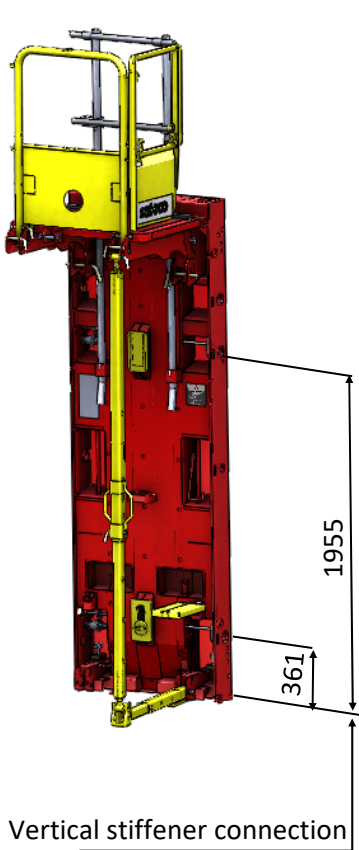


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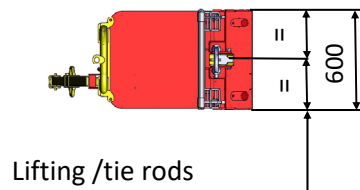
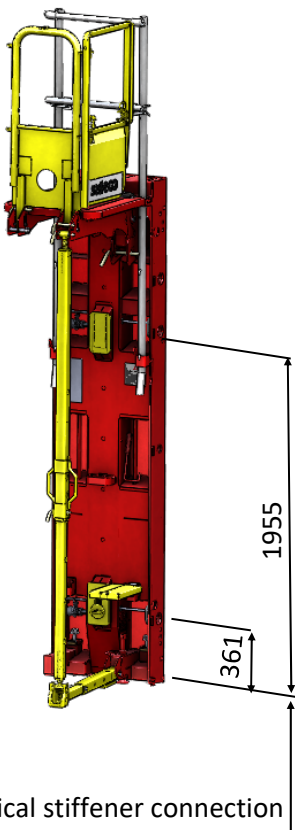
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Panel 2800x900



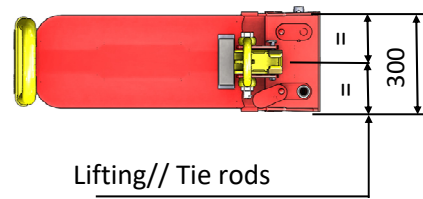
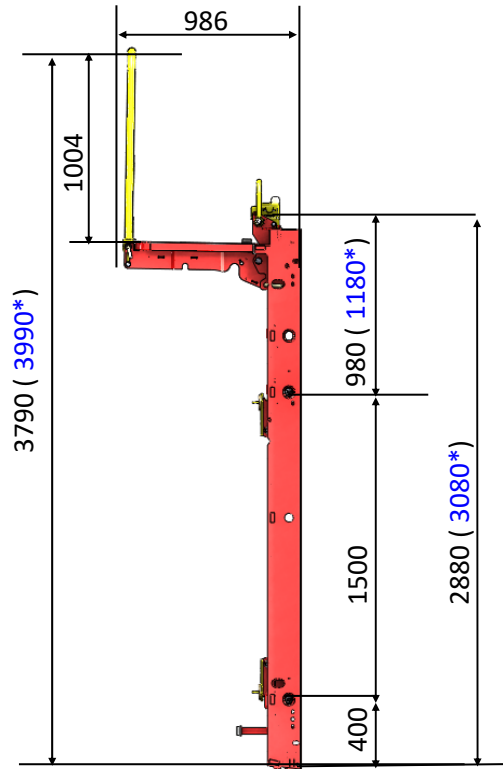
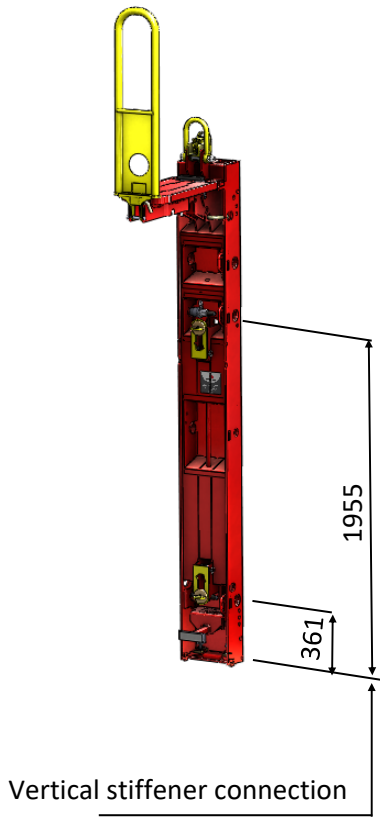
Panel 2800x600



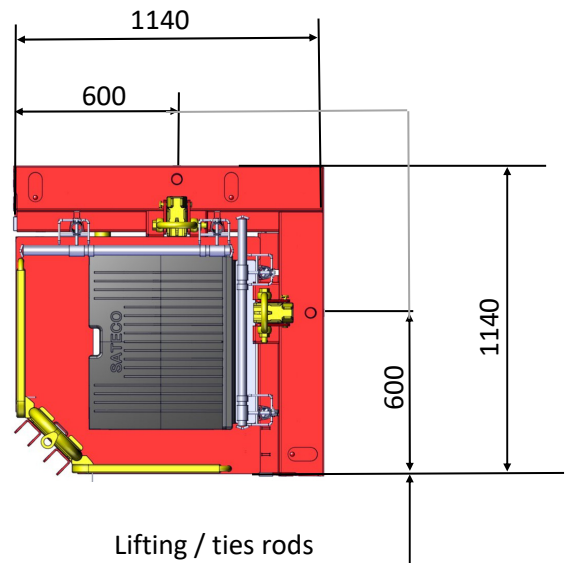
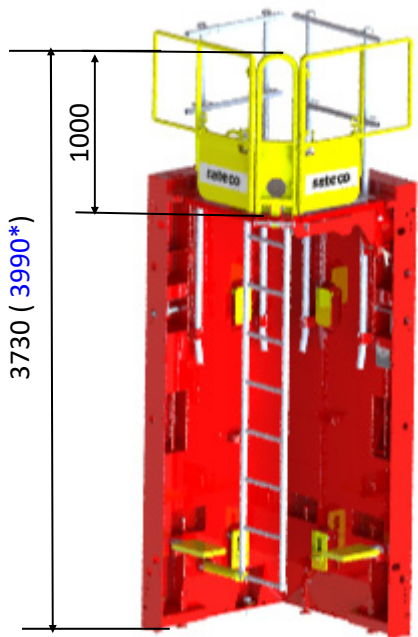
* : values for a panel height 3m



Panel 2800x300



Inner angle panel

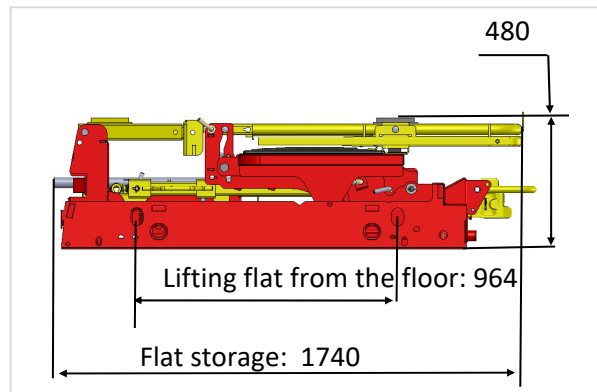
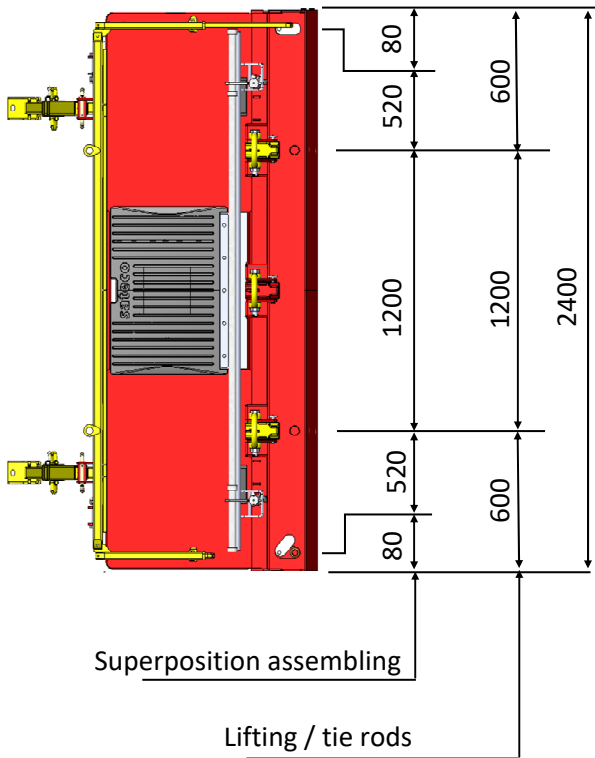
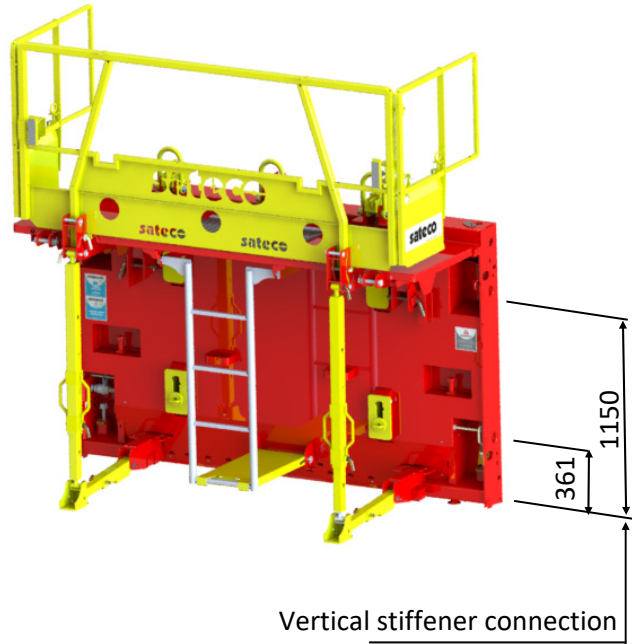
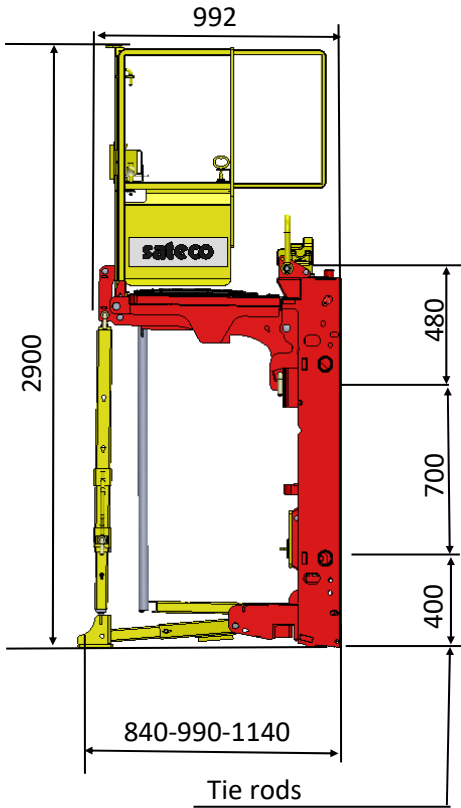


*: values for panel height 3m



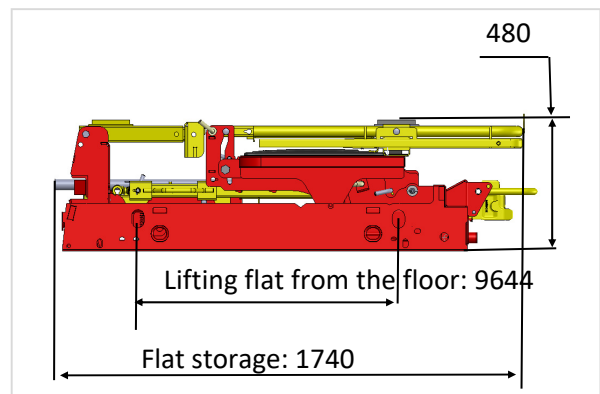
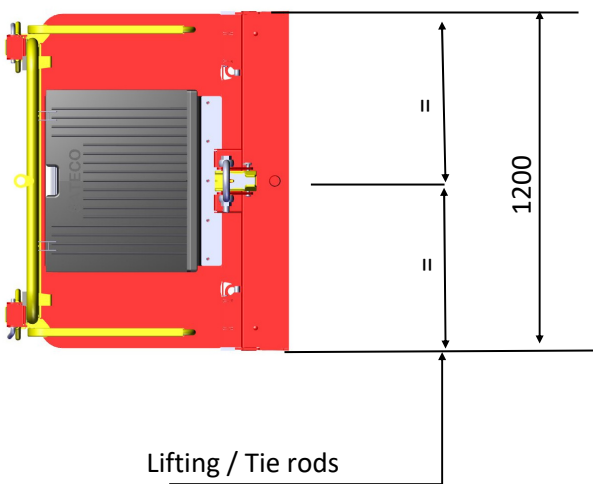
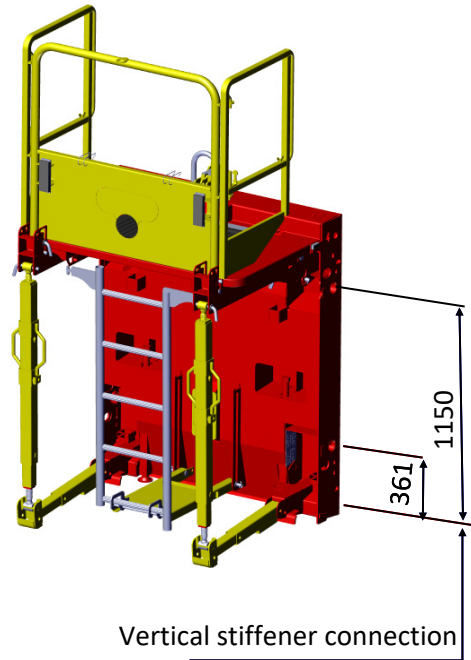
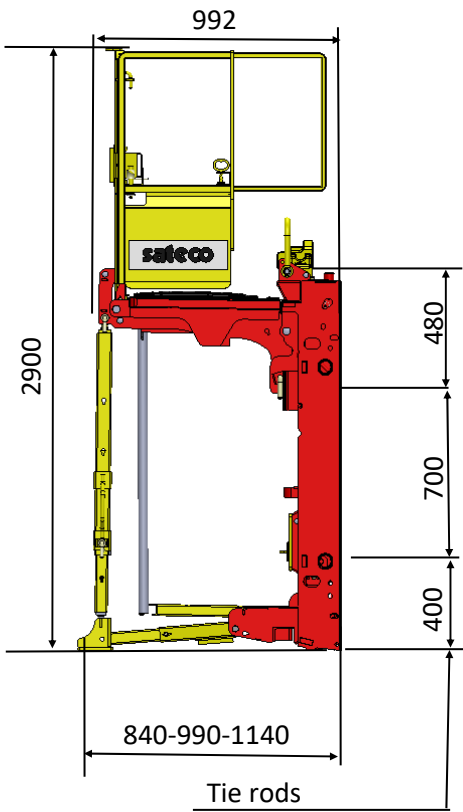


L. Extension height 1500 and width 2400





L. extension height 1500 and width 1200

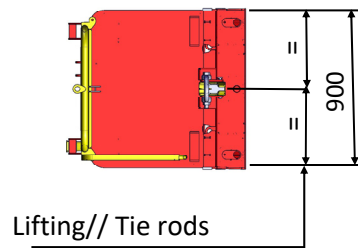
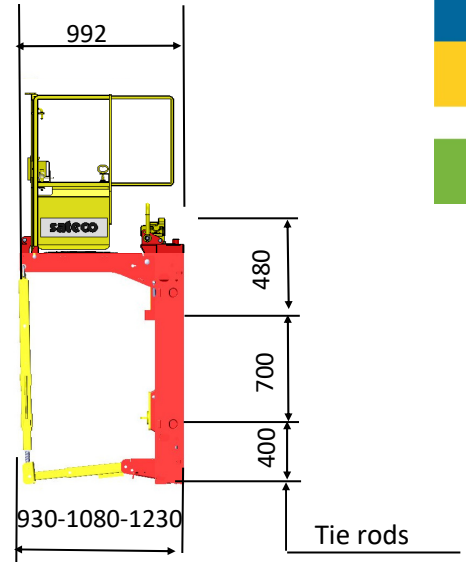
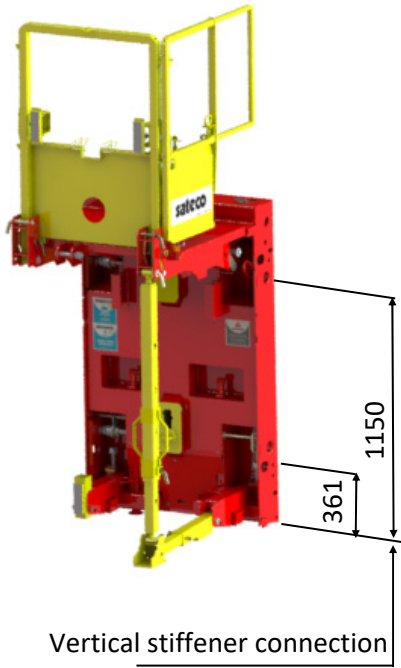


Lower Extension height 1500 - width 900/600

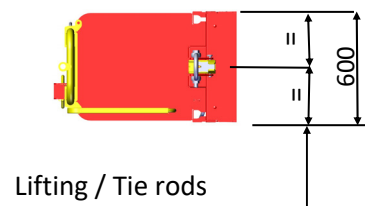
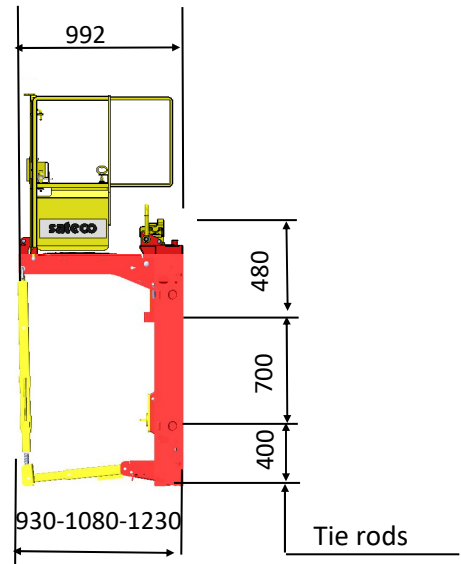
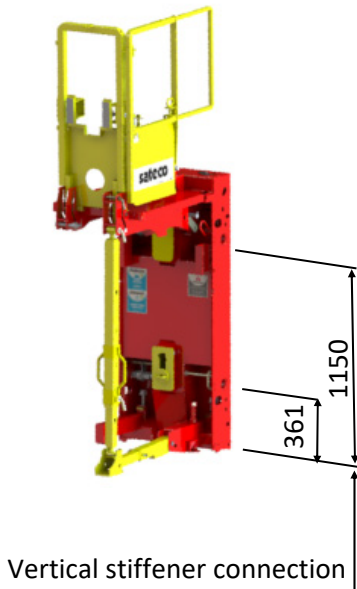
D.T. SC 1015 BOX



Lower extension height 1500 and width 900



Lower extension height 1500 and width 600

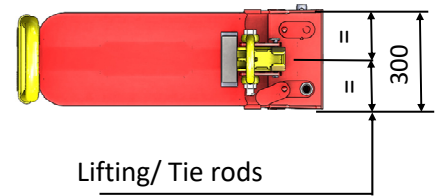
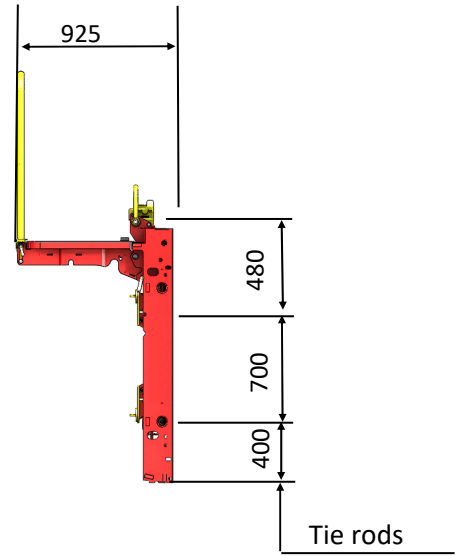
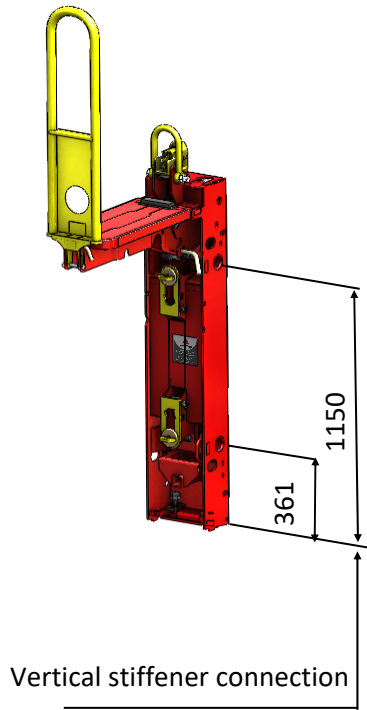


NOUS AVONS UN MONDE À BÂTIR

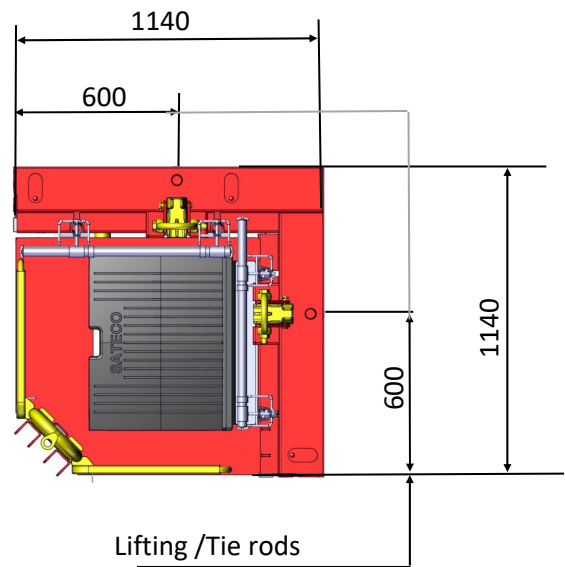
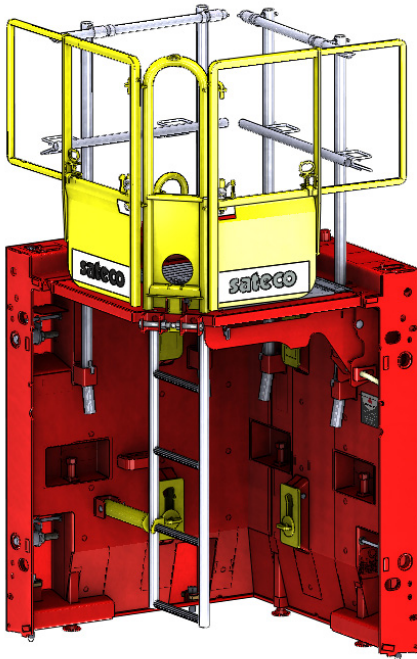
Sheet: 32.01.06 ind.03



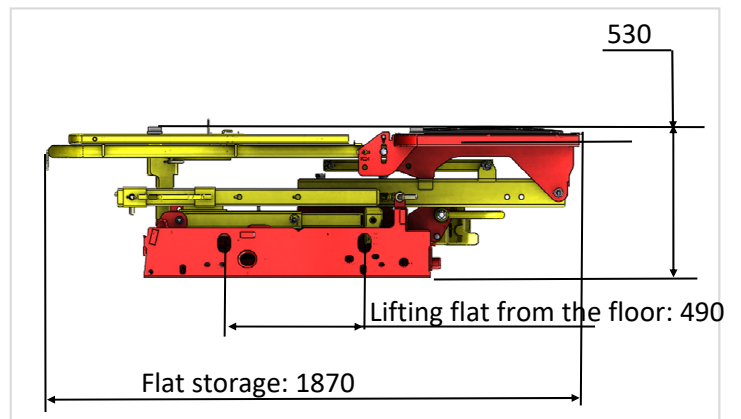
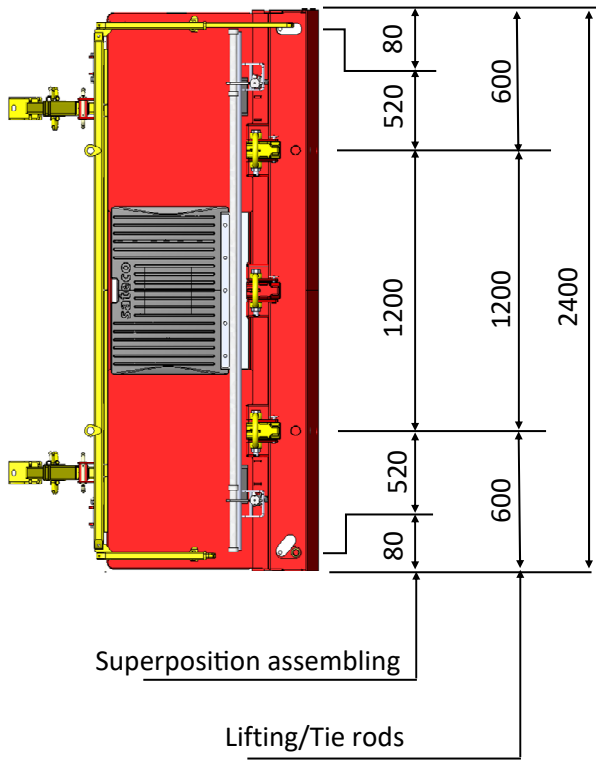
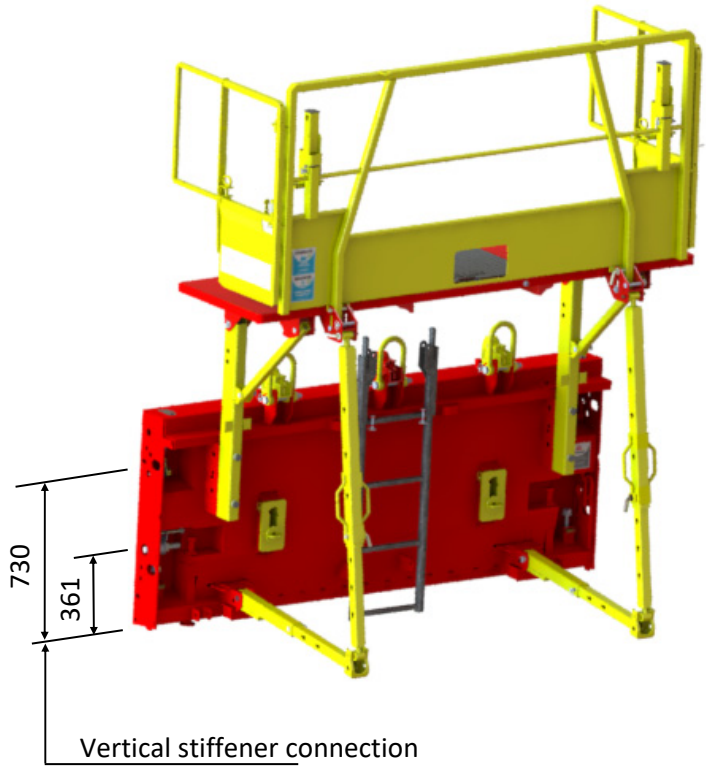
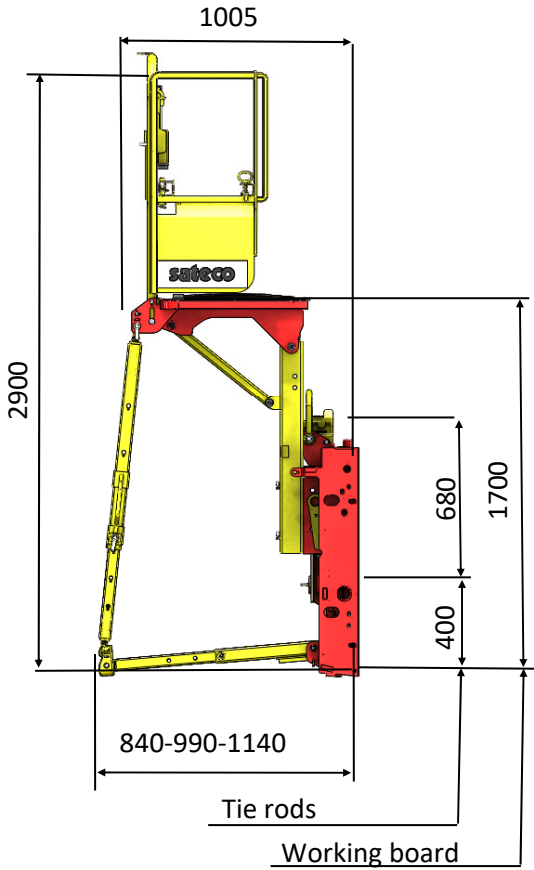
Lower extension height 1500 and width 300



Lower extension height 1500 angle

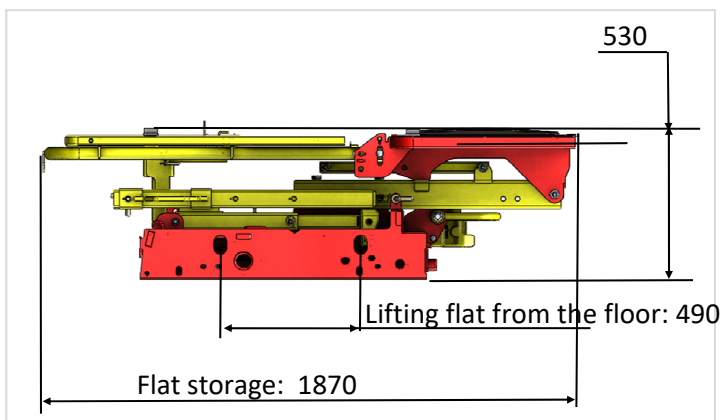
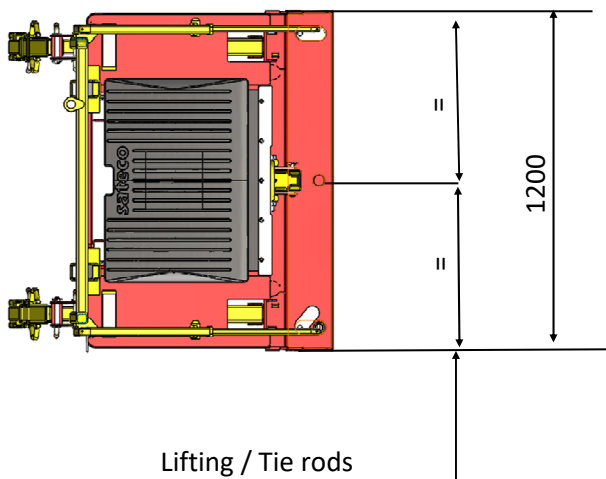
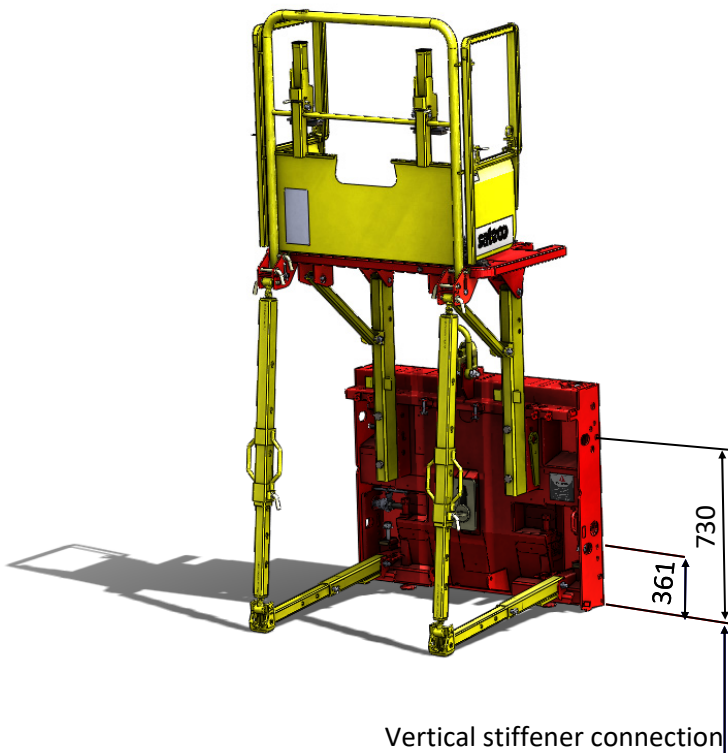
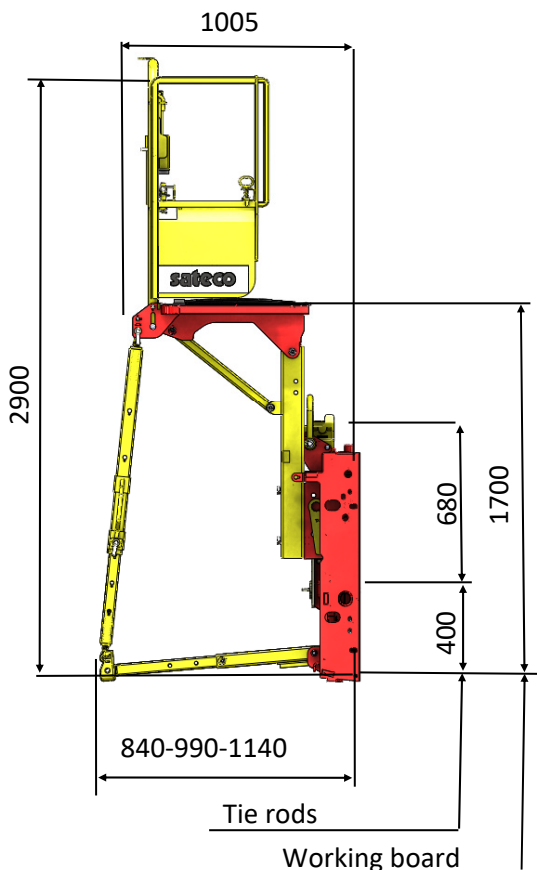


L. Extension height 1000 and width 2400:





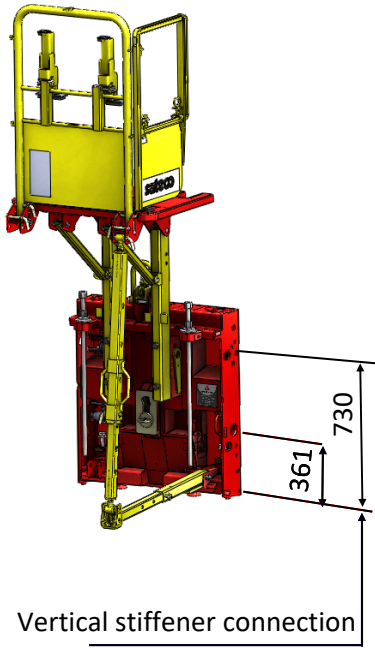
Lower extension height 1000 and width 1200



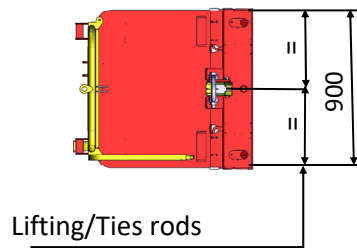
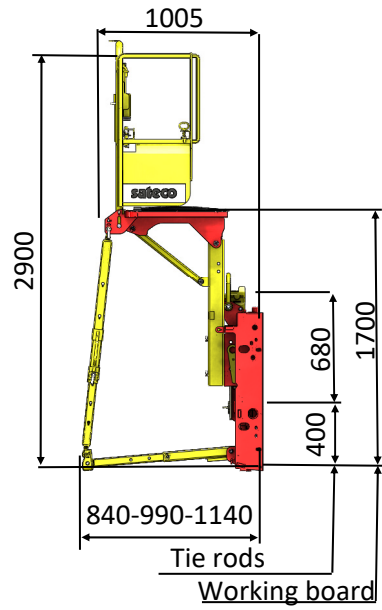
Lower extension height 1000 - width 900/600



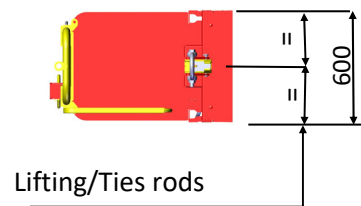
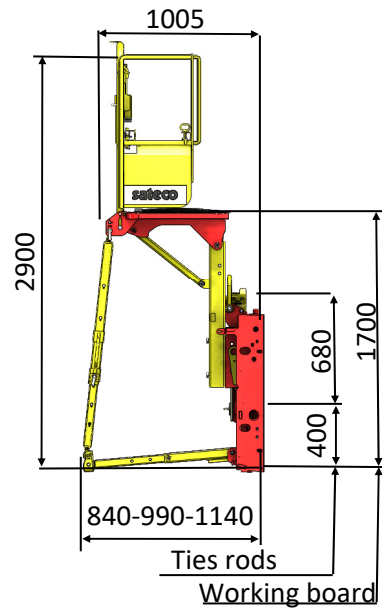
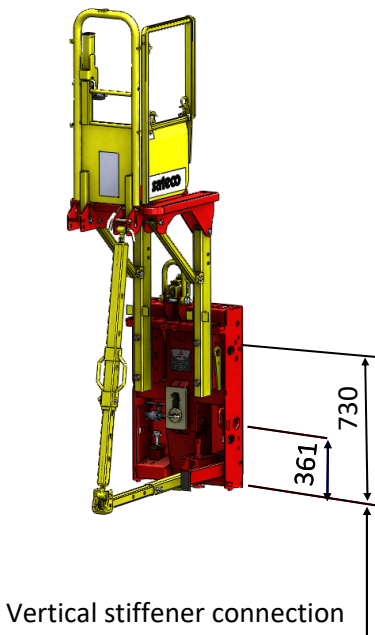
Lower extension height 1000 and width 900



D.T. SC 1015 BOX

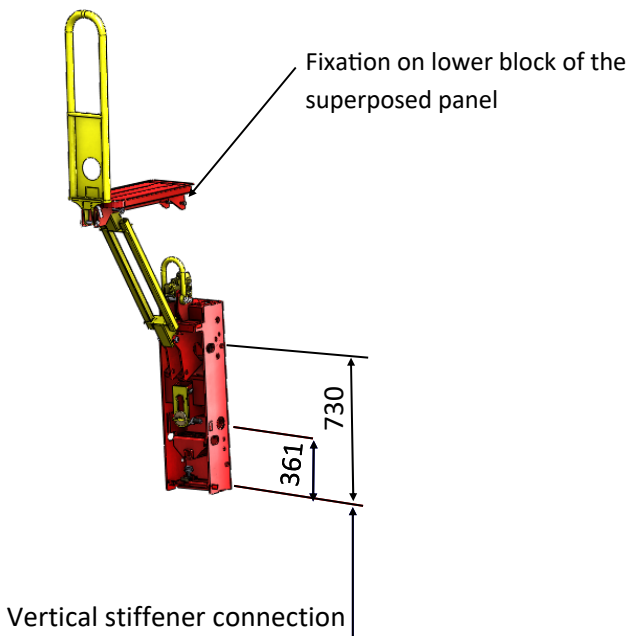


Lower extension height 1000 and width 600

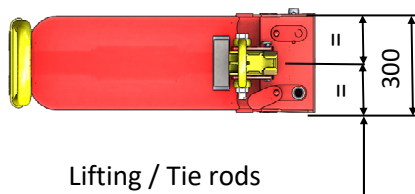
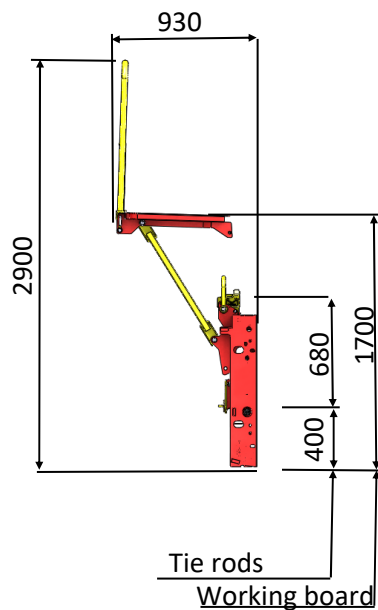


NOUS AVONS UN MONDE À BÂTIR

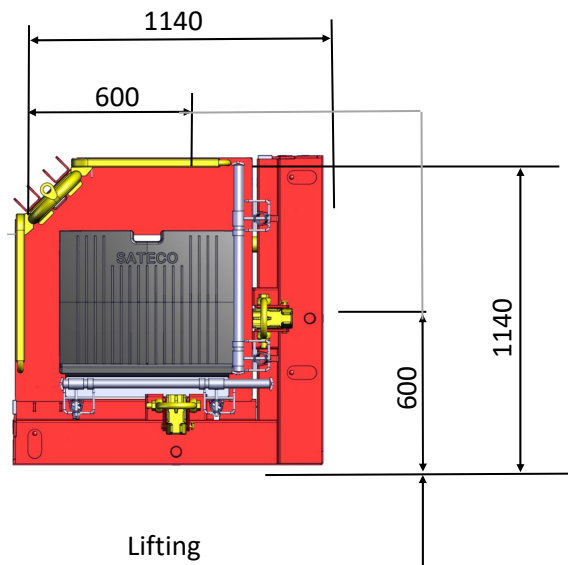
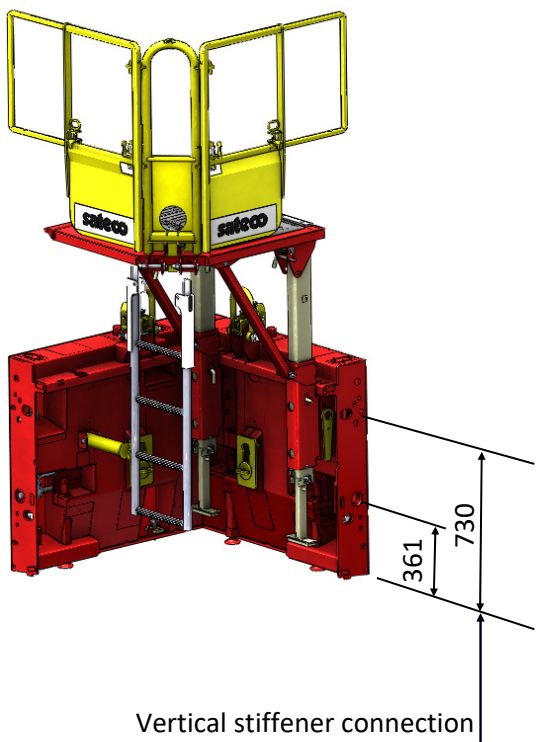
Lower extension height 1000 and width 300



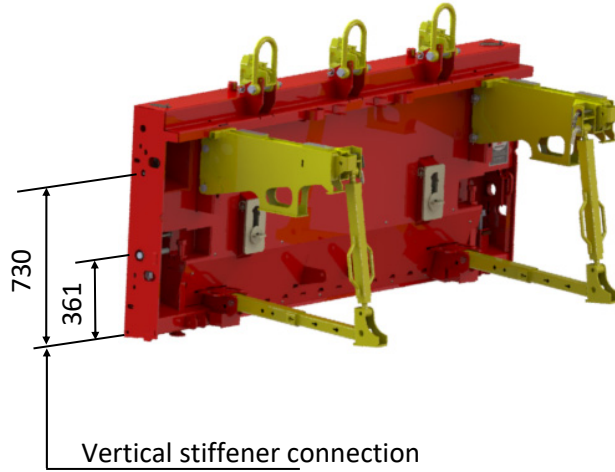
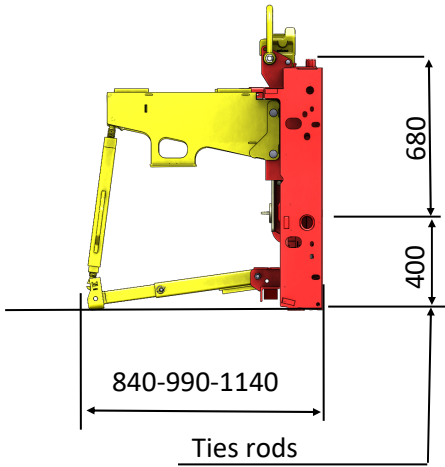
D.T. SC 1015 BOX



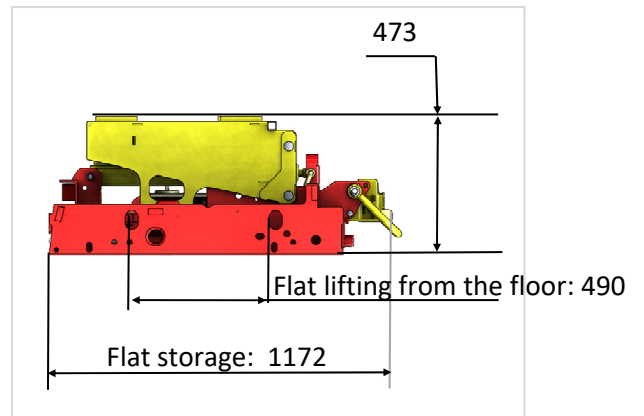
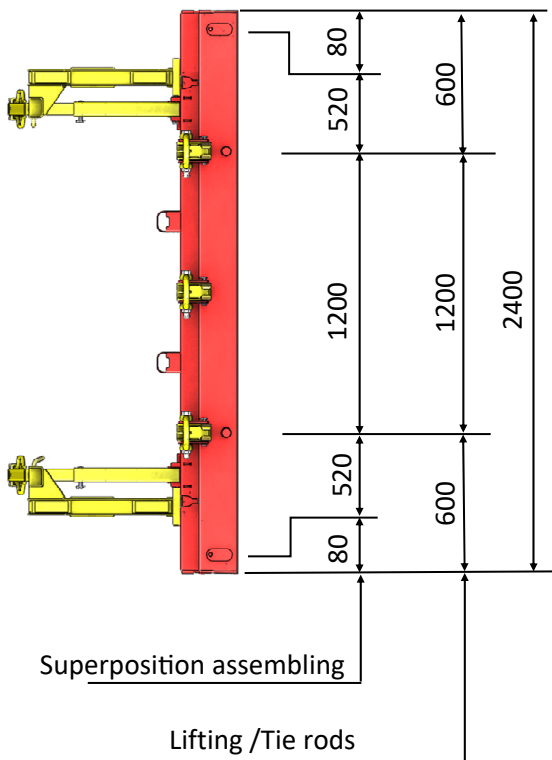
Lower extension height 1000 angle



Lower extension height 1000 without w.board (with propping kit):



For more width: please contact us

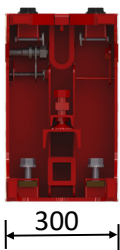
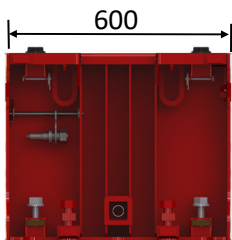
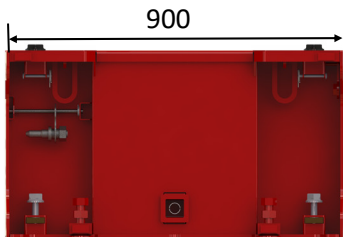
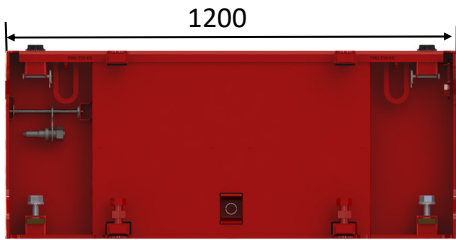
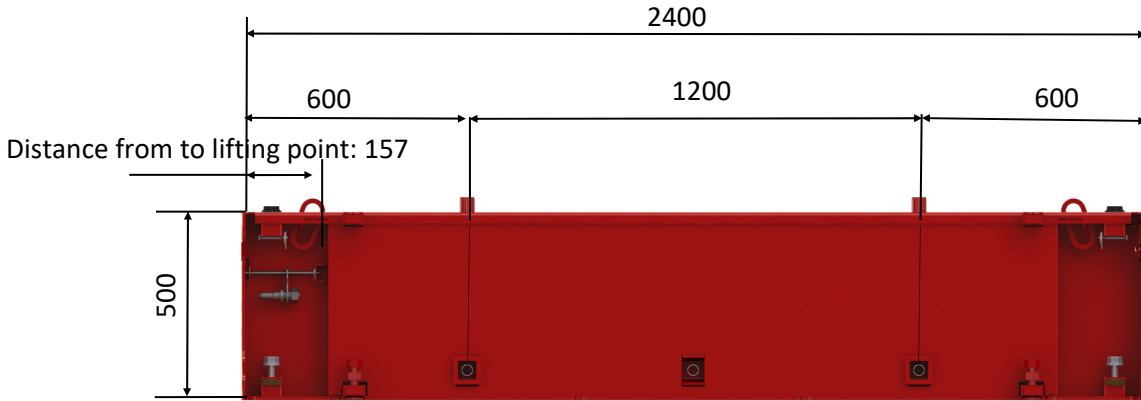


sateco

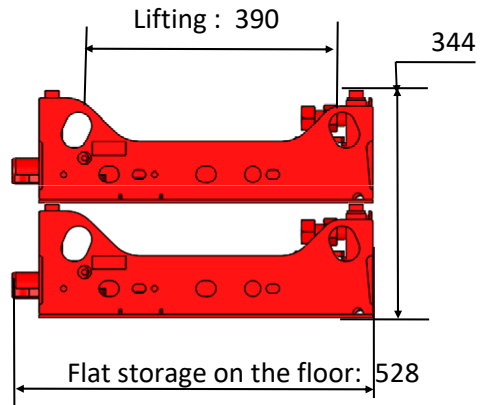
NOUS AVONS UN MONDE À BÂTIR

Upper extension height 500

D.T. SC 1015 BOX

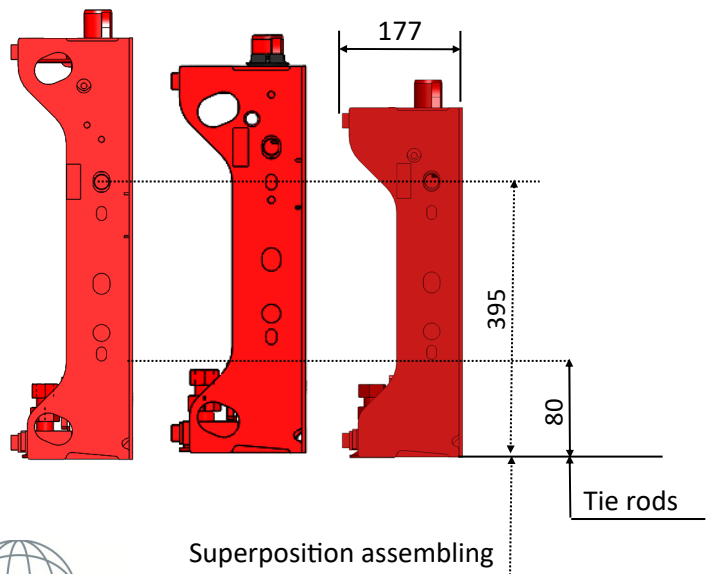


STORAGE / LIFTING FLAT FROM THE FLOOR:



Lifting flat from the floor: 10 upper extensions maxi

Height 500 / 600 / 700mm :



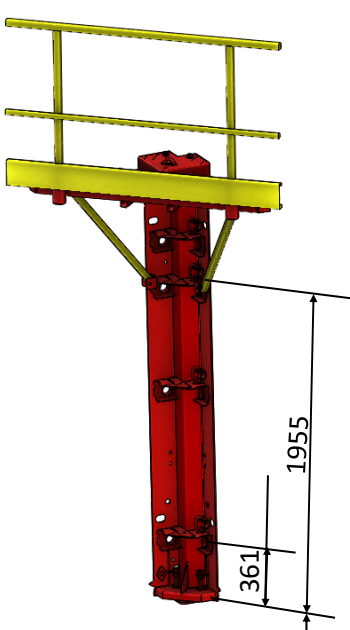
NOUS AVONS UN MONDE À BÂTIR

Sheet: 32.01.13 ind.03

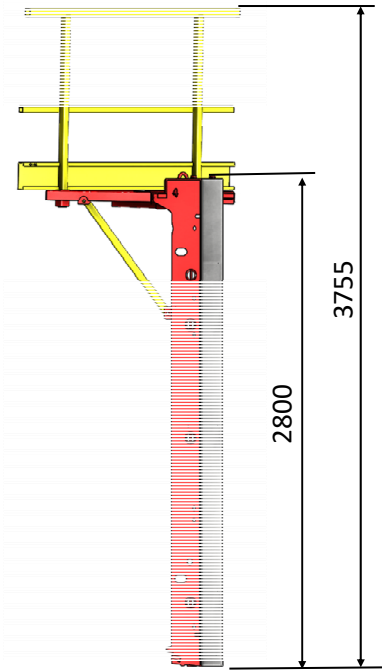
For all dimensions: refer to sheet 32.00.03. Panels and lower extension of angle have their own working board and guard rail.

Juxtaposition is possible the same way as it is on a straight panel.

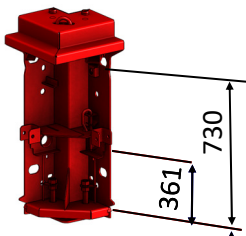
Example of an angle panel 2800 :



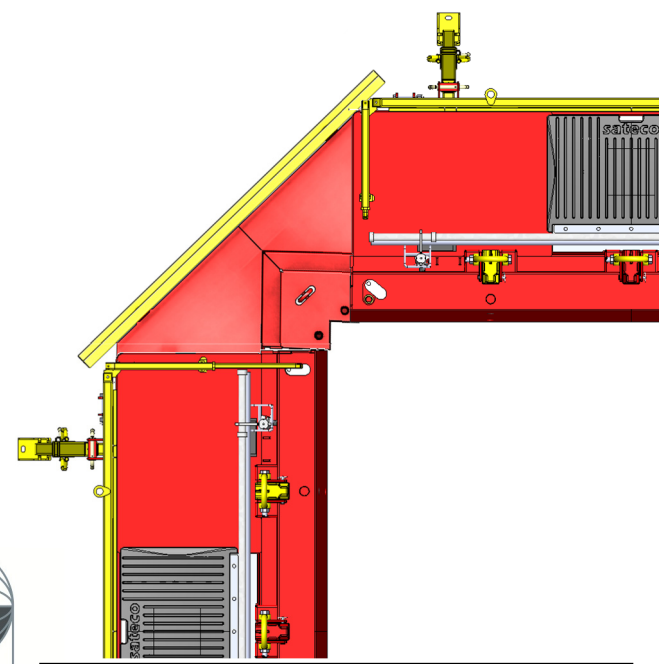
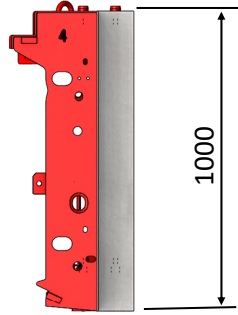
Vertical stiffener connection



Example of a lower extension with angle 1000 :



Edge assembling



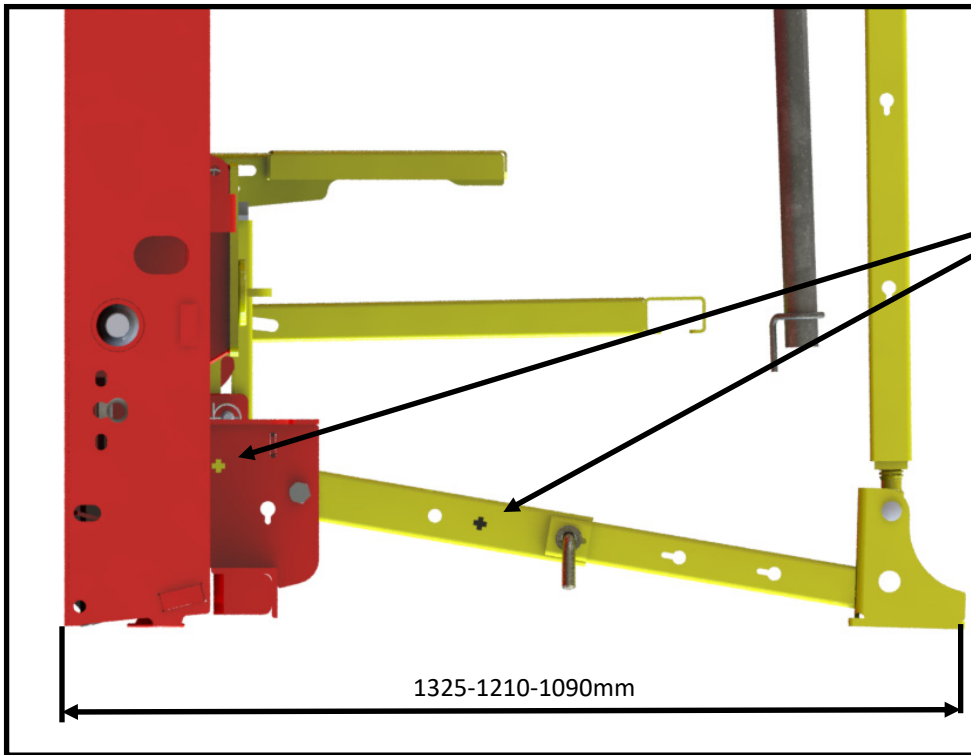
Narrowed footing

D.T. SC 1015 BOX



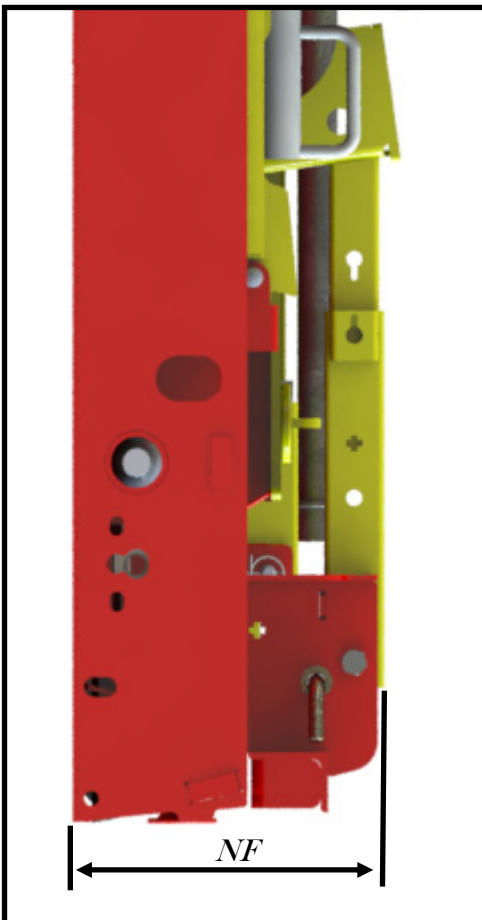
Formworks can be ordered in their narrowed footing version. NF

The difference is the bottom part : the panel foot is narrowed



the formwork is identified by a "+"

1325-1210-1090mm



$NF \leq 300\text{mm}$ without crutch

NF



sateco

NOUS AVONS UN MONDE À BÂTIR

Sheet: 32.01.15 ind01



32.10 UNLOADING - STORAGE

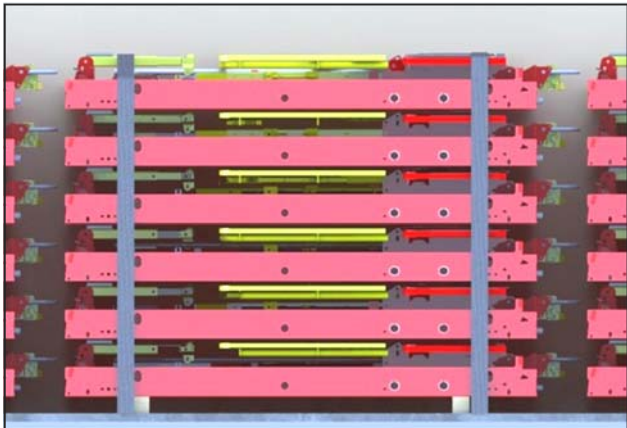
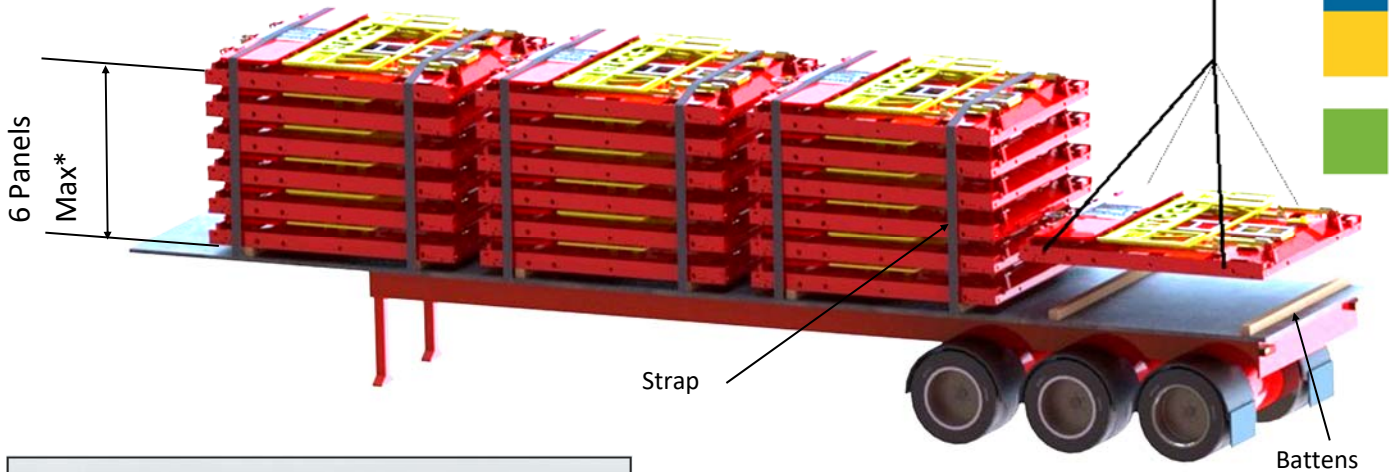


For more understanding some pictures of this chapter are presented without stability.

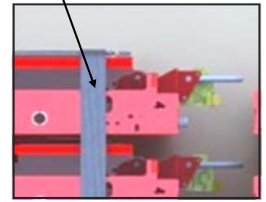
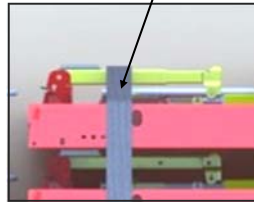


NOUS AVONS UN MONDE À BÂTIR

USUAL CASE



Straps placed close to the piling buffers

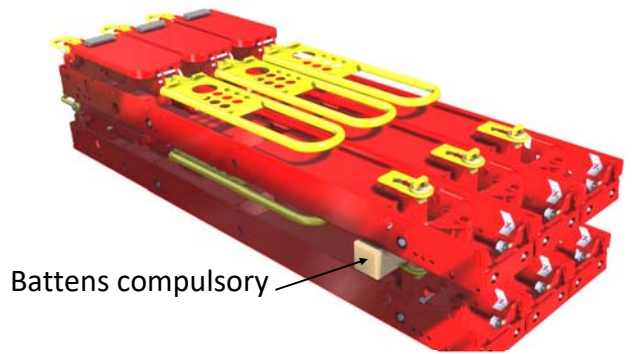


* : Check the allowed weight on the lorry according the panels dimensions loaded (refer to the charts previous chapter).
Lower extension are delivered on 6 levels maximum, 4 if they are equipped with upperextended working boards.

SPECIAL CASES

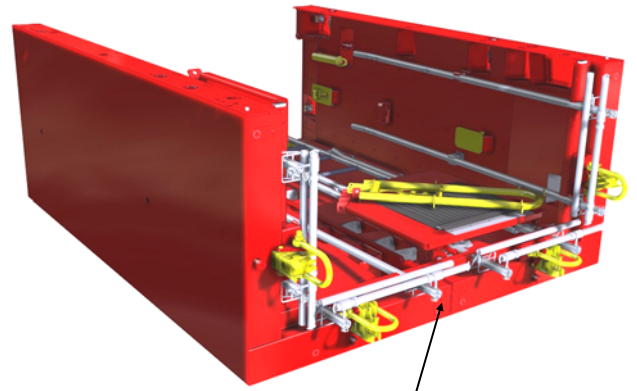
1. Panels 300

3 panels max
Height max : 2



2. Panels with inner angle

Assemble the panels in 2 in "U" shape
Height max : 1



Use the assembling edge pieces to assemble the panels (see assembling chapter)



Formworks must be laid on battens

Make sure the formworking surface is not in contact with the floor and any vegetation.

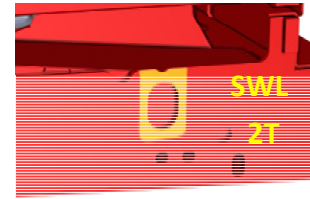




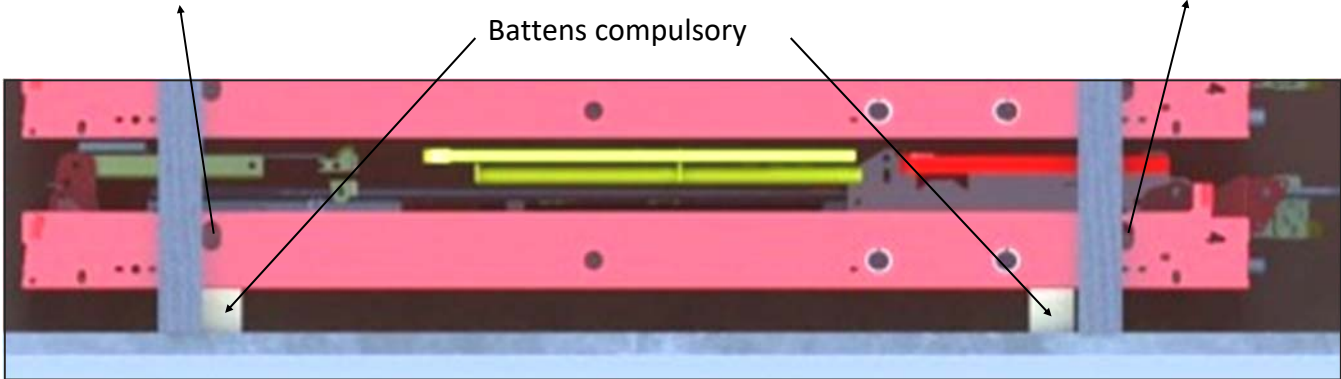
USUAL CASE



2T Bottom sling point



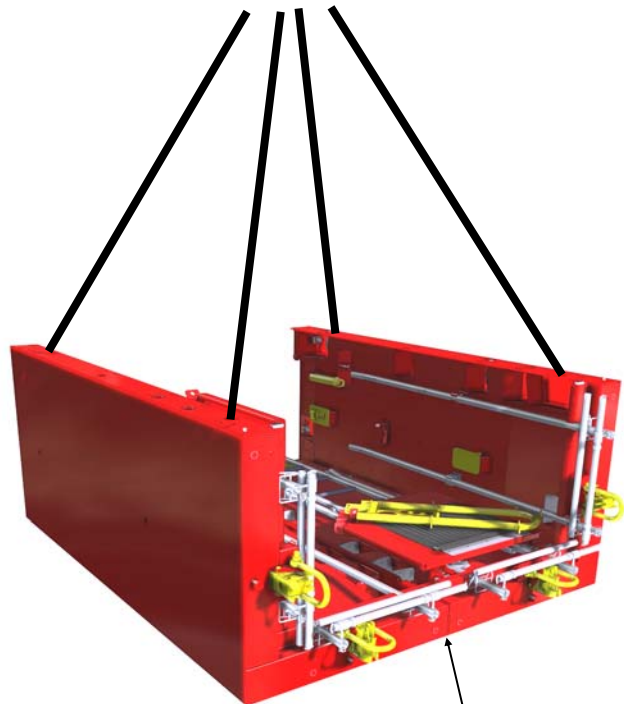
Top slinging point



- Number of panels to sling: 6 panels height 2.8m
 6 lower extensions height 1.5m
 3 lower extensions height 1.0m

SPECIAL CASES

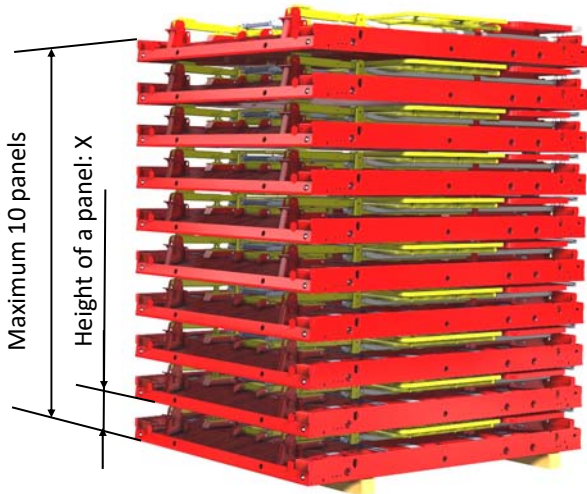
Panels with inner angle Assemble
 the panels in 2 in "U" shape



*Formworks must be laid on battens. Make
 sure the formworking surface is not in
 contact with the floor and any vegetation.*

Use the assembling edge pieces to
 assemble the panels (see assembling
 chapter)

Height of the storage pile



*Formworks must be laid on battens
Make sure the formworking surface is not in contact with the floor and any vegetation.*

** Panels width 900 equipped with second crutch, in option, can be packed on their own.*



Height difference : 50mm MAX



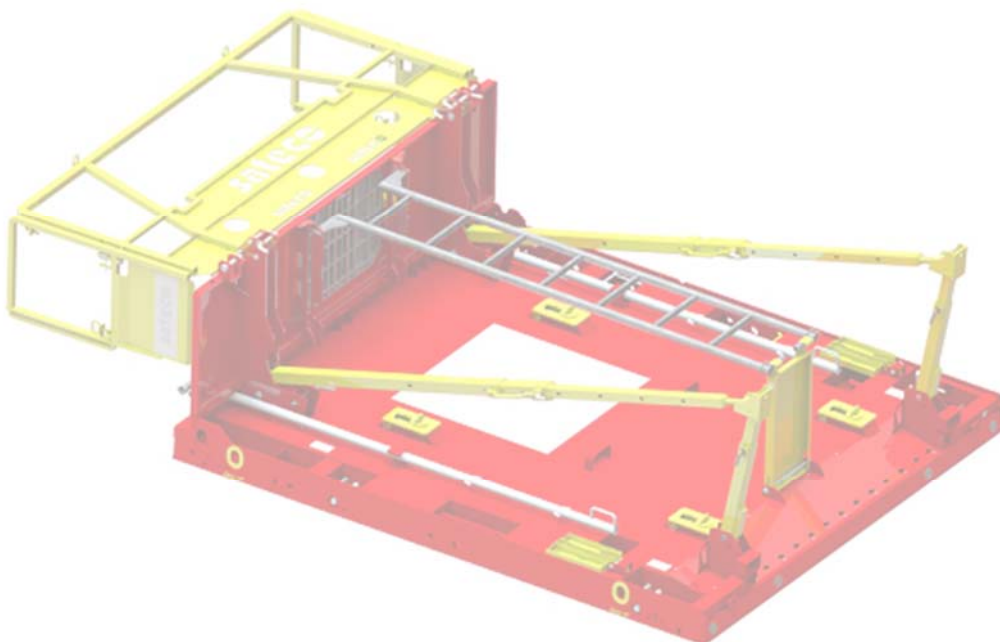
To remove water that could be stored inside the panels, Sateco recommend storing the panels on different height of battens.

Type of panels H x L	Maximum height of storage	Value X (mm)
2800 to 3000 x 2400	10	375
2800 to 3000 x 1200	10	375
2800 to 3000 x 900 assembled by 2*	10	375
2800 to 3000 x 600 assembled by 2	10	375
2800 to 3000 x 300 assembled by 3	6	375
2800 to 3000 x 300	5	375
1500 x 2400	10	485
1500 x 1200	10	485
1500 x 900 assembled by 2*	10	485
1500 x 600 assembled by 2	10	485
1500 x 300 assembled by 3	6	485
1500 x 300 single	5	485
1000 x 2400	3	605
1000 x 1200	3	605
1000 x 900 assembled by 2*	3	605
1000 x 600 assembled by 2	3	605
1000 x 300 assembled by 3	3	605
1000 x 300 single	2	605





32-20- UNFOLDING - STARTING



For more understanding some pictures of this chapter are presented without stability.



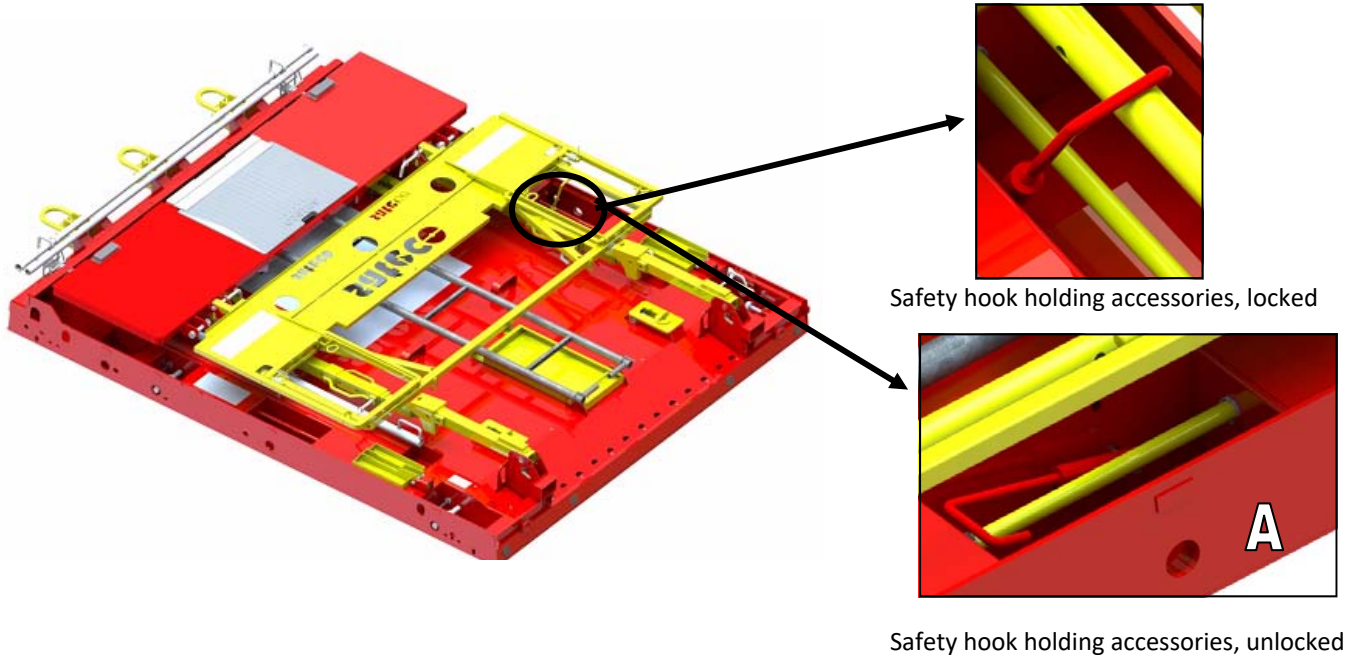
NOUS AVONS UN MONDE À BÂTIR



Step 1 : Place the formwork

Place the panel on battens in order to protect the formworking surface.

Make sure it is not in contact with the floor or any vegetation.



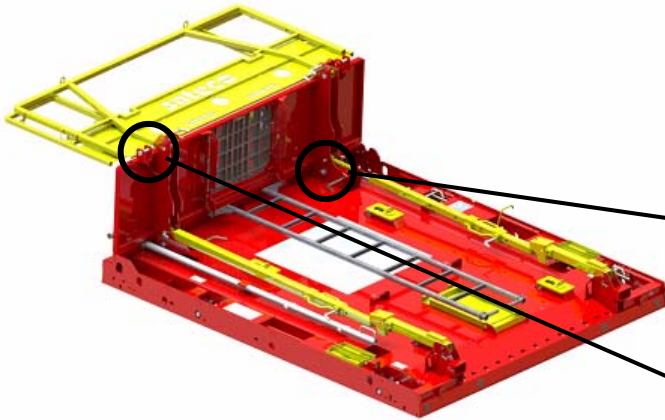
Step 1 : Raise the guard rail

- Check that the safety hook holding accessories is unlocked (A).
- Raise the guard rail





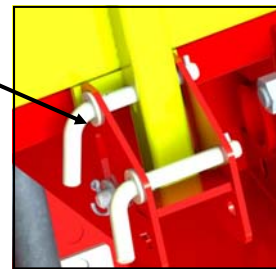
Step 2 : Raise the guard rail



Position working board unlocked

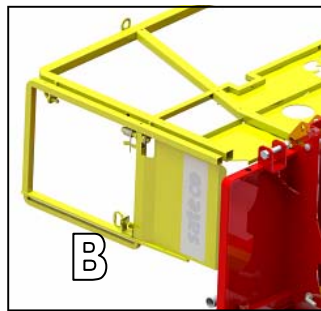


Position working board locked



Position guard rail locked

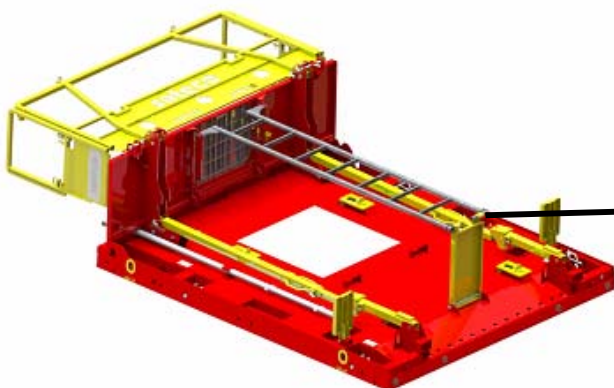
- Raise the working board set /guard rail and lock it.
- Open the working board locks (B).



Step 3 : Settle the ladder

To settle the ladder, slide it in the rails

Articulate the foot step and hook it on the first ladder bar.

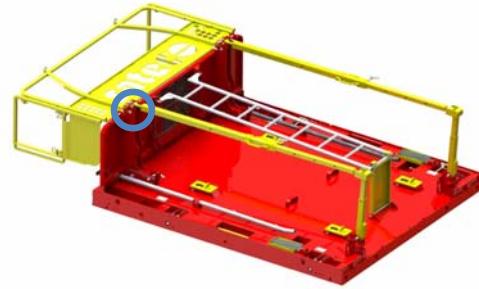
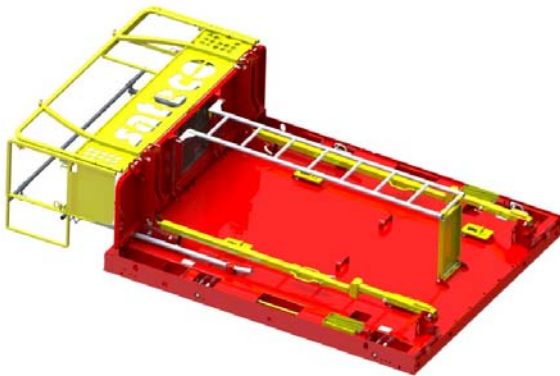




Step 4 : Assembling the crutches

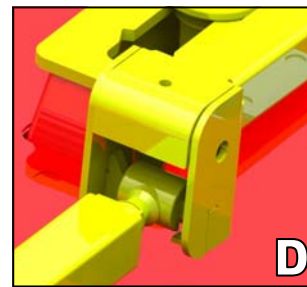
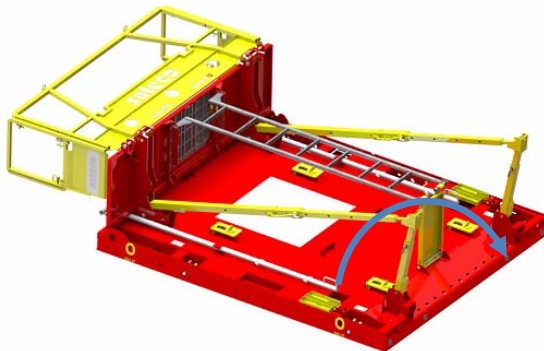


*For panels in superposition
Mind the position of the crutch*



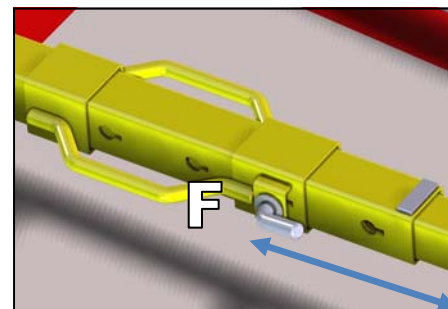
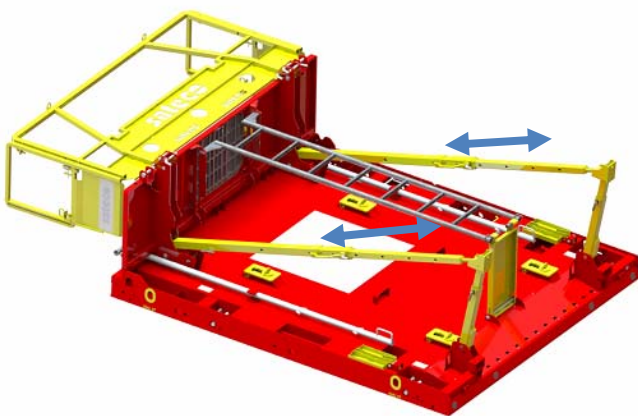
- In case it is not done, embed the endpoint of the oblic slide into the endpoint of the botton slide D

- unfold the crutch .



Step 5 : Adjust the crutches

- Adjust the crutch, then spike together the oblic slide with the handle (F)





Step 6 : Settle the stabilizers (refer to chapter stability)

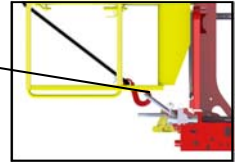


Before raising the panel, you MUST settle the wind stability

Step 7 : Sling and raise the panel

- Sling the panel and raise it (chapter raising : 32.40)
- Settle the counter railing in high position once the panel is raised

Hook for crane



0 - Counter railing folded



1 - Raise the 1st side till the middle



2 - Raise the second side to its maximum



3 - Raise the 1st side to its maximum

- Once the formwork is stabilized, you can free the crane.

NB: For lower extensions, height 1.5m, unfolding instructions are the same.



Cleaning and 1st oiling



1. Cleaning

Panels are delivered with a protection oil on the steel formworking surface. It is not compatible with the formwork removal oil.



Clean the formwork surface before first use.

Sateco suggests cleaning with hot water high pressure cleaner, on vertical panel.

2. Oiling

Apply, immediately after drying the formworking surfaces, a formwork removal oil to avoid all risk of oxidation.



Panel delivered with protection oil

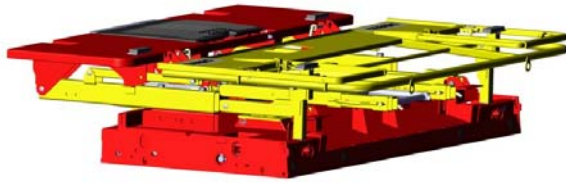


- *Ask your supplier to choose the right formwork removal oil adapted to your worksites conditions*
- *Make sure you master the instructions for the use of the oil, mainly the time limit between the application and the casting.*

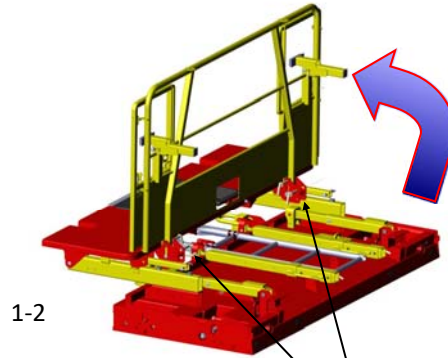




Step 1: Raise the guard rail



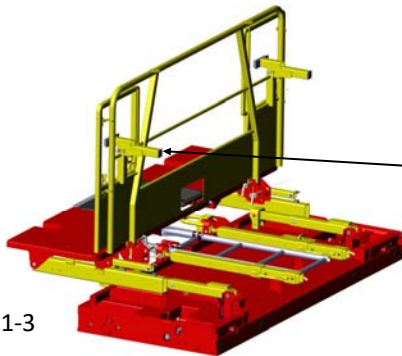
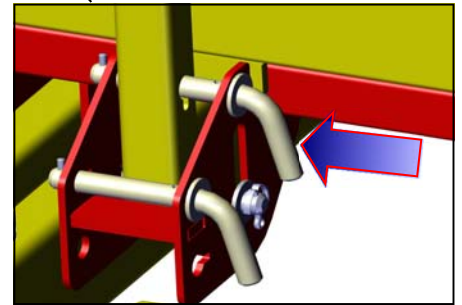
1-1



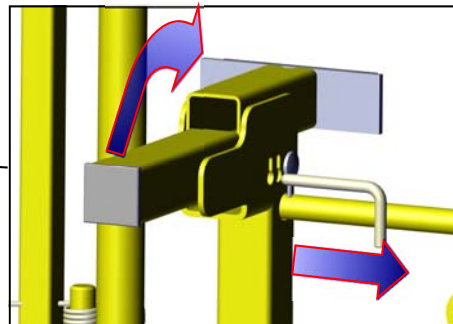
1-2

1-1– Grab the lower extension: protect the formworking surface and lay it on batters*.

1-2- Raise the guard rail and lock it

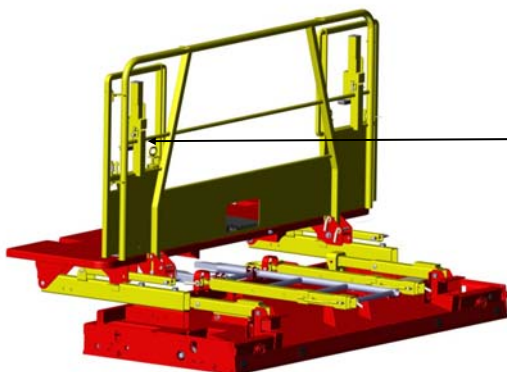


1-3

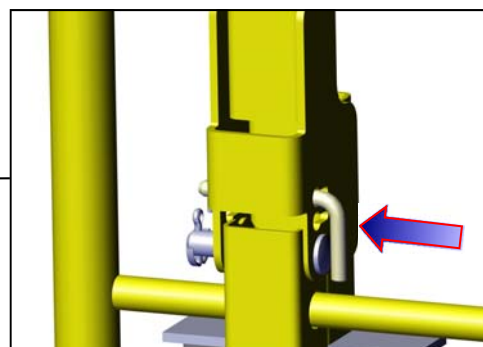


1-3– Unlock the sliding buffers and tilt them,

1-4– Lock the sliding buffers.



1-44

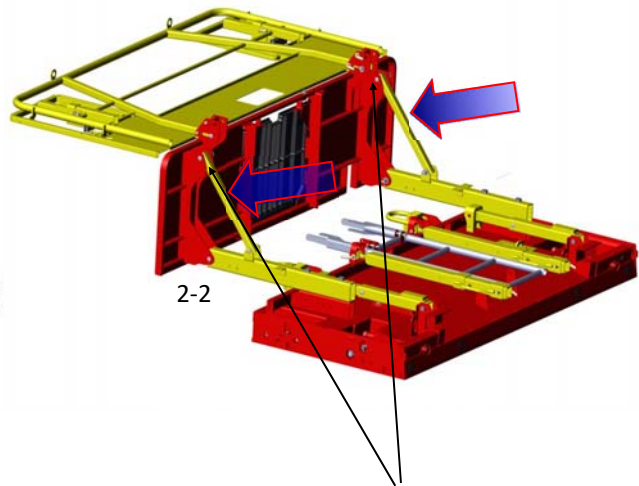
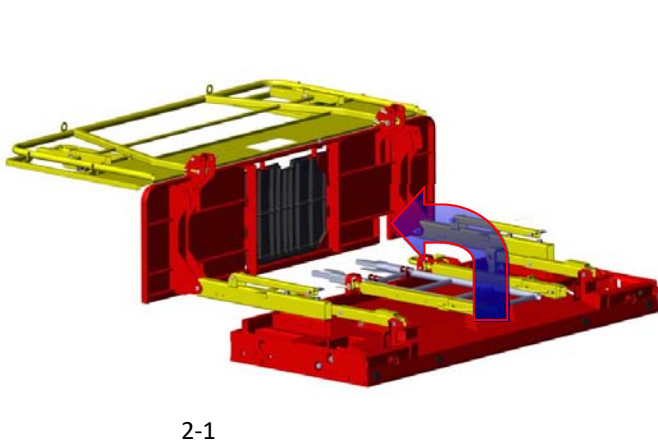


*: To easy the explanations, the batters are not represented



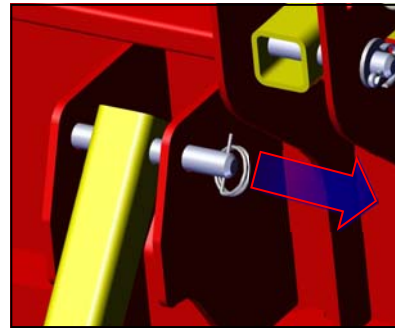


BOX Step 2 : Raise and lock the working board (continued)

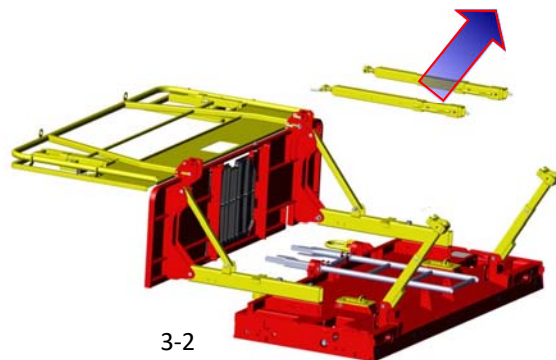
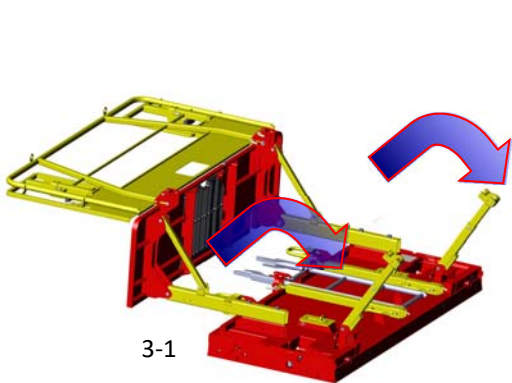


2-1– Raise the working board,

2-2– Spread and spike together the brace bars.



Step 3: Settle the crutches



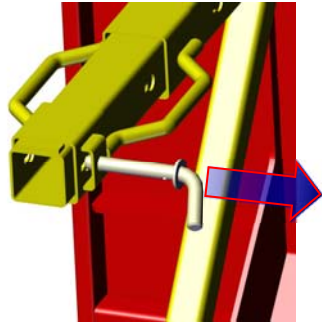
3-1- Tilt the bottom part of the crutches,

3-2- Unspike the oblic crutches from their storage space.

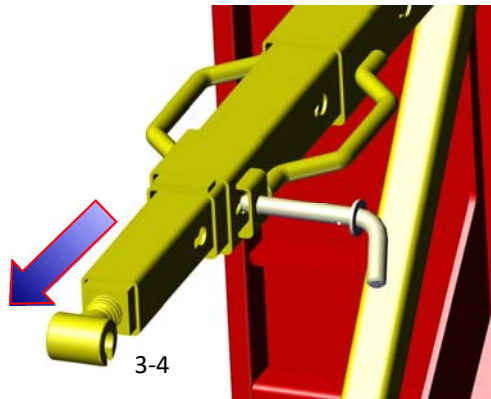


Step 3: Settle the crutches (continued)

3-3



3-4

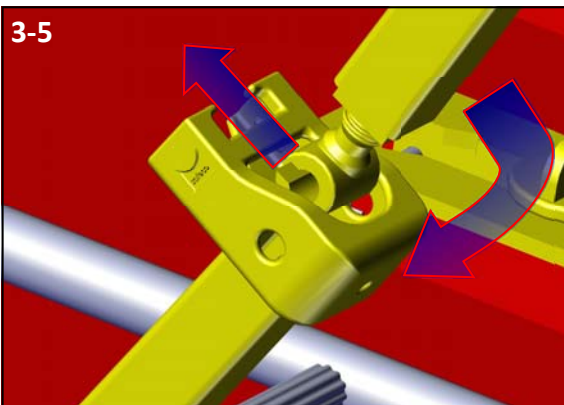


3-3– Unspike the crutch shaft

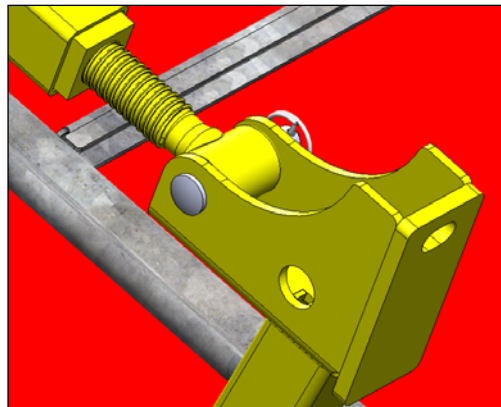
3-4– Let the crutch slide out

3-5- Assemble the oblic crutches together with the bottom crutches

3-5

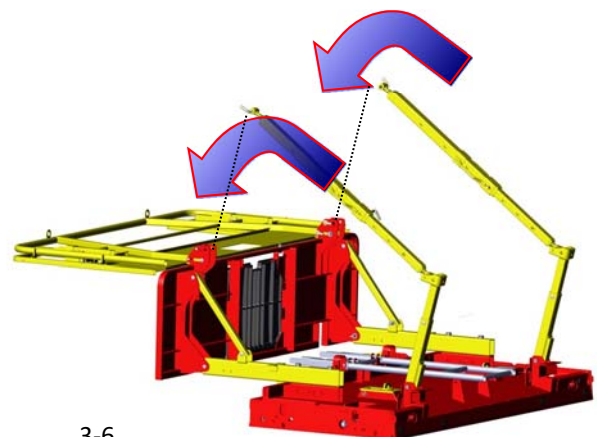


or



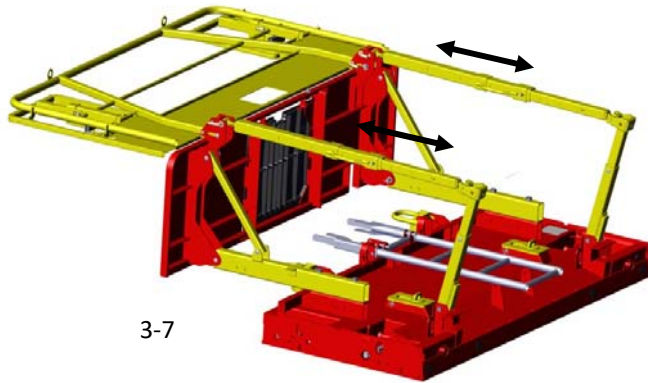
3-6- Move the set to the working board to spike the crutches.

3-6





Step 3: Settle the crutches (end)

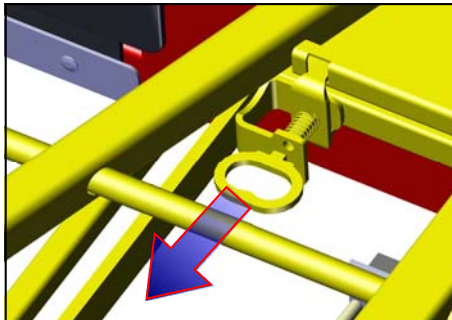


3-7

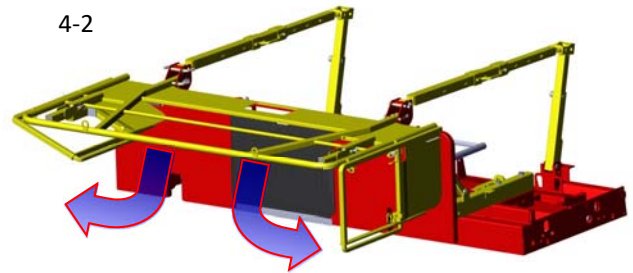
3-7- Adjust the oblic crutches so that the bottom crutches are vertical

Step 4: Unlock the working board gates

4-1



4-2



4-1- To unlock the gates, pull the automatic lock

4-2- Gates can open: the lower extension is now ready to be raised





32.30 ASSEMBLING

-

ADJUSTING



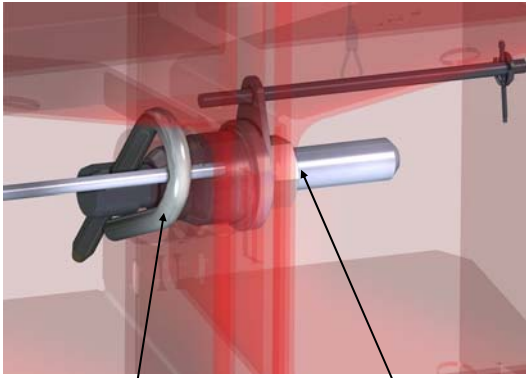
For more understanding some pictures of this chapter are presented without stability.



NOUS AVONS UN MONDE À BÂTIR

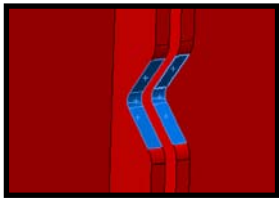
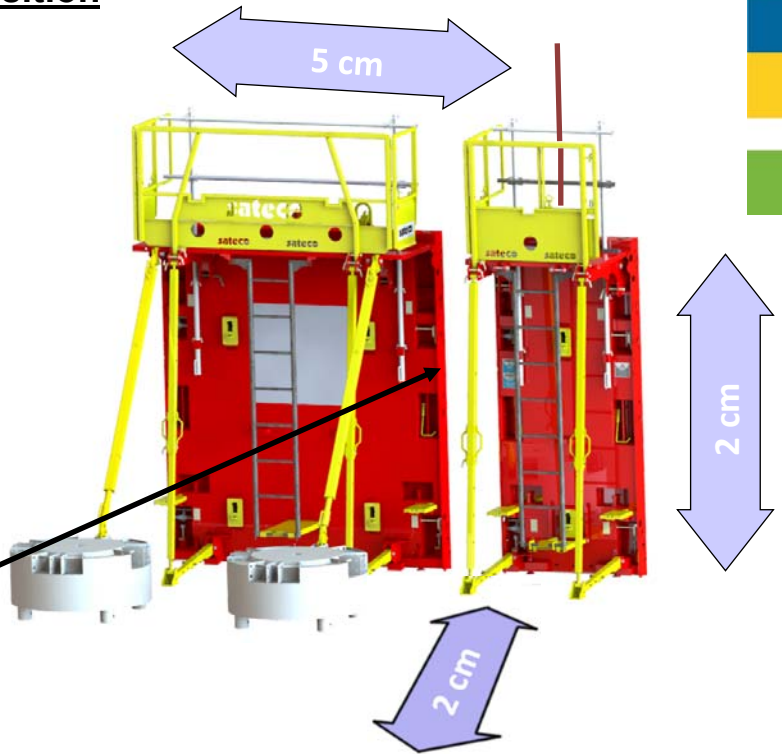


Main rules to assemble in juxtaposition



Vertical assembling piece

Pin



Marks on edge

Allowed stagger before assembling

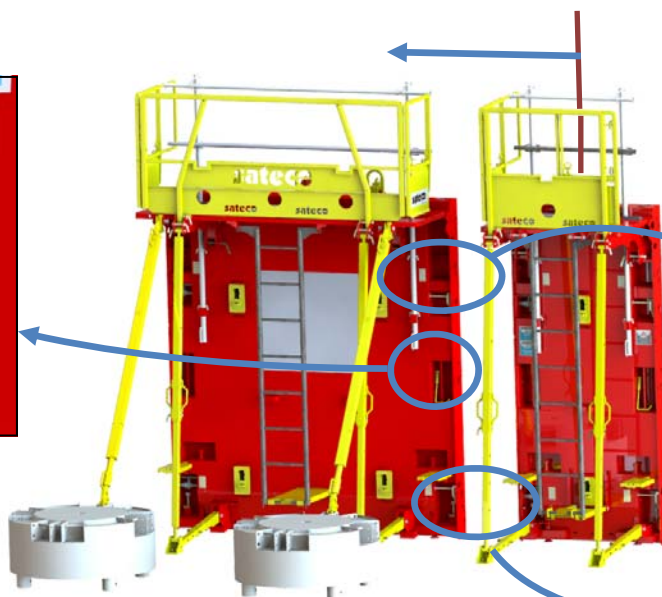
Step 1 : Juxtaposed panels

Always check edges are clean

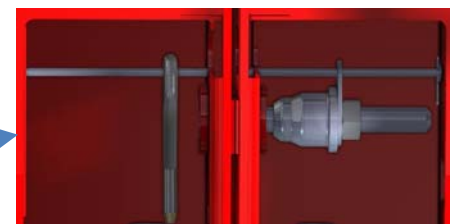
Position the panels close to each other, align the formwork surfaces



The handle makes it easier this operation



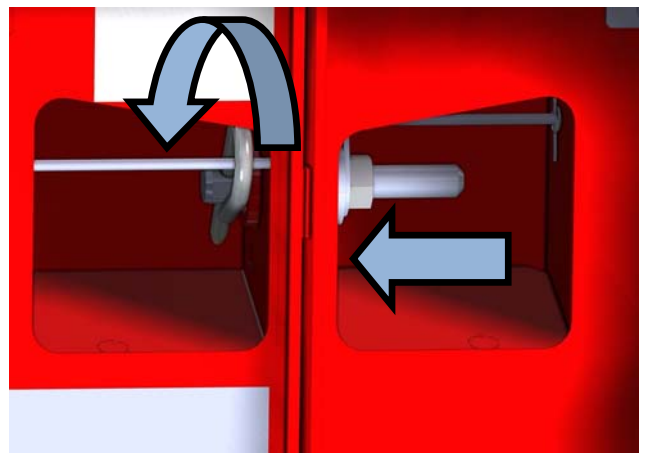
It avoids having the hands caught and hurt during the operation





Step 2 : Assembling screw

- Insert the edge assembling piece in the socket
- Set the pin in position
- Check the alignment of the panels height
- Start tightening the nuts of the edge assembling piece (at bottom then at top)



- Finish the tightening starting by the bottom of the panel.



For the slinging and the manutention of the panels set, please refer to chapter : Raising - manutention: sheet 31.40.00

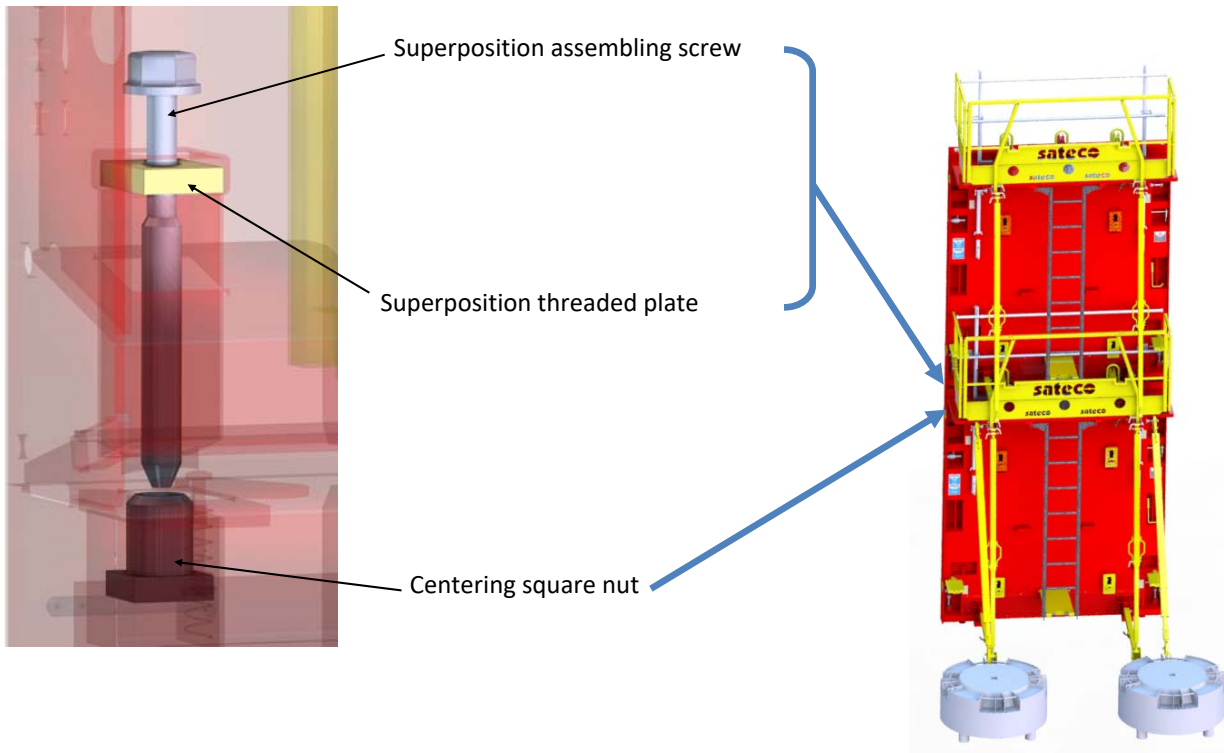
To use crutches and screw jacks to adjust level and verticality : please refer to sheet 31.60.04



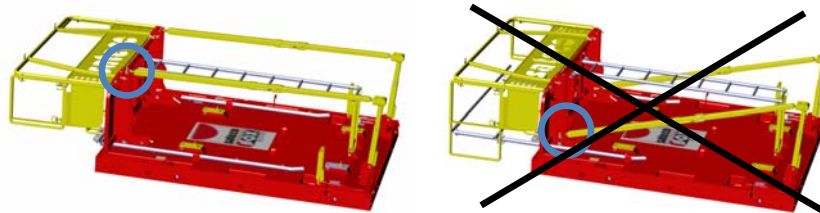


Main rules to assemble in superposition

Allow the evenness of the formworking surfaces during the assembling



Position of the crutch



Step 1 : Preparing the lower panels

Check the top stiffener is clean

Retract the unlosable plug and that the centering nut is not blocked



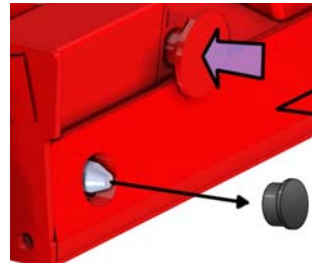


Step 2: Preparing the top panels

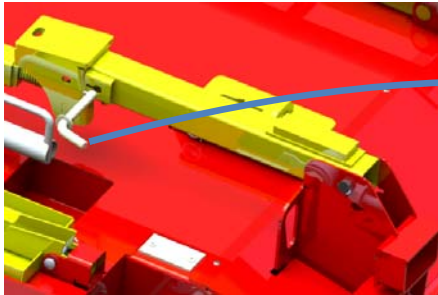
Check the bottom stiffener is clean

Remove the plug from the bottom stiffener

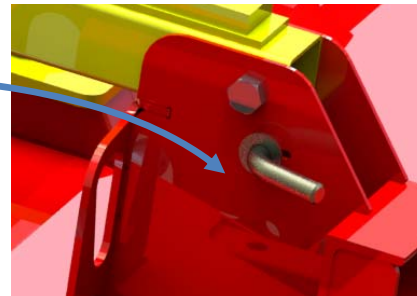
Raise the screw jacks



Fold again the bottom part of the crutch



Remove the peg



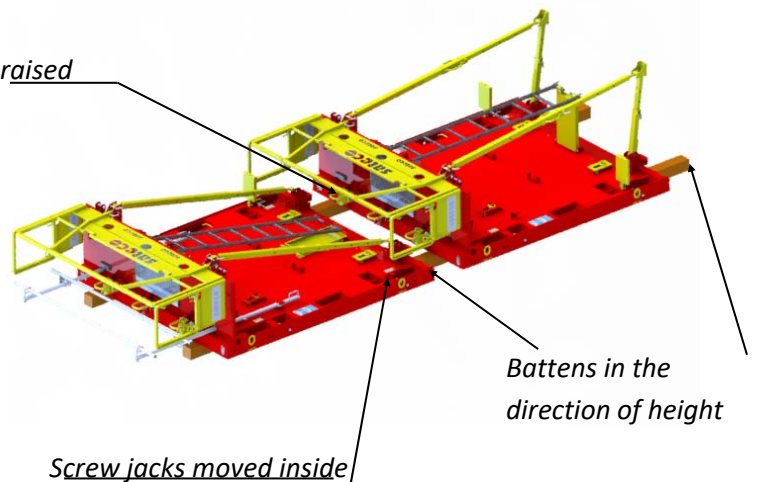
and position it on the fixing piece

Fold again the ladder step

Step 3 : Assembling

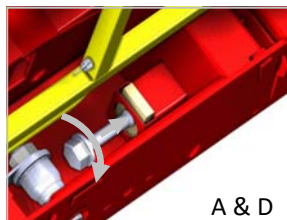
- Prepare the battens, along the same height as the panels
- Lay the top panel
- Lay and approach the bottom panel

Lifting shackles raised



Screw jacks moved inside

Battens in the direction of height

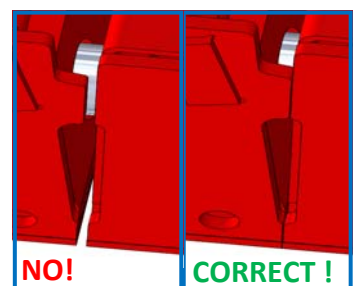


A & D

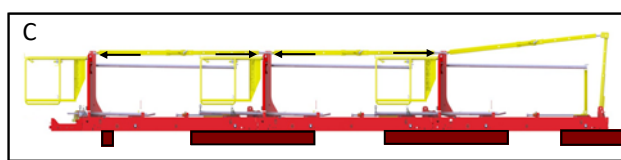
B- Contact of formworking surfaces :

Assemble both panels with assembling screws:

- Start tightening the assembling pieces (A)
- Align the panels
- Finish tightening with the key and check that the formworking are in contact (B)



THE SCREW JACKS MUST NOT TOUCH THE TOP STIFFENER



C

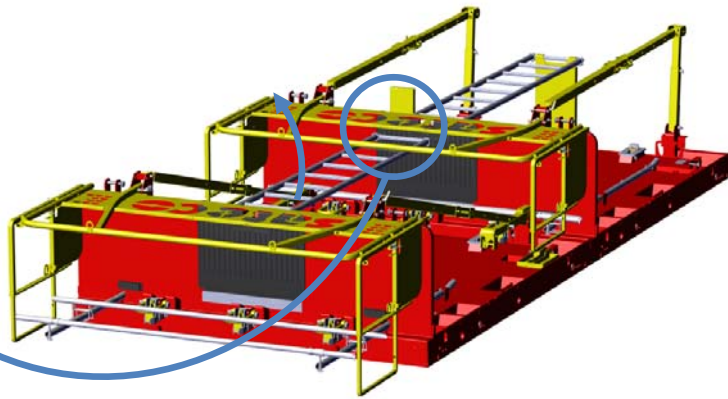
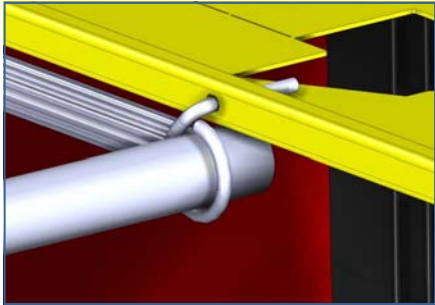
- Extend the crutches of the superposed panels to catch efforts when raising (C)





Step 4 : Ladder

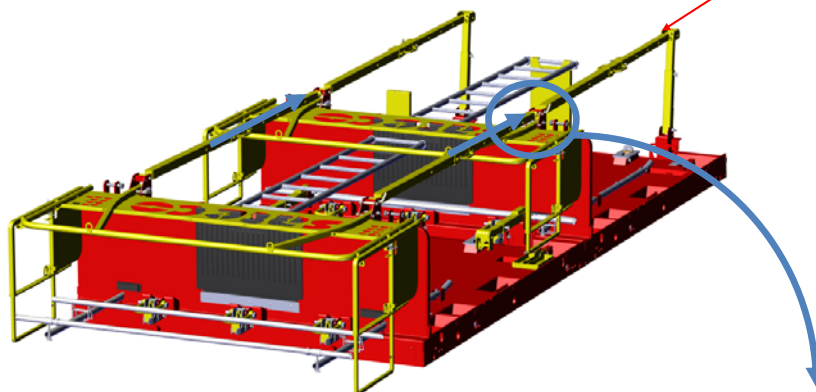
Raise the ladder of the top panel



Fix the ladder to guard rail of the bottom panel

Step 5 : Crutches

Slide the crutches to position them



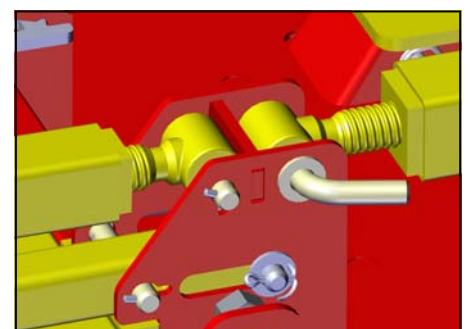
Reminder:

Correct	NO!

The crutches of the bottom panel must be adjusted

Spike the C oblic crutch on the working board of the bottom panel.

Extend the crutches.



You must absolutely set the wind stability before raising the panels

See chapter Stability 32.50.



balance the top and bottom threads of the crutches before spiking.

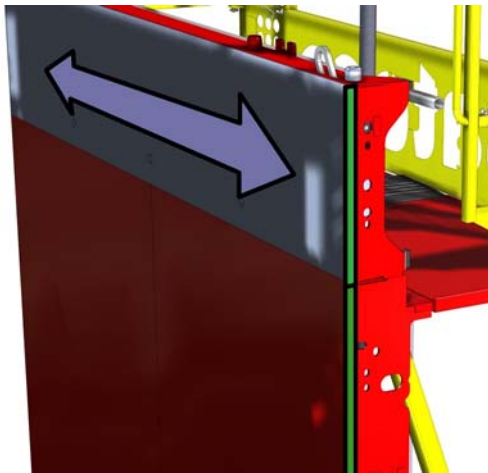
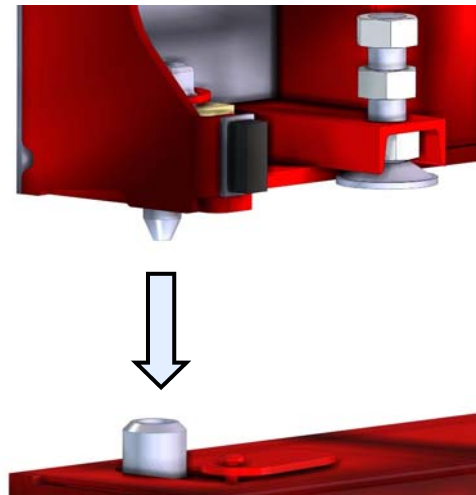


Assembling the upper extensions

D.T. SC 1015 BOX



- Check that the top and bottom stiffeners are clean
- Retract the unlosable plug of the panel and check the centering screw is clean
- Move up the screw jack of the upper extension
- Position the upper extension



- Assemble the extension to the panel with assembling screws
- Align formworking surfaces



Put the screw jacks in contact with the formwork and check the alignment of the upper extension

Strengthen the lock nut of the screw jacks



NOUS AVONS UN MONDE À BÂTIR

Sheet: 32.30.05 ind.02



32.40 RAISING - MANUTENTION



satéco

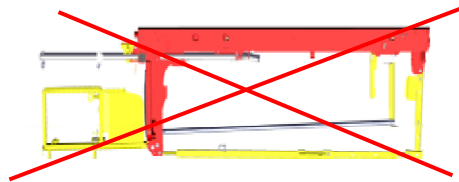
NOUS AVONS UN MONDE À BÂTIR

Raising flat from the floor

D.T. SC 1015 BOX



You always raise a panel, its formworking surfaces facing the floor, on the battens

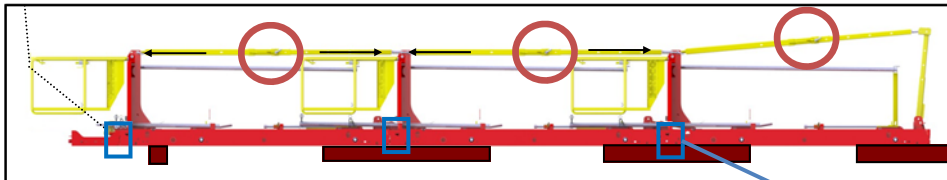


Instructions on demand for special cases : ask SATECO technical Dpt

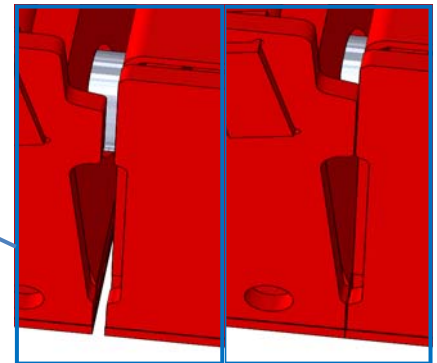
Raising with sling : Height ≤ to 8.90m

See chart next page to know more.

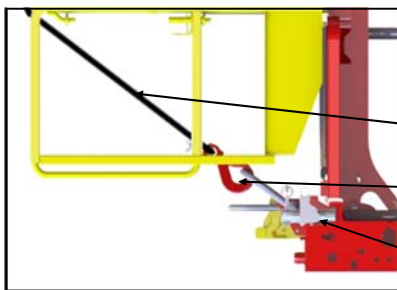
EXTEND THE CRUTCHES : 10m/Kg (tightening without tools)



Checking superposition :



Formworking surfaces in contact
NO SCREW JACKS IN SUPPORT



Sling with crane
Hook of the crane
Counter railing not appearing



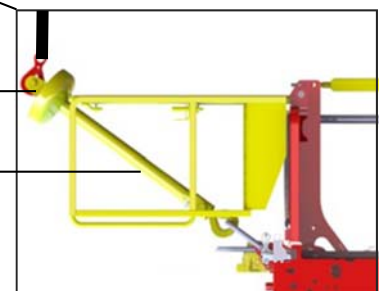
Maximum surface to raise 23m² (surface excluding upper extension)

ADJUST THE CRUTCHES AFTER RAISING TO ADJUST THE ALIGNMENT!

Following the vertical adjustment of the formwork, take up the gap by tightening the crutch

Raising flat from the floor device :

Height over 8.90m up to 11.70m maximum with same precautions above (check the crutches tightness, assembling).



Crane hook
Raising from the floor device
SWL: 3,2 TONNES



NOUS AVONS UN MONDE À BÂTIR

Sheet: 32.40.00 ind.02



AFTER RAISING , ALWAYS CHECK THE ASSEMBLINGS TIGHTENING.



	Possible case
	Raising flat from the floor device
	Forbidden case

Height \ Width	2400	2400+2400	2400+1200	2400+900	2400+600	2400+300	1200	1200+1200	1200+900	1200+600	1200+300
Panel + 500 (2800 to 3000)	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok
1000++ Panel ++500	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok
1500 + Panel +500	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok
2 Panels ++500	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok
1000 + 2 Panels + 500	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok
1500 + 2 Panels + 500	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok
3 Panels + 500	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok	ok



The cases not clarified in this book must be submitted to validation of the SATECO Design Office

Slings

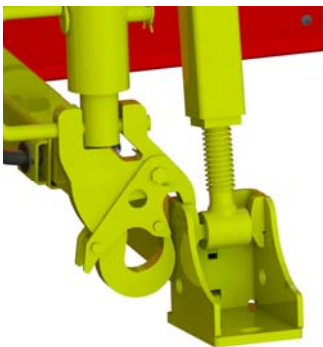
D.T. SC 1015 BOX



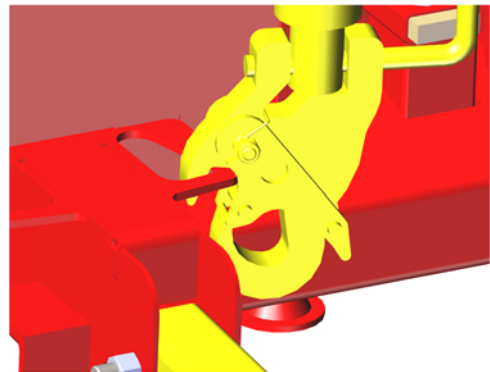
Lifting ring: SWL 4.5T at 60°
= 7.5 T vertical load



Position of the stabilizer while moving the set



In the low part of the crutch



In the panel



sateco

NOUS AVONS UN MONDE À BÂTIR

Instructions to sling the formworks

D.T. SC 1015 BOX



Width \ Height	1200	2400	1200+1200	2400+600	2400+1200	2400+1200+600	2400+2400	2400+600+2400	2400+1200+2400	2400+600+1200+2400
Panel (2800 to 3000)										
1000 + Panel 1500 + Panel										
1000 + panelu +500										



*This chart is not valid for the raising flat from the floor.
The cases not clarified in this book must be submitted to validation of the SATECO Design Office
Check the slinging angles.*



NOUS AVONS UN MONDE À BÂTIR

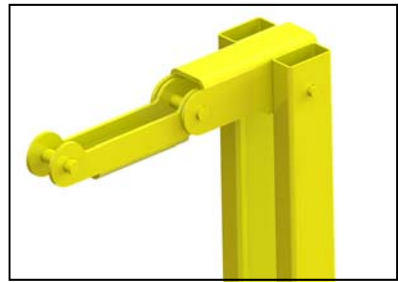
Width	1200	2400	1200+1200	2400+600	2400+1200	2400+1200+600	2400+2400	2400+600+2400	2400+1200+2400	2400+600+1200+2400
Height										
1500 + Panel ++ 500										
1000 + 1500 ++ Panel										
Panel + Panel										

*This chart is not valid for the raising flat from the floor.
The cases not clarified in this book must be submitted to validation of the SATECO Design Office
Check the slinging angles.*

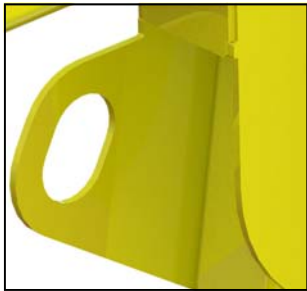




SWL = 4 T 85
Km/h maxi



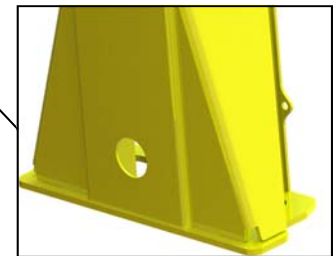
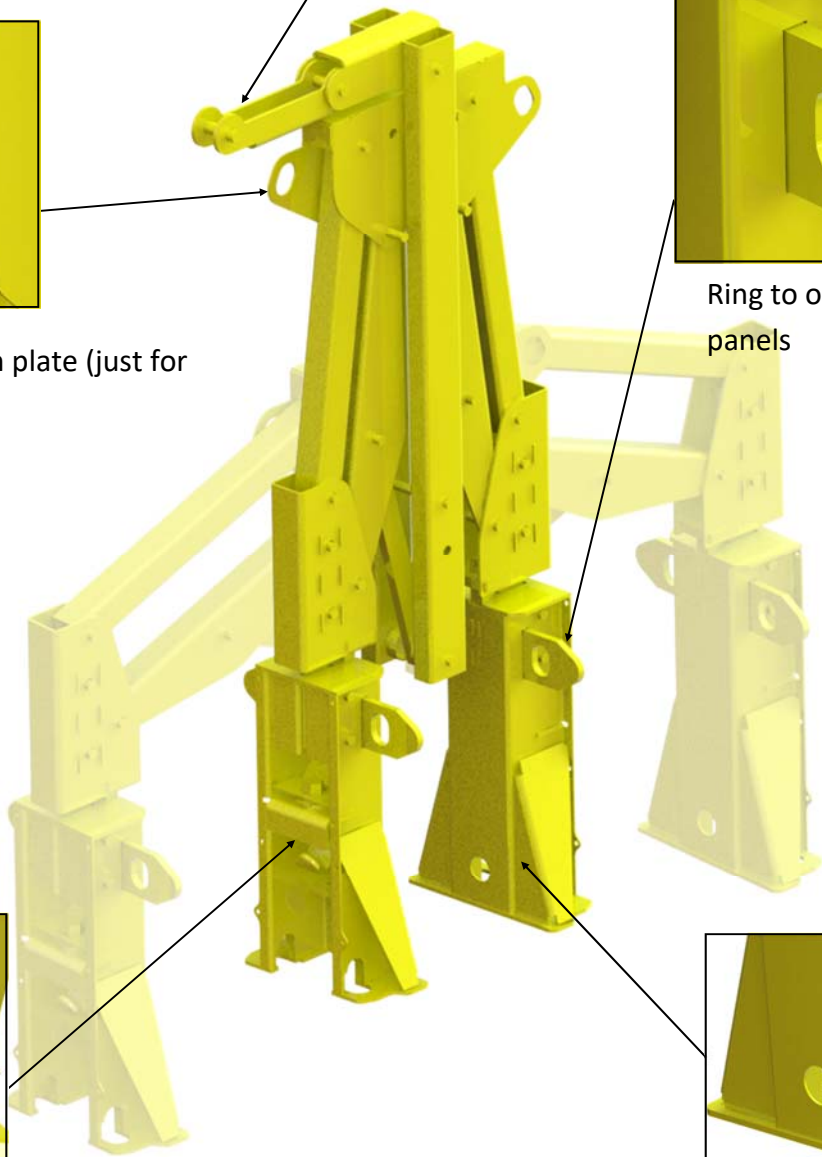
Lifting arm for formwork set



Manutention plate (just for the gantry)



Ring to open and close panels



Waythrough for tie rod

Gantry weight: 195Kg



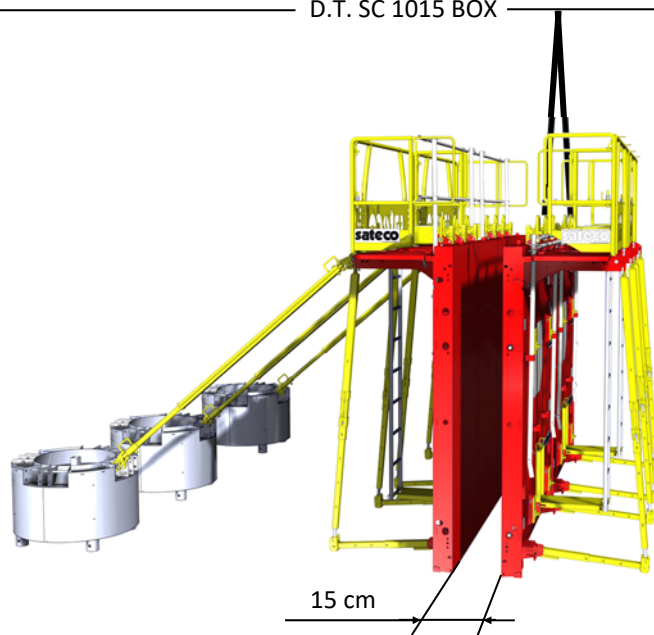


Setting the panels

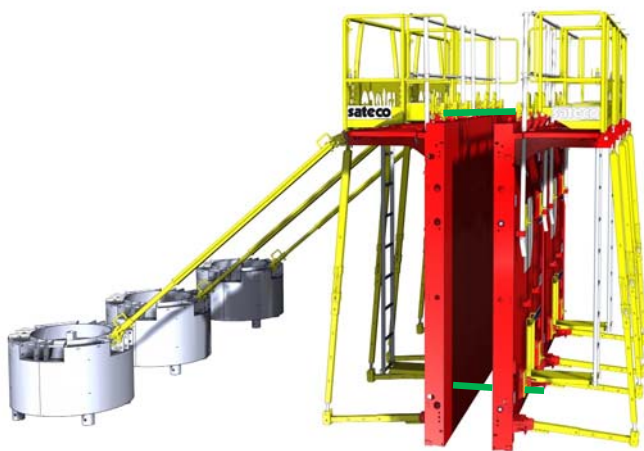
Position and stabilize the first set of panels

Install the counter rail before the panels

Position the second set of panels at about 15cm



Stabilize the second set of panels either with ballasts or with crossing tie rods



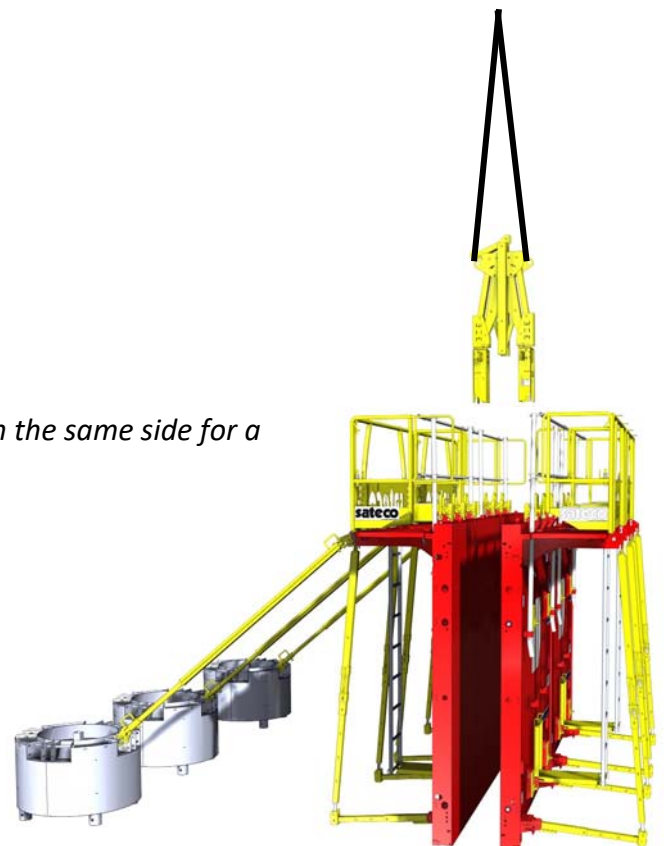
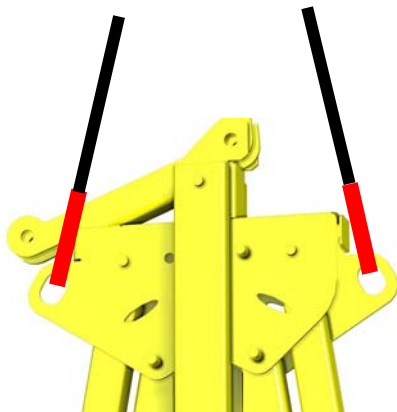
Position the gantry

Sling the gantry by the 2 mantution plates

The gantry is in "closed position"



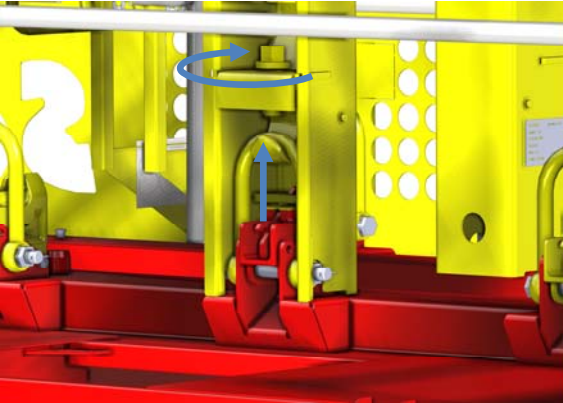
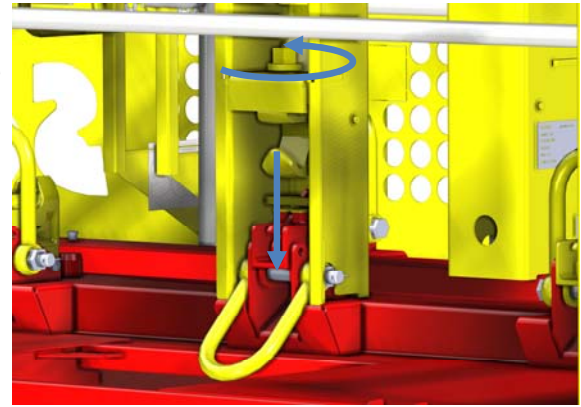
Check that all the gantries lifting arms are on the same side for a same panels set.





Fixing the gantry

- Tilt the panel lifting ring, towards the working board side
- Position the gantry foot on the high block
- Move down the fixing hook, with the screw



- Raise the panel lifting ring
- Move up the fixing hook, with screw
- Do the tightening with the panel key

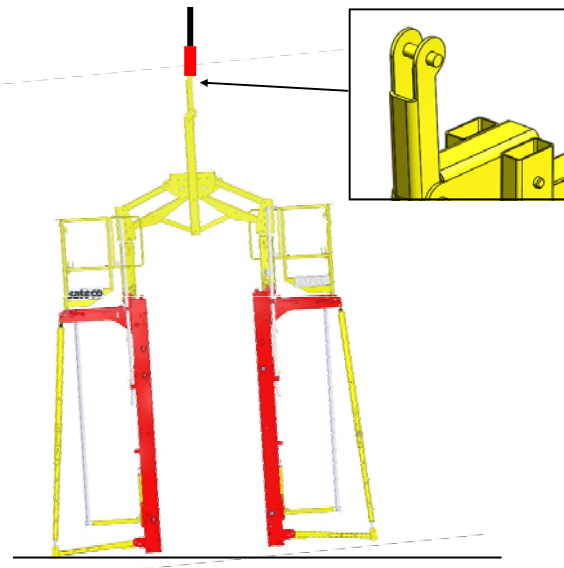
Once the operation is done on ALL the gantry feet, you can remove the slings from the gantries as well as the stabilization.

Refer to chart "sling the gantry" to know more about position and number of gantries to use.

Refer to chapter "Stabilization per gantry" to know more about stabilization per gantry.

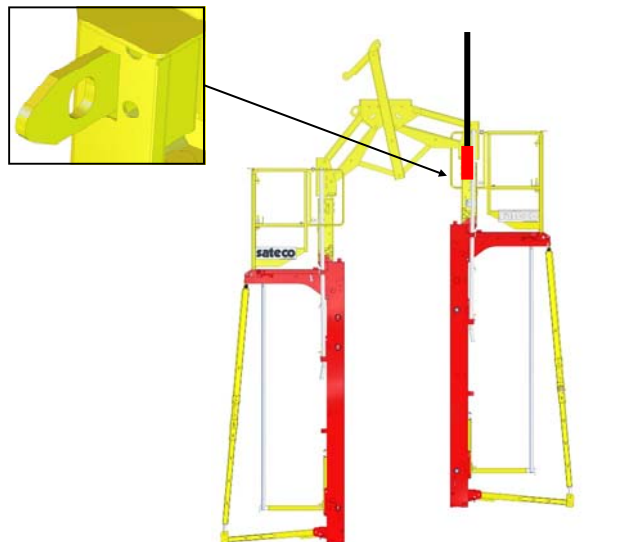
Opening the gantry

Sling on the swan-neck level



or

Sling on the gantry foot level

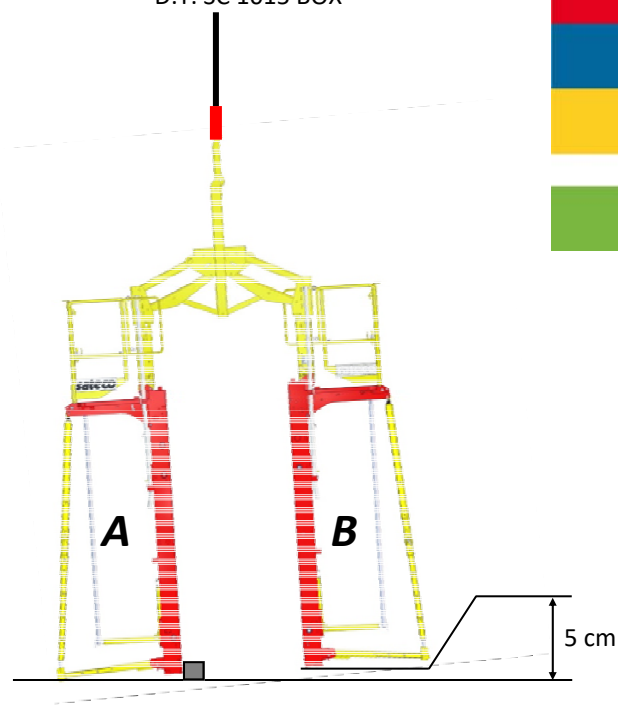


Check the tightening of the fixing hook after the first operation and then do it everyweek



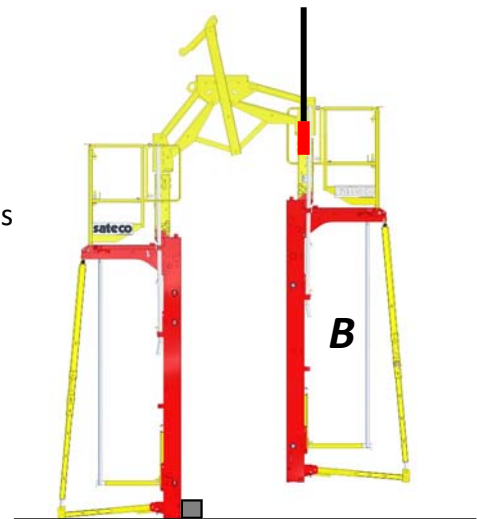
Transporting the set of panel

- Sling the set of panels by the swan-neck of the gantry
- Raise the whole set
- Move it to the formworking area
- Move inside the screw jacks
- Land the panels set and position the formworking surface A against the heel pad
- Adjust, if necessary, side A only with a crow bar ; before side B lands.
- Land the panels and set the A and B crutches
- Remove the slings from the panels set.



Closing the panels set after preparing the wall

- To close the set, sling the gantry on the side B foot
- Raise the panels set
- Close the panel at the level desired or against the sleeve cones
- Land the panels set



Gantries ensure the panels set stability, refer to chapter "stability"

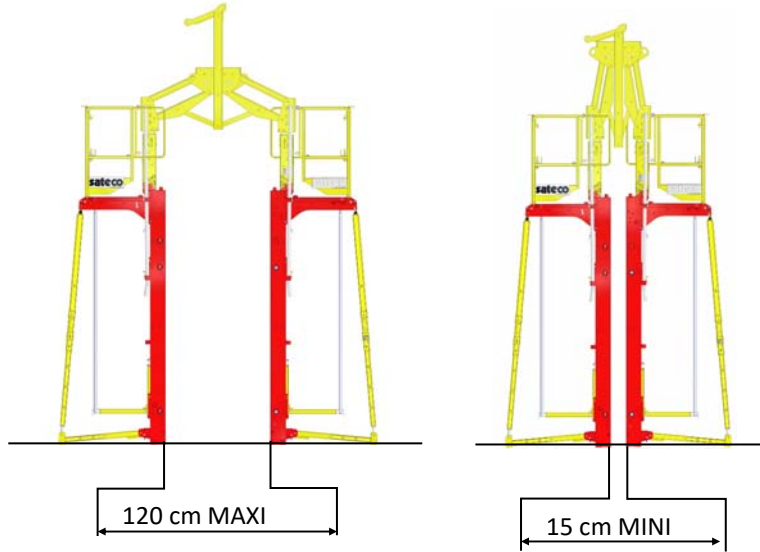


Use of a frame ONLY FACE A



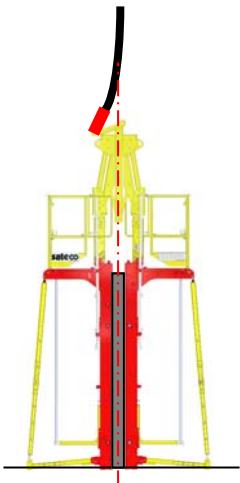


Allowed dimensions (maxi-mini) by the gantry.



Formwork

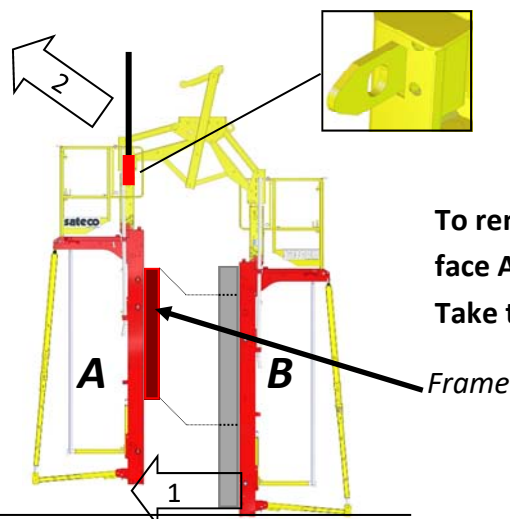
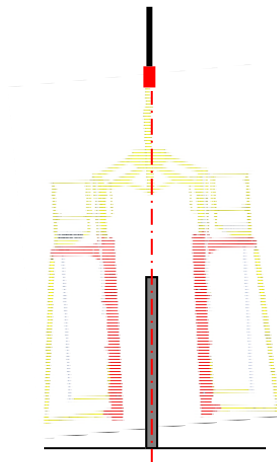
- Position the sling vertically in the axis of the wall



- Sling the swan-neck



- Raise the panels set softly : slowly




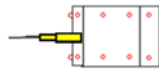
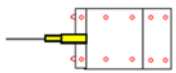



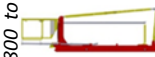








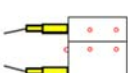
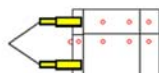
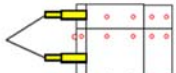
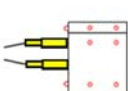
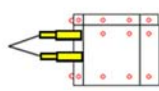
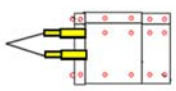
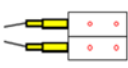
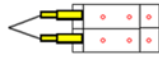
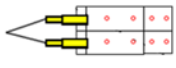


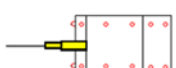
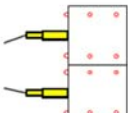
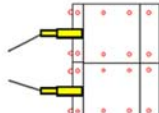
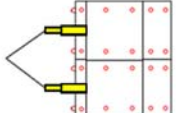
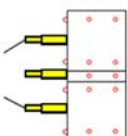
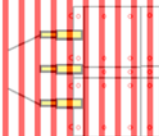
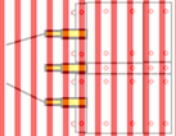
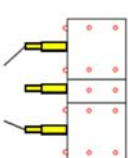
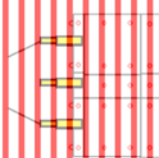
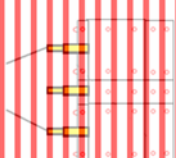
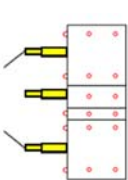
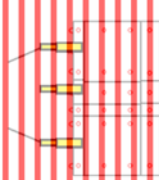
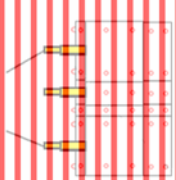
To remove formwork without knocks or a frame, sling on the gantry to free face A.

Take then the whole gantry by the swan-neck.



Chart slinging with gantry

D.T. SC 1015 BOX

Width Height	2400			
	1200			
Panel + 500 (2800 to 3500)				
1000 + Panel + 500				
1500 + panel + 500				
2400				
2400+600				
2400+1200				
2400+1200+600				
2400+2400				
2400+600+2400				
2400+1200+2400				
2400+600+1200+2400				

This chart is not valid for the raising flat from the floor.

The cases not clarified in this book must be submitted to validation of the SATECO



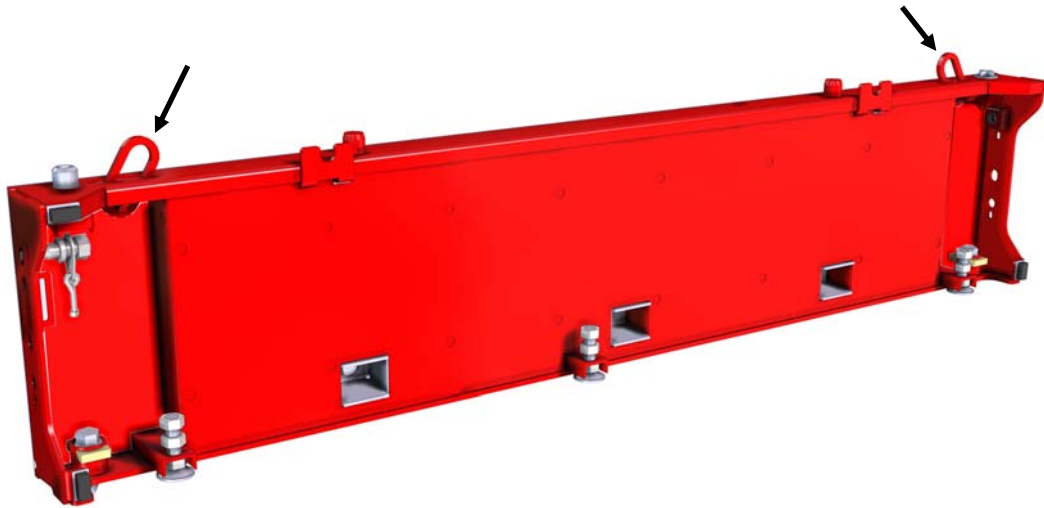
NOUS AVONS UN MONDE À BÂTIR

Case of upper extension

Lifting the upper extension to be done with the 2 lifting rings SWL 350Kg

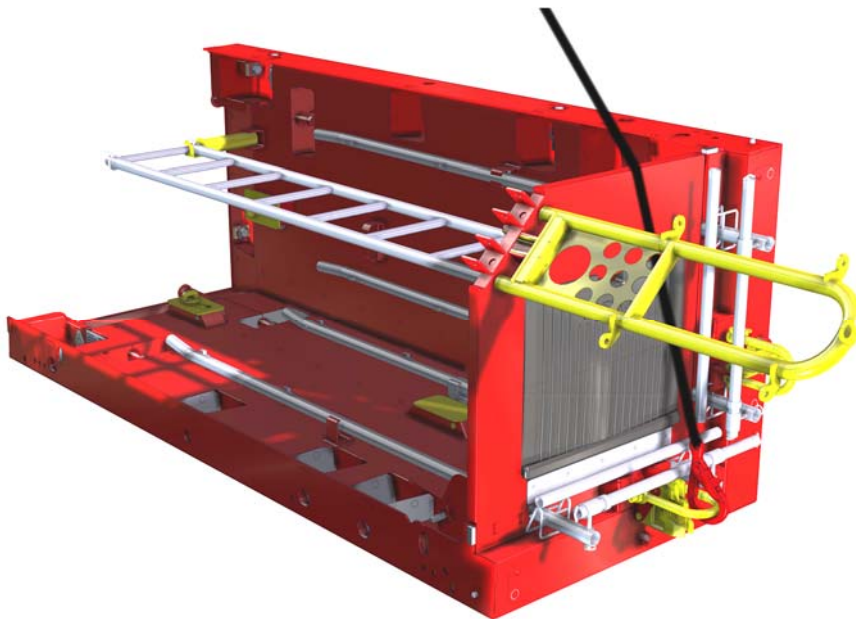


*These lifting rings are to be used **only** to lift the **upper extension alone**
In case it is assembled with a panel, the lifting **MUST** be done with the panel rings*



Case of angle panel

Lifting the angle panel to be done slinging the lifting ring located on the horizontal part of the panel.





32.45 LAY DOWN THE FORMWORKS



sateco

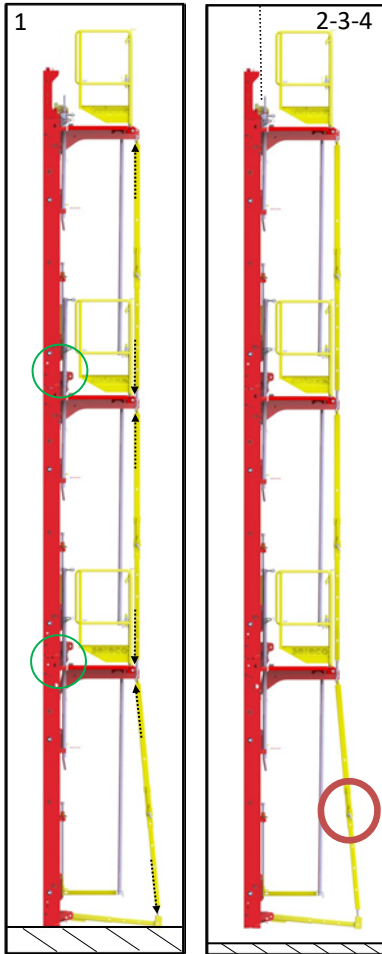
NOUS AVONS UN MONDE À BÂTIR



Lay down with a sling : Height ≤ to 8.90m

To know more about the using cases, refer to chart sheet 32.40.01

A formworking surface is always laid on battens.

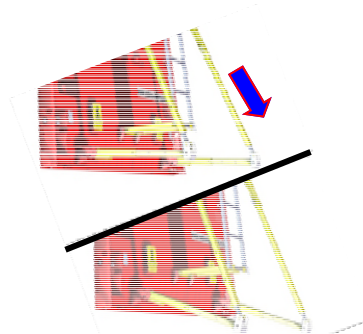


1- MOVE INSIDE THE SCREW JACKS.

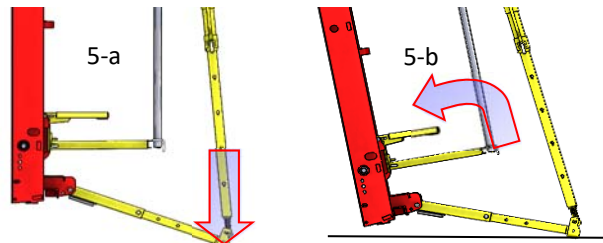
2- SLING

3- MOVE INSIDE THE FRONT COUNTER RAILING

4- LIFT THE FORMWORK SET TO REMOVE THE PEGS FROM THE OBLIC CRUTCHES



5-LAY THE SET ON THE ITS CRUTCHES IN THE STORAGE AREA (5-a) THEN ON THE FORMWORKING SURFACE PLATE (5-b).



6- SLOWLY MOVE DOWN THE SET ON THE BATTENS.



Maximum surface to lay down:

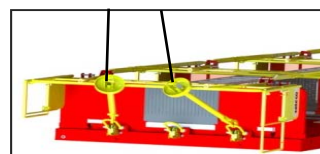
21sqm (surface except upper extension)

With the raising flat from the floor device :



Height than 8.90m up to 11.70m maximum with the same precautions mentioned above (checking crutches tightness, assembling, screw jacks).

ADD ADDITIONAL LIFTING DEVICE BETWEEN THE SHACKLE AND THE CRANE SLING.





32.50 STABILIZATION



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NOUS AVONS UN MONDE À BÂTIR



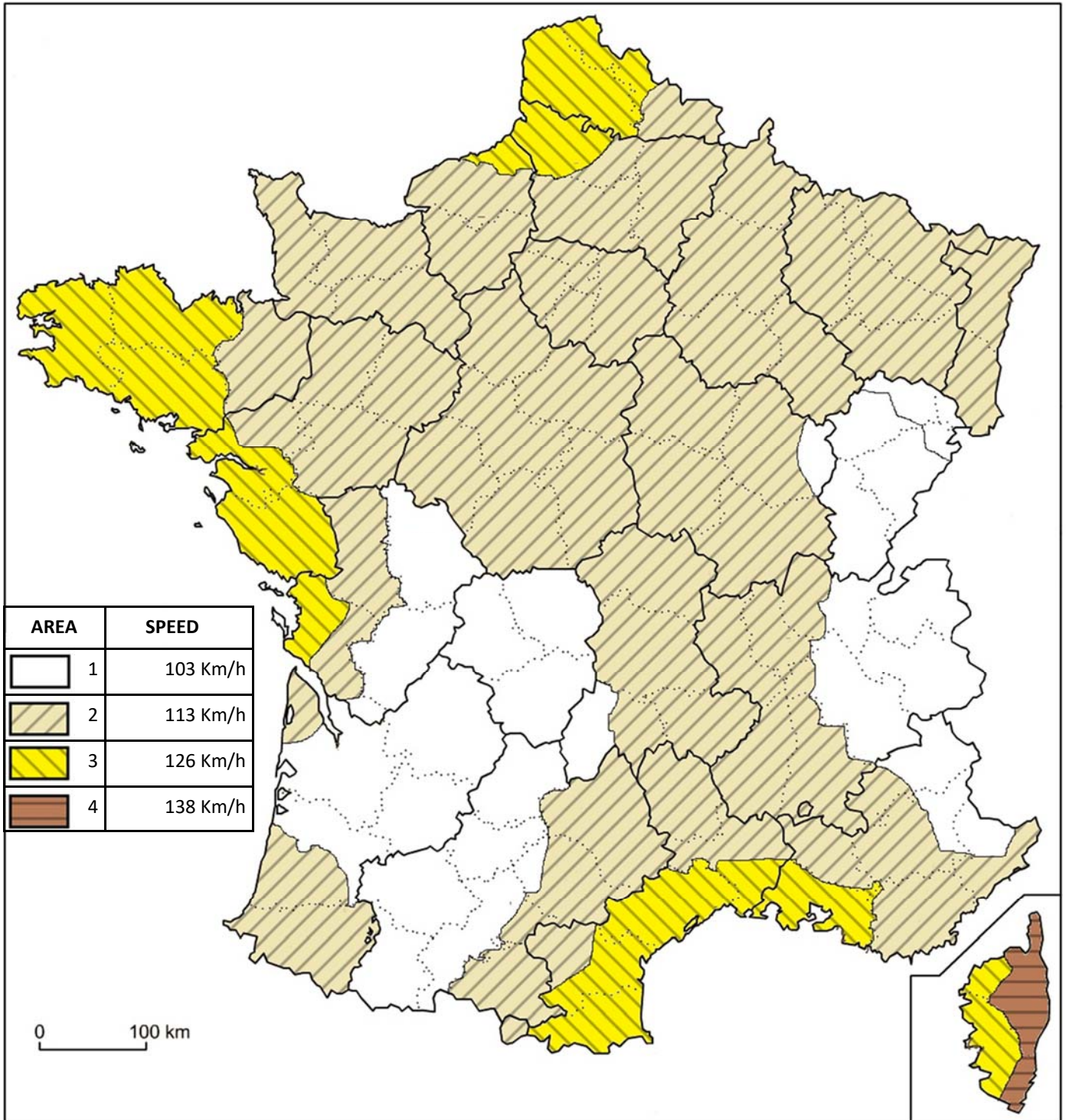
2 types of stabilization

1. With gantry, see sheet 32.50.13

Stabilization applied for winds < 85Km/h, in conformity with French standard NFP 93.350.
To know more about using cases of gantries see chapter lifting

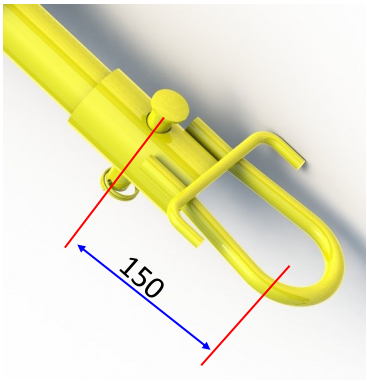
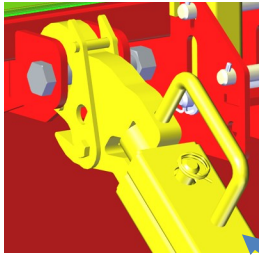
2. With ballast or anchoring, see sheets from 32.50.05 to 32.50.12

Stabilization with or without ballast, flexible according the winds map (hereunder) and according SATECO preconisations.



Stabilizer T1

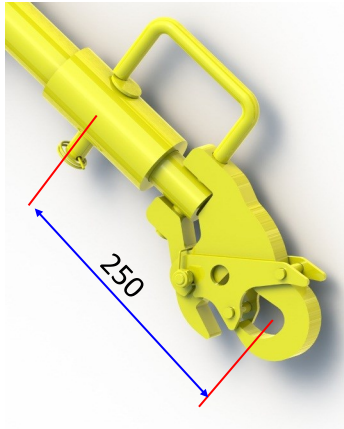
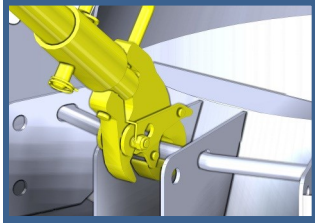
D.T. SC 1015 BOX



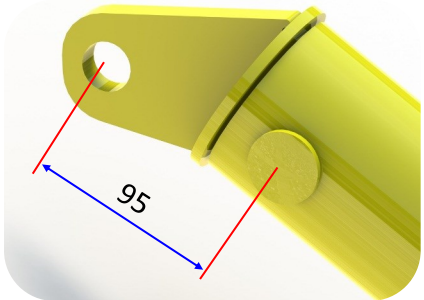
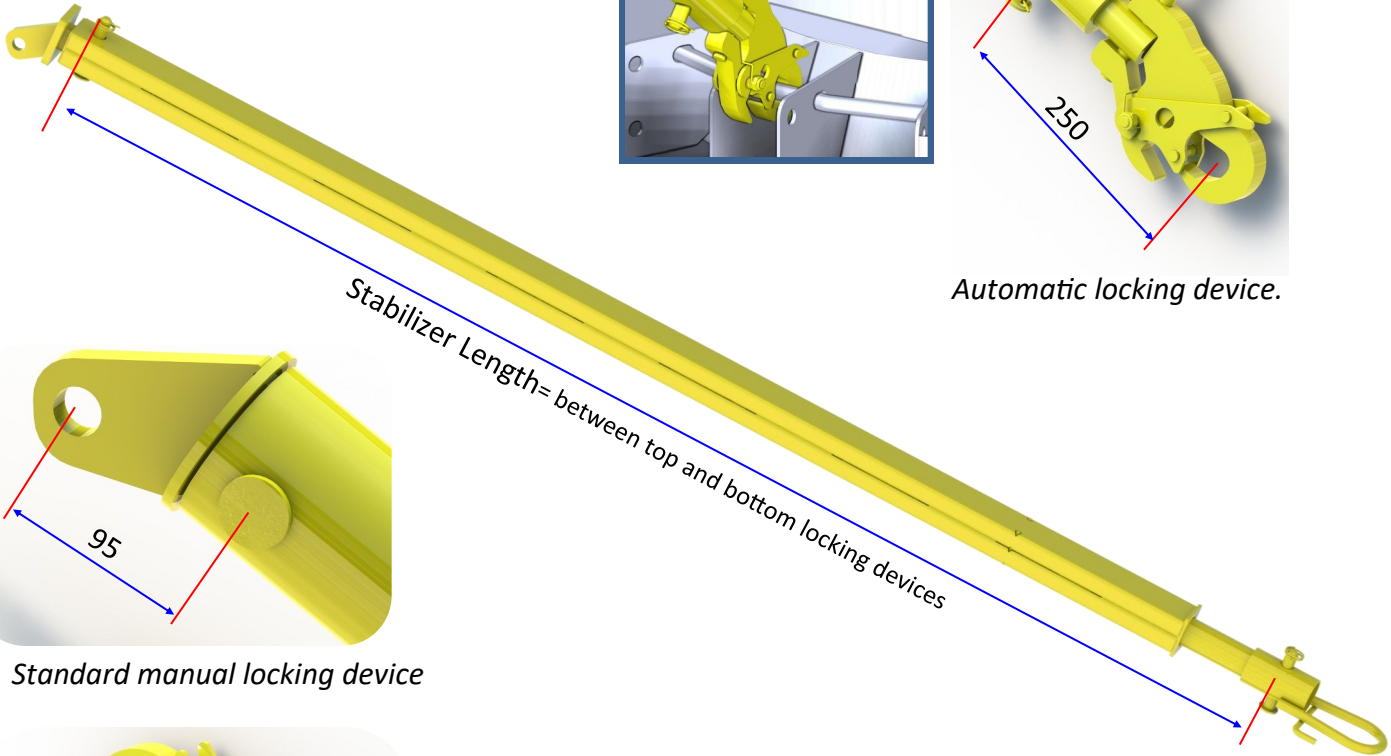
Standard manual locking device

STABILIZER T1:

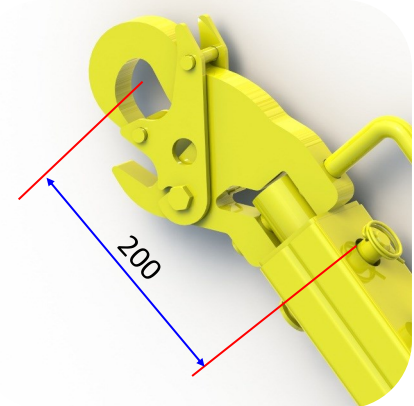
Stabilizer Length: from 1980 from 3500maxi



Automatic locking device.

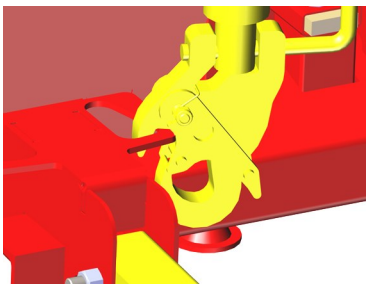
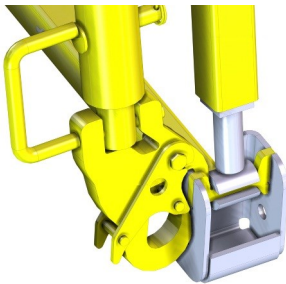


Standard manual locking device



Automatic locking device

NB: The automatic locking device are positioned on the crutch shoe or on the fixing piece of the low part of the crutch, during the manutention of the panels.
Refer to chapter 32.40 "Lifting and manutention".



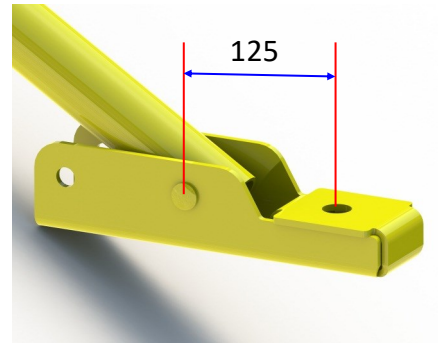
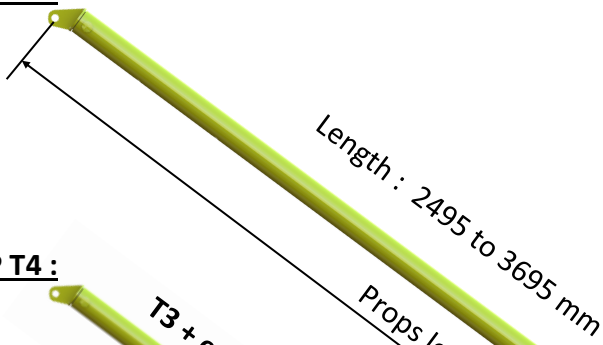
NOUS AVONS UN MONDE À BÂTIR

Props

D.T. SC 1015 BOX

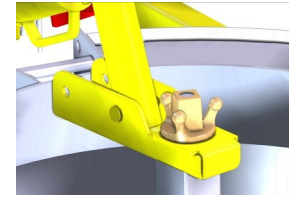
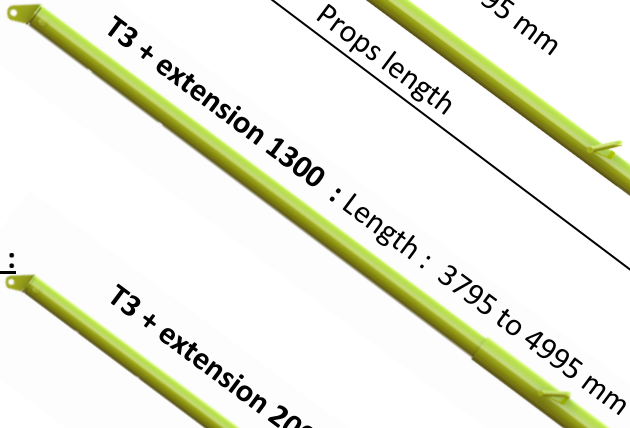


PROP T3 :



Fixing piece

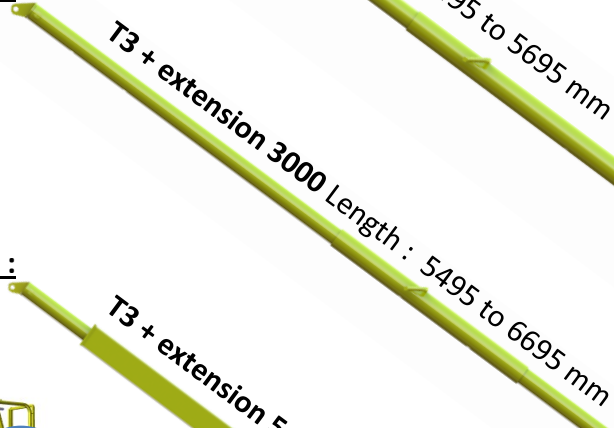
PROP T4 :



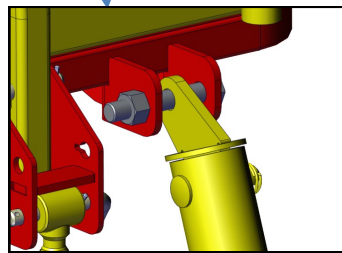
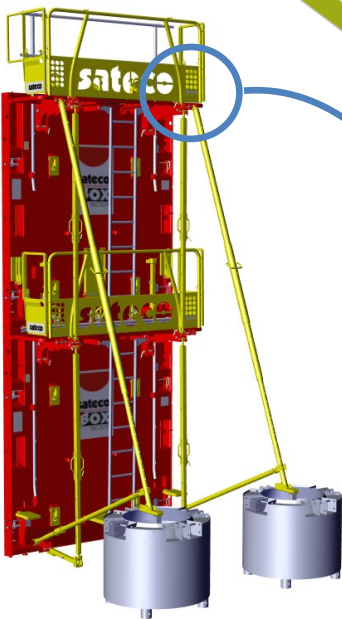
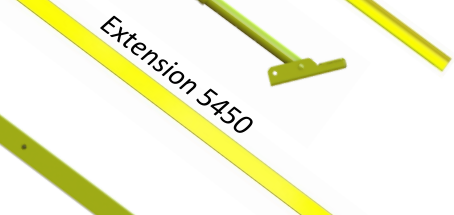
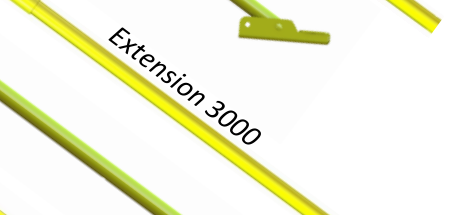
PROP T5 :



PROP T6 :



PROP T7 :



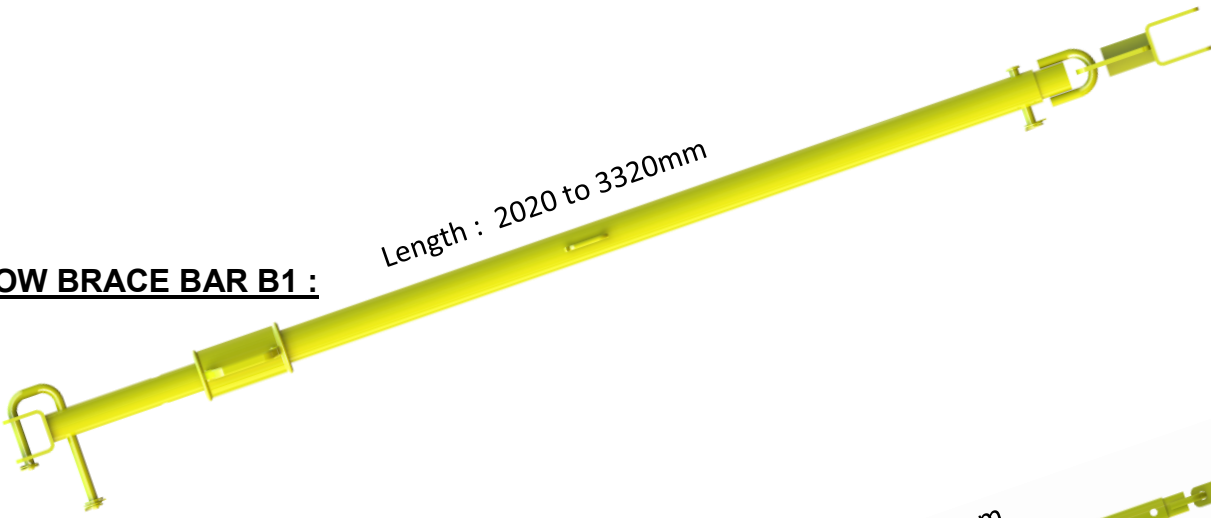
sateco

NOUS AVONS UN MONDE À BÂTIR



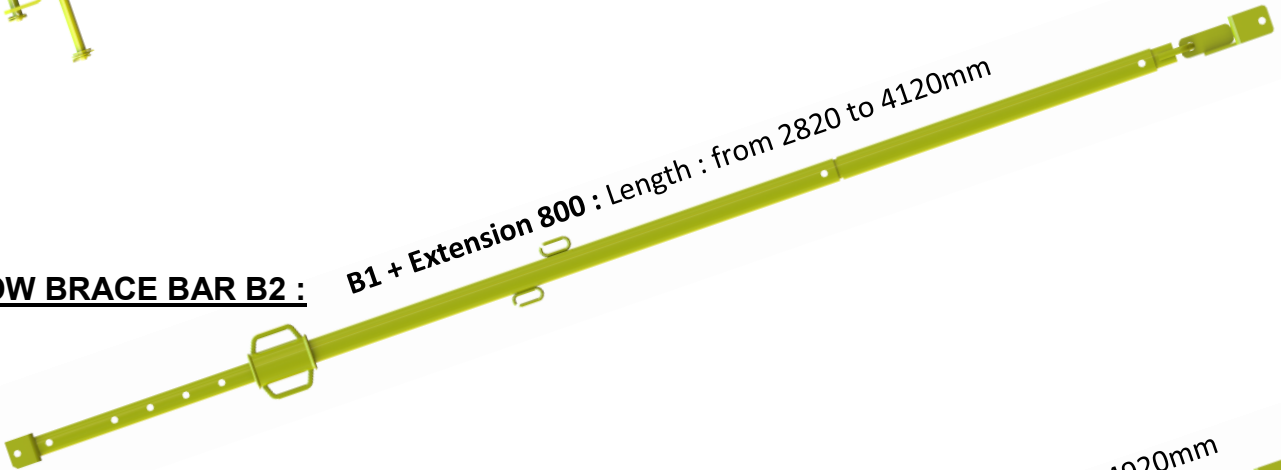
LOW BRACE BAR B1 :

Length : 2020 to 3320mm



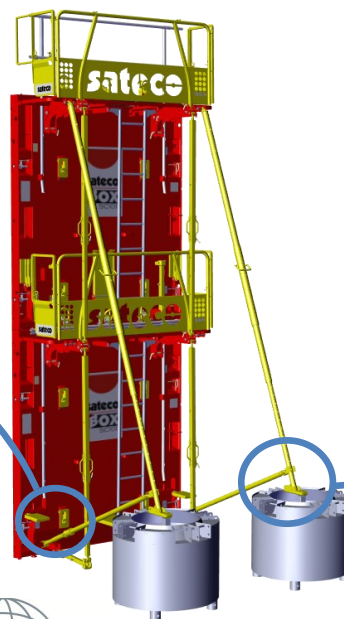
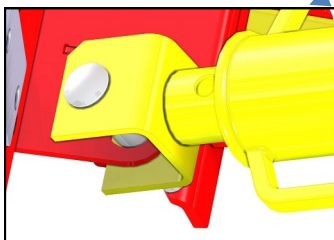
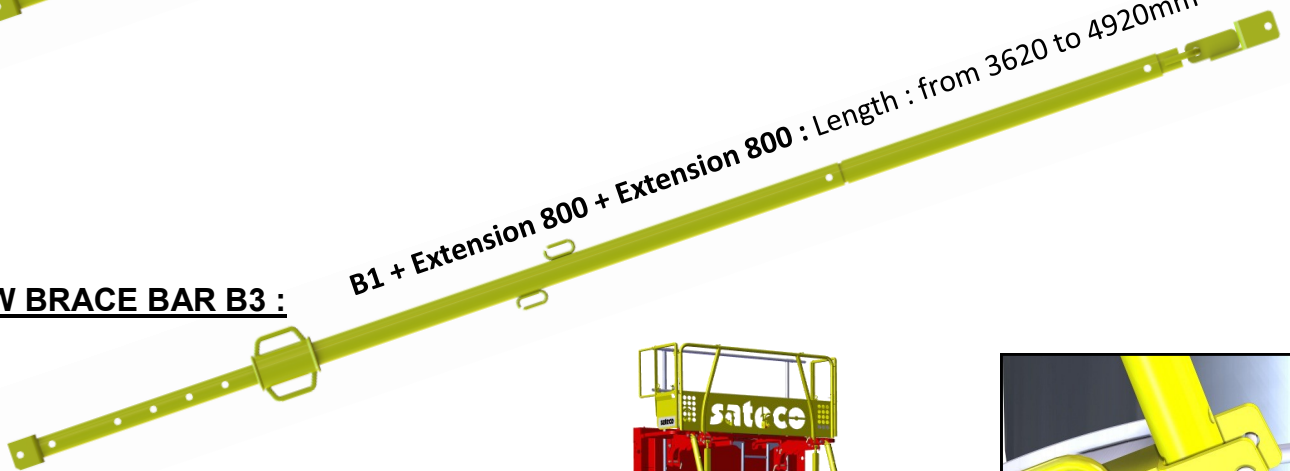
LOW BRACE BAR B2 :

B1 + Extension 800 : Length : from 2820 to 4120mm



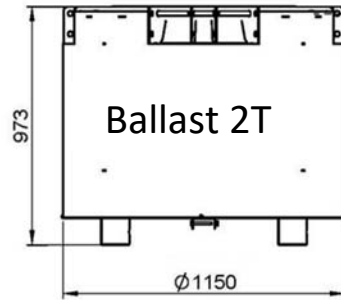
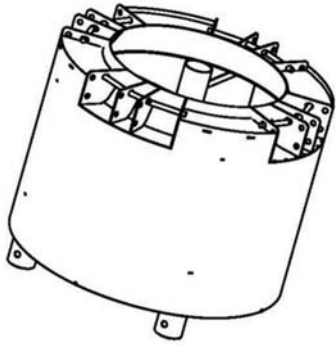
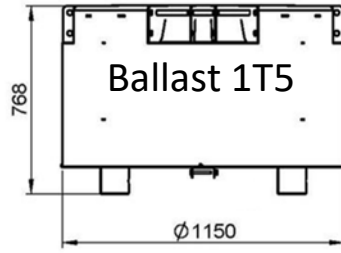
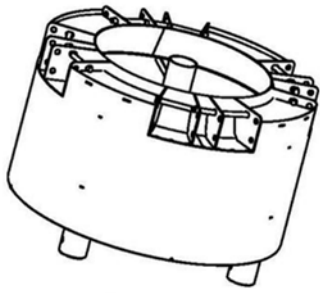
LOW BRACE BAR B3 :

B1 + Extension 800 + Extension 800 : Length : from 3620 to 4920mm

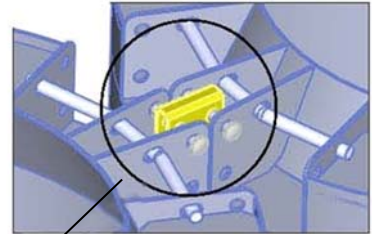


Ballasts

D.T. SC 1015 BOX

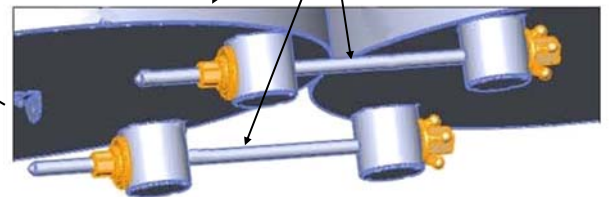


High linking piece



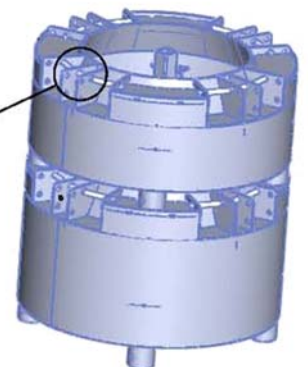
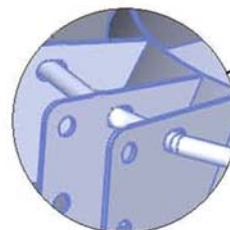
Ballasts kit of junction

2 rods to link at the bottom

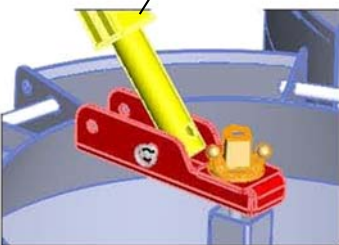
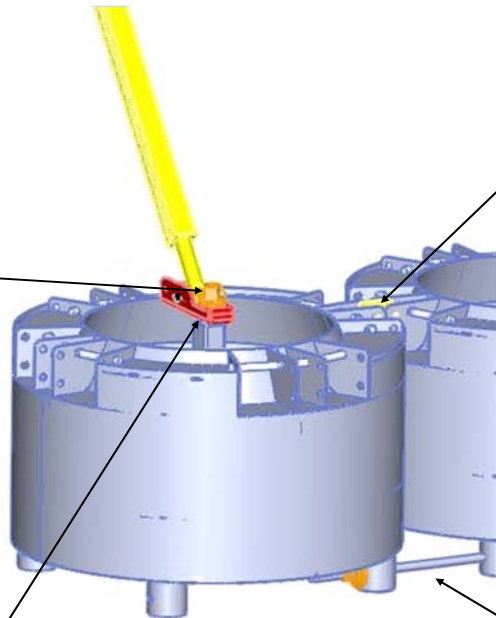
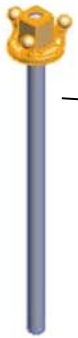


Ballasts storage :
Ballast 1.5T : 4 maxi
Ballast 2T : 3 maxi

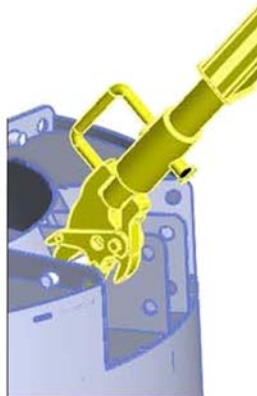
Manutention
on 4 points
SWL 3T



Fixing rod
any ballast



Fixing piece



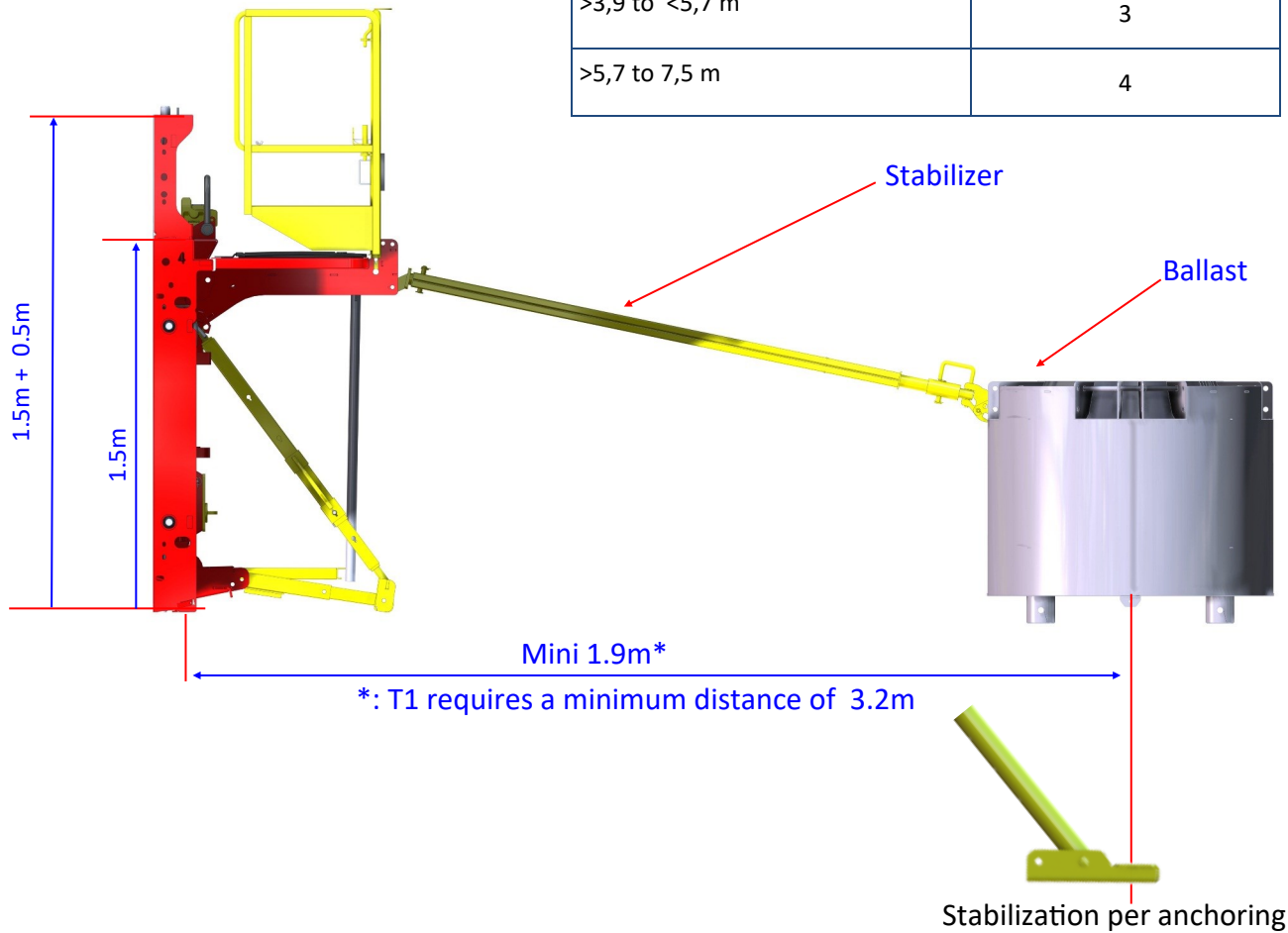
Stabilizer T1



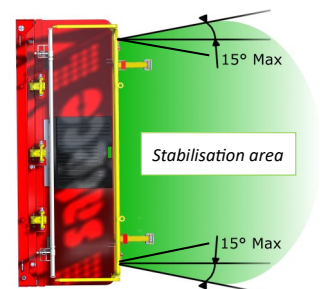
NOUS AVONS UN MONDE À BÂTIR



Equipments number	
Length of panel set	Equipments set
1,2 to < 3,9 m	2
>3,9 to <5,7 m	3
>5,7 to 7,5 m	4



Configuration of equipments			
Wind area	Standard	1-2	3
Wind speed	85Km/h	113km/h	126km/h
Stabilizer	T1	T1	T1
Ballast weight	1.5T	1.5T	1.5T
D mini	1.9m	1.9m	1.9m
Effort in the stab.	200 daN	360 daN	450 daN



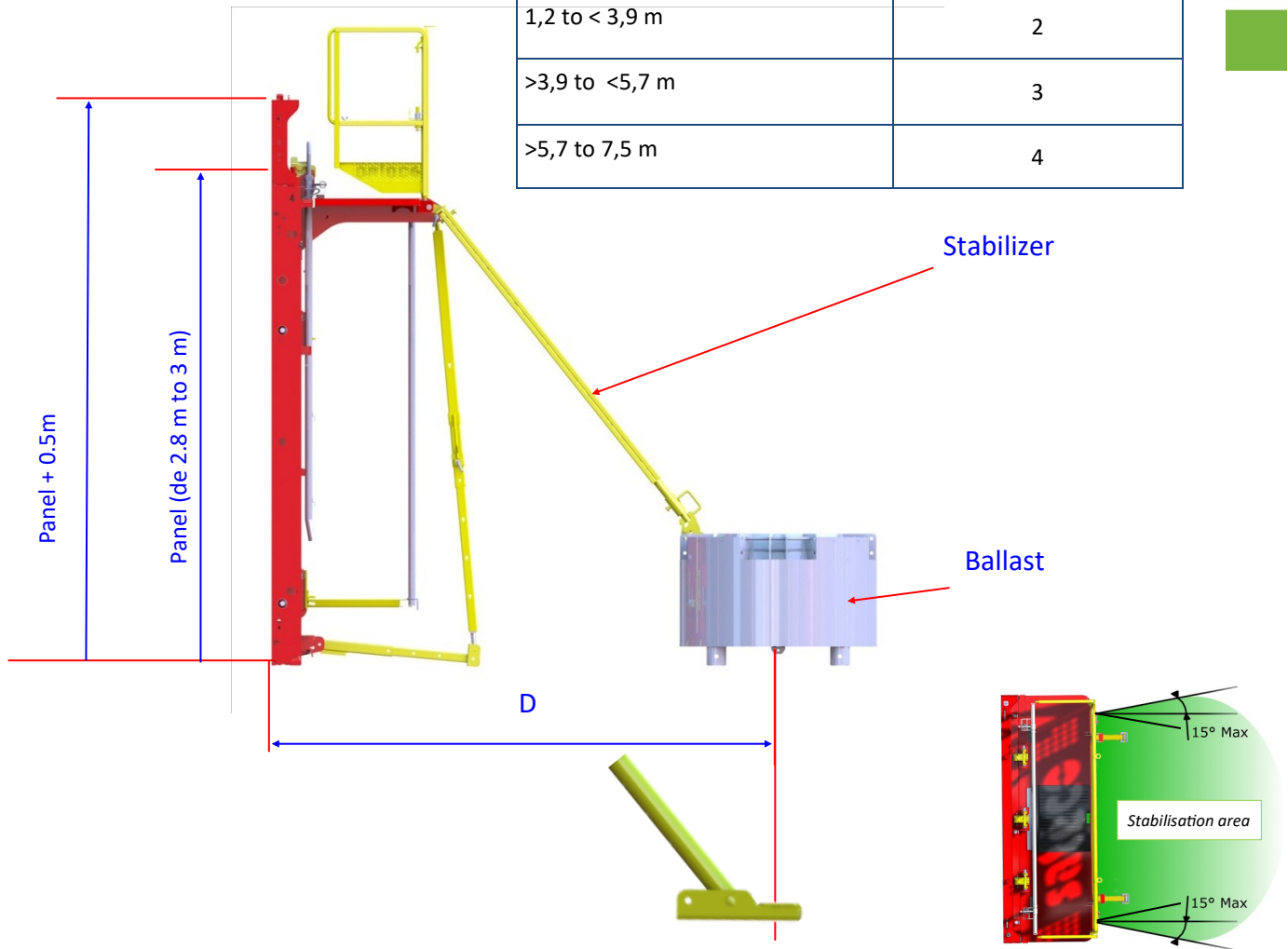
Caution: according to the stabilizer chosen, anticipate an appropriate distance D.

Example : with t1, minimum D is 3.2m.





Equipments number	
Length of panel set	Equipments set
1,2 to < 3,9 m	2
>3,9 to <5,7 m	3
>5,7 to 7,5 m	4



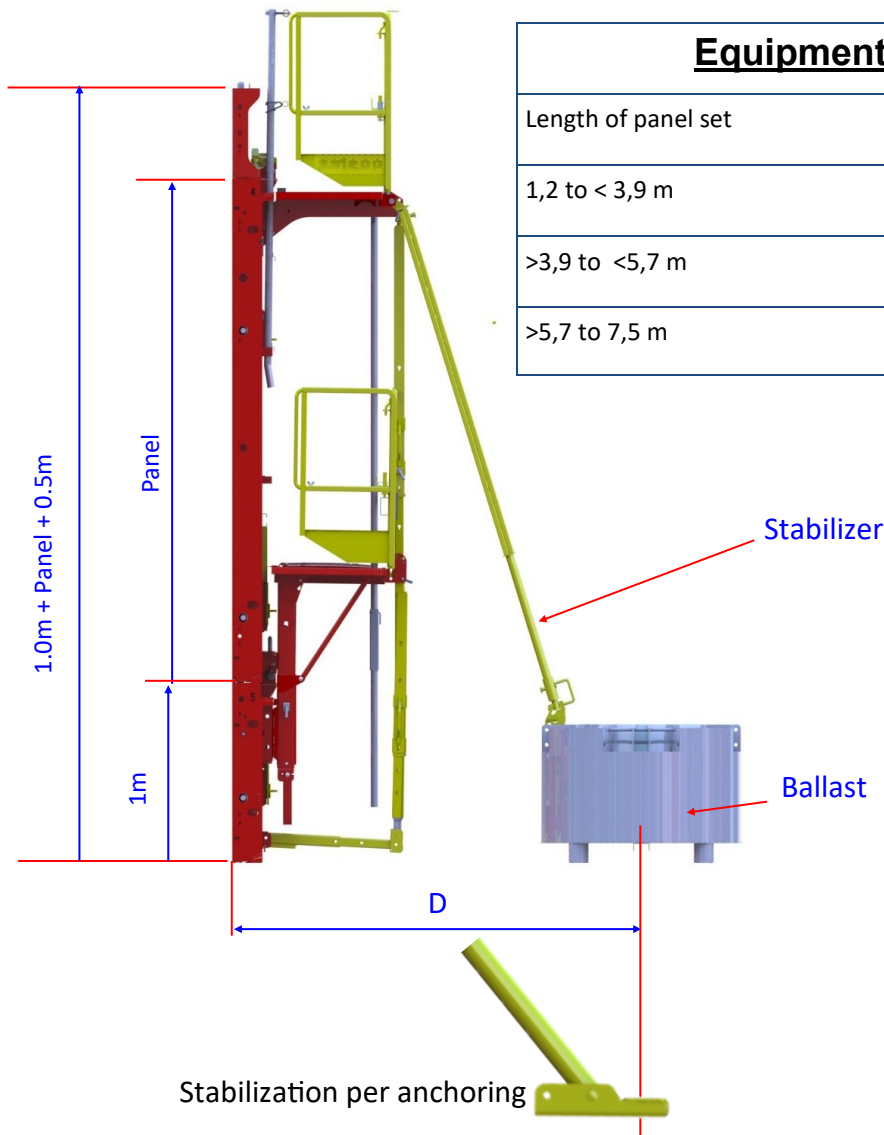
Configuration of equipment per ballast			
Wind area	Standard	1-2	3
Wind speed	85Km/h	113km/h	126km/h
Stabilizer	T1	T1	T1
Ballast weight	1.5T	1.5T	1.5T
D mini	1.9m	1.9m	1.9m
Effort in the stab.	700 daN	1537 daN	1450 daN

Per Anchoring on the floor		
Standard	1-2	3
85Km/h	113km/h	126km/h
T1	T1	T1
-	-	-
1.9m	1.9m	1.9m
795 daN	1405 daN	1925 daN

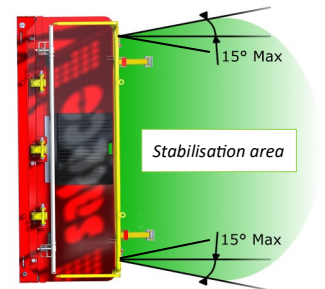


All formworks without access ladder must be laid on the floor, or paired with a stabilized formwork equipped with an access ladder.





Equipments number	
Length of panel set	Equipments set
1,2 to < 3,9 m	2
>3,9 to <5,7 m	3
>5,7 to 7,5 m	4



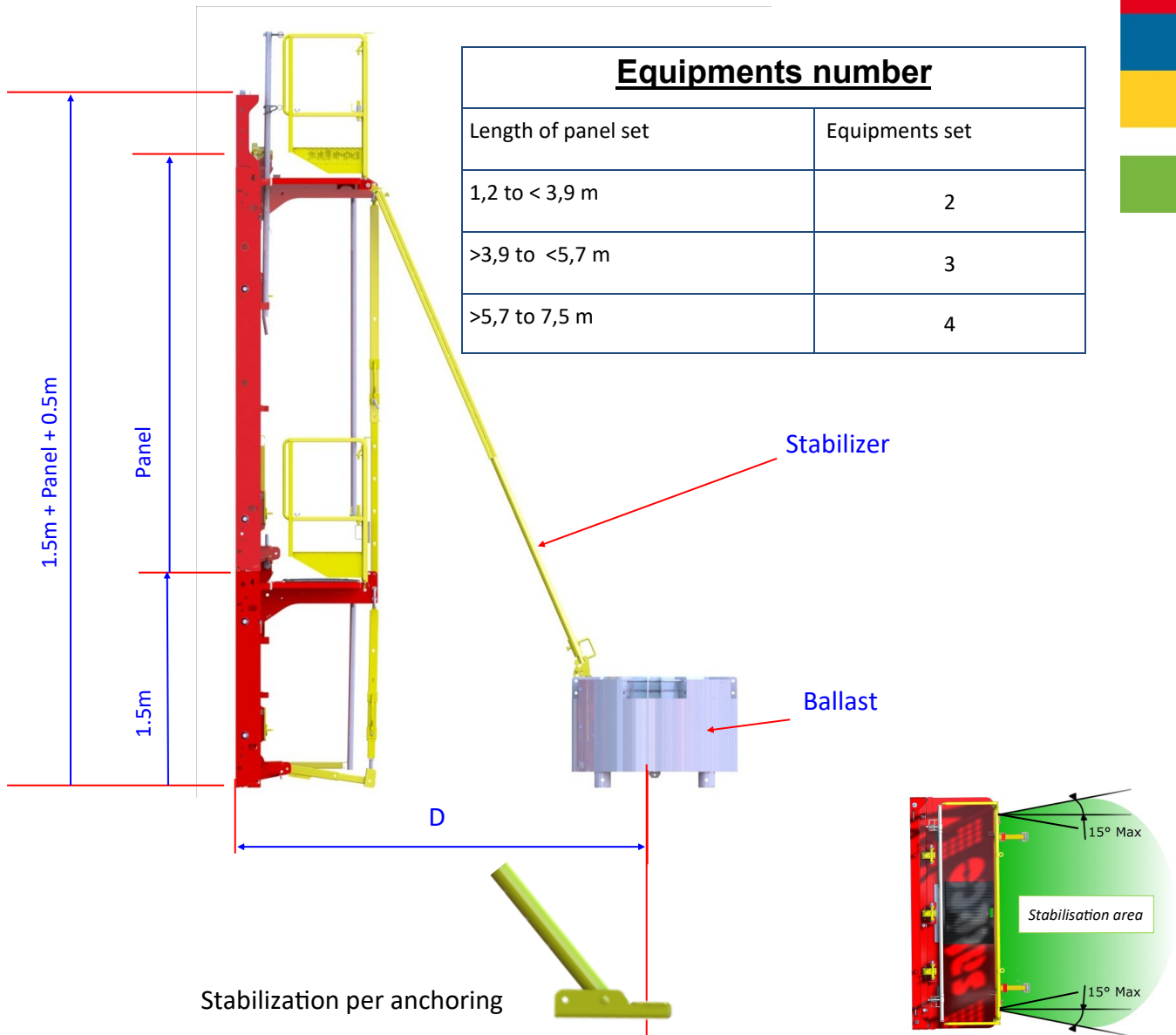
Configuration of equipement per ballast			
Wind area	Standard	1-2	3
Wind speed	85Km/h	113km/h	126km/h
Stabilizer	T1	T3	T3
Ballast weight	1.5T	1.5T	1.5T
D mini	1.9m	1.9m	2.0m
Effort in the stab.	1266 daN	2240 daN	2450 daN

Per Anchoring on the floor		
Standard	1-2	3
85Km/h	113km/h	126km/h
T1	T4	T4
-	-	-
1.9m	2.2 m	2.5m
1518 daN	2093 daN	2010 daN



All formworks without access ladder must be laid on the floor, or paired with a stabilized formwork equipped with an access ladder.





Equipments number	
Length of panel set	Equipments set
1,2 to < 3,9 m	2
>3,9 to <5,7 m	3
>5,7 to 7,5 m	4

Stabilization per anchoring

Configuration of equipments ballast or anchoring			
Wind area	Standard	1-2	3
Wind speed	85Km/h	113km/h	126km/h
Stabilizer	T1	T3	T4
Ballast weight	1.5T	1.5T	1.5T
D mini	1.9m	2.2m	2.5m
Effort in the stab.	1615 daN	2092 daN	2123 daN

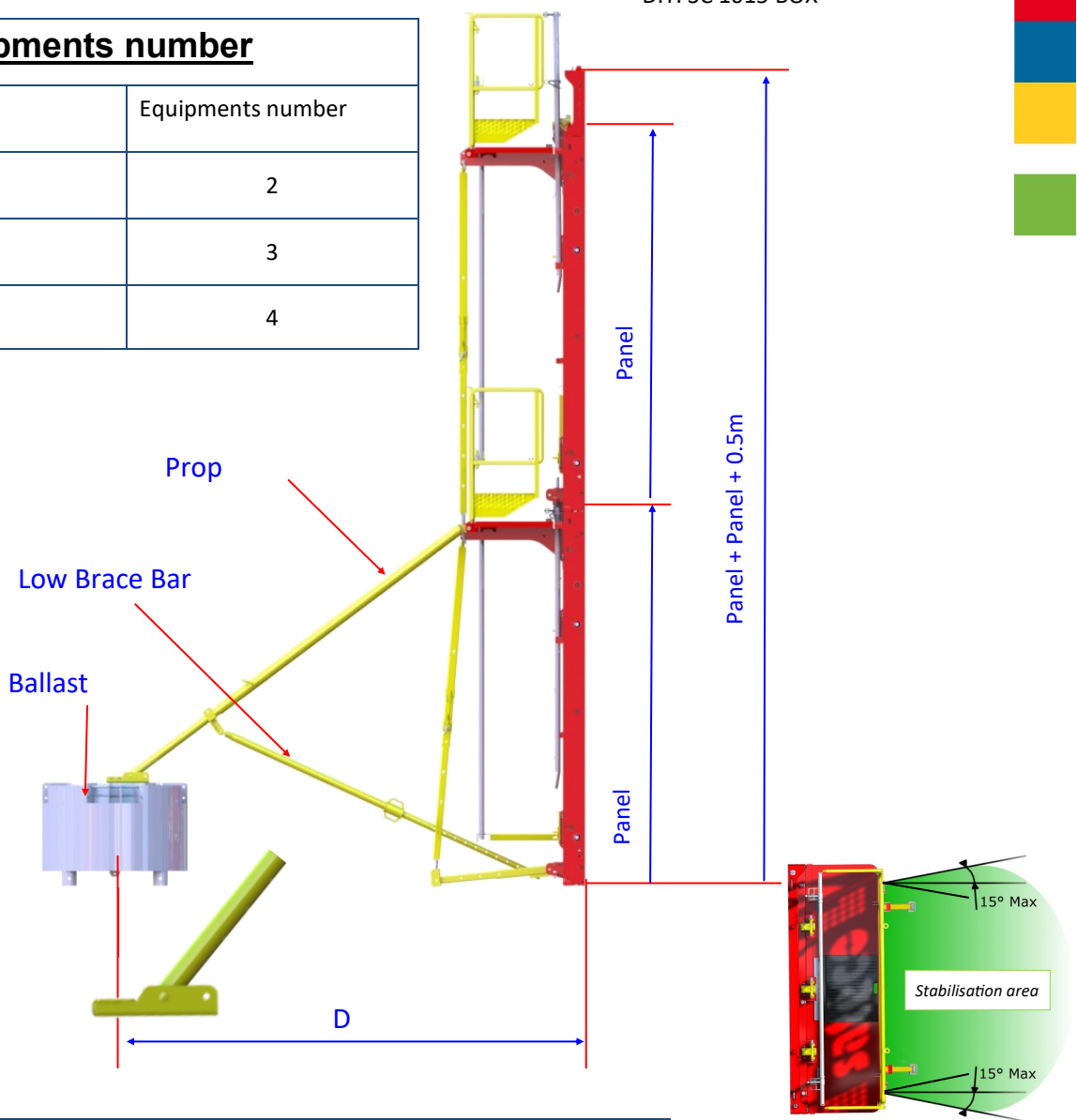
Per anchoring on the floor		
Standard	1-2	3
85Km/h	113km/h	126km/h
T4	T4	T4
-	-	-
1.9m	2.2 m	2.5m
1896 daN	2475 daN	2470 daN

*: Same stabilization for the following case Lower Ext. 1m + Lower Ext. 1m + Panels 2.80m.





<u>Equipments number</u>	
Length of panel set	Equipments number
1,2 to < 3,9 m	2
>3,9 to <5,7 m	3
>5,7 to 7,5 m	4

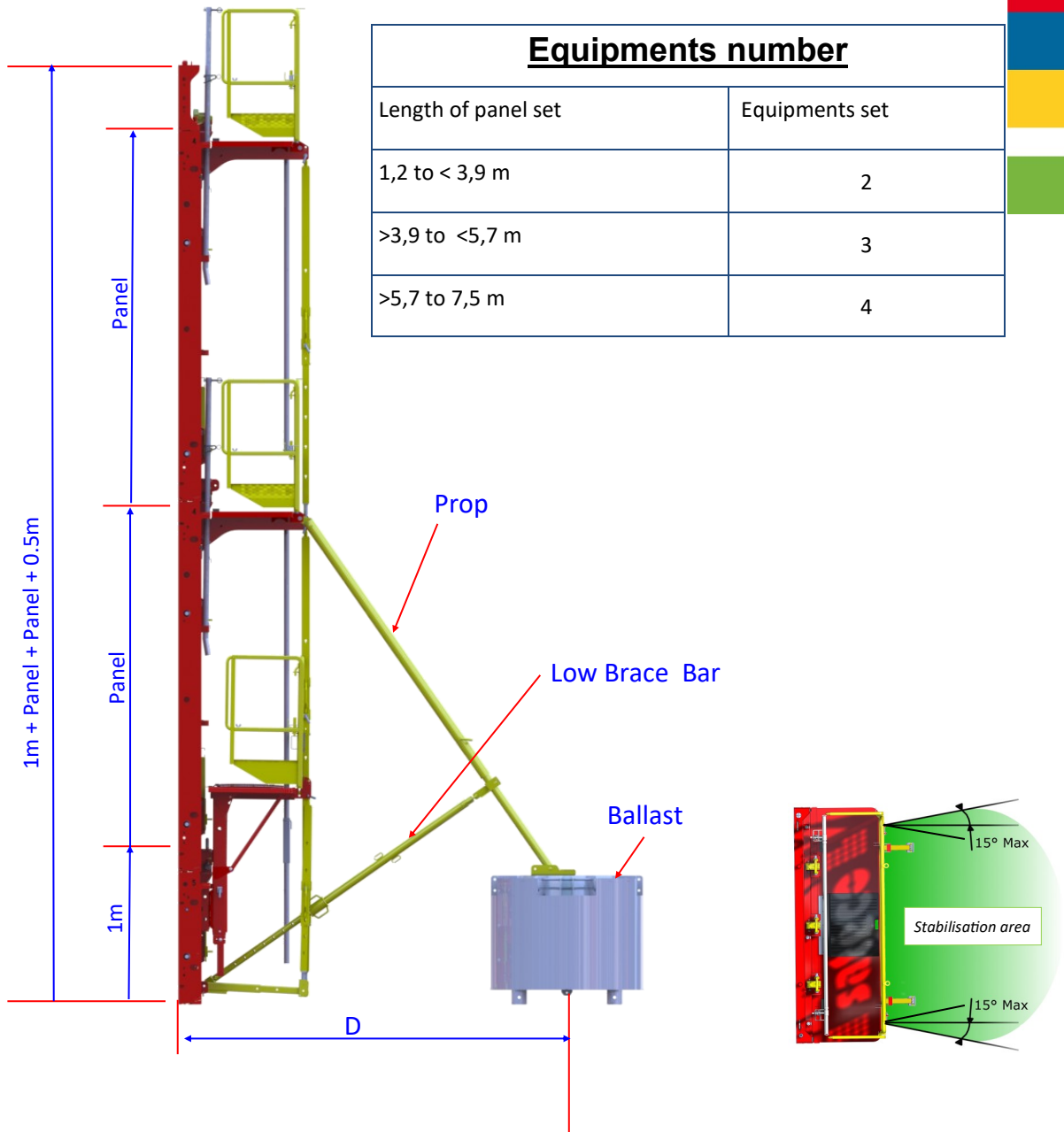


<u>Configuration of equipement per ballast</u>				
Wind area	Standard	1-2	3	4
Wind speed	85Km/h	113km/h	126km/h	138km/h
Stabilizer	T3	T5	T5	T6
Low Brace Bar	B1	B1	B1	B2
Ballast weight	1.5T	1.5T	1.5T	1.5T
D mini	Mini prop:1.9m	2.6m	3.1m	3.8m



All formworks without access ladder must be laid on the floor, or paired with a stabilized formwork equipped with an access ladder.





<u>Equipments number</u>	
Length of panel set	Equipments set
1,2 to < 3,9 m	2
>3,9 to <5,7 m	3
>5,7 to 7,5 m	4

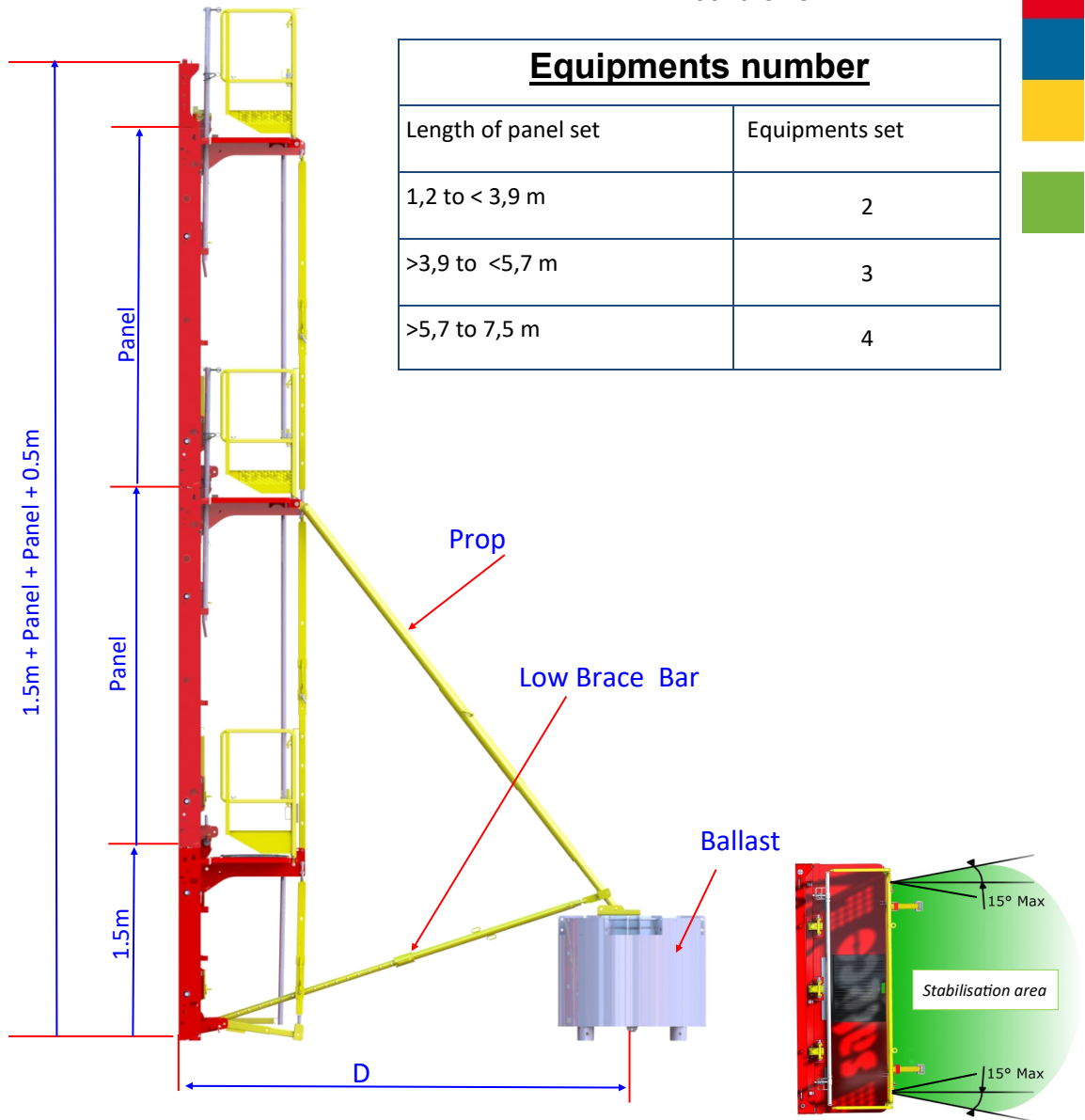
Configuration of equipments

Wind area	Standard	1-2		3			4	
Wind speed	85km/h	113 km/h		126km/h			138 km/h	
Stabilizer	T3	T4	T3	T4	T4	T3	T5	T3
Low Brace Bar	B1	B2	B1	B2	B2	B1	B3	B1
Ballast weight	1.5Tonnes	1.5Tonnes	2 Tonnes	1.5Tonnes	2 Tonnes	3 Tonnes	1.5Tonnes	3 Tonnes
D mini	2.6m	3.4m	2.6m	4.3m	3.7m	2.3m	5.1m	2.6m



All formworks without access ladder must be laid on the floor, or paired with a stabilized formwork equipped with an access ladder





Equipments number	
Length of panel set	Equipments set
1,2 to < 3,9 m	2
>3,9 to <5,7 m	3
>5,7 to 7,5 m	4

Configuration of equipments									
Wind area	Standard	1-2			3			4	
Wind speed	85km/h	113km/h			126km/h			138km/h	
Stabilizer	T4	T4T4	T4	T3	T5	T4	T4	T6	T4
Low Brace Bar	B1	B2	B1	B1	B3	B2	B1	B3	B1
Ballast weight	1.5 T	1.5Tonnes	2 Tonnes	3 Tonnes	1.5T	2 Tonnes	3 Tonnes	1.5T	3 Tonnes
D mini	2.6m	3.9m	2.9m	2.3m	4.9m	3.7m	3m	5.8m	3m



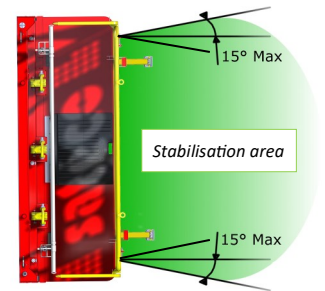
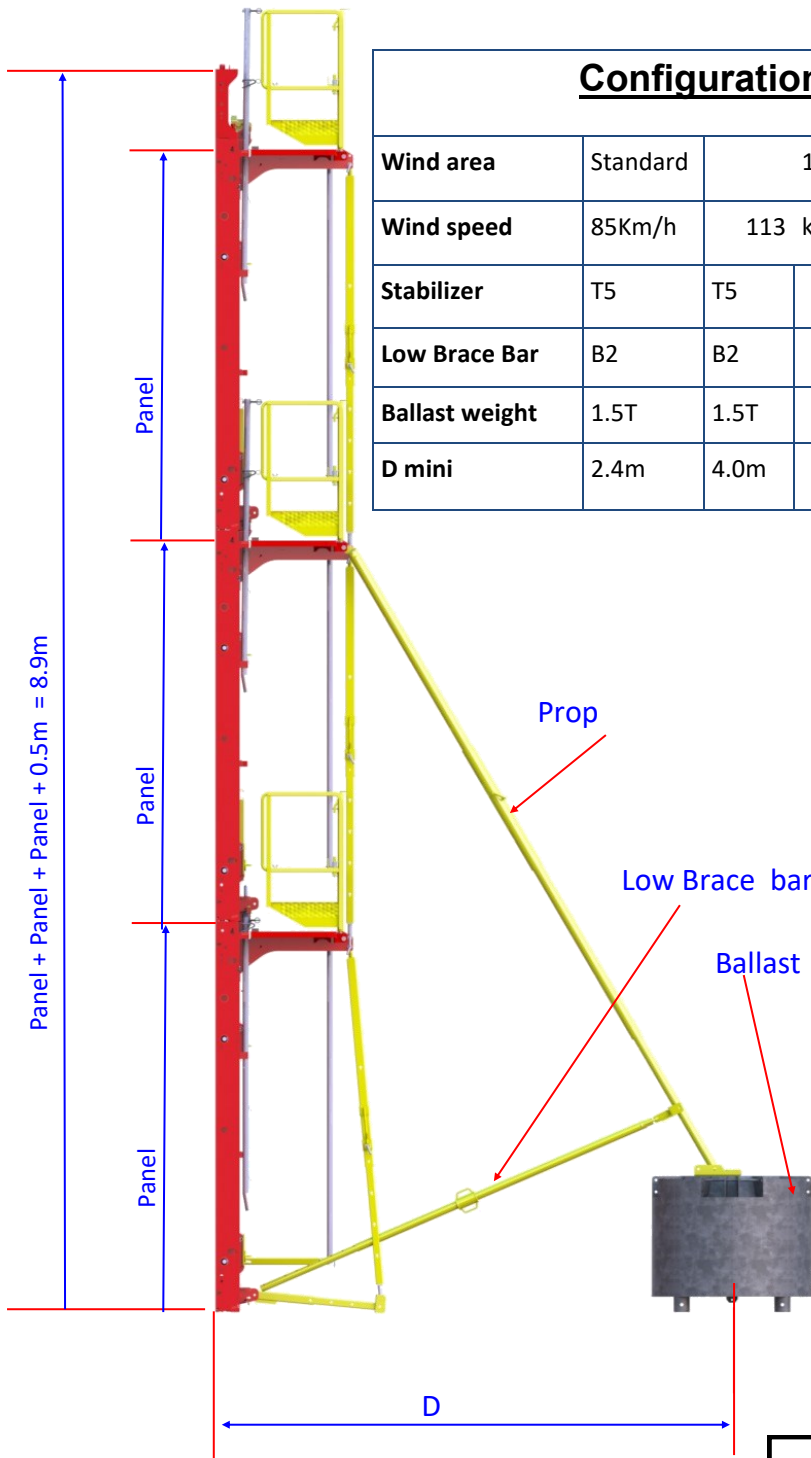
All formworks without access ladder must be laid on the floor, or paired with a stabilized formwork equipped with an access ladder





Configuration of equipments

Wind area	Standard	1-2		3	4	
Wind speed	85Km/h	113 km/h		126 Km/h		138km/h
Stabilizer	T5	T5	T5	T6	T5	T6
Low Brace Bar	B2	B2	B2	B3	B2	B3
Ballast weight	1.5T	1.5T	2T	1.5T	2T	1.5T
D mini	2.4m	4.0m	3.2m	5.00m	3.2m	6.00m



All formworks without access ladder must be laid on the floor, or paired with a stabilized formwork equipped with an access ladder

Equipments number:

$$Nb = \frac{\text{Length of panel} - 600}{1200}$$

Rounded up to the next whole nber

With: L: Length of panels set



Stabilization by gantry with spring blade

D.T. SC 1015 BOX



44800 to 7200			
2400 to 4800			
2400			
1200			
Width Height	2800+500 	1000+2800+500 	1500+2800+500

85 KM/H MAXI

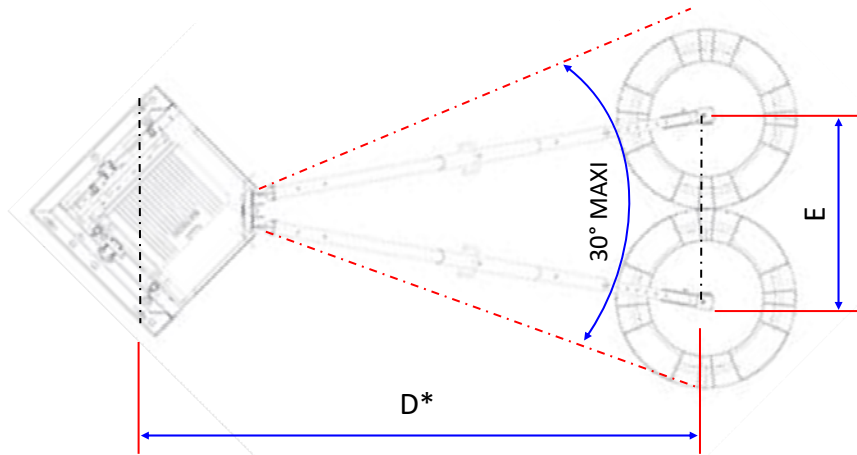
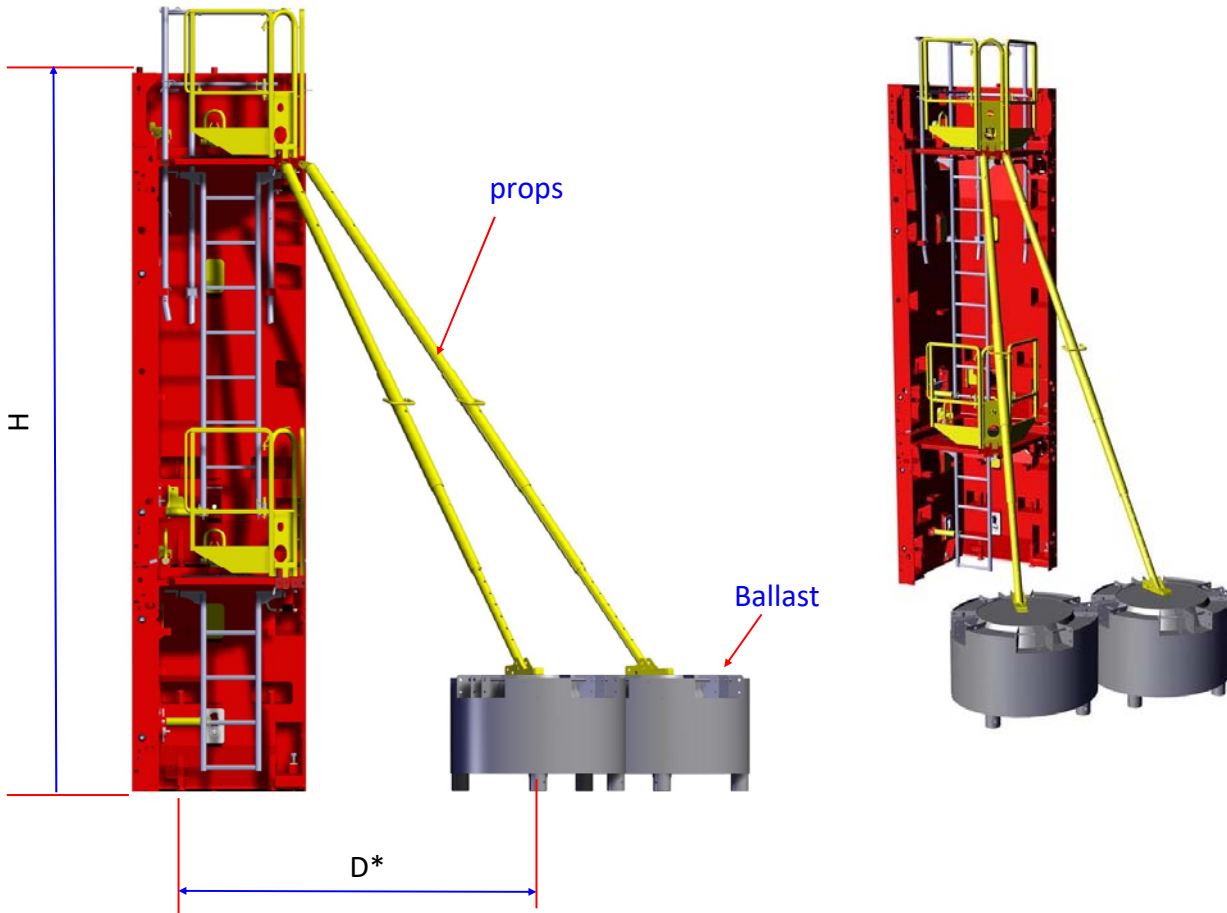


This chart is neither acceptable for raising flat from the floor nor for manutention.



NOUS AVONS UN MONDE À BÂTIR

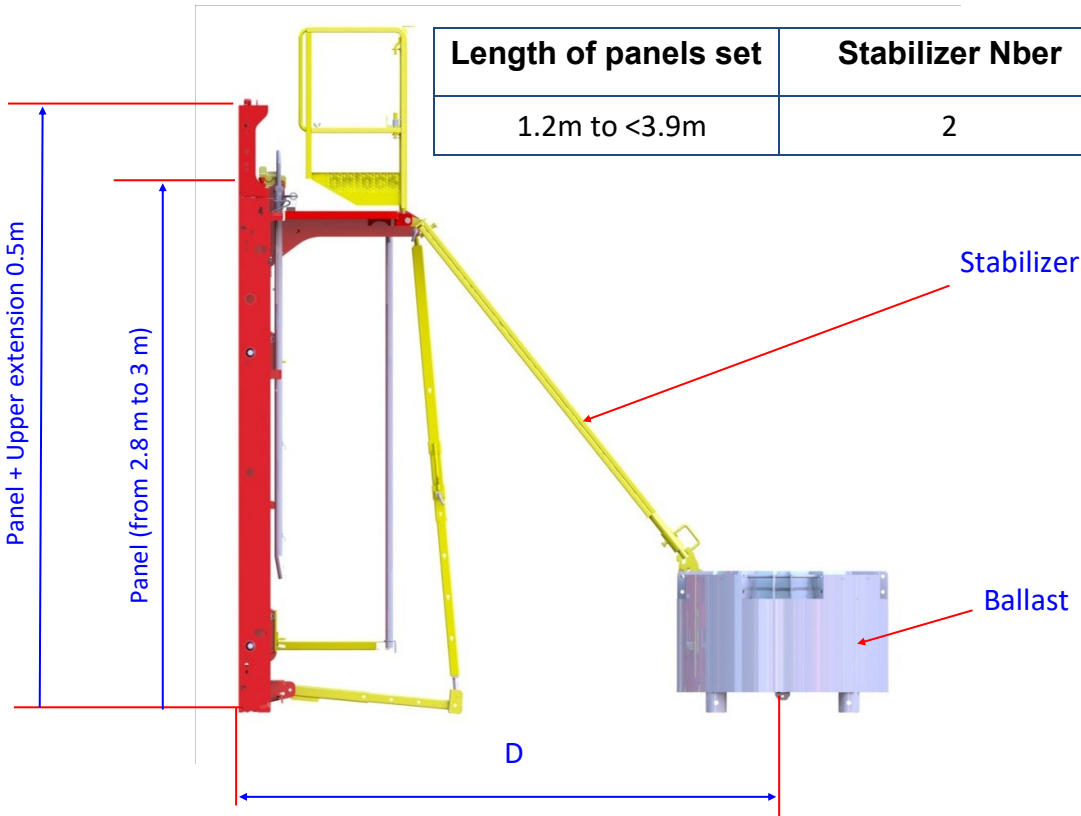
Sheet: 32.50.13 ind.01



Ht formwork H	Stabilizer	D* mini mm	Center distance mini E mm
3.30m	T3	2000	1200
4.30m	T3	2000	1200
4.80m	T44	2300	1200

*D : distance between the screw jacks lign and the anchoring point of the ballast fixing piece

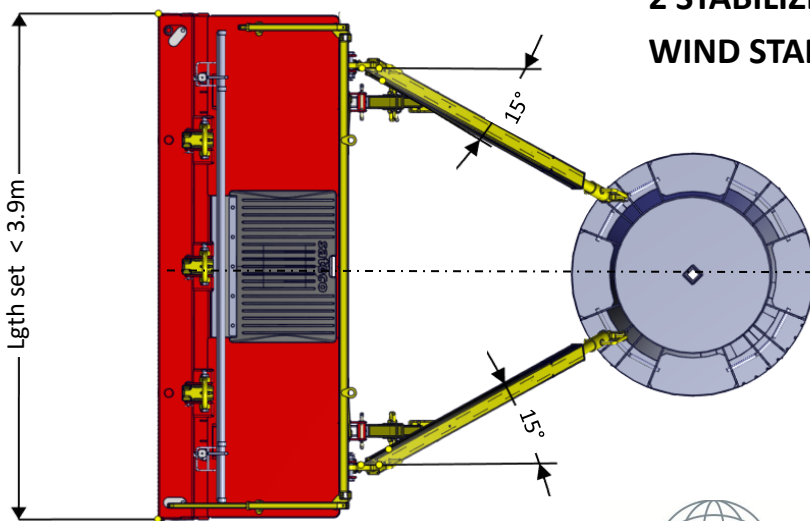




Length of panels set	Stabilizer Nber	Ballast Nbr
1.2m to <3.9m	2	1

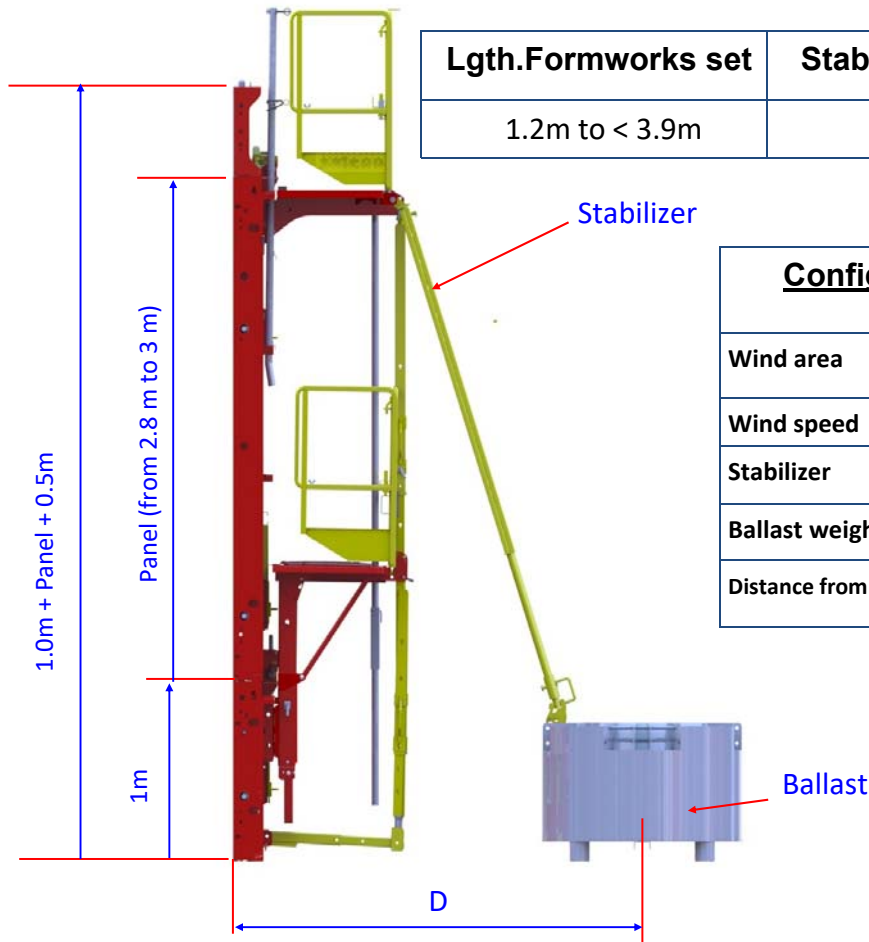
Configuration of equipments	
Wind area	Standard
Wind speed	85Km/h
Stabilizer	T1
Ballast weight	1,5T
Distance du Ballast D mini	2.85m

**2 STABILIZERS MINI PER PANEL ON ITS OWN
WIND STABILITY 85KM/ MAXI**



Ballast centered with the panels set
Automatic locking device on the stabilizer

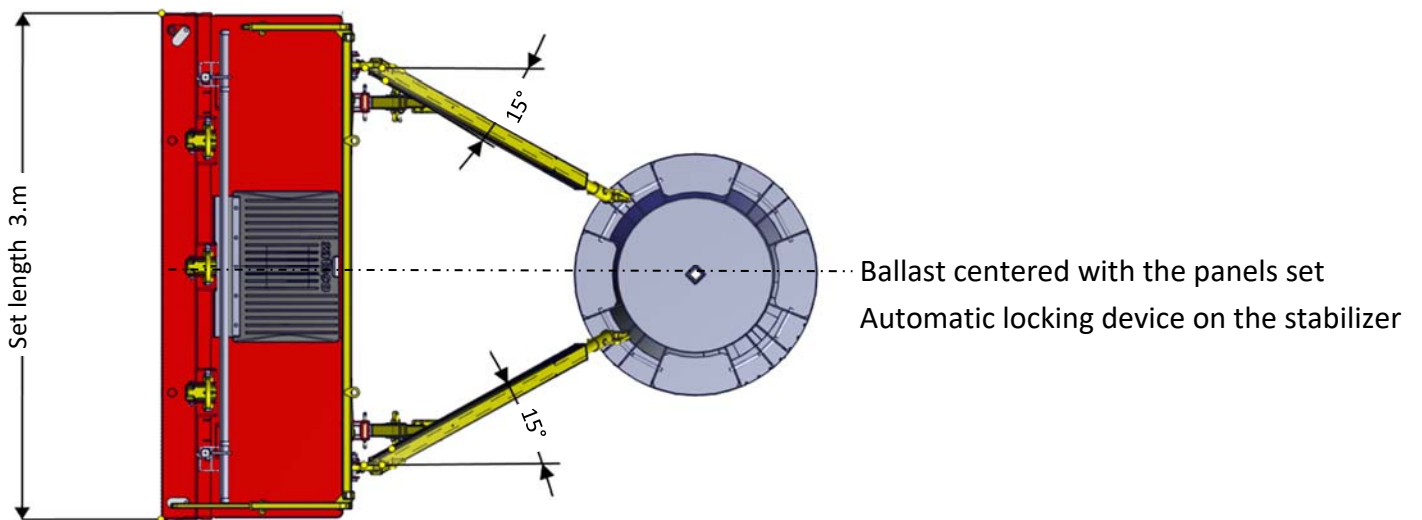




Lgth.Formworks set	Stabilizers nber	Ballast nber
1.2m to < 3.9m	2	1

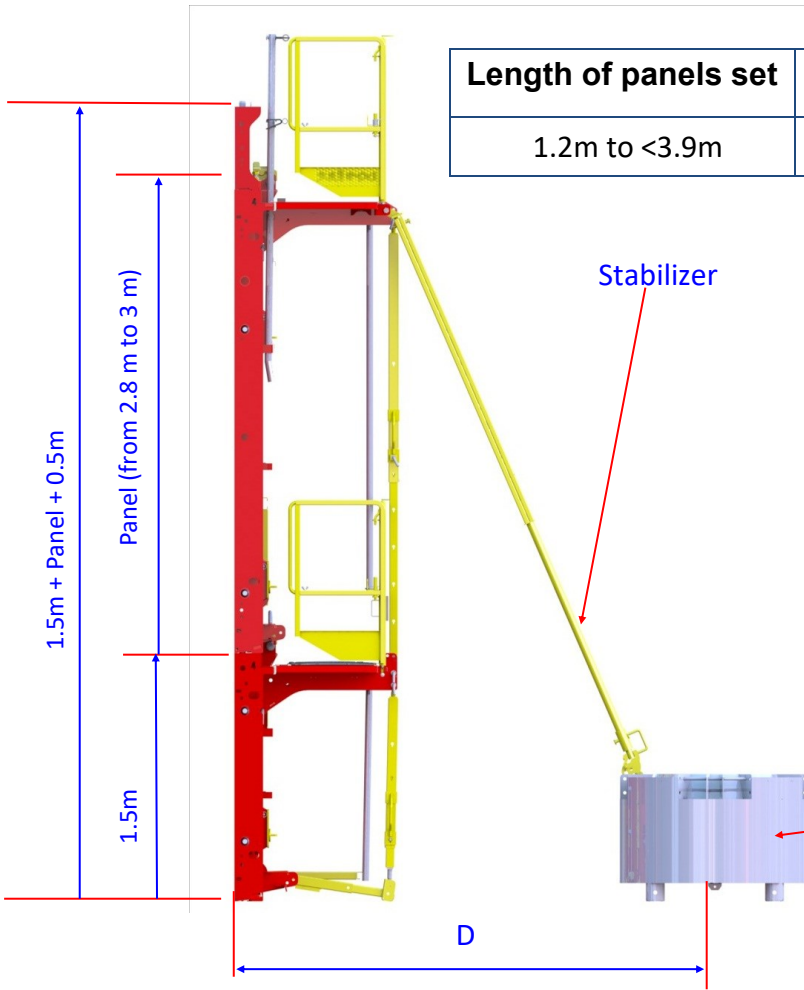
<u>Configuration of equipments</u>	
Wind area	Standard
Wind speed	85Km/h
Stabilizer	T1
Ballast weight	1,5T
Distance from ballast D mini	2.85m

**2 STABILIZERS MINI PER PANEL ON ITS OWN
WIND STABILITY 85KM/ MAXI**



Stabilization one piece ballast, panel HT 5.0

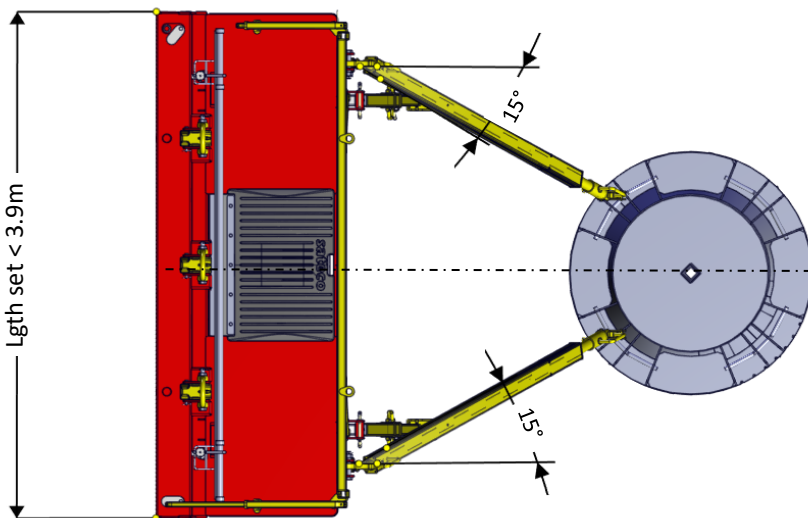
D.T. SC 1015 BOX



Length of panels set	Stabilizer Nber	Ballast Nbr
1.2m to <3.9m	2	1

<u>Configuration of equipments</u>	
Wind area	Standard
Wind speed	85Km/h
Stabilizer	T1
Ballast weight	1,5T
Distance du Ballast D mini	2.85m

**2 STABILIZERS MINI PER PANEL ON ITS OWN
WIND STABILITY 85KM/ MAXI**

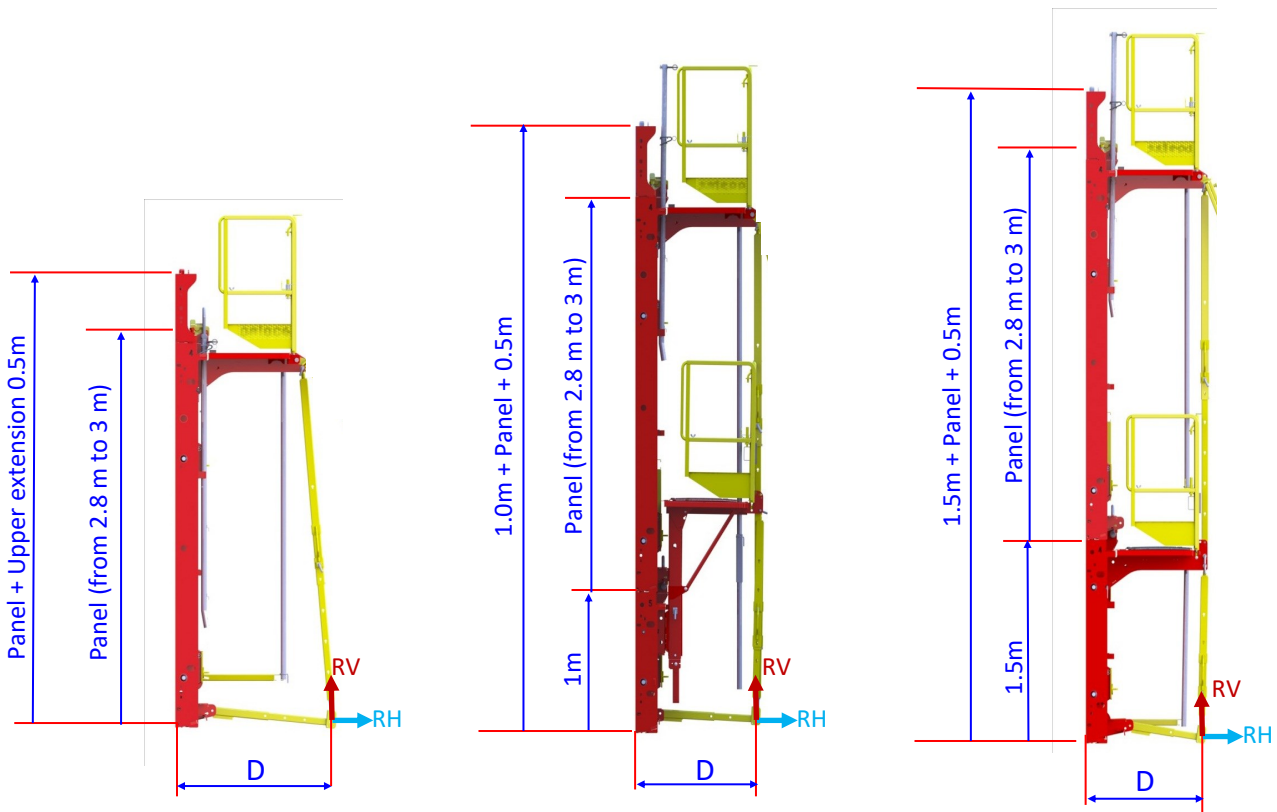


Ballast centered with the panels set
Automatic locking device on the stabilizer



NOUS AVONS UN MONDE À BÂTIR

Sheet: 32.50.17 ind.01



Configuration of equipments

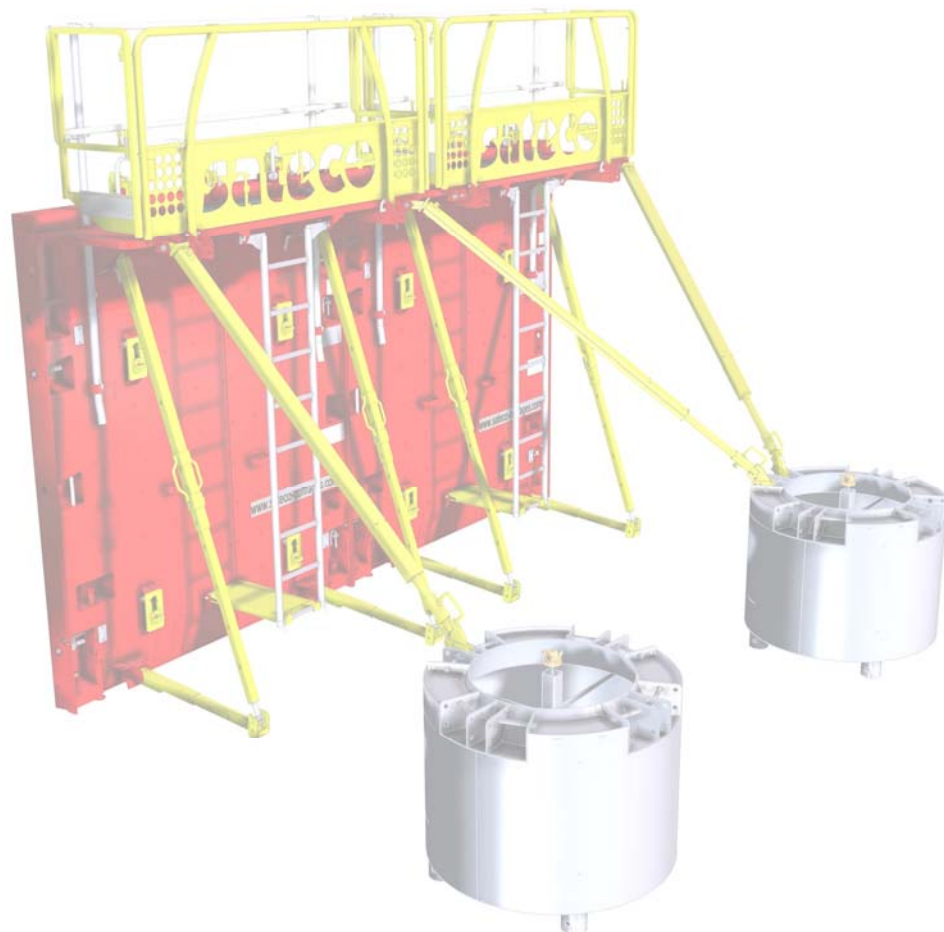
Wind area	Standard	Standard	Standard
Wind speed	85Km/h	85Km/h	85Km/h
Formwork height	3.5m	4.5m	5m
Maxi panel set width	3.6m	3.6m	3.6m
Nber of anchoring	2	2	2
Effort per Anchoring	Rv=600daN; Rh=425daN	Rv=1000daN; Rh=550daN	Rv=1200daN; Rh=600daN
Distance Anchoring D mini	1.25m	1.25m	1.25m

2 Anchorings mini per panel on its own.





32.60 IMPLEMENTATION



sateco

NOUS AVONS UN MONDE À BÂTIR



WORK EQUIPMENTS

According the OPOHCI preconisations, all our formworks are equipped with working boards with hatch and access ladder, as well as fully equipped guard rails.

A front safety rail **MUST** be installed to allow the access on the working board of a single panel **AS WELL AS** the accesses on the working boards of each of 2 panels facing each other.

Ensure the continuity of the counter railings and the working boards, mainly at the junction of the formworks and the edges of the panels set (working boards gates).

The working board and its accesses must be kept clear, in order to respect the minimum circulation space authorized.

Moreover, in order to ensure his safety, the user **MUST** :

- Access the working board from inside the panel, by the ladder and the hatch
- Leave the hatch closed and the working board free from any stuff,
- Close the endgates and settle the counter railings to prevent any fall risk
- Provide for bypassing devices :
 - by using corbelling working platforms
 - by using bypassing platforms

SATECO shall not be held responsible in case one these safety pieces belonging to the formwork, is dismantled or not installed.





STABILITY

All any formwork must be equipped with its wind stability system.

All the formworks with ladders should be laid on the floor or paired with a stabilized formwork equipped with an access ladder.

2 formworks facing each other and paired with tightened tie rods, can be stabilized on 1 face, if the stabilization instructions are fully respected.

In order to avoid any stabilization difficulty, a strict works program **MUST** be settled par the worksite's managment.

It is reminded that according to the standard R399 of CNAMTS (dated June 19th, 2003) the worksites' managment is responsible (together with this technical book) :

- to pre-determine the type of stabilization to settle as well as the way the safety devices will be used (turn, circulation area, number and places of the ballasts, quality and dimensions of the ground supports, storage areas etc.)
- to make sure that rules regarding the formwork stability during the worksite and the storage time, will be strictly followed.

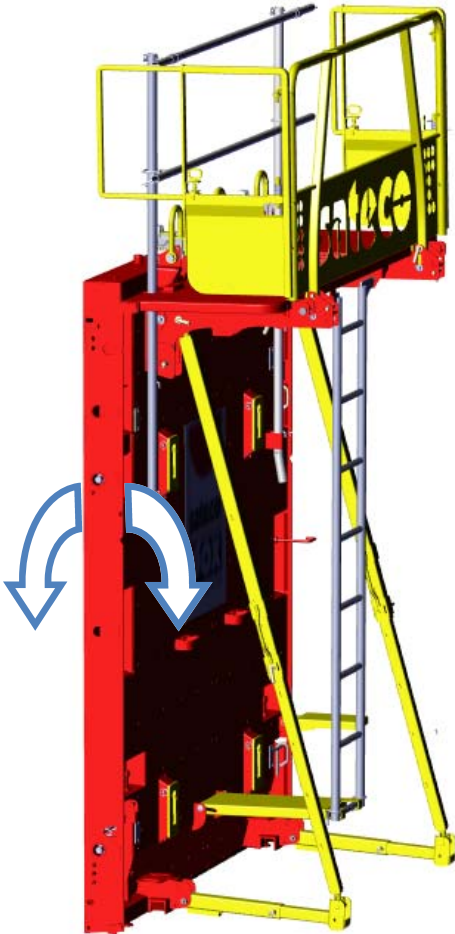
SATECO shall not be held responsible in case the material is not manipulated following the recommandations of this technical document or in case any advice had been asked and validated by SATECO Tech Dpt.

Once the shutters are stabilized, all the operations on the formwork can start in safety.

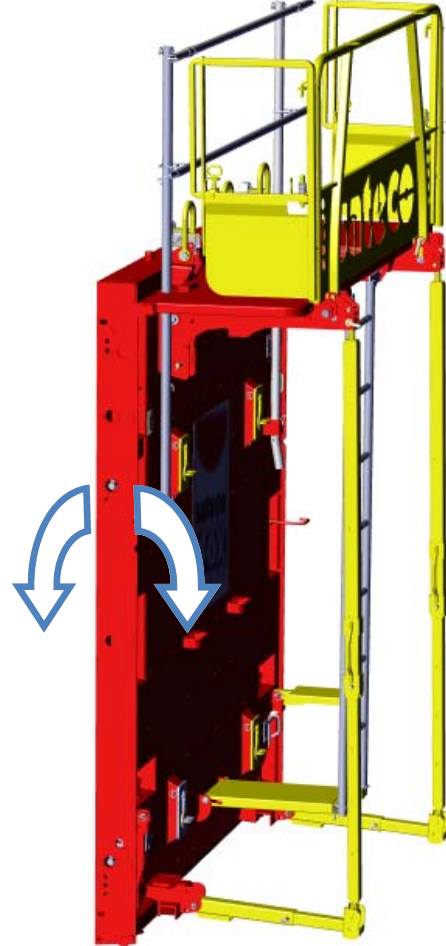




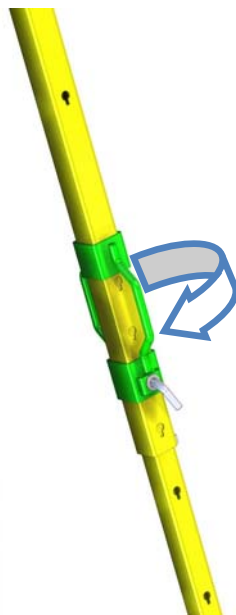
Simple Height



Superposition



To adjust verticality :
turn the handle of the
oblic crutch



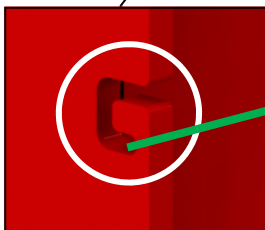
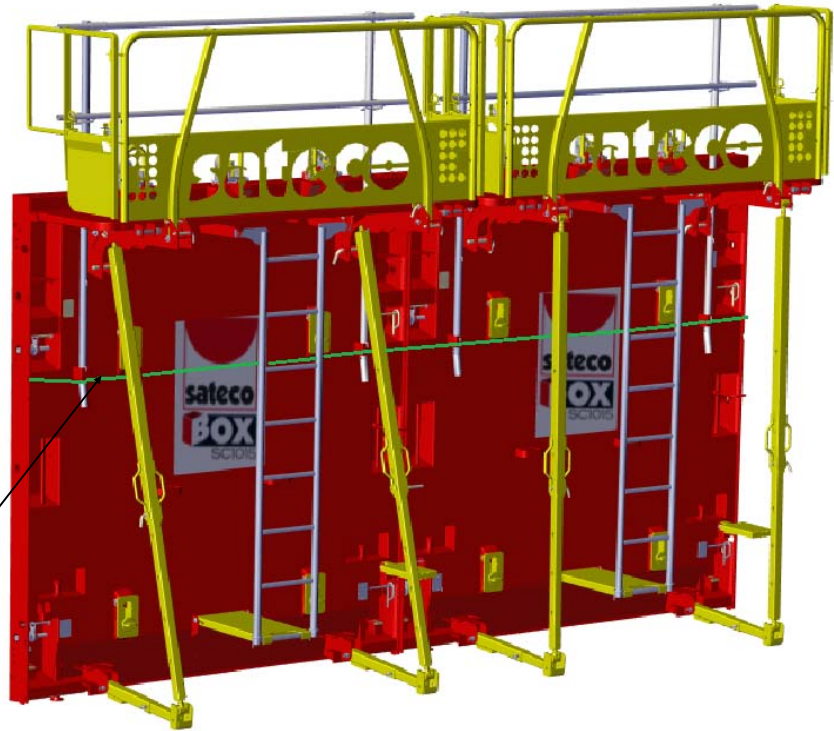
sateco

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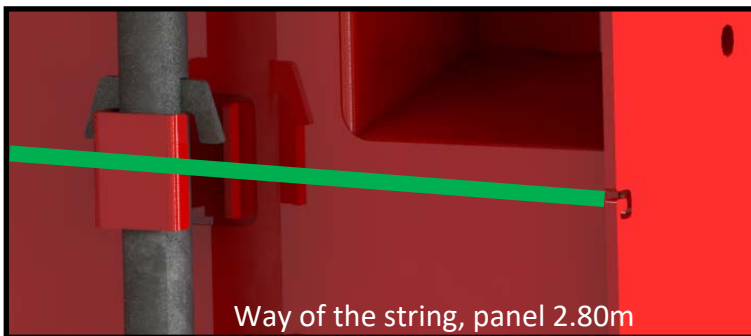


This adjustment is done using a string that will be fixed at the level of the panel edge.

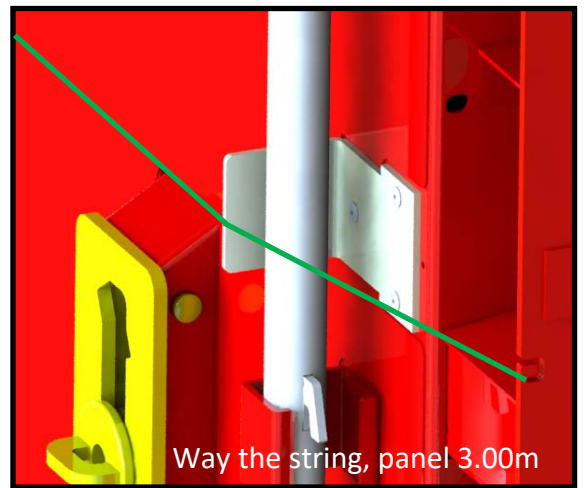
And fix the string in the last hole of the panel and tighten.



Fixation on the edge



Way of the string, panel 2.80m



Way the string, panel 3.00m



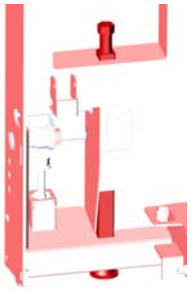
sateco

NOUS AVONS UN MONDE À BÂTIR



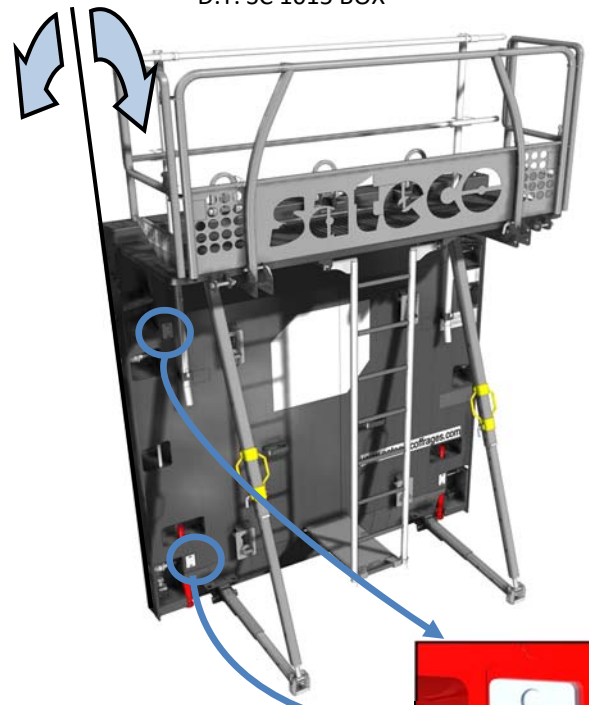
Adjusting level and verticality

Adjusting the level can be done by the screw jacks.



7cm stroke

Adjusting the verticality can be done by turning the handle of the oblic crutch.



The top and bottom plumb line supports allow positioning a plumb line and checking the verticality of the formwork.

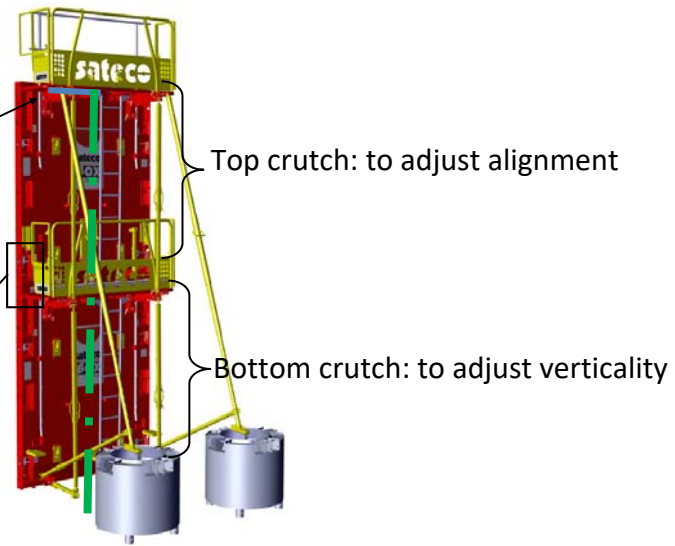


Adjusting verticality and alignment in superposition

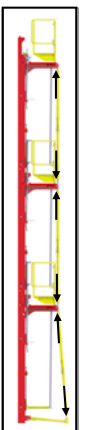
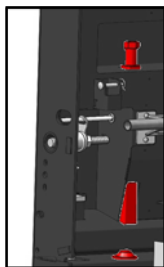
Place a tie rod in the space provided, to fix the plumb line at the back of the panels.



Placing the tie rod on the working board



Manually put the jacks at the bottom AFTER ADJUSTMENT.



IMPORTANT REMINDER: ADJUST THE CRUTCHES AFTER LIFTING TO ADJUST THE ALIGNMENT

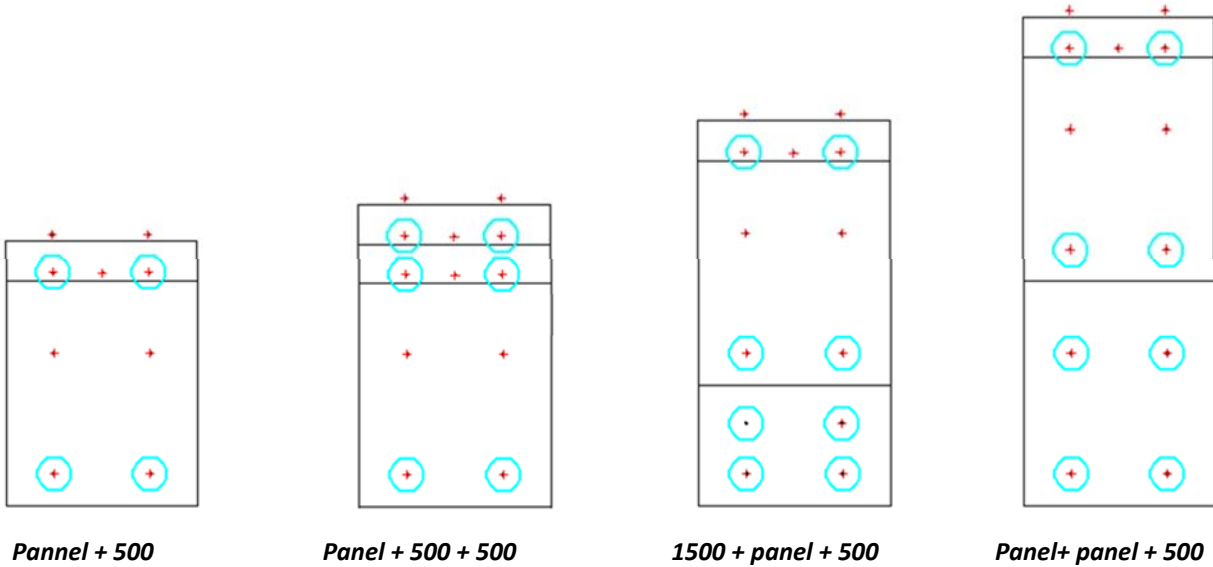
Following vertical adjustment of the formwork, take up the gap by tightening the crutch

**CHECK THE TIGHTENINGS OF THE ASSEMBLAGES AFTER LIFTING
MANUALLY PUT THE JACKS ON THE STIFFENERS AT THE BOTTOM AFTER
EVERYTHING IS ADJUSTED**



The position of tie rods depends whatever the concrete used. Always respect casting speed : never exceed 12t/m² of concrete pressure.

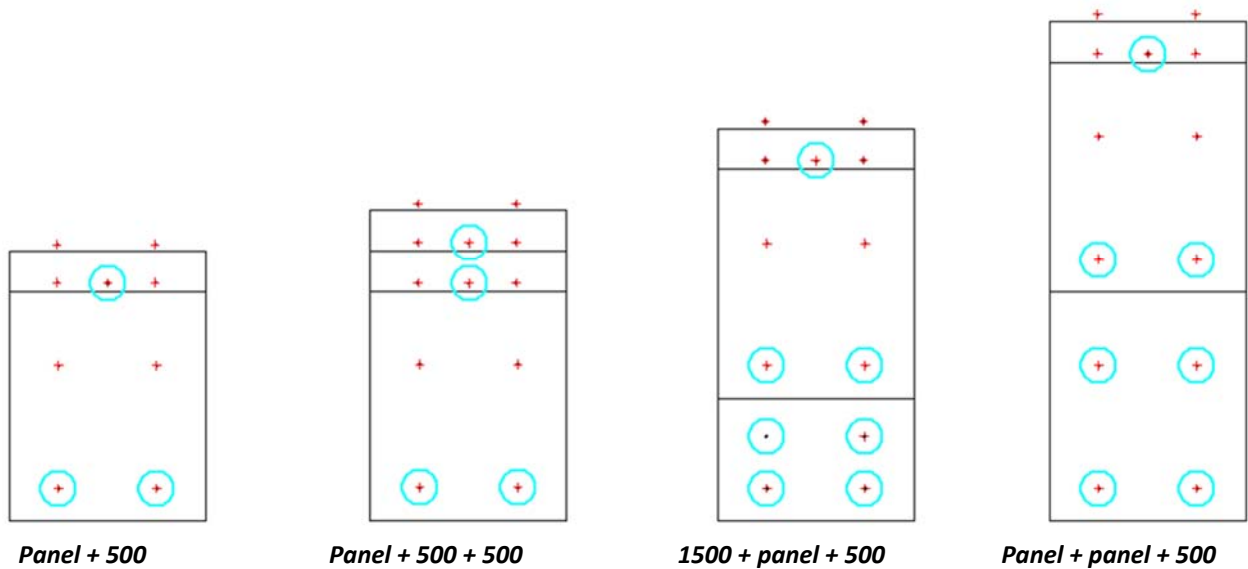
Standard case




Case with a high centered block



Forbidden case when the panels are at the end of a wall or when there is a reservation



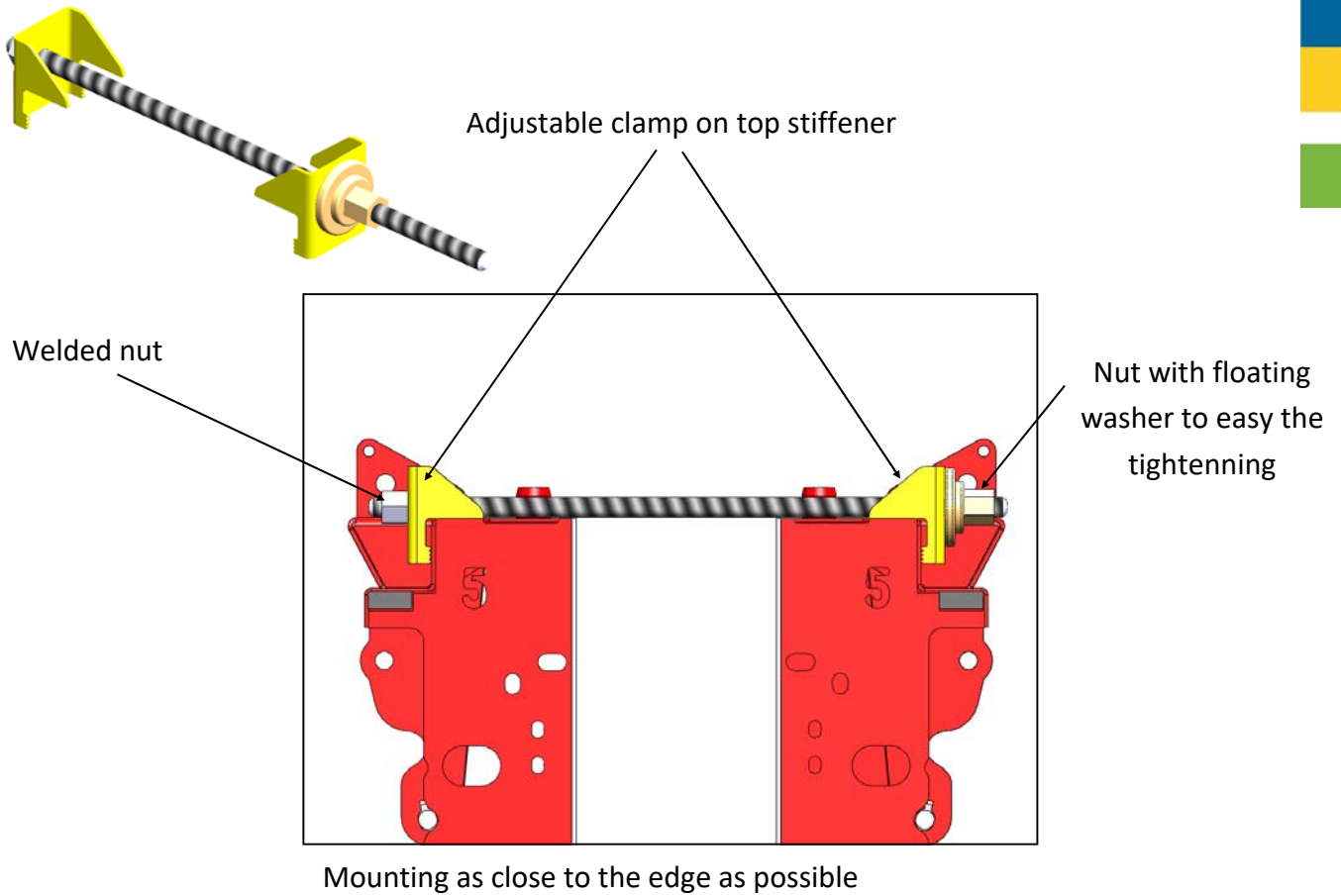
 Position of the tie rod.

Height of panel from 2.8m to 3m

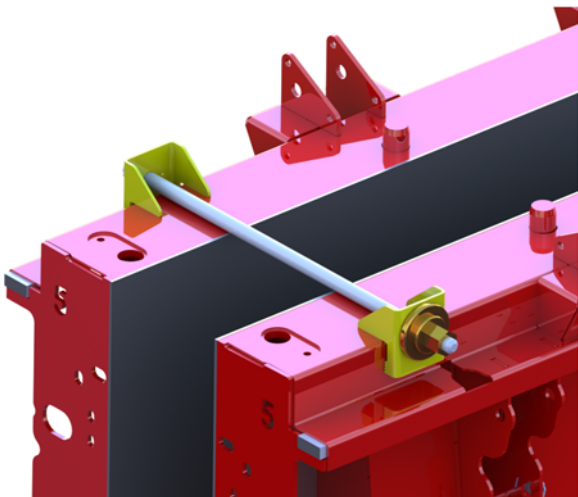


Clamp for end wall

D.T. SC 1015 BOX



POSSIBLE MOUNTING OF THE CLAMP OF THE USING CONDITIONS:



Mounting on the formwork: wall thickness 20 cm MAXI



Mounting on the upper extension wall thickness 35 cm MAXI



NOUS AVONS UN MONDE À BÂTIR



32.70 CASTING INSTRUCTIONS

TEMPS DE PRISE DU BÉTON TP :

Le temps de prise du béton est le temps nécessaire à compter du début du coulage pour ne jamais dépasser une hauteur de béton frais de 5.5 M dans le coffrage soit un effort maximum dans la tige de 18000 dan.

Ce temps de prise doit être confirmé par le fournisseur en fonction de différents paramètres :

- type de béton
- Slump du béton
- température extérieure

TP estimatif = 150 MN

FORMULES DE CALCUL :

Hb : Hauteur maxi de béton frais
Hc : Hauteur totale de coulage
Tc : Temps total du coulage
TPb : Temps de prise du béton
Vc : Vitesse de coulage

$$Vc = \frac{Hb}{(Tp - Tl - Ta)} = 2.75 \text{ M/H}$$

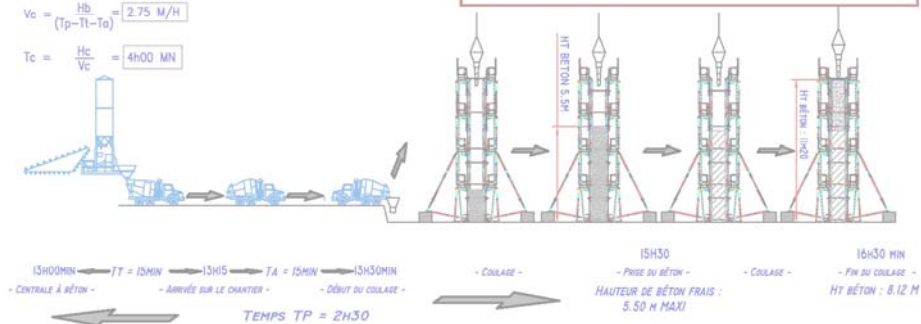
$$Tc = \frac{Hc}{Vc} = 4h00 \text{ MN}$$

Tl : Temps de transport
Ta : Temps d'attente avant coulage
TPc : Temps de prise de coulage

Consulter Sateco pour
établir une procédure
de coulage

UTILISATION

TIGE DE COFFRAGE Ø23 MM ARTEON
BARRETTES D'ABOUT BETON AUTO-PLACANT UNIQUEMENT
VOIR PL 29.30.I5
HAUTEUR DE COFFRAGE ≤ 5.5 M VITESSE ILLIMITEE
HAUTEUR DE COFFRAGE > 5.5 M VITESSE LIMITEE
CELLULE DE CHARGE IMPERATIVE



A - USER AND FORMWORK

Get to know the construction to be achieved, in accordance with the chosen formwork.

Facings of lateral walls and undersides according DTU 21 (NF P 18-201 March 2004)

We also talk about lateral faces of the walls, columns, undersides, slabs and beams and their lateral cheeks. There are 4 types of concrete facings :

Basic, Ordinary, Traditional and Neat

Basic facing : for functional buildings, an ordinary finition is not necessary.

The walls made with basic facing are also meant to be covered up by an overcoat non directly applied on them or a partition wall.

Ordinary facing : same as above when the wall face will be covered by a traditional thick facing coating

Traditional facing : the wall face will be covered by paintings or wall papers, after spackle and use of rendering applied in a thick coat to masonry facings (unless it is indicated in the technical documents of the works, these latest operations are not in charge of the constructions contractors).

Neat facing: same use as traditional facing. With its best finition, there are hardly no coating works to do and it is easy to prepare. It is interesting to note that, with the self compacting concrete formula, the facings quality is high.

See the different kind of facings flatness in the chart hereunder:

Facings	General flatness reported with a 2 meters ruler	Precise flatness – not including joints – reported with a 0.20m ruler (maximum under this ruler)
Basic	No special specification	No special specification
Ordinary	15 mm	6 mm
Traditional	7 mm	2 mm
Neat	5 mm	2 mm

Moreover, the outer facing* of the construction that is exposed to the rain must be a neat facing.

* facing that stays in the rough, or to be covered by paintings, stain or adhesive tile.





Main precautions for any type of formwork

Storage :

- Never store the formworking surface directly on the floor
- Choose a protection agent adapted to the storage period

When using any type of formwork :

- Rods tightening ;
- Sealing between the formworking elements ;
- Alignment and vertical alignment ;
- Choice of spacers and positioners.

Type of formworking surface

Steel - Stainless steel:

Cleaning brand new surfaces :

Degrease the steel surface, operation carried out by the manufacturer or the customer equipment department. Dry if necessary, then lay a mould-release agent to avoid the oxydation whaever the type of steel.

Cleaning the used surfaces :

If you notice, at the arrival on the worksite, rust stains and following the oxydation degree, treat as following :

- If the stains are light, rub them with a cloth soaked with a mould-release agent ;
- Or with rust transformer (phosphating treatment) ;
- Rinse ;
- Lay a corrosion inhibitor;
- Dry ;
- Lay a release agent ;

Sanding/grinding ;

- Clean ;
- Lay a release agent ;

Cleaning during the formworking phases :

- Right after formwork removal, remove all concrete marks with a neat scraper adapted to the shutter height.
- If necessary use an individual wheelplatform or a scaffolding.
- Lay a release agent as described in the following chapter.



B - THE USER AND THE RELEASE AGENTS

Before any operation, make sure that the formworking surface is clean and dry. In case of rain, remove the water excess.

General remarks :

The release agent is layed between the concrete and the formworking surface. It aims at :

- Making easier the formwork removal,
- Protecting formworking surfaces (mainly those in steel) from corrosion, ;
- not damaging these with too acid oils ;
- Stopping the adhesion on the formworking surface during the concrete casting and the vibration.

Choosing the release agent is important to obtain a high quality concrete wall and to avoid concrete residues on the formworking surface.

Laying the release agent is like painting : uniform layer, without drops. Operation to be done with a sprayer and an adapted nozzle.

Remove the excess product if necessary.

According the product viscosity, the covering power is from 20 to 40 m² per litre. See the manufacturer instructions.



- *Release agents have an efficiency specific time depending on the manufacturer and the product nature.*
- *Casting the concrete too early after the layer can prevent the remover evaporation.*
- *Release agents may be inefficient if the operators wait many days before concrete casting, the formworking surface is not protected anymore. The protection against corrosion is not ensured anylonger.*
- ***Do not mix different types of release agents.***

Operators must wear adapted gloves, masks, glasses, clothes to protect themselves from any possible removal products agressions.



C - USER AND CONCRETE



Get to know about the concrete used on the worksite :

Concretes are defined by the DTU 21 (NF P18-201 from March 2004) and the French standards EN 206-1. The concrete shall always have the same type of texture for the same casting phase.

Get to know the cement and the aggregates :

The composition of the cement is important. Some of its component may affect the removal agents. For a same work, the composition of the cement must be constant to avoid any shades.

It's the same for the aggregates : for one work = same composition to avoid shades. Their texture must be constant whatever they are: crushed aggregate or rounded aggregate, they can have an abrasive effect on the formworks.

Mixing the concrete:

An excess of water may affect the concrete resistance, it leads to aggregates separation with fragments appearance and washes the gravels that are no more coated.

Respect mixing time.

Limit the waiting time of concrete mixer.

Proceeding with the concrete :

Check the concrete texture : do the spreading measure with the Abraham cone, on the worksite or anytime you think there is a doubt.

Adding water is forbidden.



**Gravity casting:**

- The casting speed must be as constant as possible, in accordance with the formworks resistance pressure and the concrete hardening step ;
- Limit the drop height to 80 cm ;
- Include horizontal layers ≤ 30 cm height ;
- Check the reinforcements structures are being properly coated ;
- Do not operate when it rains heavily (water excess, aggregates being washed, fragments appearing) ;
- To cast the self-compacting concrete, always let the hose submerged ;
- Spread evenly in the formwork (do not spread with the vibrator) ;
- Spread evenly the concrete everywhere it has to be.

For the SCC, use flat and very flexible hoses. The concrete pressure increases in the hose and the concrete comes loose from the hose (it is the concrete that gives it its tubular shape).

Pumping casting :

Pumping casting is a continuous and homogeneous way to cast concrete.

Always use a rigid hose in order to limit the height of the concrete fall on the frames.

The end of the rigid hose must always be dived to ensure a constant casting. It will be pulled up at the time as the concrete raises in the formworks.

Caution : pressure on the formworks may rise since the climbing speed of the concrete is higher by pumping casting than casting with a bucket.

Effects of outdoor temperature:

The weather conditions change the formworks removal requirements. There must be a partnership between the operator, the concrete manufacturer, the formwork manufacturer and the mould release agents provider.



D - USER AND VIBRATION

Inner vibration :

Choosing the vibrator :

It depends on the nature and the mass of the concrete, the reinforcement density.

These requirements will determine diameter, length and frequency of the vibrating poker.

Protect the vibrator head in order to avoid damage on the formwork surface and diminishes the resonance of the formwork.

Operating instructions :

Vibration of the reinforcements is forbidden.

A vibration excess may cause different problems such as :

- Separation of the aggregates ;
- Higher pressure on the formworks ;
- Poor quality wall.

Vibrate by moving the vibrator head, by horizontal layers of 50cm, dive the vibrating poker, leaving spaces 8 to 10 times the diameter of the poker between each shifts.

The vibrator must be dived quickly and pulled up slowly.

Stop the vibration as soon as :

- The concrete does not settle anymore ;
- The expulsion of air bubbles stops (too much vibration may lead to air renewal that will provoke the aggregates separation) ;
- Concrete milky sheen starts appearing on the surface (shiny aspect of the surface) ;
- The vibrator noise stabilizes.

Outer vibration:

It is frequently used on prefabrication moulds and for the vibrating screeds on the slabs.

For the vertical formworks, it is studied deeply in accordance with the nature of the formwork (wood or steel surface).

This study will determine the place of the vibrators, the frequency and the vibration duration.

The shutters already vibrated shall not be vibrated again.

The formworks frames are consequently equipped (more reinforcement) and assembled carefully to avoid a possible damage caused by vibration.

Nota : self-compacting concrete shall never be vibrated.



E - FORMWORKING OPERATION

Cleaning, oiling, proceeding, adjusting, locking and blocking.

Before proceeding, check the shutter and its accessories are in good conditions, mainly the adjustment and stabilization pieces.

Clear the working area of any obstacles

Clean the formworking surface of the shutter.

The formwork removal will be done easily if this one was properly cleaned and coated with removal oil.

You can start operating on a vertical shutter **ONLY WHEN** you are sure it is stabilized.

Use the concrete buckets that fit in the space left available by the working boards guard rails.

Using a chute will help avoiding concrete loss, stains on the shutters and shutters being overburdened.

F - FORMWORK REMOVAL OPERATION

Tightening the tie rods must be done evenly with the formworking spanner without extension.

The maximum tightening effort accepted is 2T5, thus to avoid irreversible distortion of the formworking surface and the spacing cones.

Do not remove the formwork hastily.

Remove the shutter from the wall using the adjustment jacks. You can also use hand levers.

Never use the crane for the removal .

Before moving the shutters, make sure that the working boards are cleared with objects likely to fall.

The rods must be stored in their respective places. All the concrete wastes must be removed.

Check that there is no link whatsoever between the shutter and the floor or the walls.



MAX POURING SPEED (M/H) :

Pouring speed for concrete pressure 12 T/m².

Max concrete pressure: 12 T/m².

Max height fresh concrete: 7.5 m.

		Concrete temperature (°C)			
		5	10	15	20
Sinking (mm)	50	3.4	4.3	5.5	8.3
	75	3.0	3.6	4.6	5.9
	100	2.6	3.0	3.7	4.8
	125	2.3	2.7	3.2	3.9
	150	2.1	2.4	2.8	3.4
	200	1.8	2.0	2.3	2.7



Pouring speed for concrete pressure 15 T/m².

Max concrete pressure: 15 T/m².

Max height fresh concrete: 8.9 m.

		Concrete temperature (°C)			
		5	10	15	20
Sinking (mm)	50	4.7	5.8	7.5	11.3
	75	4.0	4.9	6.3	8.0
	100	3.5	4.1	5.1	6.6
	125	3.2	3.7	4.3	5.4
	150	2.9	3.3	3.9	4.7
	200	2.4	2.7	3.1	3.6

IMPORTANT INSTRUCTIONS

- 1/ WARNING: POURING SPEEDS MUST NOT BE EXCEEDED
- 2/ TIE RODS MUST BE TIGHTENED WITH A WRENCH WITHOUT USE OF A LEVER ARM.
- 3/ THE CONCRETE IS POURED IN 60 CM HIGH LAYERS
- 4/ STANDARDIZE VIBRATION

$$\text{pouring time (h)} = \frac{\text{Panel height (m)}}{\text{speed (m/h)}}$$



A	t°		SP									
			1	1.5	2	2.5	3	4	5	6	7	
50	5	Pr	4	6	8	9,5	11	13,5	15,5	17,5	19,5	
		H	2	3	4	5	6	8	10	12	14	
	10	Pr	3,5	5	6,5	8	9	11,5	13,5	15	17	
		H	1,5	2,5	3	4	5	6,5	8	9,5	11	
	15	Pr	2,5	4	5	6	7	9	11	12,5	14	
		H	1	2	2,5	3	3,5	5	6	7	8,5	
20	Pr	2	2,5	3,5	4	5	6,5	8	9	10		
	H	1	1	1,5	2	2,5	3	4	5	5,5		
75	5	Pr	5	7	8,5	10,5	12	15	17	19	21	
		H	2,5	3,5	4,5	5,5	7	9	11,5	14	16	
	10	Pr	4	6	7,5	9	10,5	13	15	17	18,5	
		H	2	3	4	4,5	5,5	7,5	9,5	11,5	13,5	
	15	Pr	3	4,5	6	7,5	8,5	11	13	14,5	16	
		H	1,5	2,5	3	3,5	4,5	6	7,5	9	10,5	
20	Pr	2,5	3,5	4,5	5,5	6,5	8,5	10	11,5	13		
	H	1	1,5	2	2,5	3,5	4,5	5,5	6,5	7,5		
100	5	Pr	5,5	7,5	9,5	11,5	13	16	18,5	20,5	22	
		H	2,5	4	5	6,5	8	10,5	13	15,5	18	
	10	Pr	4,5	6,5	8,5	10	11,5	14,5	16,5	18,5	20,5	
		H	2	3,5	4,5	5,5	6,5	9	11	13	15,5	
	15	Pr	4	5,5	7	8,5	10	12,5	14,5	16,5	18	
		H	2	2,5	3,5	4,5	5,5	7	9	11	12,5	
20	Pr	3	4,5	5,5	7	8	10	12	14	15,5		
	H	1,5	2	3	3,5	4	5,5	7	8,5	10		



KEY:

- A - concrete sinking (mm)
- t° - concrete temperature (°C)
- SP - pouring speed (m/h)
- H - height of fresh concrete (m)
- Pr - Pressure (T/m²)

Max concrete pressure : 12 T/m² (tie rod Ø23)
Max concrete pressure : 15 T/m² (tie rod Ø27)

$$\text{Pouring time (h)} = \frac{\text{Panel height (m)}}{\text{Speed (m/h)}}$$

IMPORTANT INSTRUCTIONS:

- 1/ WARNING: POURING SPEEDS MUST NOT BE EXCEEDED
- 2/ TIE RODS MUST BE TIGHTENED WITH A WRENCH WITHOUT USE OF A LEVER ARM.
- 3/ THE CONCRETE IS POURED IN 60 CM HIGH LAYERS
- 4/ STANDARDIZE VIBRATION



A	t°		SP								
			1	1.5	2	2.5	3	4	5	6	7
125	5	Pr	6	8.5	10.5	12.5	14	17	19.5	21.5	23.5
		H	3	4.5	6	7	9	11.5	14.5	17.5	20.5
	10	Pr	5	7.5	9.5	11	13	15.5	18	20	21.5
		H	2.5	3.5	5	6	7.5	10	12.5	15	17.5
	15	Pr	4.5	6.5	8	9.5	11	14	16	18	20
		H	2	3	4	5	6.5	8.5	10.5	12.5	14.5
	20	Pr	3.5	5	7	8	9.5	12	14	16	17.5
		H	1.5	2.5	3.5	4	5	7	8.5	10	12
150	5	Pr	6.5	9	11.5	13.5	15	18.5	20.5	22.5	24.5
		H	3	5	6.5	8	9.5	13	16	19	22.5
	10	Pr	5.5	8	10	12	14	17	19.5	21.5	23
		H	3	4	5.5	7	8.5	11	14	17	19.5
	15	Pr	5	7	9	11	12.5	15	17.5	19.5	21.5
		H	2.5	3.5	5	6	7	9.5	12	14.5	17
	20	Pr	4	6	8	9.5	11	13.5	15.5	17.5	19.5
		H	2	3	4	5	6	8	10	12	14
200 à 300	5	Pr	7.5	10.5	13	15	17	20	22.5	24.5	26
		H	4	6	7.5	9.5	11.5	15	19	23	26.5
	10	Pr	7	9.5	12	14	16	19	21.5	23.5	25
		H	3.5	5	7	8.5	10	13.5	17	20.5	24
	15	Pr	6	8.5	11	13	14.5	17.5	20	22	23.5
		H	3	4.5	6	7.5	9	12	15	18	21
	20	Pr	5.5	7.5	9.5	11.5	13	16	18.5	20.5	22
		H	2.5	4	5	6.5	8	10.5	13	15.5	18

KEY:

A - Concrete sinking (mm)
 t° - Concrete temperature (°C)
 SP - Pouring speed (m/h)
 H - Height of fresh concrete (m)
 Pr - Pressure (T/m²)

Max concrete pressure: 12 T/m² (tie rod Ø23)

Max concrete pressure: 15 T/m² (tie rod Ø27)

THRUST EXAMPLE:

for pouring:

- Height poured: 8 m
- pouring time: 4 h

- Pouring speed: 2 m/h
- Concrete sinking: 150 mm
- Concrete temperature: 10 °C

concrete thrust is 10 T/m² (i.e; fresh concrete height of 5.5 m).

$$\text{Pouring time (h)} = \frac{\text{Panel height (m)}}{\text{Speed (m/h)}}$$

IMPORTANT INSTRUCTIONS:

- 1/ WARNING: POURING SPEEDS MUST NOT BE EXCEEDED
- 2/ TIE RODS MUST BE TIGHTENED WITH A WRENCH WITHOUT USE OF A LEVER ARM.
- 3/ THE CONCRETE IS POURED IN 60 CM HIGH LAYERS
- 4/ STANDARDIZE VIBRATION





FORMWORK WITH SELF COMPACTING CONCRETE

Use ties rods and news nuts, it is strongly advise to use an oily substance to limit efforts when untightening.

Proceed to the test of the load cell position (sheet 31.70.15) to check the maximum efforts not to be exceeded in the tie rod. The load cell must not be installed in an area without concrete. In case the effort is exceeded, stop the casting, it means that the fresh concrete height has overtaken the maximum authorized.

- Using a rod $\varnothing 23\text{mm}$ Artéon :

For height $< 7,50\text{m}$ non stop casting without casting instructions (overflow from the top).

For height $> 7,50\text{m}$ ask Sateco for casting instructions.



sateco

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SCC FEATURES

The self-compacting concrete (SCC) are fluid concrete, that settle without vibrations. They are fluid, easy to settle by the pumping.

Precautions to use the SCC

The SCC features and its fluidity require special precautions to be respected during the proceedings.

- Special preparation and organization of the worksite (change of habits and evolution of the traditional methods of construction): materials—staff—use of a crane - timing— appropriate settlement of the frames and compartments.
- Use of clean, waterproof and stronger formworks to compensate with the hydrostatic efforts of the latter.
- Use high quality mould removal agents to avoid micro-oxygenation.
- Special care (these concretes are more sensitive to removal processes by drying out).

As for any kind of concrete, different formwork removal times may cause different wall shades.

SCC CHECKING

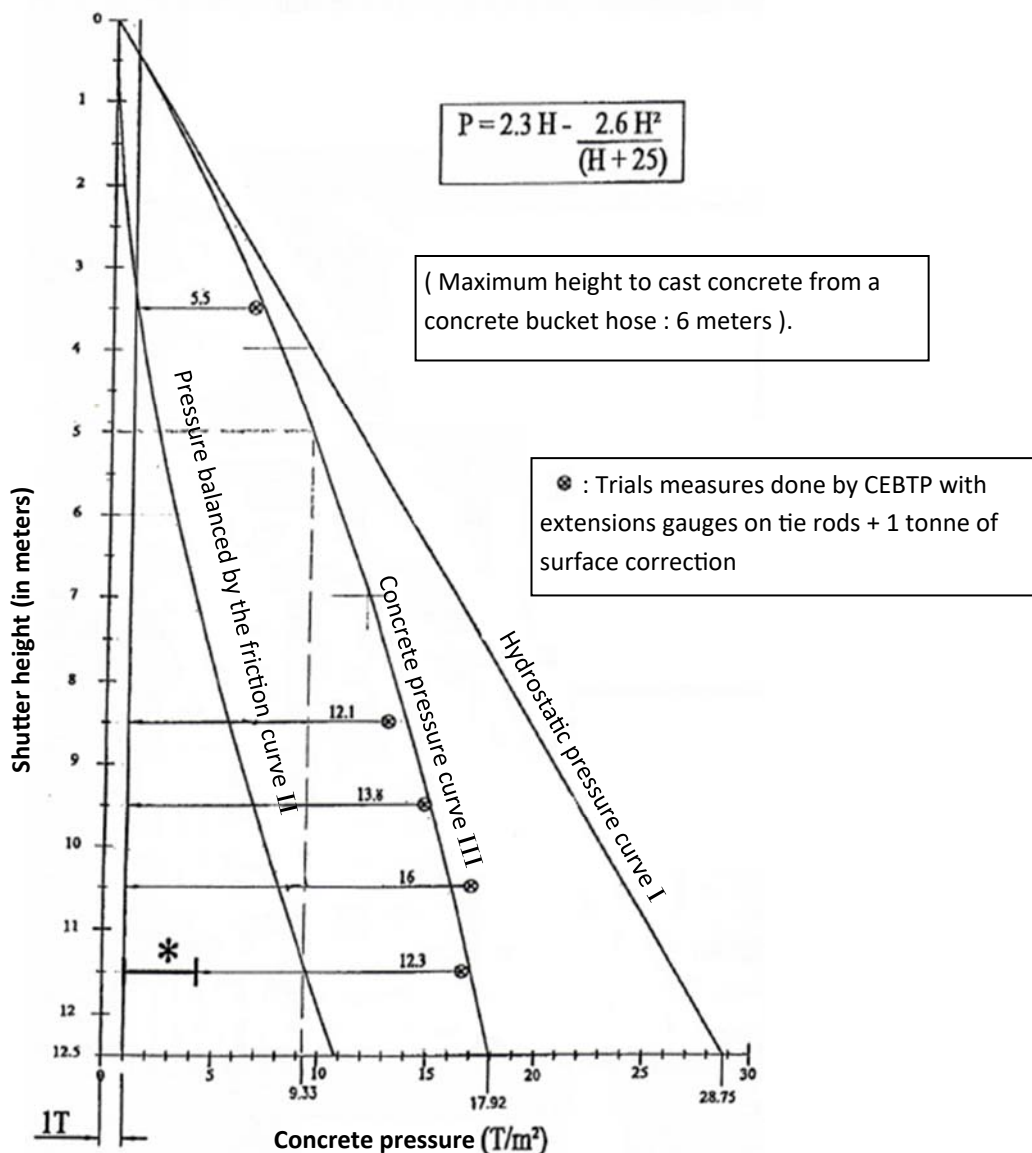
Three main tests allow to determine and check the rheology of the SCC.

Abrams cone spreading measure.

The fluidity of the SCC can be determined by the spreading measure with Abraham cone (spreading trial or sum flow). The aim searched is from de 600 to 750 mm, this is the average spreading recommended for a SCC.

This aim must be determined according the features of the formula, conditions and methods of its settlement. This test determine the mobility of the SCC in an unconfined environment. This test allows checking the fluidity of the concrete once delivered on the worksite.

Curve of the SCC pressure : Casting from the top of the shutters



* Continuity coefficient

Exemple of curve III :

Shutter heigth 5m ; concrete pressure : 9.33T



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please consult Sateco for pouring procedure.

Setting time is the time needed starting from the beginning of pouring without exceeding a fresh concrete height of 5.5 M within the formwork i.e. maximum tie rod load of 18000 daN.

This setting time must be confirmed by the supplier taking into account the different parameters:

- type of concrete
- concrete slump
- outdoor temperature

TP estimated = 150 MN

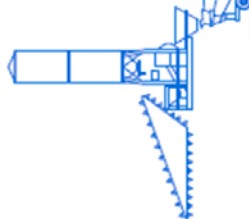
CALCULATIONS:

Hb : Max height of fresh concrete
 Hc : total pouring height
 Tc : total pouring time
 TPb : Setting time
 Vc : pouring speed

Tt : transport time
 Ta : waiting time before pouring
 TPc : Setting time

$$Vc = \frac{Hb}{(Tp - Tt - Ta)} = 2.75 \text{ M/H}$$

$$Tc = \frac{Hc}{Vc} = 4h00 \text{ MN}$$



WORKING CONSTRAINTS

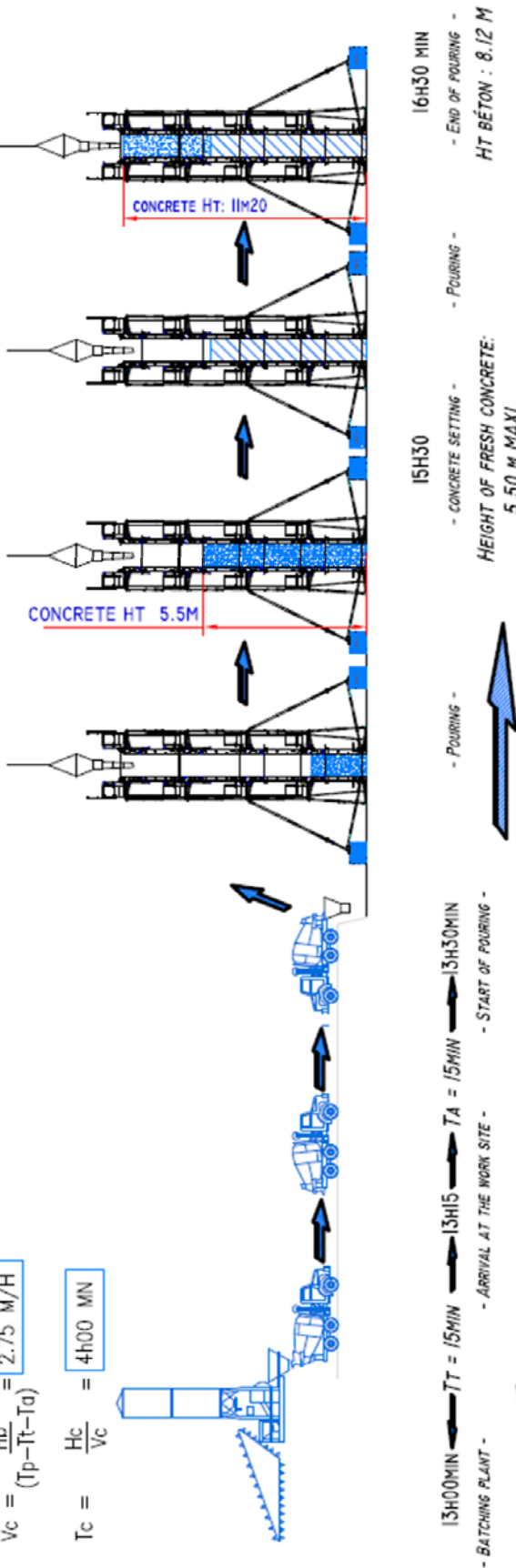
TIE ROD Ø23 MM "ARTEON"

PANEL PIN END LOCKS SELF COMPACTING CONCRETE ONLY SEE 35.30.15

FORMWORK HEIGHT < 5.5 M UNLIMITED SPEED

FORMWORK HEIGHT > 5.5 M LIMITED SPEED

LOAD CELL COMPULSORY



TEMPS TP = 2H30

EXAMPLE of SCC CASTING HT11.20m 10T/m²





CONCRETE SETTING TIME TP :

Setting time is the time needed starting from the beginning of pouring without exceeding a fresh concrete height of 8.9 M within the formwork i.e. maximum tie rod load of 18000 daN.

This setting time must be confirmed by the supplier taking into account the different parameters:

- concrete type
- concrete slump
- outdoor temperature

TP estimated = 150 MN

CALCULATIONS

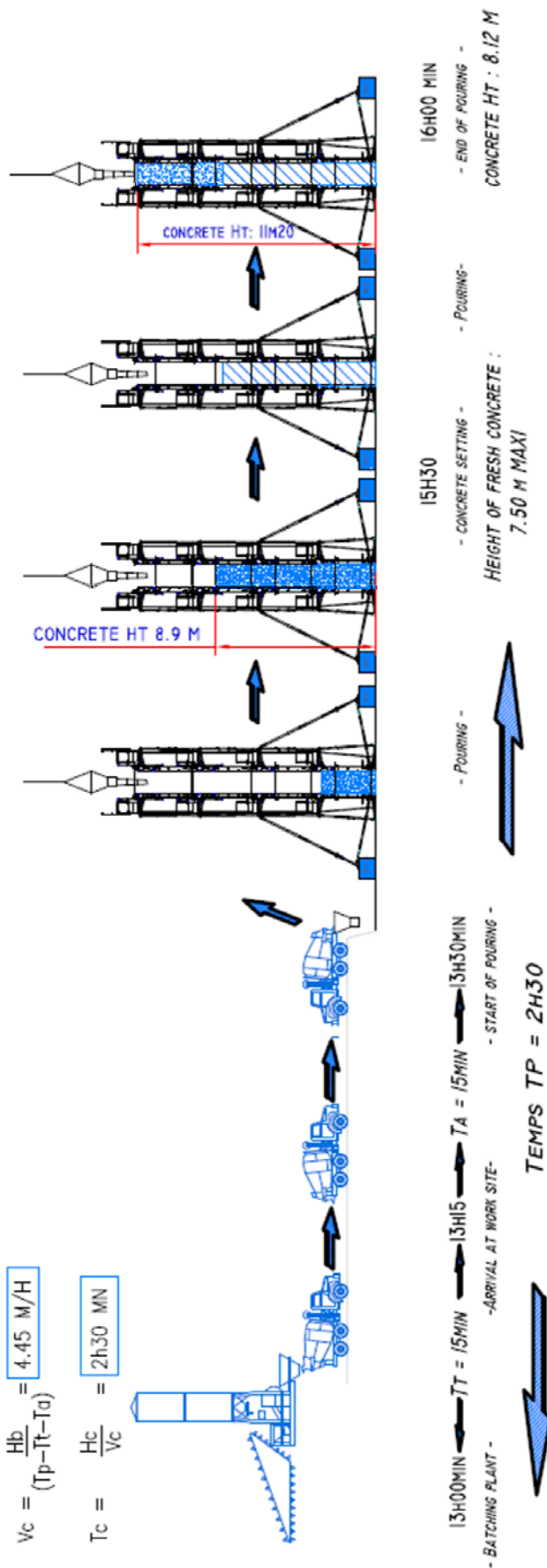
- : Hb : Max height of fresh concrete
- Hc : total pouring height
- Tc : total pouring time
- TPb : Setting time
- Vc : pouring speed
- Tt : transport time
- Ta waiting :time before pouring
- TPc : Setting time

$$Vc = \frac{Hb}{(Tp - Tt - Ta)} = 4.45 \text{ M/H}$$

$$Tc = \frac{Hc}{Vc} = 2h30 \text{ MN}$$

POURING SPEED:

- FORMWORK TIE ROD Ø27 MM "ARTEON"
- FORMWORK HEIGHT < 8.9 M UNLIMITED SPEED
- FORMWORK HEIGHT > 8.9 M LIMITED SPEED
- LOAD CELL COMPULSORY



EXAMPLE of SCC CASTING HT11.20m 15T/m²





HYDRAULIC LOAD CELL

TYPE "GLÖTZL" - REF. KN 250 A 35

MODEL M - MANOMETER GRADING IN KN PROTECTED BY A METAL HOOD AND FIXED TO THE CELL

IMPLEMENTATION:

APPLICATION AND DESCRIPTION:

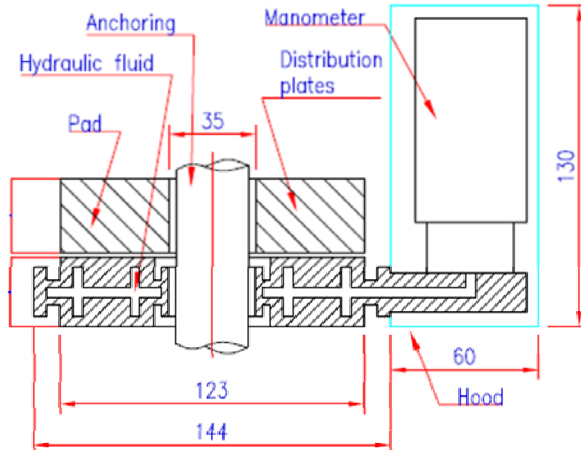
- Measurement of concrete load in the tie rod.
- The cell is made of a pressure pad which is formed by joining together two very stiff steel discs at their periphery. The space inside the cell is filled with de-aired fluid. when the load is applied to the cell, the pressure on the fluid changes.
- The pressure is measured using a manometer.



1- Place the load cell on the most worked tie rod – outside zones with compartments.

2- Tighten the tie rod nut to a load of 2 tons (20 KN)

OVERALL SIZE OF THE LOAD CELL:



TECHNICAL FEATURES:

- | | |
|--------------------------|---------------------|
| - Nominal tension: | 250 KN |
| - Max tension: | 300 KN |
| - Sensitivity: | 1 % of EM |
| - Allowable overload: | 20 % of EM |
| - Temperature influence: | 1.2 % of EM at 20°C |
| - Working temperature: | -30°C to 80°C |

WEIGHT: 7 Kg



! During concreting the manometer will indicate the exact load as soon as pre-tension exceeds 2 tons.
Be careful not to exceed the recommended maximum load.

Instructions

SCC casting :

- Concreting speed to be determined in order not to exceed m of fresh concrete

It is advised to set the most stressed tie rod on the load indicator. This one must be checked as long as the casting lasts. (see attachments).

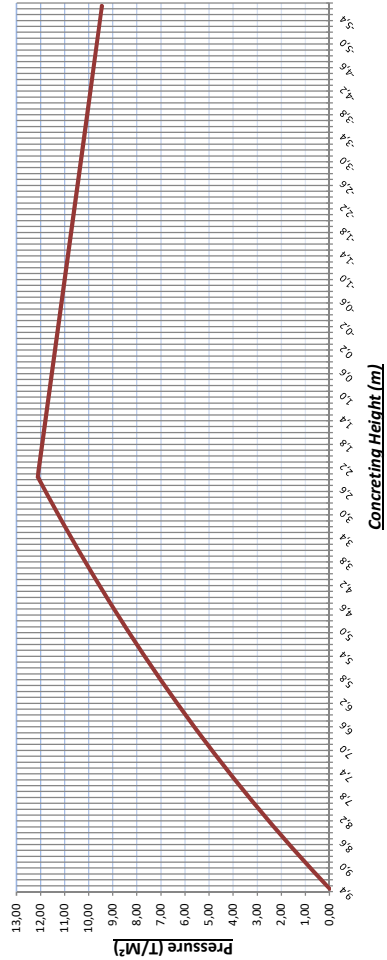
The indicator shall not exceed T

If the effort on the tie rod exceeds this value, the casting must be slowed down or stopped because the concrete setting time has been underestimated.

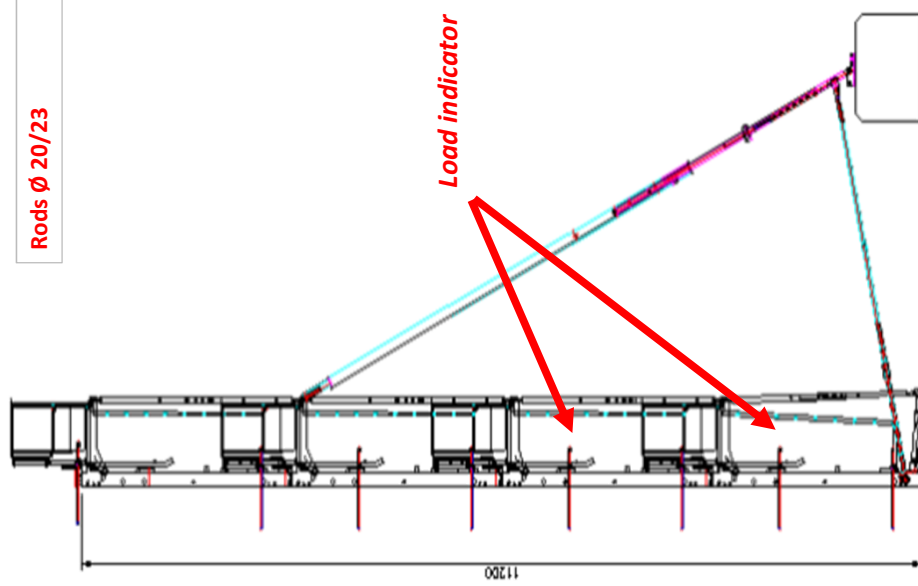
Caution!

The load indicator shall not be placed in space with compartments . The efforts indicated beside, coincide with the continuous pressure of the entire surface on the given tie rod.

Evolution of the pressure according the height



F Rod 1:	0,49 T
F Rod 2:	2,29 T
F Rod 3:	6,19 T
F Rod 4:	11,20 T
F Rod 5:	15,02 T
F Rod 6:	18,45 T
F Rod 7:	20,05 T
F Rod 8:	15,88 T
F Rod 9:	0,00 T
F Rod 10:	0,00 T
F Rod 11:	0,00 T
F Rod 12:	0,00 T
F Rod 13:	0,00 T



CASTING REPORT

Report of the achievement of a concrete wall with DATTECO shutter

Company : **Address :**

Contract ref. : **Site ref. :**

Concrete casting : **Shutter removal date :**

Concrete casting start time : **Concrete casting end time :**

Weather at casting : **Casting volume :** m³/s

Temperature of concrete : °C

Measures :

CONCRETE REMOVAL SHEET

Number of pump bar	CONCRETE volume (m ³)	Effort in tonnes on the cells							
		1	2	3	4	5	6	7	8
1		Start	Start	Start	Start	Start	Start	Start	Start
2		End	End	End	End	End	End	End	End
3		Start	Start	Start	Start	Start	Start	Start	Start
4		End	End	End	End	End	End	End	End
5		Start	Start	Start	Start	Start	Start	Start	Start
6		End	End	End	End	End	End	End	End
7		Start	Start	Start	Start	Start	Start	Start	Start
8		End	End	End	End	End	End	End	End

H) Conclusions

Casting report

Report of the achievement of a concrete wall with DATTECO shutter

Company : **Address :**

Contract ref. : **Site ref. :**

Concrete casting : **Shutter removal date :**

Concrete casting start time : **Concrete casting end time :**

Weather at casting : **Casting volume :** m³/s

Temperature of concrete : °C

Measures :

CONCRETE REMOVAL SHEET

Number of pump bar	CONCRETE volume (m ³)	Effort in tonnes on the cells							
		1	2	3	4	5	6	7	8
1		Start	Start	Start	Start	Start	Start	Start	Start
2		End	End	End	End	End	End	End	End
3		Start	Start	Start	Start	Start	Start	Start	Start
4		End	End	End	End	End	End	End	End
5		Start	Start	Start	Start	Start	Start	Start	Start
6		End	End	End	End	End	End	End	End
7		Start	Start	Start	Start	Start	Start	Start	Start
8		End	End	End	End	End	End	End	End

H) Conclusions



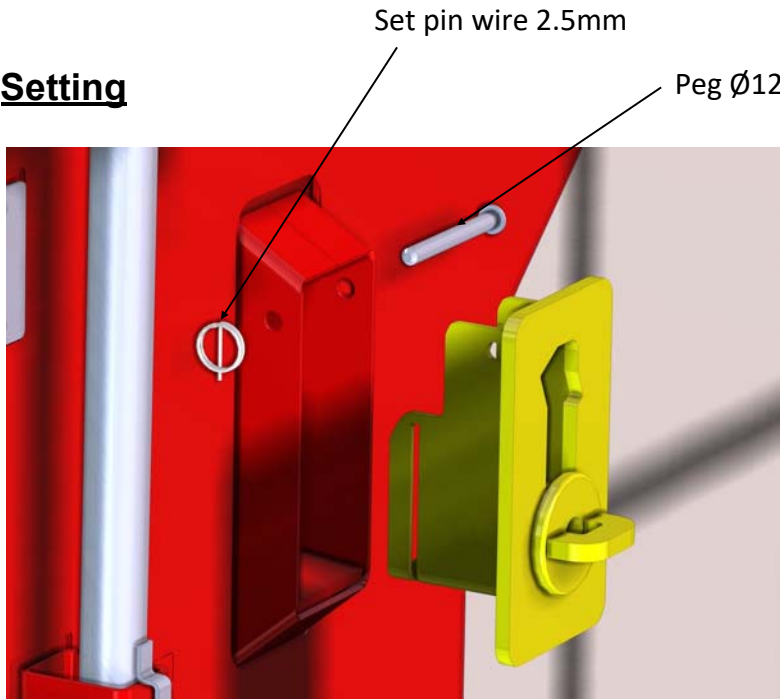
32.80 - ADDITIONAL ACCESSORIES



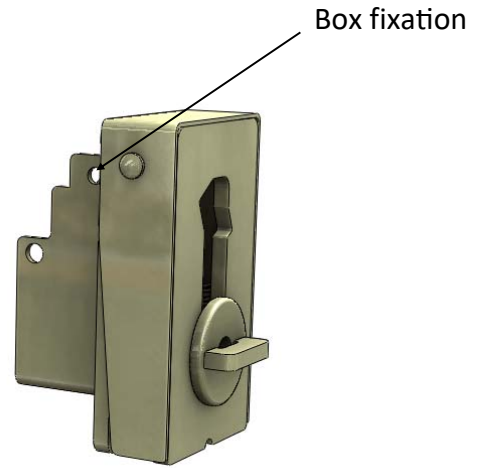
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Setting



Universal block



Detensioning spacer
unit: see sheet 32.80.01

Using



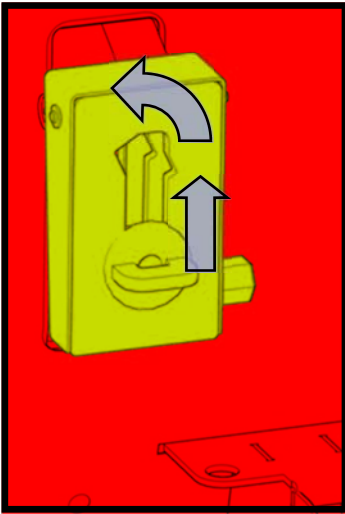
Screw position : the rod can enter but is blocked



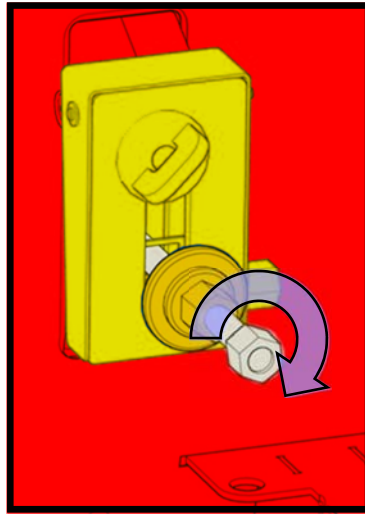
Screw position : passage of the rod



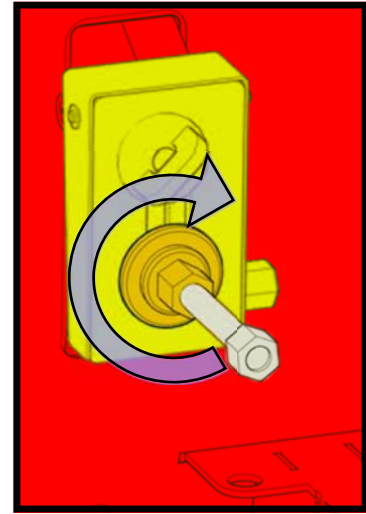
Formworking



Raise the nut

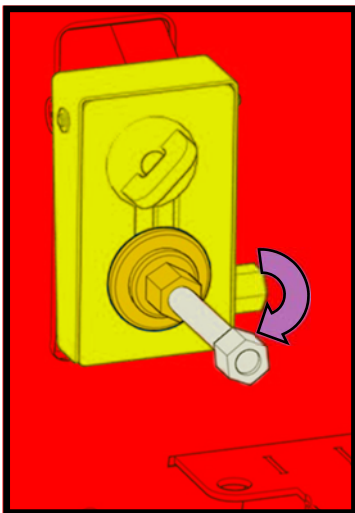


Insert and screw the tie rod*

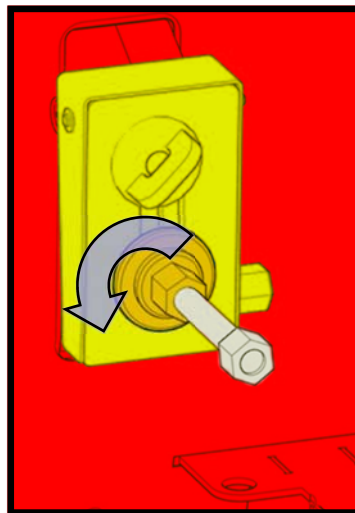


Tighten the nut of the rod

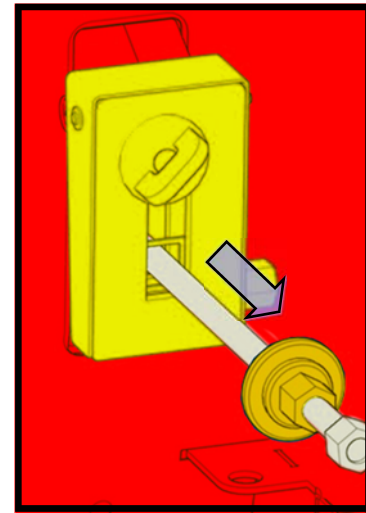
Removing formwork



Turn the screw of the spacer unit a quarter turn



Untighten the nut of the rod*

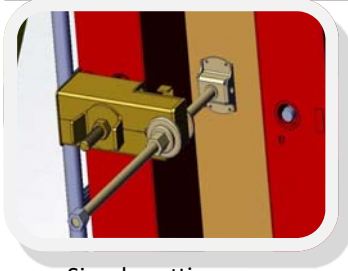


Remove the tie rod*

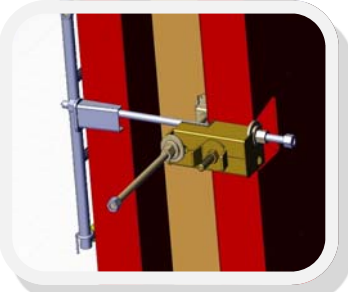
*: The ties rods for detensioning spacer units are longer than those for universal block : please contact us

Stop End

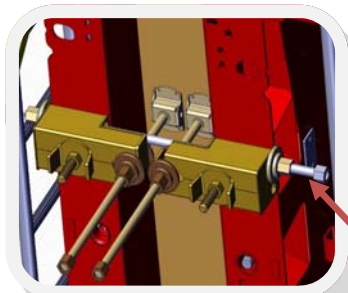
D.T. SC 1015 BOX



Simple setting

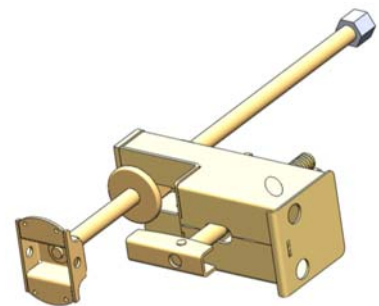


Setting with adjustable clamp : compulsory to cast SCC for walls thickness from 15 to 25.

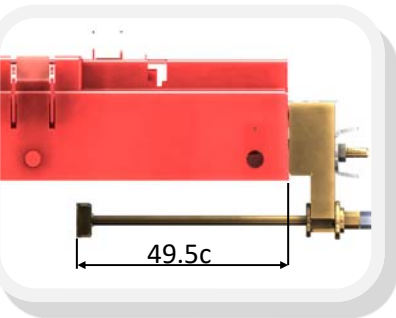


Setting with 2 stop ends

CAUTION : to cast SCC or a wall thickness > 400mm : set the tie rod between the 2 stop ends.



Picture to illustrate the comments : stabilization with ballast in reality is compulsory.



Maximum depth of the stop end with the standard rod : 49.5cm.

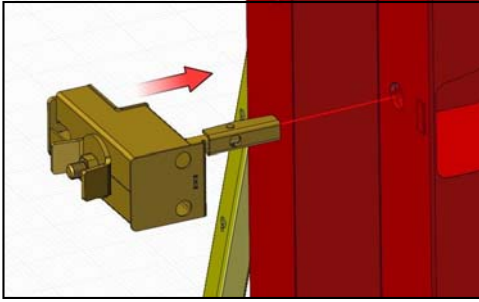
	Nber of stop end on one side		Nber of stop end on two sides
	thick. 15 to 20	thick. 20 to 25	thick. 26 to 60
Shutter simple height	2	3	3
Shutter with	Panneau	2	3
	SH 1000	1	1
Lower extension	SH 1500	2	2
2 shutters in superposition	Upp. shutter	2	3
	Bot t . Shutter	3	3
Upper Extension	0		



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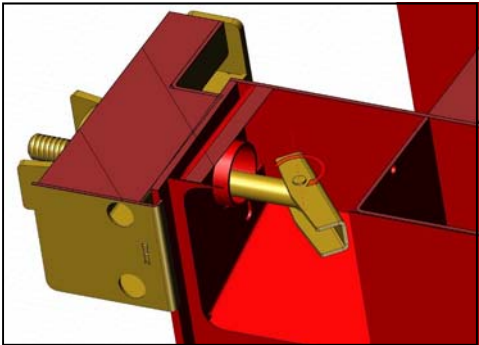
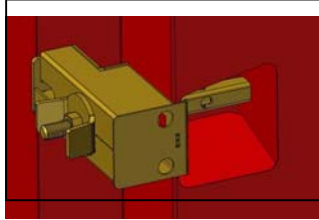
Setting the end lock

D.T. SC 1015 BOX



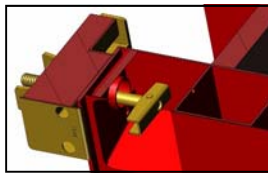
Untighten the wingnut

Insert the end lock in the socket of the edge

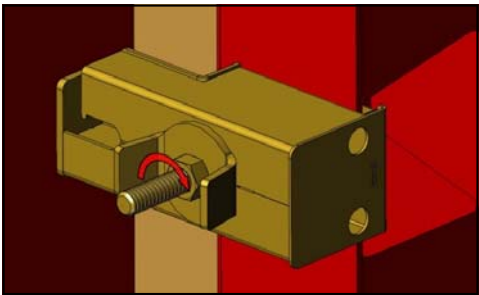


Push the end lock against the edge

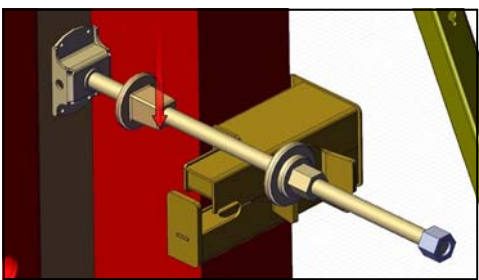
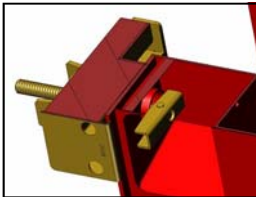
Turn the head of the hammer



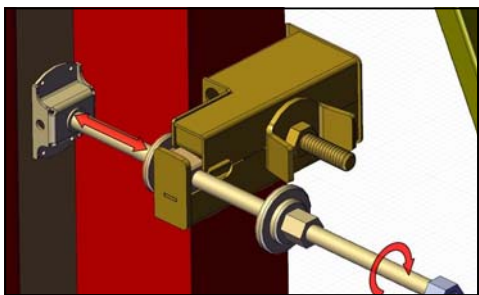
*Once the end lock is in position,
it stands by itself.*



Screw the wingnut to tighten the end lock



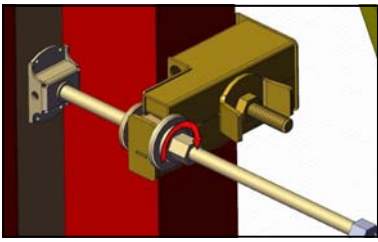
Insert the support rod of the stop end inside the opening of the end lock.



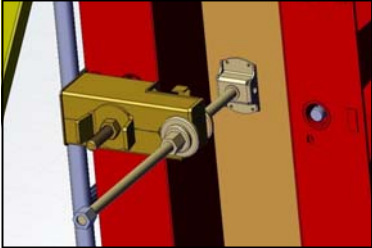
Turn the threaded rod and maintain the nut to adjust the depth of the stop end.

Setting the end lock

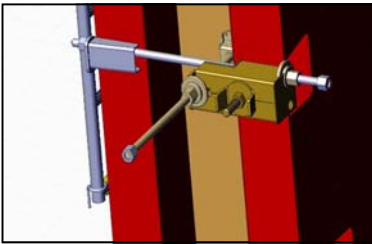
D.T. SC 1015 BOX



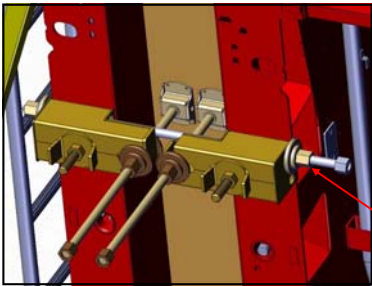
Once adjusted, tighten the screw with the loose washer



Wall from 15 to 25cm, setting one end lock



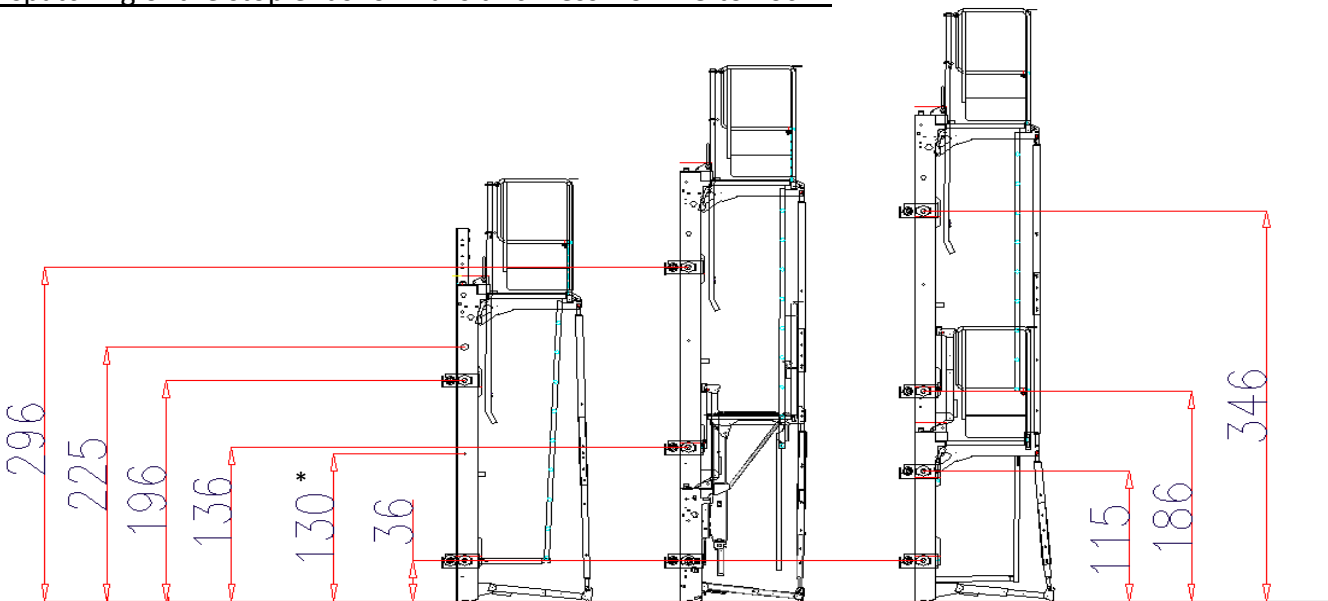
Wall from 15 to 25 cm with SCC, setting one end lock with adjustable clamp and rod.



Wall from 26 to 60 cm, setting 2 end locks facing each others : compulsory

Tie rod in option

Dispatching of the stop ends for walls thickness from 15 to 20cm:



Possible position of the end lock on the 2 top sockets



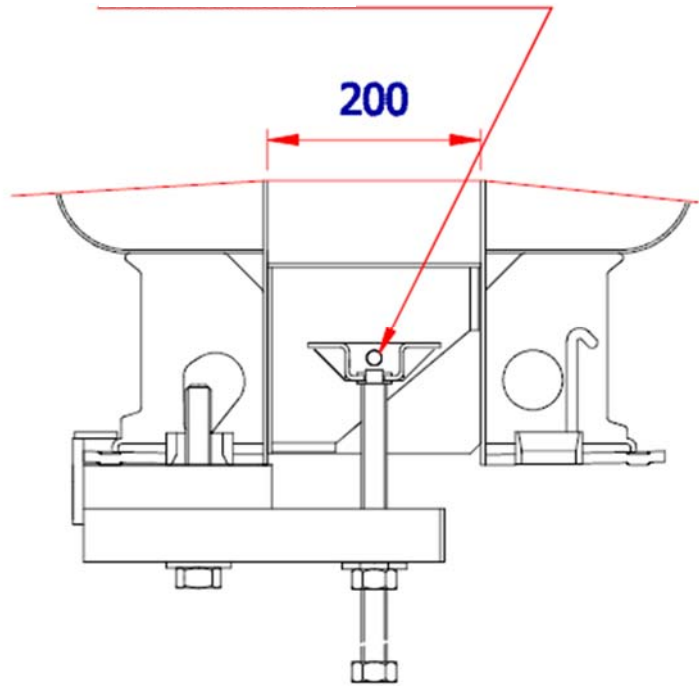
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UNDER VALIDATION

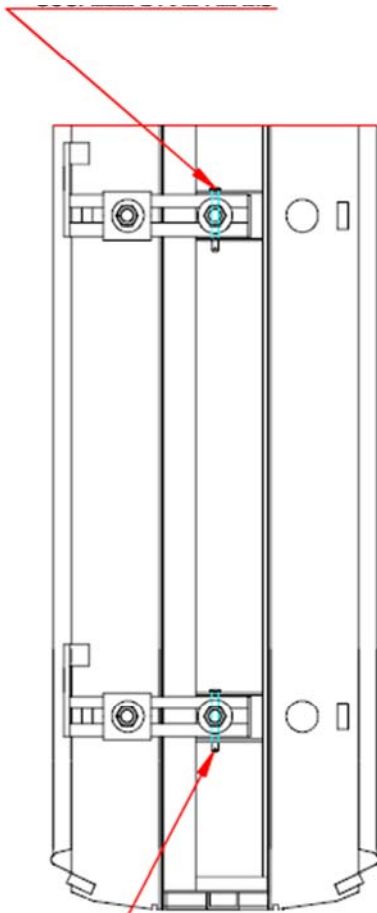
Sheet: 32.80.04 ind.02



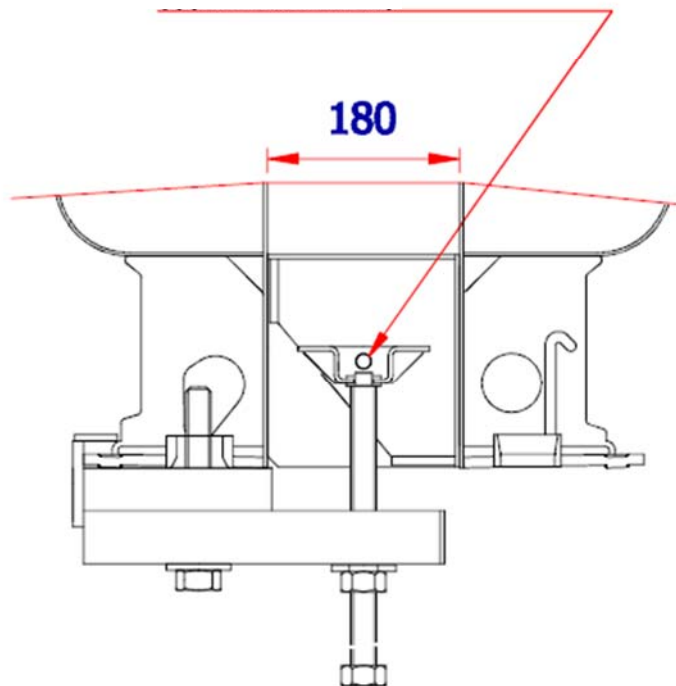
Peg $\varnothing 12 \times 105$
Set pin wire 2.5



Peg $\varnothing 12 \times 105$
Set pin wire 2.5



Peg $\varnothing 12 \times 105$
Set pin wire 2.5



Peg $\varnothing 12 \times 105$
Set pin wire 2.5

For more versions and codifications : please consult the spare parts chapter at the end of this document



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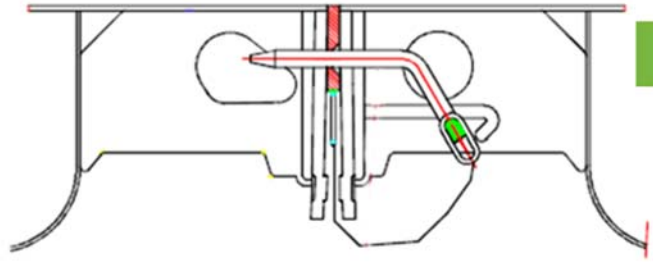


Assembling detail

1. Setting

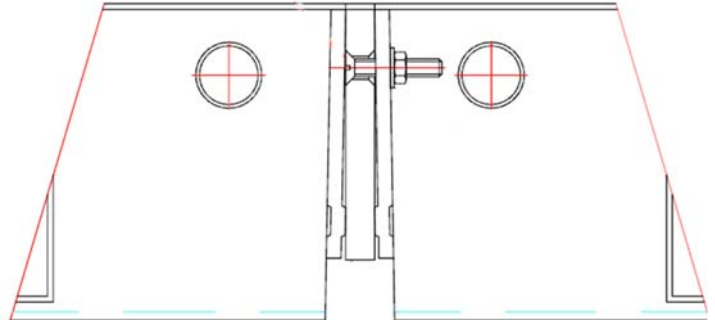
Cas 1

Position the flat iron between the 2 panels
Hold it with the unlosable peg through the edges of the 2 panels



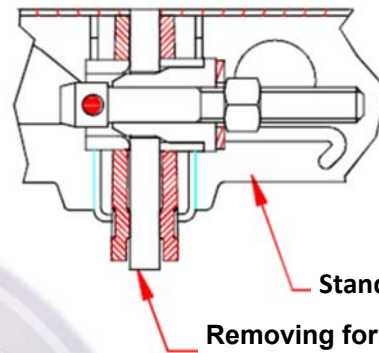
Cas 2

Position the flat iron on the edge of the panel
Fix it with a screw flat head and its nut



2. Fixation

Tighten the assembling pieces
See chapter "Assembling"



Using



For more versions and codifications : please consult the "spare parts" chapter at the end of this document .

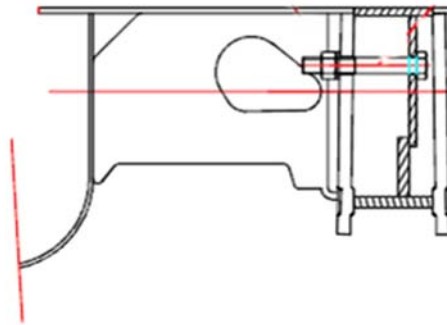




Assembling details

1. Setting

Position the infills panel nearby the edge of a panel
Hold it with a bolt

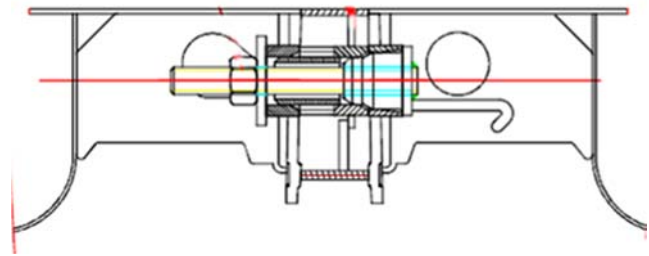
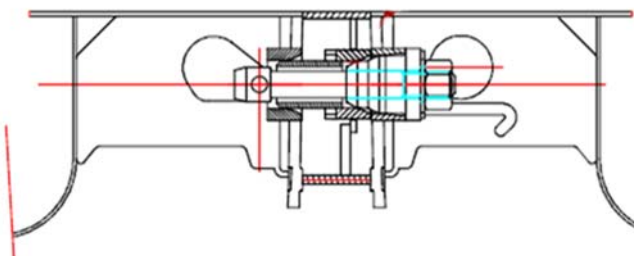


2. Fixing

Assemble the second panel using the assembling pieces in juxtaposition
see chapter "assembling"

Steel surface length from 30 to 50mm (pin version)

Steel surface length 60 mm (nut version)



Using



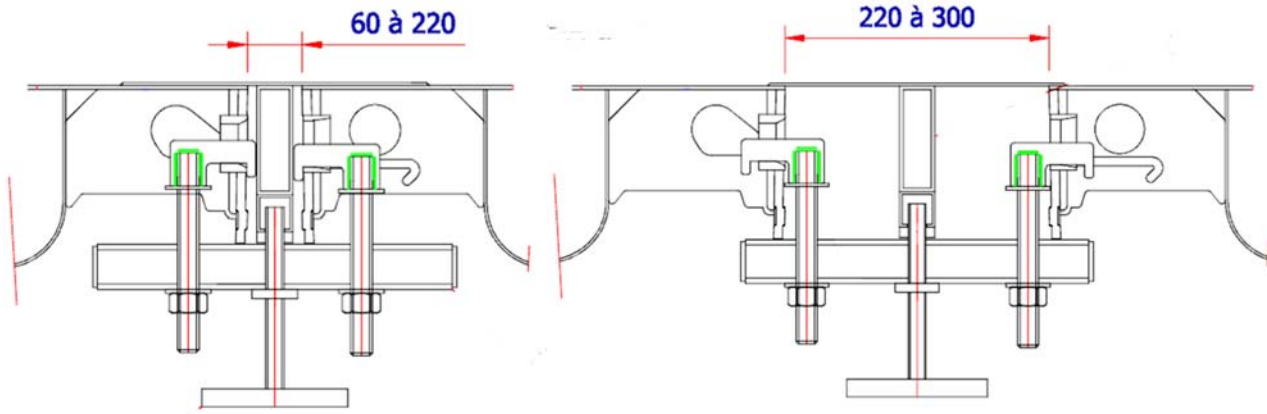
For more versions and codifications : please consult the "spare parts" chapter at the end of this document





Assembling detail

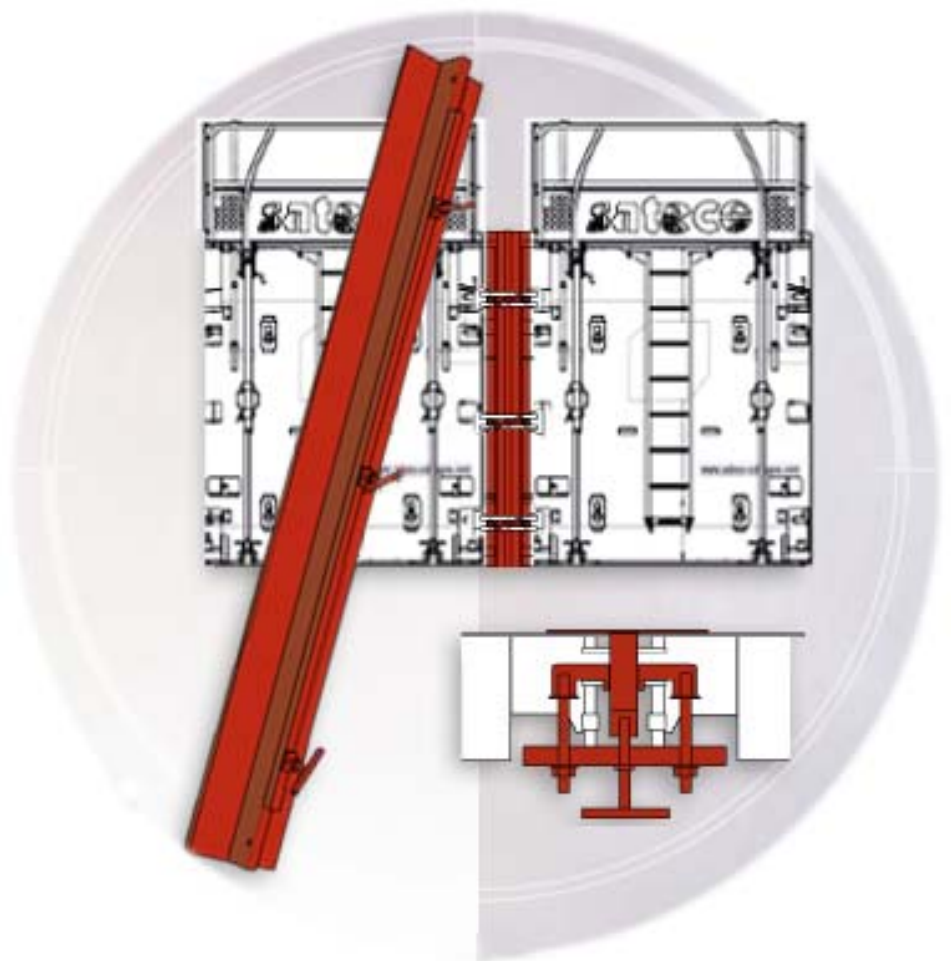
1. Setting and fixing



Using



Position one slide bar per assembling piece



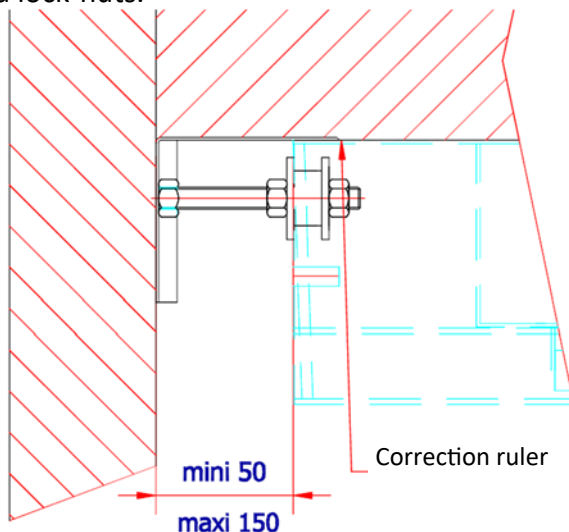
For more versions and codifications : please consult the "spare parts" chapter at the end of this document



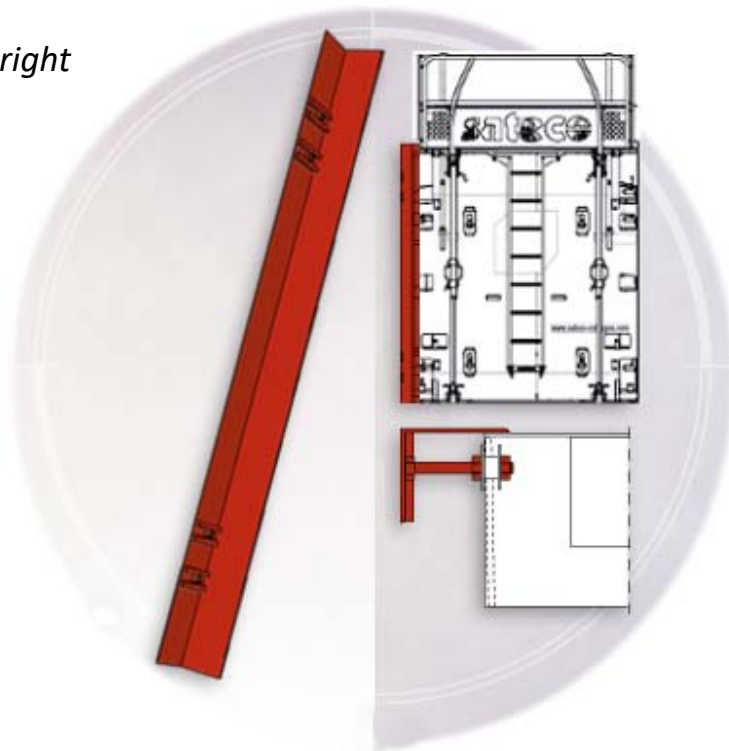
Assembling detail**1. Settling and fixing**

Position the correction ruler at the edge of the panel, the formworking part of the ruler above the formworking part of the panel.

Fix and adjust the ruler with nuts and lock-nuts.

**Using**

Exists in both version : right and left



For more versions and codifications : please consult the "spare parts" chapter at the end of this document



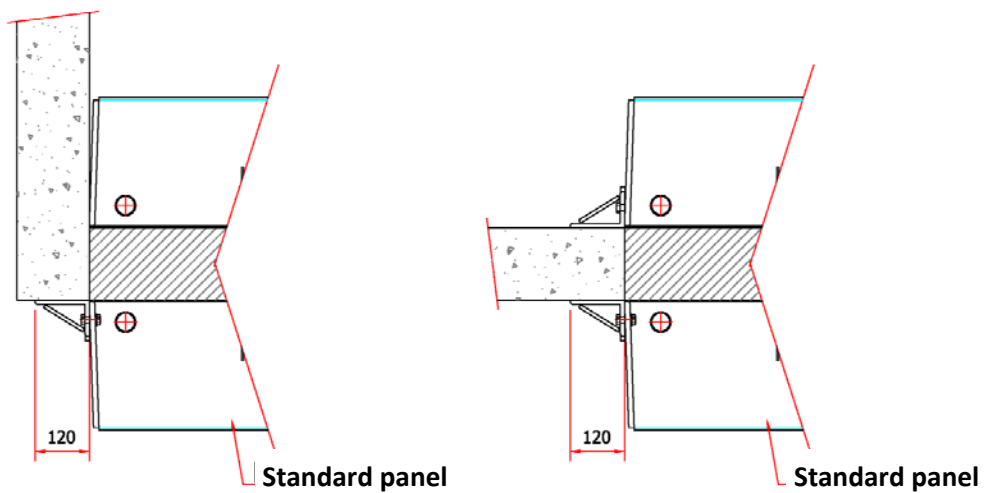
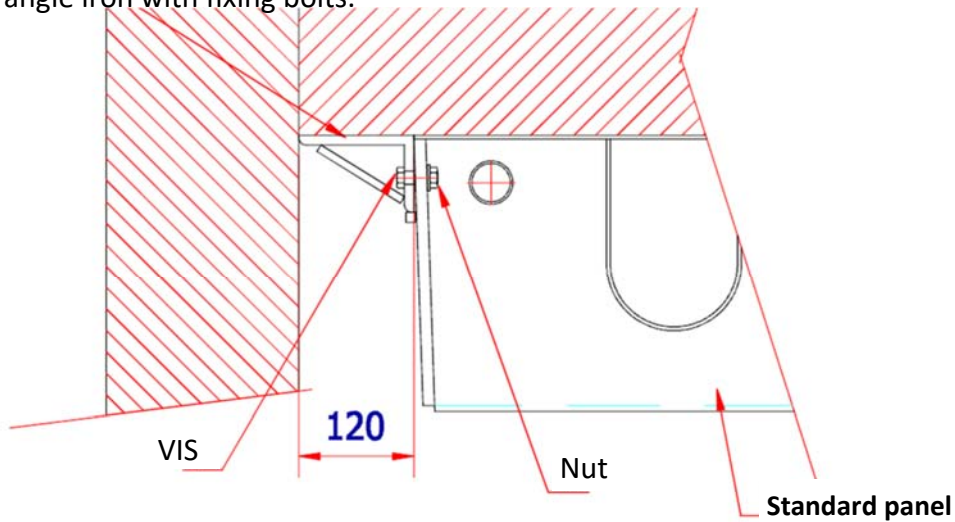


Assembling detail

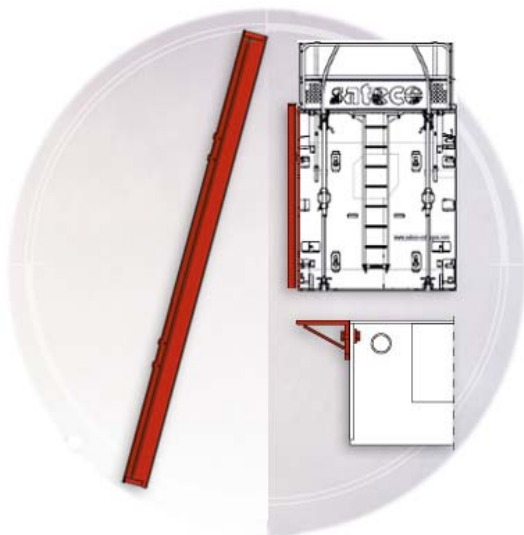
1- Settling and fixing

Position the angle iron at the edge of the panel, the formworking part of the angle to be aligned with the formworking surface of the panel.

Fix and adjust the angle iron with fixing bolts.



Utilisation



For more versions and codifications : please consult the "spare parts" chapter at the end of this document





Overview

With the walk around platform, the operator can :

- go from one side of the panel set to the other,
- work at the very end of a wall (to set up stop ends for instance)

The same walk around platform can be positioned :

- on the right or left side of the panel
- at the bottom or at the top of the panel

Top and left position of the platform



Top and right position of the platform

Bottom and right position of the platform

Set up the platform

Bottom position



In bottom position : add a plywood to extend the working board

Top position





Installing the panel support



For safety reasons, SATECO recommends to set the walk around platform when the panel is laid on the floor.

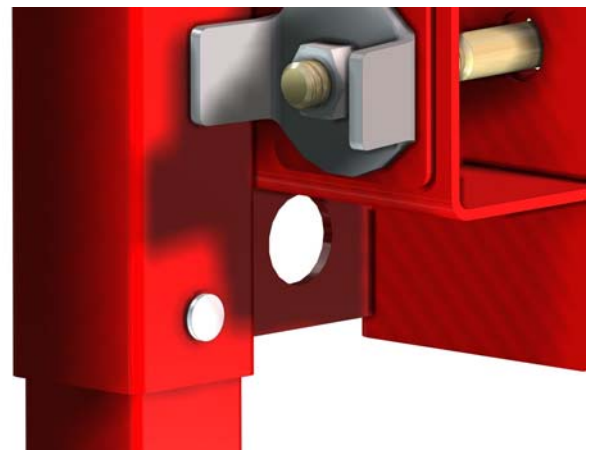
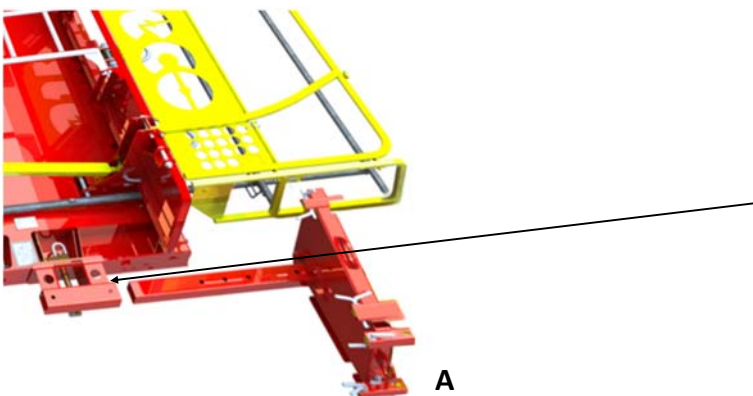
Setting the support in the edge sleeve



Mounting the walk around platform on the support.

A- Bring the platform in its support

B- Lock at the requested height with the peg



Mounting the guard rails

2 right angle pins per guard rails

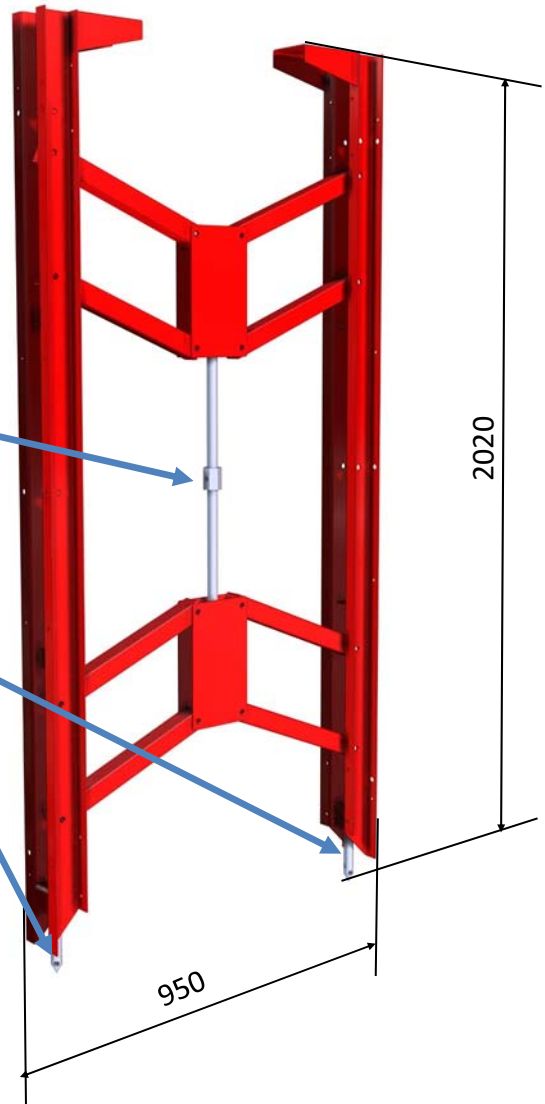




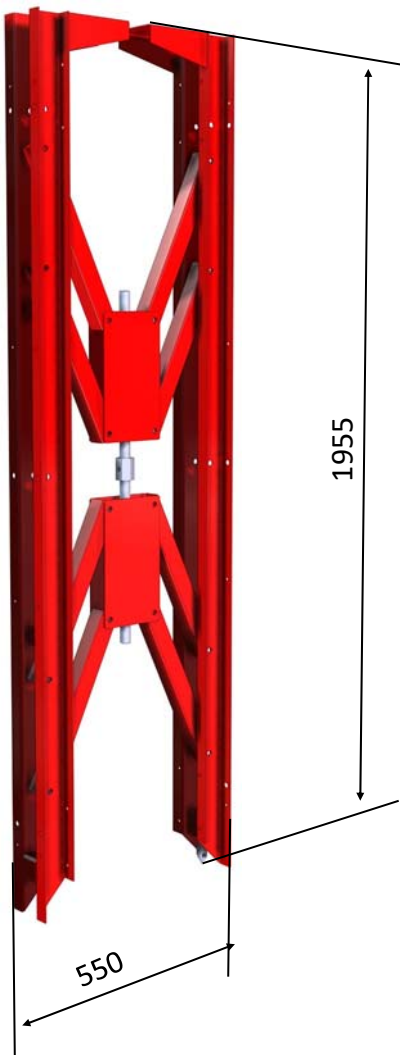
Maximum opening

Adjustment screw

Adjustment jacks: stroke 5mm



Minimum opening



*The standard reservation is used for a wall maxi : 20 cm
The reservation is not to be formworked but should be covered with plywood.*





Setting the single side frame



Remove the peg from the tie rods blocks, intermediates and low

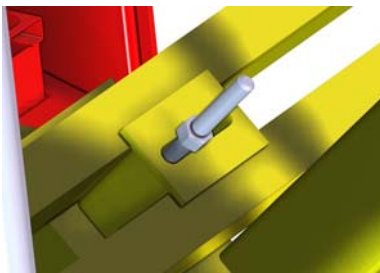


Hook the frame on the panel at the level tie rods blocks



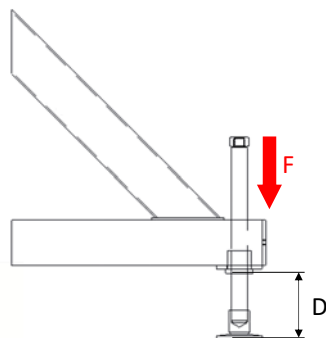
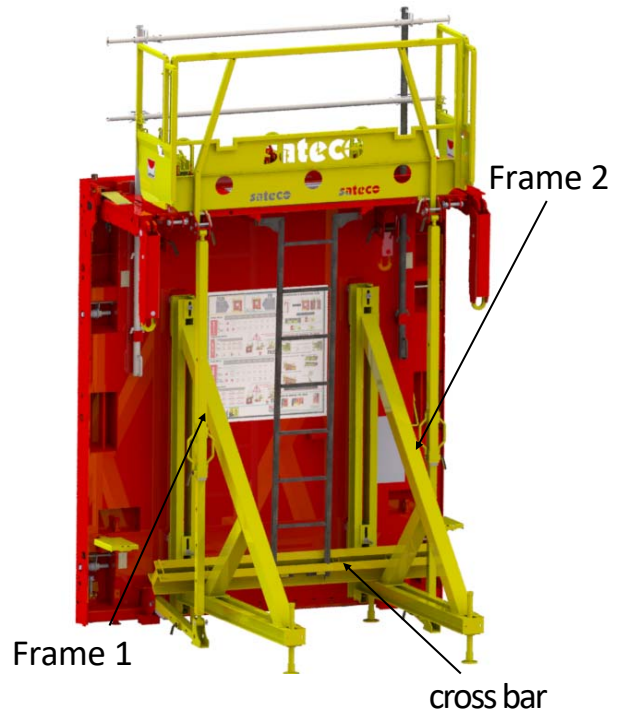
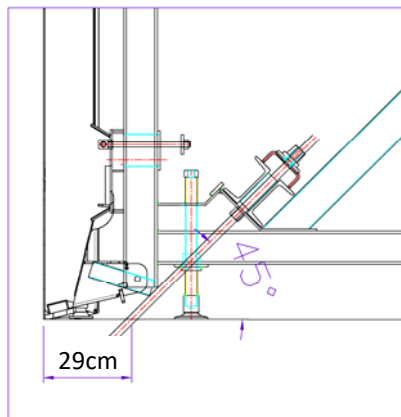
Tighten the upper and lower nuts of the frame

Do the same operations for the second frame
Fix the cross bar between the frames, at the bottom



Stabilization is still requested with the single side frames!

2 45° anchors by frames



Distance max = 200mm for F = 10T

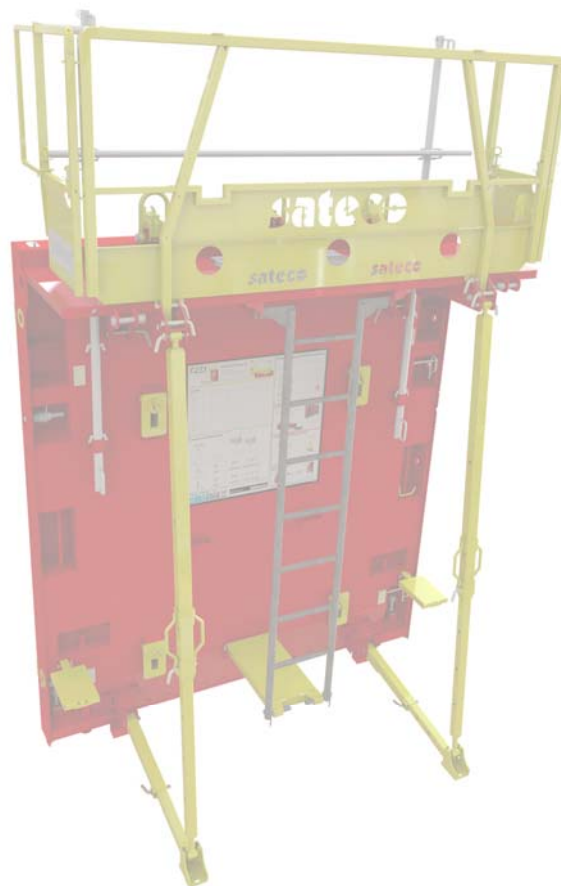
If distance >>200mm, add a wooden or steel wedge.

More details on document **FM 32.05-02**





32.90 - MAINTENANCE & CHECKING



For more understanding some pictures of this chapter are presented without stability.



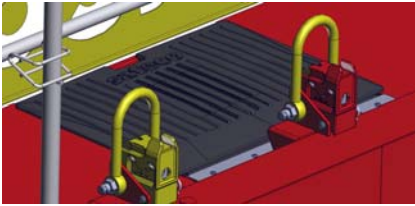
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Checkings

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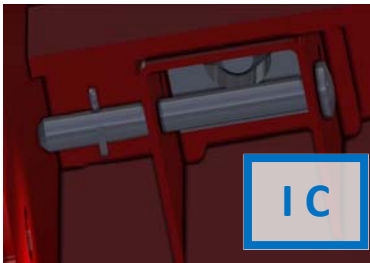
IC



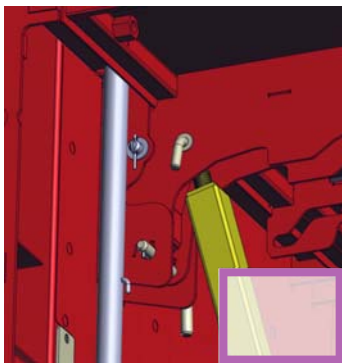
Access hatch



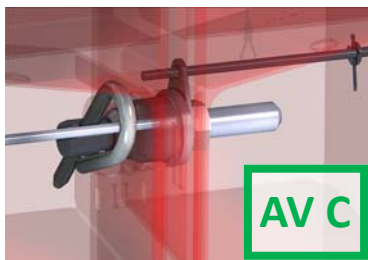
Universal high tie rod block



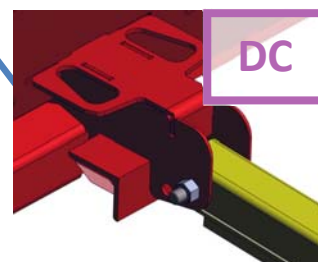
Superposition assembling



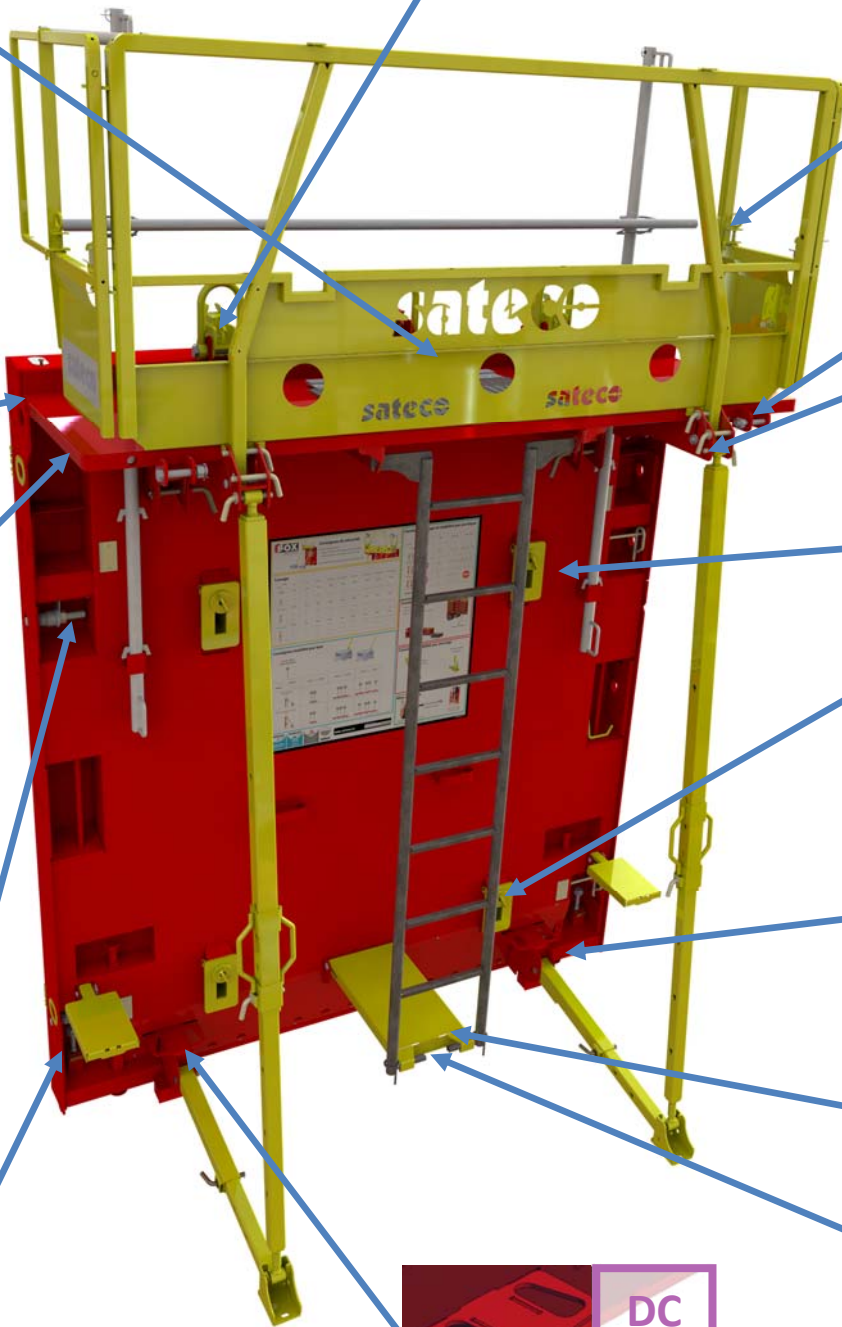
Locking the working board



Juxtaposition assembling : oiling



Low part of the crutch



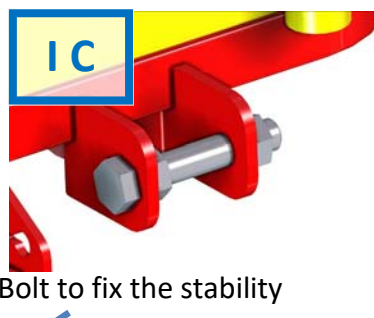
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Checkings

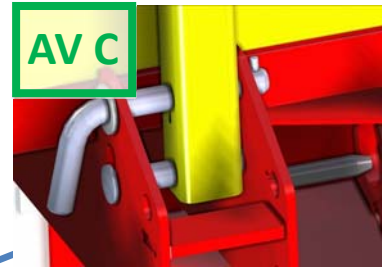
D.T. SC 1015 BOX



Lock spring



Bolt to fix the stability



Locking the guard rail



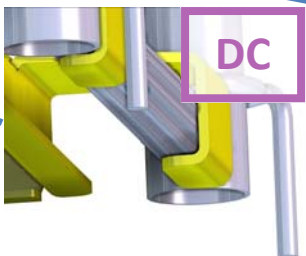
Tie rods blocks



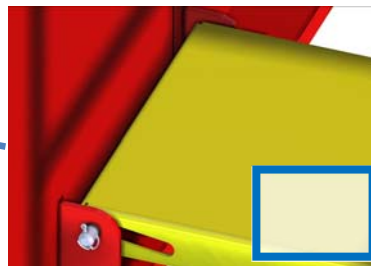
Upper extended screw jack



Formworking surface



Ladder step



Ladder step

AV C	Checking before each casting
IC	Checking between worksites
DC	Checking at worksite start



USING AND CHECKING THE SLINGS

- The slings must be listed in a safety register (see chapter general checking)
- The slings must be stored on a rack and not left abandoned on the floor
- They should have an identification plate. If the latest is lost, the sling is considered unusable
- Never lift with a twisted string
- When lifting, it is forbidden to stand or walk by in the lifting area
- A suspended load must never be left unattended
- The head mesh should move easily on the hook of the lifting device and not get caught in it.
- Never lift the load unless you are sure that the hook and the safety latch are completely locked

- Never use a sling if the head mesh or hook is widened and the peak is twisted
- A qualified person must check that the head mesh, the string, the hook do not show any cracks, notches, wears, distortions, corrosion. In case they do, they must be replaced (see chapter "general checking").

USING AND CHECKING THE SHUTTERS LIFTING

- The angle sling should be between 60° and 70° with respect to the horizontal.
- Maximum panel set length < to 10,1m.
- The WLL mark on the ring must be recognizable
- The safety pin in V shape on the bolt of the shackle must be curved and in good condition
- The bolt must not be bent
- The hook of the crane sling must move easily on the shackle and must not get caught on it.
- Never use a shutter whose shackle is widened or distorted
- A qualified person must check that the shackle does not any show any cracks, notches, wears, distortions, corrosion. In case it does, it must be replaced.

The crane driver must be informed of the risks that represent the manutention of shutters.

A good organisation of the formworks shifting will allow to reduce as much as possible the number of manutentions and thus the number of assembling modifications.

Before handling the shutters assembled all together, make sure that the vertical and horizontal assemblings are correctly tightened.

Never unhook from the crane the shutter unless its stability is strongly ensured.

Never free the shutter from its stability device before you hook it (the shutter) on the crane.

Before lifting the shutter, make sure there is no more connection between the shutter and the floor or the walls.

Stricly observe and respect the instructions regarding stopping the job at times of peak winds :

- * Stop the manutention of the shutters : 60 km/h.
- * Stop the crane : 72 km/h.
- * Stop the worksite: 85 km/h.

Additional anchoring points should be provided for winds above 85 km/h.

When moving the shutters, guide them with ropes but never directly with your hands!

Use a signal when the visibility of the crane driver is obstructed.





CHECKING THE STABILIZER

Steps :

Put the prop on a mounting checking bench (visual checking).

- Make sure the slide is operational in the shaft.
- Checking the pin (sliding in the hole of the slide)
- Check the screwing of the adjusting nut on the threaded pipe.

DETAIL OF THE STEPS

a) - Visual checking :

If the prop is bent or twisted : shaft/slide crashed (prop out of order).

If there is concrete on the prop : remove the concrete.

If the adjustment handle is twisted : go to step b).

b) - Checking if it is operational:

1. Move along the handle (4) and check it slides all along the slide (C).
2. Check the locking device of right angle pin (1) and make sure it is unlosable.
3. When the pin is locked (1), check the bolt (2) is operating all along the height of the threaded tube (F)

c)- Checking the pin (1) :

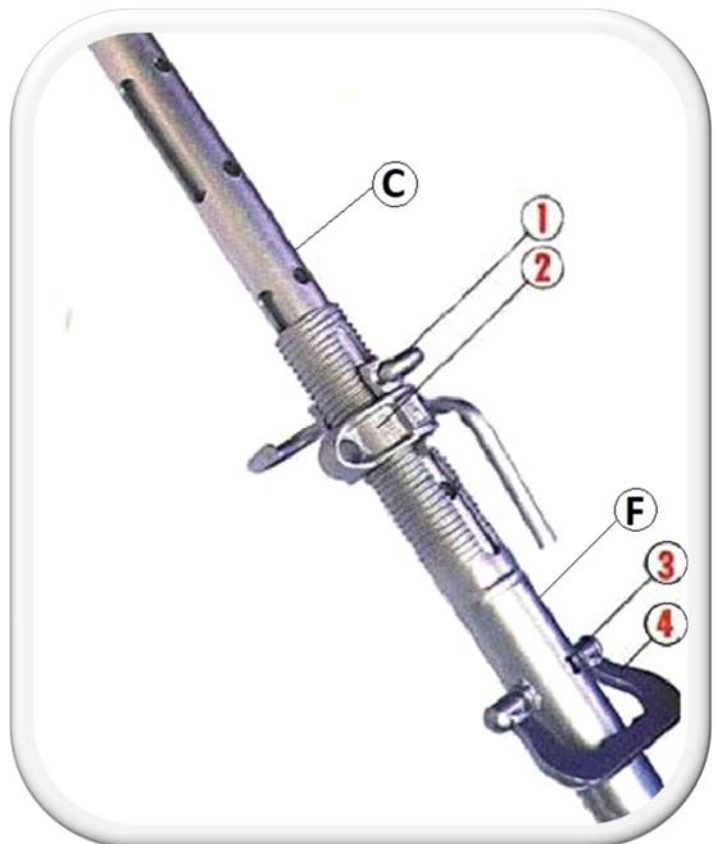
If the pin is slightly twisted : rectify it,

If it is notched or distorted : change it.

d)- Checking the bolt / handle (2) :

Check that the handle is unlosable,

Check the bolt (2) is operating on the tube (F) + oil.





USING AND CHECKING THE TIES RODS

RECOMMENDATION : It is important to use new rods and nuts when the formwork height is upper 8 meters

Rod :

Transport and storage of the rods is done away from collisions and corrosive products.
Do not put other loads on the rods.

A visual check must be done to make sure that the rod :

- Is not butt-welded end to end.
- Does not show any deep traces of rust (pitting).
- Is not bent (can be checked with a ruler).
- Does not show any deep marks (streaks, cuts).
- Does not show any traces of welding or any welding projections.
- Does not have any concrete that could stop the nut from being operational.

IF ONE THESE DEFECTS ABOVE IS OBSERVED, THE ROD MUST BE THROWN AWAY

Nut :

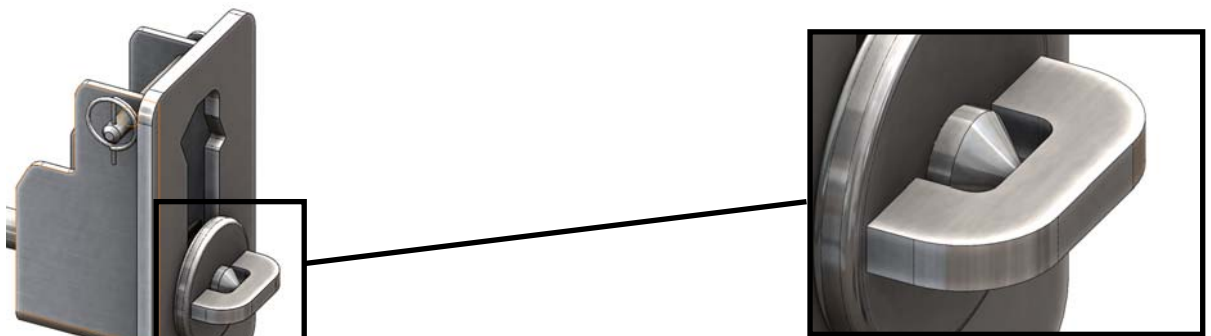
- The nut must absolutely be oiled to avoid wear.
- The nut must turn freely on the rod and do not force.
- It must not show any traces of welding or any welding projections.
- It must not have any concrete that prevent it from turning.
- It must not show any deep traces of rust (pitting).
- It must not show any deep marks (streaks, cuts)
- It must not be worn. It is observed when thread is pressed.

IF ONE THESE DEFECTS ABOVE IS OBSERVED, THE NUT MUST BE THROWN AWAY.

MAINTENANCE

A periodic cleaning of the formworks is strongly advised to detect one of these defects.
To clean the formworking surface with the removal product, please contact us.

Before each concrete casting, check that the crossing rod rests on the stop end of the nut.



Rod resting on the stop end of the nut





How to prepare the formwork before using it on the worksite ?

Wherever the tool comes from, the manufacturer's plant or the customer warehouse, the preparation steps for a worksites are the same:

- Lay the panels flat, formworking surface on the battens;
- Unfold and lock all the safety accessories (crutches, working boards, guard rails in position) or install them in case of modular formwork ;
- Set up the stability (wind stability) ;
- Sling the panel and bring it to the cleaning area ;
- Stabilise it and free the crane ;
- Remove the storage oil with a hot water high pressure cleaner
- Spray without excess the removing formwork oil on the formworking surface as well as on the panel edges.

Wipe it all.

The panel is now ready for formwork.

You can move it to your working area.

How to prepare your tool between each use ?

- After removing the formwork, transfer the panel on the cleaning area ;
- Stabilize it before freeing the crane,
- With a scraper, scratch the concrete sticking to the formworking surface as well as to the other parts of the tool,
- A visual checking of all the safety devices must be done by the operator : working board, guard rail, front safety rail, stabilizer. Any element that is damaged or broken must be replaced.
- Before re-use, spray without excess removing oil on the formworking surface as well as on the panel edges. Wipe.
- Oil the threaded elements (screw jacks, assembling pieces...).

How to prepare you formwork to be returned at the end of the worksite ?

- First repeat most the steps described before, except spraying removing formwork oil (that will be done later)
- Clean the whole panel with a hot water high pressure cleaner
- Spray the removing formwork oil on the formworking surface as well as on the panel edges,
- Sling the panel and lay the formworking surface on the battens,
- Unfold and lock the safety accessories (or dismantle them) according the instructions of the builder and the type of material.
- Oil the threaded elements (screw jacks, assembling pieces...),
- The formwork is ready to be transferred.





Advices to the warehouse to maintain the formwork between 2 worksites?

- Clean the panel with a hot water high pressure cleaner ;
- Check the formworking surface,
- Check the waythrough holes for the superpositions assembling,
- Seal the holes if necessary,
- Spray the storage oil on the formworking surface ;
- Check the safety devices (Superposition and juxtaposition pieces, front safety rail, working platform locking system) ;
- In case of damage, replace and renew,

The formwork is ready to be transferred on a new worksite or to be stored in a warehouse.

Periodic review and maintenance of the formwork

This operation is done in the warehouse or by external service provider.

- Once the equipment is received: the accessories are all dismantled, checked, sandblasted and painted,
- The back surface as well as the edges of the panel are cleaned, the holes for superposition assembling unblocked,
- The panel is the turned for the operation on the formworking surface :
 - sealing the holes,
 - checking the flatness of the shutter and re-adjustment,
 - grinding the formworking surface : at Sateco Services unit plant, an automatic grinding machine ensures an uniform gringing all over the shutter formworking surface.
- Turn once again the shutter to check and eliminate any traces of concrete,
- Oil the formworking surface (automatic system on SATECO line),
- Paint,
- Set up the accessories,

The shutter is then stored and ready to be delivered for a new worksite.





**HEAD QUARTERS
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