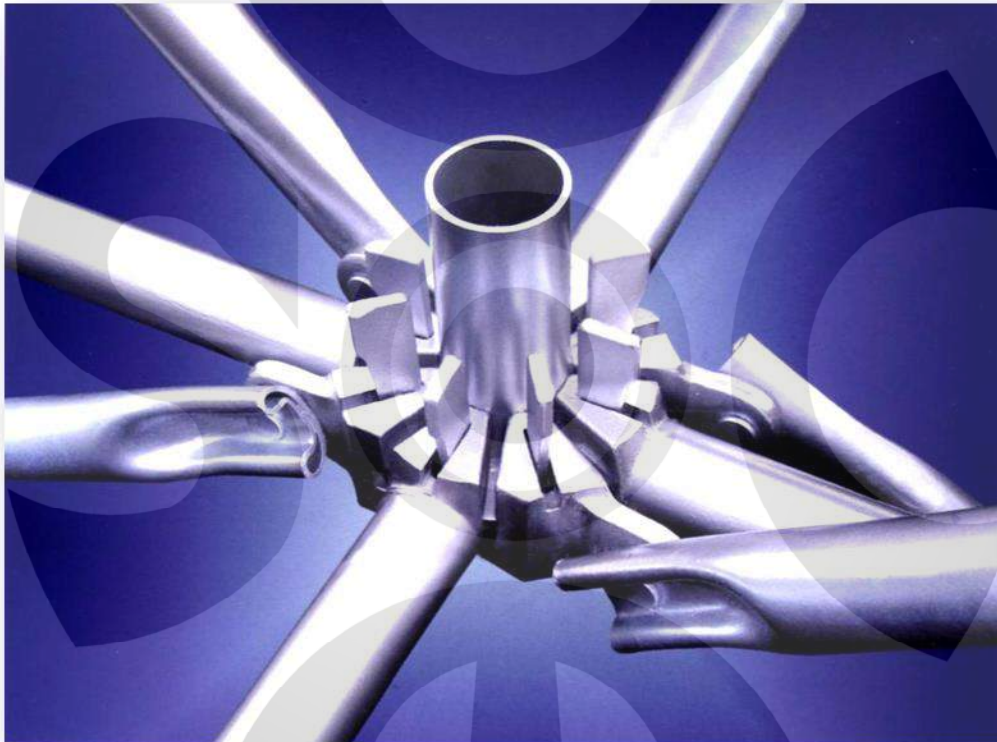


Ring System Scaffolding φ60.2mm Instruction Manual



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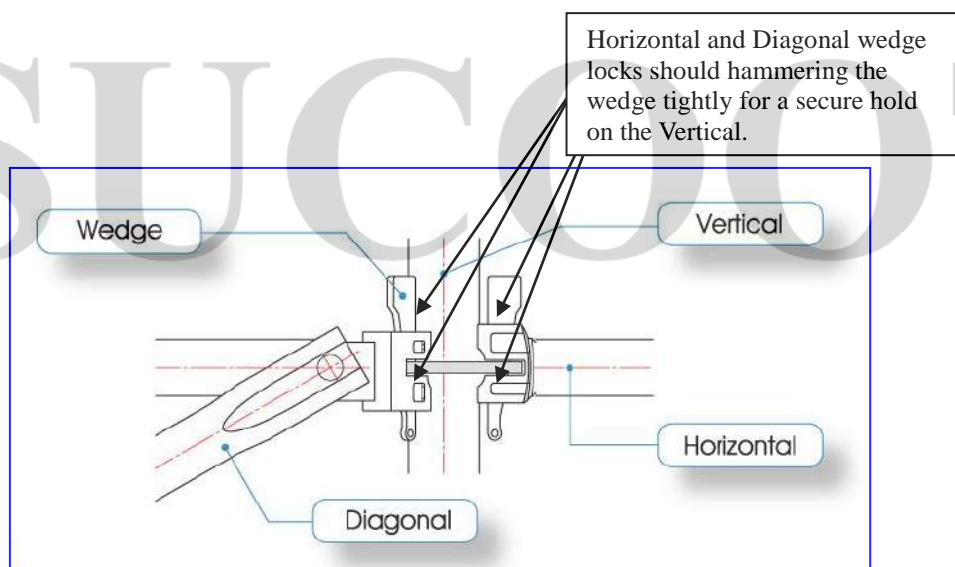
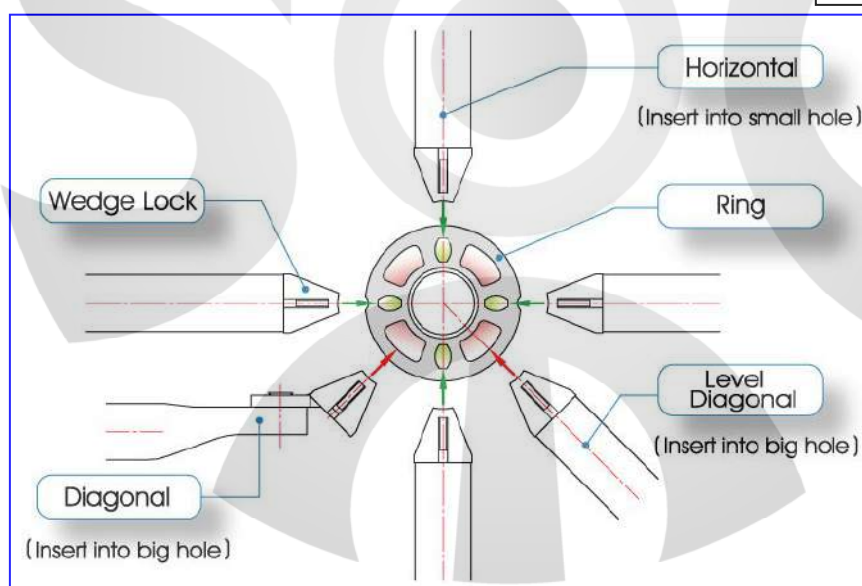
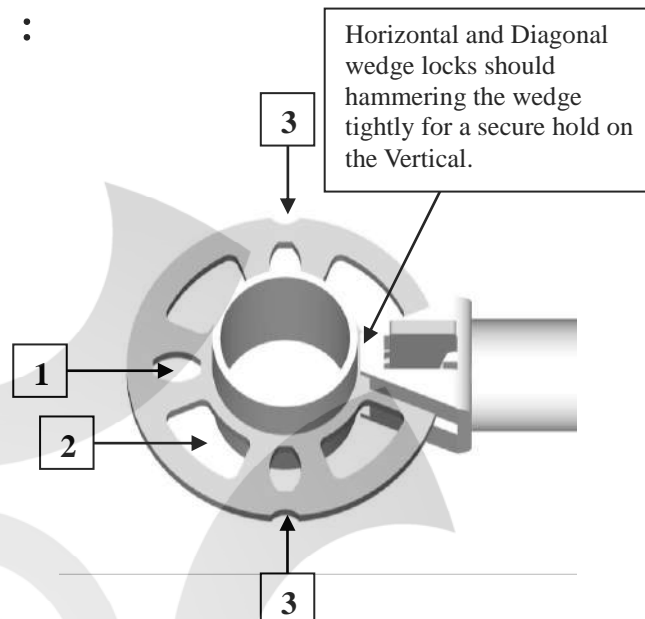




Assembly Diagram of 「Ring System」 :

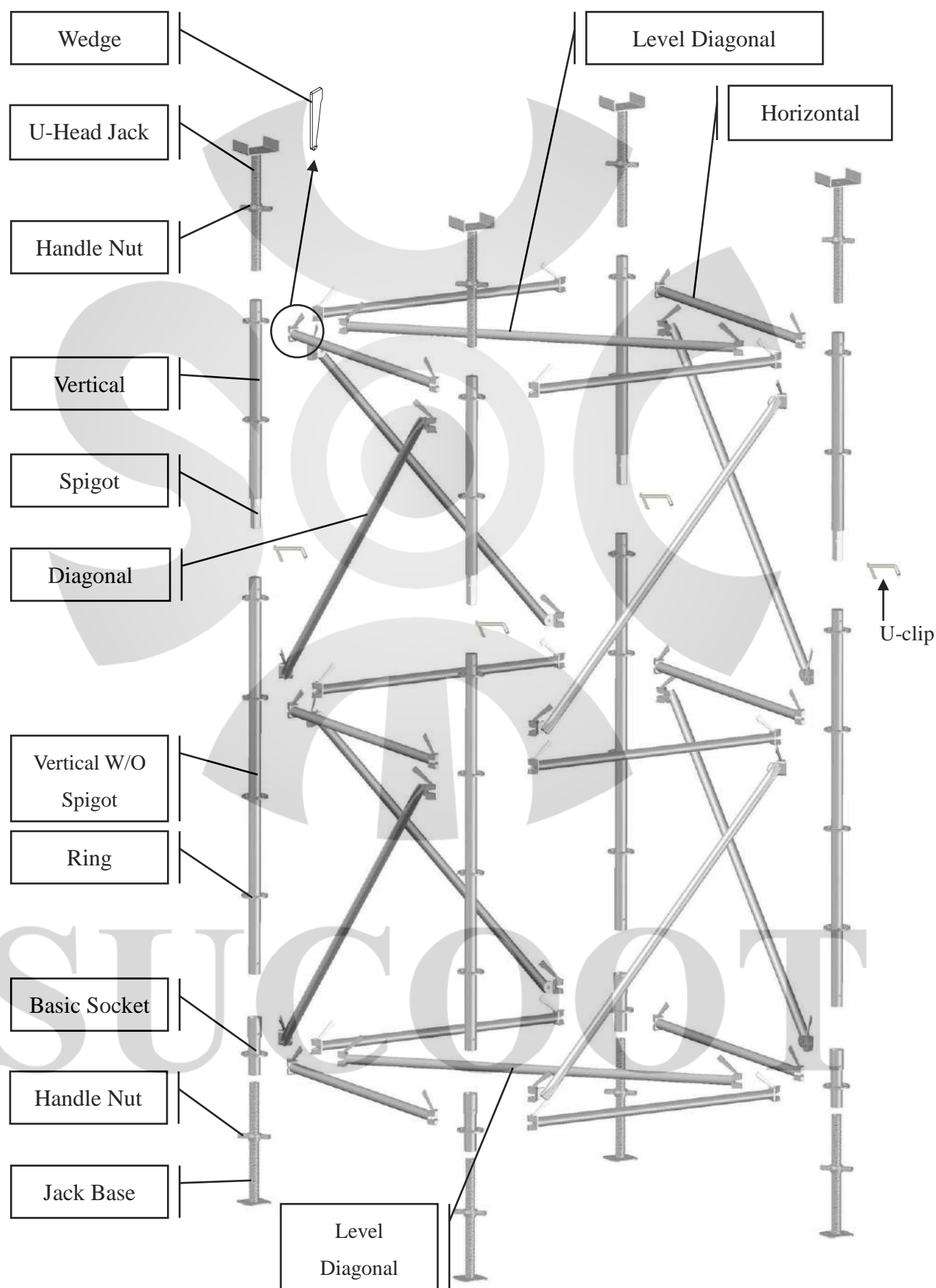
1. Small holes: 4 holes for Horizontal assembly.
(fix the wedge locks on ring and hammer the wedges tightly)
2. Big holes: 4 holes for Diagonal or Level Diagonal assembly
(fix the wedge locks on ring and hammer the wedge tightly)
3. Alignment point: for Verticals assembly in alignment.

(U-Clip to secure firm connection of Verticals while lifting up)





Component Overview :



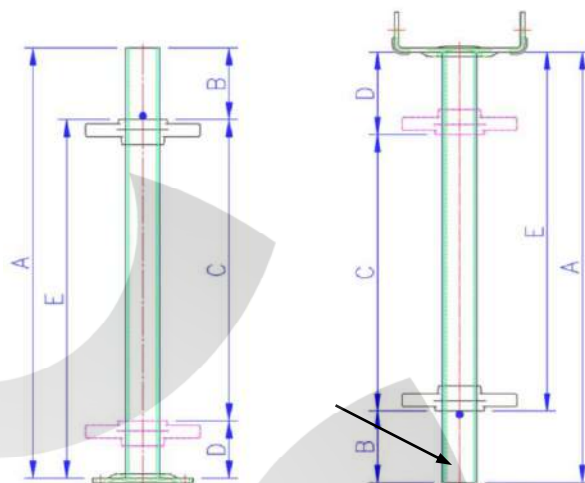


Dimension and Specifications :

1.U-Head Jack and Jack Base:

To adjust the Scaffold height.

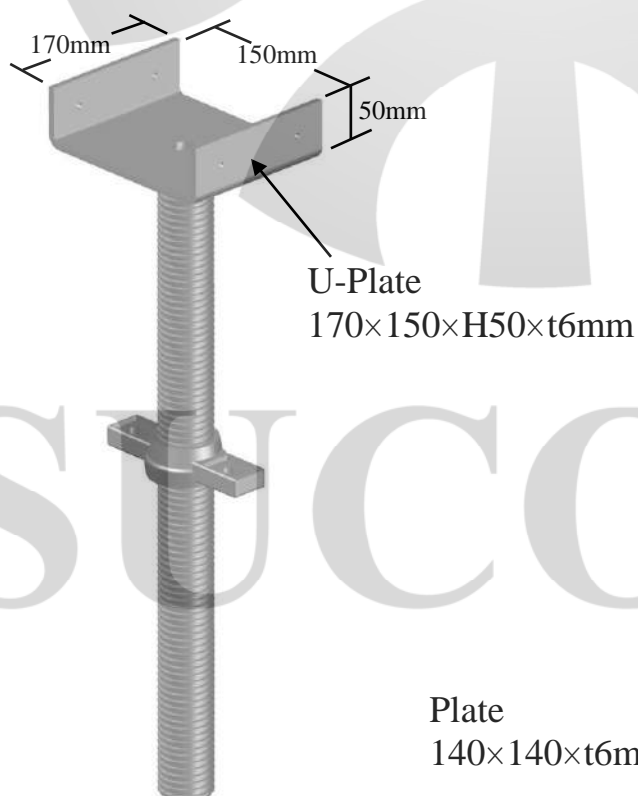
*Note 1 : Jack Base with a stop to prevent the Handle Nut from getting out and to Ensure the connection with Vertical over 100mm for safe load bearing.



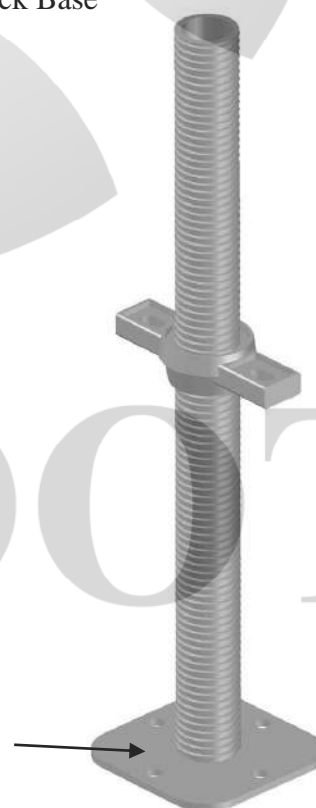
All dimensions are basic on “mm” unit:

Adjustable Length Dimension		U-Head Jack			Jack Base		
(A)	(B)	Max.(E)	Min.(D)	Adjustable (C)	Max.(E)	Min.(D)	Adjustable (C)
600	100	500	80	420	500	80	420

U-Head Jack



Jack Base

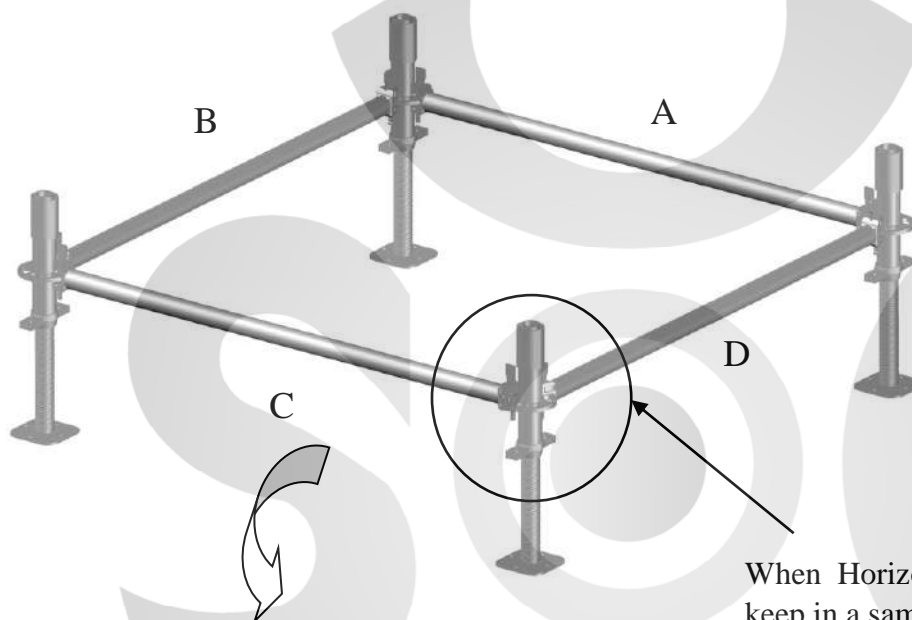


The tube dimension is $\varnothing 48.2 \times 600 \text{mmL} \times t5 \text{mm}$. Material: STK 400.
 The Handle Nut material is FCD450.

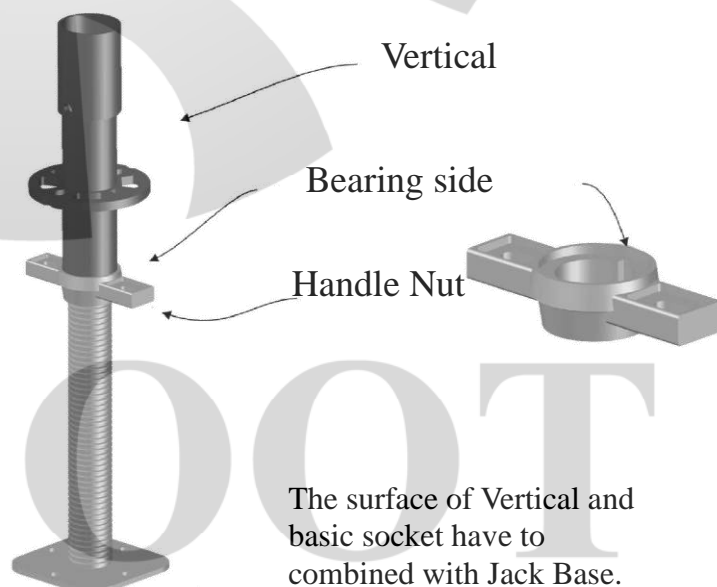
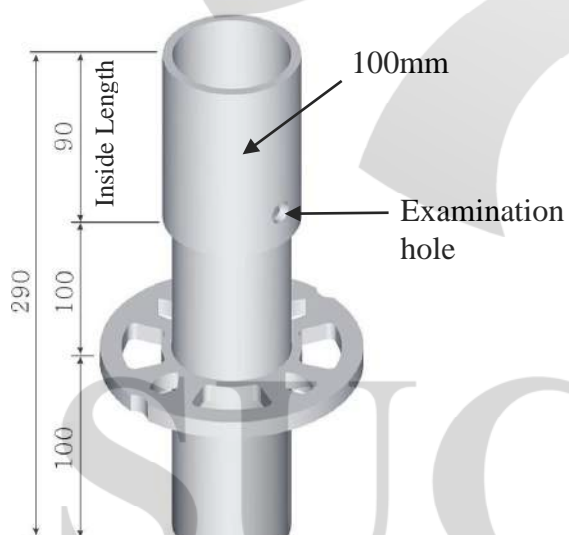


2. Basic Socket :

- For Horizontal connection to form a stable foundation
- Material: STK 500
- Pipe \varnothing 60.2mm x T:3.2mm
- L: 200mm divided by Ring from the middle.



When Horizontal A、B、C、D, keep in a same height. It will make Vertical in a great load bearing.



The surface of Vertical and basic socket have to combined with Jack Base.

unit : mm

※Basic Socket usually use on the Jack Base and adjust the Horizontality after first layer of Horizontal completed. There will no necessary to measure Horizontality of scaffold again.



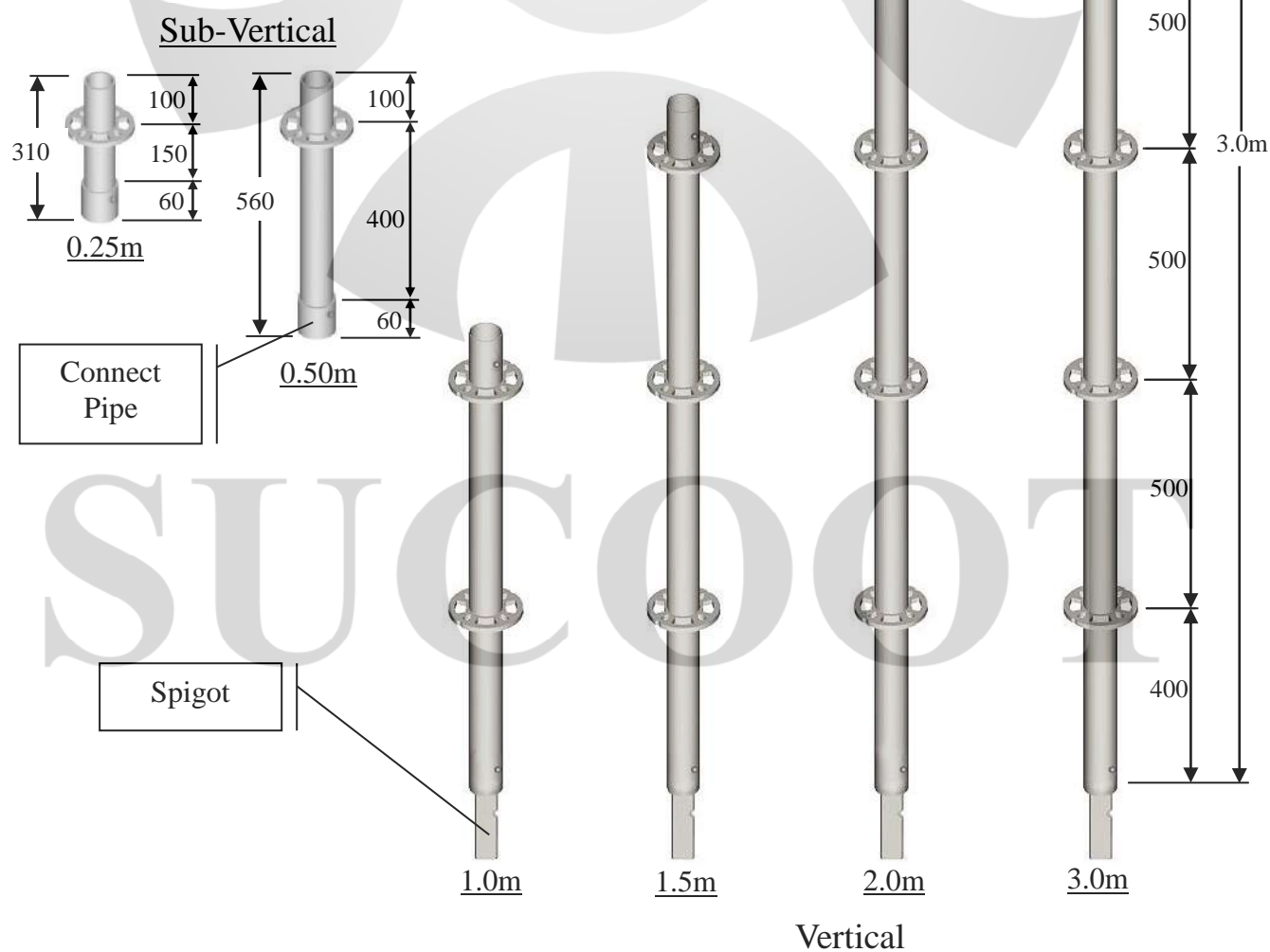
3. Vertical and Sub-Vertical

I 、Vertical and Vertical without Spigot :

- Vertical is the main support of the entire system connected by Spigot.
- Vertical (without Spigot) is only used on the first connection with Basic Socket.
- Material is used STK 500.
- Length: 1.0m, 1.5m, 2.0m, 3.0m
- Pipe: ϕ 60.2mm x T: 3.2mm
- Distance between rings: 500mm

II 、Sub-Vertical :

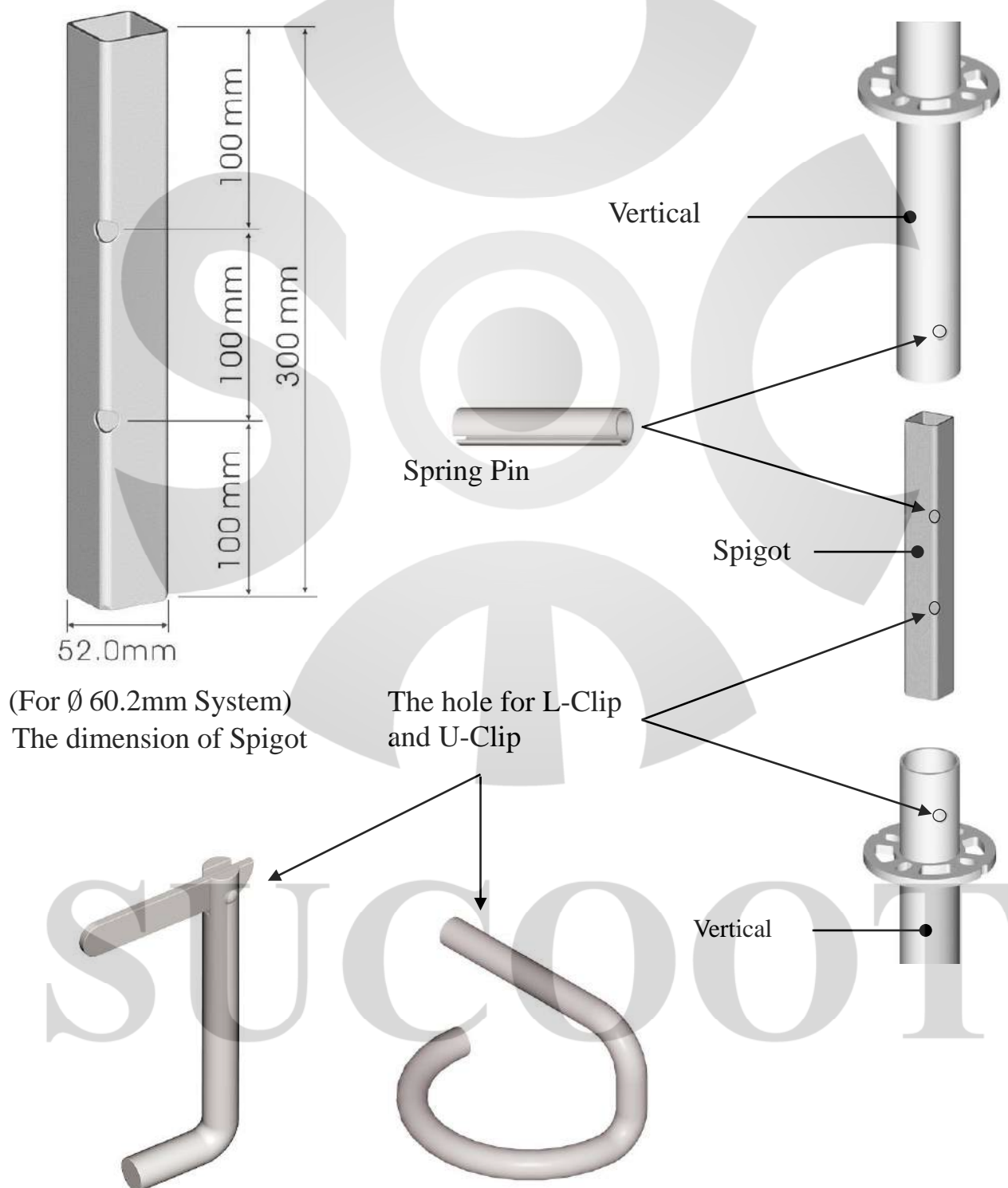
- To ease the adjustments of shoring height, especially in big alterations.
- Material is used STK 500.
- Length: 0.25m, 0.5m
- Pipe ϕ 60.2mm x T:3.2mm





4. L-Clip and U-Clip

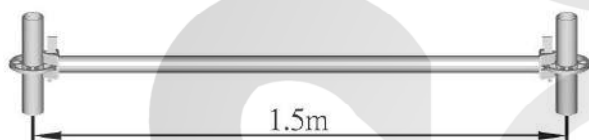
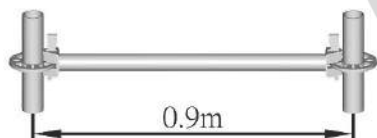
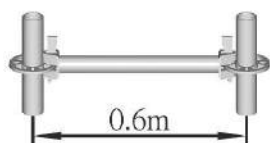
Two Verticals are connect by a Spigot and secured by a L-Clip or U-Clip to avoid wind shift or slippage °



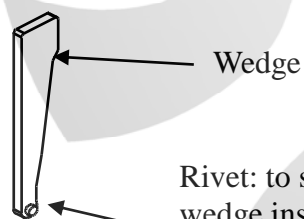


5. Horizontal

Mainly use to distribute force evenly between Verticals

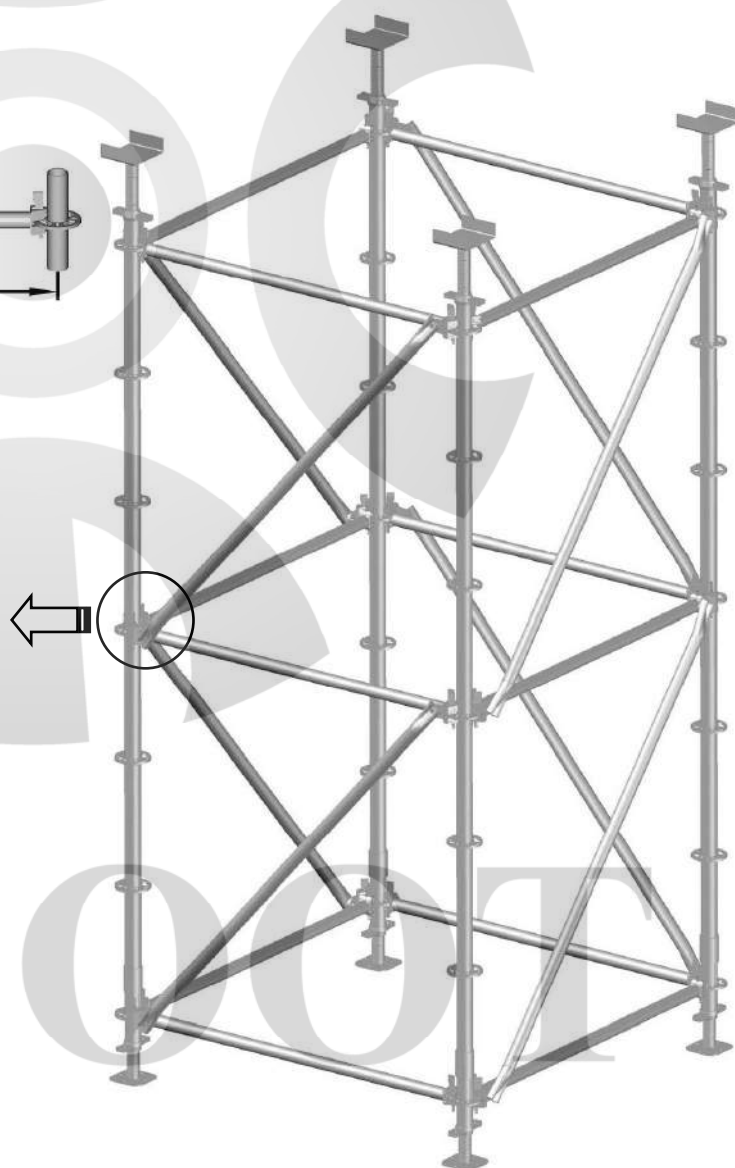
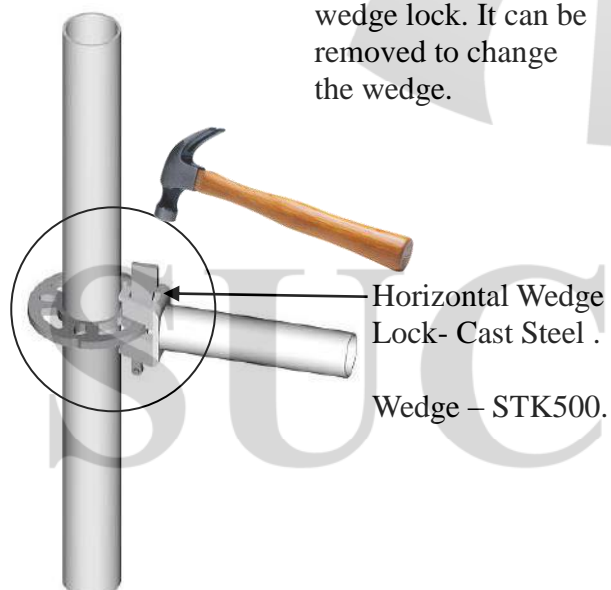


- Connecting: Wedge Lock fixed on Ring.
- Material is used STK 500
- Pipe: φ 48.4mm x T:2.3mm
- Length: 0.6m, 0.9m, 1.2m, 1.5m, 1.8m, 2.4m. Special sizes can be done as customer's request.



Wedge

Rivet: to secure the wedge inside the wedge lock. It can be removed to change the wedge.

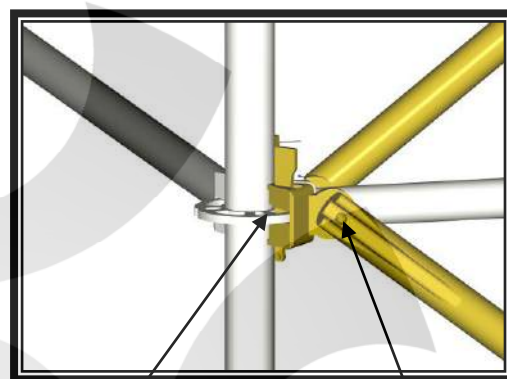
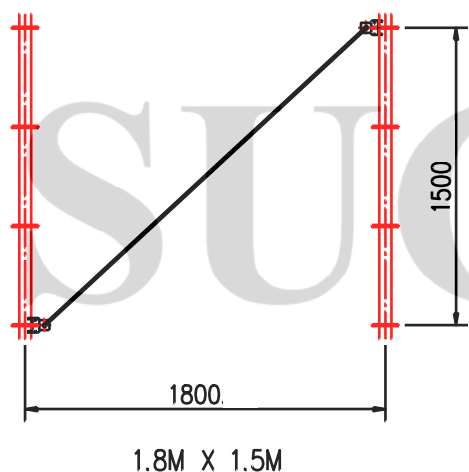
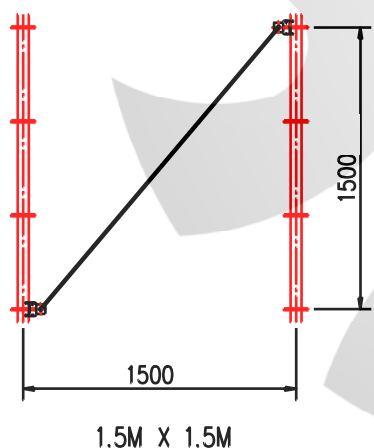
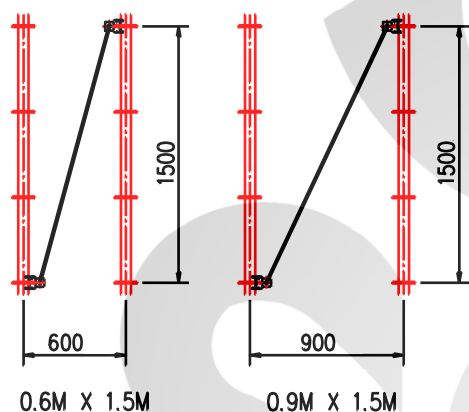


*Horizontal wedge locks to be fixed by inserting the wedge into the small hole of ring and hammering the wedge tightly for a secure hold on the Vertical.

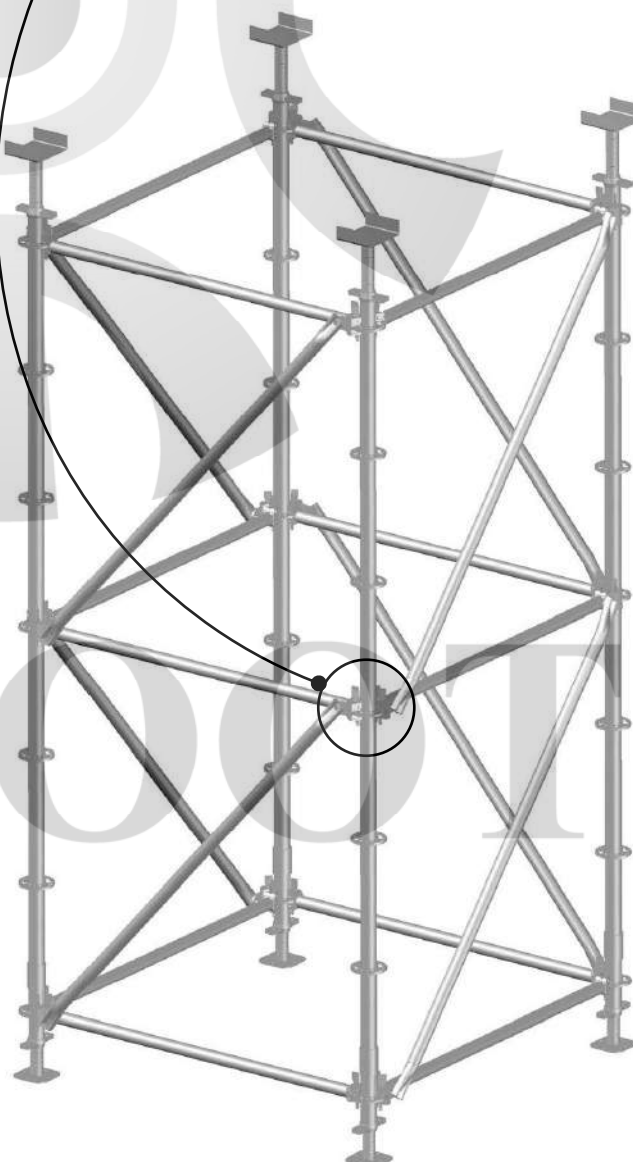


6. Diagonal :

The Diagonal is a part to fix the effective length of Vertical for enhancing the load-carrying capacity and keep the entire system from deformation. The pipe is $\phi 48.4\text{mm} \times T: 2.3\text{mm}$. Material is STK 500. Mainly dimension are L: 0.6, 0.9, 1.5, 1.8m x H: 1.0m and L: 0.6, 0.9, 1.5, 1.8, 2.4m x H: 1.5m.



Diagonal Wedge Lock – Cast
steel Wedge – STK500 Rivet

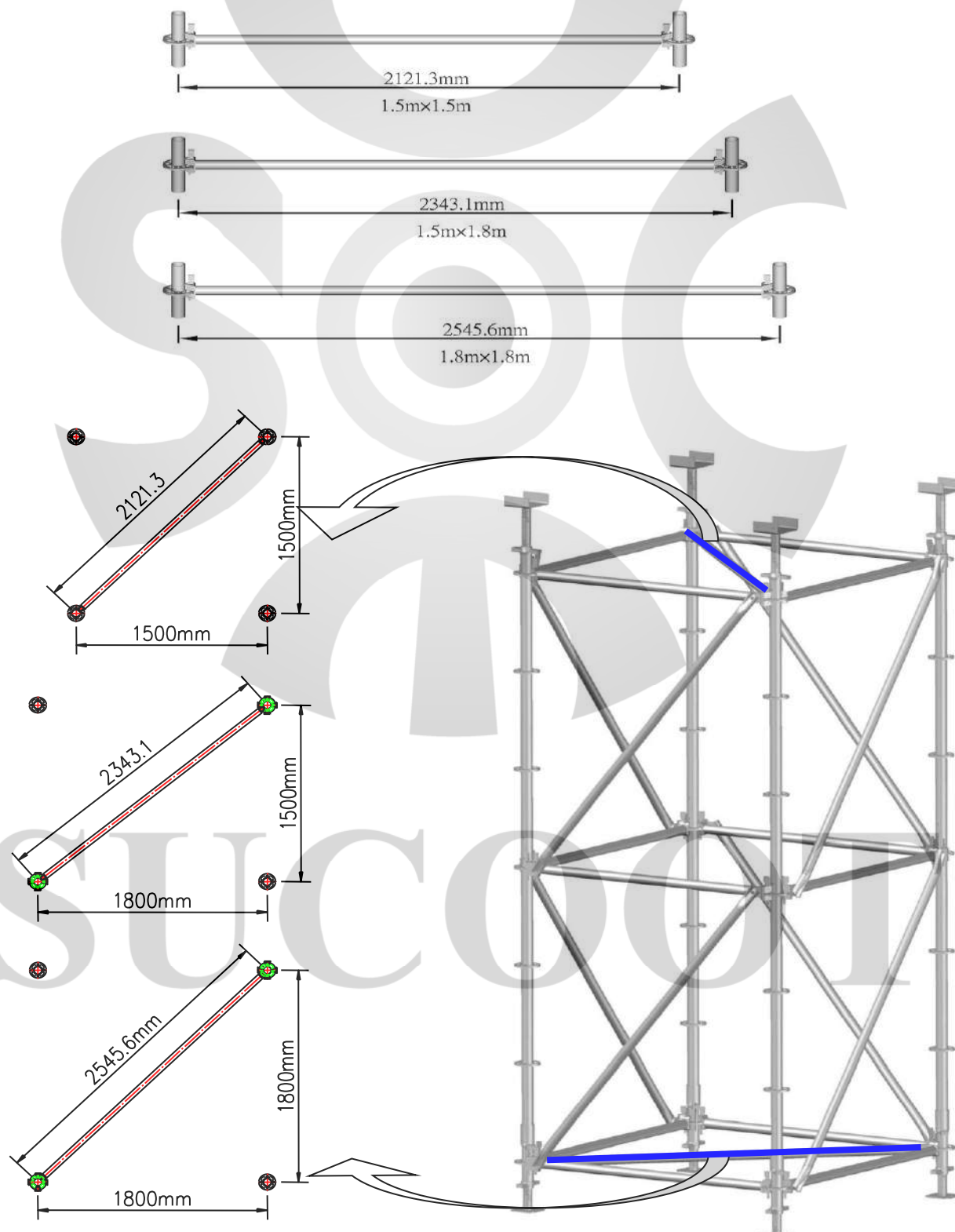




7. Level Diagonal

The Level Diagonal is a part to restrict the scaffold in a foursquare (90° at each angle), excellent steadiness for high shoring. For the connecting, it's the same as Horizontal but in Level Diagonal direction.

The pipe is $\phi 48.4\text{mm} \times T:2.3\text{mm}$, Material: STK 500. Mainly dimension are 1.5m x 1.5m、1.5m x 1.8m、1.8m x 1.8m.





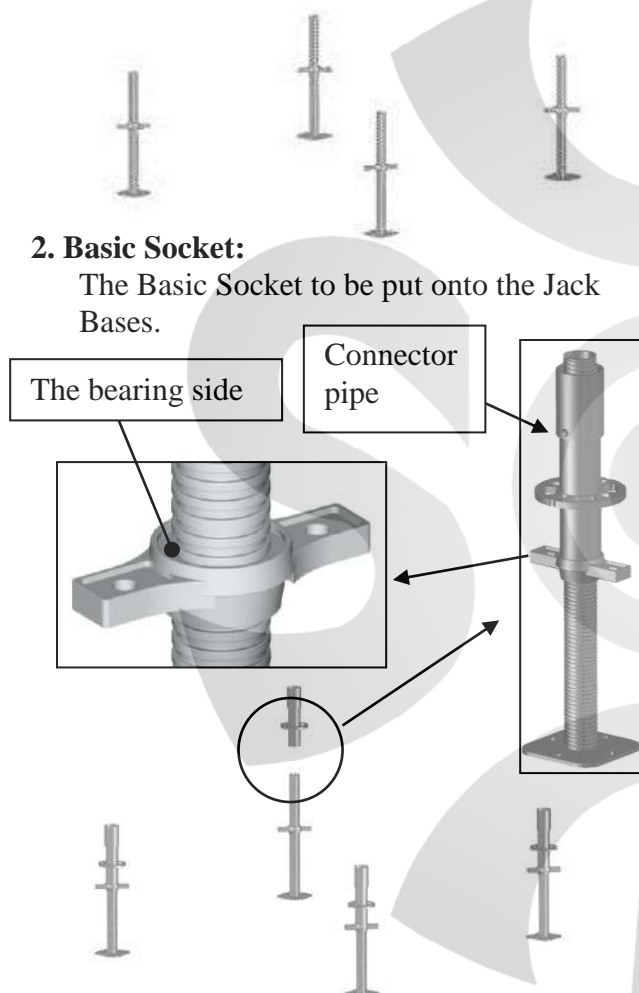
Erection Procedures

1. Jack Base:

According to the design drawing, put Jack Bases in position.

2. Basic Socket:

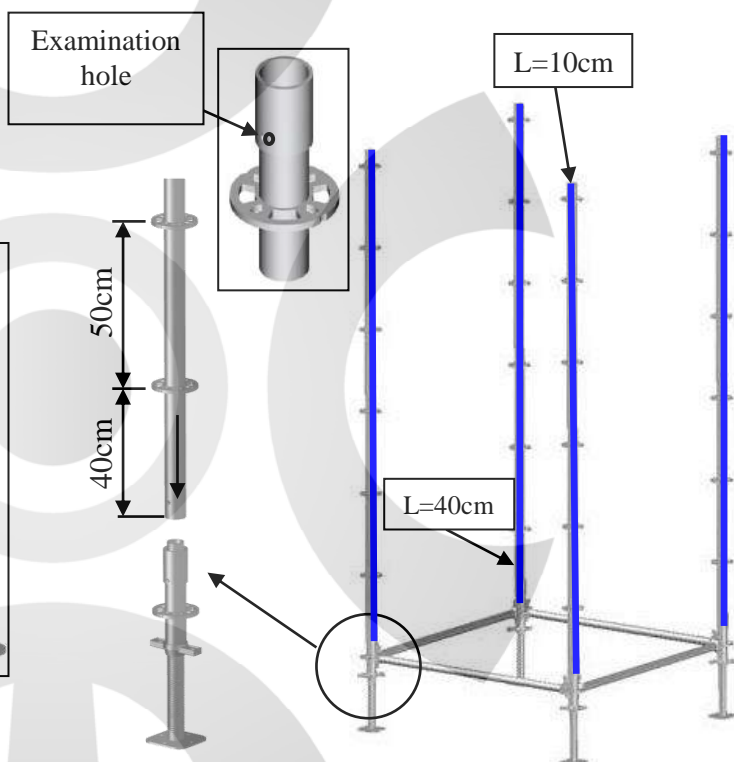
The Basic Socket to be put onto the Jack Bases.



4. Vertical without spigot:

Assemble Vertical w/o spigot into Basic Socket. Use the examination hole to make sure Vertical w/o spigot are match tightly with connector pipe.

※The Vertical W/O Spigot are only use on the first layer. Above the second layer, use Vertical to completed assembly work.

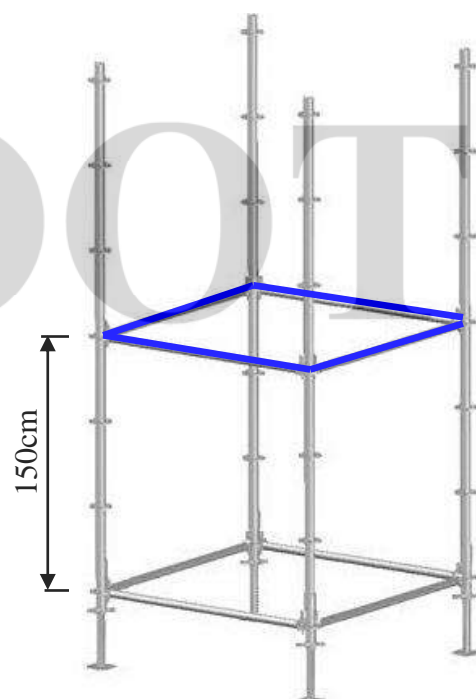
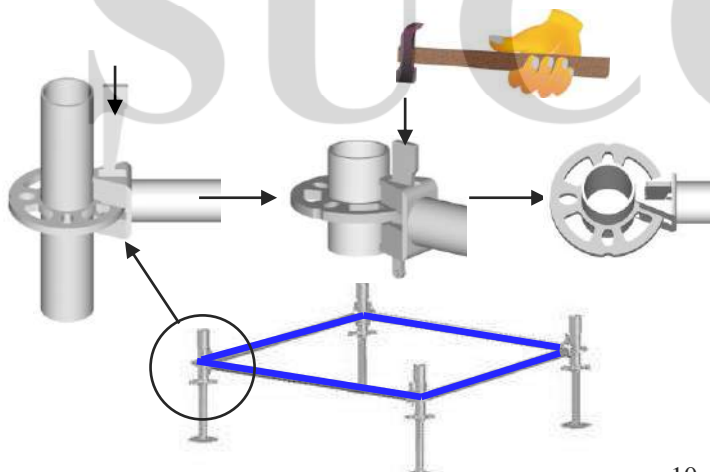


5. The second layer of horizontal.

The second layer of Horizontals to be assembled as Step 3.

3. The first layer of Horizontal

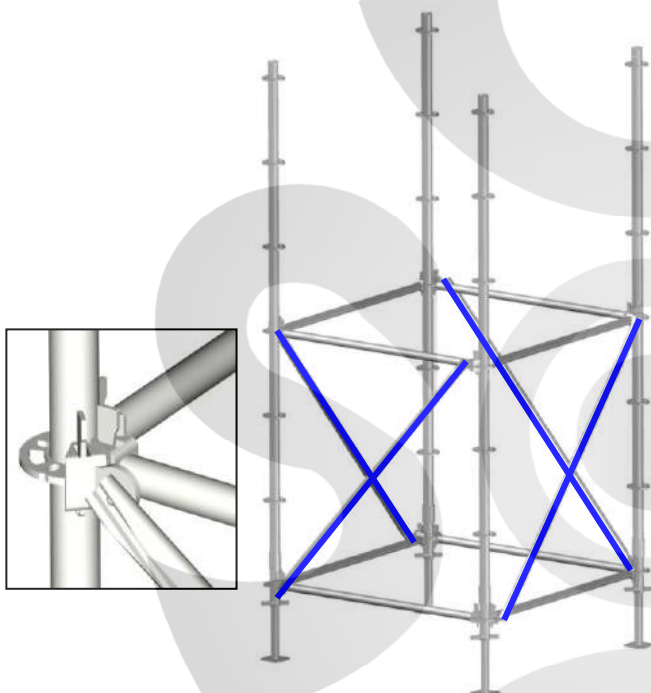
Horizontal wedge locks to be fixed by inserting the wedge into the small hole of ring and hammering the wedge tightly for a secure hold on the Vertical.





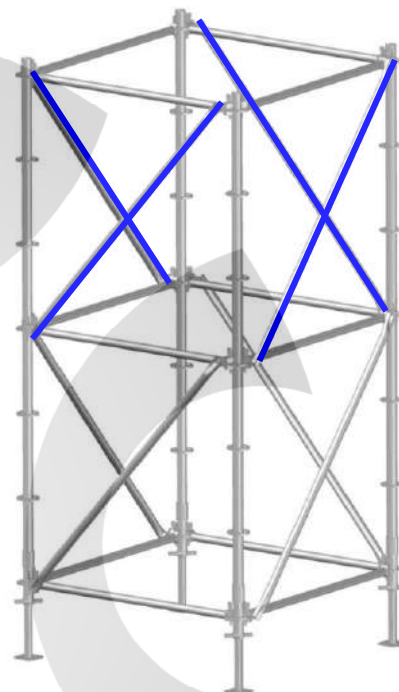
6. The first layer of Diagonal

Diagonal wedge locks to be fixed by inserting the wedge into the big hole of ring and hammering the wedge tightly for a secure hold on the Vertical. **Attention:** Diagonals must be fixed in the same direction.



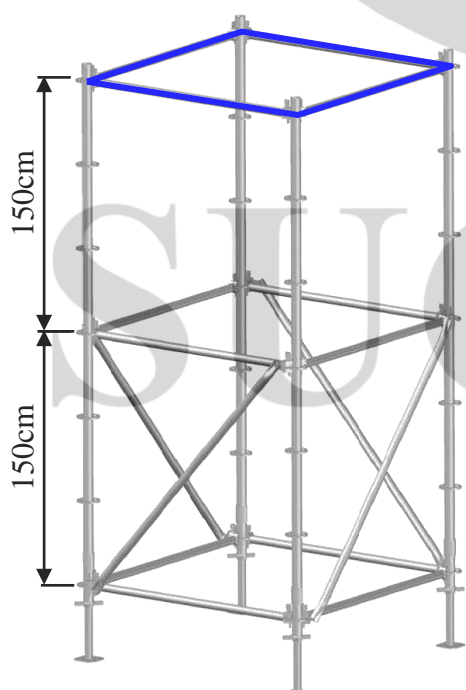
8. The second layer of Diagonal

The second layer of Diagonals to be assembled as Step 6 as the same direction.



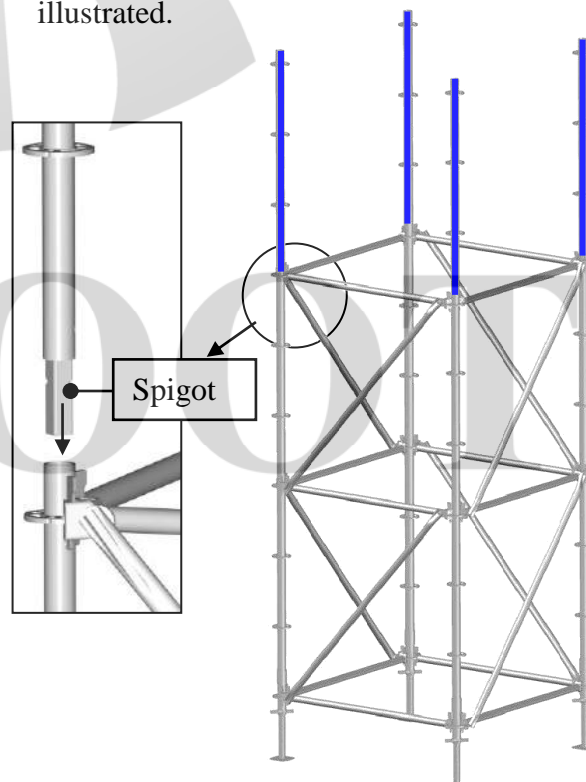
7. The third layer of Horizontal:

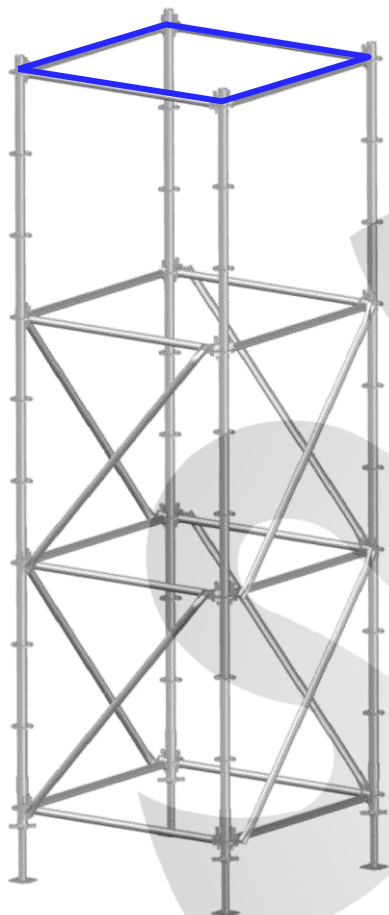
The third layer of Horizontals to be assembled as Step 3.



9. Vertical:

Assemble the Verticals directly by the spigots and fix to lower layer of Verticals as illustrated.





10. The fourth layer of Horizontal:

The fourth layer of Horizontals to be assembled as Step 3.

※Horizontals are spaced 150cm apart from each other. Every layers space cannot higher than 150cm .



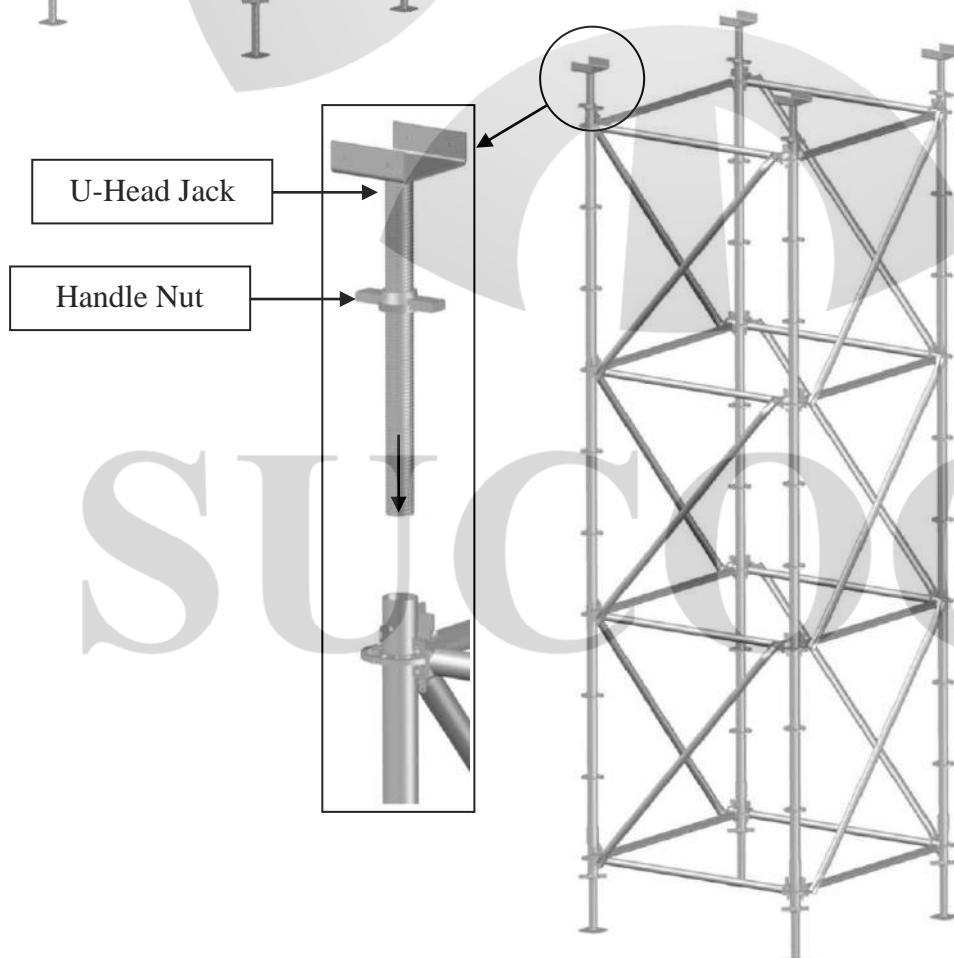
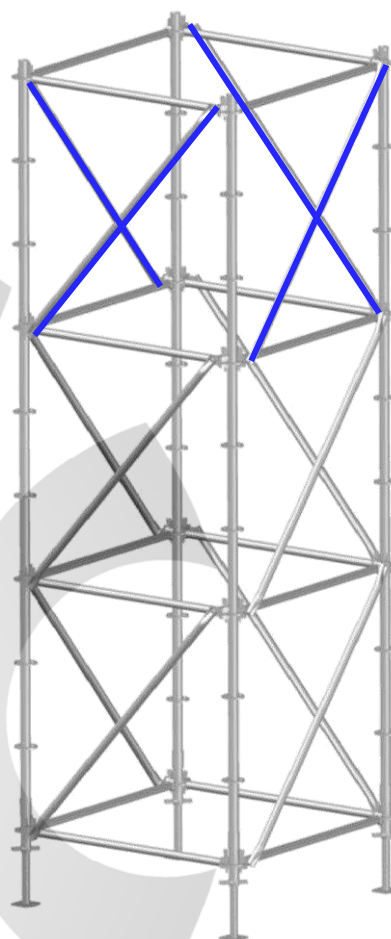
11. The third layer of Diagonal:

The third layer of Diagonals to be assembled as step 6. When lifting the whole scaffold tower, due to Diagonals are fixed on the different Verticals, it can keep the tower from falling off, and no need to use any other tools, such as U-clip or L-clip.



12. U-Head Jack:

Put the U-Head Jack into the Vertical, and adjust handle nut s to the appropriate height.

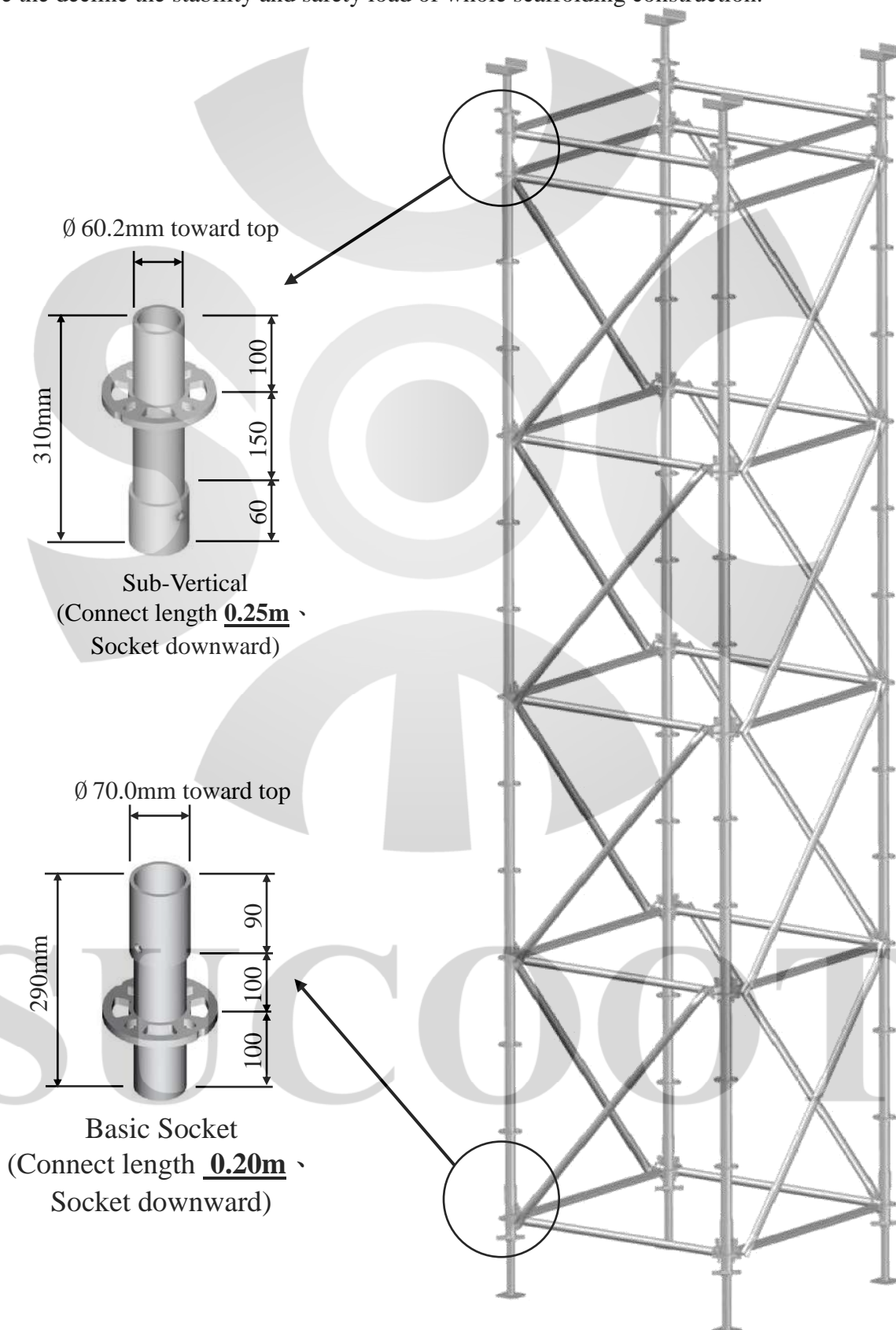


Remark:
 The above mentioned are “Ring System Scaffolding” basic erection procedure and introduction. There are different dimension between every parts for designing. When assemble scaffolds, it’s necessary to work according the design drawing.



(a) The difference between Sub-Vertical(0.25m) and Basic Socket(0.2m):

When assemble the scaffolding, should be attention that the difference and assemble position of sub-vertical and basic socket. Otherwise it will be difficult to assemble Horizontals and Diagonal, even will cause the decline the stability and safety load of whole scaffolding construction.





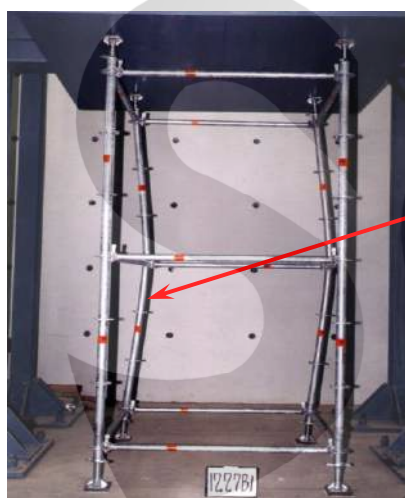
(b) The capacity difference of Diagonal

Erecting Diagonals for "Ring System" has significant effect for the bearing capacity of the scaffolding. According to the report from Yunlin University showed the capacity has 51% different for 2 layers if no using the Diagonal. And capacity has 28.6% different for 3 layers if no using the Diagonals. Refer to following photos for detail.

As shown below (1) and (2). Without configuration diagonals the entire frame body buckling.

As shown below (3) and (4). With diagonals configuration is due to the reinforcing effect, resulting Vertical buckling damaged,

Due to erecting Diagonals will has big capacity difference. If the builder want use no Diagonal mode, it's necessary to do detailed calculation and confirmation whether the bearing strength is qualified to match the requirement by professional engineer.



(1) The experiment of no Diagonal for two layers



(2) The experiment of no Diagonal for three layers

Destruction
of entire
frame body
buckling.



(3) The experiment of erected Diagonals for two layers



(4) The experiment of erected Diagonals for two layers

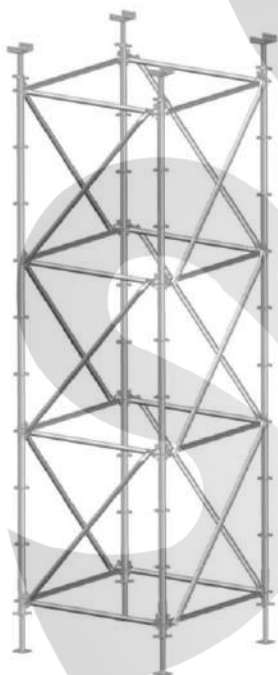
The
Vertical's
buckling
damage



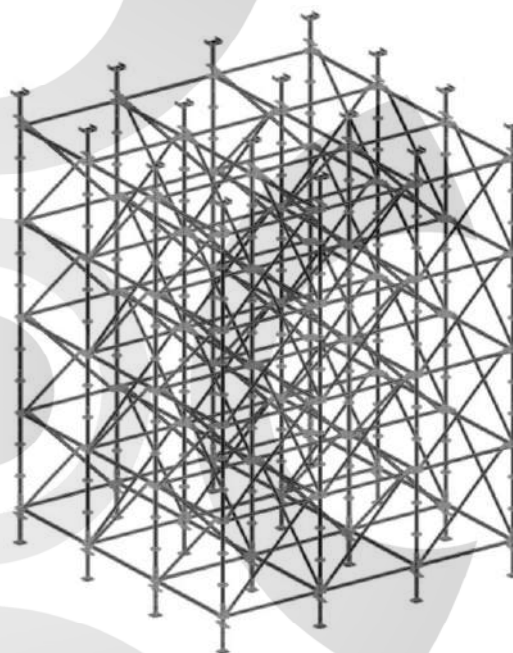
(c) Diagonals direction effect with the Capacity

The Diagonals can be assembled by any direction. However, according to the report from **Yunlin University the result** showed that there are less 10% capacity difference if Diagonals fixed in different direction. So that, we suggest to fixed in the same direction, to keep the best capacity of entire scaffolding as shown (5)

As the illustration (6 and 7), we recommend Diagonals to fix in the same direction, not only to obtain better load effects but also the builder can work more efficiency.



(5)Diagonals be fixed in the same direction



(6)The multi-combined way to be on shoring prop



(7) Diagonal configuration in the same direction.



(d) *The effect with overhang length to the capacity*

The larger overhang, the smaller bearing strength will be.

Therefore, except the maximum adjustable length of Jack base and U-Head Jack, it should assemble the Horizontals bar on Ring both on the top side and bottom to keep the capacity. The illustration (8) is not a correct way to assemble scaffolding. Due to avoid the overhang's length too long, we suggest assembling the Horizontal on the ring of top side as shown (9).



(8) The overhang is too long to keep safety load



(9)

In addition to have an easier way to adjust the height, we will use the sub-vertical to meet the needs of the structure space. However, there is often not enough 150cm high for one floor. In this case, we suggest assemble the Horizontal with the Ring on the top side. When the floor height is 100cm, it can use 0.6, 0.9, 1.5, 1.8 m \times height 1.0m or 1.5m Diagonal for support. As shown as (9) to (11).



(10)

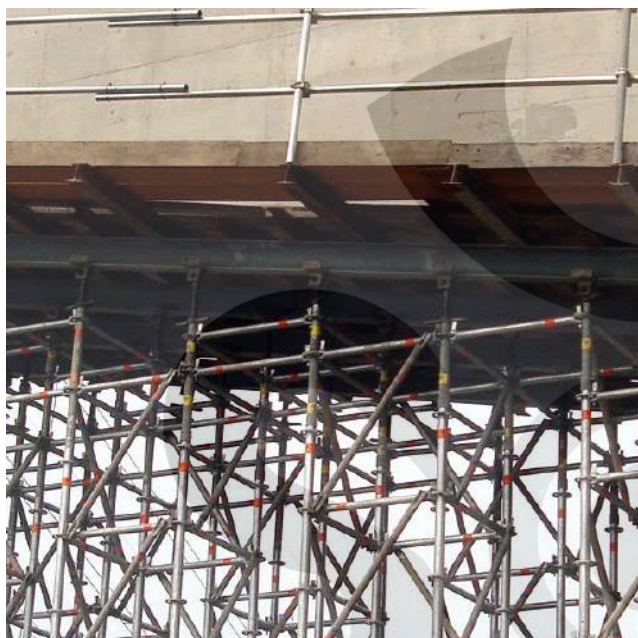


(11)



(e) For Slope

When setup on the slope and need the support, the slope and the Jack base/U-Head Jack will result a gap must be used adjustable Jack Base or use the triangle chuck to fill up the gap, lest the jack base will bear the eccentric load and reduce capacity, as shown below (12) to (15) below.



(12) Rotatable U-Head



(13) Use the triangle chuck on the U-Head



(14) Use the triangle chuck below the Jack Base on slope.



(15) Use the H beam on the slope



Attention: the correct and incorrect way to assemble the Scaffolding

Before the work begin, it's necessary to consider the construction type, engineer site situation and the formwork materials to design the construction drawing and to do the detailed calculation.

Please attention the point of assembly scaffolding as below :



✗ No erection diagonal, then bend before pouring concrete.



✓ Assemble diagonal for reinforcement.



✗ The factory construction without diagonal, caused the bending after concrete pouring.



✓ Assemble diagonals in every layer.



✗ Less one layer of diagonal to saving the material and parts.



✓ Assemble the Diagonal in every layer.



✗ In order to save materials with the wrong assembly for 2 meter high.



✓ Every layer's height fixed at 1.5m



✗ There are no Horizontal bar on the top side.



✓ Assemble Horizontal bar on the top side for reinforcement.



✗ There are no Horizontal bar on the bottom side.



✓ Assemble Horizontal bar on the bottom side for reinforcement.