# **SUCOOT**









Project Design



# RING SYSTEM SCAFFOLD















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## 1. About Us

succoot co., Ltd. was set up in 1984 and specializes in Scaffolding Accessories & Formwork Parts. Today, we have customers spreading over 65 countries around the world. Our products are engineered for the specific purpose of safety, strength and flexibility to meet international standards within this industry. We are confident that our quality is on



par with other world-leading brands—especially our Ring System Scaffold. This system is widely used in many civil engineering projects worldwide. This includes high speed rail, freeway, elevated railway, subway, high-tech factories, music concert event application and other projects.

With our technical knowledge, ready-to-ship inventory and full-service solution, we are able to serve customers with confident and quality. If you have any enquiries regarding our products, please feel free to contact us.



## 2. Key Features

There are 5 key features of SUCOOT's Ring System Scaffold which make us superior to other suppliers.

#### 1. Vertical Connection Allowance≤ 1.8mm

To control the allowance between Verticals and Spigots within 1.8mm, we have developed a device that can remove the hot dip galvanizing residue inside the tube.

\* According to the test result, the loading can reach at least 94% when the maximum allowance is 1.8mm; whilst, if the other brand allowance is 3.0mm, the loading only can reach 50%. The higher the scaffold assembled, the less the loading can bear.



# 2. Vertical Connection is Through "Cross Section", Rather Than "Point"

We use high-precision circular sawing machines to ensure the tubes are cut precisely. This allows for no visible gap between the tube connections, making the cross sections of our tubes are perfectly smooth.



#### 3. Vertical Deviation at 0.3%

It is on par with ACI 117-06, the permanent concrete structure which below 25.4m height, the vertical deviation need to be controlled within 0.3%. The less vertical deviation, the less influence on eccentric bending moment.



The rings are stamped from Q355B high-strength steel, tubes are made of high tensile steel "STK500".

#### 5. 100% Safety

Ring System has been used for 20 years. Safety is always our priority. Our scaffolding has never collapsed caused by overloading or defect.





## 3. Applications

Viaduct, Ramp, Side Traffic Lane, Pier Cap

 MRT Station, Railway Underground Station, Cut-and-cover Tunnel, Vehicle Box Culvert, Drainage Box Culvert

 Hi-Tech Factory, Gas Turbine Room, Power Plant, Water Tower, Recycling Plant, Refinery, Incinerator

Large-Scale Performance Stage

 Suspended Scaffolding for maintenance work in Shopping Mall / Department Store





 Ring System Scaffold can be flexibly assembled for different kinds of projects. <Our Engineering team can provide design and calculation as per your project>





# Large Overpass Bridge (Arch)







For steep slopes, our Ring System can replace heavy duty frames in shoring.

# Significant Projects

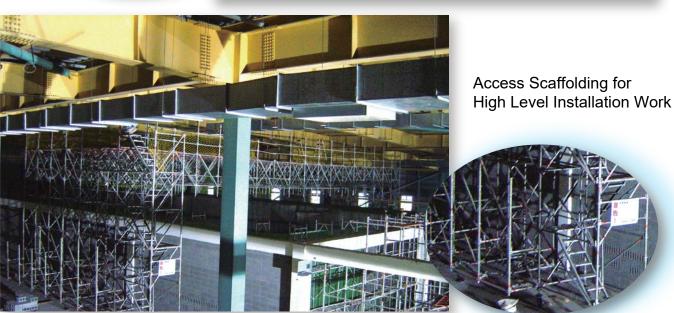
Suspended Scaffolding- Tower and Bridge



Taiwan Railway- Wujih New Station



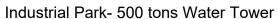




Towers and Bridges can be moved with rollers which saves time and labor costs.

Industrial Park- 3000 tons Water Tower













#### Suhua Highway Pylon Façade



Taichung Expressway No.2 Shoring



Vietnam Power Plant Foundation Shoring



Taipei MRT- Y- Shaped Pier Cap Shoring



Taipei MRT- Superstructure Formwork and Shoring

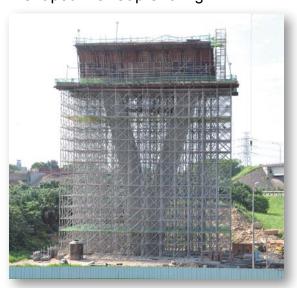




China Chongqing Bridge Three-span Shoring(6-30m height)



Y-Shaped Pier Cap Shoring



Shoring Platform for Roof Forming Machine



New Suhua Highway

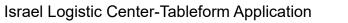


Underground, Cut-and-cover Tunnel Slab Shoring



Tunnel Shoring







Indonesia Bridge Pylon Shoring



Chongqing, China H:37m Bridge Shoring



Taiwan Tunnel Arch Form Shoring



Cable-stayed Pylon - Pier Table Shoring



Shoring for Steel Structure Factory Assembly





Taipei Music Center – Shoring for Steel Structure



Taoyuan Convention and Exhibition Center – Shoring for Steel Structure Roof



Hi-Tech Factory Slab Shoring



Tainan Green Energy Technology Demonstration Site – Shoring for Steel Structure Solar Tree



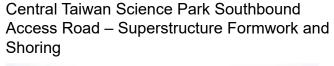
Thailand MRT Station – Shoring for Precast Beam



Underground Railway, Cut-and-cover Tunnel Slab Formwork and Shoring



Central Taiwan Science Park Southbound Access Road – Pier Table Shoring





Kaohsiung Dragon Bridge Shoring (Arch)



Hualien Jian-ying Bridge Pier Table Shoring



Superstructure Shoring in Slope

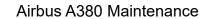


Taipower Tower Base Cross Beam Shoring



















Ø48.6 mm System (Both metric and inch sizes are available.)
 Staging for Music Concert, Sports Meet and Election Campaign.





## 4. Features

- All components have excellent structural strength. Verticals are assembled with horizontals and diagonals can form excellent combination.
- Simple and rapid assembly can save a lot of time and labor costs.
- With the universal joint and interchangeable components, this system can be used in different kinds of projects.





8 holes in one ring: Big hole: for Diagonal, Level Diagonal Small hole: for Horizontal

 All components are made of high tensile steel ( JIS STK500 ) with hot dip galvanized finish for long life.

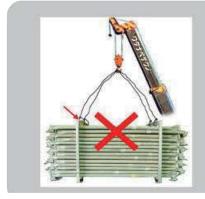


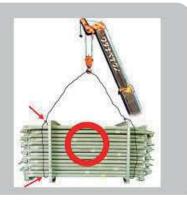




 Individual components can be packed in bundles for easy storage and transportation.

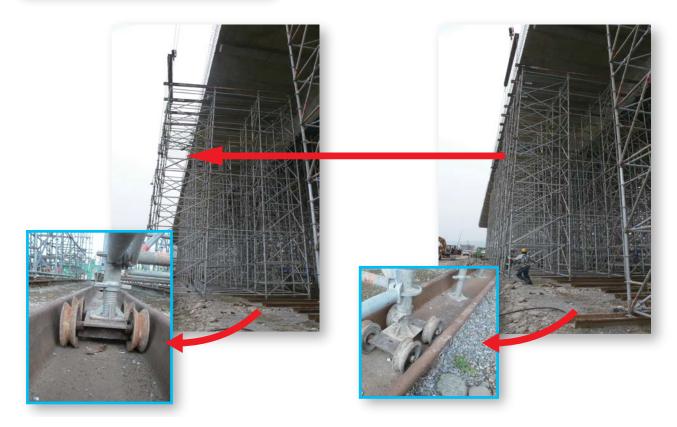






In viaduct construction, complete scaffold towers can be moved horizontally by using special wheels and rails, or simply lifted to the next location by crane. This method has been proven to save considerable time and labor costs.







- Ring System Scaffold can be used in different terrains and buildings.
- It is compatible with various formwork types (traditional formwork, formwork system or steel panels) for a consummate design.
- Using Sub-Verticals can easily solve the problem of height alterations.













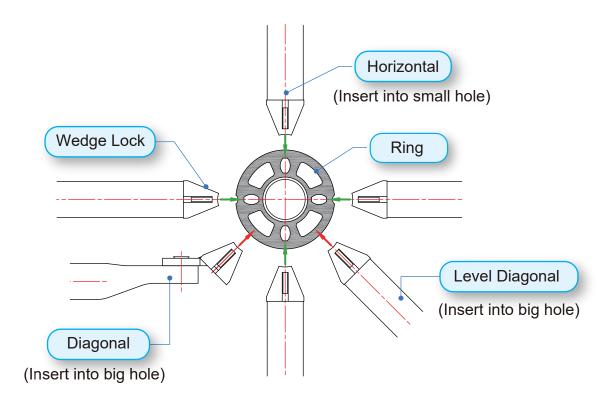


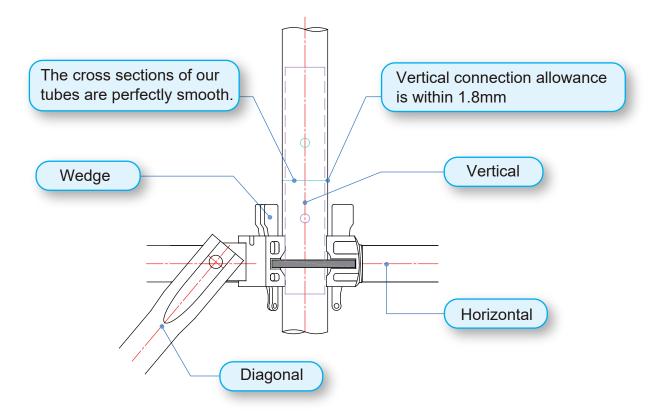




## 5. Connecting Techniques

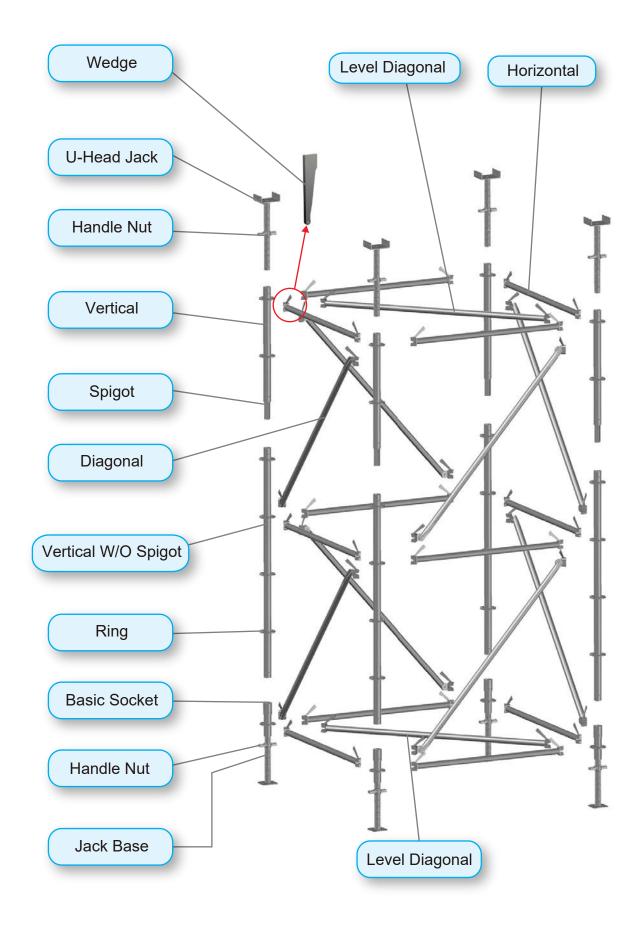
 The secure connection between the wedge locks and ring optimizes the load carrying capacity.







# 6. Component Overview



# 7. Dimensions and Specifications



#### Jack Base J48601 U-Head Jack U48601

- To adjust the scaffold height
- Material : Threaded Tube STK400 Handle Nut FCD450 Base Plate SS400
- Adjustable Range: 80~450mm

- Threaded Tube : Ø48.2mm×600mm×t:5.0mm
- Base Plate : 140mm×140mm×t:6.0mm
- U-Head : 170mm×150mm×H:50mm ×t:6.0mm



#### **Basic Socket V62020**

- Assembled with Jack Base and connected with Horizontal to steady the foundation
- Material : STK500

- Length: 200mm divided by Ring from the middle
- Pipe : Ø60.2mm x t:3.2mm



#### Vertical V61100, V61150, V61200, V61300

- Main support of the entire system connected by Spigot
- Material : STK500

#### Vertical without Spigot V60100, V60150, V60200, V60300

Only assembled with Basic Socket.

- Length:
  - 1.0m; 1.5m; 2.0m; 3.0m
- Pipe :
  - Ø60.2mm×t:3.2mm
- Distance between Rings : 500mm



# **Sub-Vertical V62025, V62050**

- To adjust the shoring height, especially in big alterations
- Material : STK500

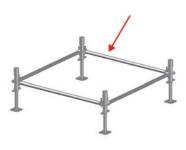
- Length :
  - 0.25m; 0.5m
- Pipe :
  - Ø60.2mm×t:3.2mm



#### **Base Vertical**

- When the shoring height is very low, Jack Base and U-Head Jack can not be used at the same time. Jack Base can be replaced by Base Vertical of fixed height. To adjust the height by U-Head Jack only.
- Material: STK500

- Length: 0.35m
- Pipe : Ø60.2mm x t:3.2mm
- The minimum height is 65cm when connecting with U-Head Jack only.



#### Horizontal H66060, H66090, H66150, H66180, H66240

- To distribute force evenly between Verticals
- Connecting: Wedge Lock fixed on Ring
- Material: STK500

Length :

0.6m; 0.9m; 1.5m; 1.8m; 2.4m; Special size can be customized

• Pipe :

Ø48.6mm×t:2.3mm



#### Diagonal D60610, D60910, D61510 D61810, D60615, D60915 D61515, D61815, D62415

- To enhance the load-carrying capacity and keep the entire system from deformation
- Material: STK500

Length:

0.6m×1.0m; 0.9m×1.0m; 1.5m×1.0m; 1.8m×1.0m; 0.6m×1.5m; 0.9m×1.5m; 1.5m×1.5m; 1.8m×1.5m; 2.4m×1.5m

Pipe :

Ø48.6mm×t:2.3mm



#### **Level Diagonal** L61515, L61815, L61818, L62415

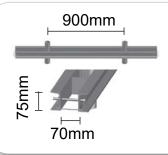
- To restrict the scaffold in a foursquare (90° at each angle), excellent steadiness for high shoring
- Material: STK500

Length:

1.5m×1.5m; 1.8m×1.5m; 1.8m×1.8m; 2.4m×1.5m;

Pipe :

Ø48.6mm×t:2.3mm



## **Heavy-Duty Beam Bracket**

- Put on the Ring of Vertical, used in beam and slab shoring
- Material: SS400

- Length : 1.65m
- Components:

Pipe Ø60.2 x t:3.2mm Snap Pin (SL-45A) Double C Waler 75 x 40

x 5 x 7mm



## **Movable Ring Coupler**

Applicable to special height spacing (without the welded ring) for connection

Ø48mm C50500 Ø60mm C60500 Ø60/48mm C60600



## 8. ANSI/ASSE A10.8 & EN 12810-1 Certified

The first scaffold manufacturer obtained EN 12810-1. Having the experience of extensive projects and EN certified product, we successfully accomplished many infrastructure projects overseas with our engineering techniques and technical support.



#### EN 12810-1 (No. 10.16.1707)

## ANSI/ASSE A10.8 (No. 10.16.1708)

# Continue to the SEA STATEMENT OF COMPLIANCE The Continue was with an account of the Compliance of the

#### ISO9001: 2015 (No. 00.12.1374)

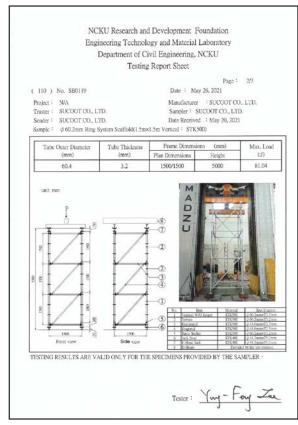


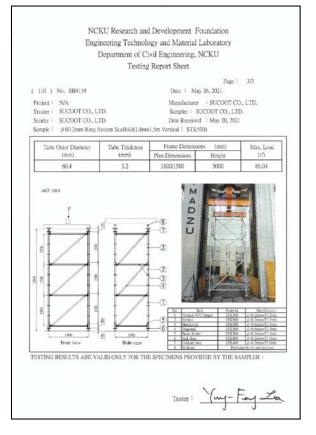


## 9. Test Report











The test result is for reference only, the design is subject to the shoring structure per each project.

## 10. Quality Control

In addition to QC checks during manufacturing and inventory management, Sucoot implements regular load tests on random samples to ensure strength and integrity of materials.





The result data is considered in our structural designs.

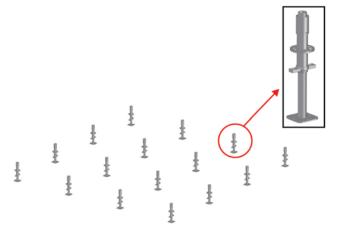




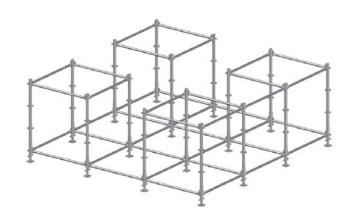


# 11 . Assembly Procedures

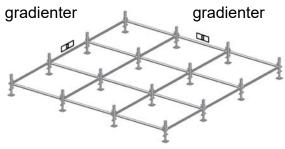
1 Basic Sockets are put on Jack Base



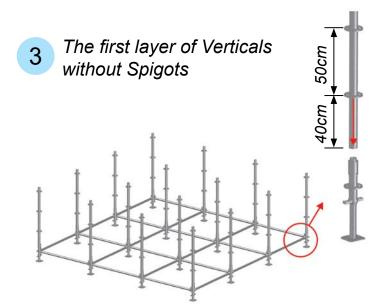
4 The second layer of Horizontals.



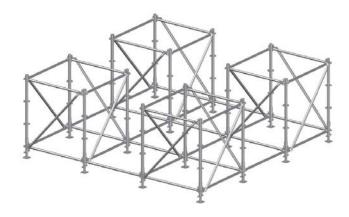
2 The connection of Horizontals.

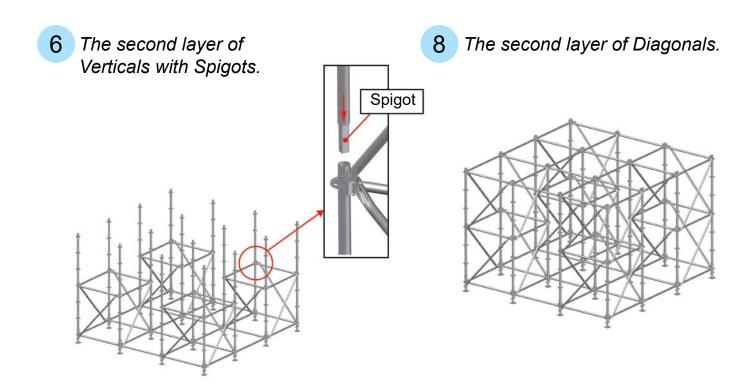


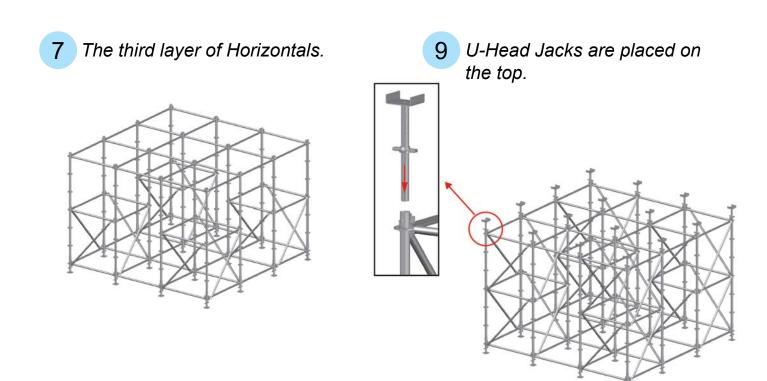
Make sure they are horizontal to the ground



5 Diagonals are fixed in the same direction.







NB-Level Diagonal required only in specific situations (i.e. high loading, crane lifted towers - to be advised by our engineers.)



#### 12. Access Tower/Staircase

The Ring System Access Tower complies with EN 12810-1, providing a safe and convenient access staircase at construction sites.

Stair units completed with stair treads and top/bottom platforms (conversion platforms) are designed to fit with 1.5m vertical spacing on the Ring System.

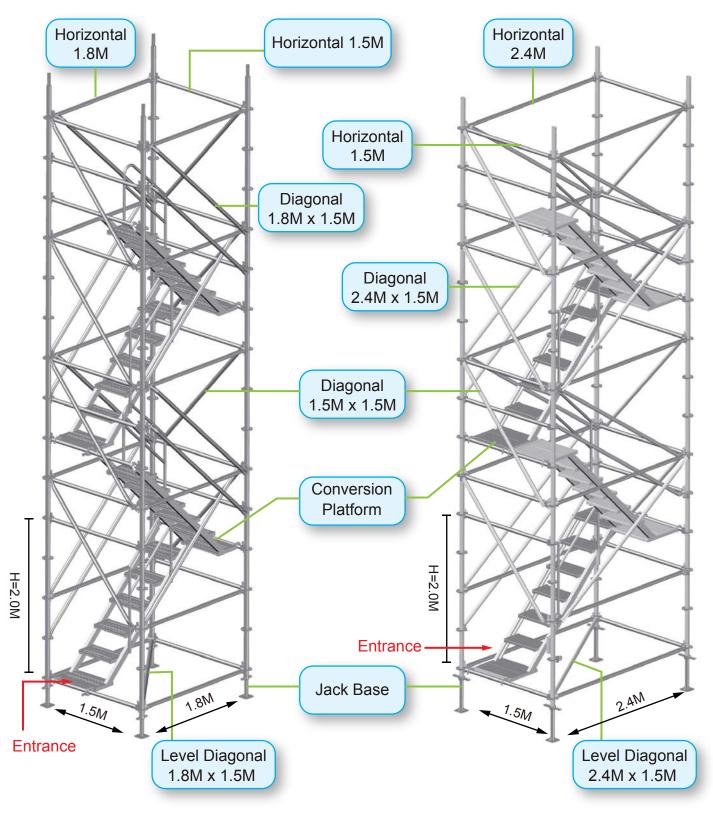
The staircase is securely locked with Sucoot's special hook and wedge couplers. Internal handrails are attached to the staircase and Ring System Diagonals are used as external handrails. Each staircase weighs only 50kgs for easy erection.



Just set the hook fixed on Horizontal and hammer the wedge tightly for a secure connection.



Not only does the Access Tower comply with the international standard, but also it is conveniently accessible and practical to maximize efficiency at site. Staircase: L1.8M x W1.5M / L2.4M x W1.5M





# 13. Movable Ring Coupler

Invented and developed by Sucoot for use in areas of limited height. The Movable Ring Coupler can be fixed in any position of a standard scaffold tube.







Ø48mm C50500 Ø60mm C60500





Ø60/48mm C60600

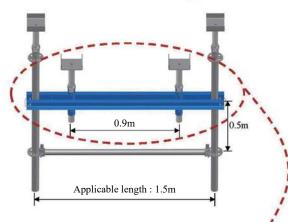


## 14. Heavy-Duty Beam Bracket

Apply to shore the roof beam formwork

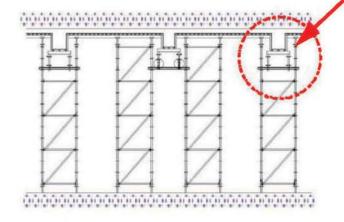
- Scaffolding with the Bracket is able to shore the beam and the slab at the same time.
- The spacing between the Brackets is 1.5m and they can bear up to 90 x 120cm beam.
- Save material, time and labor cost.









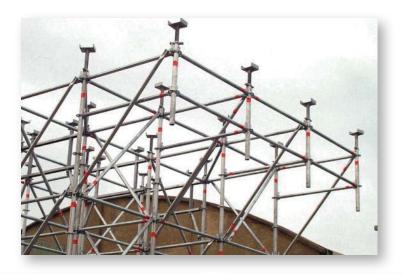






## 15. Bracket-Cantilever/Access

- In difficult ground conditions (without supporting verticals from the ground).
- To provide access around the edges of falsework scaffolding.
- Special concert stages-various configurations.











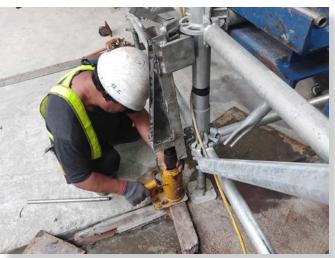
## 16. Scaffolding Drop Device

- Auxiliary device for lowering scaffolding.
- Fix the drop device to the leg of Vertical (wedge locks respectively and tightly assembled to the first and the second ring disc at the bottom) and then cooperated with the jack for lifting operation.
- Place the jack on a flat ground, lift its main shaft to touch the pressurebearing plate of the Drop Device, and lift it with appropriate force, to share and reduce the bearing load on handle nut. Then the handle nut can be easily loosened by hammer and further lower Jack Base.
- For safety purpose, to unrestricted lift the jack is strictly prohibited.











#### 17. Wheel

#### (A) Solid Wheel

- It is placed under Jack Base and used to move the complete scaffolding towers.
- In use, it is necessary to lift Jack Base first at least 75mm from the ground, and then placing the Wheel.
- After the Wheel is exactly placed under the Jack Base, to adjust the height of Jack Base according to the ground elevation and make sure that Jack Base and Wheel are tightly fitted and locked.
- Before moving, the ground should be provided with rails or appropriate limiting measures to prevent the Wheels from shifting and turning on their own.





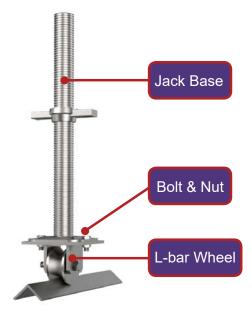




## (B) L-bar Wheel

- lt is placed and fixed under Jack Base.
- It is necessary to lift Jack Base first at least 160mm from the ground, and then place the Wheel.
- To lock L-bar Wheel and Jack Base by Bolt & Nut.
- It is required to lay the angle iron track to facilitate the movement of L-bar Wheel.

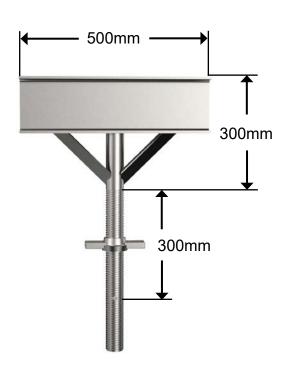




# **SUCOOT** −

## 18. T-head Jack

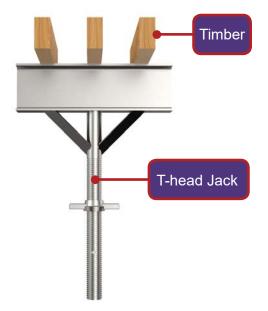
- Used for the outermost layer of shoring scaffolding, when there is a need for support above.
- The support length is 250mm from the center of the outermost shoring system to the left and right.
- The size of H Beam is 150×75×5×7mm × L:500mm.
- 🔵 Adjustable height 300mm.

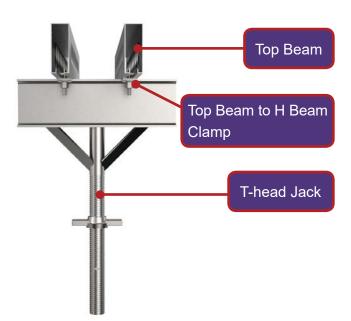






## Application

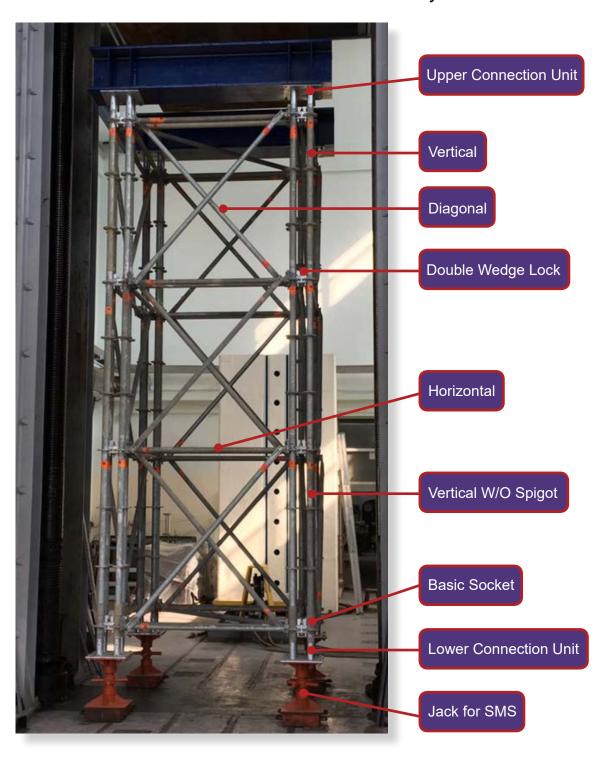






## 19. Super Modular Shore (SMS)

- This is a variation of Ring System, and the main body is assembled with the standard components of shoring system.
- To assemble 4 Verticals forming a strong prop by Double Wedge Lock, which increases the supporting strength of the single prop by nearly 4 times, and can be used to replace the steel frame.
- The frame body can be extended horizontally and vertically by using the standard Horizontal and Vertical to increase its stability.



## Dimensions and Specifications

## **Upper Connection Unit**



- Connection: Put the pipe on the Spigot and fix by snap lock. Connect with main bearer or next SMS by bolt & nut.
- Material : Pipe STK500

Length: 140mm

Pipe: Ø60.2 x T:3.2mm Plate: 220 x 220mm: Ø18mm x4 holes

# Spigot for Upper Connecton Unit Main Purpose : To put into the top Vertical

 Main Purpose: To put into the top Vertical with spring pin and then assemble with Upper Connection Unit. Length: 240mm

Square Tube 52.5 x T:3.0mm



#### **Lower Connection Unit**

- Connection: To fix with Jack by bolt & nut and then put Basic Socket on the Spigot for connecting with Vertical W/O Spigot.
- Material : Pipe STK500

Length: 140mm

Pipe: Ø60.2 x T:3.2mm Plate: 220 x 220mm: Ø18mm x4 holes

## **Double Wedge Lock**



- Main Purpose: Used to connect Verticals to increase the structural strength of frame body.
- Connection: Put Double Wedge Lock into the small holes of ring disc of the two adjacent Vertical, and fix by wedge
- Material : FCD450

Length: 90mm (Distance between the Vertical

center 150mm)



## **Jack for Super Modular Shore**

- Main Purpose : To adjust the SMS height.
- Connection: To connect Upper/Lower Connection Unit by bolt & nut.
- Material : Threaded Tube STKM 13A

Handle Nut SS400 Base Plate SS400 Base Plate: 220 x 220mm

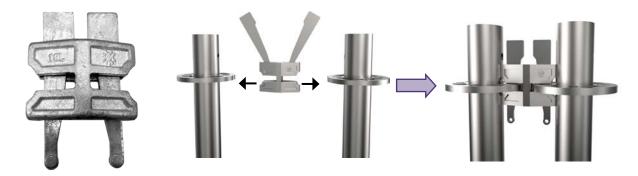
Threaded Tube : Ø78 x T:12mm

Handle : Ø32 x 100mm Adjustable : 390~520mm



## • Double Wedge Lock

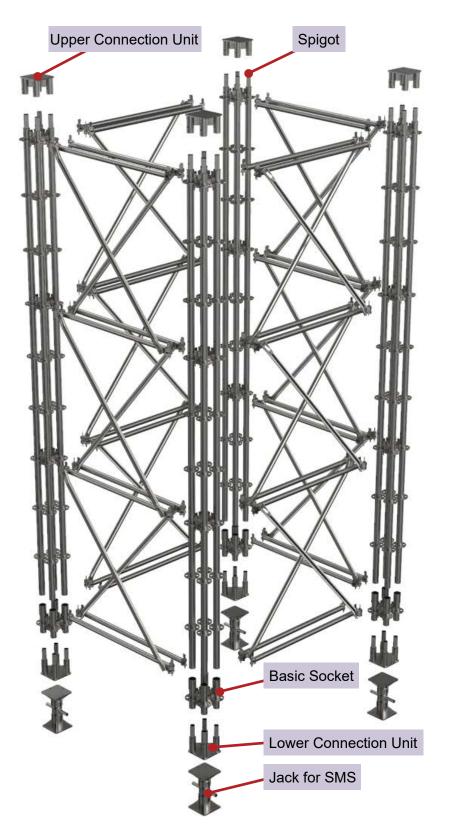
- Used to connect 2~4 Verticals forming a strong prop to enhance the bearing capacity.
- It is often used for the scaffolding body that needs high bearing capacity design such as limited space, suspended scaffolding or temporary passage, and the addition of guardrail posts around the working platform.
- Applied to Ø48.6mm and Ø60.2mm Vertical.

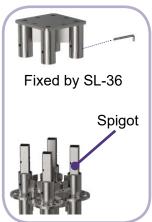


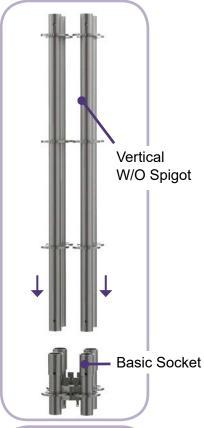
## Application

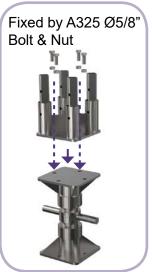


# • Component Overview











# • Test Report

NCKU Research and Development Foundation Engineering Technology and Material Laboratory Department of Civil Engineering, NCKU Testing Report Sheet

Tube Outer Diameter	Tube Thickness (mm)	Frame Dimensions (mm)		Max. Load (tf)	
(mm)		Plan Dimensions Height			
60.3	3.2	1650/1650	5400		306.09
		CNDPK			No.
	1XI	6 6 9 9 9 9			
		(2) (6) (3) (4) (7) (8)	Ten	Material	
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		(2) (6) (2) (6) (1) No. 1 Versal W.O. Sepa		STX500 STX500	Ø 50.2vT).3mm
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		(2) (6) (3) (4) (2) (6) (1) (1) (1) (2) (3) (3) (3) (4) (4) (5) (6) (1) (1) (1) (1) (1) (1) (1) (1) (1) (1	1	\$TK500 \$TK500 \$TK500 \$TK500 \$TK500 PCD450	Ø 50 2xT3 3mm Ø 50 2xT3 3mm Ø 40.6xT2 3mm Ø 40.6xT2 3mm Ø 50 2xT3 3mm 90mm
		(2) (6) (3) (4) (5) (6) (7) (8) (8) (8) (9) (9) (9) (10) (10) (10) (10) (10) (10) (10) (10	t teriori	\$TK500 \$TK500 \$TK500 \$TK500 \$TK500 RCD450 A325	\$ 50.2xT3.2mm \$ 50.2xT3.2mm \$ 46.6xT2.3mm \$ 48.6xT2.3mm \$ 50.2xT3.2mm 90mm \$ 500°x1-34°
		(2) (6) (3) (4) (5) (6) (7) (8) (8) (8) (9) (9) (9) (10) (10) (10) (10) (10) (10) (10) (10	b t Beant for Ver Super Modular Shore	\$TK500 \$TK500 \$TK500 \$TK500 \$TK500 PCD450	

TESTING RESULTS ARE VALID ONLY FOR THE SPECIMENS PROVIDED BY THE SAMPLER

Tester: Yny-Fay Lac

## Loading Test (Before)



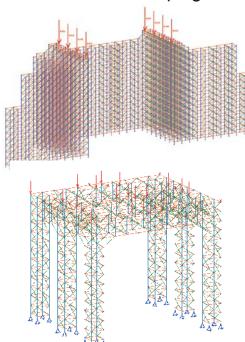
## Loading Test (After)



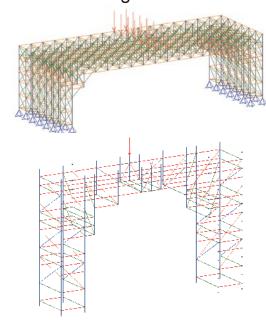
# 20. Design

With the extensive work experience, our engineering team can provide the effective and efficient design, including full site assembly details and load calculation.

1. Staging for Music Concert, Sports Meet and Election Campaign



2. Suspended Scaffolding – Towers and Bridge













## 21. Conclusion

The optimum structure design, advanced construction methods are the essential factor to a project. Following are the advantages of our Ring System Scaffold:

- It can be applied in extensive range of projects.
- Applied with the advanced construction methods can save time and labor cost.
- High quality and precision scaffolding enable us to deliver an excellent performance on load-carrying capacity.

#### Significant projects where our Ring System Scaffold has been used:

#### Taiwan:

- National Freeway NO.3 C305,C318.
- Taiwan High Speed Rail CIP
   C210,C215,C220,C280,C295, Access Tower
   T210, T220, Station S220, S280, S290.
- Taipei Rapid Transit Neihu Line, Nankung Line CE-730A.
- Kaohsiung Rapid Transit CR5, CR6.
- Taipei Ilan Expressway.
- Taiwan Railway Elevated Project (Wutu-Hsichih), Wujih New Station.
- Hi Tech Factory Hsinchu, Central Taiwan & Southern Taiwan Science Park.
- Bali-Shin Dien Expressway C801.
- Dragon Steel Corporation Phase 2 Expansion Project.
- Taichung Metropolis Road No. 4 C704A, C706, C707, C708, C709B and No. 2.
- National Freeway No.6 C602, C604, C608, C609.
- Taoyuan Airport Access MRT CE02, CE03B.
- Yuanlin Township Area Elevated Railway Project YCL121, YCL321.
- Hualian Taitung Electrification Project CL312, Cl 314
- Kaohsiung Metropolitan Railway Underground Project – CL112, CL113, CL311.
- Elevated Railway System of MRT Development in Taichung – CCL431.
- Beimen Yujing East West Expressway Project – E707-3.
- Taichung MRT CJ910, CJ920
- Taichung High-Tech Industrial Southward Road& Daija River Across Bridge
- Taipei MRT Wanda Line CQ860, CQ870, CQ840, CQ842, CQ850A
- Taoyuan MRT Green Line GC01, GC02, GC03
- Tainan Metropolitan Railway Underground Project
   C211, C214

#### Other Countries:

- Thailand Suvarnabhumi Airport, Airbus A380 Maintenance, Bridge
- Malaysia Box Girder, Pier Cap.
- Dubai, U.A.E. Canal Bridge.
- South Africa Koega Bridge.
- Spain Bridge.
- Vietnam Mong Duong II Coal Fired Power Plant, Pump Station.
- Congo Building Shoring, Wall Construction.
- Colombia Bridge.
- Philippines Shopping Mall Project.
- Singapore Plant Project.
- Indonesia Melak Bridge at East Kalimantan, Shoring and Formwork of Cooling Tower.
- China Chongqing Bridge, Haikou Underground Box Culvert
- Israel Logistic Center with Galleries, Factory, Bridge.
- New Zealand Factory.
- Mexico Access Tower for Commercial Building
- Panama Working Platform for Containers at Terminal



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