

RINGLOCK

TECHNICAL MANUAL

A modular access scaffolding system for industrial and construction applications.



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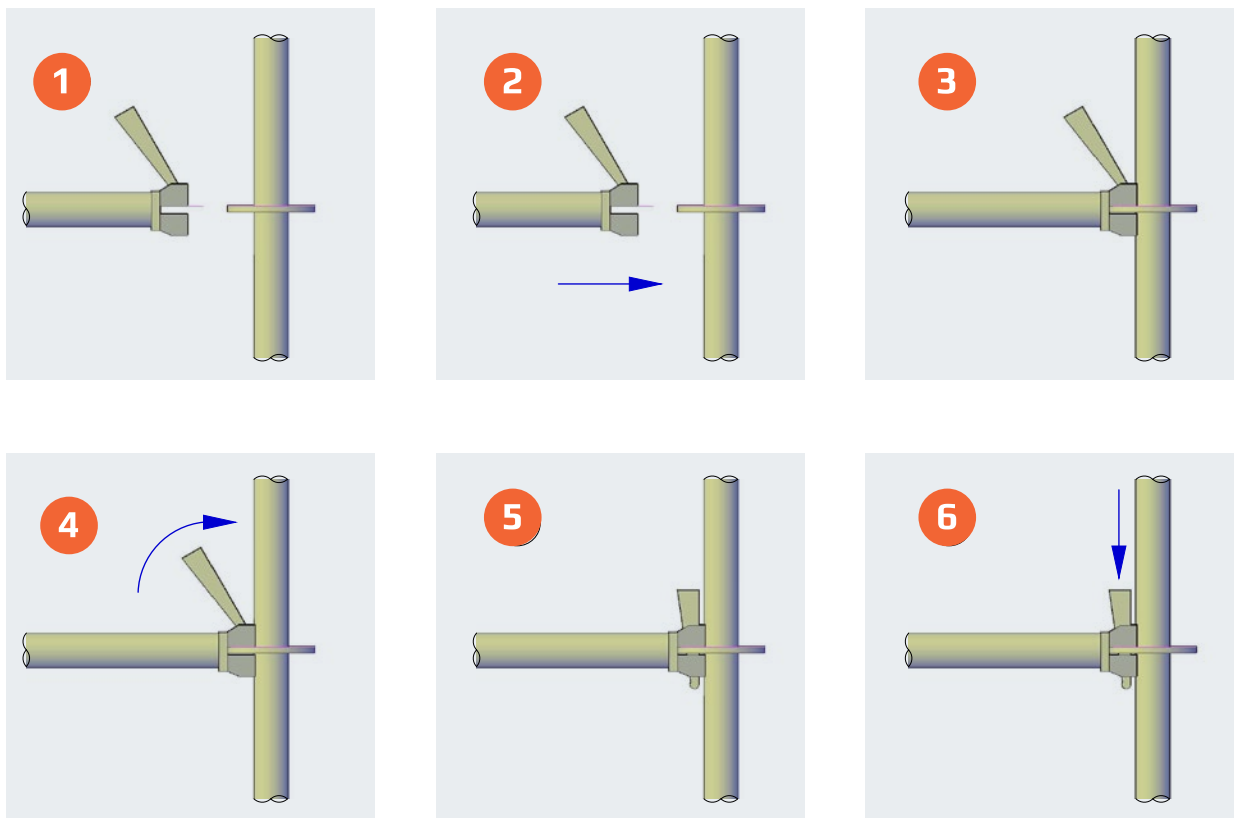
Ringlock Node Connection

Ringlock node connection consists of Standards with rosettes every 0.5m and horizontal members with a cast end captive wedge (Ledger and Transom). When connected together, the Ledger end and rosette create a very strong connection. It is this connection that transmits forces throughout the scaffold structure.

The Ringlock rosette has a diameter of 123mm and has been manufactured with 8 slots, 4 small and 4 large. The smaller slots represent the 90 degree angle at which Ledgers and Transoms are installed. The larger trapezoidal slots accommodate the Diagonal Bay Braces.

If the need arises, the Ledgers can be installed in the larger slots, allowing up to 15 degrees of rotation. This provides added flexibility to clear obstacles when necessary.

To Make A Connection



As the wedge head is pushed over the rosette, the wedge drops automatically into the recess. The ledger end is immediately secured against any possibility of shifting allowing for a safer 1-man assembly, whatever the height.

The wedge head is matched to the radius of the standard at the front end so forces are applied to a flat surface and always centrally into the standard.

Ringlock Scaffold Load Requirements

In Australia, Ringlock is designated in accordance with AS/NZS 1576.1 which prescribes Load Ratings of Light, Medium and Heavy Duty which are categorised in clause 2.5.3.1.2.

1. Light duty

A total load of 2.2kN (225kg) per bay, which includes a single concentrated load of 1.2kN (120kg).

2. Medium duty

A total load of 4.4kN (450kg) per bay, which includes a single concentrated load of 1.5kN (150kg).

3. Heavy duty

A total load of 6.6kN (675kg) per bay, which includes a single concentrated load of 2.0kN (200kg).

4. Special duty

The largest intended load but not less than 1kPa.

5. Loading platforms

The working load limit of a loading platform for material or equipment storage shall be the largest intended load but not less than 5kPa. The imposed action shall include a factor of 1.25 to allow for the effect of impact.

6. Bay extension platform

The load acting on a bay extension platform shall be limited to light duty loading. The total load on the working platform and the adjacent bay extension platform shall not exceed the duty loading of the working platform, unless the combined platforms are specifically designed for special duty category.



Fall Protection

ATTENTION! Single person fall arrest devices may be installed to the rosette connection only using an approved fall arrest device.

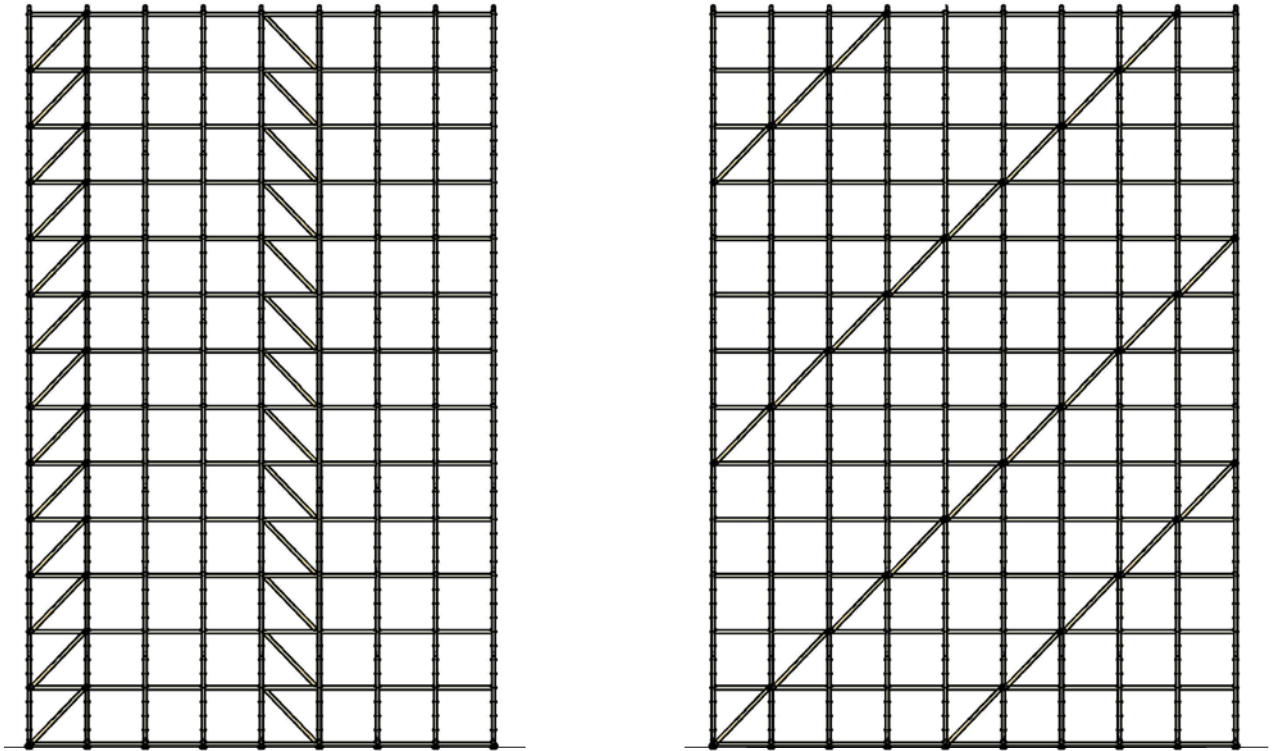
No connection to the ledger is permitted.

Connections to the Rosette are permitted within 500mm of a node point only.

Suitable lateral restraint of the scaffold structure must be achieved prior to connection of fall arrest devices.

Please consult with the temporary works engineer if in doubt.

Bracing the Assembly



The Ringlock Node connection provides positive connection to every joint between standards and ledgers. To provide a safe, secure access structure, it is important to install diagonal braces as soon as the arrangement is being assembled. Bracing satisfies 2 conditions. It provides nodal restraint and resists external forces. Providing the worst condition is catered for and both conditions are satisfied.

1. Diagonal braces unidirectional in tower form:

- Bracing to be maximum 1 in 5 bays.
- All end bays must be braced.
- Alternate bracing arrangements are required for load bearing or falsework scaffolds.
- Please consult with the temporary works engineer if in doubt.

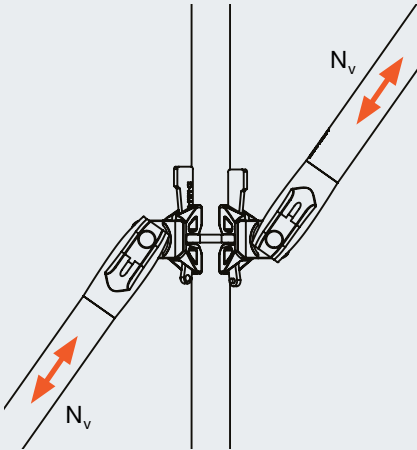
2. Alternate Falsework bracing scheme:

- Bracing must be installed such that each row of standards is braced in two directions.
- To achieve the loads in the falsework/ load bearing data table (?) Bracing must be installed at node connection levels and be continuous to the lowest node point.
- General Guidance note: When using Ringlock system for load bearing of falsework ensure that the maximum values in the Jack load Vs. height data tables are not exceeded. These values often govern in high load applications.

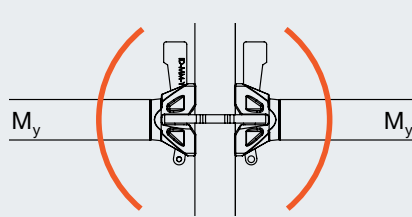
Maximum Design Forces

All permissible loads with $M = 1.1$ and $F = 1.5$

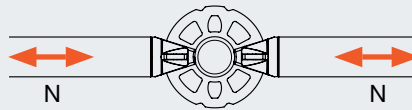
Nominal force, diagonal brace
Nyz as per table



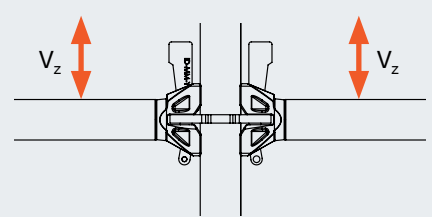
Bending moment
My 105 kNcm



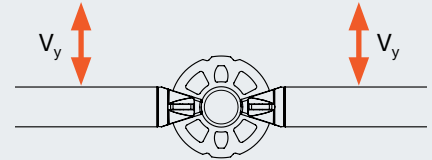
Normal force
N 23.9 kN



Vertical shear force
Vz 18.5 kN



Horizontal shear force
Vy 10.8 kN



Diagonal Bay Brace 2.0m Lift Height Load Rating

Bay length (m)	Tension / Nyz (kN)	Compression / Nyz (kN)
0.73	12.20	11.90
1.09	12.20	11.90
1.40	12.20	11.80
1.57	12.20	11.60
2.07	12.20	11.10
2.57	12.20	9.20
3.07	12.20	7.70

The below design resistances of Ringlock must be adhered to when designing an assembly arrangement. Permissible loads (or Safe Working Loads) are obtained by dividing the design resistance by 1.5 (γ).



Ledgers

O Ledgers

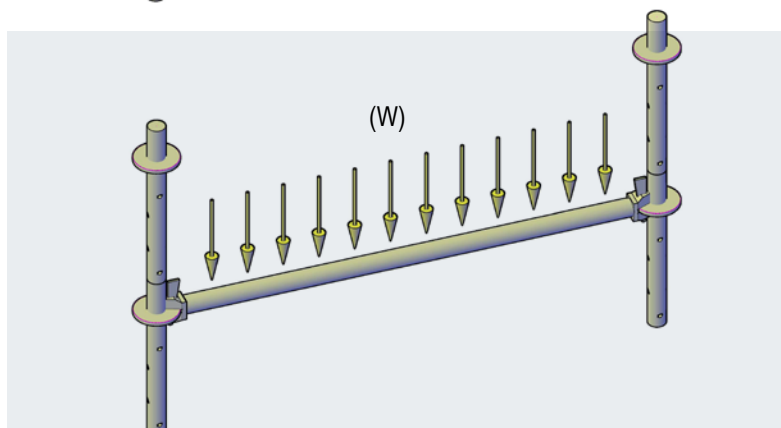
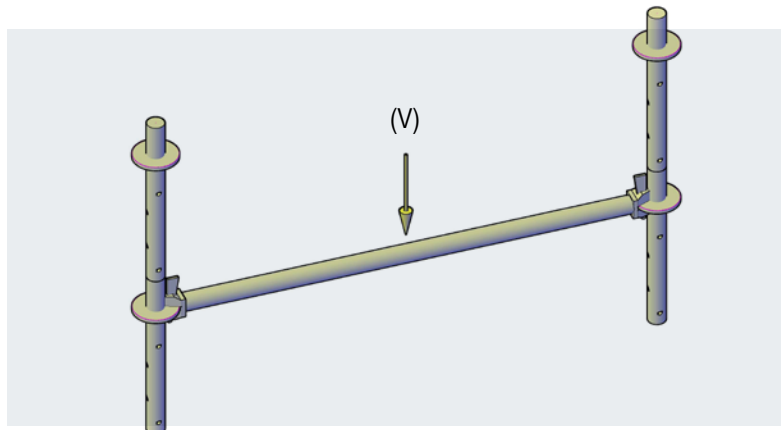
LENGTH	POINT LOAD	UDL	
(m)	V (kN)	w (kN/m)	WLL Safety Factor
0.7	11.7	27.1	2.0
1.1	6.7	12.3	2.0
1.4	6.0	8.5	2.0
1.5	5.0	6.4	2.0
2.0	4.0	3.7	2.0
2.6*	0.3	-	2.0

*For use as edge protection only, i.e. Handrail/midrail

U Ledgers

LENGTH	POINT LOAD	UDL	
(m)	V (kN)	w (kN/m)	WLL Safety Factor
0.7	9.0	21.4	2.0
1.1*	9.5	17.1	2.0

*Strengthened Transom



Couplers & Wall Ties

Couplers

ITEM	NUT TORQUE (Nm)	Working Load Limit (V in kN)
Single V Coupler	54	+ 6.25
Double V Coupler	54	+ 6.25

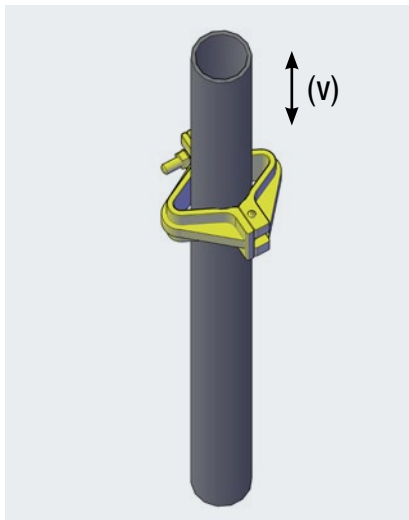
*Note: WLL Safety Factor = 2.0

Wall Ties

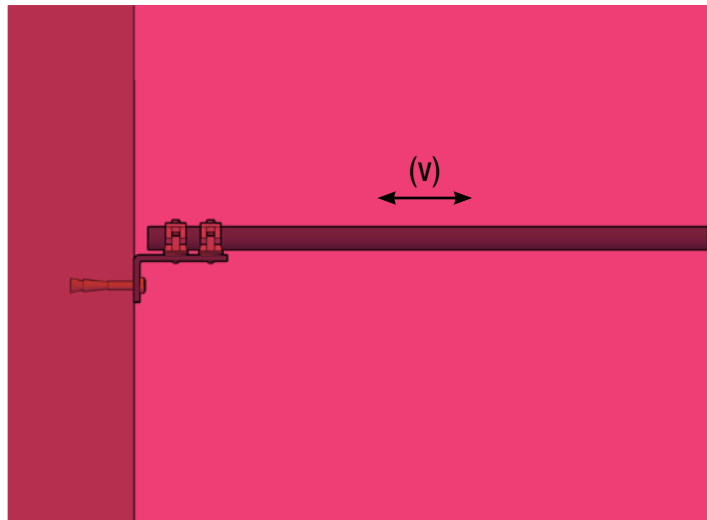
ITEM	NUT TORQUE (Nm)	Working Load Limit (V in kN)
Single Coupler Wall Tie	54	+ 6.25 kN
Double Coupler Wall Tie	54	+ 6.25 kN

*Note: WLL Safety Factor = 2.0

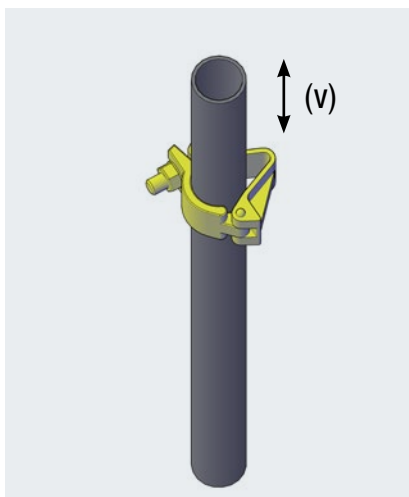
Double V Coupler



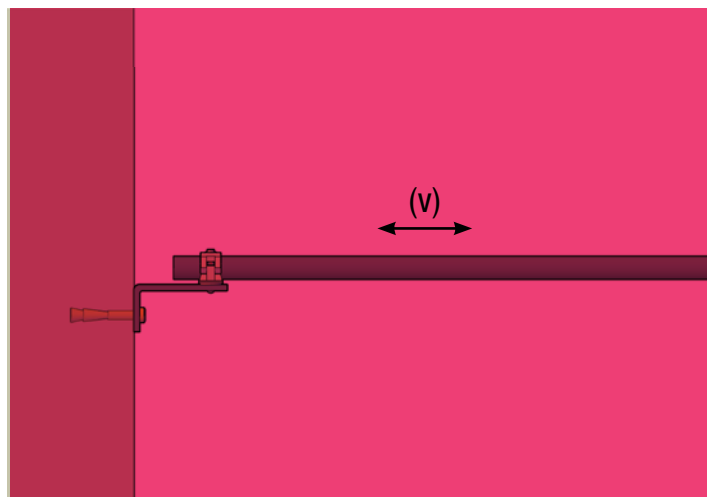
Double Coupler Wall Tie



Single V Coupler



Single Coupler Wall Tie

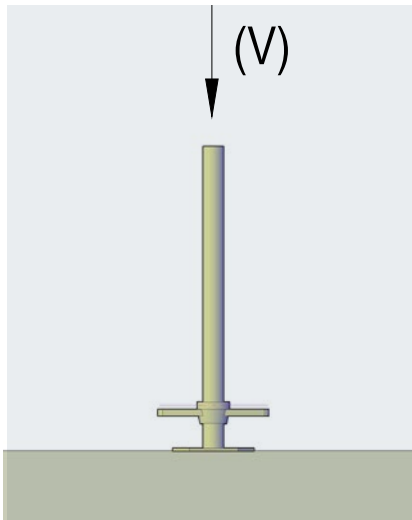


Jacks & Castors

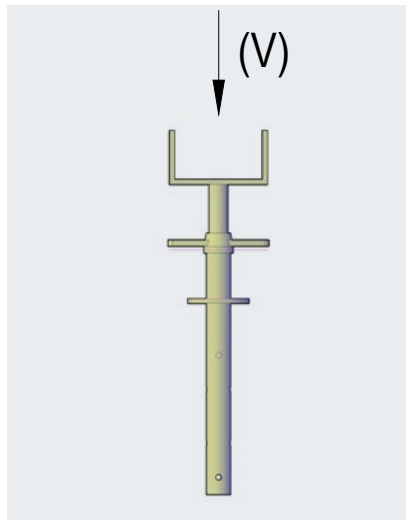
ITEM	MAXIMUM EXTENSION (mm)	AXIAL COMPRESSION (WLL) V (kn)
Solid Base Jack	500	48
Swivel Base Jack	500	49.6
Solid U-Head Jack	500	30
Solid Jack with Castors	500	7

Note: No eccentricity is considered in the above tabulated values. For all values tabulated above WLL safety factor = 2.0

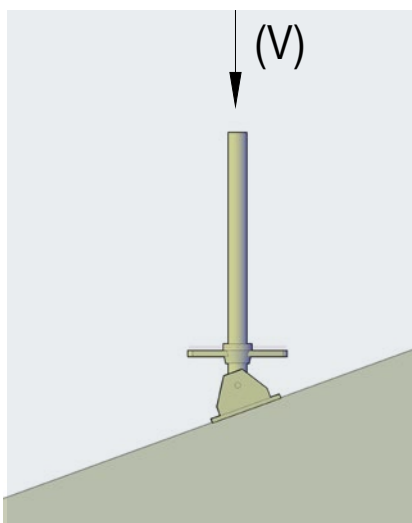
Solid Base Jack



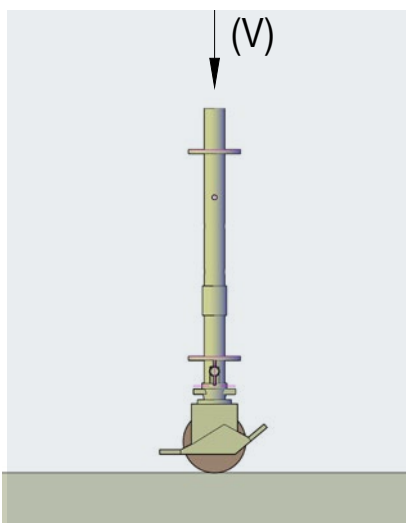
Solid U-Head Jack



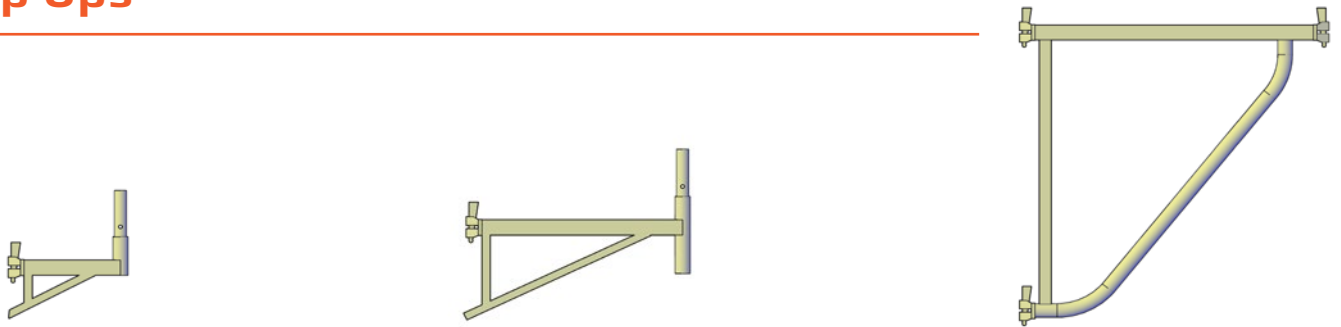
Swivel Base Jack



Solid Jack w/ Castors



Hop Ups



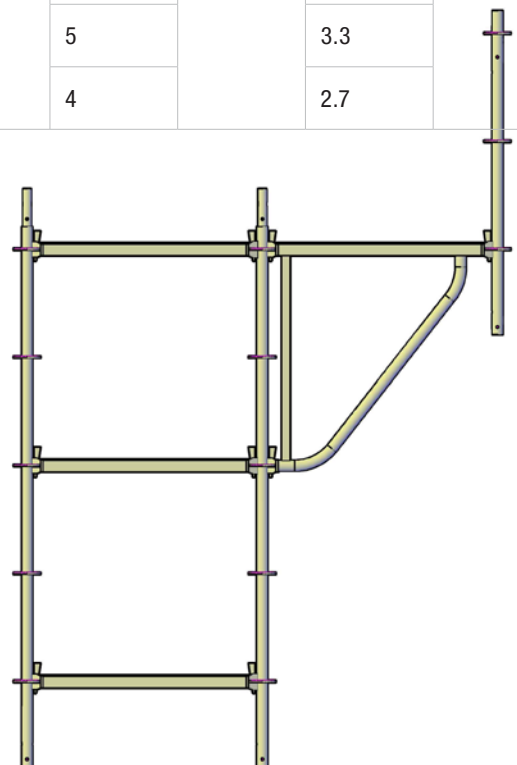
Ringlock Hop Ups are available for quickly widening scaffolding bays and for converting projecting building parts and eaves. The 3BHB 1.09 m wide is used for widening birdcage scaffolding. Transverse ledger at the height of the lower bracket connection is required.

Permissible load of Ringlock Hop Ups, K 2000+ and LW

Bay length w (m)	1BHB			2BHB				3BHB with bracing ledger		
	Perm concentrated load on spigot (kN)	Perm uniformly distributed load on bracket deck (kN/m ²)	Load class*	Without support			With support	Perm concentrated load (kN)	Perm uniformly distributed load on bracket deck (kN/m ²)	Load class*
Perm concentrated load on spigot (kN)				Perm uniformly distributed load on bracket deck (kN/m ²)	Load class	Load class*				
2.07	2.6	6.7	5	2.2	3.4	3	6	5.2	4.2	3
2.57		5.7	4		2.6		5		3.3	
3.07		4.3	4		2.1		4		2.7	

Please note, the concentrated loaded quoted and the uniformly distributed load on the hop up deck must **not act simultaneously**. The load classes quoted apply to the use of steel decks. The permissible loads quoted apply for decks double-sided.

*Nominal loads only, not a partial area load.



Stair Stringers

Stairway Stringer 500 9 steps

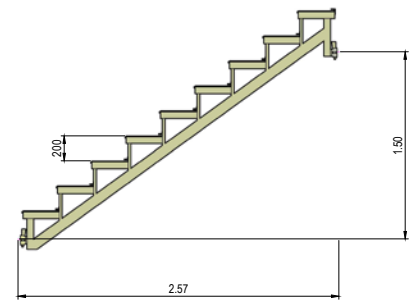
The Stairway stringer 500 offers 2.0 m storey height and is used in non-public areas, e.g. as access to the construction site, as non-public road crossings during construction work or as additional escape stairway tower. In special cases it also can be used in public areas.

Stairway dimensions:

Riser $s = 20.0$ cm
Tread $a = 27.5$ cm
Undercut $u = 4.5$ cm

Live load of the stair stringer 500

Length of steps (m)	Perm. p on the steel decks (kN/m ²)	
	Steel deck, one sided	Steel deck, double sided
1.09	12.8	6.1
1.40	9.8	4.7
1.57	8.7	4.2
2.07	6.5	3.1
2.57	5.2	2.4



Stairway Stringer 750 8 steps

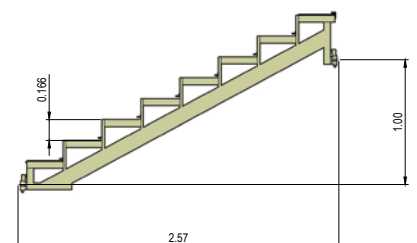
The Stairway 750 has the option to add child-safety guardrails and is intended for both temporary and permanent stair access in public areas. Typically applications are as road-crossings or internal temporary stairs during building work.

Stairway dimensions:

Riser $s = 16.6$ cm
Tread $a = 31.0$ cm
Undercut $u = 1.0$ cm

Live load of the stair stringer 750

Length of steps (m)	Perm. p on the steel decks (kN/m ²)	
	Steel deck, one sided	Steel deck, double sided
1.09	20.5	9.9
1.40	15.7	7.6
1.57	14.0	5.8
2.07	10.5	5.0
2.57	8.4	4.0



Facade Scaffolding

Permissible Working Height

	4m Tie Pattern		2m Tie Pattern	
	41m/s Ultimate Wind		41m/s Ultimate Wind	
Live Load	No. of 2m Lifts Sheeted	No. of 2m Lifts Un-sheeted	No. of 2m Lifts Sheeted	No. of 2m Lifts Un-sheeted
Light Duty	25			
Medium Duty	23			
Heavy Duty	21			

Facade Opening	4m Tie Pattern, Sheeted 41m/s Ultimate Wind		2m Tie Pattern, Sheeted 41m/s Ultimate Wind	
30% Open	Tie Load Normal to facade	Tie Load Parallel to facade	Tie Load Normal to facade	Tie Load Parallel to facade
	7.2kN	2.25kN		

Add diagrams (tie patterns)

Steel Planks and Lap Plates

Compared to a wooden plank, the steel plank is durable, non-flammable, non-slip and also lower weight.

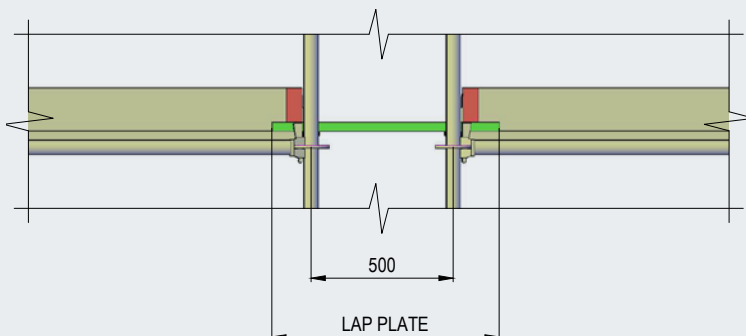
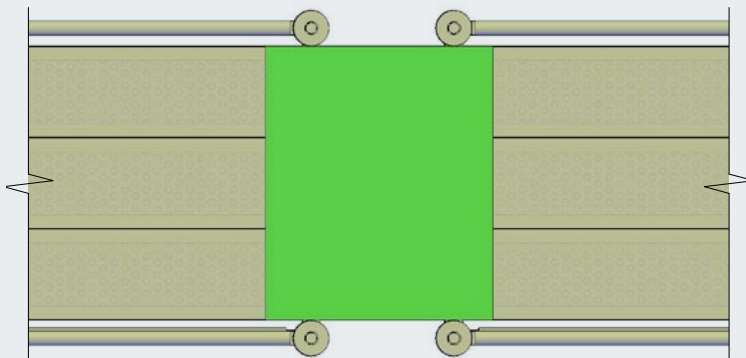
Steel Planks

DUTY RATING	STEEL PLANK 0.32m WIDE
Light Duty	✓
Medium Duty	✓
Heavy Duty	✓

In accordance with AS/NZS 1576.1. Note: WLL Safety Factor = 2.0 for all planks

Length (m)	Point Load V (kN)	UDL	WLL Safety Factor
		W (kN/m)	
0.7	11.7	27.1	2.0
1.1	6.7	12.3	2.0
1.4	6.0	8.5	2.0
1.5	5.0	6.4	2.0
2.0	4.0	3.7	2.0

Lap Plates



Issue date: 26/10/2021

Certified
— AND —
Compliant

Certificate of Compliance

Ringlock System Scaffold Designation (Australia)

Assessment

The RINGLOCK system scaffold system is tested and capacity determined as per the requirements of the following Australian standards:

- AS/NZS 1576.1:2010 - Scaffold - General Requirements
- AS/NZS 1576.2-2009 Scaffolding - Couplers and accessories
- AS/NZS 1576.3-2015 Scaffolding - Prefab and tube-and-coupler scaffolding

TEST REPORTS ASSESSED

1955-8 - ALS Industrial

BCTL-19062 - Building Construction Test Laboratory

BCTL-19103 - Building Construction Test Laboratory

BCTL-19106 - Building Construction Test Laboratory

BCTL- 20005 - Building Construction Test Laboratory

BCTL- 20006 - Building Construction Test Laboratory

BCTL- 20009 - Building Construction Test Laboratory

BCTL- 20010 - Building Construction Test Laboratory

BCTL- 20012 - Building Construction Test Laboratory

BCTL- 20013 - Building Construction Test Laboratory

BCTL- 20014 - Building Construction Test Laboratory

BCTL- 20066 - Building Construction Test Laboratory

2018/07/QC/004 - Garg Tube Export LLP

SYM200092 - Sinclair X-Ray Inspection Services

SYM200083.2 - Sinclair X-Ray Inspection Services

NM12-2359.3 - Sinclair X-Ray Inspection Services

2020 52 03 - Solid Dynamics Engineering

2020 03 03 - Solid Dynamics Engineering

ALPHA ENG CERTIFICATION

For, and on behalf of, Alpha Construction Engineering Solutions:



Andrew Antonelli
Consultant Engineer, BEng (Civil) MIEAust NER RPEQ

ALPHA
CONSTRUCTION ENGINEERING SOLUTIONS

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The **RINGLOCK** scaffold system



Global Certifications



Limitless Applications



Enhanced Performance



All-round Safety



Cost Efficient

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