

1450 & 850 TOWERS ASSEMBLY

To comply with the Work at Height Regulations we show assembly procedures with platforms every 2 metres in height, and, the locating of guardrails in advance of climbing onto a platform to reduce the risk of a fall.

All platforms feature double guardrails on both faces of either individual platforms or fully decked levels.

All guardrails should be 1 and 2 rungs (0.5m and 1.0m) above platforms.

Never stand on an unguarded platform positioned above the first rung of a tower. If your risk assessment shows it necessary, you may also need to guardrail platforms at this level.

We recommend a minimum of two persons are used to build Advance Guardrail tower. Above 4m height, it is essential that at least two persons are used.

Only climb the tower from the inside.

Always start building with the smallest height frames at the base of the tower:

Platform height in meters	Frame at base	1st deck	1st Advance Guardrail
2.2, 4.2, 6.2, 8.2, 10.2, 12.2	2 Rung	4th Rung	3rd Rung
2.7, 4.7, 6.7, 8.7, 10.7	3 Rung	1st Rung	4th Rung
3.7, 5.7, 7.7, 9.7, 11.7	2 + 3 Rung	3rd Rung	2nd Rung

Where all 3 frame heights are used in a tower, start with 2 rung frames at the base, with the 3 rung frames next and the 4 rung frames on the top. Refer to the Quantity Schedules for detail. The procedure illustrated shows a 1450 tower starting with 2 rung frames and a platform height of 4.2m. If building an 850 tower, the following method can be used with single decks at all levels.

6

Fit the stabilisers if building higher – or on single width (850mm) towers. If required, fit a temporary deck on the lowest rungs of the tower. Fit a trapdoor deck on the 4th rung with trapdoor adjacent to the ladder. Ensure the trapdoor is positioned with the hinges towards the outside of the tower as shown. Fit a fixed deck next to the trapdoor deck on the 4th rung. (If fitted, remove the temporary deck from the lowest rungs.) If clear access to the ladder is required, braces may be repositioned as shown. Reposition braces to original location before moving tower.

1

Push 4 castors onto 4 adjustable legs. Insert adjustable legs into 2 end frames as shown. Lock castor brakes. Base plates can be fitted to adjustable legs if it is not necessary to move the tower.

2

Fit one horizontal brace (red) onto the vertical of an end frame, just above the bottom rung, with the claw facing outwards. **All locking claws must be opened before fitting.**

3

Position the second end frame as shown and fit the other end of the horizontal brace on to the vertical, just above the bottom rung. Fit a second horizontal brace on the bottom rungs on the other side of the frames to square the tower.

4

Fit 2 additional end frames and check the frame interlock clips are engaged. Fit 2 diagonal braces (blue) in opposing directions, from the 1st rung to the 3rd rung on the opposing side. Ensure the frames are vertical and level by checking with a spirit level and setting the adjustable legs as required.

5

Fit an Advance Guardrail on both sides of the tower. The bottom of the Advance Guardrail must be fitted to the 3rd rung of the tower, as shown. The Advance Guardrail should be placed up against the end frame verticals.

7

Fit two additional end frames. Always climb the ladder below the trapdoor and always on the inside of the tower.

8

Fit 2 more Advance Guardrails to the end frames, with the top claws on the 10th rungs. Fit a trapdoor deck on the 8th rung, with the trapdoor in line with the one below. Place a fixed deck on the 8th rung next to the trapdoor deck. The tower now has a platform height of 4.2m. If finishing at this height, move on to step 10. If greater platform height is required, move on to step 9.

9

Continue to add pairs of end frames, Advance Guardrails and fit decks as shown in the previous steps. Continue until the required height is reached.

10

Fit toeboards. The tower is now complete.

FITTING TOEBOARDS

Lock yellow plastic toeboard clips over rung and deck claw as shown. Position as (A) on right hand deck claw. On other side of the working platform, position the clip as (B). Place 25mm thick toeboards into slots in toeboard clips as shown.

STABILISERS

Attach one stabiliser to each corner of the tower. Ensure stabiliser feet are equally spaced to form a square.

SP10 and SP15 telescopic stabilisers must always be fully extended. Position the lower clamp so that the lower arm is as close to the horizontal as possible. Adjust the position of the top clamp to ensure the stabiliser foot is in firm contact with the ground. Ensure clamps are secure.

Stabilisers are used when the tower is to be moved occasionally.

When moving the tower, adjust the top clamps to lift the four stabiliser feet a maximum of 25mm off the ground and then unlock the castor brakes. After moving ensure all four stabiliser feet are repositioned in firm contact with the ground.

Type	Y
SP7	1227
SP10	2241
SP15	2757

- Stabilisers and ballast weights shall always be fitted when specified.
- The Quantity Schedules show the recommended stabilisation. In circumstances where there is restricted ground clearance for stabilisers, contact HSS Hire for advice. Ballast must be of solid materials (i.e. not water or loose sand) and should not be positioned to overload individual legs. **Ballast should be secured against accidental removal where practicable**, and be supported on the lowest rung of the bottom frame.

DISMANTLING

To take down the tower reverse the building sequence.

- Remove toeboards and pass down the tower.
- When dismantling Advance Guardrail, remove both fixed and trapdoor decks, then undo camlocks on both Advance Guardrail frames and pass down the tower.
- Remove upper platforms from protected platform levels below.
- Pass removed components to a colleague.

SAFETY WARNING

ONLY USE ADJUSTABLE LEGS TO LEVEL THE TOWER AND NOT GAIN EXTRA HEIGHT.

NEVER climb or stand on to the platform until it is fully guard railed.

Above 4m height, it is essential that at least two persons are used to build BoSS Towers.

GENERAL NOTES

- Ties should be used when the tower goes beyond its safe height, beyond the limits of the stabilisers, or if there is a danger of instability. They should be rigid, two way ties fastened to both uprights of the frame with load-bearing right angled or swivel couplers. Only couplers suitable for the 50.8mm diameter tube of the tower should be used. Ideally, ties should be secured to both faces of a solid structure by means of anchorages.
- The tie frequency may vary depending on the application, but they should, at a minimum, be every 4 metres height.
- Brace claws, frame interlock clips, trapdoor catches and platform windlocks should be regularly checked to ensure they lock correctly.
- Check the condition of the components before erecting tower. Damaged or incorrect components should not be used

QUANTITY SCHEDULE 1450 WIDTH TOWERS														
ADVANCE GUARDRAIL BUILD														
		INTERNAL OR EXTERNAL USE												
WORKING HEIGHT (m)		4.2	4.7	5.7	6.2	6.7	7.7	8.2	8.7	9.7	10.2	10.7	11.7	12.2
PLATFORM HEIGHT (m)		2.2	2.7	3.7	4.2	4.7	5.7	6.2	6.7	7.7	8.2	8.7	9.7	10.2
Ø125MM/150MM/200MM CASTOR		4	4	4	4	4	4	4	4	4	4	4	4	4
ADJUSTABLE LEG		4	4	4	4	4	4	4	4	4	4	4	4	4
2 RUNG LADDER FRAME (1.0M HIGH X 1.45M WIDE)		1		1	1		1	1		1	1		1	1
2 RUNG SPAN FRAME (1.0M HIGH X 1.45M WIDE)		1		1	1		1	1		1	1		1	1
3 RUNG LADDER FRAME (1.5M HIGH X 1.45M WIDE)			1	1		1	1		1	1		1	1	
3 RUNG SPAN FRAME (1.5M HIGH X 1.45M WIDE)			1	1		1	1		1	1		1	1	
4 RUNG LADDER FRAME (2.0M HIGH X 1.45M WIDE)		1	1	1	2	2	2	3	3	3	4	4	4	5
4 RUNG SPAN FRAME (2.0M HIGH X 1.45M WIDE)		1	1	1	2	2	2	3	3	3	4	4	4	5
1.8M / 2.5M TRAP DOOR DECK		1	1	2	2	2	3	3	3	4	4	4	5	5
1.8M / 2.5M FIXED DECK		1	2	2	2	3	3	3	4	4	4	5	5	6
1.8M / 2.5M HORIZONTAL BRACE		2	2	2	2	2	2	2	2	2	2	2	2	2
2.1M / 2.7M DIAGONAL BRACE		2	2	2	2	2	2	2	2	2	2	2	2	2
1.8M / 2.5M SIDE TOE BOARD		2	2	2	2	2	2	2	2	2	2	2	2	2
0.6M END TOE BOARD		2	2	2	2	2	2	2	2	2	2	2	2	2
TOE BOARD HOLDER		4	4	4	4	4	4	4	4	4	4	4	4	4
1.8M / 2.5M CAM LOCK ADVANCE GUARDRAIL		2	2	4	4	4	6	6	6	8	8	8	10	10
SP7			4	4	4	4								
SP10							4	4	4	4	4	4	4	4
SP15														
TOTAL SELF WEIGHT OF TOWER (KG) 1.8M		133	151	192	196	214	254	271	289	329	334	351	392	396
TOTAL SELF WEIGHT OF TOWER (KG) 2.5M		150	173	221	226	248	296	313	336	384	389	411	459	464

NUMBER OF WORKING PLATFORMS ALLOWED

The **maximum safe working load** (the combined weight of the users, tools and materials) that may be placed on the tower is the total weight less the self weight of the tower. The total weight for the towers shown in the schedule is 950kg.

Example 1:

A 1450 ladderspan tower built using the Advance Guardrail method with a 4.2m platform height and a platform length of 1.8m has a self weight of 196kg.

950kg - 196kg = 754kg maximum safe working load total weight self weight (users, tools and materials)

Example 2:

A 1450 Ladderspan tower built using the Advance Guardrail method with a 11.7m platform height and a platform length of 2.5m has a self weight of 534kg.

950kg - 534kg = 416kg maximum safe working load total weight self weight (users, tools and materials) For greater heights and loads, consult HSS Hire.

PLATFORM LOADING

On a 1450 Advance Guardrail tower a platform comprises of two decks side by side. The maximum safe working load (the combined weight of the users, tools and materials) that

may be placed on a platform is 275kg. This must be evenly distributed over both decks.

The quantities will enable towers to be built safely and therefore comply with the requirements of the Work at Height Regulations. They include double guardrails to all platforms, and toeboards will need to be added if any levels are used as working platforms and for storage of materials. EN 1004 requires platforms at least every 4.2m, and these measures will exceed that requirement.

BALLAST: Internal/External Use

There is no requirement for ballast on 1450 towers if using stabilisers as detailed in the table.

STABILISERS

To improve rigidity, larger stabilisers can be used at a lower level than shown in the table.

Double width 1450 Towers Dimension X

	Platform Len 1.8m	Platform Len 2.5m
SP7	X= 3351	X= 3629
SP10	X= 4789	X= 5100
SP15	X= 5520	X= 5838

QUANTITY SCHEDULE 850 WIDTH TOWERS														
ADVANCE GUARDRAIL BUILD														
		INTERNAL OR EXTERNAL USE												
WORKING HEIGHT (m)		4.2	4.7	5.7	6.2	6.7	7.7	8.2	8.7	9.7	10.2	10.7	11.7	12.2
PLATFORM HEIGHT (m)		2.2	2.7	3.7	4.2	4.7	5.7	6.2	6.7	7.7	8.2	8.7	9.7	10.2
Ø125MM/150MM/200MM CASTOR		4	4	4	4	4	4	4	4	4	4	4	4	4
ADJUSTABLE LEG		4	4	4	4	4	4	4	4	4	4	4	4	4
2 RUNG LADDER FRAME (1.0M HIGH X 0.85M WIDE)		1		1	1		1	1		1	1		1	1
2 RUNG SPAN FRAME (1.0M HIGH X 0.85M WIDE)		1		1	1		1	1		1	1		1	1
3 RUNG LADDER FRAME (1.5M HIGH X 0.85M WIDE)			1	1		1	1		1	1		1	1	
3 RUNG SPAN FRAME (1.5M HIGH X 0.85M WIDE)			1	1		1	1		1	1		1	1	
4 RUNG LADDER FRAME (2.0M HIGH X 0.85M WIDE)		1	1	1	2	2	2	3	3	3	4	4	4	5
4 RUNG SPAN FRAME (2.0M HIGH X 0.85M WIDE)		1	1	1	2	2	2	3	3	3	4	4	4	5
1.8M / 2.5M TRAP DOOR DECK		1	2	2	2	3	3	3	4	4	4	5	5	6
1.8M / 2.5M HORIZONTAL BRACE		2	2	2	2	2	2	2	2	2	2	2	2	2
2.1M / 2.7M DIAGONAL BRACE		2	2	2	2	2	2	2	2	2	2	2	2	2
1.8M / 2.5M SIDE TOE BOARD		2	2	2	2	2	2	2	2	2	2	2	2	2
0.6M END TOE BOARD		2	2	2	2	2	2	2	2	2	2	2	2	2
TOE BOARD HOLDER		4	4	4	4	4	4	4	4	4	4	4	4	4
1.8M / 2.5M CAM LOCK ADVANCE GUARDRAIL		2	2	4	4	4	6	6	6	8	8	8	10	10
SP7			4	4	4	4								
SP10							4	4	4	4		4	4	4
SP15											4			
TOTAL SELF WEIGHT OF TOWER (KG) 1.8M		113	131	155	159	177	213	217	235	259	278	281	305	309
TOTAL SELF WEIGHT OF TOWER (KG) 2.5M		124	147	174	178	200	240	244	266	293	311	320	347	350

NUMBER OF WORKING PLATFORMS ALLOWED

The **maximum safe working load** (the combined weight of the users, tools and materials) that may be placed on the tower is the total weight less the self weight of the tower. The total weight for the towers shown in the schedule is 950kg.

Example 1:

An 850 Ladderspan tower built using the Advance Guardrail method with a 4.2m platform height and a platform length of 1.8m has a self weight of 159kg.

950kg - 159kg = 791kg maximum safe working load total weight self weight (users, tools and materials)

Example 2:

An 850 Ladderspan tower built using the Advance Guardrail method with a 10.2m platform height and a platform length of 2.5m has a self weight of 350kg.

950kg - 350kg = 600kg maximum safe working load total weight self weight (users, tools and materials) For greater heights and loads, consult HSS Hire.

PLATFORM LOADING

On an 850 tower a platform comprises of a single deck only. The maximum safe working load (the combined weight of the users, tools and materials) that may be placed on a

platform is 275kg, evenly distributed over the deck.

These quantities will enable BoSS towers to be built safely and therefore comply with the requirements of the Work at Height Regulations. They include double guardrails to all platforms, and toeboards will need to be added if any levels are used as working platforms and for storage of materials. EN 1004 requires platforms at least every 4.2m, and these measures will exceed that requirement.

BALLAST: Internal/External Use

There is no requirement for ballast on 850 towers if using stabilisers as detailed in the table.

STABILISERS

To improve rigidity, larger stabilisers can be used at a lower level than shown in the table.

Double width 850 Towers Dimension X

	Platform Len 1.8m	Platform Len 2.5m
SP7	X=2994	X= 3201
SP10	X= 4458	X=4734
SP15	X= 5195	X= 5485