

ALTO MD TOWERS

MEDIUM DUTY ALUMINIUM TOWERS

DOUBLE & SINGLE WIDTH

ASSEMBLY GUIDE

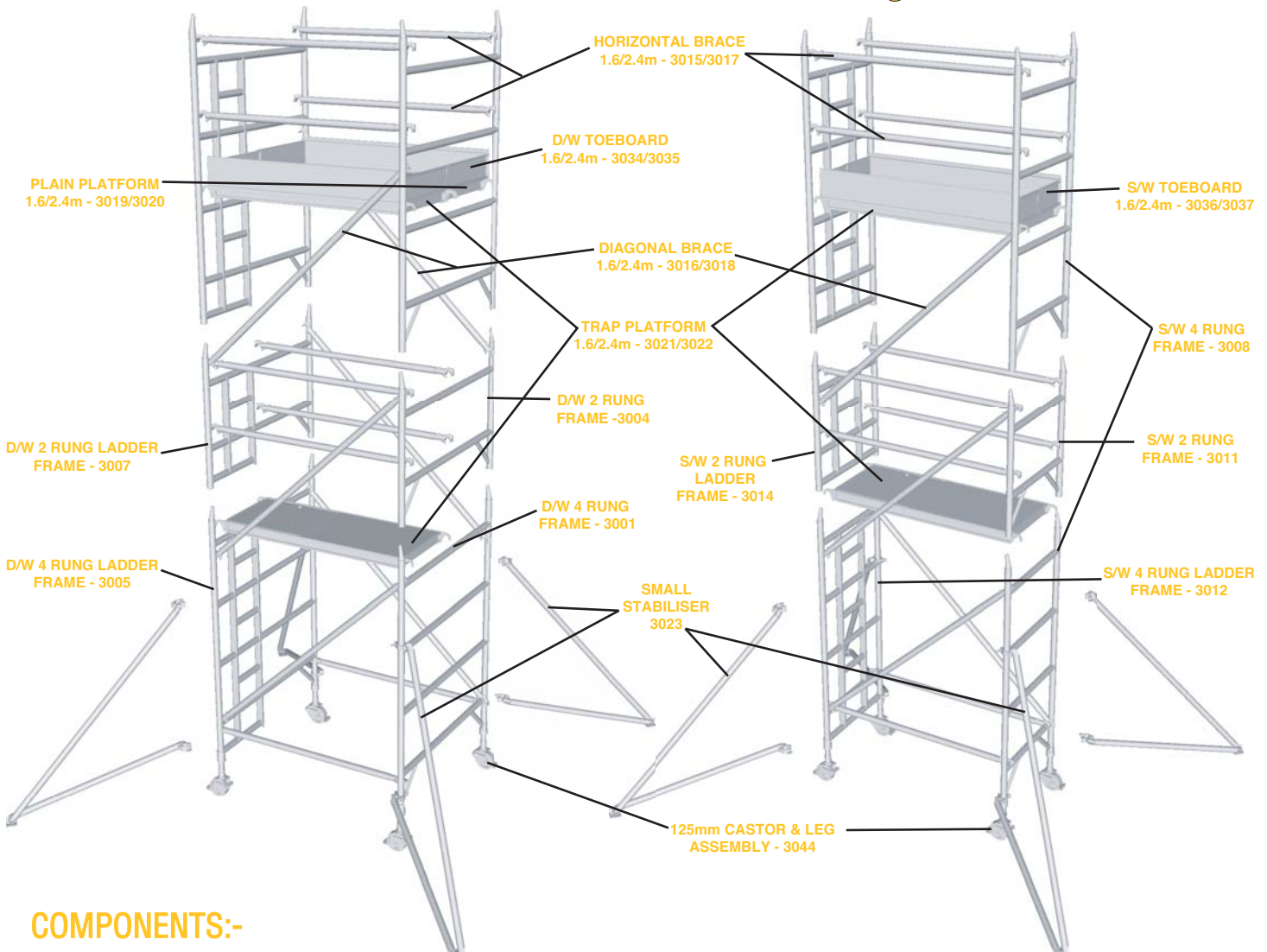
TO BS-EN 1004-2004

Using the 3T (Through the Trap) Assembly method

**REVISED
EDITION 4**

Double Width

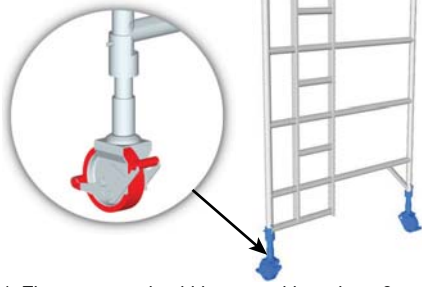
Single Width



COMPONENTS:-
SINGLE WIDTH LADDERSPAN
(1.8m & 2.7m LONG) WITH 5 RUNG
OR 4 RUNG STARTER FRAMES

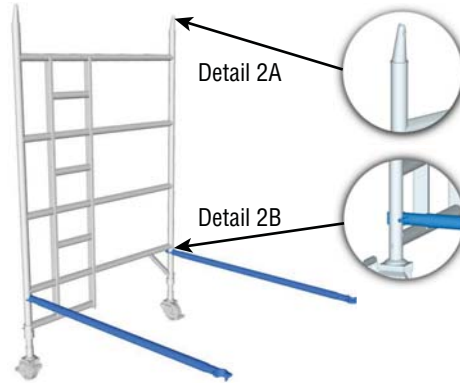
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Detail 1A



1. These towers should be erected by at least 2 competent persons, contact your supplier for details of appropriate training. Apply brakes and fit adjustable castors into one 4 rung ladder frame and one 4 rung main frame, ensuring that spring loaded pin is engaged in hole provided (1A).

Detail 2A



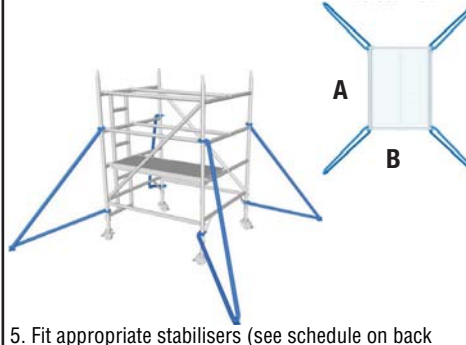
2. Make sure pegs on frame head fitting always point towards middle of tower (see detail 2A). Fit two short horizontal braces to vertical tubes of one of the frames as low down as possible ensuring spring loaded pin faces outwards (see detail 2B).



3. Fit opposite ends of short braces to other 4 rung frame ensuring pegs on frame head fitting point towards middle of tower.



4. 1) Fit two long braces diagonally in opposite directions as close to the frame vertical tube as possible. 2) Fit a temporary trap platform on third rung down from top of frame. Fit short braces horizontally as temporary guard rails onto top two rungs of frames, over pegs provided. At this stage level the tower by adjusting collar on castors (see notes).



5. Fit appropriate stabilisers (see schedule on back page) to each corner of the tower to increase the effective base dimensions A & B. They must be fitted so that when viewed from above the largest square is formed. Ensure the wing nuts are tight so that it is not possible to move stabilisers without slackening the wing nuts. Do not over tighten them as this may distort the tube.

FOR TOWERS NOT USING 2 RUNG FRAMES.



6. Working from a platform add a 4 rung ladder frame to the 4 rung ladder frame by locating onto head fitting with peg engaging into hole provided. Repeat the process at the other end using a 4 rung main frame.

FOR TOWERS NOT USING 2 RUNG FRAMES.



7. Fit two braces diagonally in opposite directions as close to the frame vertical tubes as possible.

FOR TOWERS NOT USING 2 RUNG FRAMES.



8. Working from the guarded platform locate a trap platform with the trap opening adjacent to the ladder on the 3rd rung down from the top of the tower. Working through the trap, fit short braces horizontally as guardrails, continue building the tower repeating the bracing pattern until required height is reached continue onto box 11, 12 or 13.

TOWERS USING 2 RUNG FRAMES.



9. Working from a temporary platform add a 2 rung ladder frame to the 4 rung ladder frame by locating onto head fitting with peg engaging into hole provided. Repeat the process at the other end using a rung main frame. Remove temporary platform and relocate onto 4th rung of base frame. Fit short braces to form guardrails as before.

TOWERS USING 2 RUNG FRAMES.



10. Working on platform add a 4 rung ladder frame to 2 rung ladder frame by locating onto head fitting with peg engaging into hole provided. Repeat the process at the other end using a 4 rung main frame. Fit brace diagonally in opposite direction to the diagonal fitted in 7 on the opposite side of the tower but 2 rungs higher as close to the frame vertical tubes as possible. Build tower in this manner until required height is reached.



11. **TOWERS FINISHING WITH 4 RUNG FRAMES.** Build as shown up to (8 or 10) then: still using platforms & braces to aid safe erection- Fit platforms on the third rung down. Working through the trap fit two short braces horizontally on to top rung of frames over pegs provided and two on first rung down over pegs.



12. **TOWERS FINISHING WITH 3 RUNG FRAMES.** Erect tower as shown up to (8 or 10). Repeat (8 or 10) but use 3 rung frames. Still using platforms & braces to aid safe erection Fit platforms on the third rung down in the same way as shown in (11). Working through the trap fit two short braces horizontally onto top rung of frames over pegs provided and two on first rung down over pegs.

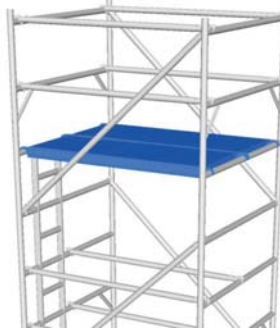
13. TOWERS FINISHING WITH G.R. FRAMES.

Guardrail frames can be used at the top of the tower instead of 2 rung frames lower down, but they will need the intermediate rest platforms to be rearranged before forming the top platform. Still using a temporary platform & braces to aid safe erection Fit two G.R frames (2 rung) by locating onto head fitting with peg into hole provided. Fit two short braces horizontally onto top rungs of frames over pegs provided and two on first rung down over pegs. Fit long braces diagonally from top rung of frame as close to the frame vertical tubes as possible.



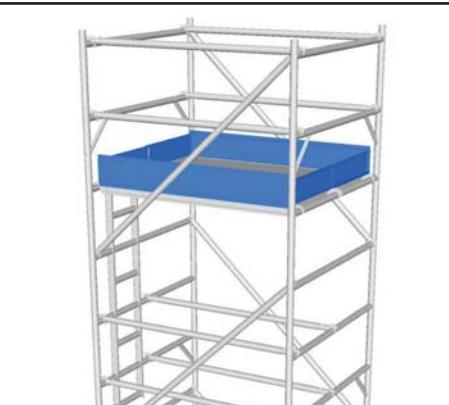
14. FORMING A WORKING PLATFORM ON DOUBLE WIDTH TOWERS.

Still using a platform & braces to aid safe erection. Fit a trap platform so that the trap is above the ladder and fit a plain platform along side it. Always make sure the meeting inside edges locate exactly in the middle. Ensure the wind latch is located by swivelling bar located under the platform to locate under frame rung (to remove platform disengage the bar by swivelling it back under platform).



15. FORMING A WORKING PLATFORM ON SINGLE WIDTH TOWERS.

Still using a temporary platform & brace to aid safe erection Fit the platform so that the trapdoor is above the ladder and the hooks are between the pegs provided. Ensure the wind latch is located by swivelling bar back under platform to locate under frame rung (to remove platform disengage the bar by swivelling it back under platform).



16. ALL TOWERS

Fit toeboard unit around the platforms. Remember to always close trapdoor immediately after climbing through.

REST PLATFORMS



Rest platforms consist of a trap platform, and guardrails at 0.5m & 1m as shown. Remember to always close trapdoor immediately after climbing through. Nb. see safety note on back page.

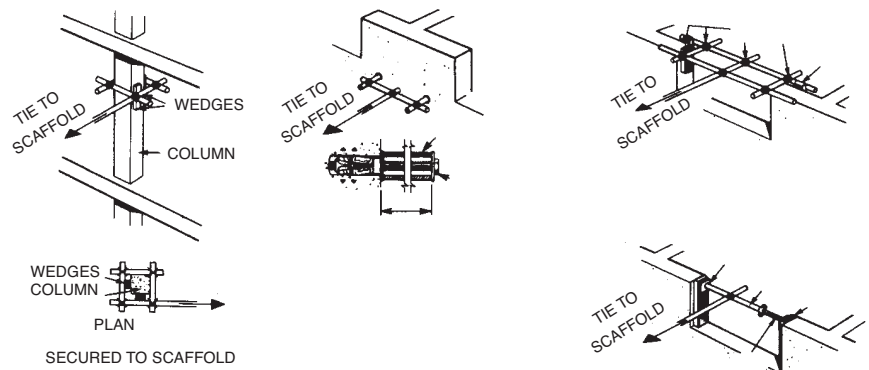


WARNING: never work from or build, or dismantle the tower from an unguarded platform

CONSTRUCTION NOTES

1. Follow the erection manual to ensure that the correct erection procedure is used.
2. Ensure that sufficient equipment is available to construct the tower and is in working order.
3. Do not extend castor jacks more than is necessary to level the tower. Adjustable swivel base jacks are available for use on stepped, steeply sloped or soft ground conditions.
4. Use a Spirit level to check that the tower is upright.
5. The peg on the head fitting must always point inwards.
6. Fit the first two horizontal braces to the vertical frame tube. This prevents the frame from falling over during erection and dismantling.
7. All diagonal braces are fitted as close as possible to the upright.
8. Observe all height limits (fig.5) and fit stabilisers to increase the safe working height to the tower. Towers may also be tied to a suitable rigid structure using standard scaffolding tubes and fittings (see tying in).
9. Fit toeboards to all working platforms and ensure that all platforms are adequately guarded.
10. The dismantling sequence is the reverse order of the erection process.
11. For special or unusual applications contact your supplier for further technical data sheets and expert advice.
12. During erection and dismantling any temporary platform used for building the tower, should be treated as a working platform with guard rails at 0.5m and 1.0m above platform.

TYING IN



NOTE: Arrangement shown in fig. D is considered to be a friction device and should not exceed 1/2 the total number of scaffold ties in any area.

When friction devices are used the connection to the scaffold must be made onto both vertical uprights. Ties should be at no more than 4m intervals.

Beware of high winds: If high winds are forecast do not erect the tower or leave up overnight.

Wind - Description	Beaufort Scale	Beaufort No.	Speed - mph	Speed - m/sec	
Medium Breeze	Raises dust and loose paper small branches sway.	4	13-18	5.5-8	Safe to work on the tower.
Strong Breeze	Large branches in motion, telegraph wires whistle.	6	25-31	11-14	Tie the tower onto a solid Structure. Do not work on tower.
Gale Force	Twigs snap off, walking is difficult.	8	39-46	17-21	Towers should on no account be erected in these conditions.

Beware of open ended building which can cause a funnelling effect.

COMPONENT SCHEDULE - 3T method

DOUBLE & SINGLE WIDTH TOWERS WITH LADDER FRAMES CONFORMING TO BS-EN1004-2004

INTERNAL & EXTERNAL USE

INTERNAL USE ONLY

1.6m & 2.4m Double Width Tower Component Schedule

DESCRIPTION	PLATFORM HEIGHT	METRIC IMPERIAL CODE	2.2	2.7	3.2	3.7	4.2	4.7	5.2	5.7	6.2	6.7	7.2	7.7
			7'3"	8'10"	10'6"	12'2"	13'9"	15'5"	17'1"	18'8"	20'4"	22'0"	23'7"	25'3"
125 mm Castor		3044	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
Toeboard Set		3034/3035	1	1	1	1	1	1	1	1	1	1	1	1
D/W 4 Rung Frame		3001	1	1	2	1	2	2	3	2	3	3	4	3
D/W 4 Rung LadderFrame		3005	1	1	2	1	2	2	3	2	3	3	4	3
D/W 3 Rung Frame		3003	-	1	-	1	-	1	-	1	-	1	-	1
D/W 3 Rung Ladder Frame		3006	-	1	-	1	-	1	-	1	-	1	-	1
D/W 2 Rung Frame*		3004	1	-	-	1	1	-	-	1	1	-	-	1
D/W 2 Rung Ladder Frame*		3007	1	-	-	1	1	-	-	1	1	-	-	1
Horizontal Brace 1.6 / 2.4m Blue/Yellow		3015/3017	6	8	11	13	12	14	16	19	17	20	21	25
Diagonal Brace 1.6 / 2.4m Green/Brown		3016/3018	3	4	4	5	6	6	6	8	8	10	10	10
Plain Platform 1.6 / 2.4m		3019/3020	1	1	1	1	1	1	1	1	1	1	1	1
Trap Platform 1.6 / 2.4m		3021/3022	1	2	2	2	2	2	3	3	3	3	4	4
Small Stabiliser		3023	4	4	4	4	4	4	4	4	4	4	4	4
Large Stabiliser		3024												
TOTAL SELF WEIGHT OF TOWER (KGS)	1.6m		116	139	149	161	165	173	194	210	211	220	244	257
	2.4m		136	167	179	193	197	207	235	254	253	265	296	312

8.2	8.7	9.2	9.7	10.2	10.7	11.2	11.7	12.2
26'11"	28'7"	30'2"	31'10"	33'6"	35'9"	37'5"	39'1"	40'8"
4	4	4	4	4	4	4	4	4
4	4	4	4	4	4	4	4	4
1	1	1	1	1	1	1	1	1
4	4	5	4	5	5	6	5	6
4	4	5	4	5	5	6	5	6
-	1	-	1	-	1	-	1	-
-	1	-	1	-	1	-	1	-
1	-	-	1	1	-	-	1	1
1	-	-	1	1	-	-	1	1
22	26	26	31	27	32	31	37	32
11	12	12	13	14	14	14	16	16
1	1	1	1	1	1	1	1	1
4	4	5	5	5	5	6	6	6
4	4	-	-	-	-	-	-	-
		4	4	4	4	4	4	4
258	272	297	314	313	326	342	363	358
312	329	359	381	378	395	415	442	434

1.6m & 2.4m Double Width Tower Component Schedule

DESCRIPTION	PLATFORM HEIGHT	METRIC IMPERIAL CODE	2.2	2.7	3.2	3.7	4.2	4.7	5.2	5.7	6.2	6.7	7.2	7.7
			7'3"	8'10"	10'6"	12'2"	13'9"	15'5"	17'1"	18'8"	20'4"	22'0"	23'7"	25'3"
125 mm Castor & Leg		3044	4	4	4	4	4	4	4	4	4	4	4	4
Toeboard Set		3036/3037	1	1	1	1	1	1	1	1	1	1	1	1
S/W 4 Rung Frame		3008	1	1	2	1	2	2	3	2	3	3	4	3
S/W 4 Rung LadderFrame		3012	1	1	2	1	2	2	3	2	3	3	4	3
S/W 3 Rung Frame		3010	-	1	-	1	-	1	-	1	-	1	-	1
S/W 3 Rung Ladder Frame		3013	-	1	-	1	-	1	-	1	-	1	-	1
S/W 2 Rung Frame*		3011	1	-	-	1	1	-	-	1	1	-	-	1
S/W 2 Rung Ladder Frame*		3014	1	-	-	1	1	-	-	1	1	-	-	1
Horizontal Brace 1.6 / 2.4m Blue/Yellow		3015/3017	6	8	10	12	10	14	14	18	14	20	18	24
Diagonal Brace 1.6 / 2.4m Green/Brown		3016/3018	3	4	4	5	6	6	6	8	8	8	10	10
Trap Platform 1.6 / 2.4m		3021/3022	1	2	2	2	2	2	3	3	3	3	4	4
Small Stabiliser		3023	4	4	4	4	4	4	4	4	4	4	4	4
Large Stabiliser		3024												4
TOTAL SELF WEIGHT OF TOWER (KGS)	1.6m		99	121	129	139	142	152	169	186	182	196	214	237
	2.4m		113	143	151	165	166	180	201	223	216	235	257	286

8.2	8.7	9.2	9.7	10.2
26'11"	28'7"	30'2"	31'10"	33'6"
4	4	4	4	4
1	1	1	1	1
4	4	5	4	5
4	4	5	4	5
-	1	-	1	-
-	1	-	1	-
1	-	-	1	1
1	-	-	1	1
18	26	22	30	22
11	12	12	13	14
4	4	5	5	5
-	-	-	-	-
4	4	4	4	4
232	252	262	283	275
277	304	315	344	330

* or 2 guardrail frames double width code: 3002 single width code: 3009 (but see illustration 13, page 3, before use)

NOTES: A WORKING LEVEL ON A DOUBLE WIDTH TOWER IS TWO PLATFORMS SIDE BY SIDE WITH TOEBOARDS & DOUBLE GUARDRAILS. THE MAXIMUM LOAD ON A 600 mm WIDE PLATFORM IS 2kN/m2 WHICH IS:-
a) 186 kgs EVENLY DISTRIBUTED ON A 1.6m LONG PLATFORM. b) 282 kgs EVENLY DISTRIBUTED ON A 2.4m LONG PLATFORM
THE MAXIMUM LOAD ON A TOWER (including the self weight of the tower) SHOULD NOT EXCEED 2000kgs (2 TONNE) WHEN NOT USING 2 RUNG FRAMES OR 1,000kg WHEN USING 2 RUNG FRAMES, UNLESS ADDITIONAL SHORT BRACES HAVE BEEN ADDED TO THE 2 RUNG FRAMES USED (refer to supplier for more information). THE MAXIMUM HORIZONTAL FORCE WHEN USING HAND TOOLS ETC. SHOULD NOT EXCEED 30 kgs & STABILISERS MUST BE FITTED.

THE ABOVE SCHEDULE INCLUDES FOR:

- (i) 1 WORKING LEVEL WITH TOEBOARDS & DOUBLE HANDRAILS AT 1m and 0.5m.
- (ii) A SINGLE TRAP PLATFORM & HANDRAILS EVERY 2m AS A REST PLATFORM.

TO CONVERT A REST PLATFORM TO A WORKING LEVEL: ON A 1.6m LONG DOUBLE WIDTH TOWER ADD 1 - 1.6m MAIN PLATFORM & 1 - 1.6m DOUBLE TOEBOARD SET
ON A 2.4m LONG DOUBLE WIDTH TOWER ADD 1 - 2.4m MAIN PLATFORM & 1 - 2.4m DOUBLE TOEBOARD SET
ON A 1.6m LONG SINGLE WIDTH TOWER ADD 1 - 1.6m SINGLE TOEBOARD SET
ON A 2.4m LONG SINGLE WIDTH TOWER ADD 1 - 2.4m SINGLE TOEBOARD SET

The component tables above allow for sufficient trap platforms and horizontal braces to build the tower using the 3T (through the trap) method and forming an intermediate platform with four horizontal braces as guardrails every 2m (or 4 rungs) up the tower. This means that on some heights of towers, to achieve this spacing, it will be necessary to form a platform on the fifth rung up from the ground. To make locating this platform easier during building a temporary platform can be located on the first rung of the tower with temporary guardrails on the second and third rungs up. Once the platform has been located on the fifth rung the temporary platform on the first rung and its guardrails can be removed by an operative working from ground level and reused higher up on the tower. The component table above reflects this. Where the platform on the fifth rung is also forming the top-working platform of the tower (e.g. on a 2.7m high tower) the braces can be relocated in this way but, although a second platform is provided, there is nowhere to relocate it further up the tower so for safety's sake the spare platform should be removed from the tower once it has been built to avoid its inadvertent use on the tower without any guardrails.

ALTO M.D. TOWER BRACE GUIDE					
BRACE TYPE	COLOUR I.D.	LENGTH	BRACE TYPE	COLOUR I.D.	LENGTH
Horizontal Brace 1.6m	Blue	1.600 m	Horizontal Brace 2.4m	Yellow	2.400 m
Diagonal Brace 1.6m	Green	2.193 m	Diagonal Brace 2.4m	Brown	2.830 m

SAFETY NOTES

1. Before erecting check ground is level unobstructed and is suitable for the purpose. Also ensure area is clear of overhead obstructions, particularly power cables.
2. Check that brakes are applied and the tower is stable before use.
3. Do not ride on the tower or attempt to move a loaded tower.
4. Always climb the tower from the inside.
5. Do not overload the tower. Maximum platform loads 200 kg/m2 (2kN/m2). Maximum tower load 2000kg mobile on towers not using 2 rung frames. On towers using 2 rung frames, maximum load on tower is 1000kg (1 tonne) unless short braces have been added (refer to supplier for more information). Maximum horizontal force at platform 30kg.
6. When moving a Tower, reduce the height to a maximum of 4m. Check that there are no power lines or other obstructions overhead.
7. Mobile towers must be moved by pushing at the base only. Beware of soft or uneven ground, drains or potholes and overhead obstructions, especially power cables. Stabilisers may be raised to a maximum of 25mm above the ground. Immediately after moving, apply the brakes and check that the tower is upright and stable and stabilisers returned to ground level.
8. Never remove components from a tower whilst it is erected. Dismantling must always be performed from the top. Failure to observe this rule will seriously reduce the strength and safety of the tower.
9. Do not use damaged components. Check all components before use and periodically lubricate all moving parts and wipe off surplus oil.
10. Beware of high winds. Secure the tower when in exposed positions and when left unattended.
11. Do not lean ladders against towers or use ladders on top of platforms.
12. At heights where components cannot be passed up or down by hand, a rope should be used for securing to components to aid safe raising and lowering.
13. Never work from, or build or dismantle the tower from, an unguarded platform.
14. Legislation now calls for inspection and recording of assembled towers. See HSE Guidance note 10 (revision 4) for further details.