PASMA

**Prefabricated Aluminium
Scaffolding Manufacturers Association**

**OPERATOR'S CODE OF PRACTICE
Issued by P.A.S.M.A.**

SECOND EDITION ISSUED JULY 1987

**Applies only to Prefabricated Aluminium Alloy Towers
supplied by members of P.A.S.M.A.**

£1.25

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SECOND EDITION (Issued July 1987)

Prefabricated Aluminium Scaffolding Manufacturers Association Limited

1. INTRODUCTION

P.A.S.M.A. is an association of the U.K. major manufacturers and suppliers of prefabricated aluminium alloy towers. All P.A.S.M.A. members have their equipment approved to BS1139; Part 3 1983 and therefore carry the current British Standard Kite Mark approval. This is a guarantee to the user that specific standards of design and fabrication have been met which may not be possible with unapproved systems.

The Health and Safety Executive have now published a tower scaffold guidance note No GS 42 which provides tower users with advice as to the use and application of towers within the framework of the Health and Safety at Work Act 1974 and the Construction (Working Places) Regs 1966.

This second edition of the P.A.S.M.A. guide has been written taking full account of the latest publication and it is hoped that it will continue to provide guidance to all aluminium tower users particularly those concerned with erection and supervision and to Training and Safety Officers.

2. SCOPE OF THIS CODE OF PRACTICE

This P.A.S.M.A. Code of Practice principally relates to free-standing access towers, manufactured from prefabricated components, where the principle structural material is aluminium alloy. These towers have B.S. Kite Mark approval, indicating that they comply with B.S. 1139; Part 3 1983.

This type of prefabricated aluminium alloy tower system can also be assembled to form continuous facade scaffolds and special structures, such as portal frames, bridges etc., but these special structures are outside the scope of this Code of Practice and users must consult their supplier for further information.

3. TOWER COMPONENTS

3.1

The main structure comprises end frames, diagonal and horizontal braces, adjustable legs with base plates or castor wheels. Above a certain height stabilisers or outriggers will be required. Working areas at the top or intermediate level are provided by platform units, around which will be guardrails and toeboards for safety.

3.2.

Access to the working platform is gained by ladders. These ladders can be either built into the frame structure, or be separate purpose built units: The access provided depends upon the type of tower selected and will vary with different suppliers designs. See illustrations on page 3.

3.3

Horizontal and diagonal braces will generally be identical excepting length. The length and purpose of the brace will normally be clearly marked on it by an identifying label and/or by colour coding. These braces will have a locking hook mechanism on the ends, which is used to hook over the horizontal members of the end frames and lock. The braces cannot be removed until the hook mechanism is unlocked.

3.4

Platform units normally comprise an aluminium frame with two hooks at each end. Platform hooks locate over the horizontal members of the end frames of the tower and are not normally provided with locking mechanisms. A deck surface will be fixed to the metal frame, normally of plywood, having a special anti-slip surface. Span type platform units will usually have a hinged hatch to allow access to the working platform within the tower.

Platform units are normally about 610 mm (24") wide (see note under Exemptions on page 19) and are available in lengths to suit the modular length of the tower. Working platforms can be single unit or two units side by side, but for intermediate or landing access platforms, a single unit would generally be used. Working platforms will be surrounded on all four sides by guardrails and toeboards. Intermediate landing access platforms require guardrails but not toeboards.

3.5

The width of the basic tower is governed by the width of the end frames and typically these are available in two widths: Single Width and Double Width of approximately 0.75 m and 1.3 m respectively. The length of the basic tower can be varied by the length of braces and platforms. These range from 1.5 m to 3.0 m.

3.6

Outriggers or stabilisers may be fitted to increase the EFFECTIVE BASE AREA and to improve stability. (See section 5).

An outrigger is a device for use on towers which are to be moved frequently and has provision for a castor.

A stabiliser is a similar device to be used on towers that are moved less frequently and has a self aligning foot in lieu of a castor.

MEMBERS

Prefabricated Aluminium Scaffolding Manufacturers Association Limited

The Building Centre
26 Store Street
London WC1

COMPANY		ADDRESS	PRODUCT
Aliscaff Limited **01 808 5005**		Unit 2, Hotspur Industrial Estate, West Road, Tottenham London N17 0RJ	ALISCAFF
Instant Zip-Up Limited **0952 811779/815815**	★	Audley Avenue, Newport, Shropshire TF10 7DP	INSTANT ZIP-UP RIBGRIP
Martin-Thomas Limited **0264 24014**	★	South Way, Walworth Industrial Estate, Andover, Hants, SP10 5AD	HI-WAY
SGB Plc **01 648 3400**		Willow Lane, Mitcham, Surrey CR4 4TQ	SNAPLOK
Star Scaffold Hire Limited **0942 602511/6**		153 Newton Road, Lowton, Nr. Warrington, WA3 1EZ	RIBGRIP & INSTANT
Stephens & Carter Limited **0635 36768**	★	Access House, Strawberry Hill, Newbury, Berks. RG13 1HA	CLIMALLOY
W. C. Youngman Limited **0403 790456**		Stane Street, Slinfold, Horsham, West Sussex RH13 7RD	EASI-BUILD
Zig Zag Scaffolds Limited **0908 662822**		Chesney Wold, Bleak Hall, Milton Keynes MK6 1NJ	ZIG ZAG

★ Founder Members

Applications are invited for membership from qualifying companies and should be addressed to the P.A.S.M.A. representative at any of the above listed companies.

11.4 When Dismantling the Tower

- Keep to the instructions in the supplier's manual.
- Never drop equipment from the tower. Always lower material to the ground by rope or hand.

IF IN DOUBT ASK THE SUPPLIER

12. TRAINING

Aluminium alloy towers are designed to be erected and dismantled by operatives having only minimal skill and experience. Provided that the erector can interpret the simple instructions in the supplier's manual and can check the structure when it is finished, then no problems should be encountered in erecting basic towers. However, P.A.S.M.A. recognise that certain users or their employers may wish for more specific training in the use of this type of equipment. P.A.S.M.A. therefore sponsors a training course, operated by its member companies, whereby the would-be user can learn the essential points and safety features which ensure the safe erection and use of aluminium alloy towers.

A P.A.S.M.A. certificate will be issued to those attending this course. Further details can be obtained from any P.A.S.M.A. member company.

FIG. 1

THREE TYPICAL TYPES OF PREFABRICATED ALUMINIUM ALLOY TOWERS

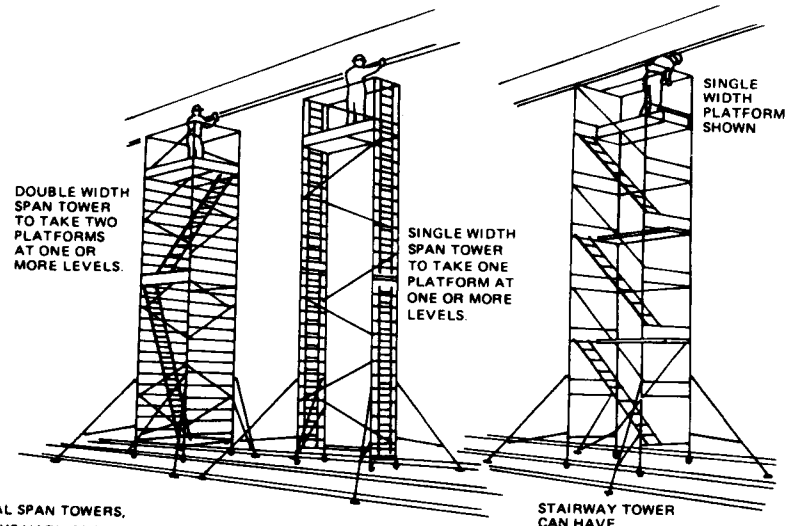
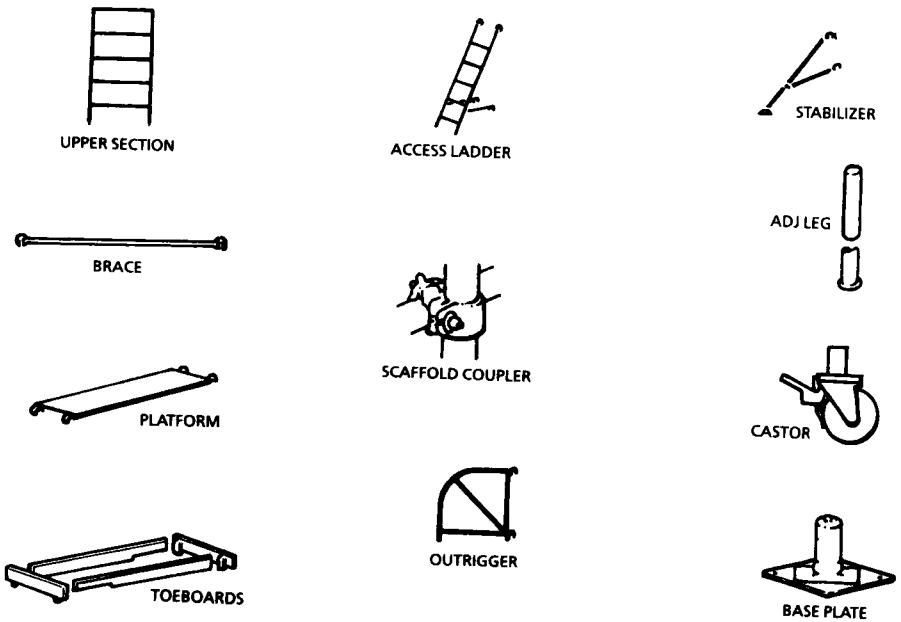


FIG. 1A



4. ERECTION AND DISMANTLING

4.1 Instruction Manuals

All P.A.S.M.A. members supply comprehensive manuals on the erection and dismantling of towers, whether the tower is supplied for sale or on a hire basis.

USERS SHOULD ENSURE THAT THESE MANUALS ARE AVAILABLE TO THE OPERATIVES ERECTING AND USING THE TOWER, AND TO THE PERSON SUPERVISING THE WORK. THEY SHOULD ALSO ENSURE THAT THE OPERATIVES ERECTING THE TOWER ARE COMPETENT TO DO SO, EITHER BY SPECIAL TRAINING OR EXPERIENCE. (See Training Section 12)

4.2 Type and Number of Components

The type of components used for the construction of a tower must be compatible. Not only should they all be components from the same supplier, they should also be those recommended for the particular tower configuration. Suppliers usually supply a range of different types of towers and although some components are interchangeable between types, this is not always the case and unsuitable components should be rejected. Before commencing to erect the tower make sure that the correct number of components is available and never attempt to make up deficiencies by the use of random scaffold tubes and couplers or scaffold boards etc.

4.3 Ground Surface

Towers should be erected and used only on ground suitable for the purpose, generally with a surface of concrete, tarmacadam or similar. Where towers are on soft or uneven ground, base plates should be used instead of castors, and these should be set on boards or other firm decking which will provide a firm foundation. Outriggers and stabilisers should be similarly treated.

4.4 Castors, Base Plates and Adjustable Legs

Erection is usually commenced by fitting either castors or baseplates to four adjustable legs. The design includes a feature to prevent the castor or base plate from falling out of the adjustable leg. The adjustable legs are fitted into the lower ends of the columns of two end frames. A mechanism prevents the adjustable leg from falling out of the end frames. Each leg has a device to vary it's extension, so that the tower is level on uneven or stepped surfaces.

THIS IS NOT a means of gaining additional height and the extension of the adjustable legs should be the minimum possible. Where adjustment is required beyond that for normal levelling purposes, then the manufacturer's advice must be sought.

- Tie into the structure if at all possible, or arrange for other methods of stability, as described in this Code.

- Incomplete towers should have recommended warning notice displayed.

11.3 During Use of the Tower

- Ensure Safe Working Load of tower is not exceeded.

- Inspect before each use to see that the height/base ratio is within limits.

- Ensure that no parts have been removed or altered from the correct configuration or have been vandalised.

- Ensure that outriggers or stabilisers are correctly positioned and secured.

- Check that ties, ballast weights or guys are in order if fitted.

- Check the tower is vertical and adjustable legs are secure.

- Check that the castors and brakes are operative.

- Check that the floor or surface is firm and level.

- Ensure recommended means of access is in place.

- Check the tower is clear of overhead obstructions before moving.

- Check that the tower is not damaged.

- Limit horizontal forces on the platform as much as possible.

- In industrial areas, housing estates, public places, etc., take all necessary precautions, like fencing the base of the tower to prevent children or vandals from climbing the tower and vehicles colliding with the tower.

- Ensure men and material are off the tower before moving. Move the tower by applying manual force at or near the base.

- Avoid moving the tower by mechanical means such as towing with a vehicle.

- Avoid using the tower in windy or severe weather conditions, unless adequately tied in or stabilised.

- Ensure that platforms are secure or tied down in windy or severe weather conditions.

11. SAFETY CHECK LIST

11.1. Before Erecting the Tower

- Make sure that the supplier's instruction manual is on site and has been read and understood.
- Make sure that all local bye-laws and Police regulations are adhered to when towers are erected in public places.
- Ensure reasonable precautions are taken to prevent collision with tower by persons or vehicles.
- Check that all components are of the same make and correct type and that the correct number are on site.
- Check that the components are not damaged.
- Check that components with moving parts – castors, brakes, telescopic legs and hooks – are working properly.
- Check that floor is level, firm and not obstructed.
- Check that floor openings are covered or filled in, or protected with barriers.
- Check that the scaffold can be tied to adjacent structures if necessary.

11.2 When Erecting the Tower

- Keep to the instructions in the supplier's manual.
- Keep to the recommended height/base ratios.
- Fit outriggers or stabilisers where required.
- Check that the castor brakes are on.
- Check that the scaffold is vertical.
- Check adjustable legs are secure.
- Fit bracing as the erection proceeds.
- Secure interlocking pins on all spigot and socket joints.
- Fit guardrails and toeboards to all working platform levels.

4.5 Base Section

The base section, comprising the two end frames and crossbraces, is then assembled according to the suppliers instructions. The legs should then be adjusted so that the base section is vertical and the two end frames are at the same level. It is therefore preferable that the tower be erected in the position in which it is to be first used, otherwise the tower may have to be re-levelled when it is moved into the working position. If castors are used these should now be braked. For tiered floor situations the frames can be at offset levels. Generally these offset frames will require extra diagonal bracing which should be placed in the positions as in the supplier's manual. If stabilisers or outriggers are required they must now be securely located. (See Section 5).

4.6 Upper Sections

The upper sections of the tower should now be erected following the sequence in the suppliers manual. Attention must be given to the following points; End frames are connected by a spigot and socket joint with a locking mechanism which must be positively engaged. All other tower components must be fitted in the correct positional sequence – without omissions.

4.7 Braces

Diagonal and horizontal braces have locking hook mechanisms which engage with horizontal members of end frames – ensure locking hooks are secure. Where horizontal braces are attached to the frame, particularly used as a guardrail, then the locking hook should be placed so that the hook is around the inside of the frame uprights.

4.8 Platforms

Intermediate and working platforms have hooks at each end which engage over the horizontal members of the end frames. Ensure that these are properly positioned and that the platform sits firmly and squarely in place. If working platforms have an access hatch, make sure that this is correctly orientated according to the assembly instructions.

4.9 Guardrails and Toeboards

Working platforms must be fitted with guardrails and toeboards and care should be taken to see that these are correctly fitted in accordance with the suppliers instructions.

4.10 Scaffold Couplers

Most P.A.S.M.A. towers have tubes of larger diameter than standard scaffold tube. Standard scaffold couplers are not therefore suitable for coupling to P.A.S.M.A. towers. If steel or aluminium scaffold tubes are connected to tower structures, possibly to provide a stabilising tie, the user should ensure that the coupler used is suitable.

4.11 Means of Access

Access to the working platform must be provided by purpose-built ladders or stairways, these should be erected as shown in the suppliers instructions.

EXTERNAL LADDERS MUST NEVER BE USED WITH ALUMINIUM TOWERS NOR SHOULD THE HORIZONTAL RUNGS OF THE TOWER BE USED AS A MEANS OF ACCESS UNLESS SPECIFICALLY DESIGNED FOR THE PURPOSE.

Certain types of tower have a vertical ladder incorporated into the end frame structure, where these are not continuous an intermediate platform must be positioned at the foot of the ladder.

Access to or through fully decked platform levels must be via a hatch which must be capable of being secured in the closed position.

4.12 Independant Ladders

If independant ladders are used vertically they must be positioned internally and fended off the frames to give adequate clearance for hands and feet. They should be firmly secured to the frames and must not rest on the ground.

4.13 Rest Platforms

Where the vertical distance between intermediate or working platform exceeds 9 m (30') a rest platform with guardrail must be provided.

4.14 Used as Facade Scaffolds

These are only to be erected to the manufacturers instructions and the recommendation of BS5973: 1981.

10. REGULATIONS, STANDARDS, RECOMMENDATIONS AND EXEMPTIONS

10.1

Aluminium alloy towers must conform to the Statutory Requirements of The Construction (Working Places) Regulations 1966. The principle points in the regulations relate to safety of the structure and the provision of guardrails and toeboards, the width of the working platforms and the use of ladders on scaffolds. Tower designs supplied by P.A.S.M.A. member companies conform to all these requirements, provided the components are erected and used in accordance with the instruction. Where proprietory ladders are used for access, it is the responsibility of the user to see that relevant statutory regulations are satisfied.

10.2

Recommendations for the design and performance of aluminium alloy towers are contained in British Standard 1139: Part 3: 1983 – Metal Scaffolding. Towers supplied by P.A.S.M.A. member companies conform fully with these requirements and are marked with the British Standard Kite Mark of Approval.

Recommendations for the safe use of aluminium alloy towers is contained in H.S.E. Guidance Note GS 42; 1987.

This P.A.S.M.A. Code of Practice is intended to satisfy the following statutory regulations, Standards and recommendations applicable to prefabricated aluminium scaffold towers.

a. Tower Scaffold Guidance Note GS 42 1987.

b. The Health and Safety at Work Act 1974, Section 6.

c. The Construction (Working Places) Regulations 1966.

d. British Standard 1139. Part 3: 1983.

e. Department of the Environment Standard Specification M and E 131.

10.3 Exemptions

Certificate of Exemption No 6 (General) F2410 dated September 1972 for working platforms positioned on internal staircases or landings or corridors which do not exceed one metre in width and where the working platform is not less than 380 mm (15") in width.

9. CARE AND MAINTENANCE

9.1

Those responsible for the care and maintenance of aluminium alloy towers should regularly check the inspection points outlined in section 8. Additionally inspection should periodically be made of all tower components, joints, rivets and locking devices. Any defects should be made good before the component is used further. Very few parts in aluminium alloy towers need lubrication but if the supplier recommends it, the mechanism for locking hooks, adjustable legs and castors should be lubricated with a suitable lubricant.

9.2 WARNING

REPAIRS SHOULD ONLY BE CARRIED OUT BY THE SUPPLIER OR OTHER COMPETENT PERSON APPROVED BY THE SUPPLIER.

Platforms should not be painted or treated subsequent to manufacture in a way which may conceal defects. Any instruction signs should be checked and replaced as necessary.

9.3 Handling, Transport and Storage

The life of aluminium alloy towers will be increased if proper care is taken of them during handling, transportation and storage. Before storage components should be cleaned. Any concrete or corrosive substance should be removed. Proper stacking will reduce any damage, and will make identification of the components easier for re-issue.

Similarly during transportation equipment should be properly stacked on vehicles. Space can be saved by systematically placing braces, platforms, stairways etc., in available space within vertically stacked frames.

5. STABILITY OF TOWERS

5.1 General

The major reason for selecting aluminium alloy towers to provide access is the lightness of the components and the consequent ease of assembly compared to the heavier sections of steel scaffold structures. In mobile form aluminium towers are easy to move from point to point, but the lightness of the structure means that care has to be taken to ensure the stability of towers. The manual the supplier provides, will show the safe height to which various tower configurations can be erected, and will give information on the use of stabilisers and outriggers to increase the stability of high towers. If these instructions are observed, aluminium alloy towers provide a stable and firm work platform for a wide variety of applications.

5.2 Height to Base Ratio

Stability can be ensured by following simple rules for the height to base ratio.

Where towers are used inside enclosed buildings, or in other environments where they are not subjected to wind forces, then the work platform can be at a height from the ground of up to 3.5 times the effective base dimension. Where towers are used outside or in exposed conditions, the height from the ground to the working platform can be up to 3 times the effective base dimension.

These ratios will not apply however if the towers are likely to be exposed to winds greater than 17 mph.

Figures 2, 3, 4 and 5 define the meaning of effective base dimensions in various situations.

THE EFFECTIVE BASE DIMENSION
IS THE SMALLEST BASE DIMENSION 'B'.
THE PLATFORM HEIGHT IS SHOWN AS 'H' THE PLATFORM HEIGHT 'H' MUST NOT EXCEED THE BASE 'B' BY MORE THAN 3 TIMES FOR OUTSIDE AND 3½ TIMES FOR INDOOR USE.

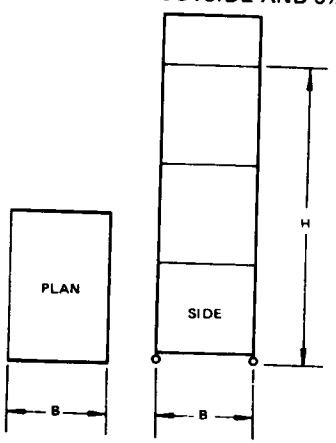


FIG. 2 TOWER WITHOUT OUTRIGGERS OR STABILISERS

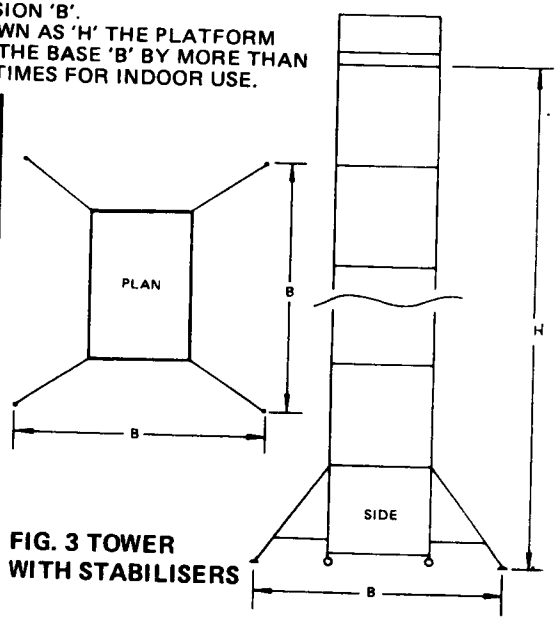


FIG. 3 TOWER WITH STABILISERS

FIG. 4 TOWER WITH OUTRIGGERS

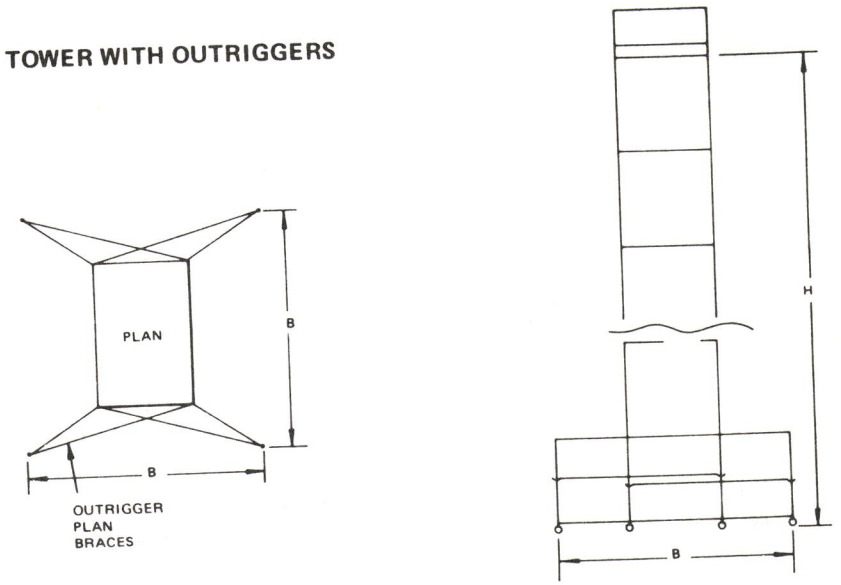
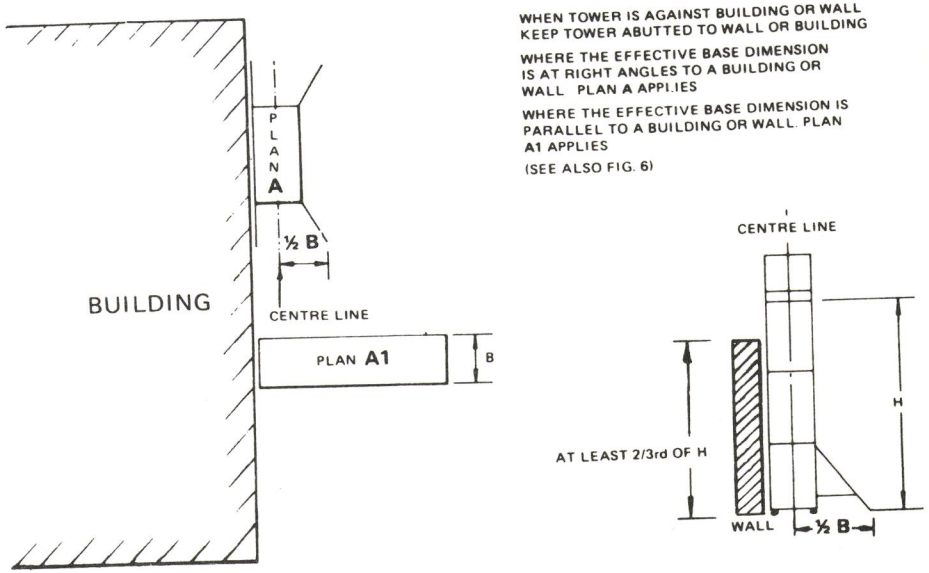


FIG. 5 TOWER AGAINST BUILDING OR WALL WHICH IS AT LEAST TWO THIRDS OF MAX. PLATFORM HEIGHT



- Check that all the spigot and socket joint locks holding the frames together are secured.
- Check that all the bracing members have been located exactly in accordance with the instruction in the suppliers manual.
- Check that all guardrails and toeboards are in position as required.
- Check that all access stairways and ladders are in position and are firmly located.

8.3 During Use of Tower

During use, the tower should be kept in good working order. A competent person should inspect the tower weekly to see that the structure has not been altered in any way. Should parts become damaged they should be replaced before the tower is used again.

8. INSPECTION

8.1 Before Erection of Tower

Before using a tower, all components should be checked to see that they are in good condition are compatible and that all joints are sound.

Castors should be checked to see that in each case the castor housing and wheel/tyre is not damaged, that the wheel rotates effectively, that the castor swivel rotates effectively and that the brake functions properly.

Adjustable legs should be checked to see that they are not bent, or the threads damaged. All threads should be clean and free from debris. The leg adjustment securing device should be checked that it operates effectively.

Frames should be checked to see that the members are straight and undamaged. They should be free of extraneous material such as concrete. Spigots should be straight and parallel with the axis of the column tube and the device for locking frames together should be checked to see that it is functioning correctly.

Similarly braces, stairways and ladders should be checked to see that they are straight and undamaged and locking hook mechanisms should be checked to see that they are functioning correctly.

Platforms should be checked to see that they are undamaged and that the frames are square and true. Plywood decks should not be split or warped and should be firmly fixed to the frames. Where toeboards incorporate clips or fittings these should be undamaged and firmly fixed to the toeboard. Ancilliary parts, such as outriggers and stabilisers, should be checked for damage and effective functioning of hooks and couplers.

8.2 Before Use of Tower

After a tower has been erected, the following checks should be made before it is used.

- Check that it is vertical and square and that the horizontal braces and platforms are level.
- Check outriggers or stabilizers are correctly positioned and secured.
- Check that all baseplates or castor wheels are fully in contact with the ground, including those on stabilisers or outriggers. All castors and leg adjustment devices are secured.

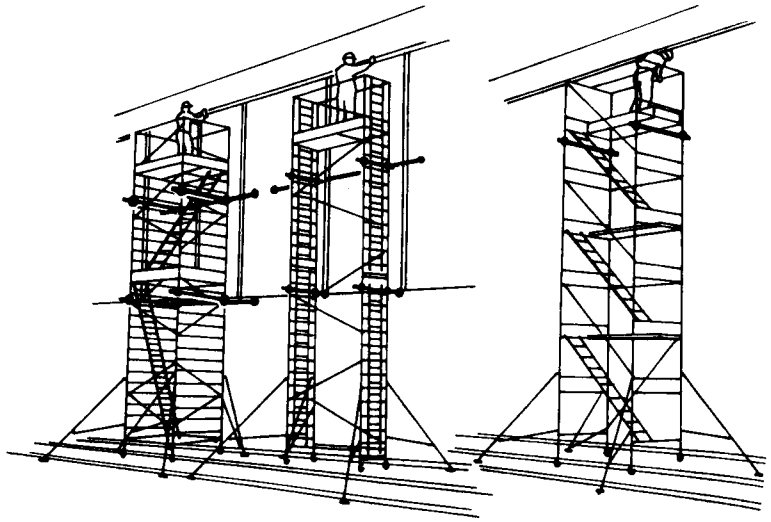
5.3

Information about the effect of wind on towers and the safe conditions in which they can be used, is contained in the following section of this P.A.S.M.A. Code of Practice. Be cautious about the use of towers in open-ended buildings, such as hangars or unclad buildings, as the wind forces in such locations can often be far greater than if the towers are used outside the building, due to the funnelling effect of the wind.

5.4 Wind Loads on the Tower

Wind imposes a horizontal load on the tower tending to overturn it. In normal safe working conditions this tendency to overturn is counteracted by the self-weight of the tower, and the stabilising effect of the outriggers or stabilisers. BS1139: Part 3: 1983, Clause E2, states that towers should be stable in a freestanding condition in windspeeds of 7.7m/sec (17.2 mph or Beaufort force 4).

Towers erected in accordance with this code are safe to be used in winds up to this speed when the specific recommendations of the supplier are followed.



5.5 Other Horizontal Loads

Apart from wind loads, other horizontal loads can act on the tower. These are mainly caused by the actions of their operatives working on the tower. For example, when using hand tools, such as a drill, pushing on the drill causes an equal and opposite force on the tower. Such forces should be avoided as much as possible and in no circumstances should they exceed 20 kg (44 lb) on free standing towers.

It is hazardous and illegal to move towers by pulling them along from the working platform. Towers must only be moved by application of manual effort at or near the base and there should be neither men nor materials on the tower during the moving operation. (See section 6.6 – moving towers).

5.6 Vertical Eccentric Loads (Lifting Material etc)

Any vertical load, produced by men or materials, within the area of the working platform, adds to the stability of the tower, but any vertical load outside the area of the working platform can be hazardous. For example, heavy materials hoisted with a rope outside the tower have a tendency to overturn the tower, particularly if no outriggers or stabilisers are fitted as can be the case with towers of lower height.

Loads must be pulled up within the EFFECTIVE BASE AREA of the tower. The advice of the suppliers must be sought to ensure safe and stable use of the tower.

5.7 Outrigger and Stabilisers

Outriggers or stabilisers increase the EFFECTIVE BASE DIMENSION of the tower and must always be fitted when required.

THE SUPPLIERS INSTRUCTIONS MANUAL WILL SHOW WHEN OUTRIGGERS OR STABILISERS SHOULD BE FITTED.

5.8 Sheeted Towers

On occasions it is necessary to enclose the frame of the tower with some form of sheeting. This greatly increases the effect of the wind on the tower thus reducing the stability. This will mean that such towers must be tied in at all times and the advice of the supplier should be sought.

5.9 Tying-in

Aluminium alloy towers are supplied as free-standing units for heights to the working platform of 10.0 m and some suppliers provide towers that are free-standing up to 16.0 m. Towers above these heights or where the optimum base dimensions cannot be constructed, will almost certainly have to be rigidly tied into adjacent structure and the advice of the suppliers should be sought.

If the correct effective base dimensions cannot be obtained, it may be necessary to tie in towers of a lesser height.

Tying-in is normally achieved with compatible aluminium tube and couplers but the advice of your supplier must be sought.

It is good practice to tie in towers of all heights whenever possible. However, where towers are left unattended or are to be located in particularly exposed conditions, stability will almost certainly be affected by wind forces. In these circumstances ensure that the tower is adequately tied in or restrained from blowing over and that platforms are securely fixed.

7. HAZARDS

Accidents are normally the result of carelessness or failure to observe good working practice. With aluminium alloy towers accidents can be caused by:–

7.1

- Height being too great relative to the effective base dimension.
- Failure to use outriggers or stabilisers when required.
- Tower being used on or moved on sloping or obstructed surfaces, without attention to vertical alignment and stability.
- Using a tower which is not vertical.
- Towers not being tied to building or adjacent structure when they should be.
- Moving the tower carelessly – pulling it along at working platform level.
- Not ensuring ground is clear of obstruction, potholes, ducts etc.
- Not ensuring tower is clear of overhead obstructions.
- Bracing members not being fitted in accordance with instructions.
- Guardrails or toeboards not being fitted allowing men or materials to fall from the working platform.
- Using the tower in adverse weather conditions.
- Using a mobile tower when the castor wheels have not been locked and leg locks have not been secured.
- Exceeding the Safe Working Load.
- Using sheeting around the tower.
- Extending the height of the top platform by use of ladders, boxes or other devices.
- Locking devices not being used.
- Failure to observe recommended access procedures ascending or descending towers.

7.2 Environmental

Deterioration of the tower material and construction can occur for a variety of reasons. Among these are:–

a. Where shot blasting or high pressure jets are used.

b. Possible chemical or atmospheric problems resulting in corrosion to the tower.

c. Where thermite sparking can occur (gaseous and dusty atmospheres).

d. Exposure to excessive temperature.

6.7 Cantilever Platforms

Towers can be equipped with cantilever platforms. Such towers must be erected in accordance with the suppliers instructions. Never attempt to make cantilever platforms by impromptu methods chosen on site. If these towers are mobile they will have less stability and greater care must be taken when moving them.

6.8 Use of Scaffold Boards and Stagings

Do not make up deck areas for the tower by using standard scaffold boards. However, it is sometimes useful to be able to bridge between two adjacent towers with proprietory staging units. If this is done, care should be taken to see that the towers are effectively stabilised and prevented from moving. The staging should be firmly supported on a load bearing part of the tower and prevented from moving. Guardrails and toeboards must be provided to stagings.

Care should be taken when using stagings that both the effective safe working load on the tower and stability requirements are complied with, and that working platform widths regulations of 600 mm min width are complied with. If in doubt consult your supplier.

In the case of towers, built against a wall or building the illustrations on page 9 show that the towers should also be abutted by the use of compatible aluminium tubes and couplers.

Typical means by which towers can be abutted to building face are shown diagramatically on page 9.

Use of Tube and Couplers

The advice of the supplier should be sought to advise on suitable methods of abutting towers especially where buildings have large glazed or clad faces, or when used in gangways against high racking.

5.10 Ballast Weights, Guy-ropes and Ground Anchors

Where additional stability is required, but cannot be achieved by tying into a rigid structure then it is possible to obtain stability by the use of ballast weights, guy-ropes or ground anchors.

Ballast weights placed on to the base of the structure will increase tower self-weight, thereby increasing the stability. A competent person should specify the correct amount of ballast weight and care should be taken to see that the total safe load on the structure, and particularly on the castors, is not exceeded.

Similarly, it is possible to stabilise a tower using wire guy-ropes or for temporary applications, limited stretch nylon or polypropylene ropes of adequate strength for the purpose of guying the tower. Again, their use should be authorised by a competent person and it should be noted that the downward pull from a guy-rope can cause an excessive loading effect on the columns of the tower. Guy-rope anchorages and guy-rope tensions must be checked regularly.

The tower can be secured to the ground by ground anchors, anchor bolts or spikes. The anchors should be of adequate strength and the method of attachment to the tower must be as specified by the supplier.

5.11 Towers in Public Places

When towers are left erected in public places or where vandals can gain access to the towers, it is advisable to provide security fencing around the tower base of a suitable height to ensure that towers are tied in to prevent injury or damage.

In certain locations, a pavement licence may be required from the local authority, which may impose special conditions such as pedestrian access, base frames, lighting etc.

6. SAFE USE OF TOWERS

6.1 General

Aluminium alloy towers provide a safe and effective working platform, provided that certain simple rules are observed.

6.2 Guardrails and Toeboards

Statutory regulations require that working platforms are provided with guardrails and toeboards. Your tower supplier will have made available suitable guardrails and toeboards which satisfy these requirements and they must be used at all times and must be positioned in accordance with the instructions in the erection manual. Do not be tempted to leave out a guardrail or toeboard to give easier access for working.

6.3 Working Platforms and Intermediate Platforms

The platforms supplied with aluminium alloy towers are specially designed for the purpose and will locate securely on the frame of the tower. Ensure that all hooks are properly engaged with their supports and see that the platforms are level and firmly seated. Sometimes intermediate platforms are required either for access or as other working areas. If the intermediate platform is to be used as a working platform, guardrails and toeboards must be provided.

6.4 Safe Loading

The supplier's instruction leaflet will detail the maximum loads that the tower can support. Generally speaking they will show the Safe Working Load that can be supported on any platform, the safe working load that can be supported by the tower as a whole (i.e. the sum of the working loads from several different platforms and safe working loads on the castors). The castors will have this safe working load clearly stamped on them. It is recommended that a notice be exhibited at the base of the tower, showing the safe working load, so that all personnel who use the tower are aware of its safe capacity.

6.5 Incomplete Towers

When towers are left in an incomplete state, then a notice should be displayed to announce the fact. This notice should read:–

DANGER
INCOMPLETE SCAFFOLD
NOT TO BE USED

6.6 Moving Towers

Towers must never be moved with men or materials on the platform and must only be moved by applying manual force at or near the base of the tower. Never move towers with powered vehicles. Never move towers in high wind conditions. Take care tower is clear of overhead obstructions, particularly electric cables. If a tower has to be lifted by a crane the supplier should be consulted before this is done.

ENSURE ANY HOLES, DUCTS, PITS OR GRATING ARE SECURELY COVERED.

It is preferable to use outriggers with castors if towers have to be moved frequently.

Towers with stabilisers should only be moved as illustrated below, they should be dismantled so that height "H" is not more than 2.5 times the effective base dimension "B".

FIG. 7 MOVING TOWERS