



Collective Mark

**PASMA**®

THE TRADE ASSOCIATION FOR THE UK MOBILE ACCESS TOWER INDUSTRY

**www.pasma.co.uk**

# OPERATOR'S Code of Practice

Applies only to prefabricated towers manufactured in aluminium alloy or fibreglass which meet PASMA's product approval criteria and which carry a current British Standard or other equivalent mark of approval.

New edition published 2009 (Revision 12.6)

**UPDATED** TO INCLUDE WAHR AND BS EN 1004:2004

Produced by PASMA in co-operation with the HSE

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There is one organisation which is solely committed to the safe use of mobile access towers, PASMA, the Prefabricated Access Suppliers' & Manufacturers' Association.

PASMA has long been committed to the ideals of providing safe, efficient access and equipping operatives with the necessary information and training to allow them to use mobile access towers safely and productively.

This latest revision of the Code of Practice incorporates the fall protection principles of the Work at Height Regulations and the completely updated methods of assembly, dismantle and alteration recommended by PASMA, in co-operation with the Health & Safety Executive, (HSE). It serves to underline PASMA's and the HSE's assertion that no-one should ever have to stand on an unprotected platform.

In addition to its function as a stand alone reference document for users, their supervisors and managers, as well as health & safety professionals, it is also intended to supplement PASMA approved training courses by serving as an invaluable reminder of the best practice that delegates have learned during training and work experience.

By following the practical guidance of this revised Code of Practice, the operative is able to call on the combined experience of the entire mobile access tower industry, since PASMA's members, with a wealth of experience between them, have once again contributed to its production.

The Work at Height Regulations require that, before working at height, a competent person should undertake a risk assessment to determine, using the hierarchy of measures:

- Can work at height be avoided?
- Is there an existing safe place of work which could be used?

Then, if neither of these is reasonably practicable, to select suitable work at height equipment, giving priority to collective fall protection over personal fall protection measures.

Mobile access towers not only provide collective fall prevention on the completed structure, but also, by using the recommended assembly, dismantling and alteration methods, provide fall protection during these processes.

The HSE commends the use of this Code of Practice to those who have duties under the Work at Height Regulations. This Code of Practice was drawn up with the participation of HSE representatives and it will be referred to in relevant HSE Publications.

The Association extends its grateful thanks to all who have contributed to the production of this Code of Practice, by whose combined efforts PASMA continues to meet its stated commitment to the safe use of mobile access towers

**PASMA Standing Review Committee**  
October 2005

PASMA is an industry association for suppliers and manufacturers of mobile access towers consisting of Manufacturing, Hirer / Dealer, Training, Associate and Subscribing Members.

Manufacturing members must have product conformity certification to the latest British / European product standards accredited by a third party certification body such as British Standard Kitemark, TUV or other equivalent mark of approval.

Hirer / Dealer members undertake, as a requirement of their membership, to have as the bulk of their stock, equipment which carries a British Standard Kitemark, TUV or other equivalent mark of approval.

Training members, as well as conducting training using equipment which carries the mark of approval as described above, are also subject to initial assessment and ongoing audit to ensure they comply with the stringent requirements of the PASMA training scheme.

This edition of the PASMA Code of Practice takes account of the latest Regulations, Guidance and Product Standards, (refer to Safety Requirements section for details), at time of issue, and supersedes all previous editions.

It is intended to give guidance on best practice for the use of mobile access towers, where users have established that work at height cannot be avoided, that there is not an existing safe place of work, and thereafter have selected a mobile access tower as the most suitable work at height equipment because of its inherent collective fall protection measures.

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Details of the PASMA membership can be found on the website [www.pasma.co.uk](http://www.pasma.co.uk)

## 3. SCOPE

This Code of Practice relates mainly to free-standing mobile access towers manufactured from prefabricated components where the principal structural materials are aluminium alloy or fibreglass and specifically refers to towers that have a British Standard or equivalent UK or European approval mark.

This type of mobile access 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. Users must consult their supplier for further information and may wish to consult the Product Standard for such configurations listed under Section 4 (Safety Requirements).

The scope of the current product standard is limited to mobile prefabricated towers of height from 2.5m to 12m (indoors) and from 2.5m to 8m (outdoors).

This document should be used in conjunction with the appropriate manufacturer's instruction manual. Updated versions of these are available for download on the Association's website, [www.pasma.co.uk](http://www.pasma.co.uk)

This code of practice is based upon and incorporates the requirements of the following:

### 4.1 Legislation

Health & Safety at Work (etc.) Act (1974)

### 4.2 Regulations

Work at Height Regulations (2005) (as amended)

Management of Health & Safety at Work Regulations (1999) (as amended)

### 4.3 Guidance

Health & Safety in Construction HS (G) 150

HSE Information Sheet CIS 10

Copies of the above are available from your local HSE office,  
and further information is available from the HSE's website, [www.hse.gov.uk](http://www.hse.gov.uk)

### 4.4 Standards

BS EN 1004:2004

BS EN 1298:1996

BS 1139, Part 6:2005

Copies of these and other relevant industry standards can be obtained  
direct from PASMA, Tel: 0845 230 4041, or from the PASMA website  
[www.pasma.co.uk](http://www.pasma.co.uk)

In conjunction with this Code of Practice, users should refer to the following:-

Provision & Use of Work Equipment Regulations (1998)

Personal Protective Equipment at Work Regulations (1992)

Manual Handling Operations Regulations (1992)

Reporting of Injuries, Diseases & Dangerous Occurrences Regulations (1995)

Young people at work – a guide for employers HSG165

### 5.1 Training

The Regulations require that you, (and your Supervisor and Manager) be **competent** in the safe use of work at height equipment, which includes mobile access towers. The PASMA photocard provides proof that you have undergone and successfully completed training to a nationally recognised standard. Many workplaces will insist on seeing your PASMA photo card before you will be allowed to assemble, alter or dismantle mobile access towers, so it should be retained with you at all times and presented for inspection by anyone in authority.

### 5.2 Competence

A competent person is a person who can demonstrate that they have sufficient professional or technical training, knowledge, actual experience, and authority\* to enable them to:-

- a. carry out their assigned duties at the level of responsibility allocated to them;
- b. understand any potential hazards related to the work (or equipment) under consideration;
- c. detect any technical defects or omissions in that work (or equipment), recognise any implications for health and safety caused by those defects or omissions, and be able to specify a remedial action to mitigate those implications.

*\*Note: "authority" here means delegated authority to the individual by his employer to carry out a certain function or duty.*

Going onto or **assembling a mobile access tower** will involve working at height. The Advisory Committee on Work at Height Training (ACWAHT) indicate that for anyone who works at height, the above definition of a competent person implies:

- To know and understand the specific legal duties under the Work at Height Regulations which apply to them as an individual
- To understand who controls their activity and the lines of communication to use
- To understand the principles of fall protection that the Regulations require to be used
- To be able to recognise safe and unsafe situations / activities
- To understand how to deal with the hazards associated with the task allocated to them
- To have adequate training in the correct use and limitations of any work equipment allocated to them for the task
- To understand the need for and the ability to check the adequacy of the safety equipment allocated to them
- If that equipment has been issued to them on a personal basis, an understanding of the correct procedure for storage, maintenance and inspection
- To understand safe procedures of work and state the correct procedure for the task, the emergency (including rescue) procedures in place for the work and their role in it
- To know the procedure for reporting any defects, hazards or unsafe procedures they detect

### 5.3. Responsibilities

Always, your overriding concern has to be for your safety and the safety of anyone else who is affected by what you do.

You must always read and follow the manufacturer's instruction manual and on no account attempt to use equipment beyond its limitations. You must never use mobile access towers whilst under the influence of alcohol or drugs.

You must not misuse or abuse equipment and you must not remove or interfere with guardrails or other devices which are provided for your safety.

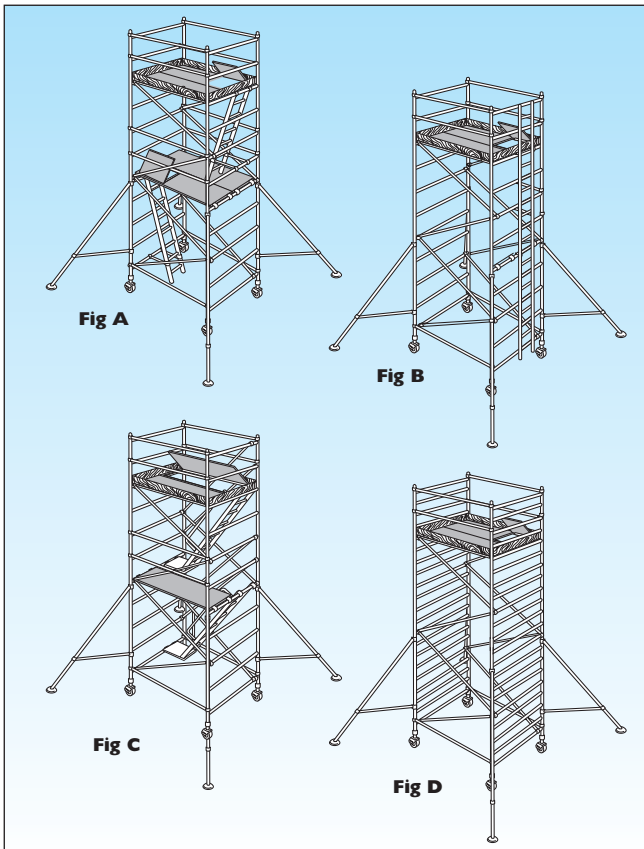
You must follow the training and instructions given to you, unless you think it would be unsafe to do so.

Since the safe use of mobile access towers requires that you consult safety notices and read and thoroughly understand the manufacturer's instruction manual, literacy and language comprehension are important requirements for any tower user.

Similarly, since the assembly and use of mobile access towers can be physically demanding, users should be physically fit and in good health and should, **generally**, not have problems with eyesight or hearing, heart disease, high blood pressure, epilepsy, fear of heights / vertigo, giddiness / difficulty with balance, impaired limb function, alcohol or drug dependence or psychiatric illness.

If you have any problems with literacy or language comprehension, or have any doubts about your fitness to use mobile access towers, you **must** bring them to the attention of your employer. This need not preclude you from using mobile access towers, provided your employer conducts an assessment and is able to put into place adequate measures, to take account of any difficulties you may have.

## 7. TYPES OF MOBILE ACCESS TOWERS



**Fig A**

Inclined Ladder Access Tower

**Fig B**

Vertical Ladder Access Tower

**Fig C**

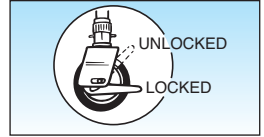
Stairway or Stairladder Tower

**Fig D**

Frame Access Tower

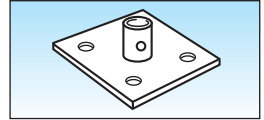
### Castor

Castors are fitted with braking devices which should always be locked unless you are moving the tower. Castors come in various sizes and load capabilities. Castors should not be used on soft ground without employing sole boards.



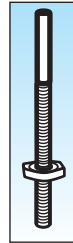
### Base Plate

Like the castor, the base plate is attached to the adjustable leg and is particularly intended for use on towers which you do not intend to move or which are sited on uneven or sloping ground.



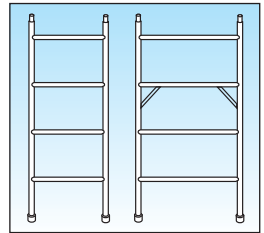
### Adjustable Leg

Adjustable legs are used to level the tower only. Use in conjunction with either castor or base plate. Do not use the adjustment to gain additional height.



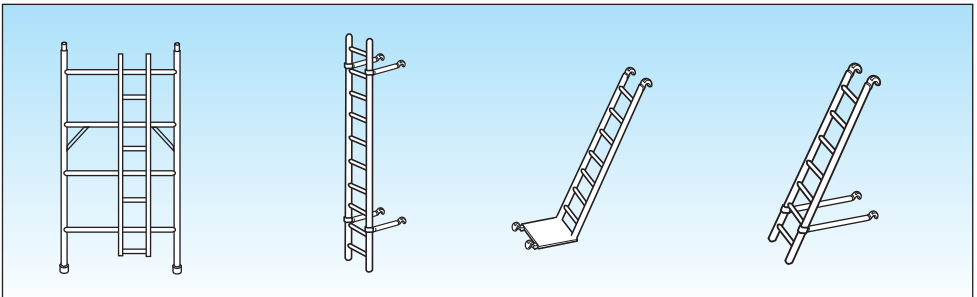
### Frame

Frames provide one of the main structural elements of the tower. They come in single width accommodating one platform, and double width accommodating two platforms side by side. They are joined together by connecting spigots until the desired height of the tower is reached. The platform(s) is located on the rungs of the frame. Frames are available in various heights to ensure you can achieve the exact height you need.



### Access

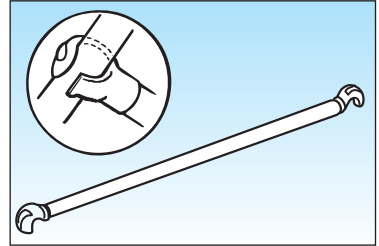
Access to platforms can be provided by a number of different means. Vertical clip-in ladders, stairways and stairladders are separate components which are positioned within the tower. Integral ladder frames and frames with rungs, which are suitably spaced and anti-slip, also provide a safe means of gaining access. Consult your instruction manual to determine what access is provided with your tower.





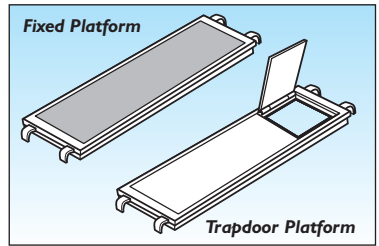
**Brace**

The second main structural element of the tower, braces are generally horizontal and diagonal. You can easily identify the difference between horizontal and diagonal braces, because the diagonals are always longer and the horizontals are the same length as the platform. They are usually fitted with locking hooks at each end, which are attached to the frame horizontals or verticals to make a rigid modular structure. Where braces are attached to verticals, they should always have the open side of the hook facing outwards, to prevent accidental disengagement. The manufacturer's instruction manual will clearly show the bracing pattern for each tower type.



**Platform**

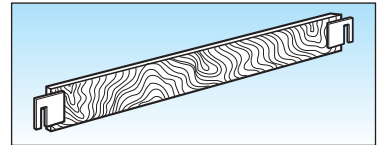
Generally comprising a frame with two hooks at each end and a slip resistant decking, platforms are designed to be safe and comfortable. They are available in various lengths and may be used singly or placed side by side to form a wider area. Platforms that hinge open are provided to allow you to access the platform from inside the tower. Only Trapdoor Platforms are used on single width towers.



Fully Hinged Platform not shown

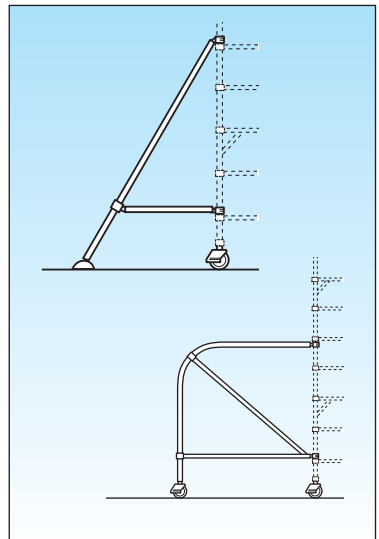
**Toeboard**

Designed to ensure tools and equipment are not dislodged from the platform area. Toeboards come in various sizes to accommodate the differing lengths and widths of towers.



**Stabilisers & Outriggers**

Stabilisers and outriggers increase the effective base dimension of the tower to allow you to build higher. Stabilisers are intended for towers you intend to move infrequently, whereas outriggers, as they are fitted with adjustable legs and castors are for towers which you intend to move frequently. Outriggers require the installation of plan braces to fix them in their optimum position and prevent them folding in whilst the tower is being moved. The manufacturer's instruction manual will advise which stabilisers/outriggers are suitable for each height of tower, their positioning and sequence, although as a general rule they should be fitted at the earliest opportunity.



### 9.1 Instruction Manuals

All PASMA members supply comprehensive instruction manuals on the erection and dismantling of towers which will comply with the current standard, and which incorporate the fall protection measures recommended by PASMA, in co-operation with the HSE, to ensure that operatives should never have to stand on an unprotected platform from which they are at risk of fall liable to cause personal injury. Suppliers and users should ensure that these manuals are available to the operatives erecting and using the tower, and to the person supervising the work. Employers should also ensure that the operatives erecting the tower are competent to do so by training (or, if undergoing training, are closely supervised by a competent person). PASMA have designed a recognised certification scheme for this purpose.



### 9.2 Type & Number of Components

The manufacturer's instruction manual will provide information on the types of components and the number of components required for a particular tower configuration. Suppliers usually provide a range of different towers and although some components are interchangeable such as adjustable legs and castors, checks should be made to ensure that the correct type and the correct number of components have been supplied. Never attempt to make up deficiencies by the use of alternative parts, random scaffold tubes, couplers or scaffold boards and the like.

### 9.3 Suitability of Site - Ground Conditions

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



### 9.4 Castors, Base Plates & Adjustable Legs

Begin assembly by fitting either castors or base plates 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 verticals of two frames. A retaining mechanism on the adjustable leg prevents it from detaching from the frame. Each leg has a device to vary its extension, so that the tower can be made level on uneven or stepped surfaces. This is NOT a means of gaining additional height and the extension of the adjustable leg should be the minimum possible. Where adjustment is required beyond that for normal levelling purposes, consideration should be given to offsetting or stepping frames for which the supplier's advice must be sought.

## 9.5 Base Module

The base module, comprising the two frames and braces, is then assembled according to the manufacturer's instructions. The legs should then be adjusted so that the base module is vertical and the two end frames are at the same level. PASMA recommends that the tower be checked using a spirit level vertically, across the width and across the length to ensure it is level. It is sensible that the tower be assembled in the position in which it is to be first used; otherwise the tower may have to be adjusted to ensure it remains level 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 as recommended by the manufacturer. Generally these offset frames will require extra diagonal bracing which should be placed in the positions the manufacturer recommends. If stabilisers or outriggers are required you should generally fix them at this stage, but refer to your instruction manual to be certain, (refer to 9.11 Stability).

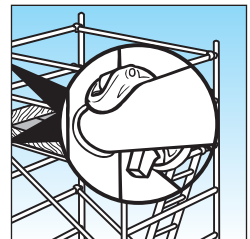


## 9.6 Upper Modules

The upper modules of the tower can now be erected following the sequence in the manufacturer's manual. Frames are usually connected by a spigot and socket joint with a locking mechanism which you must ensure is positively engaged and locked. All other tower components must be fitted in the correct positional sequence and following the manufacturer's recommended bracing pattern - without omissions. Take particular care to follow the manufacturer's instructions to ensure guardrails are installed before you stand on any platform to ensure that you are always prevented from falling in the course of assembly and check the instructions for the manufacturer's recommended methods for lifting components.

## 9.7 Braces

Diagonal and horizontal (guardrail) braces have locking hook mechanisms which engage with either horizontal or vertical frame members. When fitted to horizontal members, locking hooks must have their aperture facing downwards. When horizontal braces are fitted to verticals ensure that locking hooks have their aperture facing outboard. In all cases when fitting braces ensure that the hook mechanisms have operated correctly, the brace is securely fixed to the frame, and the hooks are located correctly on both sides.



**9.8 Working Platforms**

All platform units have hooks at each end which locate onto the horizontal members of frames. Ensure that these are properly positioned and that the platform sits firmly and squarely in place. If platforms are fully hinged platforms, ensure that the hinge is outboard. The trapdoor platforms should generally be self-closing. The windlock device(s) on the platforms should be engaged. Platforms should be installed at suitable intervals as recommended in the instruction manual, and depending on the nature of the work.

**9.9 Guardrails and Toeboards**

All platforms from which it is possible to fall a distance liable to cause personal injury must be fitted with guardrails. Care should be taken to see that these are correctly fitted in accordance with the manufacturer’s instructions. The diagram opposite shows the dimensions for guardrails and toeboards to comply with Regulations and current product standard.

In order to protect users from the risk of falling through an unprotected gap, current regulations require that an intermediate guardrail, or some other suitable barrier, must be installed.

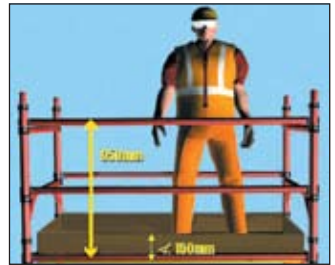
Toeboards, or other suitable barriers, are mandatory at all places of work from which it is possible that tools, equipment or other material may fall, liable to cause personal injury. Their use on intermediate, or rest, platforms is not compulsory unless a risk assessment identifies a risk that items such as tools and / or materials may be stored there and may fall from the unprotected platform.

**9.10 Method of Access**

Access to the platform must be provided by vertical clip-in ladders, integral ladder frames, suitable frame access incorporating anti-slip rungs, stairladders, inclined ladders or stairways. These should be erected as shown in the manufacturer’s instructions. If frequent vertical movement is required, a stairway or stairladder should be used. If materials are to be carried, a stairway should be used.

**EXTERNAL LADDERS MUST NEVER BE USED WITH MOBILE ACCESS TOWERS.**

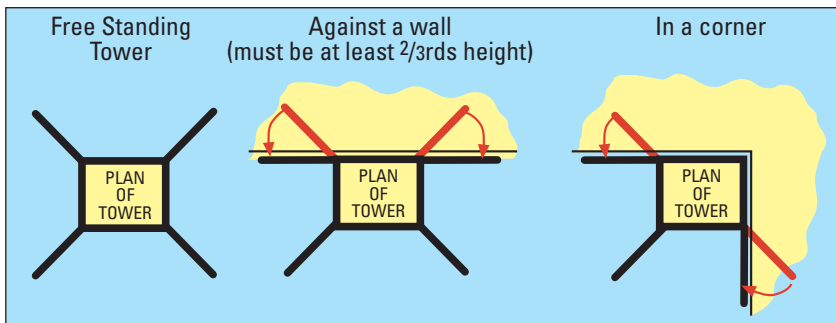
Access to or through a platform must be via a trap door which must be capable of being secured in the closed position.



**9.11 Stability**

The major reason for selecting mobile access 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 the tower.

**It is no longer appropriate to apply simple rules of thumb** (e.g. measure 3 x minimum base dimension for external use) but instead 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. PASMA recommends that stabilisers or outriggers are added at the first available opportunity, usually after the first module is complete.



The illustration shows the optimum positions for stabilisers and outriggers.

PASMA Manufacturers' towers all comply with British and European standards. This is your guarantee that, amongst other things, your tower meets very strict requirements for stability and meets stringent quality control criteria.

### 10. Moving the Tower

Towers should be moved with the utmost caution. Before moving, check the suitability of the intended route to ensure there are no obstructions, both at ground level and overhead, (particularly overhead cables). Men and materials must be removed and the height of the tower reduced to 4.0m. Finally, the stabilisers should be left in position and raised no more than 25mm from the ground. The tower must only be moved by applying manual effort at or near the base of the tower and you should ensure you have sufficient operatives on hand to control the movement of the structure.

PASMA do not recommend that assembled towers be suspended, for instance, by a crane. The manufacturer must approve any intended use of this nature and provide an appropriate design and method statement.

PASMA recommends outriggers in preference to stabilisers if a tower is to be moved frequently.

**ENSURE ANY HOLES, DUCTS, PITS OR GRATINGS ARE SECURELY COVERED BEFORE MOVING YOUR TOWER.**



Diagram showing tower being moved, clearance of 25mm on stabilisers and maximum platform height when moving of 4.0m.

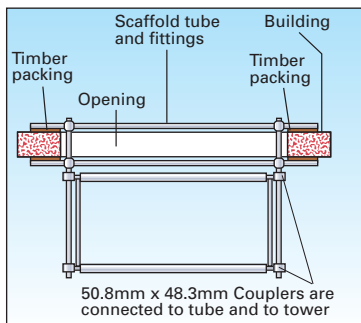


## 11. TYING IN AND IMPROVING STABILITY

Mobile access towers are supplied as free-standing units for heights to the working platform of 12m. and some suppliers provide special towers that are free standing up to 16m. Towers above these heights or where the optimum base dimensions cannot be constructed must be rigidly tied into an adjacent structure and the advice of the supplier should be sought.

You should tie in towers of all heights wherever possible, as it is safe practice to do so. (PASMA have produced a guidance note giving practical advice on tying methods, which is available from PASMA or its members). However, where towers are left unattended or are to be located in particularly exposed conditions, wind forces will almost certainly affect stability. In these circumstances ensure that the tower is adequately tied in or restrained from blowing over and that the platforms are securely fixed, or alternatively the tower dismantled.





Through Tie



Hilti Ring



Fischer Tie

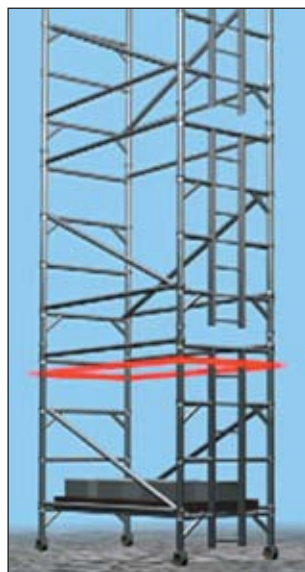
Tying-in is normally achieved with aluminium or steel tubes and suitable couplers, but, as most PASMA towers have tubes of larger diameter (50.8mm) than standard scaffold tube (48.3mm), standard scaffold couplers are not suitable for coupling to PASMA towers. If steel or aluminium scaffold tubes are connected to tower structures, the user should ensure that the coupler used is suitable, i.e. one that will accept the two different sizes of tube. These are available from PASMA members.

### 11.1 Ballast Weights, Guy Ropes and Ground Anchors

In exceptional circumstances, for instance in the case of a particularly tall tower, 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 must be of solid materials (i.e. not sand, water or other liquid or granular materials) and must be securely attached to the tower structure.

Ballast weights placed at the base of the structure will increase tower self-weight, thereby increasing stability. If this is a standard configuration for the tower, your supplier will specify the correct amount of ballast weight, and where and how it is to be positioned. Care must be taken to ensure that the weight of the ballast weights used is known, and that the total safe load on the structure, and particularly on the castors, is not exceeded. In the event that this is not a standard configuration for your tower, you should consult your supplier, as the Regulations require that the structure and the build and dismantle sequences be designed by a competent person.

Do not use guy ropes for stability unless under specialist direction. The tower can be secured to the ground by ground anchors, anchor bolts or spikes. Anchors should be of adequate strength and the method of attachment to the tower must be as specified by the supplier because of the extra loading on the tower.



Adding ballast reduces the centre of gravity and improves stability

### 12. Dismantling the Tower

Follow the manufacturer's instruction manual for dismantling and ensure that components are removed in the correct sequence. Take particular care to follow the manufacturer's instructions to ensure you are protected from falling in the course of dismantling and check the instructions for the manufacturer's recommended methods for lowering components. Remember site conditions may have changed since you assembled the tower.

## 13. HAZARDS

### 13.1 Slips

Avoid slips by not working on towers in snowy or frosty weather or in heavy rain. Similarly, you will also avoid slips by climbing only on those parts of the tower which are designed for climbing - either on the ladder section or on the special anti-slip rungs on some towers.



### 13.2 Electrocutation

The hazard of electrocution can be avoided by staying clear of overhead electrical cables. Aluminium towers are not insulated, although fibreglass towers do provide considerable insulation properties. For details of the insulation properties, contact your supplier.

If you need to work in the vicinity of overhead electrical cables, consult the appropriate HSE Guidance Note and your local power company for advice on safe distances, and be aware of the flash factor, (arcing), particularly in wet conditions.





### 13.3 Striking by Vehicles

If you are working on a tower structure which is sited at, or near, a road, you must take appropriate steps to ensure vehicles cannot come into contact with the tower. Use cones or barriers, or in some cases you may have to arrange traffic diversions. This does not only apply to public highways, you must give the same consideration when you are working in a factory or a site, where forklift trucks, delivery vehicles and such like can cause the same problems. Remember that this is a temporary structure - drivers and forklift operators do not expect the tower to be there.



### 13.4 Falling Objects

Objects can fall because they are dropped, or thrown intentionally, perhaps in the haste to complete a job. The momentum, which can gather with even lightweight components, makes such a practice extremely dangerous for anyone in the vicinity and is therefore not permitted in any circumstances.

Objects such as tools or materials can fall from the platform unintentionally. Toeboards are designed to prevent such an occurrence and are provided with every tower supplied by PASMA members. Regulations require that they must be installed at all places of work where there is a risk that tools, equipment or materials may fall a distance liable to cause personal injury.



Since there is a higher risk of objects falling during the assembly, alteration or dismantling processes, Regulations also require that you set up an exclusion zone, in the form of a physical barrier, (which may be cones with tape, for example), to ensure others are prevented from entering the danger area during these activities.

### 13.5 Instability - Effects of Wind

One of the major factors affecting stability is the effect of wind. However, determining wind speeds can sometimes present difficulties. PASMA recommends the use of a hand-held wind speed device, (anemometer). 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.

Towers should be stable in a freestanding condition in a wind speed that equates to 28 mph or Beaufort force 6. If the wind speed should exceed 17mph you should cease to work upon the tower. If the wind speed is likely to reach 25mph the tower should be tied into a rigid structure, and if it is likely to reach 40mph, the tower should be dismantled.

Another factor that makes the effect of wind even more dangerous is the attachment of sheets or tarpaulins to towers, or working with sheet materials such as cladding. These act like sails and, even in relatively light winds, can still cause the tower to overturn. Such towers must be tied in at all times and the advice of the supplier should be sought.

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 greater than if the towers are used outside the building, due to the funnelling effect of the wind.

### 13.6 Instability - Side Loads

Another example of a side load is where the tower is pushed or pulled, particularly at the top. Pushing or pulling a tower at platform level is very dangerous and could cause the tower to overturn. Side loads at the platform can also be caused by such activities as shot-blasting, high pressure jets, and the use of percussion drills. This list is not exhaustive; there may be other things in your work that could apply side loads. The maximum allowable side load at the platform is 20kg.

### 13.7 Instability - Vertical Loads

Any vertical load outside the area of the tower can be hazardous. For example, heavy materials hoisted outside the effective base area of 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 hoisted within the **EFFECTIVE BASE AREA** of the tower (i.e. within the area bounded by the tower or stabilisers / outriggers where fitted.) Your instruction manual must be consulted about hoisting loads to ensure safe and stable use of the tower.

Some manufacturers do not recommend the use of lifting devices, such as hoists. If you intend to use such equipment, you must consult and follow the advice given in the manufacturer's instruction manual

### 13.8 Instability - Moving by Vehicles

Pushing, or pulling towers at the bottom, using mechanical means such as forklifts or other vehicles is strictly forbidden. This is a very dangerous practice imposing sudden side loads which could cause the tower to overturn.



### 13.9 Instability - Ground Conditions

Ground conditions can also have a marked effect on the stability of a tower. If a tower is situated on soft or uneven ground or on top of grates or manholes, it is very possible that it could overturn. Like any structure, it is only as good as its foundations.

### 13.10 Instability - Over-extension of adjustable legs

Do not over-extend adjustable legs to give additional height, this has an effect similar to the tower being built on stilts, making the tower very unstable.

### 13.11 Instability - Vertical Alignment

Towers should be checked to ensure they remain vertical. A tower which is not properly vertically aligned is likely to be unstable.

The likelihood of overturning of towers as a result of instability is most often a combination of factors. Being out of level is a common contributory factor.

A very effective way of countering many of the risks of overturning is to alter your freestanding tower so that it takes its stability from an adjacent structure. PASMA recommends that all towers should be tied to an adjacent structure wherever possible. Your manufacturer's instruction manual will tell you at what point you must tie in, when your tower is above the safe free-standing height for stabilisers or outriggers, (*Ref to 11. Tying in and improving stability*).

### 13.12 Structural Failure – Overloading

Whilst it is an uncommon occurrence, tower structures can collapse. Investigation shows that this is almost invariably as a result of incorrect assembly, using damaged components or overloading the tower structure.



Do not exceed the manufacturers' stated maximum load, either on individual platforms or on the whole tower structure, and ensure you evenly distribute the load – do not amass materials, or tools, in a concentrated area.

### 13.13 Structural Failure - Incorrect Assembly

When assembling and dismantling towers, always follow the sequence explained in the manufacturers' instruction manual. Use only the correct components in the right place, following the recommended bracing pattern. (Refer to 9.2. Type and number of components). It is important that this advice is followed, as this gives the tower its structural strength. Never remove or borrow components from an assembled tower and reject, tag and isolate damaged components.



### 13.14 Falls from Height - Improper Use of Guardrails

Statistics show that falls from height are historically amongst the highest causes of fatalities and serious injuries reported each year.

Guardrails are designed to prevent falls from the platform. With the main guardrail set at about 950mm high, which is intended to be above the user's centre of gravity, and the mid guardrail at approximately the mid point between this and the platform, so that there is no unprotected gap of more than 470mm, it is difficult for anyone to fall if these are installed correctly.

Although guardrails, or other suitable fall prevention measures, are compulsory at all places of work from which it is possible to fall a distance liable to cause personal injury, some users either do not install them at all, or install them at below the correct height, so that they are below the centre of gravity of the users.



These are extremely dangerous practices, since they can easily lead to unnecessary, potentially fatal, falls from height if the user slips, trips or stumbles at the unprotected, or inadequately protected, work place.

**13.15 Falls from Height - Over-reaching**

Users must avoid over-reaching, over-stretching or setting up ladders, steps, or other devices to gain additional height. These have the effect of placing the operative outside the fall prevention measures afforded by the guardrails.

Only use additional components to increase the platform height safely.



**13.16 Falls from Height - Climbing Outside of Tower**

Climbing up the outside of the tower is expressly forbidden, and must never be attempted under any circumstances. Not only does this practice significantly increase the risk of the tower overturning, but, if you do lose your grip, or slip, there is nothing to prevent you falling.

**13.17 Falls from Height - During Assembly & Dismantle**

PASMA, in co-operation with the HSE, currently recommend two methods for assembling, altering and dismantling mobile access towers which take account of the need to prevent falls during these processes.

**Advance Guardrail**

This method uses an additional set of equipment allowing guardrails to be placed ahead of the platform from the safety of the level below, so that collective fall prevention measures are in place before the operative stands on the platform.



### 3T – Through The Trap

This method allows the operative to position himself through the trap of the platform and place horizontal braces ahead of him so that collective fall prevention measures are in place before he stands on the platform.



### 13.18 Falls from Height Personal Fall Protection Equipment

Both PASMA and the HSE specifically recommend that you do not attach safety harness lanyards to mobile access towers. In the event of an arrested fall, you are likely to cause the tower to overturn, not only increasing the risk of further injury to yourself, but also occasioning the additional risk of putting others in the vicinity in danger from the falling tower.



### 13.19 Working in Public Places

When towers are left erected and unattended in public places, or where vandals can gain access to the towers, it is advisable to provide security fencing around the tower base to a suitable height to prevent access, or some other suitable means to prevent unauthorised access, and tie in whenever possible.

In certain locations, a pavement licence may be required from the local authority, which may impose special conditions such as the use of pavement frames, lighting and such like. PASMA's Advanced Training Scheme incorporates a module, which equips delegates to assemble such structures.



**14.1 Safe Loads**

The manufacturer's instruction manual 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 and 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). The castors will have their Safe Working Load clearly marked 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.

**14.2 Incomplete Towers**

When towers are left in an incomplete state, a notice must be displayed in a prominent position to announce the fact.



**14.3 Cantilever Platforms**

Cantilever platforms can be attached to towers. Such structures must be erected in accordance with the manufacturer's instructions. Never attempt to make cantilever platforms by impromptu methods chosen on site. The design must be approved by the manufacturer, which will have a restricted safe working load based on an acceptable factor of safety. PASMA's Advanced Training Scheme incorporates a module, which equips delegates to assemble such structures.

**14.4 Linked/Bridged Towers**

These are outside of the scope of this document and should only be erected according to the manufacturer's instructions and the recommendations of current standards. PASMA's Advanced Training Scheme incorporates a module, which equips delegates to assemble such structures.

PASMA recommends that all such advanced uses of mobile access towers are undertaken only by operatives who have undergone Advanced PASMA Training and are in possession of the appropriate certificate and photocard.

### 15 Care and Maintenance

Those responsible for the care and maintenance of mobile access towers should regularly check the equipment. 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 mobile access towers need lubrication but if the manufacturer recommends it, the mechanism for locking hooks, adjustable legs and castors should be lubricated with a suitable lubricant.

#### 15.1 Component Inspection Check-list

All components should be checked to ensure that they are in good condition, and that all joints are sound. Castors should be inserted into the adjustable legs to check for wheel/tyre and housing damage, and that the wheel and swivel rotate freely. Examine the mechanism for retaining the castor in the leg and that the brake functions properly. Adjustable legs should be checked to see that they are not bent or the thread damaged. All threads should be clean and free from debris. The adjustable leg device should be inserted and removed to see that the securing device operates effectively. Frames should be carefully examined to see that the members are straight and that joints and welds are undamaged. They should be free of materials 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. Braces, stairways and ladders should be straight and undamaged, and the locking hook mechanisms should be functioning correctly. Ancillary parts such as stabilisers and outriggers should be checked in the same way. Platforms should be checked to see that the frames are square and true, and there is no weld or other damage. Plywood decks should not be split or warped and should be firmly fixed into the frames. Toeboard clips or fittings should be undamaged and remain firmly fixed to the toeboard. Any labels should be intact and legible. Any components found to be damaged should be ISOLATED, TAGGED & REPORTED to someone in authority to either have them repaired or removed from service. Also see your manufacturer's / supplier's Instruction Manual for guidance.

## 16. REPAIRS

### 16. Repairs

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

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

## 17. HANDLING TRANSPORT & STORAGE

### 17. Handling, Transport and Storage

The life of mobile access towers will be increased if proper care is taken of them during handling, erection, transportation and storage. Before storage components should be dismantled, checked and 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 and such like, in available space within vertically stacked frames.



## 18. Site Inspection

Towers must be inspected as often as is necessary to ensure safety. Although the Regulations make a distinction between the inspection requirements for towers which are used in construction and those which are not, PASMA recommends the following, regardless of activity, as current best practice.

For towers from which it is possible to fall 2m or more, you must

- Inspect after assembly, or significant alteration, and before use
- Complete a written report, before going off duty
- Give the report to the person for whom it was completed within 24 hours
- Re-inspect and report as often as necessary – but at least every 7 days
- BUT, there is no need to re-inspect and report every time is moved at the same location
- Re-inspect and report after any event likely to have affected its stability or structural integrity, such as adverse weather conditions
- Keep a copy of the inspection report safe
  - At a construction site until the work is completed
  - Then at your office for another 3 months

A tower from which it is possible to fall a distance of less than 2m has different inspection requirements. It must be inspected after assembly, and before use; after any event likely to have affected its stability or structural integrity and at suitable intervals depending on frequency and conditions of use.

PASMA recommends the use of the PASMA Tower Inspection Record which not only gives a visual indicator of the tower's inspection status, but also satisfies the requirements of the Regulations to record the inspection, and when affixed to the tower satisfies the requirement to give to the person for whom it was completed", and finally, on completion by retaining the Tower Inspection Record, satisfies the requirement to retain a copy of the record as detailed in the Regulations.

PASMA has produced a PocketCard and Posters explaining the inspection requirements for towers and how Tower Inspection Records should be completed. These and Tower Inspection Records (in packs of 50), can be obtained in the online shop at [www.pasma.co.uk](http://www.pasma.co.uk).



### 18.1 Assembly Check-list

1. Check that you have a copy of the manufacturer's / supplier's instruction manual on site and that it has been read and understood.
2. Check the risk assessment document.
3. Check that the correct type and the correct number of components for the height required are present and are undamaged.
4. Lay out the components and check that all castors are locked.
5. Follow the steps outlined in the Instruction manual, ensuring that:

- castors locked / legs correctly adjusted
- braces & platform level
- tower upright
- stabilisers/outriggers fitted as specified
- platforms located & windlocks on
- guardrails in place
- toeboards located
- inspect tower prior to use



### 19. PASMA Training Scheme

As well as being the lead industry body, the organisation consulted by British & European standards agencies, the HSE and the people to whom users, managers and safety professionals turn for expert advice, PASMA also operates a national training scheme through a network of Approved Training Centres. Training Centres have to meet an exacting set of criteria before they can become PASMA Approved. Instructors are vetted; premises and facilities, course materials and equipment all have to meet exacting standards. Moreover, they are subject to ongoing audit to ensure they continue to meet consistently high standards.

This Code of Practice as well as being a definitive stand alone reference document also serves as support reference for the PASMA Standard Training scheme. It forms part of a nationally recognised one day training course in the PASMA Training Scheme for operatives, supervisors and managers in the safe assembly, use, inspection, repositioning and dismantling of mobile access towers. The course is intended to meet the requirements of the basic syllabus of the Advisory Committee for Work at Height Training, (ACWAHT). Successful delegates receive a PASMA certificate and convenient photocard as proof of competence.

## 20. OTHER PASMA TRAINING COURSES

PASMA Approved Training Centres also provide a series of Advanced Training Courses covering the more advanced use of towers and ancillary equipment.

1. **Chimney Scaffolds.**
2. **Cantilever Access Towers.**
3. **Aluminium Bridging Units, Linked Towers, Lightweight Stagings and Swimming Pool Bridges.**
4. **Access Towers with Walk Through frames, High Clearance Frames on Footways and Access Towers on Stairways.**

These are available in modular form and are intended for the more experienced PASMA operative who has completed the Standard Course.

PASMA Approved Training Centres also offer the following courses:

1. Basic Work at Height - intended to give delegates a basic understanding of the essentials of working at height
2. Low Level Access - introduces delegates to the safe use of low level access units made from prefabricated components
3. Work At Height with Mobile Access Towers - Essentials for Managers and Supervisors (Inspection)

Courses are subject to continuing review and authorisation by PASMA and may not always be available immediately, please check with your local training centre for current availability.

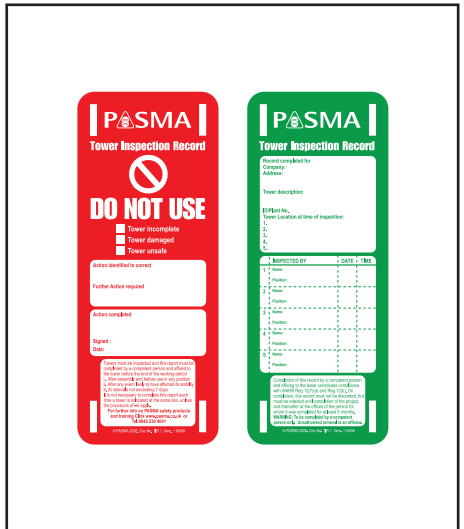
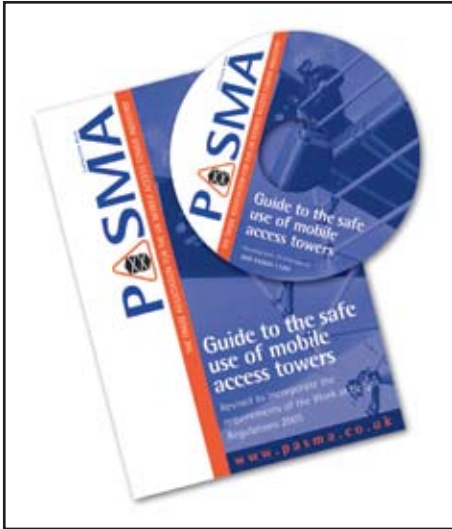
PASMA training is available only from PASMA Approved Training Centres.

PASMA have produced a number of DVD's and Publications in support of its aims to encourage the safe use of Mobile Access Towers.

For more details of all PASMA Training Courses, to purchase copies of this Code of Practice, or to purchase any PASMA DVD's or Publications contact your PASMA Approved Training Centre or contact PASMA at:

**PASMA, PO Box 26969, Glasgow G3 9DR**  
Telephone: +44 (0)845 230 4041  
Fax: +44 (0)845 230 4042  
Email: [info@pasma.co.uk](mailto:info@pasma.co.uk)  
Website: [www.pasma.co.uk](http://www.pasma.co.uk)

# Other Safety Products available from PASMA



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