

Practical alternatives to using stepladders

A guide for electricians and other engineering contractors

Part 2 Practical alternatives to steps



Produced by the ECA in collaboration with SELECT



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This guide has been produced in collaboration with SELECT and the HSE, and with the support of other leading organisations, as part of the ECA's ongoing 'ZAP' initiative to reduce accidents at work.

Some key messages

When looking for practical alternatives to stepladders (steps):

- *Consider the whole job*
- *Plan the work*
- *Keep an open mind about the alternatives to steps*
- *Communicate if possible with the client or main contractor -confirm if they have any plans or expectations about access*
- *Even if steps can be justified on the basis of what is practicable, ensure you have considered the alternatives*

DISCLAIMER

This document provides general information on the selection and use of alternatives to stepladders. It is not an industry code of practice. All employers and the self-employed are responsible under health and safety law to make an assessment of the risks to health and safety of their operations, and how these risks can be suitably controlled. This document is designed to help employers to consider options for working at height, but users of the document are responsible for selecting safe equipment and methods of work for any given workplace situation. Neither the ECA nor any organisation associated with this document is liable in any way for the actions or omissions of users of the document.

However, we welcome comments from users about their own practical experiences of working with alternatives to steps, which we will take into account when this document is reviewed.

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This guidance document complements Part One, which considers how to choose access to work at height, and safe working with stepladders.

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Cover Photo

'Sherpascope' work platform Courtesy: Zarges UK Ltd.

1. Alternatives to stepladders (steps)

Statistics show that working at height is a major cause of accidents to electrical contractors. Such falls can lead to serious, sometimes fatal, injury. The Work at Height Regulations (WAH), expected in 2005, will cover work with all types of access equipment and work platforms, regardless of the duration of the work or the height involved. WAH covers a wide range of access equipment, but one of its aims is to reduce the inappropriate use of stepladders ('steps').

It is worth stressing that under WAH, steps are not being banned outright. However, the regulations require employers to actively consider practical alternatives - the subject of this guide. The HSE accepts that ladders may be the most practical option for certain types of short duration work, but not for long duration work. There is no firm line between long and short duration - common sense must prevail! The HSE considers a series of short duration tasks as still being short duration, provided that doing the job that way is the reasonably practical method. For example, fitting a large number of light bulbs can still add up to 'short duration work' but before the work is taken on, the question "is there a better, safer way to do all this?" should be properly considered.

"An operative was standing on the 2nd and 3rd steps of a pair of stepladders and using the platform as a 'bench' to cut a piece of copper with an hacksaw. Another operative heard him fall and came into the room and discovered the injured person slumped against the wall. He was conscious, but subsequent x-rays showed a fracture to the neck and internal bleeding."

Case study: source HSE

2. Practical considerations

Choosing practical alternatives to stepladders requires an appreciation of the job in hand, and aspects such as job duration, sequencing, site access and housekeeping. Even basics such as the state of the working floor (trailing leads and other workplace obstructions) can influence whether anything other than steps can be used effectively.

"Carrying steps to the job" may be a popular view of how decisions on work at height are made, but many contractors are now choosing and using practical alternatives to steps.

Many clients and main contractors are not waiting for WAH, and they are already telling contractors not to bring steps on-site. However, simply banning steps does not remove the hazard, namely a fall from height, so where steps are restricted or banned, clients and contractors need to plan ahead and agree on suitable alternative equipment.

It is good practice to plan work beforehand (e.g. sequencing tasks efficiently with other trades) and for bigger jobs, to discuss (and hopefully agree) means of access with the client. In many situations, access equipment is often hired and delivered separately to larger contracts or set up by a major contractor, ready for use. For long-term maintenance work or where frequent access to plant, equipment or machinery is required, permanent access steps, ladders, and handrails should be available.

For a given task, WAH will require companies to assess if it is reasonably practicable to use a safer alternative to steps. While steps will still be the preferred equipment for some short or tricky tasks, there will be many situations where other means of work at height should be chosen. Where reasonably practicable, WAH will require work at height to be conducted 'from a suitable surface' (working platform). Essentially, a suitable surface should provide the same security as working from the ground. Guidance on the WAH says that, so far as is reasonably practicable, access equipment needs:

- *a flat, suitably sized, working platform*
- *barriers or guard-rails*
- *to allow two-hand working*
- *to be stable in use.*

Steps do not usually meet many of these criteria and as we will see below, in many cases reasonably practicable alternatives are available.

Whatever access equipment is chosen, the following will affect how safely it can be used:

- *the quality of the equipment/components (does it meet a recognised Standard?);*
- *correct assembly by a competent person;*
- *a trained end user; and*
- *a suitable and sufficient work area / space.*

A "working platform" can include podium steps and towers, scaffold cradles, trestles or gantries, and mobile elevating work platforms (MEWPs) such as scissor lifts

or self-propelled booms. Working platforms should:

- *be big enough to allow room to work, safe passage (if needed) and the safe use of equipment and materials;*
- *prevent feet passing through the flooring, or feet and objects passing over the edge (i.e. toe boards or edge protection);*
- *be clean and tidy (e.g. dust or rubbish must not be allowed to build up on platforms), and*
- *be secure.*

When using towers, podiums or steps:

- *the person using the equipment should be properly trained and competent*
- *those who aren't supposed to use the equipment must be clearly advised that they should stay off it*
- *the equipment should be properly maintained and regularly inspected (particularly if it is used or stored outside).*
- *the equipment should be inspected visually before use, every day*
- *ensure light tools are carried in a shoulder tool bag or holster attached to a belt so that both hands are free for climbing.*
- *heavy or bulky loads should not be carried up or down access equipment - lifting equipment should be used instead*
- *work should not require extended periods in difficult postures.*

Ultimately, all access equipment relies on safe and efficient use by the end user. Supervisors and operatives must be competent to work at height, and the provision of basic information and instruction is crucial. Whatever access equipment is used, operatives must know about its limitations, and if they are required to set up or adjust the equipment, they should be properly trained. Defective access equipment must be reported to the supervisor, be clearly identified, and not used.

Getting to the workplace...

For smaller tasks, a very practical consideration is often "how do I get my access equipment to the workplace". Several products on the market, notably Podium Steps, can be folded and carried in reasonably sized vans. However, some access products are quite bulky and users will need to consider if, and how, they can transport this equipment. For some short-term work, carrying some types of alternative to steps might not be practicable. While changing the existing company van to take new access equipment may be impracticable due to cost, users should properly consider how to carry access equipment when choosing new company transport.

If they can get the equipment to the workplace, users will also need to know if the access equipment can be transported safely on-site to the work area. There may be obstructions, for



Courtesy: Euro Towers

example doorways, other equipment or debris. Users should also bear in mind that the surrounding area might be very different when the job is finished. If so, it could be difficult to get a large tower or other bulky access equipment back out. If access equipment cannot be got in, or out after the work is done, it is clearly not a reasonably practicable access solution!

3. Mobile towers and other temporary access

When work at height is of more than short duration, alternatives such as mobile towers should be seriously considered, since many offer a range of safety benefits. A growing variety of mobile towers are available, and the best designs allow easy access, either by climbing through the tower or using a properly designed and integral tower ladder.



Diagram: For podiums and towers, extra height requires extra stability such as extending legs, to prevent the equipment from toppling (the podium on the left illustrates a platform height of around 0.5 metres and an adapted podium on the right, of about 1.9 metres). In practice, the stability of towers can be a major consideration as working heights increase. Courtesy: Interlink Alloy Systems

As with ladders and any other type of access equipment, the risk of toppling for higher-level podiums and towers is an issue. Scaffolding stability standards apply to work platforms at or above 2.4 metres, but not for platforms below that level. Contractors need to liaise with suppliers and others to ensure the equipment has good operational stability.

Some podiums can offer three or four working heights and this makes them particularly flexible, but even so there are situations where the platform in mobile towers “isn’t at the right height for the task”. This, and other factors such as mobility, means that using towers often needs more work planning than using steps. “Assumptions and safety do not mix”, and if alternatives to ladders are going to be used it is essential to know, in advance, about the working heights required for carrying out given tasks.

Podium steps

There are many types of podium steps (sometimes called ‘pulpit’ steps), and they are being used in a wide range of building and maintenance projects. Podium steps typically cost several hundred pounds to buy, or they can be hired. They are usually made of aluminium and some weigh less than 22kg, although some models weigh up to 40kg.

Podiums offer a stable working platform with barriers to prevent falls, and the ability to work:

- in any direction (360 degrees), and
- two handed.



Courtesy: Tuner Access Systems

Many modern podiums offer ‘snap click’ or fold out assembly, with slide-in handrails. Ease of assembly is an obvious factor, not just for productivity, but for ensuring that operatives use the equipment. A locking barrier usually completes a four-sided ‘cage’ for the worker.

Many types of podium step can pass through a standard doorway, although taller towers must be set up close to the work area. Dismantled mainframes can be folded to pass through single doorways or into lifts etc. Some equipment can be passed through a door or other ‘pinch point’ and then extending feet can give extra width and stability.

Podium steps give a raised working platform (usually measuring around 600mm square) of heights up to nearly two metres high, although for some models stability can be an issue above 1.5 metres. Typically a podium will allow a working height of around 2.5 metres (see diagram at foot of page 4) but with additions, podiums can be adapted to give a working height in excess of three metres (see diagram at foot of page 4). Even if the podium steps toppled over, falls in a podium frame are, overall, less likely to cause serious injury than falls from steps at a similar height.



Source: Delco Plant Hire

Courtesy: Alto Tower Systems

Podium Steps: some pros and cons

ADVANTAGES	DISADVANTAGES
Good on flat / finished floors	Less useful on unmade / uneven floors (difficult to move around if floor not clear)
Suits low-level work	Temptation to work off upper guard-rails
Generally quick to set up	Gates must be closed for 360° protection
Relatively easy to move around	Peripherals such as castors can be damaged
Built-in guard-rails	Easily moved while in use, if not locked off
Limited number of components	High lateral loading can overturn unit
Some variation in height possible	Need to dismount to move equipment to other areas
Good working platform, allows 360° and two handed work	Restricted access unless folded down e.g. corridors
	Storage and security issues

Access towers

Towers are already being used extensively in open areas, but generally they are not practical in smaller or confined spaces.

Many tower products offer quick assembly with foldout frames and snap/click fittings. Some towers can provide a working platform at up to 2.9 metres (or more with guardrails and stabilisers) but as with podiums, as tower platforms go above 1.5 metres, stability rapidly becomes an issue. Some operatives complain about movement from towers with wheel attachments.

Access towers usually cost several hundred pounds, although this naturally depends on their size. Some models fold out and can be quite easy to move around, unlike larger set-ups. Most towers are aluminium (or steel) but glass reinforced plastic (GRP) models are also available (right). The older, steel framed, ladder units with no internal access are unlikely to satisfy HSE inspectors. If in doubt about the ability of access equipment to meet modern safety standards, check before starting work.

“Assumptions and safety do not mix. Plan ahead, and for bigger jobs, try to confirm beforehand that the client has no problem with your choice of access equipment. Preparing and agreeing a simple method statement can help”.

Paul Reeve, H,S&E advisor, ECA

Access towers can usually support more than one worker at a time and some specialist towers (below) are designed to overarch obstructions on the floor (such as office furniture, or site materials).



Courtesy: Turner Access Systems

When considering access towers, make sure that there are no restrictions that will prevent guard-rails from being properly fitted.

Mobile access towers should only be set up by (or under the supervision of) a competent person. Training sponsored by PASMA is referred to in part one of this guide.

Mobile Scaffolds: some pros and cons

ADVANTAGES	DISADVANTAGES
Good work platform	Need to ensure competent / correct erection
Large work / platform area	Restricted movement in confined areas
Adjustable legs / level	'Invasion of space' / cuts work space
Adjustable height	Stability issues at higher levels
Guard-rails	Damage to finished surfaces / ceilings
Toe boards / edge protection	Limited access 'thru' hatch on low level platform
Adaptable use / range of components	Large number of components, loss of components



Courtesy: Planet Platforms

“We are increasingly replacing the use of step ladders with mobile towers. In open plan areas towers work well, but they are unsuitable in confined spaces. Both clients and contractors need to match risk assessment with a practical view of the job.”

Steve Burley, Director, Derry Building Services, Newark.

Platform steps

There are several types of products that are more closely related to steps than towers, but they are designed to be safer than steps because they offer a working platform and handrails. However, it is essential to ensure that the platform being offered is of a suitable size. They may be referred to as platform steps, or 'height adjustable working platforms' but whatever their description, they can be a practical improvement on a basic stepladder. The extra safety features mean that HSE does not require this equipment to be limited to 'short duration' work.

Platform steps range from stable ladders with a mid-way platform and side handrails, through to access equipment with handrails and stabilizers, and adjustable platform heights (see cover picture). Even the bigger units tend to fold up to help with access.

Basic platform steps cost around £150, or around £250 if they are made of GRP. The more sophisticated equipment described above costs around £475 for a single platform (around 1 to 1.5 metres, with a working height of around 3 to 3.5 metres) but over £900 for adjustable models.

Platform steps: some pros and cons

ADVANTAGES	DISADVANTAGES
Help keeps legs inside stile / hand rail	Lean against rail / side pressure
Better working platform than steps alone, provided platform is not too high in relation to hand rails	May use rail as hand hold to lean out / over reach
Combination of stabilisers, rails and platform can provide suitable work surface	Platform must not be too high in relation to handrails, or user can be in hazardous situation
Unlike normal steps, not subject to HSE restrictions on duration of work	May give false sense of security
	Stacking / storage issues
	Rails and fittings are susceptible to damage
	Some platforms may not be big enough for safe working
	Instability, unless large base or specifically stabilised

Other products in this category are more suitable for low level working since the equipment may be unstable if it is too high. The platforms are not usually height adjustable.



Courtesy: Zarges UK

'Aircraft steps' are a type of 'platform and handrail' steps. They usually have a wider base than stepladders, which makes them more stable. They also have a large, stable working platform, guarded on three sides by rails. This reduces the risk of tipping over, although it is still possible to fall down the stairs if the operative steps backwards. A chain is sometimes used to restrict backwards movement. The design of aircraft steps (below left) encourages the worker to face the task, further reducing the risk of a fall.

Powered access units (MEWPs)

An ongoing problem for contractors is the time taken to get down from access equipment, move it to the next task, and then go up again. While large towers can provide some mobility at height before a move is needed, powered access units or mobile elevating work platforms (MEWPs) take away the need to continually get down from height.

"We tend to use scissor lifts and cherry pickers more these days. We used to do a lot of work on scaffolding but find these other methods quick and easier to use, though cost is a factor. Some operatives will still try to go back to steps if not carefully monitored".

Sharon Taylor, Group Health and Safety Consultant, E. Collinson & Co. Ltd., Preston

MEWPs are only feasible on sufficiently large, stable and clear surfaces (such as empty conference rooms or in the open). There are a number of practical and safety issues to consider (such as stability) and job planning is essential. MEWPs have a relatively high initial cost, they require significant maintenance, and they are heavy. Not all floors will take a MEWP and liaison with the main contractor or premises owner is essential.

MEWPs provide a safe means of working at height *if* they are used by competent people in accordance with the manufacturer's instructions.

Suitable training is essential for those who operate MEWPs, and various trainers offer courses approved by the International Powered Access Federation (IPAF). A demonstration on the use of a MEWP by hire companies should, by itself, not be considered as suitable training.

Employers and others responsible for the use of MEWPs should assess the risks of users falling from or being thrown from the basket, and take precautions to eliminate or control those risks.

When using a MEWP, a safe system of work should include:

- *planning the job to be aware of overhead hazards and any passing traffic, including the effect on workers and others if there is a collision*
- *floor loading and stability issues*
- *use of trained/experienced operator(s);*
- *use of harnesses*
- *instructions in emergency procedures, notably getting down safely if the power fails.*



Courtesy: JLG Access Lifts

MEWPs are ‘lifting equipment’ as defined by LOLER. They must be thoroughly examined by a competent person once every six months or in accordance with an examination scheme drawn up by a competent person. They must also have routine maintenance in accordance with the manufacturer’s instructions.

MEWPs:some pros and cons

ADVANTAGES	DISADVANTAGES
Moving around work area without dismantling and remounting the equipment	Cost and expenses (notably maintenance and training)
Wide range of working heights available	Weight and size restrictions
Provide suitable work platform	Restricted access indoors
	Risk of toppling if user is not competent

Platform lifts/work platforms

These are sometimes referred to as ‘hop ups’. Although WAH does not require low-level work to be enclosed on all sides, the danger of falling off a ‘hop up’, particularly when stepping back, is foreseeable. Hop ups may be suitable for achieving up to a third of a metre (around one foot) of extra height in a confined area where other access equipment is not feasible. However, even if they are stable they are not a suitable alternative for long duration work in unconfined areas.

“An electrician was contracted to install an electrical circuit for access at ceiling height. He was standing on an aluminium stepladder, which slipped. In falling the man hit his head and he was unconscious for a few seconds. His assistant shouted for help and two staff (one being a first aider) found him conscious but motionless on the ground. The emergency services were called and the victim was taken to hospital -cuts and bruising plus strained neck muscles.”

Source: HSE

Summary

People tend to like steps because they see them as simple and flexible to use. Some operatives may have only used stepladders throughout their working life, so there may be an attitude that supports the continued, extensive use of steps. One way of helping to ensure that alternatives to steps are actually used is to involve employees when making decisions on which equipment to buy or hire.

Not all alternatives to stepladders are safer. Some can give rise to safety problems during transport or set-up, while others may not even reduce the risk of harm from a fall. However, employers should actively consider the practical alternatives to using steps, and choose and use safer alternatives *if* it is reasonably practicable.

Asking employees about the sort of equipment they are able to work with and whether there are practical problems and solutions, will help to introduce practical alternatives to stepladders in time for the new regulations.

This guide has some indicative prices for the various types of access equipment, but ‘bulk buying’ and other purchasing arrangements may mean that contractors encounter different prices. We will update our guidance if feedback shows that prices are markedly different. One final point: alternatives to steps tend to cost more, which makes them a bigger target for thieves. Before deploying the equipment, a company needs a good system for ensuring the equipment does not ‘disappear’ from the site.

WAH is expected to come into force in Spring 2005.

Information on a number of companies that provide alternatives to stepladders will also be available on the ECA website in mid-2005. Visit: www.eca.co.uk (go to the 'Health and Safety' section, then visit 'downloads'). Please note all equipment prices quoted in this guide are indicative, 2005 figures.

4. Acknowledgements

We would like to thank the HSE, SELECT and ECA members and access equipment manufacturers for their help with this guide. In particular, we acknowledge the input of T Clarke plc on the 'pros and cons' sections.

HSE's webpages are at: <http://www.hse.gov.uk/index.htm>



Courtesy: Turner Access



Courtesy: Delco Plant Hire

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The ECA

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Members range from single owner proprietors to large national companies with many branches.

Part 1 of this guide is entitled 'Working at height' and outlines many of the requirements of the forthcoming Work at Height Regulations, and safe working on stepladders.



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