

The selection, management and use of mobile elevating work platforms

HSE information sheet

Introduction

This information sheet is aimed at those who select, specify, manage and operate mobile elevating work platforms (MEWPs).

It tells you what you should consider before selecting a MEWP to gain access to work at height and the risks that need to be assessed and managed while the MEWP is in use.

All types of MEWPs are covered by this guidance, including ones that are:

- vertical 'scissor' lift;
- self-propelled boom;
- vehicle-mounted boom; and
- trailer-mounted boom.

This information sheet has been produced in consultation with the Strategic Forum for Plant Safety – MEWP Safety Group.

What the law requires

The Work at Height Regulations 2005 require an assessment to be carried out before starting any work at height. If the assessment determines that the work can be carried out in a way that avoids having someone working at height then this must be done.

However, if the assessment confirms that there is no alternative to working at height then the work must be properly planned and organised in advance by a competent person to ensure that the most suitable work equipment is chosen.

When choosing the most suitable work equipment, you must follow the fall protection hierarchy. This states the order in which protective measures should be considered to prevent and mitigate the risks when working at height cannot be avoided.

The Provision and Use of Work Equipment Regulations 1998 (PUWER) require the risks from using equipment at work to be prevented or controlled and specifically

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Figure 1 Operating a MEWP near overhead structures

focuses on minimising the overturning risks associated with mobile work equipment such as MEWPs. This is particularly relevant when considering the ground, environmental and operating conditions that the MEWP may experience.

The Lifting Operations and Lifting Equipment Regulations 1998 (LOLER) require that all lifting operations are to be planned by a competent person and that any equipment used for lifting or lowering loads or people (including MEWPs) should be of adequate strength and stability and thoroughly examined at regular intervals thereafter.

Assessing the risk

MEWPs are designed to provide a safe work platform for temporary work at height. In relation to the fall protection hierarchy, they are considered to be work equipment that can prevent a fall.

It is important that those responsible for selecting, specifying and managing MEWPs on site (the competent person) understand the risks associated with the use of a MEWP so they can advise on the precautions required to eliminate or control those risks. Planning is crucial to their safe operation and the stages below are designed to help you with your planning.

Selection criteria

There are many different types of MEWP with various rated capacities, working heights and outreaches.

Before you decide which type of MEWP is the most suitable for the job, think about the following (this list is not exhaustive):

- What work needs to be done?
- At what stage in the job will the MEWP be needed and what will the ground conditions or supporting structure be like at that stage (ie rough, prepared, poured slab, finished surface etc)?
- What access is there onto the site to deliver/collect a MEWP and to travel it to and from the work location?
- What terrain and gradient will the MEWP have to cross to get to the work position and is operator visibility and segregation adequate for the manoeuvre?
- Are there any overhead power lines or subterranean hazards on site to be avoided?
- How much space is available to position and operate the MEWP at the work position?
- What is the maximum ground bearing capacity at the work area and along the route to and from the work positions?
- How many people need to be lifted?
- What is the required safe working load (SWL) of the machine?
- What height and outreach are required?
- Will the MEWP be expected to move in the elevated position?
- Are there likely to be any overhead structures that the operator could be crushed against?
- Are there any materials to be lifted and if so what is their weight/shape/length?
- Are material handling devices required?

- What interface is there with other vehicles and pedestrians and are there any unusual issues, eg aircraft, rail traffic, public highway?
- What fuel type is allowed on site and where will refuelling take place?

Managing the risk

Once you have chosen the most suitable type and size of MEWP for the job you need to look at the hazards associated with using it, assess the risks and identify control measures to develop a safe working method. The following areas should be considered.

Delivery to and collection from site

Think about what size of delivery vehicle or vehicle-mounted MEWP will need access to site or whether a self-propelled MEWP will have to be off-loaded on the public highway. You should liaise with your supplier/haulage company on the following matters:

- What time of day will be most appropriate?
- Will the MEWP need to be reversed off the delivery vehicle or, if vehicle-mounted, reversed onto site?
- What size of turning circle will be needed?
- Who will meet the delivery driver?
- If you have to unload/reload the MEWP on the public highway, this still forms part of your undertaking and will require adequate control measures to protect/segregate pedestrians and other road users during these manoeuvres.
- Is the lighting adequate or is more required?
- Is the ground capacity suitable? Are there manhole covers or other features that must be avoided?

Storage/charging area

Wherever possible, keep MEWPs in a secure compound or in a designated area with the engine or motor switched off, the working platform lowered to its parked position and the brakes applied. If it has to be parked on a gradient, the wheels should be chocked.

Recharging electrically powered MEWPs should be carried out in an area that is protected from the elements.

It is the MEWP users responsibility to make sure that the MEWP cannot be used by unauthorised persons. Different options for isolating machines and preventing unauthorised use are being developed by manufacturers and hirers and you may wish to discuss what would work best for you with your supplier.

Positioning before and during work

Consider the following:

- What type of ground will the MEWP have to travel across before reaching its work position, eg hard, firm, soft, sloping, uneven terrain, soft spots, kerbs, subterranean hazards (such as tanks, cellars and culverts, inspection covers, sewers and service trenches), paved areas, footpaths, waterlogged areas, frozen ground etc?
- Is a banksman or vehicle marshaller required when moving the MEWP across the site to its work position?
- Will a wander lead be utilised and, if so, is it long enough to keep the operator at a safe distance?
- Is the ground sufficiently level at the work location?
- What is the ground bearing capacity at the work position and along the route to and from it? Is there enough space for the outriggers to be deployed?
- What is the maximum point load (under a wheel, outrigger or jack pad)? Are spreader plates required?
- Will the MEWP have to pass beneath any overhead power lines? If so, is there enough clearance and has the area been demarcated?
- Will the MEWP have to be lifted into position by crane? Are the MEWP lifting points well indicated and is the weight of the MEWP and radius of lift known? Is there an Appointed Person to plan the lift?
- Will the MEWP have to operate on ground floor slabs or slabs at other levels in the structure? Has the risk of the MEWP running off the edge of a ground floor slab onto soft ground or off the edge of an elevated floor slab been considered? How will the risk be controlled?
- Have segregation/control measures been considered to prevent the MEWP encroaching into or over live vehicle or pedestrian routes?

Temporary works (ground conditions and supporting structures)

The person in control of the site should supply relevant information about the ground bearing capacity, terrain, gradient, base area, load bearing capability of supporting structures and any localised ground features, such as trenches, manholes and uncompacted backfill, which could lead to overturning. BS 5975:2008 *Code of Practice for temporary works procedures and the permissible stress design of falsework* provides more detail on temporary works and the elements that should be included.

If operating on a precast or cast in-situ concrete slab, request the slab loading limits from the person in control of the site and check how this compares with

the maximum weight of the MEWP and the maximum point load that it could exert on the floor. Has enough time been allowed for the concrete to cure?

Adverse weather

Think about wet, cold and windy weather.

- Is the MEWP designed only for indoor use or can it be used outdoors?
- What is the manufacturer's maximum wind speed in which the MEWP can operate safely?
- How will the wind speed be checked (usually with an anemometer) and by whom?
- Is the MEWP being operated between buildings where increased wind speed and/or turbulence can be a particular problem?
- What about the potential for wind chill, which can affect the operator's dexterity and concentration?
- If using a MEWP rated as 'indoor only' think about wind exposure, eg in a partially clad building or where large doors are open at both ends of a fully clad building.

Falling from the platform

One of the biggest risks when using boom-type platforms is being thrown out of the basket if the boom swings, jolts or tilts away from the machine's centre of gravity (this can occur when travelling in a MEWP), or if the operator overreaches (usually by standing on the guard rails). Other causes can be impact by other vehicles or snagging the boom or basket on obstructions. The precautions described in this guidance are designed to minimise the chances of this happening but any risk assessment must still consider the use of personal fall prevention equipment.

Where there is a risk of impact or someone falling from a boom-type MEWP, those people should wear appropriate fall prevention equipment.

The preferred option is to stop the person falling from the work platform by using a work restraint system. A work restraint system should normally consist of a full-body harness (BS EN 361) connected to a lanyard (BS EN 354) which is connected to an anchor point on the MEWP basket. **From the anchor point, the lanyard length should be short enough to prevent a person reaching a position where they could fall.** The lanyard may contain an energy-absorbing device (BS EN 355), but should still only be used as part of a work restraint system.

Do not use retractable type fall arresters (BS EN 360) unless they are suitable and have been specifically tested in the proposed manner of use.



Figure 2 Examples of secondary guarding devices

For information about restraint systems used in arboriculture and forestry, refer to the HSE leaflet *Mobile elevating work platforms (MEWPs) for tree work AFAG403*.

Working next to, or over water must be assessed to identify whether the greatest risk of injury to the operator is from falling from the MEWP basket or drowning, if the MEWP falls into the water. The decision can then be made as to whether it is most appropriate to wear a harness to address the fall risk or whether a harness should not be worn due to the risk of drowning. Life jackets, not harnesses should be worn where there is a risk of drowning.

Overhead hazards

Look for any overhead hazards such as power lines, steel beams, pipe bridges, arches or trees and take account of any risks they present and any control measures needed.

Trapping/crushing against overhead and adjacent obstructions

When operating a MEWP where there are adjacent or overhead structures, it is possible that the operator could be trapped or crushed against those structures. This entrapment can result in serious, sometimes fatal injury.

If there are structures against which an operator could be trapped or crushed, consider selecting a MEWP fitted with a secondary guarding device which will prevent, or mitigate against the consequences of trapping or crushing (see Figure 2).

For further guidance, see *Best practice guidance for MEWPs* and *MEWPs - Guidance on secondary guarding devices available to reduce the risk of entrapment injury* (see Further reading).

Extra care must be taken if MEWPs are used to manoeuvre up through steelwork, service ducts or other obstacles as there is a risk of the operator

being trapped between the basket and surrounding structures. This risk increases when the number of levels the MEWP operates through increases, and when clearance is reduced due to materials being loaded onto the lower levels.

MEWPs are fitted with proportional controls to allow smooth operation and movement of the platform. There can be an element of 'run-on' when the controls are released abruptly, which may mean the platform continues to move for a short time after the controls have been released. Therefore, particular care must be taken when working close to overhead structures to avoid the impact and possible risk of crushing.

Manoeuvring the basket with the operator crouched over the control panel to try to avoid overhead obstructions is dangerous and should not be done.

Site traffic and personnel

Think about how the MEWP interacts with other site traffic and personnel.

- Does the operator have limited visibility, particularly during reversing? Is a banksman required?
- What is required in terms of vehicle route signage, pedestrian and vehicle segregation barriers, cones, crossings etc?
- Is there a risk of trapping other workers between the counterweight and an adjacent structure during slewing?
- Are people below protected from the risk of objects falling from the basket? The first priority should be to keep people out of the area but, if it is necessary to have people working in an area where they could be at risk of being struck by a falling object, you must put control measures in place, eg tool lanyards.
- When working in an area used by other workers or vehicles, the entire MEWP work area (based on required outreach distances and not just base structure footprint) should be barricaded using cones and warning signs etc.

- How many lifting devices are working in the area and is there any risk they could collide with each other?
- Does any part of the MEWP protrude out of the confines of the work area? Note: you must never boom over live traffic.
- Are you working within 6 km of an aerodrome/airfield using a MEWP in excess of 10 m in height? If so, you should contact the airfield manager for permission to work in that air space.

Handling materials

If MEWPs are to be used to install materials, it is essential to know the weight and dimensions of those materials and to properly consider any manual handling and load distribution issues.

Boom-type MEWPs generally have smaller baskets and lower lift capacities than scissor-type MEWPs and their platforms can 'bounce' at height due to the boom structure flexing. This may make them less suitable to use for installing long or heavy materials, or bulky materials that may obstruct the control panel.

Materials should never be balanced on the handrails of a MEWP. Instead, you should consider using a second boom-type MEWP, a scissor lift, a crane or a telehandler of appropriate capacity in conjunction with an appropriate material handling attachment where necessary (see Figure 3). The combination of a MEWP used for access, with other plant to handle the materials, reduces the risk of overturning and minimises the risk of injury due to manual handling.

Remember, all people, tools, materials and material handling devices add to the safe working load of the machine. Never disable the platform overload system. Where the overload alarm has been activated or movement functions have cut out due to overload, remove the overload immediately if possible before attempting to recover the machine.

If you plan the work properly, the need for outreach may be avoided by, for example, preparing or reinstating the ground conditions in the area directly beneath planned overhead work or by adjusting the work schedule to delay the construction of low level structures until work overhead has been completed.

Exiting the work platform at height

MEWPs are specifically designed to lift people to a position where they can carry out work from the work platform and then return to the starting level. They are not intended to be used to transfer people from one level to another or for people to exit the basket at height.



Figure 3 A MEWP fitted with a material handling device

Exiting the basket at height should be strictly controlled and may only be undertaken where a rigorous risk assessment carried out as part of planning the job indicates that this is the safest and most effective means of accessing a particular location.

Further information can be found in BS 8460:2005 Annex B *Guidance on safe systems of work for exiting the work platform at height*.

Pre-use checks and machine faults

The trained operator is responsible for carrying out a basic daily/pre-use function check. In addition, there will be basic maintenance required by the manufacturer. Records of these checks should be kept.

The operator should also be fully aware of the procedure their employer expects them to follow should they identify a fault with the MEWP, eg isolate the controls, tag the machine and report the defect to the person in control.

Thorough examination

MEWPs, and any material handling devices must be thoroughly examined at least every six months by a competent person, or at an increased frequency in accordance with an examination scheme drawn up by such a competent person. You should ask to see and retain the report of the thorough examination for the equipment you are going to allow to be used on your site.

Training and certification

It is the employers responsibility to ensure that all MEWP operators have been adequately trained.

Although specific courses are not a strict legal requirement, there are recognised schemes available. Once the training and assessment has been successfully completed, the operator is given a training certificate or card, which clearly identifies the operator and lists the categories of MEWP they are trained to operate. This document can be updated as the operator undergoes further training on different types/sizes of MEWP. You should check the expiry date of the training certificate or card.

For trained operators who have to access areas where the risk of entrapment is increased due to the proximity of adjacent or overhead structures, the employer should check whether the operator's training is sufficient or whether additional training is required. The additional training is designed to make operators more aware of how to operate MEWPs in these higher risk environments and reduce the risk of entrapment.

Operators using material handling attachments should have received additional training in accordance with the attachment manufacturer's recommendations.

Operators and any other person being lifted by the MEWP will need instruction in the correct fitting and use of the harness, lanyard, rescue equipment and the procedures for periodic inspection, maintenance and storage of fall protection PPE (especially textile equipment). For further information, refer to *Inspecting fall arrest equipment made from webbing or rope* (see Further information).

Depending on the activity being undertaken you may also require a competent person to supervise the MEWP operations on site. Again, although specific courses are not a strict legal requirement, there are recognised training courses for those who manage MEWP operations.

Familiarisation

Before being authorised to operate a particular make or model of MEWP, it is the employer's responsibility to ensure that all operators are trained and given adequate time to undertake familiarisation on the use of the machine with a competent person. Familiarisation should follow on from basic training and should cover:

- manufacturer's instructions and warning;
- features of the specific model of MEWP;
- the control functions particular to the specific model of MEWP;
- the function of each safety device;
- the emergency lowering procedures.

All of the above information can be found in the operators manual which should be supplied with the machine.

All familiarisations should be recorded.

Emergency and rescue procedure

The emergency and rescue plan should identify nominated, trained, site-based personnel who would be available to lower the work platform using the ground controls or emergency descent system, situated at the base of the machine, should the elevated operator experience difficulties. These people should be included in the familiarisation for the specific machines being used on site and should be given the opportunity to practice the emergency rescue procedure at regular intervals.

The plan should also include the call-out details for the service engineer or other person who is competent and authorised to lower the work platform in the event of an emergency or a machine malfunction.

Personal protective equipment

Operatives should wear the following, where appropriate, following risk assessment:

- a hard hat (with or without a chin strap);
- suitable high visibility clothing;
- suitable cold/wet weather clothing; and
- a full body harness with a restraint lanyard or a fall arrest lanyard suitably adjusted to prevent a fall from the platform.

Documenting what you have done

The next stage is to record the planning and communicate it to all those involved with the work.

Before work starts, the plan should be reviewed to allow for any changes in circumstances, such as changes in site access, ground conditions, the task to be carried out, the weather conditions etc.

Make a record of who has been briefed and issued with the plan.

Tell those involved in the work to report any problems with the plan immediately. Should they need to deviate from the plan, this should be agreed with the competent person before any changes are made.

Further reading

Working at height: A brief guide Leaflet INDG401(rev2)
HSE Books 2014
www.hse.gov.uk/pubns/indg401.htm

Inspecting fall arrest equipment made from webbing or rope Leaflet INDG367 HSE Books 2002
www.hse.gov.uk/pubns/indg367.htm

BS 8460:2005 *Safe use of MEWPs. Code of Practice*
British Standards Institution

Crane stability on site C703 (Second edition) CIRIA
2003 ISBN 978 0 86017 703 6

BS ISO 18878:2013 *Mobile elevating work platforms. Operator (driver) training* British Standards Institution

Avoiding danger from overhead power lines General Guidance Note GS6 (Fourth edition) HSE 2013
www.hse.gov.uk/pubns/g6.htm

Managing health and safety in construction. Construction (Design and Management) Regulations 2007. Approved Code of Practice L144 HSE Books 2007 ISBN 978 0 7176 6223 4
www.hse.gov.uk/pubns/books/l144.htm

Management of Health and Safety at Work Regulations 1999 SI 1999/3242 www.legislation.gov.uk/ukxi/1999/3242/contents/made

Safe use of work equipment. Provision and Use of Work Equipment Regulations 1998. Approved Code of Practice and guidance L22 (Third edition) HSE Books 2008 ISBN 978 0 7176 6295 1
www.hse.gov.uk/pubns/books/l22.htm

Safe use of lifting equipment. Lifting Operations and Lifting Equipment Regulations 1998. Approved Code of Practice and guidance L113 HSE Books 1998 ISBN 978 0 7176 1628 2
www.hse.gov.uk/pubns/books/l113.htm

Manual handling. Manual Handling Operations Regulations 1992 (as amended). Guidance on Regulations L23 (Third edition) HSE Books 2004 ISBN 978 0 7176 2823 0
www.hse.gov.uk/pubns/books/l23.htm

Fall protection in mobile elevating work platforms Technical Guidance Note H1 IPAF 2012

Familiarisation of MEWPs Technical Guidance Note F1 IPAF 2007

Mobile elevating work platforms (MEWPs) for tree work Leaflet AFAG403(rev1) HSE 2013
www.hse.gov.uk/pubns/afag403.pdf

Best Practice Guidance for MEWPs: Avoiding Trapping/Crushing Injuries to People in the Platform Construction Plant-hire Association www.cpa.uk.net

MEWPs - Guidance on secondary guarding devices available to reduce the risk of entrapment injury UKT3 04/14-002 IPAF www.ipaf.org

Operating Tower Cranes in the Vicinity of Aerodromes, Notification and En-Route Obstacle Lighting TIN 039 Construction Plant-hire Association 2014
www.cpa.uk.net

Further information

For information about health and safety, or to report inconsistencies or inaccuracies in this guidance, visit www.hse.gov.uk/. You can view HSE guidance online and order priced publications from the website. HSE priced publications are also available from bookshops.

This guidance is issued by the Health and Safety Executive. Following the guidance is not compulsory, unless specifically stated, and you are free to take other action. But if you do follow the guidance you will normally be doing enough to comply with the law. Health and safety inspectors seek to secure compliance with the law and may refer to this guidance.

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