BRITISH STANDARD

BS 8460:2005

Safe use of MEWPs —

Code of practice

ICS 53.020.99

Committees responsible for this British Standard

The preparation of this British Standard was entrusted to Technical Committee, MHE/12, Lifting platforms, upon which the following bodies were represented:

Association of Loading and Elevating Equipment Manufacturers

British Fluid Power Association

British Parking Association

Construction Plant-hire Association

Co Opted Members

DfT — DTLR — Central Transport Group

DTI — Standards Policy Unit

Garage Equipment Association

HSE — Health and Safety Executive

International Powered Access Federation

Safety Assessment Federation Ltd

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Contents

Foreword

This British Standard has been prepared by Technical Committee MHE/12 as a result of requests from industry. It has been based on proposals from the joint Powered Access Interest Group of the Construction Plant-hire Association and the International Powered Access Federation.

Mobile elevating work platforms (MEWPs) are increasingly being used as temporary working places that provide access to specific areas at height. For many tasks they can be safer and more convenient to use than other forms of access equipment such as ladders, scaffolding, staging or suspended cradles.

Responsibility for the safe operation of MEWPs lies with employers, managers, supervisors, operators and others using these appliances. This code of practice gives guidance and recommendations to maximize the possibility that appropriate MEWPs are selected for use and positioned, used, maintained and examined safely.

The safe operation of MEWPs requires the use of competent operators since inadequately trained personnel are unlikely to appreciate the risks involved.

It has been assumed in the drafting of this standard that the execution of its provisions will be entrusted to appropriately qualified and competent people, for whose use it has been produced.

This Code of Practice provides guidance for hirers, responsible bodies and persons using the MEWP to assist them in complying with the Provision and Use of Work Equipment Regulations 1998 (PUWER) [1], the Lifting Operations and Lifting Equipment Regulations 1998 (LOLER) [2] and the Work at Height Regulations 2005 [3]. It also provides valuable guidance for training those involved in MEWP operations.

The Health and Safety Executive (HSE) commends the use of this British Standard to those who have duties under the Health and Safety at Work etc. Act 1974 [6]. This standard was drawn up with the participation of HSE representatives and will be referred to in relevant publications.

As a code of practice, this British Standard takes the form of guidance and recommendations. It should not be quoted as if it were a specification and particular care should be taken to ensure that claims of compliance are not misleading.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with this British Standard does not of itself confer immunity from legal obligations.

Attention is drawn to the following statutory regulations:

The Provision and Use of Work Equipment Regulations (PUWER) [1];

The Lifting Operations and Lifting Equipment Regulations (LOLER) [2];

The Work at Height Regulations [3];

The Control of Substances Hazardous to Health (COSHH) Regulations [4];

The Personal Protective Equipment (PPE) Regulations [5];

The Health and Safety at Work etc. Act 1974 [6];

The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) [7];

The Road Traffic Act [9];

The Air Navigation Order [18];

The Management of Health and Safety at Work Regulations [21].

The Electricity at Work Regulations [24].

Summary of pages
This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 47 and a back cover.

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1 Scope

This British Standard gives guidance and recommendations for persons responsible for the selection, hiring, positioning, maintenance and thorough examination of mobile elevating work platforms (MEWPs). It also gives guidance and recommendations for the safe use of MEWPs, including the selection and training of operators and other personnel, together with guidance to assist in the selection of competent persons.

NOTE 1 This British Standard does not give recommendations for delivering persons and materials to fixed landing levels. Equipment intended for this purpose, such as lifts or hoists, are dealt with by other standards including BS EN 12158-1, *Builder's hoists for goods*, BS EN 12159, *Builder's hoists for goods and passengers* and BS EN 81, *Safety rules for the construction and installation of lifts*.

NOTE 2 Mast climbing work platforms (MCWPs) conforming to BS EN 1498, suspended access equipment defined in accordance with BS EN 1808, lifting tables defined in accordance with BS EN 1570, fire fighting and fire rescue appliances defined in accordance with BS EN 1777, and non-integrated working platforms on forklift trucks are not included within the scope of this British Standard.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

BS 8437*, Code of practice for selection, use and maintenance of personal fall protection systems and equipment for use in the workplace.*

BS EN 280*, Mobile elevating work platforms — Design calculations — Stability criteria — Construction — Safety — Examinations and tests.*

BS EN 45004*, General criteria for the operation of various types of bodies performing inspection.*

3 Terms and definitions

For the purposes of this British Standard, the following terms and definitions apply.

3.1
accessory
device attached to a work platform to assist with tasks being carried out from the work platform

NOTE Accessories might include cladding carriers, camera pods, sign carriers, glazing carriers, lighting frames, advertising panels and pipe racks.

3.2
anchor point
element secured to or part of a work platform to which a fall protection system can be attached

3.3
articulated boom
extending structure of a boom-type MEWP which moves by articulation of one or more booms

3.4
competent engineer
person who has such theoretical knowledge of the design of the MEWP as enables them to assess the design of the item in order to establish appropriate criteria for any proposed modification or adaptation, or for a thorough examination

3.5
competent person
person having sufficient professional or technical training, knowledge, actual experience and authority to enable them to:

— carry out their assigned duties at the level of responsibility allocated to them;

— understand any potential hazards related to the work (or equipment) under consideration;

— detect any technical defects or omissions in that work (or equipment), recognize 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 The attributes for competence which this implies are detailed in **7.2**.

3.6
counterweight
substantial mass incorporated into the rotating base of a MEWP in order to counteract the overturning moment created by the work platform and its payload

3.7
demonstrator
person having such practical and theoretical knowledge and experience of MEWPs as is necessary to familiarize operators with their responsibilities and demonstrate pre-operational and safe operational procedure and the limitations of MEWPs

3.8
extending axle
axle on the chassis of a self-propelled MEWP which extends to increase the supporting base of the MEWP in its operating condition

3.9
fall arrest system
personal fall protection system by which a fall is arrested to prevent the collision of the user with the ground or structure

3.10
familiarization
provision of information for use, and demonstration of the controls and characteristics of a specific MEWP to a potential operator

NOTE Familiarization is also known as "handover".

3.11
ground bearing pressure
pressure exerted on the supporting surface by the stabilizers, outriggers, wheels or tracks of the MEWP

3.12
hirer
company, firm, person, corporation or public authority taking the owner's plant on hire

3.13
insulated aerial device
MEWP manufactured with specially insulated sections of boom or scissor pack for the purpose of electrical insulation

3.14
knuckle
articulating junction of two booms

3.15
manual force
reaction forces applied to a MEWP by persons in the work platform when carrying out work

3.16
mobile elevating work platform
MEWP
mobile machine which consists as a minimum of a work platform with controls, an extending structure and a chassis; that is intended for work at height

NOTE A more detailed definition of a MEWP for the purposes of design standards is given in BS EN 280.

3.17
operator
person(s) responsible for the operation of the MEWPs

3.18
oscillating axle
axle on the chassis of a self-propelled MEWP which oscillates during travel to ensure that all wheels remain in contact with the ground

3.19
outreach
horizontal distance between the point at which the centre of rotation meets the ground and the vertical centreline passing through a point 0.5 m outside the rail of the work platform furthermost from the centre of rotation

3.20
outrigger
device intended to increase the supporting base of the MEWP and level it in its operating condition

3.21
owner
company, firm or person owning and/or letting the plant on hire

3.22
personal fall protection system
assembly of components for protection against falls from a height at work when the risk of a fall exists, including at least a body holding device connected to a reliable anchor

3.23
rescue system
personal protective system by which a person can carry out a rescue, rescue themself or be rescued from a height or depth by pulling, lifting or lowering

3.24
responsible body
person or organization who requires the use of a MEWP and who has responsibility for its safe operation, maintenance and thorough examination

3.25
safe working load
SWL
maximum load that can be safely handled by a MEWP at a specified position and under specified conditions

NOTE The SWL may also be known as “rated capacity” or “working load limit”.

3.26
scissor lift
self-propelled X/scissor action and Sigma (Σ) type vertical lifting platform

NOTE A scissor lift may have limited outreach by use of a deck extension.

3.27
self-propelled boom MEWP
self-propelled telescopic or articulated MEWP with an integral chassis, capable of rotating and providing outreach

NOTE A self-propelled boom MEWP may have outriggers or stabilizers.

3.28
site survey
survey of a location by a competent person prior to the use of a MEWP in order to assess hazards associated with that location and, so far as is practicable, the work to be carried out, and to determine the most suitable MEWP and method of use for the task to be undertaken

NOTE The site survey follows an assessment to identify that a MEWP is suitable for carrying out the task(s).

3.29
spreader pad
pad used to increase the area under a stabilizer, outrigger, wheel or track of a MEWP in order to reduce the ground bearing pressure to an acceptable value

3.30
stabilizer
device or system used to stabilize a MEWP by supporting and/or levelling the complete MEWP or the extending structure

NOTE Examples of stabilizers are jacks, suspension locking devices and extending axles.

3.31
suspension trauma
orthostatic shock caused by vertical suspension for a period of time interfering with the human body's blood circulatory system, which could lead to faintness, shock and ultimately, death

3.32
telescopic boom
extending structure of a boom-type MEWP which moves by the extension or retraction of one or more booms

3.33
vehicle mounted MEWP
MEWP which is driven from, and mounted onto, a vehicle chassis

3.34
working height
vertical distance from the ground to a point 2 m above the floor of the work platform

3.35
work platform
guarded platform which can be moved under load to the required working position and from which erection, repair, inspection or similar work may be carried out

NOTE This is also known as a "cage", "bucket", "basket" or "carrier".

3.36
work restraint system
personal protective system by which a person is prevented from reaching zones where the risk of a fall exists

4 Hazards associated with the use of MEWPs

When undertaking risk assessments of the transport, delivery, positioning, use and maintenance of MEWPs the hazards associated with the use of MEWPs should be considered. Some of the typical hazards associated with these activities are given in Table 1.

Table 1 — Typical hazards associated with the use of MEWPs

Stage	Activity	Hazard	Cause	Relevant cross references
Transport and delivery	Loading in depot	Crushing	Machine slipping off truck deck and ramps	**9.2.5**
			Crushing between MEWP and truck headboard and adjacent MEWPs on truck bed	**9.2.5**
		Slip, trip and falls	Fall hazard (tripping over chains)	**9.2.5**
			Fall from vehicle deck	**11.1**r)
			Environmental conditions (wind, rain, ice, snow and poor visibility)	**6.2**
	Transport on the highway	Impact with traffic and bystanders	Insecure load (both machines and components)	**6.5**, **10.2**
		Impact	Low bridges (striking with high machines)	**9.2.5**
	Loading and unloading on site	Overturning/ crushing	Site conditions (public highway, ground conditions, gradients, cranes, services, environment, traffic, pedestrians)	**6.8**, **6.9**
			Inappropriate ramps	**9.2.5**
			Machine slipping off truck deck and ramps	**9.2.5**
			Overhead objects	**9.2.5**
			Crushing between MEWP and truck headboard and adjacent MEWPs on truck bed	**9.2.5**
		Fall	Slip	**9.2.5**
			Tripping over chains	**9.2.5**
			Fall from vehicle deck	**11.1**r)
		Collision	Stationary and moving vehicles and traffic	**10.3**
			Pedestrians (including the interface with public)	**6.5**
			Adjacent structures and objects	**6.5**
			Overhead objects	**6.5**
		Environment	Wind, rain, ice, snow and poor visibility	**6.2**, **6.8.7**
	Travel on site	Impact with bystanders	Limited operator visibility (particularly reversing)	**10.3**
			Constricted areas, crossings, pedestrian areas	**10.3**
			Site signage and identified vehicle route ways	**10.3**
			Open yards and loading/unloading areas	**10.3**

Table 1 — Typical hazards associated with the use of MEWPs (*continued*)

Stage	Activity	Hazard	Cause	Relevant cross references
		Overturning	General and localized features such as poor ground, excavations, basements and cellars	**6.8**
			Driving on cross gradients	**11.2**
		Electrocution and fire	Services (above and below ground)	**6.3**, **6.8.6**
		Collisions	Travel orientation (unexpected response to controls)	**11.2**
			Overhead hazards	**10.3**
			Inability to hear warnings due to high noise levels	**11.2**
			Lack of segregation from vehicles, traffic routes and management arrangements	**6.9**
		Ejection from work platform	Unexpected movement	**11.2**
			Striking adjacent object/structure	**10.3**, **11.2**
			Struck by moving vehicle	**6.9**
		COSHH [4]	Fuel and exhaust fumes in confined areas	**6.14**
		Fire and explosion	Unprotected combustion engines and electric motors in hazardous areas	**6.14**
	Parking	Collisions	Moving vehicles	**11.7**
			Obstructing vehicle routes or loading/unloading areas	**11.7**
			Run away	**11.7**
Positioning prior to carrying out work	Ground conditions	Overturning	Un-compacted fill (poor ground bearing)	**10.4**, **6.8**
			Paved areas (unknown bearing capacity)	**10.4**, **6.8**
			Cellars and basements (unknown bearing capacity)	**10.4**, **6.8**
			Excavations (collapse of adjacent ground)	**10.4**, **6.8**
			Waterlogged areas (poor ground bearing)	**10.4**, **6.8**
			Frozen ground (reduction in bearing capacity as ground thaws)	**10.4**, **6.8**
	Services	Overturn, electrocution, fire and damage to services	Above ground: Collision with power lines, telephone lines, projections, pipe bridges	**6.3**
			Below ground: Collapse due to sewers, manhole covers, cable ducts, water mains, gas mains	**10.4**, **6.8**

Table 1 — Typical hazards associated with the use of MEWPs (*continued*)

Stage	Activity	Hazard	Cause	Relevant cross references
	Adjacent structures and objects	Impact and crushing	Contact with adjacent structures and mezzanine floors	**11.2**
			Between counterweight and adjacent object or structure while slewing	**11.2**
			Walls and roofs of tunnels and corridors	**11.2**
			Falling objects	**11.2**e)
	Weather conditions	Overturning	Wind speed: local effects (shielding, vortex effect, aircraft exhaust)	**6.10**
			Using zero wind rated machines out of doors	**6.2.1**
		Personnel hazards	Wind chill, sunburn, sun glare, rain, snow, ice and poor visibility	**6.2.2**, **11.6**
	Other plant and vehicles	Collision, ejection from platform and crushing	Cranes (tower, mobile and EOT)	**6.9**
			Road vehicles	**6.9**
			Site vehicles	**6.9**
Setting up	Outrigger deployment	Crushing	Feet under outrigger pad	**6.8.2**
		Impact, trapping and crushing	Extending outrigger beams into adjacent personnel, vehicles or structures	**10.4**
		Unexpected movement	Hand brake on rear wheels only (chassis moves when rear wheels leave ground)	**10.4.4**
		Overturning	Incorrect set up	**10.4**
			Levelling (slope limit) plus max packing height	**10.4**
			Ground bearing capacity	**6.8**
	Attachment of work platform and accessories	Muscular-skeletal injuries	Incorrect manual handling	**10.6**
		Falling and falling object	Not attached securely (lack of competence)	**10.6**
During use	Loading of the work platform	Overload, overturning and structural failure	Inadequate planning of the operation	Clause **9**, **10.5**
			Exceeding number of persons	**10.5**
			Exceeding SWL	**10.5**
			Exceeding manual persons force	**10.5**
			Uneven distribution of load	**10.5**
			Taking an unknown load into the platform whilst elevated	**10.5**
			Wind loading on the platform and objects handled and placed in or attached to the work platform	**10.7**
			Shock loading	**10.7**
			Using the MEWP as a crane	**11.1**

Table 1 — Typical hazards associated with the use of MEWPs (*continued*)

Stage	Activity	Hazard	Cause	Relevant cross references
			Using the work platform to nudge components into position. Nudging steel work	**10.7**
			Trailing cables hanging from the work platform	**10.7**, **11.1**p)
			Long loads, ducting, large panels/pipes, posters or signs (increased wind area)	**10.7**
			Loads carried on the rails of the work platform (damage to rails, endangering persons in the work platform)	**10.7**, **11.1**o)
			Loads carried outside the work platform (increased loads on levelling and load sensing systems, risk of entanglement)	**10.5**
	Use at height	Fall from height	Using "hop ups" on floor of work platform (stools, boxes, ladders work platform mid-rail etc.)	**11.1**n)
			Exiting the work platform at height	**6.12**, Annex C
			Work platform levelling system failure	**6.6**
			Faulty or inappropriate personal fall protection system	**6.6**
			Low height falls from vehicle mount decks	**11.1**r)
			Ejection by collisions (sideswipe)	**6.9**
			Unauthorized means of egress	**11.1**d)
			Work platform access point sliding mid-rail secured or jammed in raised position	**11.1**c)
		Falling objects	On to work platform (lack of head protection)	**9.2.5**
			From work platform (particularly loose materials carried on guard-rails)	**11.1**g)
		Entanglement	Proximity to trees. Long and/or inappropriately attached materials	**10.7**e)
		Stranding at height	Machine failure	**12.1**
			Entanglement or blocking of the work platform at height	**10.7**e)
		Suspension trauma	Incorrect selection and use of emergency egress equipment/rescue system	**6.7**
			Prolonged suspension in fall protection systems (particularly but not exclusively fall arrest systems)	**6.7**
			Lack of rescue procedures, lone working etc.	**6.7**, **6.15**

Table 1 — Typical hazards associated with the use of MEWPs (*continued*)

Stage	Activity	Hazard	Cause	Relevant cross references
		Trapping and crushing	Against, between and underneath structures and services	**11.1**l)
			Personnel under descending scissor lift extension deck	**11.1**l)
		Structural failure	Corrosive environment	**11.1**j), **12.3.5**, **13.3.2**
			Poor maintenance	Clause **12**
			Unauthorized modifications	**6.2.1**, **6.13**
		Incorrect operation, safety system failure	Excess paint overspray (covers decals, jams up switches/mechanisms), poor maintenance	**11.1**j)
		Mechanical failure	Shot blasting (insufficient protection)	**11.1**j)
		Overturning	Slow ground failure, erosion	**6.8**
		Electrocution	Lightning strikes	**6.16**
	Travelling on site	Impact with bystanders/ obstacles	Limited operator visibility (particularly reversing)	**11.2**
			Constricted areas, crossings, pedestrian areas	**11.2**
			Site signage and identified vehicle route ways	**11.2**
			Open yards and loading/unloading areas	**11.2**
		Overturning	Uneven rough ground (potholes, kerbs etc.)	**10.3**
			Unprotected edges	**10.3**
			Housekeeping (debris, objects projecting into or obstructing route ways etc.)	**10.3**
		Overturning and ejection of cage occupants	Acceleration during turning and stopping (bumper cars) and over uneven ground	**11.2**
			Magnification of distance and acceleration at the work platform on boom-type MEWPs when travelling over uneven ground (particularly with the boom extended)	**11.2**
			Sudden movement of the work platform on tracked-type MEWPs when travelling over uneven ground	**11.2**
			Sudden movement of the work platform if oscillating axles are locked when travelling over uneven ground	**11.2**

Table 1 — Typical hazards associated with the use of MEWPs (*continued*)

Stage	Activity	Hazard	Cause	Relevant cross references
			Being towed	**10.3**
		Impact, trapping, crushing and structural damage	Towing another machine	**10.3**
	Airports (additional issues)	Impact, trapping and crushing	Collision with aircraft and other traffic	**6.10**
		Overturning	Aircraft exhaust	**6.2.4**, **6.10**
		Air traffic control confusion	Radar interference from moving MEWP airside	**6.10**
		Auditory damage	High noise levels	**6.10**
	Railways (additional issues)	Impact, trapping and crushing	Collision with rail traffic	**11.5**
		Electrocution	Proximity to overhead power lines and "third rail" systems	**6.3**, **11.5**
Maintenance	Common activities (daily checks, weekly inspections, breakdowns, routine servicing, cleaning, pre-hire inspections)	Fall from height	Low height falls from vehicle mount decks	**7.2**, Clause **8**, **12.1**
			Incorrect set up or operating technique	**7.2**, Clause **8**, **12.1**
			Machine failure	**7.2**, Clause **8**, **12.1**
		Lack of assistance in event of injury	Lone working	**6.15**
		Injury	Slips and trips from poor housekeeping	**7.2**, Clause **8**, **12.1**
		Muscular-skeletal injuries	Insufficient manual handling assessment and techniques	**7.2**, Clause **8**, **12.1**
		Trapping and crushing	Operation whilst guards are removed	**7.2**, Clause **8**, **12.1**
		Injuries from hazardous substances	Insufficient COSHH [4] assessment and correct use of PPE [5]	**7.2**, Clause **8**, **12.1**
			Contamination of machine on site	**7.2**, Clause **8**, **12.1**
	Breakdowns and routine servicing	Hydraulic fluid injection	Insufficient experience and competence	**7.2**, Clause **8**, **12.3**
		Environmental contamination	Insufficient environmental assessment and waste disposal arrangements	**7.2**, Clause **8**, **12.3**

Table 1 — Typical hazards associated with the use of MEWPs (*continued*)

Stage	Activity	Hazard	Cause	Relevant cross references
		Machine failure	Insufficient experience and competence	**7.2**, Clause **8**, **12.3**
			Use of incorrect spare parts	**7.2**, Clause **8**, **12.3**
Thorough examination (including testing)	Thorough examination and testing	Fall from height	Low height falls from vehicle mount decks	**7.2**, Clause **8**, Clause **13**
			Incorrect set up or operating technique	**7.2**, Clause **8**, Clause **13**
			Machine failure	**7.2**, Clause **8**, Clause **13**
		Lack of assistance in event of injury	Lone working	**6.15**
		Injury	Slips and trips from poor housekeeping	**7.2**, Clause **8**, Clause **13**
		Muscular-skeletal injuries	Insufficient manual handling assessment and techniques	**7.2**, Clause **8**, Clause **13**
		Trapping and crushing	Operation whilst guards are removed	**7.2**, Clause **8**, Clause **13**
		Injuries from hazardous substances	Insufficient COSHH [4] assessment and correct use of PPE [5]	**7.2**, Clause **8**, Clause **13**
			Contamination of machine on site	**7.2**, Clause **8**, Clause **13**
		Hydraulic fluid injection	Insufficient experience and competence	**7.2**, Clause **8**, Clause **13**
		Environmental contamination	Insufficient environmental assessment and waste disposal arrangements	**7.2**, Clause **8**, Clause **13**
		Machine failure	Insufficient experience and competence	**7.2**, Clause **8**, Clause **13**
			Insufficient product knowledge	**7.2**, Clause **8**, Clause **13**
		Injuries to bystanders and the public	Unsuitable location without exclusion zone	**7.2**, Clause **8**, Clause **13**

5 Management

5.1 General

It is essential that the selection, positioning, operation, maintenance and thorough examination of a MEWP is properly planned, appropriately supervised and carried out in a safe manner. Having identified the hazards associated with the use of MEWPs (see Clause **4**), the competent person should evaluate the risks associated with their use and put appropriate control measures in place as identified by the risk assessment.

5.2 Organizational arrangements

MEWPs are used in many industries and work situations for a wide variety of tasks. The provision of MEWPs generally fall into two categories:

a) MEWPs owned by the responsible body;

b) MEWPs hired by the responsible body from a hire company.

In both cases the major responsibility for the management of the use of the MEWP lies with the responsible body. Before the MEWP is used a safe system of work should be put in place and the operators instructed to follow it. The system of work should include the following.

1) Planning of the operation including procedures for the recovery of persons and/or the machine in the event of an emergency, see **6.7**.

2) Selection, provision and use of a suitable MEWP and work equipment associated with it.

3) Any necessary preparation of a site for the positioning of the MEWP.

4) Maintenance and thorough examination requirements.

5) The provision of properly trained and competent personnel who have been made aware of their relevant responsibilities under the Health and Safety at Work etc. Act [6].

6) Familiarization of the MEWP operator with the specific machine they are required to operate, local site rules and information on any hazards to be aware of in the areas where the MEWP is required to work and travel.

7) Adequate supervision by properly trained and competent personnel having the necessary authority. These persons may be provided by either the responsible body or the person in control of the site, provided that this has been agreed by all parties and made known to the persons carrying out the work.

8) Availability of all necessary reports of thorough examination and other documents.

9) Preventing unauthorized movement or use at all times.

10) The safety of persons not involved in the operation.

The system of work and its implementation should be effectively communicated to and between all parties concerned, taking account of any language differences.

The responsible body should check that a competent person is given responsibility for drawing up the system of work which the operator should then follow. In the case of a hired MEWP, the competent person may be assisted in this task by a site surveyor employed by the MEWP owner, who has sufficient knowledge and experience to give specialist advice in the selection and use of the MEWP for the specific application. However, such assistance does not relieve the competent person of their overall responsibility for the safe management of the operation.

6 Safety at worksites

6.1 Accidents, near misses and dangerous occurrences

6.1.1 *General*

An accident is defined in the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) [7] as:

"any unwanted, unscheduled or unplanned event or occurrence that causes an injury or death to any person or damage to any property".

A near miss is an accident which almost happens and could have had severe consequences.

RIDDOR [7] lists a number of dangerous occurrences which are relevant for safety at worksites, one of which is "the collapse of, the overturning of, or the failure of any load-bearing part of: any lift, hoist, crane, derrick or mobile powered access platform....etc."

Other dangerous occurrences listed in the regulations which should be borne in mind in relation to safety at worksites, are the collapse of scaffolding or buildings (which could be connected with the operation of MEWPs in some instances) and contact with overhead power cables.

NOTE RIDDOR [7] requires that a dangerous occurrence is reported to the Health and Safety Executive. They might require that nothing is moved or disturbed until they have visited the site.

6.1.2 *Actions in the event of an accident, near miss or dangerous occurrence*

In the event of an accident, near miss or dangerous occurrence the following apply.

— It is essential that all accidents, near misses or dangerous occurrences are reported to the person in charge of the worksite immediately.

— Following an accident or dangerous occurrence, nothing should be moved, especially any MEWP, unless this is required to prevent further injury or damage to property.

— The occupier of the site should report any incident to the enforcing authority, which is often the HSE.

— All cases of severe shock loading of any MEWP should be reported to the machine owner.

6.2 Wind

6.2.1 *Effect of wind forces*

MEWPs should not be used in winds where their stability could be compromised. No modifications or additions to the MEWP that could affect its wind loading and consequently its stability should be made without the manufacturer's approval, for example modifications to or addition of signs, panels or attachments. Where this approval cannot be obtained because the manufacturer has gone out of business, advice should be obtained from a competent engineer.

All MEWPs, except those designed specifically for indoor use, are designed to operate in maximum wind speed conditions which should be marked on the machine. Operation in wind speeds above this maximum can cause instability and should not be permitted. BS EN 280 specifies a minimum design wind speed of 12.5 m/s (28 mph).

NOTE Some MEWPs are specifically designed to work in wind speeds in excess of 12.5 m/s. In such cases the manufacturer might impose specific restrictions on use.

Wind speed should be measured from the MEWP platform with an anemometer. It should be noted that wind speed increases with height and could be 50% greater at a height of 20 m above ground level.

6.2.2 *Wind chill factor*

Persons using the MEWP should consider the effect of wind chill prior to starting work on site each day and dress accordingly. On a calm day an ambient temperature of 10°C is considered to be cool but not unpleasant. At this temperature in a wind of 20 mph the face and hands can experience a wind chill temperature of 0°C and if the ambient temperature drops to freezing, the wind chill temperature can be –15°C. Under these circumstances, warm clothing should be worn, even though it might feel relatively warm at ground level, before starting work.

6.2.3 *Effect of wind on equipment in the work platform*

It is essential that care is taken when handling building cladding, sheet materials, panels and other such materials which can act as sails and affect their ability to be handled safely or the stability of a MEWP, especially in gusty wind conditions.

6.2.4 *Local wind effects*

The shielding and funnelling effects of high buildings can cause high wind speeds and turbulence on days when the wind speed in open areas is low. Other sources of local high wind speed which should also be considered in relation to safety at worksites are aircraft slipstreams at airports and high sided vehicles on motorways.

6.3 Overhead power lines

6.3.1 *General*

Most overhead electric lines are un-insulated and usually carry high voltage electricity; up to 400 000 volts. However overhead lines on electrified railways carry 25 000 volts. Working from or moving a MEWP in the vicinity of overhead high voltage lines can be extremely dangerous. Charge can jump between the power lines and MEWP if sufficient separation distance is not maintained. Further information on precautions to be taken when a MEWP is working in the vicinity of overhead power lines are given in Guidance NOTE GS6 [8] which is available from the Health and Safety Executive. There might also be special rules established for particular sites and these should be taken into account wherever they exist.

6.3.2 *Controlled sites*

On sites where MEWPs have to pass under overhead electric lines, ground level barriers should be positioned and goal posts erected to ensure that the machine can pass safely under the overhead lines. If there is no need to pass under the overhead lines, both ground level barriers and high level markers, usually in the form of bunting, should be placed to keep MEWPs at a safe distance.

6.3.3 *Minimum safe distances*

Many fatal accidents have occurred due to some part of a machine touching or even simply coming close to overhead lines. A minimum safe distance should be kept between the overhead lines and the closest point of the MEWP, with the boom fully extended. This distance is:

— 15 m for worksites with overhead lines mounted on steel towers; and

— 9 m for worksites with lines mounted on poles of wood, concrete or steel.

These distances should be measured horizontally at ground level from a position vertically below the outermost conductor tower or pole position in accordance with Figure 1 and Figure 2. Strong winds can cause overhead electric lines to sway and thus reduce the distance between the lines and the MEWP. Therefore the working distance should be rechecked and the safe working distance maintained if the work platform is moved from the original location.

Dimensions in metres

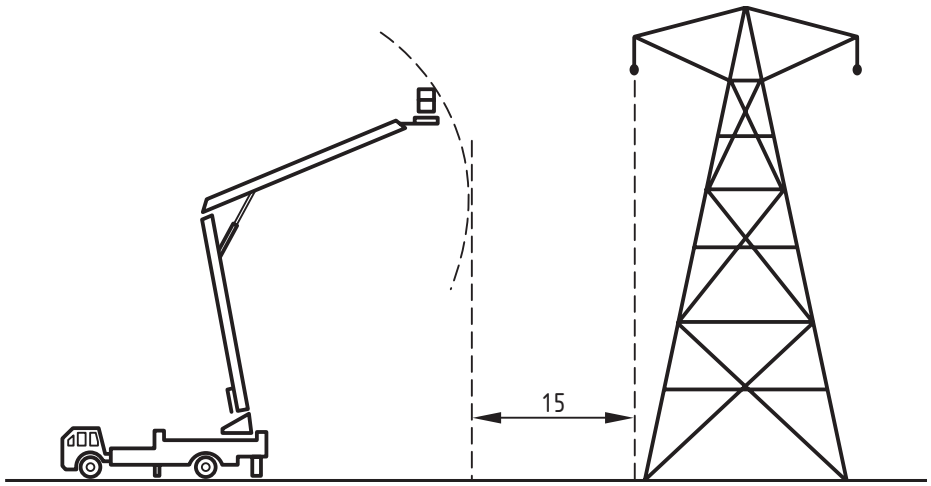


Figure 1 — Minimum safe distance from power lines mounted on steel towers in excess of 33 kV

Dimensions in metres

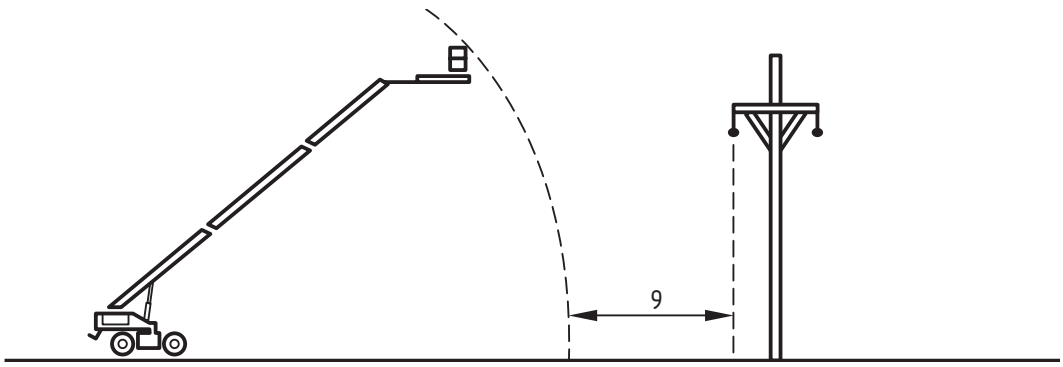


Figure 2 — Minimum safe distance from power lines mounted on poles up to 33 kV

6.3.4 *Working inside the safe distance limit*

Working inside the safe distance limit may only be undertaken following a site specific risk assessment and consultation with the operator of the power line. All overhead lines and other electrical apparatus should be treated as live unless declared "isolated" and "safe" by the electricity company (or other line operator).

6.3.5 *Warning devices*

Devices are available that are designed to be fitted on machines to give a warning when the machine comes within a predetermined distance of overhead electric lines. Such devices should not be considered as a substitute for an agreed safe system of work.

6.3.6 *Emergency procedure on contact with a live electric line*

If a MEWP makes contact with a live electric line, the operator should observe the following precautions in order to minimize the risk of electrocution.

a) Remain on the platform or in the cage.

b) Warn all other personnel to keep away from the machine and not to touch any part of it.

c) Try, unaided, and without anyone approaching the machine, to move the machine until it is clear of the power line and/or lower the platform to the ground.

d) If the machine cannot be moved away or lowered, remain inside the cage. If possible, get someone to inform the electricity supply authority at once. Take no action until it has been confirmed that conditions are safe.

e) Do not touch the machine and the ground at the same time.

f) Get someone to inform the site management of the situation immediately and, until assistance is received, ensure that the machine is cordoned off, or if this is not possible, someone stands guard by the machine at a safe distance to warn of the danger.

6.3.7 *Live line working*

Utility companies and specialist overhead line contractors sometimes carry out work on power lines when they are live, i.e. the power has not been switched off, so that the supply of electricity to consumers is not interrupted. This technique is generally referred to as Live Line Hands on Working (LLHOW). The use of MEWPs for this purpose should only be undertaken with a tested and certified insulated MEWP (Insulated Aerial Device) used in accordance with electricity supply industry guidance.

6.4 Non-ionizing radiation

MEWPs are sometimes used in close proximity to sources of non-ionizing radiation such as mobile phone aerials and microwave link dishes. Non-ionizing radiation might pose a health hazard to personnel in the work platform and could also interfere with MEWP control systems.

Aerials, particularly those operated by mobile phone networks, are not always obvious and might be disguised in locations such as petrol station forecourt signs or church towers. Before working in locations where aerials might be located enquiries should be made of the owner of the premises who ought to be able to confirm the presence of sources of non-ionizing radiation, give advice on radiation levels and, if necessary, make arrangements for the sources to be switched off for the duration of the work.

6.5 Working on the highway

NOTE 1 These precautions also apply during the loading and unloading of self-propelled MEWPs onto and off vehicles parked on the highway.

When working with a MEWP in an area used by other vehicles or pedestrians, the entire operating area should be barricaded off using, for example, cones, warning notices and/or flashing yellow beacons.

MEWPS carrying out work on the highway should be fitted with an amber flashing warning beacon.

When working on the highway it is essential that no part of a MEWP is allowed to extend or swing into a line of traffic.

If arrangements need to be made to divert traffic, using temporary barriers, cones, traffic lights and/or signs, the person in charge of the site should be consulted.

The Road Traffic Act [9] requires that only a properly authorized person may direct traffic on a highway. If there is any doubt the police should be consulted.

When operations are to be carried out during the hours of darkness at a location where the public have access, it is essential that barriers are provided together with yellow flashing beacons. If the work platform is to be left at the worksite overnight, permission should be obtained from the relevant authority, for example the highway authority or the police.

NOTE 2 Guidance on requirements for signs, cones and barriers is given in the Department for Transport document *Safety at street works and road works — A code of practice* [10].

6.6 Use of personal fall protection systems

MEWPs conforming to BS EN 280 (i.e. all CE marked machines) have work platforms which are provided with guard-rails, mid-rails and toeboards that provide an equivalent level of protection against falls from height to that on fixed scaffold. However there is a risk of falling from the work platform as a result of sudden movements caused by an impact (for example, from a moving vehicle), sudden ground collapse, entanglement of the work platform or failure of a critical part. In such a situation an appropriate personal fall protection system in accordance with BS 8437 should be worn to provide protection against the risk of falling, or being thrown out of the work platform.

Boom-type machines are particularly susceptible to these risks. It is strongly recommended that all personnel in the work platform of boom-type MEWPs use suitable full body harnesses with work restraint systems attached to a suitable anchorage point in the work platform. Currently the most suitable type of work restraint system is an adjustable lanyard adjusted to be as short as possible, other types of work restraint systems for MEWPs are under development. Further information on the use of personal fall protection equipment is given in BS 8437.

Fall protection systems are not normally required in scissor and other vertical lifts. In certain circumstances operatives might need to lean over the guard-rails to carry out work. Where possible MEWPs should be positioned adjacent to or directly under the work area. Where this is not possible and the operative could overbalance, a personal fall protection system should be used.

The requirement for a fall protection system is the outcome of a job specific risk assessment undertaken prior to work commencing.

The following factors should be taken into account when selecting and using fall protection systems.

a) Choice of systems to suit the task being carried out.

b) Availability of suitably rated anchor points on the work platform.

c) Rescue of any person in the event of an emergency.

d) Inspection and routine replacement of the fall protection system.

Guidance on these and other related matters is given in the HSE Information Sheet MISC614 [11], INDG 367 [12] and the IPAF/CPA technical guidance note H1/05/05 [13].

6.7 Rescue from height

As part of safety at worksites, consideration should be given to the rescue of MEWP work platform occupants if the machine is unable to be lowered for any reason, such as machine malfunction or work platform entanglement. Rescue might also be necessary in the event of illness, injury or risk of exposure. Any rescue procedure should be properly planned taking into account the reasons why the platform is stranded at height and any need for urgent action.

Wherever possible, rescue should be carried out by an appropriately trained person using the machine's ground controls, emergency power pack or manual bleed down systems. If this is not possible, another MEWP may be used to carry out the rescue.

Rescue using another MEWP should only be carried out once a site specific risk assessment has been carried out and a specific plan drawn up. The plan should take into account the hazards highlighted in **6.11** and Annex B together with the following.

a) The rescue machine should be positioned to enable the rescue procedure to be carried out without compromising the safety of personnel involved in the rescue.

b) It is essential that the cages of both machines are adjacent to each other with a minimal gap between them. The engines on both machines should be switched off during the transfer.

c) The person being rescued should wear a full body harness with an adjustable lanyard. The lanyard should be attached to the anchor points on the rescue machine before the transfer takes place.

d) It is essential that care is taken not to overload the rescue machine. This could mean making more than one journey to complete the rescue.

Suspension trauma can occur if a person has been suspended at height for a period of time. If communication cannot be established with suspended personnel the emergency service should be summoned. BS 7985 provides further guidance on the use of rope access methods.

6.8 Ground conditions

6.8.1 *General*

The stability of MEWPs, and hence their safety, can be affected by poor ground conditions, which can cause settlement and lead to the machine being out of level and becoming unstable. It is essential before using a MEWP that the ground on which it is to stand is assessed for its ability to accept the loads imposed by the MEWP and that any measures required to improve its bearing capacity are carried out.

NOTE Further guidance on assessment of ground conditions is given in the CIRIA publication *Crane Stability on Site* [14].

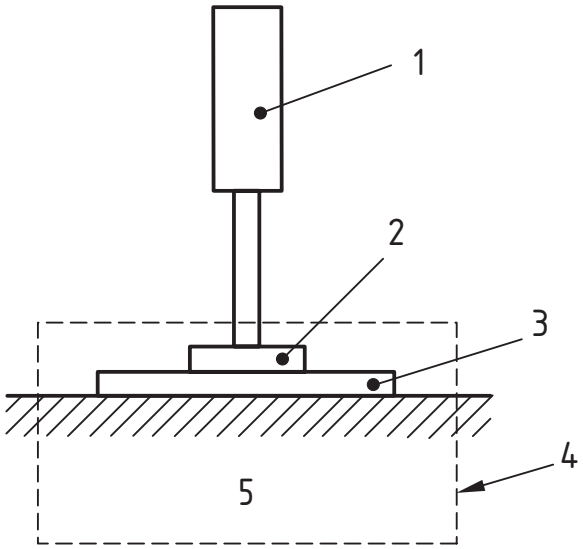
It is important that operators use the level indicators provided on platforms and take notice of any warnings provided. If the level indicator indicates that the operating limits are exceeded then the operator should lower and then reset the machine in a level position. If it is suspected that the outriggers could sink for any of the reasons given in **6.8.2**, **6.8.3**, **6.8.4**, **6.8.5**, **6.8.6** and **6.8.7** then regular checks should be made on machine level and adjustments made to outriggers, packing mats etc.

Typical ground conditions that could cause problems and the actions that might be taken to ensure stability are given in **6.8.2**, **6.8.3**, **6.8.4**, **6.8.5**, **6.8.6** and **6.8.7**.

6.8.2 *Inadequate outrigger foundations*

The area of the foot attached to the outrigger of a MEWP is relatively small and consequently generates high pressures on the ground. Most soils, unmade ground and some paved and tarmac covered areas are not capable of supporting these pressures and some form of foundation or spreader pad is often required to reduce the pressure to an acceptable level. Spreader pads are often required when outriggers are placed on unmade ground and soil surfaces and ground where underground voids might be present that could cause the surface to collapse under the outrigger. Spreader pads should have sufficient size, stiffness and strength to spread the load over the required area. Figure 3 illustrates the use of spreader pads to reduce outrigger pressure on the ground.

NOTE Further guidance on outrigger foundations is given in the CIRIA publication *Crane Stability on Site* [14].



Key
1 Outrigger
2 Outrigger foot
3 Spreader pad
4 Foundation
5 Ground

Figure 3 — Use of spreader pads to reduce outrigger pressure on ground

6.8.3 *Uncompacted fill*

Soil or other fill material might be piled along the line of a backfilled trench without being compacted. An indication of uncompacted fill could be the cracking of the ground along the line of the trench.

NOTE Further guidance on uncompacted fill is given in the CIRIA publication *Crane Stability on Site* [14].

6.8.4 *Floors, cellars and basements*

Many floors, cellars and basements are incapable of bearing the weight of a MEWP with or without a load, and could collapse without warning. The strength of floors and location of cellars and basements should be taken into account when siting MEWPs.

NOTE Further guidance is given in the CIRIA publication *Crane Stability on Site* [14].

6.8.5 *Paved areas*

Paved areas can look deceptively strong but might have been laid on weak ground underneath. Footpaths should be considered to be suspect as there could be weaker material or shallow services underneath the surfacing.

If a road is used regularly by heavy commercial vehicles and does not show any signs of distress it is of less concern than a lightly trafficked car park or estate road.

NOTE 1 As an indication of relative bearing pressures, a car tyre exerts a pressure of approximately 2.4 bar (35 lb/in^2) whereas a typical MEWP outrigger without a spreader pad could generate a pressure of 13.8 bar (200 lb/in^2).

NOTE 2 Further guidance is given in the CIRIA publication *Crane Stability on Site* [14].

6.8.6 *Underground services*

Sewers, drains, manholes, gas and water mains, etc. might be damaged by the weight of a MEWP or could even collapse and cause it to become unstable or overturn.

NOTE Further guidance is given in the CIRIA publication *Crane Stability on Site* [14].

6.8.7 *Weather conditions*

Heavy or prolonged rain can alter ground conditions and cause sinking of outriggers or wheels. If it is suspected that the ground supporting a MEWP is getting softer regular checks should be made on machine level and the appropriate adjustments made to outriggers, packing mats etc.

Regular checks should be carried out when frozen ground is thawing out since frozen ground can appear to be much firmer than it actually is.

6.9 Segregation from other vehicle movements

When in use, MEWPs are at risk from collision with other vehicles. A small impact at the base of a MEWP can have a disproportionately large effect on the work platform and its occupants due to the magnification effect of a long boom. This can result in serious injury and the possibility of persons being ejected from the work platform.

Every worksite should be the subject of a risk assessment and where vehicle movements are likely to occur close to the MEWP, measures should be taken to segregate the MEWP from the other vehicles. These measures might be the general rules that apply on a highway (see **6.5**), adapted to local circumstances including the use of barriers, signage, re-routing and traffic management systems.

Further guidance on segregation is given in the HSE publication HSG 136 [15].

6.10 Use in the vicinity of airfields/airports

If a MEWP is to be used within 6 km of an aerodrome/airfield and its height exceeds 10 m or that of surrounding structures or trees, if higher, the aerodrome/airfield manager should be consulted to obtain prior permission to work. Restrictions might be placed on the overall height of the MEWP and there could be a requirement to fit warning (obstacle) lights to the top of the MEWP. Further information is given in *Cranes and Planes — A guide to Procedures for Operation of Cranes in vicinity of Aerodromes* [16].

Additional guidance that can be applied to the use of MEWPs in the vicinity of airfields/airports is given in *A Voluntary Code of Practice for the Safe Use of Cranes in and around Airports* [17].

NOTE Attention is drawn to The Air Navigation Order 2000 [18] which states that it is an offence to act recklessly or negligently in a manner likely to endanger aircraft.

6.11 MEWPs mounted on water-borne craft

6.11.1 *General*

MEWPs mounted on water-borne craft are considered a major modification so the combined MEWP and vessel assembly should be assessed, tested and thoroughly examined. When mounting and using MEWPs on water-borne craft, an appropriately qualified and experienced person, see **6.11.2**, should be consulted so that the combination of MEWP and vessel can be used safely under the specified conditions.

NOTE See **6.6** regarding the use of fall protection systems when working over/near water.

6.11.2 *Information*

Information regarding the amount of list and freeboard allowable for MEWPs mounted on water-borne craft under both safe working load (SWL) and overload conditions should be obtained from a competent person or authority experienced in MEWP design and stability of water-borne craft. In addition, confirmation should be obtained from the MEWP manufacturer on how far the MEWP is derated from land based ratings whilst on the barge or pontoon. This is necessary to minimize any excessive loads in the structure which would be applied when any part of the barge or pontoon is at maximum list.

6.11.3 *Attachment of MEWP*

MEWPs should be securely attached to water-borne vessels. The design of this attachment should take into account all the loads and forces that are likely to be encountered both when the MEWP is in use and whilst travelling.

6.11.4 *Verification*

Before testing is carried out on a water-borne MEWP the following details should be verified.

a) The calculated angle of heel and trim of the vessel when the MEWP is in operation, so that a minimum freeboard is maintained.

b) The MEWP manufacturer's allowable SWL whilst working on the pontoon or barge, taking account of information obtained from the assessment in **6.10.1**.

c) The amount and position of any ballast required.

d) The depth of water below the vessel's keel.

NOTE This is so that the vessel does not ground during the test.

e) The limiting weather and sea state condition allowed by the MEWP designer, certifying authority or other competent person.

6.11.5 *Mooring*

If it is not possible to moor the vessel to the shore directly, the vessel should be moored to a craft alongside which is moored to the shore. The mooring should be sufficiently free to allow the vessel to take up a natural list in the water.

6.11.6 *Load sensing system*

Any MEWP load sensing system should be checked to determine whether the SWL reduction and any increase in load radius due to the list of the vessel has been taken into account.

6.11.7 *Thorough examination before testing*

A water-borne MEWP should undergo thorough examination before the application of any loads. The examination should verify whether ties, supports, anchorages, ballast counterweight and configuration for the type of MEWP under test are in accordance with the MEWP manufacturer's instructions. A functional test of the MEWP with no load applied should be carried out to check for correct operation of controls and safety devices. The operation and correct adjustment of the brakes and limit switches should also be checked and tests carried out to determine whether they are operating correctly.

6.11.8 *Stability margin*

The stability margin for a MEWP/vessel combination should be calculated by a competent person familiar with the use of MEWPs onboard vessels. The margin should be such that the maximum overturning moment of the MEWP, calculated in accordance with BS EN 280, does not exceed two thirds of the restoring moment of the MEWP/vessel combination.

6.11.9 *Overload test*

After the competent person has established the appropriate stability margin in accordance with **6.10.8** the water-borne MEWP should be tested to the maximum SWL that is within the required stability and strength margins for both the MEWP and vessel.

With the work platform set at its maximum working radius, the SWL should be applied and the MEWP operated through all motions, reducing the radius to a minimum to check backward stability. An overload should then be applied by increasing the SWL by 25 % and again the MEWP operated through all motions, reducing the radius to a minimum to check backward stability.

Backward stability should also be checked at minimum radius without a load in the work platform.

The overload should be handled through all motions at the lowest possible speeds. The test should be stopped if there is any sign that the limits of strength or stability of the combination are being compromised. In this situation the work platform radius should be adjusted to a safe position and the situation reassessed before recommencing the test.

The maximum list of a vessel under any conditions, including test, should not exceed 5° with adequate freeboard remaining, i.e. 300 mm.

NOTE These angles of list apply to vessels without cargo.

These angles of list are only permissible if they do not exceed the MEWP manufacturer's maximum allowable inclination of the chassis.

6.11.10 *Post test examination and certification*

On completion of the overload test a thorough examination of the water-borne MEWP should be carried out in accordance with Clause **13**.

When the testing has been satisfactorily completed, the competent person should issue a certificate which should be appended to the report of thorough examination.

NOTE Attention is drawn to LOLER Regulation 9 [2] regarding the certificate of test of lifting equipment. A typical certificate is shown in Annex A.

6.12 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 for the transfer of people from one level to another or exiting the work platform at height.

Exiting the platform at height may only be undertaken where a rigorous risk assessment carried out as part of planning the job (see **5.2** and Clause **9**) indicates that this is the safest and most effective means of accessing a particular location taking into account the availability on site of other more suitable access equipment and the practicability of providing the same within the required timescales for the task to be carried out. The risk assessment should take into account the following factors:

a) falling of persons during transfer from the work platform to the structure;

b) falling of tools and materials during transfer from the work platform to the structure;

c) sudden movement of the MEWP or work platform;

d) additional loads imposed on the MEWP for which it was not designed which could affect stability or overload the machine;

e) dynamic and impact loads from personal fall protection equipment;

f) damage to the MEWP or structure by an unintentional movement of the MEWP;

g) stranding of people at height;

h) use of extending decks and gates, use of double lanyards, etc.;

i) maintenance/replacement of fall protection measures for persons whilst they are on the structure.

Once the risks have been assessed, measures should be devised to reduce these risks to an acceptable level and a method formulated so that a safe system of work can be put in place. This safe system of work should include supervision by the responsible body so that the method is adhered to by personnel at the worksite.

NOTE Further information is given in HSE leaflet INDG 163 [19].

If for any reason it is not possible to introduce adequate measures to reduce the overall risk of the proposed operation to an acceptable level then the operation should not be carried out.

Annex B gives further recommendations for safe systems of work for exiting the work platform at height.

6.13 Modifications to the MEWP

Modifications or additions to a MEWP may only be made following consultation with the manufacturer and after their written permission has been obtained. When the manufacturer is no longer in existence, the advice of a competent engineer should be sought regarding the viability of such modifications or additions.

6.14 Use in hazardous environments

If a MEWP is to be used in a hazardous environment where flammable or explosive gases or particles are present, advice should be sought from the person in charge of the site regarding the need to select MEWPs that are designed for use in the hazardous environment, the use of personal protective equipment or modifications to the machine (for example, fitment of spark arresters or intrinsically safe equipment). Expert advice may need to be sought.

6.15 Lone working

Risk assessments carried out as part of the planning process when a MEWP is to be used should take account of the particular hazards of lone working from a MEWP. Of particular concern is the rescue of the occupant of the work platform in the event of machine malfunction, work platform entanglement or a medical emergency. Guidance on lone working is given in the HSE leaflet INDG 73 [20].

6.16 Use in thunderstorms

Whenever a MEWP is operating in thunderstorm conditions, particularly in isolated areas away from tall buildings and trees, the machine should be stowed and if possible driven away from the thunderstorm area. If lightning strikes an elevated MEWP the occupants of the cage are at great risk of electrocution, being at the highest point on the structure. The MEWP structure is also at risk from arcing due to the poor bonding of adjacent metallic parts which could lead to damaged hydraulic cylinders and bearing surfaces. Control systems are also susceptible to a high level of damage due to the high transient voltages and current flows experienced during a lightning strike.

The poor bonding of adjacent metallic parts in the MEWP structure has the effect of providing an earth path of relatively high impedance which will lead to the MEWP being at a potential substantially above earth. People standing on the ground and touching part of the machine are consequently at risk of electrocution.

7 Selection and minimum attributes of personnel

NOTE The minimum attributes specified in this clause are not comprehensive indicators of competence, they provide basic information on core elements on which competence can be judged.

7.1 Selection of personnel

Personnel operating MEWPs should either have been selected, trained and authorized to do so, or be undergoing formal training under supervision. BS ISO 18878 gives requirements for the training of MEWP operators.

Personnel who are considered to be competent to carry out all duties required should be selected as having the ability to carry out all tasks in a safe manner. Records of training and experience of personnel should be consulted to assist in selection of suitable personnel.

Persons responsible for selection of personnel on a worksite should check that personnel are efficiently organized to ensure good teamwork. Personnel should be instructed not to work under the influence of alcohol, drugs or other impairments to efficiency. All personnel should be made aware of their duties. Personnel undergoing training should be supervised by appropriate personnel.

NOTE Attention is drawn to The Management of Health and Safety at Work Regulations 1999 [21].

7.2 Minimum attributes of personnel

7.2.1 *General*

All personnel should be:

a) competent to perform the tasks required of them;

b) trained and/or successfully assessed;

c) able to present a record of training and assessment;

d) physically able to undertake the appointed tasks;

e) able to demonstrate understanding of any rescue plan in place for the activity and their part/role in it if it is invoked.

7.2.2 *Responsible body and persons using the MEWP*

The responsible body and persons using the MEWP should be able to demonstrate that they:

a) understand relevant health and safety regulations;

b) understand accident prevention and control;

c) understand how to work safely at height;

d) understand the need for and correct use and maintenance of personnel protective equipment;

e) can recognize unsafe practices.

7.2.3 *Operator*

The MEWP operator should:

a) be physically fit;

b) appear to be comfortable working at height when taken up in the work platform of a MEWP;

c) have a responsible attitude;

d) demonstrate an ability to learn;

e) be able to communicate clearly with other personnel on site;

f) be able to demonstrate understanding of relevant health and safety regulations;

g) be able to demonstrate understanding of accident prevention and control;

h) be able to demonstrate that they can work safely at height;

i) be able to demonstrate understanding of the need for and correct use and maintenance of personnel protective equipment;

j) operate the MEWP safely and manoeuvre the machine as required, to correctly position and carry out the required tasks in a correct and proper manner, inside and outside a building;

k) be able to identify and avoid foreseeable hazards and recognize unsafe practices/developing situations;

l) carry out daily pre-use checks.

7.2.4 *Service engineer*

The service engineer should:

a) be physically fit;

b) appear to be comfortable working at height when taken up in the work platform of a MEWP;

c) have a responsible attitude;

d) demonstrate an ability to learn;

e) be able to communicate clearly with other personnel on site;

f) be able to identify equipment;

g) be able to demonstrate an understanding of and apply manufacturer's service/maintenance information;

h) be able to demonstrate that they can diagnose, rectify and record faults;

i) be able to demonstrate an understanding and knowledge of how to carry out inspections (other than thorough examinations) and can make recommendations for the continued use of equipment;

j) be able to demonstrate an understanding of and apply company procedures;

k) be able to demonstrate that they can operate the equipment safely;

l) be able to demonstrate that they can carry out functional checks and setting procedures;

m) be able to demonstrate knowledge of how to record all maintenance work carried out;

n) be able to demonstrate the required knowledge and experience of the MEWPs to be serviced and maintained;

o) be undergoing a form of Continuing Professional Development.

7.2.5 *Competent person for thorough examination*

The competent person carrying out thorough examinations should:

a) be physically fit;

b) appear to be comfortable working at height when taken up in the work platform of a MEWP;

c) have a responsible attitude;

d) demonstrate an ability to learn;

e) be able to communicate clearly with other personnel on site;

f) comply with BS EN 45004;

g) be capable of detecting defects or weaknesses in the MEWP for the purpose of the thorough examination;

h) have sufficient knowledge and experience to assess the importance of defects or weaknesses in the MEWP and identifying what actions need to be taken in order to rectify them. In particular they should be able to:

1) verify that the MEWP is operating as it is intended to when lifting and travelling;

2) identify defects or weaknesses which could compromise the safe use of the MEWP;

3) specify the appropriate time-scales within which identified defects or weaknesses need to be rectified;

4) establish that defects identified in the previous report of thorough examination have received attention;

5) assess the correct function of all safety devices;

6) check that warning notices are correctly fixed and legible; and where necessary specify any limitations on the use of the MEWP;

7) carry out any testing required as part of thorough examination;

8) report on the findings of the thorough examination.

7.2.6 *Site surveyor and planner*

The site surveyor should:

a) be physically fit;

b) have a responsible attitude;

c) demonstrate an ability to learn;

d) be able to demonstrate that they can:

1) communicate clearly with other personnel on site;

2) assess site conditions and hazards;

3) carry out and document risk assessments;

4) communicate with site management;

5) select an appropriate MEWP for the task to be carried out;

6) prepare a report of site survey;

7) prepare method statements for specific tasks;

e) have sufficient knowledge and experience of the MEWPs to be selected;

f) have sufficient knowledge and experience of site conditions for specific applications;

g) be able to keep adequate records of their site surveys for their own and others future use.

7.2.7 *Demonstrator*

The demonstrator should:

a) be physically fit;

b) appear to be comfortable working at height when taken up in the work platform of a MEWP;

c) have a responsible attitude;

d) demonstrate an ability to learn;

e) be able to demonstrate that they:

1) can communicate clearly with other personnel on site;

2) can impart information to other personnel in a structured and convincing manner;

3) have sufficient knowledge and experience of the MEWPs to be demonstrated;

4) have sufficient record keeping ability to retain their site surveys for their own and others future use;

5) have an understanding of relevant health and safety regulations;

6) have an understanding of accident prevention and control;

7) can work safely at height;

8) have an understanding of the need for and correct use and maintenance of personnel protective equipment;

9) can operate the MEWP safely and manoeuvre the machine as required, to correctly position and carry out the required tasks in a correct and proper manner, inside and outside a building;

10) can carry out daily pre-use checks;

11) can familiarize operators with the MEWP they are to operate; inform them of their responsibilities; and demonstrate pre-operational and safe operating procedures, and the limitations of MEWPs.

7.3 Medical considerations

Employers should consider whether those employed for tasks associated with the safe use of MEWPs are medically fit for work. It is good practice for all operating and maintenance personnel to be screened for fitness before employment and at periodic intervals; also after sickness or an accident, where it appears likely that this could have affected fitness, in order to assess the possible effect of the illness or injury and its treatment on the individual's current and future performance. Advice on what constitutes suitable screening can be obtained from the nearest office of the HSE's Employment Medical Advisory Service.

Each person's fitness for operating or maintenance should be judged individually. Some disabled workers have developed skills which compensate for their disability, however their competence in an emergency should also be considered.

Points to be considered concerning the normal level of fitness required are as follows.

a) *General*
MEWP operators should generally have full movement of the trunk, neck and limbs and normal agility. However, an experienced worker who loses a limb may be re-employed after undergoing appropriate retraining. A stable disposition is required in personnel, but a history of previous mental illness should not necessarily preclude selection.

b) *Vision*
Proper guidance of the MEWP and its load depends upon good judgement of space and distance, and this generally requires the effective use of both eyes. Although some persons with monocular vision can undertake certain kinds of work platform work satisfactorily, normal distant vision should not be less than 6/12 with both eyes, and if corrected by glasses it is essential that these are worn while operating. Correct colour vision should also be taken into consideration in relation to the operation of colour coded controls.

NOTE The ability to read a car number plate at 22.86 m (75 ft) for figures 88.9 mm (3.5 in) high or at 20.42 m (67 ft) for figures 79.4 mm (3.125 in) high is equivalent to a visual acuity of between 6/9 and 6/12.

c) *Hearing*
The ability to hear instructions and warning signals with each ear.

d) *Epilepsy*
This should not debar if the individual is eligible for an ordinary driving licence (i.e. has had no waking seizures for three years) but any recurrence of seizures should be reassessed medically.

8 Training of personnel

The individual employer should determine the training needs of persons on site, and make the necessary arrangements for training. Self-employed persons should handle their own training needs. The tasks associated with the use of MEWPs, and for which training should be provided, are as follows:

a) operation;

b) demonstration;

c) maintenance;

d) testing and examination;

e) site surveys.

Employers should evaluate the existing competence of each employee to carry out the tasks allotted to them and then train the employee to make up any shortfall between their competence and that required to carry out these tasks with due regard to health and safety. The training given should be adequate and could be in accordance with one of a number of nationally recognized training schemes for MEWP operating, demonstrating and maintenance personnel.

NOTE BS ISO 18878 gives requirements for the training of MEWP operators.

Confirmation of the training given, including its scope and any attainments or competencies achieved, should be given by the training provider to the trainee, and to their employer, in writing.

Table 2 identifies competences and training needs of the main tasks associated with the use of MEWPs.

Table 2 — Core elements and training needs for the use of MEWPs

Job Title	Core elements	Training Needs
Generic	Understand relevant Health and Safety regulations	Attend appropriate safety awareness course Attend appropriate personal protective equipment training course
	Understand accident prevention and control	
	Understand the potential limitations and risks for working at height and implement and maintain a system for working safely at height	
	Understand the need for and correct use and maintenance of personal protective equipment	
	Recognize unsafe practices	
Responsible body and persons using the MEWP	See Generic	See Generic
Operator	Drive the MEWP safely and manoeuvre the machine as required, to correctly position and carry out the required tasks in a correct and proper manner, inside and outside a building	Attend recognized operator training course Final assessment of competence in the work situation Receive familiarization on all models of MEWP they are required to operate (ongoing training issue)
	Identify and avoid foreseeable hazards	
	Carry out daily pre-use checks	
Service engineer	Identify equipment	Attend relevant MEWP manufacturer's service training courses (ongoing training issue) Attend recognized operator training course Receive familiarization on all models of MEWP they are required to operate (ongoing training issue) Attend in-house training courses on company procedures
	Understand and apply manufacturer's service/maintenance information	
	Diagnose, rectify and record faults	
	Carry out inspections (other than thorough examinations) and make recommendations for the continued use of equipment	
	Understand and apply company procedures	
	Operate the equipment safely	
	Carry out functional checks and setting procedures	
	Record all maintenance work carried out	
	Have required knowledge and experience of MEWPs to be serviced and maintained	

Table 2 — Core elements and training needs for the use of MEWPs (*continued*)

Job Title	Core elements	Training Needs
Competent person (thorough examination)	Verify that the MEWP is operating as it is intended to when lifting and travelling	Attend relevant courses on the role of the competent person, thorough examination procedures and practices and recording and reporting the results of thorough examination Attend recognized operator training course Attend relevant MEWP manufacturer's product familiarization courses (ongoing training issue)
	Identify defects or weaknesses which could compromise the safe use of the MEWP	
	Specify the appropriate time-scales within which identified defects or weaknesses need to be rectified	
	Establish that defects identified in the previous report of thorough examination have received attention	
	Assess the correct function of all safety devices	
	Check that warning notices are correctly fixed and legible; and where necessary specify any limitations on the use of the MEWP	
	Carry out any testing required as part of thorough examination	
	Report on the findings of the thorough examination	
Site surveyor and planner	Assess site conditions and hazards	Attend appropriate training course covering assessment of site conditions and hazards, selection of MEWPs, preparation of site survey reports and method statements Attend relevant MEWP manufacturer's product familiarization courses (ongoing training issue)
	Carry out and document risk assessment	
	Communicate with site management	
	Select an appropriate MEWP for the task to be carried out	
	Prepare a report of a site survey	
	Prepare method statements for specific tasks	
Demonstrator	Drive the MEWP safely and manoeuvre the machine as required, to correctly position and carry out the required tasks in a correct and proper manner, inside and outside a building	Attend recognized operator training course Attend additional recognized demonstrator training course Receive familiarization on all models of MEWP they are required to operate (ongoing training issue) Attend appropriate familiarization training course
	Carry out daily pre-use checks	
	Familiarize operators with the MEWP they are to operate, inform them of their responsibilities and to demonstrate pre-operational and safe operating procedures, and the limitations of MEWPs	

9 Planning a job

9.1 General

Before commencing an operation, the responsible body should check that the risks involved have been evaluated and that sufficient planning has been carried out for the job. The extent of the planning required depends on the nature of the task to be carried out and the hazards associated with it. For example, the use of a self-propelled boom to access overhead lights in an unoccupied warehouse with a substantial concrete floor involves few hazards whereas using a large vehicle mounted MEWP to access street lighting on a busy road junction next to a railway line involves a substantial number of hazards. In the first case a generic plan can be used because the risks associated with the activity are common with all activities involving a MEWP and there is no need for special safety measures to address site specific risks. In the second case significant planning is needed to ensure that the ground is adequate for the outrigger loads, traffic management is in place to avoid the danger of collision from other vehicles, barriers are erected to exclude the public, and the requirements of the railway authorities have been met.

9.2 The stages of planning

9.2.1 *General*

When planning all jobs the stages given in **9.2.2**, **9.2.3**, **9.2.4**, **9.2.5**, **9.2.6**, **9.2.7**, **9.2.8**, **9.2.9** and **9.2.10** should be worked through. These stages are summarized as follows:

a) Identify the task to be undertaken.

b) Select an appropriate MEWP.

c) Identify the hazards associated with the task (see Clause **4**).

d) Carry out a risk assessment.

e) Identify control measures.

f) Develop the method to be used.

g) Record the planning in a Method Statement (including any contingency activities for personnel rescue).

h) Communicate the plan to all persons involved.

i) Review the plan before the job starts and incorporate any changing circumstances.

9.2.2 *Identify the task to be undertaken*

As the first stage in the planning process, the task to be undertaken should be clearly identified, together with the location and timing. For example, the task might be to replace the lamps in an illuminated sign at a motorway service station at night.

9.2.3 *Select an appropriate MEWP*

There are many different types of MEWP with various SWLs, working heights and outreaches. The correct machine should be selected for the task to be undertaken, taking into account any constraints such as working environment, ground conditions, site access and proximity to the public. The initial selection might have to be changed in light of the risk assessment (see **9.2.5**).

NOTE For planning purposes the outreach dimension is normally adjusted by taking into account the distance from the centre of rotation to the edge of the machine.

9.2.4 *Identify the hazards associated with the task*

The hazards associated with the task should be identified. These might be associated with the location where the work is to be carried out, the nature of the MEWP or the people and equipment to be carried. Clause **4** gives guidance on typical hazards associated with the transport, delivery, positioning, use and maintenance of MEWPs.

9.2.5 *Carry out a risk assessment*

Having identified the hazards associated with the task, a risk assessment should be carried out to identify who might be harmed, the chance of them being harmed and the consequences of any harm. This assessment should be recorded.

9.2.6 *Identify control measures*

Once the risk assessment has highlighted the risks involved in the task, the procedures and measures required to control them should be identified.

9.2.7 *Develop the method to be used*

Having identified the hazards, evaluated the risks and worked out the control measures required to carry out the task safely, these components should be developed into a coherent plan. Any contingency measures and rescue procedures should be included in the plan.

9.2.8 *Record the planning in a Method Statement*

Once the plan has been developed it should be recorded in a Method Statement. The length and detail of this document depends on the complexity of the task to be undertaken and on the risks involved. A simple low risk job such as routine maintenance work in a factory might only require the use of a brief generic method statement, whilst a more complex and high risk job such as replacement of a valve in a high level pipeline in a petrochemical plant would require a more detailed job specific method statement and permits to work.

9.2.9 *Communicate the plan to all persons involved*

One of the most important aspects of successful planning is to ensure that the contents of the plan are communicated effectively to and between all parties involved, taking account of language differences. Arrangements should be made to ensure that copies of any method statements are given to the appropriate people and that others involved in the job are fully briefed. Similarly any changes to the plan should be communicated to all parties. In particular it is essential that all parties understand any rescue plan developed in connection with the work at height and their part in it, if it is invoked.

9.2.10 *Review the plan before the job starts*

Immediately before a job starts the risk assessment and method should be reviewed to check if any aspect of the job has changed and the effect that these changes could have on the safety of the operation. If any modifications to the plan are required these should be communicated to all those involved.

9.3 Site surveys

A number of the planning steps outlined in **9.2** should be dealt with as part of a site survey. This involves visiting the location where the task is to be carried out, preferably with site personnel or their representatives who can identify hazards associated with the area and ground on which the MEWP is required to operate, so that both the task and any hazards involved can be identified. For simple tasks the remainder of the planning process may be completed at the same time, whilst for more complicated jobs the site surveyor might need to complete the process off site.

9.4 Familiarization

MEWPs come in many types, sizes and configurations, each with their own particular operating parameters. It is therefore essential that operators are familiarized with the controls and characteristics of each model of MEWP they are required to operate. This familiarization should be carried out by a trained demonstrator (see **7.2.7** and Clause **8**). All familiarizations should be recorded.

10 Positioning and setting up the machine

10.1 General

Prior to the commencement of work, the MEWP should be positioned onsite once the operator has been made aware of any site specific hazards. This might involve:

a) making contact with a responsible person before taking a MEWP on to the site;

b) identifying an area where the MEWP can be parked prior to being put into use;

c) site safety induction and communication of rescue plans;

d) walking the route from the machine's parking place to the workplace;

e) using the expert knowledge of the site management;

f) reference to the site survey.

10.2 Unloading on the highway and travelling between adjacent sites

Where MEWPs are unloaded from a transporting vehicle on the highway or a MEWP travels on the highway between adjacent sites, it is essential that precautions are taken to protect the persons involved from passing traffic. Arrangements, such as the use of warning cones, signs and marshals, should also be made to warn other vehicles of the presence of the MEWP and any associated vehicles.

The recommendations given in **6.5** apply when unloading on the highway and, in the case of MEWPs travelling between adjacent sites, suitably signed escort vehicles should be used.

NOTE Advice on the signing of escort vehicles is given in the Highway Agency's *Code of practice — Self-escorting of abnormal loads and abnormal vehicles* [22].

10.3 Travelling to the workplace on site

The MEWP selected for use should be capable of travelling over the ground conditions found on the job site. A "smooth slab" machine might not be suitable for travelling over the rough ground on a construction site. As such, only rough terrain MEWPs should be selected for use on surfaces that are not compacted and substantially level ground. The intended route of the MEWP should be checked before setting off for hazards such cables, building projections or other obstacles which could present a danger.

Before travelling, the MEWP should be in the recommended travel position and checks made to ensure that there are no persons in the path of the machine. The outriggers or stabilizers should be retracted and locked as recommended by the manufacturer before moving off.

Whilst travelling, the operator should look out for other vehicles and persons in the path of the machine. If visibility is limited then a trained banksman with suitable high visibility clothing should direct the movement of the MEWP.

Only MEWPs which have been specifically designed and equipped for the purpose may be used to tow another vehicle. Self-propelled MEWPs should not be towed as this can cause overturn, serious mechanical damage to the machine or injury to persons on site. In the event of a breakdown in the travel systems, recovery should only be attempted either under the direction of the owner or in accordance with the manufacturers' instructions.

10.4 Siting and stability

10.4.1 *Ground conditions*

The stability of MEWPs depends on the condition of the surface on which they are standing, together with the correct inflation of their tyres or setting of their outriggers. The ground absorbs the loads from either tyres or outrigger pads and poor ground conditions can cause settlement that could lead to the machine being out of level and instability in use.

It is therefore essential that ground conditions are assessed before the MEWP is set up and used. Guidance on the assessment of the ability of the ground to safely absorb the loads imposed on it and safety measures that can be taken to protect against overturn of the MEWP is given in **6.8**.

10.4.2 *Use of outriggers and stabilizers*

Certain types of MEWPs are fitted with outriggers and/or stabilizers which should be used in accordance with the manufacturers' recommendations and the following general guidance.

Before raising the platform or cage, the MEWP should be levelled within the manufacturers' limits and located on a firm surface. The use of packing should be considered when it is necessary to spread the load under the outriggers to prevent them from either sinking into the ground or damaging the supporting surface (see **6.8.2**).

Each outrigger and its packing should remain in full contact with the ground. This should be checked before starting work and at regular intervals.

Any concerns about the suitability of the ground to support the loads imposed by the MEWP should be raised with the person in charge of the job site and satisfactorily resolved before the MEWP is set up and used.

With some types of machines the full weight should be taken off the tyres before the platform is raised. For further information refer to the manufacturers' instructions.

If the MEWP has been specifically designed to allow part extension of outriggers, the outriggers may be partially extended, otherwise outriggers, if fitted, should be fully extended on both sides.

10.4.3 *Extending axles*

Some types of MEWP use extending axles to increase the stability of the machine. Extended axles should be extended in accordance with the manufacturers instructions. If an adjustment to the position of the machine is necessary as part of the work being carried out then the MEWP may be moved with the axles extended. In all other cases it is essential that axles are retracted when travelling on the road and to or from the place of work.

See **11.2** for further information regarding travelling with an operator on an elevated work platform.

10.4.4 *Slopes*

MEWPs should not be set up or parked on slopes with a gradient greater than that permitted by the manufacturer. Where MEWPs rely on their wheels for support and stability, wheel chocks should be used to prevent the machine moving down the slope.

10.5 Safe working load

The safe working load (SWL) is the maximum load that a MEWP can safely carry and includes the weight of all persons, tools, equipment, hoses, cables and materials. Overloading by exceeding the SWL is extremely dangerous and should not take place. Not only does it damage the machine, but it could also cause it to overturn. The SWL should be marked on the machine in a prominent position, such as on the work platform. The capacity should be shown in kilograms and also by diagrams indicating the maximum number of persons and weight of additional equipment permitted on the work platform.

Before starting work the SWL of the MEWP should be checked to determine whether it is sufficient for the maximum combined weight of persons, tools and equipment to be carried in the machine's work platform. An allowance should also be made for any additional loads that might need to be carried by the platform during the work or any rescue activity.

MEWPs are generally designed for the load to be carried within the confines of the work platform. Long and wide materials that do not fit into the work platform should only be carried with the MEWP manufacturer's written permission, using approved carrying attachments. Materials should not be carried on the guard-rails of the work platform. The unapproved carriage of these materials might result in wind or other loads on the MEWP structure for which it was not designed, which can lead to overturning or structural failure.

Taking loads into the work platform at height should be undertaken with extreme caution. If the weight of the load is not accurately known it can lead to overloading of the work platform and overturning of the MEWP. Load sensing systems do not provide protection in these situations. The transfer of loads into the work platform at height should be taken into account as part of the planning process, see Clause **9**.

Persons on the work platform should not apply any manual forces that exceed those permitted by the manufacturer.

Some manufacturers allow varying SWLs for specific MEWPs. The manufacturer's load chart and manual should be consulted for machine specific details when setting up the MEWP. This is particularly important if it is intended that the machine will form part of a rescue procedure.

10.6 Fitting work platforms or accessories

Work platforms or accessories should be fitted or changed on a MEWP in accordance with the manufacturer's instructions. Before the MEWP is used it should be checked to determine whether the fitting has been carried out correctly.

10.7 Other hazards

The following factors reduce the stability of a MEWP and could cause overturning or collapse. These hazards should be eliminated by planning in accordance with Clause **9**.

a) Uneven distribution of the load on the work platform.

b) Using the machine in high winds. The maximum wind speed in which the machine may be safely used is specified by the manufacturer and marked on the machine (see **6.2**).

c) Sudden impact (shock) loads from falling objects or arrest systems etc.

d) Pushing or pulling (horizontally) on a structure or object adjacent to the platform can cause instability, overturning and damage to the MEWP when the loads are greater than specified by the manufacturer.

e) Entanglement of long materials (such as pipes, ducting and other materials overhanging the work platform).

f) Long loads such as pipes and other materials with an offset centre of gravity.

11 Operation

NOTE Information regarding safety at worksites during the operation of MEWPs is given in Clause **6**. This information covers the use of MEWPs when affected by wind (see **6.2**); in the vicinity of overhead power lines (see **6.3**); while working on a highway (see **6.5**); and the use of personal fall protection systems (see **6.6**).

11.1 Correct use of MEWPs

MEWPs are designed to provide a temporary working platform for persons, their tools and items of equipment, and to give them access to a work place. They should not be used as a crane by suspending a load beneath the platform using slings or any other type of lifting gear. Nor should it be used as a hoist or a lift for the transfer of persons or goods from one level to another.

When an operator is operating a MEWP the following apply.

a) Unauthorized persons should not be allowed to operate or interfere with the controls.

b) The controls should be engaged gently and smoothly.

c) The work platform should only be entered and exited when it is in the fully lowered position, using the steps or walkways designed for that purpose unless the requirements of **6.11** are met. Sliding mid-rail access gates should not be tied up to the top handrail.

d) An attempt should not be made to climb the machine supporting structure whilst elevated.

e) A MEWP which has been designed to travel with the boom extended or platform raised may do so but other MEWPs should not travel with the boom extended or platform raised.

f) When working in an area used by other workers or vehicles, the entire MEWP work area should be barricaded using cones and warning signs etc.

g) Materials or tools should not be leant against the outside of the platform. If they are forgotten they might fall when the platform is moved.

h) It is essential that MEWPs are not used as a jack, prop or a tie to support other structures or machines etc.

i) Hydraulic, electrical or mechanical safety devices or controls should not be interfered with, wedged, or overridden.

j) Adequate control measures should be put in place to protect the occupants of the work platform from falling materials such as masonry, paint, grit, hot metal from welding etc. and to protect the machine so that dust and moisture does not affect the correct operation of control mechanisms and safety systems. As a MEWP work platform does not usually have a roof the control measures often consist of ensuring that work above the MEWP is stopped for the duration of the MEWPs use. Protection of a MEWP from dust and moisture might include the use of gaiters and sleeves on the booms and hydraulic cylinders.

k) It is essential that a MEWP is not used for the electrical earth when welding structures alongside it.

l) Before and during the raising or lowering of the platform, the operator should check that there are no obstructions or persons that might be struck by the platform.

m) The lanyards of personal fall protection systems should be attached to a suitable anchorage on the work platform, such as the anchorage provided by the manufacturer. It is essential that personal fall protection systems are not attached to any object or structure outside the work platform (see **6.6**).

n) It is essential that the guard-rails of the MEWP, ladders, staging or similar items are not used to extend the reach or height of the occupants of the work platform for any purpose. Personnel on the work platform should be instructed to keep their feet firmly on the deck of the work platform at all times.

o) The guard-rails of the MEWP should not be used to carry materials. The guard-rails, which are not designed for this purpose, might be damaged so endangering subsequent persons who use the MEWP.

p) It is essential that equipment carried in the work platform which has cables or hoses attached is not left hanging free, but is properly supported. Particular care should be taken to prevent objects or equipment striking or interfering with the controls of the machine.

q) Taking loads into the work platform at height should be undertaken with extreme caution. If the weight of the load is not accurately known it can lead to overloading of the work platform and overturning of the MEWP. Load sensing systems do not provide protection in these situations.

r) Care should be taken when working on or accessing the decks of the vehicle mounted MEWPs. These are generally without edge protection and present a risk of low height falls which should be taken into account when carrying out the risk assessment required in **9.2.5**.

11.2 Travelling with the operator on an elevated work platform

The operator may only travel on the elevated work platform of a MEWP if the machine has been specifically designed to be used in this way. The jolting caused by an uneven surface can be magnified considerably at the work platform and could cause instability and danger to any occupants of the cage or platform.

MEWPs may only travel up or down slopes when they have been specifically designed to do so. When travelling on a slope it is strongly recommended that an additional person guides the operator from ground level.

Before travelling the operator should check that:

a) the stabilizers or outriggers are not extended;

b) no ramps, trenches, holes or other visible hazards lie in the path of travel;

c) no overhead cables, building projections or other overhead hazards obstruct the path of the MEWP;

d) adequate warning, such as the use of the horn, has been given to persons on the ground;

e) nothing has been left unsecured and liable to fall from the work platform;

f) hoses, cables, wires etc. have not been left hanging or trailing from the machine.

11.3 Emergency or auxiliary controls

Before operating the controls of a MEWP the operator should check that they know the position, function and correct operation of both the emergency/auxiliary lowering controls and the emergency stop switch. The operator should also check that another responsible person on the site, who is not working on the work platform, knows how to use the emergency controls (see **6.7**).

Emergency controls should not be used for purposes other than lowering the work platform in an emergency. It is essential that persons in the MEWP work platform do not attempt to climb down the boom or lattice of a MEWP.

11.4 Operation of MEWPs in conjunction with other equipment

When a MEWP is to be operated in conjunction with a crane or other equipment, the work should be properly planned and a safe system of work developed which should be clearly explained to all persons who are participating in the operation. Each person should also be instructed in how to deal with any foreseeable emergencies. Arrangements should be made for operators to be able to communicate clearly with each other during the operation.

In case of operation with a crane, signals to the crane driver should be given by a competent, authorized crane signaller using industry recognized signals such as those given in BS 7121-1.

11.5 Use of rail mounted MEWPs on track

Rail mounted MEWPs on a rail track should be operated in accordance with the operating rules of the organization in charge of that rail track.

11.6 Operation in low temperature environments

The operation of MEWPs in low temperature environments, such as a cold store, should be carried out in accordance with the manufacturer's instructions to ensure that the machine can operate safely at the temperatures likely to be encountered. Precautions should also be taken to protect operating and maintenance personnel from the effects of low temperatures. Additional maintenance and thorough examinations might be required in these circumstances and advice should be sought from a competent person.

11.7 Parking of MEWPs

Wherever possible MEWPs should be parked in a secure compound or in a supervised area inaccessible to unauthorized persons. Any keys should be removed from the MEWPs when not in use. Keys should be issued only to authorized operators and retained by them until the end of the work period.

On completion of the work the MEWP should be parked in the designated parking area with the engine or motor switched off, the work platform lowered to its parking position and the brakes applied.

If the MEWP has to be parked on a gradient the wheels should be chocked.

12 Maintenance, checks and inspections

12.1 General

The effective maintenance of a MEWP is an essential part of safe operation. As with all machines the MEWP wears and deteriorates over time and the maintenance process, including checks and inspections, monitors, prevents and rectifies this deterioration. It is important that the personnel asked to carry out these tasks have the necessary machine specific training, experience and competence in both periodic and breakdown maintenance.

12.2 Checks and inspections

12.2.1 *General*

Maintenance intervals and inspections should be carried out taking account of the frequency of use of the MEWP and the environmental conditions in which it regularly works.

If the operator is appropriately trained and considered to be competent, they may be authorized to carry out routine pre-use and weekly checks.

The employer of the person carrying out these checks or, if authorized, the person carrying out the checks should ensure that the machine is taken out of use for the period of time required to carry them out. Also, the employer or authorized person carrying out the checks should ensure that a safe system of work is in place to prevent personnel from being exposed to risk, for example from the inadvertent operation of the equipment.

NOTE MEWPS are complex machines with electrical, mechanical and hydraulic systems that require the manufacturer's preventative maintenance instructions to be strictly complied with if safety is to be maintained in use.

12.2.2 *Pre-delivery inspections*

Before accepting delivery of a hired MEWP, the responsible body should ensure that the owner has carried out a satisfactory pre-delivery inspection.

12.2.3 *Daily pre-use checks*

At the beginning of each shift or working day before work commences, the following visual and functional routine checks, if appropriate for the type of MEWP, should be carried out:

a) checks as required by the manufacturer's handbook;

b) cleanliness and general signs of damage;

c) efficiency of brakes;

d) correct pneumatic tyre pressures (where fitted);

e) lights (when fitted);

f) levels of the engine cooling-water, lubricating oil and hydraulic oil;

g) security of any pin locating arrangements and visible damage to the prime means of support for the work platform and extending structure;

h) hydraulic leaks;

i) operation of stabilizers/outriggers;

j) correct functioning of controls and safety devices (for example interlocks, anemometers, load/moment limiters/sensors, 2-way communications systems);

k) chassis.

A defect reporting system should be in place so that any defects are rectified promptly. It is good practice to keep a record of the daily check.

12.2.4 *Refuelling of power units and battery charging*

If a MEWP is fitted with an internal combustion engine, the engine should be shut down whilst the fuel tanks are filled. Refuelling should be carried out in a well-ventilated area free of flame, sparks or other hazards that might cause fire or explosion.

The batteries used on electrically powered MEWPs produce explosive hydrogen gas when they are being charged. Charging of batteries should only be carried out in an area which is well ventilated and where smoking is prohibited.

Battery acid is highly corrosive and adequate precautions should be taken whilst topping up a battery or in the event of a spillage.

NOTE Guidance on precautions to be taken when handling storage batteries is given in the HSE leaflet INDG 139L [23].

12.2.5 *Intermediate inspections*

The intermediate inspections listed should either be carried out once a week or at intervals recommended by the manufacturer. These inspections are in addition to the checks recommended in **12.2.3** and are to ensure that all systems function correctly, the MEWP is free from damage and that fluid levels are within the manufacturer's limits. Inspections should be appropriate for the type of MEWP and include the following.

a) Inspections as required by the manufacturer's handbook.

b) Check pneumatic tyres, where fitted, for correct pressures and damage.

c) Wheel nuts should be in place and properly tightened.

d) Brakes should be tested for efficient working.

e) Lights, when fitted, should be in working order.

f) Batteries should be clean, free from corrosion and checked for adequate water level (if applicable) before use and before recharging.

g) All structural parts should be sound and free from visible defects.

h) Powered mechanisms for raising, slewing and steering etc. should be working properly.

i) Hydraulic systems should be free from leaks.

j) Hydraulic fluid levels should be checked where accessible.

k) Any additional equipment should be functioning satisfactorily.

l) All electrical equipment operating at above 55 volts should be checked.

NOTE Attention is drawn to the Electricity at Work Regulations [24] regarding testing of equipment.

m) The base structure, including any safety guards, should be free of damage and clear of debris.

n) All engine, water, oil and fuel levels should be checked and topped up where necessary.

o) All hoses, fittings, wiring and valves etc. should be inspected for leaks, security and damage.

p) All ground station controls should be tested including any safety cut-outs fitted.

q) All support structures such as scissor packs, booms or outriggers, where fitted, should be inspected for damage, loose or missing retaining pins, damaged hoses and wiring, and any loose or missing fittings.

r) Any emergency lowering and slewing equipment fitted should be tested.

s) All operating and warning decals should be clear and readable.

t) All platform guard-rails, entrance-gate latches and harness points should be checked for security.

u) All platform workstation controls including any emergency systems should be tested.

v) Drive systems, brakes, steering and speed controls should all be tested for correct operation.

w) Any audible or light alarms fitted by the manufacturer should be checked for correct operation.

x) Any communication system fitted between platform and ground level should be in good working order.

A written record of the weekly inspection should be retained by the responsible body. A defect reporting system should be in place so that any defects are rectified promptly.

12.3 Maintenance

12.3.1 *Frequency*

The frequency at which maintenance activities are carried out for a MEWP should take into account the intensity of use, operating environment, variety of operations and the risk to health and safety from the possibility of malfunction or failure. The maintenance programme should be based on the manufacturer's recommendations, the owner's risk assessment and the results of previous inspections and thorough examinations. It should address those parts of the equipment that are likely to deteriorate and lead to health and safety risks. A formal system of planned preventative or condition-based maintenance should be adopted for each MEWP.

The manufacturer's (or in-house) maintenance instructions should be available to the persons involved in maintaining the equipment.

12.3.2 *Maintenance personnel*

Maintenance activities should only be carried out by authorized and trained (see Clause **8**) persons who are both familiar with the equipment and deemed competent to carry out the work. Maintenance personnel should be able to demonstrate familiarity with all precautions that need to be taken to ensure that the machine is safe at the start of maintenance activities.

Employers of maintenance personnel should ensure that personnel are provided with such training and instruction as enables them to carry out their work in a safe manner.

Where MEWPs are on hire, it is important for both the owner and the hirer to establish formal arrangements to identify which party is responsible for the various maintenance activities. The terms of the agreement should be set out in writing.

12.3.3 *Replacement components*

Replacement MEWP components should be in accordance with the manufacturer's specification.

Care should be taken when replacing heavy components such as tyres, wheels and batteries so that they are equivalent to the manufacturer's specification. Components that are lighter or of a different shape can affect the ballasting and hence the stability of the MEWP.

12.3.4 *Use of special materials in MEWP construction*

Modern MEWPs make extensive use of specialist materials. Repairs to any parts of the MEWP structure should be in accordance with the procedure specified by the manufacturer. Improper procedures can affect the properties of materials used such as high tensile steels and aluminium alloys.

12.3.5 *MEWPS returned to service after a period of non-use*

If a MEWP is not in regular use, special checks, inspections and maintenance activities might be specified before it can be used. The extent and thoroughness of these depend not only on the length of the period that the MEWP was out of use, but also on its location and the conditions in which it was kept during this period. A MEWP that has been standing under cover inside a workshop might require very little extra inspection. However a MEWP that has been in the open and exposed to weather and atmospheric pollution might require an extensive appraisal to ensure its fitness for work.

In addition to the daily pre-use checks listed in **12.2.3** consideration should be given to at least the following:

a) checks that are recommended in the manufacturer's instructions;

b) check all ropes/chains where applicable for signs of corrosion, degradation, damage and thorough lubrication;

c) check for correct lubrication and functionally test the control linkage for evidence of seizure or partial seizure;

d) functionally test every motion for several minutes without load, each motion individually at first, then a combination of two or more motions simultaneously as appropriate, and then repeating the test with a load applied;

e) functionally check the correct functioning of all the safety devices;

f) check hoses, seals or other components for evidence of deterioration.

NOTE See Clause **13** for further information on thorough examination.

12.3.6 *Records*

Written records should be made and kept of all maintenance, including inspections, carried out on a MEWP. These records should be retained for the life of the machine in order to be able to:

a) demonstrate that adequate maintenance has been carried out;

b) identify repeated defects and trends;

c) pass on this information to the next owners.

These records should cover the following items.

1) Identification of the MEWP on which the maintenance has been undertaken.

2) The date on which the maintenance was carried out.

3) The location where the maintenance was carried out.

4) By whom the maintenance was carried out.

5) Details of the results of inspections and maintenance carried out.

6) In the case of a check or inspection list any defects found.

7) State if the MEWP may continue to be used.

8) The hour meter or odometer reading (if fitted).

13 Thorough examination, including testing

13.1 General

The responsible body should ensure that any thorough examination that is due has been carried out before a MEWP is used. Where equipment is hired from a third-party, the responsible body might come to an arrangement with the owner whereby the owner carries out the thorough examinations as part of the hire agreement.

The responsible body should ensure that the MEWP is taken out of service for the period of time required by the competent person to carry out the thorough examination. The responsible body should also advise the competent person of any known defects or faults on the MEWP that could affect their safety during the thorough examination.

The responsible body should also ensure that facilities or services which are required by the competent person to carry out the thorough examination are provided. These could include the following.

a) An appropriate working area, cordoned off to prevent access by persons not directly involved in the operation.

b) An operator for the MEWP.

c) Person/s to remove covers or open up parts of the MEWP.

d) Preparation of parts or areas of the appliance for non-destructive testing (NDT).

LOLER [2] provides flexibility for competent persons to choose between either a "specified period" or an "examination scheme" approach to thorough examination, both of which may include testing.

13.2 Personnel carrying out thorough examinations

Competent persons should have appropriate practical and theoretical knowledge and experience of the MEWP for the purpose of thorough examination. It is essential that competent persons are sufficiently independent and impartial to allow objective decisions to be made. This does not mean that the competent persons have to be employed from an external company or inspection body. If employers and others from within their own organizations have the necessary competence, then they may carry out the examination. However, if they do, they should also have the genuine authority and independence to ensure that examinations are properly carried out and that the necessary recommendations arising from them are made without fear or favour.

The competent person might require testing to be carried out. This could involve the use of specialists in particular types of testing such as NDT or load testing. The competent person should specify precisely what is required, to ensure that such work is effectively managed and that the results of the work are assessed accurately in relation to their significance for the appliance.

Where the competent person identifies defects affecting the continued safe use of the appliance or specifies timed replacement of components, the responsible body should ensure that these defects are rectified (see the HSE document *Safe Use of Lifting Equipment* [25], paragraphs 38–43).

Where equipment is hired from a third-party, the responsible body should ensure that the periodic thorough examinations are undertaken at the required intervals. The responsible body might come to an arrangement with the owner whereby the owner carries out the thorough examinations, but the responsible body should ensure they are carried out.

13.3 Periodic thorough examination

13.3.1 *General*

All MEWPs in service should undergo a thorough examination by a competent person at least once every six months unless the competent person specifies a shorter interval.

Prior to thorough examination the MEWP should be cleaned by appropriate means, e.g. pressure washed, to remove any deposits such as oil or dirt, which would otherwise conceal the structure or mechanisms and prevent an effective examination. The examination should be carried out in a logical sequence, for example top to bottom, to ensure that nothing is overlooked.

13.3.2 *Details of periodic thorough examination*

The competent person carrying out the periodic thorough examination should include the following in their examination.

a) The supporting and elevating/lowering/extending structures, for deformation, damage, cracks, corrosion, welding defect/damage/faults etc.

b) The work platform, for example the floor, guard-rails, toeboards, gates, fall protection system anchorage points and levelling system.

c) The visible fixings, for example screws, nuts and bolts, pin retainers, bearings; hydraulics, electrics, suspension elements (ropes/chains), steering, brakes.

d) Safety systems and control systems, for example anemometers, load/moment limiting (sensing) devices, communication systems, emergency-lowering system and stop-buttons.

e) All guards.

f) Power units and pumps.

g) Hydraulics/electrics.

h) Levelling systems.

i) Suspension elements, for example ropes or chains.

j) Brakes.

k) Steering.

l) Slewing/rotating mechanisms.

m) The chassis, including the stabilizers.

If extension/ retraction mechanisms within telescopic booms cannot be exposed or examined via removable covers, then some dismantling might be required to check chain or rope wear, wear pads, hydraulic cylinders. The manufacturer's recommendations on appropriate periods should be followed.

Overload testing is not generally carried out during thorough examination so should only be considered after major repair or modification of the MEWP. In such instances, the manufacturer's advice should be sought, see **13.6.1** for further guidance.

Non-destructive testing might be necessary, particularly when there is a suspicion of cracks or other damage existing in structural or load-bearing parts, for example pin-bearings connecting scissor-arms, knuckle-joints, highly stressed areas of booms and supporting structures.

13.4 Written scheme of thorough examination

A scheme of thorough examination is a written schedule for assessing the condition of the equipment by a competent person at specified intervals to assess its ongoing safety. The thorough examination is intended to ensure that the equipment remains safe to use. It comprises visual inspection and functional testing with more detailed testing, whenever necessary, to identify faults and defects and the measures that need to be taken to rectify them along with appropriate specified timescales for them to be completed. The scheme of thorough examination and associated examination techniques should be documented and remain subject to review and development by competent bodies in the light of developments on MEWPs and experience in their use.

For most MEWPs, where the usage history (load spectrum, duty cycle frequency, overload and shock load history, working and storage environment etc.) is not known in detail, a written scheme of examination is not appropriate and the periodic thorough examination approach should be used.

Should the written scheme of thorough examination approach be chosen, the scheme should be drawn up by a competent person with the necessary qualifications and experience. These are likely to be significantly higher than those of a competent person carrying out thorough examinations under the periodic approach as the drafting of a scheme requires professional engineering judgements to be made.

13.5 MEWPs not in regular use

If a MEWP has been out of service such that the thorough examination report has expired or the MEWP has been substantially modified or undergone major repair, then a thorough examination should be carried out before it is put back into service.

13.6 Testing

13.6.1 *General*

Thorough examination includes testing. This can take many forms including functional testing, performance testing, non-destructive testing (NDT) and overload testing occasionally. The competent person should carry out functional testing as part of the thorough examination process, decide when other tests are necessary and determine the most appropriate means of carrying them out.

It is important therefore that the competent person takes account of the instructions and other relevant information provided by the manufacturer or a competent engineer.

13.6.2 *Testing as part of a thorough examination*

MEWPs are overload tested at the time of initial supply. When carrying out a thorough examination the competent person should consider if overload testing is necessary to prove the continued integrity of the equipment, taking into account its age, usage, condition and operating environment. It is essential that the manufacturer's overload testing instructions and other relevant information are followed. In the absence of the manufacturer, a competent engineer should be consulted.

13.6.3 *Testing after major repair or modification*

MEWPs should be thoroughly examined and tested after every major repair or modification, including overload testing if necessary. Any testing should be carried out in accordance with the manufacturer's instructions or those obtained from an appropriate design authority, such as a competent engineer.

13.6.4 *Testing of load limiting device*

The accuracy of any load-limiting device should be determined by use of calibrated weights at least every 12 months, or in accordance with the manufacturer's instructions. This should be carried out periodically as part of a thorough examination.

13.7 Actions based on recommendations

The competent person carrying out a thorough examination should report any defects to the responsible body. If these pose immediate serious risk of injury then the competent person should recommend that the MEWP is not used until the defects are rectified, inform the responsible body immediately and send a copy of the thorough examination report to the responsible body and the relevant enforcing authority. Under these circumstances it is recommended that the competent person isolates the machine and tags it as "not to be used".

NOTE The relevant enforcing authority is generally the Health and Safety Executive or the Environmental Health Department of the Local Authority.

Where less serious defects, requiring rectification within a specified timescale, are identified the competent person should submit the report to the employer promptly to allow the necessary action to be taken within the required period. In normal circumstances the competent person should complete the report and forward it within 28 days of the examination.

13.8 Reporting and keeping of records

After completing the thorough examination the competent person should formally report his findings in writing to the responsible body and also, where appropriate, to the person from whom the MEWP has been hired or leased. An example of a report of thorough examination for MEWPs is given in Annex C.

NOTE Attention is drawn to Schedule 1 of LOLER [2] regarding the information to be contained in a report of thorough examination.

It is also helpful to the responsible body and MEWP operator if the competent person affixes a durable label to the machine indicating the date the thorough examination was carried out and the due date for the next thorough examination.

Regulation 11 of LOLER [2] sets out the minimum periods for which reports of thorough examination need to be kept. In the case of MEWPs this would be for the life of the machine as they assist in identifying repeated defects or indicating trends, for example of wear or damage. Periodic review of this information should be part of the management arrangements for controlling the lifting equipment.

Annex A (informative)
Example of report of thorough examination and load test certificate

Certificate No. ……..

Report of Thorough Examination (Including Testing) of Lifting Equipment

Lifting Operations and Lifting Equipment Regulations 1998

Regulation 9

1.	Name and address of owner of equipment and its location				
2.	Make of lifting equipment				
3.	Type of lifting equipment				
4.	Date of manufacture of lifting equipment				
5.	Identification (e.g. makers serial number, owners identifying mark)				
6.	Make and type of rated capacity indicator/limiter				
7.	Date of last previous test of the lifting equipment				
8.	Date of last previous thorough examination of the lifting equipment				
9.	Safe working load or loads In the case of lifting equipment with a variable operating radius the safe working load at various radii of the boom/jib should be given. Test loads at various radii should be given in column (iii).	(i) Length of Boom/Jib (m)	(ii) Radius (m)	(iii) Test Load (Kg)	(iv) Safe Working Load (Kg)
10.	Maximum radius at which the boom/jib may be worked (in metres).				
11.	Defects noted and alterations or repairs required before the lifting equipment is put into service. (If none enter "None")				

I hereby declare that the equipment described in this record was tested and thoroughly examined on ……in accordance with the appropriate provisions and was found free from any defect likely to affect safety (unless otherwise stated above) and that the particulars are correct.

Name of competent person:	Signature:	Job title/qualification:
Name of authenticating person:	Signature:	Job title:
Address of competent person or his employer:		
Date of Certificate:		
The next thorough examination is due on or before:		

Annex B (normative)
Guidance on safe systems of work for exiting the work platform at height

B.1 General

The points given in **B.2**, **B.3**, **B.4**, **B.5**, **B.6** and **B.7** should be taken into account when assessing the risks involved in exiting a work platform at height, and deciding on appropriate measures to enable a safe system of work to be formulated. The recommendations are for general guidance and might not be appropriate in every situation. Whenever exiting the work platform at height is being considered, a task and site specific risk assessment should be carried out. In particular the task assessment should consider in detail how fall protection measures are to be maintained for the duration of the task.

B.2 Consideration of alternative means of access

The work platform should only be left at height where a rigorous risk assessment indicates that this is the safest and most effective means of accessing a particular location taking into account the availability, both on site and in the market place, of other means of access. MEWPs should never be used where a dedicated access to the location is already provided.

B.3 MEWP selection, siting and control

If an operation which involves exiting the work platform at height is suggested, the following apply when selecting a suitable MEWP and its position.

a) The MEWP is equipped with anchorage points having a SWL suitable for the type of fall protection system dictated by forces generated by the worst fall factor that can occur during the activity.

NOTE For fall arrest this capacity requirement conforms to BS EN 795.

b) The MEWP should have a SWL in excess of the planned work platform load including weights of persons, tools and equipment.

c) The MEWP should be provided with an authorized, competent operator who should remain in the MEWP work platform at all times during the operation.

d) The MEWP should be dedicated to the job in hand and remain in place for the duration of the work activity.

e) MEWPs with large stiff structures minimize the movement between work platform and landing area during exit from, and re-entry to, the work platform at height. The total movement should be proved at ground level, using an appropriate boom extension to replicate the work requirement. If movement is in excess of 300 mm the MEWP should not be used in this application.

f) MEWPs with rotating work platforms allow the access gate to be oriented inwards, away from the edge of the structure.

g) The area around the chassis of the MEWP should be free of vehicular traffic.

h) The ground conditions should be suitable for the use of the MEWP (see Clause **10**).

i) A competent person should be available at ground level to lower the work platform in the event of malfunction.

j) Effective communication, such as handheld radios, should be provided between persons in the work platform and those on the ground. In anticipation of communication failure, procedures and arrangements should be in place for backup communications using recognized pre-agreed hand signals.

k) It is essential that a written rescue plan is in place in case of an emergency and everyone involved in the work activity should be briefed to ensure that they understand their role in the event the plan is invoked.

B.4 Landing area

Unless it has been confirmed otherwise by a person competent to do so, roofs should be assumed to be fragile. The persons in the work platform may access a non-fragile, flat roof with edge protection (guard-rails and toeboards) and protection preventing access to any fragile areas, provided that any movements of the work platform do not create additional hazards. If on the other hand, the landing area is, for example, a pitched roof, a suitable method should be devised and adopted to ensure that persons cannot fall whilst exiting the work platform. This is likely to entail using a fall arrest system such as a full body safety harness and a twin legged lanyard, with shock absorber, attached to a suitable anchor point on the structure before exiting the platform ensuring that the individual has fall protection maintained at all times.

NOTE BS 8437 gives guidance on the selection and use of personal fall protection equipment.

Factors to consider when assessing the risks associated with, and acceptability of, the landing area include:

a) the size of the target area;

b) whether it is sloping, slippery or uneven;

c) headroom;

d) weather conditions (especially high winds and wet or freezing conditions);

e) the operational requirements of the task to be carried out;

f) possible interference with communications.

B.5 Exiting the work platform at height

Care should be taken when exiting or entering the work platform at height. Fall protection measures should be maintained at all times. Wherever possible the work platform should be oriented so that the access gate faces away from the edge of the structure.

A vertical gap of at least 120 mm (5 inches) should be maintained at all times between the work platform and the adjacent structure. The work platform might move as the weight of the passenger is transferred, and this could cause a limb to be trapped.

Internal leakage within the hydraulic system can cause the work platform to move whilst the MEWP is stationary. If this occurs the operator should maintain the position of the work platform through appropriate positional adjustments.

B.6 Work platform overloading

Care should be taken to avoid overloading of the work platform at height. Overload sensing systems cannot protect the MEWP from overturning due to gross overload in this situation. To avoid overloading at height the following measures apply.

a) Only people who have dismounted should be allowed back into the work platform.

b) Unless it is identified as being appropriate to do so in the risk assessment for the task being carried out, additional material should not be taken into the work platform.

c) The position of the work platform should not be changed between personnel exiting and re-entering at height (see **B.5**).

NOTE On MEWPs fitted with load moment limiting systems, increasing the outreach could reduce the SWL below that at the landing point.

B.7 Object handling

When exiting the work platform at height there could be a risk of tools or materials being transferred into or out of the work platform, being dropped, or of material from the landing area being dislodged. In this case steps should be taken to provide either sufficient safeguards to prevent the fall of material or to establish an adequate exclusion zone beneath the operating area to protect persons below the platform.

B.8 Training

Operatives who are expected to leave the MEWP platform at height should be trained in working at height outside a MEWP and in the use of personal protective equipment made available for the tasks to be carried out.

Annex C (informative)
Example of a report of thorough examination

Mobile Elevating Work Platform

Report of Thorough Examination

(As required by Lifting Operations and Lifting Equipment Regulations 1998 — Schedule 1)

Date of thorough examination:	Date of report:	Report No:	Date of last thorough examination:

Name and address of hirer/responsible body:	Name and address of owner:
Makers name:	MEWP Model type and No:
Location of equipment:	

Date of manufacture:	Owners No:	Serial No:

SWL/Rated capacity:	Load test carried out during this thorough examination? **Yes/No**	Test load applied:

Periodic examination 6 Monthly: **Yes/No**	State if any parts were inaccessible:
Examination following alteration/repair Or exceptional circumstances: **Yes/No**	Particulars of other tests carried out during this thorough examination:

Is the equipment safe to operate: **Yes/No**	
Particulars of any defects, repair, renewal or alteration required which is or could become a danger to persons:	Date (time) by which the defect has to be rectified:

I hereby declare that the equipment described in this record was thoroughly examined in accordance with the appropriate provisions and was found free from any defect likely to affect safety, (unless otherwise stated above) and that the particulars are correct.

Name of competent person:	Signature:	Job title/qualification:
Name of authenticating person:	Signature:	Job title:
Address of competent person or his employer:		
The next thorough examination will be due on or before:		

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