Rescue of Persons from MEWPs

Plant Safety Group

1. Introduction

When MEWPs are used there is always the risk of persons in the work platform becoming stranded at height due to MEWP malfunction, breakdown or an outside influence. This risk can be significantly reduced through using well maintained equipment, conducting a pre-use inspection, including function checks and the MEWP being operated by a trained, competent operator. These factors will significantly reduce any potential risk. It is however, still essential that plans are put in place to rescue persons in the work platform.

NOTE: *Whilst every care has been taken to ensure the accuracy of the material contained within this guidance, no liability is accepted by the authors in respect of the information given. Compliance with this guidance does not give automatic assurance of compliance with legislative requirements. It is the duty holders' responsibility to ensure they comply with the legal requirements relevant to safe work at height.*

2. Legislation

Health and safety legislation requires that safe systems of work are in place for all work activities and the references for the requirement to provide a means of safe rescue are:

- Work at Height Regulations 2005 – Regulation 4(2)
- Lifting Operations and Lifting Equipment Regulations 1998 – Regulation 5(1)(d)
- Management of Health and Safety at Work Regulations 1999 – Regulation 3
- CDM 2015 - Regulation 30 on Emergency Procedures
- The Health and Safety at Work etc Act 1974 - Sections 2 & 3 also set out general duties that require this.

3. Responsibility for rescue

The primary duty for ensuring that there are adequate resources for planning and carrying out rescue of persons from a MEWP rests with the user[1] of that MEWP. They must liaise closely with the Principal Contractor if it is a construction site as defined by the Construction (Design and Management) Regulations 2015 (CDM 2015), or with the site occupier for non-construction premises, to ensure that any aspect of the emergency plan requiring their input can be actioned.

In the case of a hired-in MEWP supplied with an operator, the responsibility for the rescue plan remains with the user. The employer of the operator or their nominated representative should check with the MEWP user to ensure that an adequate rescue plan has been put in place.

MEWP suppliers should be able to provide technical advice to assist with the planning process.

[1] The term *"user"* is defined in BS 8460:2017 as *"person or organization that has control of the planning, management and use of the MEWP on site and is responsible for ensuring the MEWP is kept in a safe working condition"*

4. Planning for rescue from a MEWP

Before carrying out rescue from height, as with all activities in the workplace, employers must ensure that a safe system of work is in place. An emergency plan is vital to establishing a safe system of work and will involve the following stages:

1. Identification of the task to be undertaken;
2. Identification of the hazards associated with the task;
3. Assessment of the risks involved with the rescue operation;
4. Identification of the required control measures;
5. Identification of roles and responsibilities;
6. Developing the method to be used including:
    a. Identification and provision of any equipment required;
    b. Identification, training and assessment of suitable competent persons to carry out the rescue;
    c. Ensuring the availability of appropriately trained and competent persons when required;
    d. Provision of necessary information;
    e. Establishing suitable methods of communication;
    f. Consideration of "basket to basket" or other means of rescue;
    g. Need for the provision of a "personnel emergency pack" in the MEWP platform and the contents of that pack (see **section 8.**);
    h. Liaison with the local emergency services;
    i. Contact details for the operator of any nearby overhead power lines.
7. Recording the planning in a method statement;
8. Communication of the plan to all those involved;
9. Reviewing the plan at intervals, incorporating any changed circumstances and undertaking periodic refresher training.

The control measures identified should include arrangements for training of persons and the inspection and maintenance of any rescue equipment. A list of general risk factors to be taken into account in the risk assessment in Bullet 3 above is given in **Annex A**.

A hierarchy of the measures that can be taken during the rescue of persons from a MEWP is given in **Annex B**. It should be emphasised that this is only an example and that a specific rescue plan should be developed for each individual MEWP, based on the specific machine characteristics, the task being undertaken, site specific factors and environmental factors.

Additional information and guidance is given in:

- IPAF Toolbox Talk, *Understanding a MEWP Rescue Plan*
  (free download from https://www.ipaf.org/en-gb/resource-library/toolbox-talks-understanding-mewp-rescue-plan)
- IPAF *Guidance on emergency rescue*
  (free download from https://www.ipaf.org/en-gb/resource-library/guidance-emergency-rescue)
- HSE Guidance on emergency procedures
  (free download from http://www.hse.gov.uk/toolbox/managing/emergency.htm)

5. Rescue personnel

Whenever a MEWP is in use, a competent and authorised person in the vicinity of the MEWP should be designated as the *"nominated ground rescue person"*. This person should be familiar

with the ground controls of the MEWP and have practiced lowering the platform. They should also have been fully briefed on the rescue plan and identified to the MEWP operator in the work platform as the nominated ground rescue person.

In the case of rescue being required, the MEWP operator should in the first instance alert their supervisor. If, however they are not contactable the operator should contact the nominated ground rescue person directly for assistance.

It is essential that all personnel involved in the rescue have the necessary competence to enable the rescue to be carried out safely.

6. Communication

Effective communication between the MEWP operator and their supervisor and/or nominated ground rescue person is essential if the rescue plan is to be carried out successfully. The means of communication chosen will depend on a number of factors including maximum working height of the MEWP, background noise, environment and mobile 'phone signal strength.

In areas with poor mobile 'phone signal strength it may be necessary to use hand-held radios. Information on radio communications for lifting operations is given in CPA Technical Information Note TIN 017 (free download from https://www.cpa.uk.net/tower-crane-interest-group-tcig-publications/)

7. Means of rescue

If the MEWP cannot be lowered, either by using the auxiliary power source or ground controls, it may be necessary to rescue the platform occupants using another MEWP to carry out a *"basket to basket"* transfer. Guidance on this process is given in **Annex D**.

An alternative method that may be considered is the use of a mobile crane or tower crane with a suspended man-basket. Guidance on the lifting of persons using cranes is given in **Annex E**.

8. Personnel emergency packs

Where there is a risk of persons being stranded at height in a MEWP for a long period of time, the provision of an emergency pack may help to relieve the effects of cold, hunger and thirst. The need for an emergency pack and the contents of such a pack should be determined by the user as part of the planning process (see **section 4.**)

9. Use of the emergency services

The rescue plan should not rely on the fire and rescue services to carry out the rescue of persons from a MEWP at height, as their capabilities vary from area to area and the MEWP may well have a much higher working height than any firefighting hydraulic platform or turntable ladder.

Where an occupant of the MEWP platform is injured or incapacitated the ambulance service should be called immediately.

10. Last resort

If all other practical alternatives have been exhausted and rescue is still essential, a controlled descent device might be considered as a "last resort" in exceptional circumstances.

The decision to use such a device should only be considered after a robust risk assessment shows that this is acceptable. **Annex C** lists some of the many risk factors that should be considered and managed before using any Controlled Descent Device. This list is not exhaustive and other hazards may be identified by a robust risk assessment.

NOTE 1: *The vast majority of MEWP rescue plans will not require the inclusion of a Controlled Descent Device.*

NOTE 2: *For more detailed information on the use of CDDs in another work at height application refer to OC 282/31. Rope evacuation from mechanical handling equipment.* *(free download from http://www.hse.gov.uk/foi/internalops/ocs/200-299/282_31.htm)*

Annex A - General Factors to be Considered when Planning the Rescue of Persons from MEWP Platforms

- Availability of a management nominated supervisor – decision maker and point of contact;
- MEWP failure;
- Operator error / misuse;
- Work platform position / location / proximity to hazards (spatial awareness);
- Environment (e.g. changing weather conditions, temperature, lighting);
- External factors in the vicinity (e.g. overhead power lines, adjacent structures, cranes);
- Ground conditions;
- Height of the platform;
- Accessibility to/on site;
- Machine type;
- Number of persons to be rescued;
- Any potential medical (physical and mental) conditions;
- Availability / location of technical support;
- Availability of secondary machine for basket to basket transfer;
- Availability of crane for man-riding basket rescue;
- Lone working.

NOTE: *This list is **not** exhaustive and other hazards may be identified by a robust risk assessment*

Annex B - Rescue from MEWPs Hierarchy

If the MEWP stops unexpectedly

- Do not panic;
- Check that the machine has not been inadvertently switched off;
- Check for warning lights and alarms, consult the operator's manual if required, and take appropriate action;
- Attempt to restart the machine if possible;
- If the machine cannot be restarted, use the platform auxiliary controls to lower the machine to the stowed position, if it is safe to do so.

If the operator is alone and incapacitated

- The supervisor should call the site based first aider / emergency response team as specified in the rescue plan;
- The nominated ground rescue person should assess the situation, conditions and the platform location for surrounding hazards;
- If it is not detrimental to the operator, fully lower the machine to the stowed position;
- The use of another MEWP or alternative means of access might be necessary to complete the rescue.

If the platform auxiliary controls are not effective

- Notify the supervisor and nominated ground rescue person;
- Activate the rescue plan;
- Assess and agree the sequence for lowering the platform from the ground controls;
- Where possible or when applicable, retract extending decks and booms to reduce the lowering area required;
- The nominated ground rescue person should use the primary ground controls (not auxiliary) first;
- If the primary ground controls are inoperable, the auxiliary ground controls/power source should be used to lower the machine to the stowed position, if it is safe to do so;
- The operator in the platform should verbally relay the progress of the rescue to the nominated ground rescue person.

If there is total failure/loss of ground controls

- If the ground controls/power source are unresponsive the supervisor should call the machine supplier (owner/rental company/manufacturer) for technical assistance and an estimated time of arrival;
- The supervisor should assess the position and condition of the operator and other platform occupants; it might be safer to leave them where they are until technical assistance arrives;
- If assistance is not available in an acceptable timescale; consider a *"basket to basket"* or other means of rescue;
- Guidance on *"basket to basket"* rescue is given in **Annex D** and Clause **6.10** of BS 8460:2017.

Annex C – Controlled Descent Device Specific Risk Factors

- Suitability of the MEWP for the attachment of descent equipment and the loads arising from its use (Manufacturers' approval including anchor points and guardrails);
- Selection and suitability of the descent equipment including the harness (front or rear attachment), length of the rope;
- Maintenance, storage and inspection of the descent equipment;
- Failure of descent equipment;
- Potential for shock loading;
- Competence of the personnel involved – initial training / frequency of refresher training / practice and additional risks introduced;
- Any potential medical (physical and mental) conditions;
- Willingness of occupants to use descent equipment;
- Descent zone - free of hazards;
- Suitability of landing area.

NOTE 1: *This list is* ***not*** *exhaustive and other hazards may be identified by a robust risk assessment.*

NOTE 2: *The vast majority of MEWP rescue plans will not require the inclusion of a Controlled Descent Device.*

NOTE 3: *For more detailed information on the use of CDDs in another work at height application refer to the HSE document OC 282/31, "Rope evacuation from mechanical handling equipment".* *(free download from http://www.hse.gov.uk/foi/internalops/ocs/200-299/282_31.htm)*

Annex D - Rescue of Stranded Persons Using Another MEWP

D1. Risk Assessment

Before undertaking the rescue of persons from a MEWP work platform using another MEWP an on-site site-specific risk assessment should be carried out and a specific plan drawn up. The risk assessment should take into account the following hazards:

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

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

c) sudden movement of either MEWP or work platform;

d) additional loads imposed on either MEWP for which they were not designed and which could affect stability or overload the machines;

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

f) damage to either MEWP by an unintentional movement of either MEWP;

g) stranding of people at height;

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

NOTE: *This is not an exhaustive list and other site and situation specific hazards may need to be taken into account.*

D2. Planning

The plan, prepared from the outcomes of the risk assessment should take account of the following:

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

b) The platforms of both MEWPs should be placed as close together as possible with the entry gate adjacent where possible, to allow the operative to transfer between gates. Where this cannot be achieved the platforms should be positioned at the same height, as close as possible to allow the operative to climb between the top and middle guard rails. If neither of these options are possible, the operative should climb over the guard rails.

c) Fall protection measures should be maintained at all times during the transfer.

d) During the transfer the controls on both MEWPs should be isolated.

e) The person(s) being rescued should position themselves in the platform being exited to equally distribute the weight as far as is possible.

f) The rescue plan should be clearly communicated so that all know the sequence for rescue.

g) One person at a time should be taken from the platform into the rescue platform, taking care not to overload the rescue platform.

h) In a boom-type MEWP the rescuer should always remain attached to the rescue machine.

i) Care should be taken to avoid overloading the rescue machine. This could mean making more than one journey to complete the rescue.

j) If, during the rescue, a person falls and is suspended in their fall protection equipment communication should be established with the suspended person. If this is not possible the emergency services should be summoned.

k) Suspension trauma can occur if a person has been suspended at height for a period of time. Guidance on first aid measures for suspension trauma is given in HSE Research Report RR708. *Evidence-based review of the current guidance on first aid measures for suspension trauma*, (free download from http://www.hse.gov.uk/research/rrhtm/rr708.htm)

Annex E - Raising or Lowering of Persons with Mobile or Tower Cranes

The raising and lowering of personnel by equipment that is not specifically designed for this purpose should only be carried out in exceptional circumstances, when it is not practicable to do so by other, less hazardous means (see LOLER 1998 ACOP paragraph 127). Each raising and lowering operation requires careful planning before the operation is carried out.

NOTE: *This Annex is based on the requirements of Clause* ***20.1*** *of BS 7121-1:2016*

E1. Equipment Requirements

E1.1 *Carrier*

The type of carrier selected when raising/lowering personnel should be based on a risk assessment and may vary according to the application, for example construction, forestry, rescue. New carriers selected for use should conform to BS EN 14502-1.

NOTE: *The carrier is sometimes referred to as a man-basket*

E1.2 *Compatibility of carrier and crane*

E1.2.1 Capacity

The crane selected to lift the carrier should have a rated capacity for the crane configuration to be used which is at least twice the weight of the carrier, its lifting accessories and its load.

E1.2.2 Motion control system

The crane should be equipped with a motion control system that brings motion to rest automatically when the controls are released.

The crane should be equipped with power lowering. A crane with free-fall capability should not be used to lower and raise persons unless the free-fall facility is locked out.

Load-bearing hydraulic cylinders should be fitted with a device to stop movement in case of hose rupture or pipe fracture.

The crane control system should be able to provide a smooth transition of the carrier. The working speed of the carrier should be limited to a maximum of 0.5 m/s on all motions.

Means should be provided so that, if the power supply or control system fails, the carrier can be positioned to enable access/egress without risk.

E1.2.3 Ropes

Ropes used for hoisting and lowering the carrier should have a minimum diameter of 8 mm.

E1.2.3 Hook

The crane hook should be provided with a safety catch.

E1.3 *Thorough examination and pre-use checks*

Thorough examination and pre-use checks of cranes and carriers for lifting persons should be carried out in accordance with BS 7121-2-1:2012, Clause 12.

E1.4 *Other devices/facilities*

E1.4.1 Anemometer

The crane should be fitted with an anemometer or other device to monitor in-service wind speeds.

E1.4.2 Storage

Storage accommodation for equipment, including any emergency egress equipment, should be provided in the carrier.

E1.4.3 Rated capacity limiter/rated capacity indicator

The rated capacity limiter/rated capacity indicator on the crane should be maintained in good working order.

E1.4.4 Other limiters

Limit switches should be provided to prevent over-hoisting, over-lowering or over-derricking.

The operator should check limit switches for correct operation each day before personnel carrying operations are carried out.

Limit switches are not necessarily fail-safe, so care should be taken if motion limits are approached.

Operation of limit switches, check valves and similar devices could prevent some motions of the crane with the carrier still suspended. Precautions should be taken to ensure that persons in the carrier are not left suspended for an excessive period, and/or a procedure for raising or lowering the carrier to a safe position should be provided.

E2. Operation

E2.1 *Organizational requirements*

Lifting, lowering and supporting the carrier should be carried out by the operator in controlled conditions, directed by a slinger-signaller who should be present at all times during the lifting operation. The slinger-signaller should be positioned such that they can see both the carrier and the crane operator at all times.

The crane operator should be present at the normal crane control station when the carrier is occupied. Audible communication should be possible between the persons in the carrier and the crane operator at all times during the lifting operation.

NOTE: *This may be provided by dedicated radio or wired telephone.*

E2.1.1 During the operation

a) an adequately trained and briefed person should be present to perform any emergency recovery procedure;

a) the crane operator and signaller should not perform any other work at the same time, and should only be responsible for operating one crane or directing one carrier;

b) cranes and other machines should not operate simultaneously in the same place if there could be a risk of collision;

c) all movements should proceed gently and not exceed 0.5 m/s;

d) load-lifting attachments for carriers should not be used for any other purpose.

E2.1.2 Carriers should not be used in the following conditions:

a) winds exceeding 7 m/s (25 km/h), measured with a calibrated hand-held anemometer at a similar level to that to which the carrier will be lifted;

b) electrical storms;

c) snow or ice;

d) fog;

e) sleet; and

f) other weather conditions that could affect the safety of personnel.

Unintentional rotation of the carrier should be prevented, for example by using guide ropes or anchoring. The means of preventing unintentional rotation should not inhibit any emergency procedures and otherwise interfere with the safe operation of the carrier.

Lifts should not be made on any other hoist lines of the crane while any person occupies a carrier attached to the crane.

The crane, load-lifting attachments and carrier should be inspected every working day during use.

***NOTE**: For further information on inspections, see BS 7121-2. An example of a personnel carrier pre-use check form is given in BS 7121-2-1:2012, Annex C.*

E2.2 *Precautions for persons in the carrier*

The following precautions for persons in the carrier should be observed when planning and carrying out the lifting of persons in a suspended carrier:

a) The payload of the carrier should not be exceeded.

b) The stability of the carrier should not be affected by the operation. Additional care should be taken if the carrier is of a length that could lead to excessive tilting through movement of persons or tools within the carrier.

c) Users of a carrier should wear suitable full-body harnesses with work restraint systems attached to a suitable anchorage point in the carrier. The most suitable type of work restraint system is an adjustable lanyard, adjusted to be as short as possible to ensure that a person is restrained within the carrier.

   ***NOTE:** Further information on the use of personal fall protection equipment is given in BS 8437.*

d) Consideration should be given to the rescue of persons from a carrier if the carrier is unable to be lowered for any reason, such as machine malfunction or carrier entanglement. Any rescue procedure should be properly planned, taking into account the reasons why the carrier is stranded at height and any need for urgent action.

   ***NOTE**: In many circumstances the rescue plan simply involves lowering of the carrier by the supporting crane.*

e) In the event that fall-arrest equipment is selected, a rescue plan should be prepared to avoid the consequences of suspension trauma when a person is suspended from a fall-arrest harness.

f) Any tools/materials in the carrier should be secured to prevent displacement, tipping and/or falling out.

g) Personnel should remain entirely inside the carrier during raising, lowering and positioning to avoid pinch points. Personnel should only stand on or work from the floor of the carrier.

h) Carriers should be secured so that access and egress can be accomplished without danger.

i) Crane-suspended man riding cages should not generally be provided instead of fixed access/egress.

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