



## **1.0 Summary**

A secondary guarding device is a piece of equipment which can be fitted to a Mobile Elevating Work Platform (MEWP) in addition to the primary guarding systems, and is intended to further reduce the risk of entrapment and / or provide an alert that an entrapment situation has occurred. This document describes currently available options to assist decisions on possible risk reduction measures.

## **2.0 Introduction**

The use of MEWPs can save time, make work at height more efficient, effective and safer than using other more traditional methods of access. Data from the UK Health & Safety Executive (HSE) clearly shows that, when used safely, MEWPs significantly reduce the risk of injuries attributed to work at height.

Unfortunately, accidents involving the use of MEWPs have occurred, including tragically some fatalities. Of these incidents, some have involved persons being crushed while driving, accessing their work area, or while working at height near obstructions. A number of these incidents may have been caused by direct entrapment or by sustained involuntary operation of the controls, both of which may have been prevented by thorough planning, preparation, selection of the appropriate equipment and correct use.

The UK Strategic Forum for Construction, Plant Safety Group (SFCPSG), made up of experts involved in the access industry, has produced guidance entitled “Avoiding trapping/crushing injuries to people in the platform”. The document provides straightforward, comprehensive and easy to adopt information for management (Part 1), and supervisors / MEWP operators (Part 2). Published in July 2010, copies are freely available from the websites of participating organisations (including [www.cpa.uk.net](http://www.cpa.uk.net) and [www.ipaf.org](http://www.ipaf.org)). It is recommended that the SFCPSG guidance is read in conjunction with this document.

The following guidance is intended to help employers differentiate between the possible options available, when considering the selection of appropriate equipment where the increased risk of entrapment has been identified.

## **3.0 Means of prevention**

Currently there is no single solution to completely eliminate the risk of entrapment in all working environments. Reducing the number of such incidents requires the combined efforts of management, hirers, rental companies, and operators working to:

- Improve management of MEWPs on site including ground conditions, temporary works and supporting structures
- Select the correct equipment based on suitable and sufficient risk assessment
- Supply specific information to allow management / hirer to make informed decisions
- Improve supervisory and operator competence through increased understanding of the hazards and associated risks

As well as manufacturers working to:

- Continuously improve MEWP design and functionality

The European Union MEWP design standard EN280:2001 paragraph 5.7.1 stated: *“All controls, particularly foot operated controls, shall be constructed to prevent inadvertent operation.”* This resulted in “built in” features such as foot pedals, shrouds, stand-off bars, guards and sunken controls being fitted as standard by MEWP manufacturers.

These built in "primary guarding" systems are designed to prevent inadvertent operation and ensure that the operator always has control of platform movement. Despite these primary guarding systems being present, accident data shows that incidents still occur where the operator becomes trapped between the MEWP and a structure.

Following a review of EN280:2001, the revised version EN280:2013 paragraph 5.6.16 states: *“Operators on the platform shall be protected against being crushed over the control panel when the platform is moving. This requirement can be fulfilled e.g. by controls according to 5.7.1.”*

EN280:2013 paragraph 5.7.1 states: *“All controls shall be constructed to prevent inadvertent operation. Hand operated controls in the platform shall be protected against sustained involuntary operation. This protection should either prevent further movement of the machine in the direction of trapping or allow the operator to reverse or stop the trapping movement.”*

#### **4.0 Planning and selection**

The correct selection of MEWPs and possible use of additional devices is the responsibility of those planning the work at height. Equipment selection should be the result of a comprehensive risk assessment to identify the most appropriate MEWP considering:

- Travel to and from the work area
- Access to the work area
- Work task(s) at height including the risk of entrapment
- Emergency rescue procedures

Once the most suitable type of MEWP has been selected for the task(s) to be undertaken, consideration to further reducing any foreseeable risk of entrapment may include selection of an additional secondary device. A secondary guarding device is a piece of equipment that can be fitted to a MEWP in addition to the primary guarding systems, and is intended to further reduce the risk of entrapment and / or provide an alert that an entrapment situation has occurred.

The fitting of any additional device intended to further reduce the risk of entrapment and / or provide an alert that an entrapment situation has occurred, cannot replace the operator’s responsibility to be aware of their surroundings and the need to follow safe working practice and protocols, but must be in addition to those fundamental requirements.





#### **5.0 Secondary guarding options**



There are two main design types of secondary guarding device currently available. These are:

- Physical barrier(s)
- Pressure sensing device(s)

The following pictorial examples illustrate “secondary guarding” devices intended to reduce the risk of entrapment, which are available for certain boom type MEWPs (1b and 3b). Currently similar devices are NOT available for static and mobile vertical machines (1a and 3a). This does not mean entrapment cannot

occur with 1a and 3a machines. It is only that secondary guarding devices have not yet been developed for such machines.

	<p><b>Physical barrier</b></p> <p><b>Fixed full cage structure</b></p>
	<p><b>Physical barrier</b></p> <p><b>Operator protective structure</b></p>
	<p><b>Physical barrier</b></p> <p><b>Side protection barriers</b></p>
	<p><b>Pressure sensing device</b></p> <p><b>Pressure sensing bar - when activated, it stops further movement and activates audible and visual warning devices</b></p>

	<p><b>Pressure sensing device</b></p> <p><b>Break-away or moveable pressure sensing stand-off bar - when activated, it stops immediate boom movement, activating audible and visual warning devices, and limits further platform movement</b></p>
	<p><b>Pressure sensing device</b></p> <p><b>Pressure sensing control panel - when activated, it stops further movement and activates audible and visual warning devices</b></p>

Note: Inclusion or exclusion of devices or equipment depicted in this document does not indicate any preference, but simply reflects those designs currently made known to the authors at the time of publication.

## 6.0 Caution

It should be noted that no one particular device or item of equipment will prevent entrapment in all known circumstances when operating a MEWP and:

- The operator and nominated emergency rescue personnel should be made familiar with the operation of any additional secondary guarding device including functionality, how it is triggered, operated and reset.
- Once fitted, any secondary guarding device should be included in the MEWP pre-use inspection regime.
- When selecting a device or equipment to address a single hazard, consideration should be given to the potential for significantly increasing other possible hazards.
- Some of the devices and equipment shown above can be fitted to existing machines, used independently or in conjunction with each other.

## 7.0 Fitting of additional devices or equipment

Some of the secondary guarding devices and equipment shown are fitted to MEWPs by the manufacturer during the MEWP assembly process and as such are an integral part of the original machine design and certification.

Where it is intended to fit additional devices or equipment to existing machines, it is recommended that those intending to fit or use the devices refer to the SFCPSG “*Avoiding trapping/crushing injuries to people in the platform*” document, Part 1 Section 6 “Fitting additional devices or equipment on MEWPs”.

### **8.0 Evaluating secondary guarding devices**

Once the most suitable type of MEWP has been selected for the work task(s) to be undertaken, consideration to further reducing any remaining risk of entrapment may include the selection of an additional secondary device.

As previously noted, there is currently no one particular secondary guarding device that will prevent entrapment in all known circumstances. Therefore the following five points should be considered as part of the risk assessment process to assist the employer to select, where available within the industry, the most appropriate secondary guarding device.

1. Reasons for selecting the MEWP for the intended work task(s)
2. Identification of foreseeable entrapment situations expected to be encountered whilst carrying out the work task(s)
3. Identification of types of secondary guarding devices available, their suitability for the work task(s), and their compatibility with the selected MEWP
4. Consideration of additional hazards compared with the potential benefits that may be gained with the introduction of a secondary guarding device
5. Need for additional familiarisation of operators and emergency rescue personnel for the selected device