MANUAL
PREVENTION OF OCCUPATIONAL RISKS
FOR MOBILE ELEVATING PLATFORMS FOR PERSONNEL

Author:Maria Dolores Sanchez García
Superior Technician in Occupational Risk Prevention

www.academy-formation.com

ÍNDICE

UNIT II DOCUMENTATION AND SIGNALLING

1. Documentation
2. Manufacturer's Instruction Manual
3. Signalling

UNIT III MAINTENANCE. SERVICING

UNIT IV OPERATOR PEMP. REQUIREMENTS

MODULE III
MOBILE ELEVATING PLATFORM FOR PERSONNEL: SAFETY IN TRANSPORT, LOADING AND UNLOADING (I)

INTRODUCCIÓN

UNIT I : VEHICLES AND MASSES

UNIT II: DIMENSIONS OF THE VEHICLE AND ITS LOAD. ARRANGEMENT OF THE LOAD

1. Dimensions
2. Arrangement of the load

UNIT III: LOAD SIGNALLING

UNIT IV: CALCULATION OF FRONT AXLE LOAD

UNIT V: CLAMPING FORCE

UNIT VI: MOORING ACCESSORIES

1. Tie tapes made from chemical fibres
2. Fastening chains
3. Steel mooring cables

MODULE IV MOBILE PERSONNEL LIFTING PLATFORM: SAFETY IN TRANSPORT, LOADING AND UNLOADING (II)

UNIT I: RISKS AND RISK FACTORS

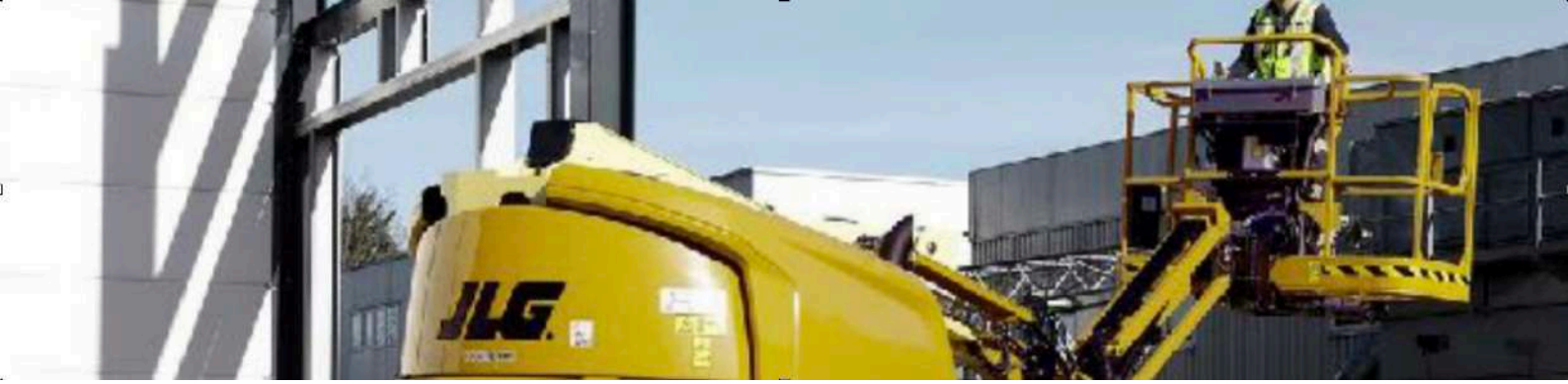
1. Rollover of the vehicle or cargo transported
2. MEWP drop from the transport vehicle
3. Trapping between MEWPs when loading them
4. Diverse blows and shocks
5. Upper extremity cuts/crushes
6. Electrical contacts with power lines
7. Various pinching and shearing in upper extremities

UNIT II: PREVENTIVE AND PROTECTIVE MEASURES

UNIT III: PEMP. DRAG PEMP TOWABLE

1. Registration
2. Number plates
3. Braking system
4. Rear light signalling system 5. Driving licence

BIBLIOGRAPHY AND APPLICATION REGULATIONS



MODULO I PLATFORM ELEVADORA MÓVILES DE PERSONAL (I): PREVENTIVE MANAGEMENT FOR ITS SAFE USE

UNIT I. INTRODUCTION

The habitual use of mobile elevating platforms of personnel (PEMP) to carry out works in height of different nature, mainly assemblies, repairs, inspections or other similar works, in all type of activities and sectors, together with the fact that most of these equipments are of rent, makes necessary the development of this manual, that tries to facilitate a guide of preventive management of these equipments of work since, to the own risks and associated to their use, are added those derived from the ignorance, on the part of the users who work with them, of the norms of safe use that must be applied.

Consequently, the objectives of this manual are as follows:

- Differentiate the different categories according to the technical regulations and briefly describe their basic characteristics.

- Expose the different criteria to be considered for the selection of these work equipment according to the characteristics of the task or activity to be carried out.

- Provide information on the state of the art in the sector.
- Identify the risks and risk factors associated with their use.

- Provide a non-exhaustive list of preventive and protective measures to control these risks.

- To inform about the legally required documentation and the information to be provided with these work teams.

- Reference the legal and normative texts that affect them and that should be applied.

UNIT II:
DEFINITION, TYPES, PARTS AND TECHNICAL CHARACTERISTICS

1. DEFINITION

The Mobile Personnel Platform Lift (MEWP) is a mobile machine designed to move people to a working position where they perform a task from the platform, where people enter and leave the working platform only from the access positions at ground level or on the chassis. These platforms consist of at least one working platform with controls or service bodies, an extendable structure and a chassis.

According to the standard UNE-EN 280, there are a number of machines that can lift people and do not have consideration of MEWP, specifically this European standard does not apply to:

- Machinery using nest levels (see standards UNE-EN 81-1, UNE-EN 81-2 and UNE-EN 12159).
- Fire-fighting and rescue lifts (see standard UNE-EN 1777).
- Cestas no guiadas, suspendidas de aparatos de elevación (véase la norma UNE-EN 1808).
- Driving stations that can be lifted on stacker cranes (see standard UNE-EN 528).
- Lifting gates (see standards UNE-EN 1756-1 and UNE-EN 1756-2).
- Mast climbing work platforms (see standard UNE-EN 1495).
- Specific equipment for fairs and amusement parks.
- Lifting tables (see standard UNE-EN 1570-1).
- Aircraft ground support equipment (see UNE-EN 1915-1 and UNE-EN 1915-2 standards).

2. TYPES

There are articulated and telescopic truck platforms, self-propelled scissors, self-propelled articulated or telescopic and towable platforms among others.

According to UNE-EN 280 the MEWPs are divided according to the vertical projection of the centre of gravity in:

➡GROUP A: They are the ones that the vertical projection of the center of gravity (c.d.g.) of the load is always inside the tipping lines, in all platform configurations and at the maximum inclination of the chassis specified by the manufacturer.
➡GROUP B: Rest of PEMP. Depending on their translation possibilities, they are divided into three types:

- Type 1: Travel is only possible if the MEWP is in the transport position.
- Type 2: Translation with the working platform in raised position is only controlled by an organ on the chassis.
- Type 3: Translation with the working platform in raised position is controlled by an organ on the working platform.

NOTE: Types 2 and 3 can be combined.

3. PARTS

The main parts of a MEWP can be seen in Figure 2 and are described below:

➡Working platform: A platform surrounded by a handrail, which can be moved with its load to a position where assembly, repair, inspection or similar work can be carried out.

➡ Extendible structure: Structure that is attached to the chassis and supports the plate, allowing it to be moved to the required situation. It can consist, for example, of one or several sections, booms or arms, simple, telescopic or articulated, scissor structure or any combination between all of them, with or without the possibility of orientation in relation to the base.

The vertical projection of the c.d.g. of the load, during the extension of the structure can be inside the support polygon (group A), or, according to the constitution of the machine, outside that polygon (group B).

➡Chassis: It is the base of the MEWP. It can be self-propelled, pushed or towed; it can be placed on the ground, wheels, chains, caterpillars or special bases; mounted on a trailer, semi-trailer, truck or van, and fixed with stabilizers, external axles, jacks or other systems that ensure its stability.

➡Complementary elements:

- Stabilizers: All devices or systems designed to ensure the stability of MEWPs, such as: jacks, suspension locks, extendable axles, stabilizer plates, etc.

- Drive systems: These are the systems used to drive all the movements of the extendable structures. They can be driven by cables, chains, screws or by pinion and rack.
- Service bodies: These are mainly normal, safety and emergency control panels.

4. TECHNICAL CHARACTERISTICS OF DIFFERENT TYPES OF PEMP

➡PEMP articulated or telescopic on lorry: This type of PEMP is used to carry out outdoor work located at high altitudes, such as repair and maintenance work on power lines, wind mills, construction, etc.

It consists of an articulated or telescopic structure, with the peace of rising to heights of more than 100 m and turning 360°. The platform can be used by several operators depending on the case.

➡PEMP self-propelled scissors: This type of platform is used for electrical installations, maintenance, industrial assembly, construction, etc.

The structure has a vertical elevation with reaches higher than 25 m, a high nominal working load and can be used by several people simultaneously. They can be powered by batteries, explosion motor, all-wheel drive and double manual extension.

➡PEMP self-propelled articulated or telescopic: They are used for works in areas of difficult access. They can have an articulated structure and telescopic section or only telescopic with a range of more than 60 m. They can be powered by batteries, diesel engine or a combination of both systems and have all-wheel drive.

➡PEMP unipersonal: Used indoors on totally stable surfaces to perform work at heights of more than 14 m with vertical access. It is the most compact, lightweight and easy to transport solution, with great mobility, stability and quick installation.

UNIT III
RISKS AND RISK FACTORS

The main risks and risk factors associated with the use of MEWPs are described below.

1. FALLS TO A DIFFERENT LEVEL DUE TO:

- ❖Tilting of the equipment as a whole as it is located on an inclined surface or in poor condition, lack of stabilizers, etc..
- ❖Absence of safety handrails on part or all of the perimeter of the platform.
- ❖ Carry out work using auxiliary elements such as ladders, benches, etc., to win. height.
- ❖Work on the platform without using properly anchored personal protective equipment.
- ❖Breakage of the working platform due to overloading, deterioration or misuse.
- ❖Utilizar the MEWP to access from it to an external installation or structure.
- ❖Work with part of the body located outside the working platform.
- ❖Lifting or lowering using the lifting structure.
- ❖Catapult effect when passing over a kerb, etc.

2. OVERTURNING OF THE EQUIPMENT DUE TO:

- ❖ Work with the chassis on an inclined surface.
- ❖ Sinking or softening of all or part of the chassis support surface.
- ❖ Do not use stabiliser plates or use them incorrectly.
- ❖ Support the MEWP totally or partially on lightly resistant surfaces.
- ❖Overload the working platform with respect to its nominal load.
- ❖ Pendulum effect when falling into a vacuum from the working platform, with the operator carrying a non-adjustable sling, the pivot point being the anchorage point, which can cause the MEWP to overturn in certain circumstances.
- ❖ Do not respect the minimum safety distance from a trench.
- ❖ Use the MEWP as a crane for lifting suspended loads.

❖ Increase the surface area of the working platform with additional structures.

❖ Use the equipment in adverse weather conditions such as wind, rain, storms, etc. with electrical apparatus, etc.

❖Sobrepasar the maximum permissible lateral force, e.g. by using a high-pressure water hose to clean a façade.

❖Exceed the maximum permissible number of persons on the working platform.

3. FALL OF MATERIALS ON PEOPLE AND/0 GOODS

❖ Team overturning.

❖ Working platform without perimeter protections together with the existence of tools. or materials left on the surface.

❖ Breakage of the working platform.

❖People located in the vicinity of the working area or under the vertical of the platform without markers.

Falls to the same level due to:

❖Lack of tidiness and cleanliness on the surface of the working platform.

Blows, collisions or trapping of the operator or the platform itself against fixed or moving objects due to:

❖Carrying out lifting movements or small movements of the equipment in the vicinity of fixed or mobile obstacles without the corresponding precautions (for example: not looking in the direction of the movement of the work equipment, not keeping all the members of the body inside the platform, etc.) or by not taking into account the state of the terrain on which it is being moved.

❖ Pendulum effect when the operator falls into a vacuum using a non-adjustable sling hitting obstacles in the fall path or with elements of the MEWP itself.

Trapping of the body or upper extremities between some of the moving parts of the structure and between it and the chassis due to:

❖ Carrying out some type of action on the structure during the operation of lowering / raising it.
❖To be placed between the chassis and the platform during the operation of lowering / raising of the working platform.

Direct or indirect electrical contacts due to:

❖ To carry out work in proximity to HV and/or LV power lines, whether aerial or on the façade.
❖ Use the MEWP as an earth connection.
❖Use the MEWP in case of storms with electrical equipment.

Burns or poisoning due to:

❖ Charge batteries in poorly ventilated areas with risk of explosion by hydrogen vapour.
❖ Fill up with fuel while the engine is running.
❖ Projection of hydraulic fluid by rupture of a hose with pressure.
❖ Contact with hot parts of the combustion engine.
❖ Use of the MEWP with combustion engine in rooms with insufficient ventilation.
❖ Use the MEWP in areas or areas where there is a risk of ignition, deflagration, explosion or fire.
❖ Lack of adequate PPE protection when checking or handling batteries.

4. PREVENTIVE AND PROTECTIVE MEASURES

Preventive and protective measures are developed by describing the construction characteristics of the essential parts of mobile personnel lifting platforms (MEWPs) and the protection measures against specific risks.

SAFETY CONSTRUCTION FEATURES

The safety construction features are fundamentally related to the characteristics of the structure and stability, the appropriate drive systems and safety devices, the presence of stabilisers and extendable structures.

- **Structure and stability calculations. Generalities:**

The manufacturer is responsible for the structural calculations, the evaluation of the individual loads and forces in their positions, directions and combinations producing the most unfavourable stress conditions of their components, the stability calculations, the identification of the various positions of the MEWP and the combinations of loads and forces that together provide minimum stability conditions. The manufacturer's instruction manual should indicate the loads and forces relative to the nominal load, wind loads and manual forces and the operator should use the equipment within the established limits.

- **Chassis and stabilizers:**

The chassis must have the following safety devices:

- Device that prevents its translation when it is not in transport position. (MEWPs with pedestrian and type 1 self-propelled).

- Device (e.g. a spirit level) indicating whether the inclination or slope of the chassis is within the limits set by the manufacturer.

Type 3 MEWPs must have an audible and optical audible signal that warns when the maximum inclination limits are reached and prevents travel in the selected direction.

The support bases of the stabilisers must be constructed in such a way that they can be adapted to soils with a slope or unevenness of at least 10°.

Extendable Structures:

MEWPs must be equipped with control devices that reduce the risk of tipping over or exceeding the permissible voltages. We distinguish between group A and group B MEWPs to indicate the most advisable methods in each case:

Group A:

- Load control system and position recorder.
- Position control with criteria of stability and reinforced overload.

Group B:

- Load control system and position recorder.
- Load and moment control systems.
- Position control with stability and position criteria.

reinforced overload.

- Moment control systems with reinforced overload criteria.

It should be noted that the load and moment controls do not protect against an overload that greatly exceeds the nominal load.

Drive systems for extendable structures:

The drive systems must be designed and constructed in such a way as to prevent any overloading untimely movement of the extendable structure.

Cable drive systems:

Cable drive systems consist of a device or system that in the event of a failure limits the vertical movement of the working platform to 0.2 m with the maximum working load.

The load cables must be made of galvanised steel in accordance with standard UNE-EN 12385-4, with no splices except at the ends. Stainless steel cables can be used taking appropriate precautions. The technical characteristics that must be met are:

- Minimum diameter: 8 mm.
- Minimum number of wires: 114.
- Wire resistance class between 1.570 N/mm2 and 1.960 N/mm2.

Each cable must be correctly fixed on the drum. The fixing must resist up to 80% of the minimum breaking load of the cable.

- **Chain drive systems:**

Chain drive systems must have a device or system which, in the event of failure of the chain drive system, limits the vertical movement of the fully loaded working platform to 0.2 m. The chain drive system must have a device or system which, in the event of failure of the chain drive system, limits the vertical movement of the fully loaded working platform to 0.2 m. Chains with round links must not be used. The link between the chains and their terminal must be able to withstand at least 100% of the minimum breaking load of the chain.

- **Screw drive systems**

In screw drive systems, the design effort (allowable or safety value of the material used) on the screws and nuts must be at least equal to 1/6 of the breaking strength of the material used. The material used for the bolts must have a higher wear resistance than that used for the load-bearing nuts.

Each bolt must have a load bearing nut and a non-load bearing safety nut. The safety nut must not be loaded unless the nut supporting the load is broken. The working platform must not be able to be lifted from its access position if the lock nut is loaded. The screws must be equipped at each end with devices (e.g. mechanical stops) that prevent the load and safety nuts from coming out of the screw.

- **Rack and pinion drive systems**

In rack and pinion drive systems, the operating voltage of pinions and

racks must be at least equal to 1/6 of the breaking strain of the material used.

They must be equipped with a safety device driven by an overspeed governor. This safety device must progressively bring the working platform with the maximum load to a stop and keep it at a standstill in the event of failure of the lifting mechanism.

If the safety device is activated, the power supply must be cut off automatically.

WORKING PLATFORM

Equipment

The working platform must be equipped with handrails or any other structure around its perimeter at a minimum height of 0.90 m and have a protection that prevents the passage or sliding under them or the fall of objects on people in accordance with Royal Decree 486/1997 on workplaces (Annex I.A.3.3) and Royal Decree 1215/1997 on work equipment (Annex 1.1.6).

The UNE-EN 280 standard is more demanding and specific in pointing out that the platform must have a railing height of at least 1.1 m, a plinth height of at least 0.15 m and an intermediate railing located less than 0.55 m from the top rail or the plinth. The height of the plinth can be reduced to 0.1 m at platform accesses. The guardrail must have a resistance to specific forces of 500 N per person, applied at the points and in the most unfavourable direction, at 0.5 m separation (distance from the person to the point of application in the resistance test), without producing permanent deformation. When the usual removal of the fixed handrails is foreseen, their fixings must remain anchored to the part of the handrail or to the platform.

The platform must have an access door or, failing that, movable elements which must not open outwards. For working platforms with fixed handrails, the access openings must be at least 920 mm high and 645 mm wide. Where the above dimensions cannot be achieved, the opening must be at least 420 mm wide and 800 mm high. They must be equipped with systems that prevent work on the platform if the guard rails are not in position, for example with locking systems or a defined sequence of closing the guard rails.

The movable protection elements used to allow access to the platform must be constructed to close and lock automatically or have a locking system to prevent any movement of the MEWP until they are closed and locked. Unintentional opening must not be possible. Normally the closing and blocking of the access to the working platform is done by gravity, but it can also be done through an interlocking system, so that if the access door is not closed, the MEWP does not work, and the closing sequence will be indicated, for example access to the working platform, closing of the access by acting on the interlocking device and the operating disposition of the MEWP.

The base of the working platform must be made of at least flameproof materials, e.g. self-extinguishing materials that do not hold the flame when the fire source is removed.

MEWPs can be used with foldable perimeter guards as long as they do not open outwards, comply with the above requirements and are securely attached to the platform with locking devices secure against unintentional release or loss.

The floor, including the hatch if fitted, must be non-slip and allow water to escape (e.g. trellis or perforated metal). The openings must be sized to prevent the passage of a sphere with a diameter of 15 mm.

The hatches must be securely closed to avoid any untimely opening. It must not be possible to open them downwards or sideways.

The platform floor must be able to withstand the maximum working load "m" calculated according to the following expression: m = n × mp + me, where:

mp = 80 kg (mass of one person)
me = 40 Kg (minimum value of mass of tools and materials)
n = maximum number of persons authorised on the working platform

In addition, it must have anchorage points (retention) to be able to anchor the safety harnesses for each person that can be placed on the working platform. More than one harness can be attached to a single anchorage, if it has been designed for such a purpose. Each anchorage must withstand a static force of at least 3 kN per person, without reaching the breaking load. Unprotected edges and corners must be mitigated either with a radius of at least 0.5 mm or with a 5° bevel.

Each anchorage point must be marked with the phrase "Retention only" or an equivalent symbol and the maximum number of persons who can be anchored to it simultaneously.

The following must be permanently, clearly and visibly displayed on the working platforms:

- nominal load in kg,
- nominal load expressed in maximum number of authorised persons and equipment in kg,
- maximum permissible manual force in newton,
- maximum permissible wind speed in m/s,
- where appropriate, permissible loads and special forces. If several maximum working loads coexist, they must be listed in a table depending on the configuration of the MEWP.

Type 3 MEWPs must be equipped with a beeper operated from the working platform itself, while type 2 MEWPs must be equipped with means of communication between the personnel on the working platform and the driver of the carrier vehicle.

Control systems

The platform must have two control systems, one primary and one secondary. The primary must be on the platform and accessible to the operator.

Secondary controls must be designed to replace the primary controls and must be located to be accessible from the ground. Wireless control systems must be designed in accordance with standard UNE-EN 60204-32:2009 paragraph 9.2.7 (Annex F Standard). All the directional controls must be activated in the direction of the function returning to the stop or neutral position automatically when they are no longer acted on. The controls must be designed in such a way that they cannot be operated involuntarily and must be protected against crushing when the platform is moved.

On type 2 and type 3 MEWPs it must not be possible to operate the travel controls and the controls of any other movement simultaneously. This does not apply to MEWPs mounted on rails.

Maximum tilt safety systems

The inclination of the working platform must not vary more than 5° from the horizontal or chassis plane during movements of the extendible structure or under the effect of loads and service forces. In case of failure of the horizontal maintenance system, there must be a safety device that maintains the level of the platform with an additional tolerance of 5o. A manual adjustment of the platform for an inclination of more than 5° is also acceptable, provided that the extension structure is stationary.

Auxiliary lowering system

All working platforms must be equipped with manual auxiliary systems or with an auxiliary lowering motor and with a retractable or rotational system in case of failure of the primary system.

Emergency stop system

The working platform must be equipped with an easily accessible emergency stop system that effectively deactivates all drive systems in accordance with UNE-EN ISO 13850:2008. Machine safety. Emergency stop.

Design principles. It is permitted to override the emergency stop and load sensing system to rescue to a trapped and/or incapacitated operator, but there must be clear evidence that it has been used or handled.

Cancellation of safety functions is only permitted using a mode selection device, which is independent of the control station selection device. Such a mode selection device is a safety device and must be operated with low-speed, one movement at a time and must be prohibited from use without authorization.

- **Warning systems**

The working platform must be equipped with an alarm or other warning system that activates automatically when the base of the platform tilts more than 5° from the maximum permitted tilt in any direction.

STABILIZERS, PROTRUSIONS AND EXTENDABLE SHAFTS

Stabilizers are used to improve the stability of the MEWP or to increase the area of stability. Some high-rise MEWPs have hydraulic cylinders that lift the MEWP and extendable axles to increase the width and achieve the working stability area.
They must be equipped with safety devices to positively ensure that the platform will not move while they are not in position. The control circuits must ensure that the motion motors cannot be activated until the stabilisers have been deactivated and the platform is not lowered to the minimum transport height. Some MEWPs designed to work without stabilisers for a limited range of operations at height must be equipped with safety devices that prevent work outside this range without the stabilisers being in place.

One type of stabilizer is a hydraulic stabilizer with a support plate.

LIFTING SYSTEMS

- Security Systems

When the nominal working load of the platform is supported by a cable system or both, the safety factor of the cable or chain must be a minimum of 8, based on the unit load of breakage at the traction referred to in the primitive section.

All hydraulic and pneumatic drive systems as well as hazardous components must have a breaking strength of four times the working pressure for which they are designed. For non-hazardous components this resistance will be twice the working pressure.
Hazardous components are those which, in the event of failure or malfunction, would result in a free lowering of the platform.

Protective systems

When the platform is lifted by means of an electromechanical system, it must be designed to prevent free descent in the event of failure of the generator or the power supply.
When lifting the platform by means of a hydraulic or pneumatic system, the system must be equipped to prevent a free fall in the event of a hydraulic or pneumatic line breaking. The hydraulic or pneumatic systems of the stabilizers or any other system must be designed to prevent their closing in the event of a hydraulic or pneumatic line breaking.

Other protections

Hot engines or parts of MEWPs must be adequately protected. They may only be opened with special keys and by authorised personnel. Exhaust from internal combustion engines must be directed away from the control stations.

SAFETY DEVICES

Electrical

Safety switches acting as information providers must comply with UNE-EN 60204-1 Safety of machinery. Electrical equipment of the machines. Part 1: General requirements.

Hydraulics and pneumatics

They must be designed and installed in such a way as to offer levels of safety equivalent to electrical safety devices. The hydraulic and pneumatic components of these devices and systems which act directly on the power circuits of the hydraulic and pneumatic systems must be duplicated if the failure of a component could lead to a dangerous situation. Controlled distributors of these components must be designed and installed in such a way as to maintain safety in the event of a power failure, i.e. to stop the corresponding movement.

Mechanics

They must be designed and installed in such a way as to offer levels of safety equivalent to electrical safety devices. This requirement is satisfied by the rods, levers, cables, chains, etc., if they resist at least twice the load to which they are subjected.

PROTECTIVE MEASURES AGAINST THE RISK OF DIRECT OR INDIRECT ELECTRICAL CONTACTS

According to the Regulation on technical conditions and safety guarantees in high voltage electrical installations and their ITC-RAT (Royal Decree 337/2014), three-phase alternating current at 50 Hz frequency, whose nominal voltage and voltage between phases is equal to or greater than 1 kV, is tended as such.

In order to prevent the risk of electrocution, the criteria established in Royal Decree 614/2001 on minimum provisions for the protection of the health and safety of workers against electrical risk must be applied, mainly by respecting certain limit distances.

In addition, it is recommended to consult the NTP-72: Works with Elements of Height in the Presence of Overhead Power Lines and the Technical Guide for the Development of Royal Decree 614/2001 published by INSHT.

SAFETY RULES FOR THE USE OF THE EQUIPMENT

There are four sets of important standards: those prior to platform commissioning, those prior to platform lifting, those for moving equipment with the platform raised and for after platform use.

1.- Prior to the start up of the platform

Before using the platform, the MEWP must be checked for possible defects or faults that could affect its safety. The check should consist of verifying the following elements:

✓ Operation and emergency controls.
✓ Safety devices.
✓ Availability of PPE against falls.
✓ Electrical, hydraulic and combustion systems, as applicable (leaks and poor condition of the equipment).
electrical connections).
✓ Warning and control signals.
✓ Integrity and legibility of stickers.
✓ Physical state of the stabilizers and general structure.
✓ Evidence of deteriorated welds or other structural defects.
✓ Abnormal conditions in wheels, tyres, brakes and batteries.
✓ Existence of residues of chemical products, mud, oil, paint, etc. that can make the surface of the work basket slippery.

Any defect must be evaluated by qualified personnel trained by the manufacturer and determine whether it constitutes a risk to the safety of the equipment. All defects detected that may affect safety must be corrected before using the equipment.

2.- Previous to the elevation of the platform

Before lifting the platform, the following operations must be carried out:

✓ Check the possible existence of electrical conduits of A.T. in the vertical of the equipment. It is necessary to maintain a minimum safety distance, isolate them or cut off the current while the work is being carried out in their vicinity.

✓ Do not exceed the nominal load of the MEWP.

✓ Check the place of work where the MEWP will be placed before each use.

✓ Use the stabilisers in accordance with the manufacturer's instructions and that no action may be taken on them while the working platform is not in transport position.

✓ Lower or close the handrail or access door to the platform before operating the equipment.

✓ Distribute the loads and, if possible, place them in the centre of the working platform.

✓ Operators in the working basket must use harnesses (full body and adjustable sling) anchored to the specific points provided for this purpose (retention), as well as PPE corresponding to the risks of the task to be performed (helmet, gloves, etc.).

✓ Operators must always be kept inside the work basket, with their feet on the work basket floor, and it is forbidden to sit or climb on the guardrails.

✓ Delimit the work area to prevent people outside the work remain or circulate nearby.

3.- Movement of the equipment with the lifting MEWP

During the movement of the equipment with the platform raised must be complied with:

✓ Continuously maintain a clear vision of the road and the area to be covered.

✓ The reverse transfer movement must be limited to the essential cases, as visibility is not always guaranteed.

✓ Maintain a safe distance to obstacles, slopes, ditches, ramps, etc.

✓ Mantener the minimum distance from live power lines.

✓ Limit the MEWP's travel speed taking into account ground conditions, visibility, presence of slopes, etc.

✓ Weather conditions (wind, rain, snow, etc.) must be taken into account so that they do not imply the need to stop work.

✓ Do not handle the MEWP in a reckless or distracted manner, checking at all times that there are no workers in your vicinity.

✓ Avoid placing yourself on fragile or unstable surfaces, evaluating the conditions of the terrain beforehand.

✓ If the MEWP is faulty, leave an out of service indicator and remove the ignition keys by depositing them in the place set aside for this purpose.

✓ Use support plates in such a way as to increase the support surface and reduce the pressure on the ground. Bear in mind that by increasing the support surface 3 times, the pressure exerted on the floor decreases by 10 times.

✓ Do not move the MEWP at high speed in narrow areas or with obstacles.

Verify the presence of obstacles above the operator and determine the need to attach anti-climbing systems.

4.- Rules after the use of the platform

At the end of the use of the MEWP, the following safety regulations must be observed:

✓ Park the MEWP conveniently at the place designated for this purpose.

✓ Close all contacts and verify the immobilization, shimming the wheels if necessary.

✓ Clean the MEWP of grease, oils, paint, etc.

✓ Clean the MEWP with water, ensuring that it does not affect cables or electrical parts of the equipment.

OTHER COMPLEMENTARY SAFETY RECOMMENDATIONS

The following additional safety recommendations are recommended:

- Personnel on the ground, e.g. the preventive resource, should be familiar with the emergency rescue or lowering procedure and warning in the event of an emergency.
- Do not modify or neutralize the safety devices of the MEWP, as they affect its safety and stability.
- Do not add elements that increase the load due to wind, such as advertising panels that can modify the maximum working load, the structural load, the load due to wind or manual force, as the case may be.
- Use the MEWP controls gently, without abruptness.
- When getting off the ramp of a lorry, do it in a safe way, avoiding a blow.

against the ground or a catapult effect.

- Batteries should be charged in open, well-ventilated areas away from possible flames, sparks, fires and with a smoking ban (hydrogen emission).
- No modifications of any kind should be made to the entire MEWP package.
- A record of MEWP revisions/inspections and maintenance must be maintained.

preventive and corrective as indicated in the UNE 58921.

- Do not get on or off the platform if it is elevated using lifting devices or any other access system.
- Avoid using internal combustion engines indoors, unless they have sufficient ventilation to avoid toxic fumes.
- Do not use auxiliary elements located on the working platform to gain height, such as ladders, planks, scaffolding, etc.
- Any anomaly detected by the operator that affects his safety or that of the equipment must be communicated immediately and rectified before continuing the work.
- Before lowering or moving the MEWP, check that there are no people or obstacles in adjacent areas.
- In pruning work, the vertical of the work area must be delimited and another operator must be placed to prevent other people from accessing the risk area.
- Do not refill the fuel tanks (MEWP with combustion engine) when the engine is running.
- Ensure that MEWP operators receive theoretical/practical training according to UNE 58923 and especially familiarisation with the equipment used as indicated in part 1 thereof.
- All workers who are going to operate with lifting platforms must have the medical APTO for health surveillance, which empowers them to work at height.
- Do not overload the working platform. Do not use the platform as a crane. - Do not attach the platform or its operator to fixed structures.

4. DOCUMENTATION AND SIGNALLING

DOCUMENTATION

The MEWP operator should check that the following legally required documentation is available:

- Manufacturer's instruction manual.
- CE marking and Declaration of Conformity.
- Documentation justifying the last check that the MEWP has been revised and inspected, in accordance with art. 4.4 of RD. 1215/1997.

It must be verified that the MEWP has stickers or plates with the instructions relating to use, adjustment and maintenance, whenever this is necessary in order to guarantee the health and safety of people.

MANUFACTURER'S INSTRUCTION MANUAL

Every MEWP must carry a Manufacturer's Instruction Manual in English, which separately includes instructions for maintenance operations that can only be performed by specialized maintenance personnel. The manual must contain at least the following information:

Information See Annex I point 1.7.4.2 of Royal Decree 1644/2008:

A. The trade name and full address of the manufacturer and its authorised representative.

B. The designation of the machine, as marked on the machine itself, with the exception of the serial number.

C. The EC declaration of conformity or a document setting out the contents of the EC declaration of conformity and giving particulars of the machinery without necessarily including the serial number and signature.

D. General description of the machine.

E. Drawings, diagrams, descriptions and explanations necessary for the use, maintenance and repair of the machine and for checking its proper functioning.

F. Description of the work stations that may be occupied by operators.

G. Description of the intended use of the machine.

H. Warnings concerning the ways in which a machine may not be used which, from experience, may arise.

I. Assembly, installation and connection instructions, including drawings, diagrams and means of attachment and designation of the chassis or installation on which the machinery is to be mounted.

J. Installation and assembly instructions aimed at reducing noise and vibration.

K. Instructions for the commissioning and use of the machine and, if necessary, instructions for the training of operators.

L. Information on residual risks that exist despite inherently safe design measures, protective measures and complementary preventive measures adopted.

M. Instructions on the preventive measures to be taken by the user, including, where appropriate, the personal protective equipment to be provided.

N. The basic characteristics of the tools that can be attached to the machine.

O. The conditions under which the machines meet the requirement of stability during use, transport, assembly, disassembly, out of service situation, test or foreseeable breakdown situation.

P. Instructions to ensure that transport, handling and storage operations can be carried out in complete safety, indicating the mass of the machinery and that of its various components where they regularly have to be transported separately.

Q. The operating mode to be followed in the event of accident or breakdown; if a blockage is likely to occur, the operating mode to be followed in order to achieve the safe unblocking of the equipment.

R. The description of the adjustment and maintenance operations to be carried out by the user, as well as the preventive maintenance measures to be complied with.

S. Instructions designed to enable the adjustment and maintenance to be carried out in complete safety, including the preventive measures to be taken during this type of operation.

T. The characteristics of the spare parts to be used, when these affect the health and safety of the operators.

U. The following indications of the environmental noise emitted:

- The A-weighted emission sound pressure level at workstations where it exceeds 70 dB(A); if this level is less than or equal to 70 dB(A), this must be indicated.

- The maximum value of the instantaneous C-weighted sound pressure at workstations, when it exceeds 63 Pa (130 dB in relation to 20 presión).
- The A-weighted sound power level emitted by the machine, if the A-weighted emission sound pressure level exceeds 80 dB(A) at workstations.

V. Where the machinery is likely to emit non-ionising radiation which may cause harm to persons, in particular persons carrying active or inactive implanted medical devices, information on the radiation emitted to the operator and exposed persons.

SIGNAGE 

MEWPs must be provided with the following documentation and signalling elements:

✓ Scope diagrams and specifications.

✓ Hazard signs and safety warnings in the MEWP manuals.

operation delivered by the manufacturer.

✓ The operator must read and understand the symbols located on the working platform, if necessary with the help of competent or trained personnel (familiarization session).

✓ One or more indelible manufacturer's plates giving the following information on the basis of point 7.2.1. of standard UNE-EN 280 must be permanently attached to an easily visible site:

(a) the business name and full address of the manufacturer and, where appropriate, his authorised representative;

(b) the model and designation of the machinery; serial or manufacturing number;

(c) the year of manufacture, i.e. the year of the end of the manufacturing process;

(d) unladen mass in kilograms; nominal load in kilograms;

(e) nominal load expressed in authorised number of persons and mass of equipment in kilograms;

(f) for working platforms having different nominal loads each nominal load must be expressed in authorised number of persons and mass of equipment in kilograms;

(g) maximum permissible manual force in Newtons;

(h) maximum permissible wind speed in metres per second;

(i) maximum permissible inclination(s) of the chassis;

(j) information concerning the hydraulic source in the case of power supply by energy source outside hydraulics;

(k) information concerning the electrical source in the event of being supplied by a power source external electrical energy.

5. MAINTENANCE. REVIEWS

MEWPs must be maintained in accordance with the instruction manual of the MEWP. which is delivered with each piece of equipment. This maintenance must be carried out by personnel competent and specially trained.

Periodic safety checks" may only be carried out by a qualified technician. The qualified technician means a person with a minimum training qualification accredited and regulated professional.

It is also possible to accredit the qualification with wide experience, by means of certificates of professionalism.

In all cases, you must have specific training of the manufacturer or technical services officers, who can train to diagnose the safety status of a MEWP in the event of an emergency its different categories and models and, where appropriate, to apply any corrective measures that may be necessary.

The UNE-58921 standard includes a "Periodic Review Sheet" of the MEWPs that can serve as a basis for guide when carrying out these revisions, but it should be borne in mind that prevailing indications that in this sense the manufacturer provides for each particular model of MEWP on the elements to be checked.

Personnel specially trained to carry out maintenance work must have specific information on the following aspects:

- technical information on MEWPs, including electrical/hydraulic circuit diagrams;

- consumables requiring regular or frequent monitoring (lubricants, condition and level of hydraulic fluid, batteries, etc.);

- safety functions to be checked at given intervals, including safety devices, load control sensors, priority emergency devices, and any emergency stops;

- measures to be taken to ensure the long-term safety of maintenance;

- checks to detect any dangerous defects, with regard to corrosion, cracking, abrasion, etc..;

- criteria for the method and frequency of servicing and repair/replacement of elements;

- the importance of using only replacement parts approved by the manufacturer, in particular for load-bearing or safety-related components;

- the need to obtain the manufacturer's approval for any modification that may affect stability, strength or performance.

- elements requiring regulation, with details of adjustments.

- the necessary tests and checks after a maintenance operation to ensure safe operation;

- instructions for inspection and maintenance of anchorage points and the structure to which they are attached.

6. PEMP. OPERATOR REQUIREMENTS

Only authorized and trained persons over the age of 18 may operate and use MEWPs.

It is recommended that these operators be trained in accordance with UNE 58923 in order to comply with this requirement.

For a correct and complete application of the practical training according to the UNE 58923 standard defined by its particular annexes and with the aim that the practical time is sufficient for the future MEWP operator to acquire the necessary knowledge, a maximum ratio of 6 people/MEWP is recommended.

MODULE IV
MOBILE ELEVATING PLATFORM FOR PERSONNEL: SAFETY IN TRANSPORT, LOADING, AND UNLOADING (II)

UNIT 1
RISKS AND RISK FACTORS

The main risks and risk factors associated with MEWP transport operations are as follows:

1. Rollover of the vehicle or cargo transported due to:

- Absence or inadequate training of the vehicle driver or MEWP operator.

- Lack of information/training of the MEWP driver and operator.

- Poor condition of the vehicle, MEWP or attachment and towing accessories (improper maintenance).

- Road conditions (works, bad signposting, etc.).

- Unfavourable environmental conditions (rain, snow, ice, wind, etc.).

- Inadequate use of the vehicle or the MEWP and its auxiliary elements.

- Cargo badly insured and subject to the foreseen accelerations.

- Overturning of the vehicle in curves due to excessive speed, or due to evasive manoeuvring (rapid lane change); this causes the load to move and causes an unequal distribution of weight.

2. MEWP drop from the transport vehicle due to:

- Slip or tilt of the load, due to vibrations generated during travel.

- Load balancing, because it has a high centre of gravity in relation to the measurements of the base surface.

- During unloading due to failure to follow safety procedures.

- Overloading of vehicle axles.

- Drive with the MEWP without picking up.

- Collision with electrical lines.

- Collision with bridges.

- Do not use mooring belts designed for frictional mooring.

- Use different lashing systems (e.g. lashing chains and lashing straps) to hold the same load, due to different behaviour and elongation under load conditions. Auxiliary fastenings (components) and the compatibility of the load lashing devices with the lashing strap must also be taken into account.

- Breakage of lashing straps due to chemical contamination.

- When the load is unloaded, a change in the ambient temperature during transport can affect the force exerted on the lashing belt.

- Use fastening tapes in poor condition, tears, cuts, knots, notches, breakage of component fibers and retention seams; or deformations resulting from exposure to heat.

- Do not use tapes protected against friction, abrasion and damage due to loads with sharp ends, by means of protective sleeves and/or angle protectors.

- Use connectors and tensioners with deformations, cracks, pronounced wear marks and signs of corrosion.

- Overload shafts when unloading mixed loads.

- Overload the clamping chains above the maximum manual force of 500 N. Use mechanical aids such as levers or bars that are not part of the tensioning device.

- Do not check the tensile strength of the tie-downs periodically, especially after starting transport.

- Use chains with surface cracks, elongations greater than 3%, wears greater than 10% of the nominal diameter, and visible deformations.

- Vehicle bed/box covered with contaminants (oil, grease, water, etc.) that reduces load friction.

- Poor fastening of the load by erroneous combinations made by the driver (combination of tie-downs or components with different traction capacities).

3. Traps between MEWPs when loading due to:

- To be placed on the loading surface.

4. Diverse blows and shocks due to:

- Hitting the work basket against the ground when unloading the MEWP from the vehicle.

- Hitting the vehicle's cab when braking during transport.

- Use the winch as a mooring element.

- Danger of falling to the same level/ground during MEWP loading/unloading.

- Tipping or displacement of the load, loss of balance or fall during application and tensioning due to faulty equipment, sudden breakage or malfunction of the tensioning device, leading to a sudden absence of manual reaction force.

- Effect catapults when unloading the MEWP from the vehicle.

- Loads that have moved or that have been inclined during transport due to inappropriate fastenings, or to a malfunction of the equipment such as recoil or breakage, or to faulty equipment that may fall on personnel.

- Excessive retraction of the levers or cranks of the tensioning devices.

- Loss of balance or fall when applying force, due to faulty equipment, sudden breakage or malfunction of the tensioning device, resulting in a sudden lack of reaction force in the lever.

5. Cutting/crushing of upper extremities due to:

- Existence of sharp ends or burrs that may be in contact with the textile tapes or the hands of the operator.
- Use hand cranks without being secured.

6. Electrical contacts with power lines due to:

- Charging or mooring equipment colliding with power lines.

7. Various pinching and shearing in the upper extremities due to:

· Existence of sharp ends in the tensioning devices during handling.

UNIT 2
PREVENTIVE AND PROTECTIVE MEASURES

The measures of prevention and protection against the described risks shall be applied to eliminate or minimize the inherent risk of the vehicle driver or MEWP operator during the loading and unloading of the MEWP:

➡ Workers must have information and training appropriate to the work to be carried out. Standard UNE 58923 is recommended for the use of MEWPs and specific for loading and unloading operations.

➡ The ascent and descent of the cabin of the vehicle or the MEWP must be carried out facing it.

➡The load may not be dragged on the ground, exceed the template (gauge) or the maximum weight. authorized.

➡ Cargo protruding behind vehicles must be signaled by means of the V-20 panel. With dimensions of 50 x 50 cm, and will be painted with alternating diagonal stripes of red and white. The panel should be placed at the rear end of the load.

➡ The load must not impede or significantly diminish the driver's field of vision or obscure lighting or light-signalling devices, license plates and driver's manual warnings.

➡ The effort exerted on the mooring devices will be gradual, never sudden. The pull, especially in the starting movement, will always be vertical, never inclined.

➡ Before making any journey, check that the MEWP is properly retracted into its transport position.

➡ Load collected and lashed down correctly.

➡ When using the winch on a slope to load a MEWP, the cabin of the vehicle must be uphill.
➡ Monitor traffic, pedestrians and other obstructions (parked vehicles, other machines, etc.) during MEWP loading/unloading.

➡ Take into account weather conditions, especially visibility during loading/unloading of the MEWP.

➡ Take into account the ground conditions during loading/unloading of the MEWP (wet ground, dirty ground, oil, etc.).

➡ Carry out a risk assessment prior to the loading/unloading of the MEWP, in order to avoid/eliminate hazards and contribute to a safer way of working.

➡ The operator must take special care when activating the control lever of the MEWP, to ensure that the direction of travel is correct and operation is safe at all times.

➡ As a general rule of safety, always avoid positioning yourself in the path of any MEWP that is moving, and always be careful with fixed objects that are in the area of movement of the MEWP.

➡ Use the appropriate PPE (reflective vest, safety footwear, helmet, harness, gloves, safety glasses, etc.).

➡ Whenever possible, load the side of the steered wheels first.

➡ Check that the MEWP is properly aligned with the vehicle bed before loading.

➡ Follow all loading instructions indicated in the MEWP Manufacturer's Manual, Workplace Rules or Regulations or any other applicable safety provisions.

➡ During loading, keep the MEWP basket as close to the ground as possible.

➡ During unloading, prevent the MEWP basket from inadvertently contacting the ground.

➡ Place the machine on the truck so that the axles are not overloaded.

➡ Never stand between the moving MEWP and other machines or objects.

➡ During transport, place the locking bolt of the turret to prevent lateral movements of the MEWP arm. Subsequently to use the MEWP unlock the safety bolt.

➡ Use the winch to facilitate the loading and unloading operations of the MEWP, its purpose is not to secure the load during transport. The winch prevents losing control of the machine during the loading and unloading process.

After unloading part of a load, it may be necessary to reposition the remaining load, check that the remaining load does not overload the axle and that the overall stability of the vehicle and load is not at risk (check that the rest of the MEWPs are secured).

➡ Whenever possible, the MEWP should be operated when the operator is in the basket, NOT walking next to it.

➡Check that the MEWP is in perfect condition for loading.

➡ For this purpose, it is recommended to follow the instructions of standard UNE 58921.

➡ Check the tensile forces of the moorings after entering hot zones.

➡ Do not secure the MEWP near the cab of the vehicle, to avoid a possible collision due to a braking due to any circumstance. Figure 17. Load properly secured.

➡ Lashing straps must be rejected or returned to the manufacturer or supplier for repair whenever they show signs of deterioration.

➡ Protect lashing chains and load edges. Protect against abrasion and damage by means of protective tubes and/or protection angles.

➡ When there are overhead power lines in the vicinity of the loading/unloading area of the MEWP, in order to effectively develop the corresponding preventive measures, it is necessary to carry out a prior study of the situation. Therefore, it is necessary to analyse the different movements of the MEWP, which can generate a risk of coming into contact with live elements or invading danger zones. By means of these or other procedures, the movements and/or displacements of the MEWPs can be delimited or restricted in such a way that they do not invade the danger zones in the most unfavourable situations (maximum elevations or displacements of the moving parts), also taking into account the maximum oscillations of the cables and the suspended MEWPs. In general, for work in the vicinity of overhead power lines, when working with MEWPs, to ensure that the danger zone is not invaded, DPEL, it is recommended not to exceed the DPROX-1 limit for "authorised workers" (or those working under their supervision). In all other cases, it is recommended not to exceed the DPROX-2 limit. The safety distance on A.T. overhead lines is 3 m up to 66,000 V and 5/7m for higher voltages.

UNIDAD 3
ARRASTRE DE PEMP. PEMP REMOLCABLES

It is a special type of MEWP that is mounted on a trailer, so that it can be transported by a tractor vehicle (towed/dragged), without having to transport it on another vehicle.

Therefore, this semi-trailer must comply with the conditions and characteristics established by the Law. As a general rule, all semi-trailers exceeding 750 kilos must be registered for use on public roads.

1. Registration

According to article 25.1 of the General Regulation of Vehicles, non-light trailers and semi-trailers, that is, those whose maximum authorised mass exceeds 750 kilograms, must be registered in the Traffic Headquarters of the province in which their owner or holder has the legal domicile, registering them in the corresponding register and having to be provided with the circulation permit and the technical inspection card.

Trailers and light semi-trailers do not need to be registered to circulate, as their maximum mass does not exceed 750 kilograms. However, caravans and light trailers shall be fitted with a technical inspection card.

2. Number plates

A MEWP whose maximum authorised mass does not exceed 750 kilograms does not have to be registered and must bear a single rear plate on the left side or in the centre, the same content as that of the towing vehicle.

The MEWP exceeding 750 kilograms must be registered and the registration plate, located vertically or almost vertically and in the longitudinal median plane of the vehicle and, in addition, on the right side of the rear, must bear another plate with the registration number of the towing vehicle.

The background of the plates shall be red retro-reflecting. The embossed characters shall be painted in matt black. Three groups of characters consisting of the letter R, a four-digit number ranging from 0000 to 9999, and three letters, beginning with the letters BBB and ending with the letters ZZZ, shall be entered on the registration plates, the five vowels being deleted, as well as the letters Ñ and Q, due to their easy confusion with the letter N and the number 0, respectively, and the letters CH and LL, due to incompatibility with the design of the registration plate, which would not allow the inclusion of four characters in the last group.

3. Braking system

For trailers in category O2, with a maximum authorised mass exceeding 750 kilograms but not exceeding 3,500 kilograms, service, parking and automatic braking systems in the event of uncoupling are compulsory.

It should be remembered that the functions of the braking system are to progressively reduce or cancel the speed of the MEWP in progress, or to keep it stationary if it is already stopped:

- Service braking: Service braking must be able to control the movement of the vehicle and stop it safely, quickly and efficiently, regardless of speed and load conditions and for any uphill or downhill slope on which the vehicle is located. Its action must be adjustable.

- Emergency braking: Emergency braking must allow the MEWP to be stopped within a reasonable distance in the event of a break in the coupling system. Its action must be adjustable.

- Parking braking: Parking braking must allow the MEWP to remain stationary on a slope, uphill or downhill.

- Inertia braking: braking carried out using the forces caused by the approach of the towed MEWP to the towing vehicle.

4. Rear light signalling system

The General Regulation of Vehicles in its Article 16. "Mandatory lighting and optical signalling devices", in its point 5 indicates that all trailers and semi-trailers, with the exception of agricultural trailers, must be provided with (see figure 23):

- Direction-indicator lamps with emergency signal.
- Stop lamp.
- Rear registration plate lamp.
- Front position lamp for trailers more than 1,60 m wide.
- Rear position lamp.
- Rear fog lamp.
- End-outline marker lamp, if its width is more than 2.10 metres.
- Rear triangular retro-reflectors.
- Non-triangular front retro-reflectors.
- Non-triangular side retro-reflectors.
- Side position lamp for vehicles exceeding 6 metres in length.

5. Driving licence

The driving licence for classes B, C1, C, D1 and D authorises its holder to drive the vehicles to which it relates with a coupled trailer of maximum authorised mass not exceeding 750 kilograms.

Consequently, as a general rule, in order to tow a trailer which is not light, i.e. with an M.M.A. of more than 750 kilograms, holders of licences for classes B, C1, C, D1 and D must hold a driving licence for class E (B+E, C1+E, C+E, D1+E, D+E).

There are two exceptions to this general rule:

1. The class B licence (maximum authorised mass of 3,500 kg) also authorises the driving of combinations made up of a motor vehicle of which it authorises the driving of that licence and a trailer whose maximum authorised mass exceeds 750 kg provided that the maximum authorised mass of the combination does not exceed 4,250 kg.

2. To drive a combination made up of a category B tractor vehicle and a trailer with a maximum authorised mass exceeding 750 kg, if the combination thus formed exceeds 3 500 kg, authorisation must be obtained after a test of skills and behaviour (48.2 and 49.2 of the General Drivers' Regulations). This authorisation is reflected in the driving licence by means of the harmonised Community code 96, which is why we have been speaking, in a simplified form, of authorisation B96. These tests are: reversing with the trailer to park and coupling and uncoupling the trailer.

LEGAL AND TECHNICAL REGULATIONS

European:

- DIRECTIVE 2009/104/EC of the European Parliament and of the Council of 16 September 2009 concerning the minimum safety and health requirements for the use of work equipment by workers at work (second individual Directive within the meaning of Article 16(1) of Directive 89/391/EEC).

- DIRECTIVE 2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery and amending Directive 95/16/EC (recast).

- DIRECTIVE 2001/95/EC of the European Parliament and of the Council of 3 December 2001 on general product safety.

- DIRECTIVE 98/37/EC of the European Parliament and of the Council of 22 June 1998 on the approximation of the laws of the Member States relating to machinery.

Design and manufacture:

- UNE-EN 280. Mobile personnel lifting platforms. Design calculations. Stability criteria. Construction. Safety. Exams and tests.

Commissioning:

- Royal Decree 1644/2008, of 10 October, establishing standards for the marketing and commissioning of machines.

- Royal Decree 1801/2003, of 26 December, on general product safety.

Use and maintenance:

- Royal Decree 2177/2004, of 12 November, establishing the minimum safety and health requirements for the use of work equipment by workers in temporary work at height.

- Royal Decree 614/2001, of 8 June, on minimum provisions for the protection of workers' health and safety against electrical risk.

- Royal Decree 1627/1997, of 24 October, establishing minimum safety and health requirements for construction sites.

- Royal Decree 1215/1997, of 18 July 1997, establishing minimum safety and health requirements for the use of work equipment by workers.

- UNE 58921 Instructions for the installation, operation, maintenance, revisions and inspections of mobile elevating platforms for personnel (PEMP). General provisions in Spain:

- Royal Decree 486/1997, of 14 April, establishing minimum safety and health requirements in the workplace.

- Royal Decree 773/1997, of 30 May, establishing minimum safety and health requirements for the use by workers of personal protective equipment.

- Royal Decree 1211/1990, of 28 September, approving the Regulations to the Law on the Regulation of Land Transport.

- Royal Decree 1225/2006, of 27 October, amending the Regulations of the Law on the Regulation of Land Transport.

- Royal Decree 2822/1998, of 23 December, approving the General Regulation of Vehicles.

- Royal Decree 750/2010, of 4 June, regulating the approval procedures for motor vehicles and their trailers, self-propelled or towed machines, agricultural vehicles, as well as systems, parts and pieces of such vehicles.

National Institute for Occupational Safety and Hygiene (INSHT):

- Technical Guide for the evaluation and prevention of risks related to the use of work equipment. Madrid INSHT. 2nd edition. 2011.

Spain. SPANISH ASSOCIATION FOR STANDARDIZATION (AENOR):

- UNE-EN 280:2014. Mobile personnel lifting platforms. Design calculations. Stability criteria.
Construction. Safety. Exams and tests.

- UNE 58921:2002 IN. Instructions for the installation, operation, maintenance, servicing and inspection of mobile elevating platforms for personnel (MEWP).

- UNE 58923:2014. Mobile Personnel Lifting Platforms (MEWP). Operator training.

- UNE-EN 60204-32:2009. Safety of machinery. Electrical equipment of machines. Safety of machinery - Part 32: Requirements for lifting appliances.

- UNE-EN 12195-1:2011. Devices for securing loads on road vehicles. Safety. Part 1: Calculation of clamping forces.

- UNE-EN 12195-2:2001. Devices for securing loads on road vehicles. Safety. Part 2: Lashing straps made of man-made fibres.

- UNE-EN 12195-3:2002. Devices for securing loads on road vehicles. Safety. Part 3: Fastening chains.

- UNE-EN 12195-4:2004. Devices for restraining loads in road vehicles. Safety. Steel wire ropes - Part 4: Steel lashing ropes.

United Kingdom. Bibliography and BS Standards:

- Management of Health & Safety at Work Regulations 1999 (MHSR 99)

- Provision and Use of Work Equipment Regulations 1998 (PUWER 98)

- Lifting Operations and Lifting Equipment Regulations 1998 (LOLER 98)

- Work at height Regulations 2005 (WAHR 05)

- Construction (Design and Management) Regulations 2007

- BS EN 280:2001 Mobile elevating work platforms: Safety by design

- BS 8460 Mobile Elevating Work Platforms: Code of practice: Safe use

- BS EN 1495:1998 Mast climbing work platforms: Safety by design

- BS 7981 Mast climbing work platforms: Code of practice: Safe use

- BS ISO 16368:2010 Mobile elevating work platforms: Design calculations, safety requirements and test methods

- ISO 18878 Mobile elevating platforms: Operator (driver) training

USA, AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI):

- ANSI / SIA 92.6 Self Propelled Elevating Work Platforms 8
Prevention Technical Notes

- ANSI / SIA A92.2-1900 Vehicle Mounted Elevating and Rotating Devices

- ANSI / SIA A92.3 Manually Propelled Elevating Work Platforms

- ANSI / SIA A92.5 Boom-supported Elevating Work Platforms

You are done!

Click here: Start Test

FÓR-MATE
ACADEMIA DE FORMACIÓN