MANUAL
PREVENTION OF OCCUPATIONAL RISKS
FOR TELESCOPIC HANDLER

FÓR-MATE
ACADEMIA DE FORMACIÓN

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INTRODUCTION

This document arises from the need to collect basic guidelines for the protection of workers' health in the use of self-propelled handling trucks with variable reach, commonly known as telescopic handlers, hereinafter referred to as MT.

It is increasingly common to see MOTs on construction sites inside and outside our borders, mainly because of their versatility. It is a piece of equipment that with the right implements (lifting accessories and interchangeable equipment) can perform many of the functions required of a vertical mast all-terrain forklift truck, a mobile personnel lifting platform, a loader, a self-propelled crane or other specific load handling equipment such as reelstands, bale loaders, trailer tow tractors, etc. The ability to adapt to perform all these functions is a cost saving for construction companies and nobody doubts it; but from a preventionist perspective, the use of this equipment requires a series of preventive actions to reach acceptable safety levels in this case as well.

It cannot be said that this is less safe equipment than others, all equipment is equally safe if the preventive principles are respected in the design phase and in the use phase. We understand that, on the basis of safe MTs that comply with the applicable marketing regulations, safety remains in the hands of the good technician throughout the useful life of the equipment as far as its use is concerned. It is therefore essential to maintain the equipment in the same safety conditions as when it was purchased, to evaluate the residual risks that remain and to adopt and monitor that the appropriate prevention and protection measures are complied with.

In the first section, the classification of forklift trucks will be shown, in accordance with the current technical standardisation, continuing with the most common types and uses of MV.

A second section will list the legislation, technical standardisation, technical criteria, etc. applicable to MV.

The third section contains descriptions of the most frequent accidents or those that could occur during the use of TM; some have been materialised and have been published by international bodies in order to serve as a reference and do not happen again.

The fourth section contains recommendations to avoid accidents during the handling of TM. These are recommendations, although some are based on legal obligations and are therefore binding in all cases. These recommended measures are the result of combining the measures contained in publications of INSHT and other bodies in the field of occupational risk prevention, together with those of MV manufacturers governed by their manuals and other documentation provided to users. In practice, these recommendations should be introduced into the work procedures that are developed; in this sense, the Basic Guidelines for the Integration of Occupational Risk Prevention in Construction Works refer on numerous occasions to the term "work procedure" being understood as the specific way of carrying out an activity. In view of Appendix 4, paragraph 4 of the Technical Guide for the assessment and prevention of risks relating to construction works, hereinafter referred to as 'the CG', some of the elements that would be recommended to be included in a work procedure are included in paragraph 4 of this document.

1

CLASSIFICATION OF FORK-LIFT TRUCK

1.1. DEFINITION ACCORDING TO UNE STANDARD AT 1459:2000+A3:2012

The harmonised standard UNE EN 1459:2000+A3:2012 "Safety of industrial trucks. Self-propelled variable reach trucks" in accordance with Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery, defines MV as self-propelled trucks with a seated operator and a variable reach system, designed to handle loads of all types using one of the accessories indicated in the end of the standard itself and mentioned below. It does not cover the lifting of persons by any type of accessory, in particular by working platforms. Machines with load suspension elements of variable length (chains, cables, etc.), from which loads can oscillate freely in all directions, are also not covered by this standard. It applies to the handling of Series 1 containers of a length equal to or greater than 6 metres with the dimensions and safety features specified in ISO 668:2013 - Series 1 freight containers - Classication, dimensions and ratings and ISO 3874:1997 - Series 1 freight containers - Handling and security.

For the purposes of this standard, self-propelled seated operator variable reach trucks are forklift trucks with cantilevered load, fitted with one or more articulated arms, whether or not telescopic, non-rotating, as defined in ISO 5053:1987 Powered industrial trucks _ Terminology, as revised by ISO 5053-1:2015 Industrial trucks -- Terminology and classification -- Part 1: Types of industrial trucks, used to stack loads. Load handling equipment may be mounted directly on the lifting devices or on an auxiliary mast mounted at the end of the lifting equipment. The means of lifting must not be rotatable or, in any case, have a rotatable movement not exceeding 5o to each side in relation to the longitudinal axis of the forklift.

Trolley Parts

- Chassis: is the base of the MT, and consists of a metal structure mounted on wheels that support the ground and that, depending on the type of MT, can have a rotating system and stabilizers.

- Operator's cabin: cabin from where the operator manipulates the MT with the corresponding control system, adjustable seat, safety belt, etc.

- Arm, boom, mast: extendable structure, which can be rotated and moved to a position that allows different jobs to be carried out depending on the accessory that is placed at the tip.

- Accessories: tools or work equipment located at the tip of the arm.

- Complementary elements:

    - Stabilizers: all devices or systems designed to ensure the stability of the MT, such as: jacks, pension locks, extendable axles, stabilizer plates, etc.
    - Drive systems: these are the systems used to move the MT and to drive all the movements of the extensible structures.
    - Service bodies: these are mainly the usual, safety and emergency control panels.

The base on which the MT rests consists of the two front tyres and the rear axle pivot. The rear wheels are not part of the base because most MTs have an oscillating rear axle to allow propulsion on uneven ground. The three points formed by the two front tyres and the rear pivot form a ground level triangle, which is commonly referred to as the "stability triangle". As long as the centre of gravity of the MT (the point at which the weight of the vehicle is distributed evenly) remains within the stability triangle, the machine remains stable.

If a load is added with the boom lowered, the center of gravity moves forward and downward, but if the load is raised, the center of gravity moves up and backward.
If the center of gravity moves out of the stability triangle, the MT will become unstable and tip, either front or rear if an excess load is handled longitudinally, or laterally if the center of gravity moves out of the triangle to the left or right.

1.2. TYPES AND USES OF TELESCOPIC HANDLERS: ACCESSORIES

The UNE EN 1459:2000+A3:2012 standard covers **two types** of variable reach trucks:

✓ Industrial trucks for working on firm, smooth, prepared and substantially horizontal soils;

✓ All-terrain forklift trucks for working on unprepared ground, with unevenness and in areas in a natural state.

In the market it is usual to find another MT **classification**:

✓ Non-rotating telescopic manipulators. They are the most common type of MV. In this case the chassis is not rotatable.

✓ Telescopic rotary manipulators. MT whose chassis has a super-rotating structure on which the cab and mast are mounted. These machines have stabilisers mounted at each end of the chassis, which allow the entire chassis to be lifted and arms that rest on the ground to gain stability. The main advantages of these machines over the non-rotating type is that the chassis is usually more compact, has higher lift height, greater stability, work capacity and the possibility of handling loads without moving the chassis.

There are a multitude of attachments for telescopic handlers and each of them has applications determined by the manufacturer. In compliance with Royal Decree 1215/1997, of 18 July, which establishes the minimum safety and health requirements for the use of work equipment by workers, the employer must only use equipment appropriate to the task to be performed, which implies that it must be observed which implements will be used with the equipment, since the use that can be given to the manipulator will depend on it. It is in the instruction manual of the machine where we will find the lifting accessories and interchangeable equipment that the manufacturer authorizes to use with that machine.

The standard establishes the following standardized accessories:

Forks:
Device including two or more fork arms of solid section (mounted on hook or on axle), which are fixed on the fork carriage and which are normally placed manually.

Fork extensions:
Devices mounted on the fork arms to increase their length.

Container hooks (interchangeable equipment):
Device mounted on the arm and designed to attach the lifting points of standardised containers, swap bodies and semi-trailers. It can be equipped with driving devices to connect the load lifting points and with articulation mechanisms to facilitate coupling.

Side clamps (interchangeable equipment):
A device consisting of two plates that horizontally clamp homogeneous loads (boxes, cartons, drums, blocks, etc.).

Wood clamps (interchangeable equipment):
Device consisting of curved fork arms in the shape of a clamping arch, specially designed for handling logs and slabs.

Spoons (interchangeable equipment):
Device for loading bulk products such as sand, gravel, coal, etc.

Load clamp (interchangeable equipment):
Device that squeezes the load vertically, stabilizing it and preventing it from falling, especially when the forklift truck is moving on poor ground.

Load pusher/puller (interchangeable equipment):
Device that allows the load to slide forward or backward on the fork arms.

There are other types of implements which, without being covered by the standard, are supplied for the performance of certain tasks, for example: specific forks for handling big-bags, working platforms to function as MEWPs (only for exceptional use, unless the manufacturer of the equipment has submitted the assembly to EC type-examination by a Notified Body and this is indicated in the EC Declaration of Conformity), etc.

The proper and safe selection of a telescopic handler will depend primarily on whether the equipment is appropriate to the type and size of the load for which it is to be used, together with the specific working environment. **The selection process should at least take into account the following points:**

- **Working environment** (space, traffic routes, type of terrain, radius and lifting height, environmental conditions, visibility, power lines, interference with other machines or work...).

- **Type of operation** (weights, dimensions and characteristics of both the telescopic handler and the load to be handled, necessary accessories, number and frequency of tasks, space available for access to the telescopic handler, deployment, operation and storage, including the space necessary for the correct implementation of the stabilizers…).

The selection of attachments for use with telescopic handlers must be made with adequate criteria to ensure that the combination of telescopic handler and accessory is compatible and safe, which criterion is in accordance with the manufacturer's instruction manual. In this respect, it should be noted that both interchangeable work equipment and lifting accessories fall within the scope of the Machinery Directive and must therefore have, among other requirements, a technical file, instruction manual, EC declaration of conformity and CE marking in accordance with this provision.

Annex II, section 3, of Royal Decree 1215/1997 establishes that lifting accessories must be selected according to the loads being handled, the gripping points, the coupling device and the atmospheric conditions, and taking into account the modality and configuration of the mooring. Lifting accessory assemblies must be clearly marked to allow the user to know their characteristics. In addition, lifting accessories must be stored in such a way that they are not damaged or deteriorated, taking into account what is established in the instruction manual or leaflet that must accompany the lifting accessory.

The INSHT Technical Guide for the evaluation and prevention of risks related to the use of work equipment sets out a series of recommendations in this respect, in Appendix C "Checking of lifting equipment and accessories" and in Appendix P "Selection of lifting accessories".

2

REGULATIONS APPLICABLE TO TELESCOPIC HANDLERS

It is of interest to take into account the data from the study carried out by the INSHT "Characterisation of the Spanish machinery fleet" whose Annex III "Fichas de carretillas automotoras y transpaletas" provides relevant information on the current situation of this equipment in relation to the fulfilment of requirements that may be demanded depending on its age and form of acquisition.

According to this study, out of a total of 34 variable range forklifts, 28 were acquired when the EU machinery marketing regulations had already come into force, which require the CE marking and compliance by the manufacturer with the essential requirements applicable to these forklifts. This seems to indicate that this is a piece of equipment whose available fleet is quite new and, therefore, that there will not be as many risks at source as in other types of forklift trucks.

It would be advisable for companies that have equipment prior to 1995 or that were acquired later but were second-hand to pay special attention to their forklift trucks, as the study shows that none met all the legal requirements.

2.1. COMMUNITY AND LEGISLATION ON THE MARKETING OF MACHINERY

The importance of this section lies in what is established in article 3 of Royal Decree 1215/1997, which establishes: "In any case, the entrepreneur must only use equipment that satisfies: a) Any applicable legal or regulatory provision. (...)". Therefore, the employer is obliged to use MT that satisfies the applicable marketing regulations. Depending on the year in which the MT is placed on the market or put into service for the first time, one of the European Union product marketing directives must be complied with, namely:

- Directive 2006/42 CE, on the marketing and putting into service of machines, transposed into Spanish law through Royal Decree 1644/2008, of 10 October, establishing the rules for the marketing and putting into service of machines (applicable from 29/12/2009).

- Council Directive 89/392/EEC on the approximation of the laws of the Member States relating to machinery (codified as 98/37/EC), transposed into Spanish law by Royal Decree 1435/1992 of 27 November, amended by Royal Decree 56/1995 of 20 January (applicable from 01/01/1995 to 29/12/2009).

2.2. REGULATIONS ON THE PREVENTION OF RISKS AT WORK

Some of the applicable rules are quoted in a non-exhaustive manner:

- RD 486/1997, of 14 April, establishing minimum safety and health requirements in the workplace.
- RD 773/1997, of 30 May, which establishes the minimum health and safety provisions relating to the use by workers of personal protective equipment.
- RD 1215/1997, of 18 July, establishing the minimum health and safety provisions for the use of work equipment by workers. This royal decree transposed into Spanish law Directives 89/655/EEC and 95/63/EEC relating, respectively, to the use of work equipment and its first amendment.
- RD 1627/97, which establishes the minimum safety and health requirements for construction sites. (Annex XV, Part C, 3B).

2.3. COLLECTIVE AGREEMENTS

A priori it seems logical to think that the application agreement is the V Collective Agreement of the Construction Sector, but it should be borne in mind that it will be if the activity is carried out by a company covered by that agreement. When analyzing the market situation, it has been observed that MV are mainly used in the Construction sector, but at the same time there is an inclination of the balance towards other sectors. The use of MV in other sectors is not under the umbrella of the 5th Collective Bargaining Agreement in the Construction sector. In any case, we are going to focus on this one because it is sufficiently strict in terms of occupational risk prevention in the use of MV. In particular, article 160 of the aforementioned Convention refers to the training content for operators of lifting devices, established at 20 hours.

Those devices which, due to their date of marketing or first time putting into service, are not subject to the aforementioned Royal Decree 1644/2008, of 10 October, which establishes the rules for marketing and putting into service of the machines, must be put into conformity in accordance with the provisions of Royal Decree 1215/1997, 18 July.

With regard to the use of these devices, the provisions of Royal Decree 1215/1997, of 18 July, modified by Royal Decree 2177/2004, of 12 November, will be complied with.

General conditions of lifting devices, establishes that:

1. Lifting devices and lifting accessories, including their constituent elements, fixing elements, anchorages and supports, shall:
- They shall be of good design and construction and have sufficient strength for their intended use.
- They must be installed and used correctly.
- They must be kept in good working order.
- Be handled by qualified and authorized workers who have received training.
adequate.

2. On lifting appliances and lifting accessories, an indication of the value of their maximum load, which must under no circumstances be exceeded, must be affixed in a visible manner.
Lifting appliances and their accessories may not be used for purposes other than those for which they are intended by the manufacturer.

3. When using lifting equipment, the following measures, among others, must be taken into account:

- Check the stability of the ground or the support base of the lifting devices.
- Check the condition of the cables, chains and hooks, and remove any steel cable slings which are crushed, have broken threads, etc.
- Know the operator the maximum allowable load, not only of the machinery or lifting equipment, but also of the auxiliary means to be used for the slinging (cables, hooks, etc.).

- To study the route to be taken with the load up to its eventual or definitive location, to in order to avoid interferences on this route.
- The loading and unloading operation, if necessary, will be supervised by specialized personnel.
- If in the operation there is lack of vision of the operator, he will be helped by the corresponding assistant or signalman.
- Check the correct slinging or clutching of the pieces to order displacements. unchecked and pick up loads.
- Start, stop and any other manoeuvre will be carried out smoothly.
- It is forbidden to transport people with load lifting equipment.
- Special care must be taken with radio-controlled lifting equipment, due to the possible interferences with other frequencies.
- Never leave cranes loaded when resting.
- They must not be used in adverse weather conditions that exceed the manufacturer's forecasts.

4. It is forbidden to park or drive under suspended loads.

5. Lifting appliances shall be examined and tested before being put into service. Both will be duly documented.

6. Suspension hooks shall be fitted with a safety device to prevent the unhooking or accidental falling of suspended loads.

Safety measures shall be extreme, taking special care to prevent lifting appliances from hitting overhead power lines near the place of work or the road travelled by them in their movements; the minimum distance required by the regulations to avoid electrical contacts shall be maintained. The same measures shall be taken in respect of the loads suspended by such lifting appliances.

2.4. STANDARDS AND TECHNICAL REPORTS

Technical standards are voluntary documents (unless a legal standard requires compliance) containing technical specifications based on the results of experience and technological development. Standards are the result of consensus among all parties involved in the activity. In addition, they must be approved by a recognised Standards Body. The standards guarantee levels of quality and safety that allow any company to position itself better in the market and constitute an important source of information for professionals of any economic activity.

In order to make it easier for manufacturers to presume conformity with the essential requirements of Directive 2006/42/EC, European Harmonised Standards have been developed, the aim of which is to reflect the state of the art and therefore the level of safety achievable at the time of their preparation. Machinery manufactured in accordance with a harmonised standard, the reference of which has been published in the Official Journal of the European Union (OJEU), shall be presumed to comply with the essential requirements covered by that harmonised standard. The manufacturer is free to use other means to satisfy the essential requirements, but in that case he must achieve a level of safety at least equivalent to that laid down by those standards.

The following are some harmonised standards, compliance with which by manufacturers gives presumption of conformity with the essential requirements of the Machinery Directive 2006/42/EC, applicable to MV:

- UNE EN 1459:2000+A3:2012: Safety of industrial trucks. Self-propelled variable reach trucks.
- UNE-EN 1175-1:1998+A1:2011: Safety of industrial trucks. Electrical requirements. Safety of industrial trucks - Part 1: General requirements for battery-powered trucks.
- UNE-EN 1175-2:1998+A1:2011: Safety of industrial trucks. Electrical requirements. Safety of industrial trucks - Part 2: General requirements for internal combustion engine powered trucks.
- UNE-EN 1175-3:1998+A1:2011: Safety of industrial trucks. Electrical requirements. Safety of industrial trucks - Part 3: Particular requirements for the electrical transmission systems of internal combustion engine powered trucks.
- UNE-EN 12053:2002+A1:2008: Safety of industrial trucks. Test methods for measuring noise emissions.
- UNE-EN 13059:2002+A1:2008: Safety of industrial trucks. Test methods for measuring vibrations.
- UNE-EN 13490:2002+A1:2009: Mechanical vibration. Handling trolleys. Laboratory evaluation and specifications of the vibrations transmitted to the operator by the seat.
- UNE-EN 15000:2008: Safety of handling trucks. Self-propelled variable reach trucks. Specifications, performance and test requirements for longitudinal load moment limiters and indicators.
- UNE-EN 15830:2012: Variable reach all-terrain forklift trucks. Visibility. Test and verification methods.
- UNE-EN ISO 6683:2008: Earth-moving machinery. Safety belts and their anchorages. Performance requirements and tests.
- UNE-EN ISO 2867:2012: Earth-moving machinery. Access systems.
- UNE-EN ISO 3164:2013: Earth-moving machinery. Laboratory evaluations of protective structures. Specifications for deformation limit volume.
- UNE-EN ISO 3449:2008: Earth-moving machinery. Protective structures against falling objects. Laboratory tests and performance requirements.
- UNE-EN ISO 3471:2009: Earth-moving machinery. Rollover protection structures. Laboratory tests and performance requirements.
- UNE-EN ISO 6682:2008: Earth-moving machinery. Zones of comfort and accessibility to the controls.

- UNE-EN ISO 7096:2008/AC:2009: Earth-moving machinery. Laboratory evaluation of the vibrations transmitted to the operator by the seat.

- UNE-EN 349:1994+A1:2008: Safety of machinery. Minimum distances to avoid crushing of body parts.

- UNE-EN ISO 13850:2008: Safety of machinery. Emergency stop equipment, functional aspects. Design principles.

- UNE-EN ISO 12100:2012: Safety of machinery. Basic concepts, general design principles.

- UNE-EN 1037:1996+A1:2008: Safety of machinery. Prevention of untimely start-up.
- UNE-EN 60204-1:2007: Safety of machinery. Electrical equipment of the machines. Part 1: General requirements. (+A1:2009 and CORR:2010)

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

- UNE-EN 61310-1:2008: Safety of machinery. Indication, marking and manoeuvring. Part 1: Specifications for visual, audible and tactile signals.

- UNE-EN 61310-2:2008 Safety of machinery. Indication, marking and manoeuvring. Part 2: Requirements for marking.

- UNE-EN 61310-3:2008: Safety of machinery. Indication, marking and manoeuvring. Safety of machinery - Part 3: Requirements for the location and operation of actuators.

- UNE-EN 614-1:2006+A1:2009 Safety of machinery. Ergonomic design principles. Part 1: Terminology and general principles.

- UNE-EN 614-2:2006+A1:2009: Safety of machinery. Ergonomic design principles. Part 2: Interactions between machine design and work tasks.

- UNE-EN 842:1997+A1:2008: Safety of machinery. Visual danger signals. General design and testing requirements.

- UNE-EN 894-1:1997+A1:2009: Safety of machinery. Ergonomic requirements for the design of information devices and controls. Safety of machinery - Part 1: General principles for human interactions with information and command devices.

- UNE-EN 894-2:1997+A1:2009: Safety of machinery. Ergonomics requirements for the design of information devices and controls. Part 2: Information devices.

- UNE-EN 894-3:1997+A1:2009: Safety of machinery. Ergonomics requirements for the design of displays and controls. Part 3: Controls.

- UNE-EN 953:1998+A1:2009: Safety of machinery. Guards. General requirements for the design and construction of fixed and movable guards.

- UNE-EN 981:1997+A1:2008: Safety of machinery. Auditory and visual warning and information systems.

- UNE EN ISO 14119:2014: Safety of machinery. Interlocking devices associated with guards.

- UNE-EN ISO 13849-1:2008: Safety of machinery. Safety-related parts of control systems. Part 1: General principles for design.

- UNE-EN ISO 13849-1:2008/AC:2009: Safety of machinery. Safety-related parts of control systems. Part 1: General principles for design.

- UNE-EN ISO 13849-2:2008: Safety of machinery. Parts of control systems relating to safety. Part 2: Validation.

- UNE-EN ISO 13857:2008: Safety of machinery. Safety distances to prevent dangerous areas from being reached by the upper and lower limbs.

- UNE-EN ISO 14122-1: Safety of machinery. Means of permanent access to machines and industrial installations. Part 1: Selection of fixed means of access between two levels.

- UNE-EN ISO 14122-2: Safety of machinery. Means of permanent access to machines and industrial installations. Part 2: Working platforms and walkways.

- UNE-EN ISO 14122-3: Safety of machinery. Means of permanent access to machines and industrial installations. Safety of machinery - Part 3: Stairs, step ladders and guard-rails.

- UNE-EN ISO 14122-4: Safety of machinery. Means of permanent access to machines and industrial installations. Part 4: Fixed ladders.

- UNE-EN 14159:2008: Safety of machinery. Hygiene requirements for the design of machinery.

- UNE-EN ISO 14738:2008: Safety of machinery. Anthropometric requirements for the design of workstations associated with machines.

- UNE-EN 60947-5-1:2004: Low Voltage Switchgear. Control circuit devices and switching elements - Part 5: Control circuit devices and switching elements. Section 1a: Electromechanical control circuit devices.

Among the published non-harmonised standards directly affecting MV is the national standard for training: UNE 58451:2012. Training of operators of handling trucks up to 10 000 kg.

2.5. GUIDES AND TECHNICAL CRITERIA

This sub-section includes those documents that may be of technical-preventive interest, published either by official bodies or by research centres, prevention services, foundations, sector associations, etc., but which are not binding:

- Technical guide for the evaluation and prevention of risks arising from the use of work equipment, published by INSHT. Although the entire guide is of interest, the following deserve express mention: Appendix C "Checking lifting equipment and accessories", Appendix D "General requirements to be met by the instruction manual of a machine subject to the CE marking", Appendix M "Minimum criteria for the training of drivers of automotive work equipment" and, finally, Appendix N "Criteria for the lifting of persons with equipment designed for the lifting of loads and on working platforms associated with such equipment", the aim of which is to prevent the inappropriate use of equipment for lifting loads.

- Machinery verification guide, published by the Fundación Laboral de la Construcción.

- Prevention Technical Note No 214: Forklift trucks. Published by INSHT.

- Prevention Technical Note No 713: Self-propelled forklift trucks (I): Basic knowledge for risk prevention. Published by INSHT.

- Prevention Technical Note No 714: Self-propelled forklift trucks (II): Basic knowledge for risk prevention. Published by INSHT.

- Prevention Technical Note No 715: Self-propelled forklift trucks (III): Basic knowledge for risk prevention. Published by INSHT.

3

ANALYSIS OF CLAIMS. MOST FREQUENT ACCIDENTS

INTRODUCTION

In order to determine the number of TM accidents and which are the most frequent accidents during the use of this equipment, data from the State Observations on Working Conditions for the years 2008 to 2012 have been analysed. Above all, it should be noted that no specific data are available for self-propelled variable-range trucks. This is due to the fact that, when observing the material agents that can be collected in the current accident report model, it is only possible to determine whether it is a forklift truck but without knowing what type of truck it is. Selecting as Material Agent associated with Specific Physical Activity code 11.04.02.00, for the years 2008 to 2012, the following data have been extracted:

The total number of work-related accidents that occurred between 2008 and 2012 with this material agent associated with specific physical activity was 6,373 accidents, of which 4,573 were associated with the form or contact that caused the injury. Graph 1 shows the distribution by year.

Regarding the activity sector of the work centre where the accident took place, we can observe in table 1 that 4.71% of the accidents occurring with forklifts were, on average, in work centres in the Construction sector. Although it is true that table 1 shows a reduction, both in number and in percentage, in centres in the Construction sector with respect to all sectors, this does not imply that better prevention is being done, since it is possible that in those years the weight of the sector in the use of this equipment has decreased more than in other sectors.

Less than 1% of accidents are fatal, but 2% of accidents have serious or fatal consequences.

In view of the data on location, type of injury, etc., which are not reproduced here, and taking into account the daily experience with this type of equipment, the accidents that could most frequently occur during the use of TM are described below.

3.2. OVERTURNING OF THE TELESCOPIC HANDLER

The first of the type accidents is the MT overturning1, the load falling, the telescopic arm and the whole structure of the chassis until its impact with the ground.

There are different causes for this accident, among them can be mentioned:

- ➡ Failure of some structural element of the base in an unexpected way due to erroneous design, lack of maintenance or incorrect maintenance or due to overloading.
- ➡ For not respecting the rules of use regarding the stability of the terrain, maximum authorized weight, maximum wind speed, maximum inclination of the base, etc.
- ➡ For collision with another machine or object and loss of equilibrium, among others.

The severity of the injuries will depend on many factors: the existence or not of a tip load, the height of the arm at the time of the accident, objects on which it falls (for example: steel frames, materials, vegetation, etc.), the solidity and resistance of the TM, the physical condition of the worker, etc.

3.3. ENTRAPMENT WITH ELEMENTS OF THE TELESCOPIC HANDLER: STABILISERS

Among the mechanical hazards of nests in the UNE-EN ISO 12100 standard is the danger of entrapment and/or crushing with moving parts of the machines. In the case of MV, there are different mobile elements that can trap workers between elements of the machine itself. The most obvious example is the trapping by the arm which, through its movement, raises or lowers the load. If the worker is operating from the cab, he is not in a risk zone, but he is when maintenance work is carried out on the hydraulic system of the lifting system. In this case, unintentional operation, system failure or failure to take adequate measures to prevent untimely start-up can result in an accident causing serious injury or even death to the worker.

It is also possible that the feet may become trapped between the stabilisers and the ground when the stabilisers are unfolded. It would also not affect the worker in the driving position, but it would affect other workers who are in the vicinity or who are carrying out maintenance work.

3.4. FALLING LOAD

When handling work equipment, the possibility of harming other workers who may have nothing to do with the work being done with the equipment in question should be kept in mind. An example is the damage suffered by workers or other people in the vicinity of the TM.

This is a common type of accident that affects third parties, either the company, other concurrent companies or people completely unrelated to the work, such as pedestrians.

3.5. ELECTRICAL CONTACT BY CONTACT OF THE TELESCOPIC HANDLER WITH LIVE PARTS

As a general rule, this type of equipment has electrical continuity between all its elements so that, if any element comes into contact with a live electrical line, all the equipment would be live. This fact causes a type of electrical contact accident that usually has fatal consequences; it happens when the arm comes into contact with a power line, the current goes to the metal elements and to the worker, who will suffer injuries by electrical contact.

Although less likely, direct contact of the worker with the power line may also occur.

There are several factors that influence the effects of electric current (either directly or indirectly) on the human body, although, if contact occurs with a high voltage line, some of them may be neglected; these factors are as follows:

- ➡ The intensity of the electric current.
- ➡ The duration of the electrical contact.
- ➡ The resistance of the human body.
- ➡ The applied voltage.
- ➡ The frequency of the electric current.
- ➡ The path of the electric current through the body
- ➡ The responsiveness of people

3.6. HITTING OR HITTING THIRD PARTIES

This type of accident is less common than in operations with other types of vehicles, mainly due to the low speed of movement of the MT, but in any case it is possible that during the movement of the MT workers may be run over who are in their trajectory. Precisely its low speed can cause an excess of confidence in the workers who are near the machine and the hit occurs with the wheels or tracks of the platform, causing injuries to the feet or legs of the worker hit.

3.7. FALLS AND BLOWS WHEN ENTERING OR EXITING THE CAB

Generally, due to the lack of planning in certain maintenance tasks or because productive criteria take precedence over preventive ones, tasks are carried out that lead the worker to the need to quickly enter or leave the MV cabin to carry out other work without due precaution. This entails the risk of falling from height.

3.8. DAMAGE DURING TESTING AND CHARGING OF BATTERIES

Checking the state of the batteries is one of the maintenance tasks to be carried out prior to the use of the MV with this power supply system, in the same way as for platforms powered by a combustion engine, although in this case the verification is less conditioning for its use. During this task, the necessary precautions must be taken so that the worker carrying out the operation is not damaged either by the battery acid, or by an explosion when a potentially explosive atmosphere is generated, or by an electrical contact direct to the terminals or indirect with metallic elements accidentally put in tension, with power cables, etc.

The load check must be carried out with a densimeter or acid weigher or with a multimeter that has this function. Use of the multimeter will avoid the risk of damage from contact with battery acid.

The battery should be charged with a charger suitable for the type of battery to be charged, preferably chargers with a charge limiter to avoid overcharging the batteries.

The batteries should be charged in well-ventilated places to avoid the inhalation of vapours and the formation of potentially explosive atmospheres. The battery compartment flap must remain open throughout the charging process.

3.9. DAMAGE DURING ASSEMBLY AND DISASSEMBLY OF IMPLEMENTS

Due to the need to change some type of MT implement, the worker may be subject to a risk of muscle overload or falling objects. In this case, unintentional actuation, system failure or failure to take adequate measures to prevent untimely start-up can result in an accident causing serious injury or even death to the worker.

3.10. DAMAGE DUE TO LIFTING WORKERS ON FORKS OR IMPROVISED PLATFORMS

The current Machinery Directive 2006/42/EC makes a clear distinction between the requirements for machines for lifting loads and those for machines for lifting or moving persons. The Directive itself, in its recital, states that "this Directive should not apply to the lifting of persons by means of machinery not designed for that purpose".

Royal Decree 1215/1997 in Annex II section 3 literally states: "The lifting of workers shall only be permitted by means of work equipment and accessories provided for this purpose".

As a general rule, to lift workers only work equipment specifically designed for lifting people should be used, such as the silver forms of mobile elevators of personnel (PEMP), the stacker cranes with operator on board or other specific types of industrial forklifts. An MT could be used if the manufacturer has designed it for use with the accessory in question and certifies it.

However, where, exceptionally, work equipment not intended for that purpose is to be used for that purpose, appropriate measures must be taken to ensure the safety of workers and to ensure adequate surveillance.

The WG of RD 1215/1997, published by INSHT, dedicates its appendix N to establishing the "Criteria on the lifting of persons with equipment designed for the lifting of loads and on the working platforms associated with such equipment". In addition, the INSHT Prevention Technical Notes (NTP) 955 and 956 establish criteria on platforms for the lifting of persons coupled to load lifting equipment.

During the stay of workers in work equipment intended to lift loads, the control post must be permanently occupied. Elevated workers must be provided with a safe means of communication and must be evacuated in the event of danger.

Exceptional circumstances exist in which equipment other than that specifically designed for lifting persons must be used:

- When it is technically impossible to use specific equipment,
- When using such equipment exposes people to a greater risk, for the evacuation of persons in case of emergency.

They cannot be considered as exceptional routine, repetitive or foreseeable operations such as:

- Lifting people from one level to another;
- Repair of public or private lighting;
- Access to storage areas for order picking;
- Manual handling of materials at height;
- Installation, assembly or dismantling operations at height;
- Other work at height, occasional, for cleaning, maintenance, etc.

In addition, in these exceptional situations:

- There must be a supervisor (preventive recourse).
- The operator must be permanently occupying the command post the operator, signalist and supervisor must not perform any other task.
- There must be secure means of communication.
- The evacuation procedure must be provided for.

Therefore, the use of MV for lifting workers is restricted to certain exceptional situations. The risks associated with the misuse of MV under these conditions are:

◉ Fall of the platform with people inside due to:

- Rollover of equipment, in the case of forklift trucks due to overloading, incorrect driving or translation, etc., carrying out work, movements or turns on slopes, collisions or blows against other vehicles, movements on uneven terrain.
- Loss of attachment of the platform to the lifting equipment due to the absence of means of attachment or incorrect design of the same, insufficient mechanical strength, overloads, poor maintenance, errors in the assembly or attachment of the platform to the equipment.
- Faults in the lifting mechanisms of the equipment (cables, chains, nails, etc.), in the control or energy supply systems, or incorrect use of such mechanisms or control systems.

4

APPLICABLE PREVENTION AND PROTECTION MEASURES AND PREVENTION OF FREQUENT ACCIDENTS

- Falls to different level of people while they are on the silver form or basket due, in addition to those previously described, to:

    - Lack, insufficiency, science or damage of the means of collective protection or lack of maintenance of the same.
    - Control errors which cause the platform to be tilted unduly.
    - Workers leaving the platform to carry out work or gain access to areas. elevated, with risk of falls to different levels.
    - Effect catapults when released untimely after hooking against a fixed obstacle.

- Fall of objects, tools or other utensils on people or equipment located in the vertical of the area of operation due to:

    - Undue openings in the platform due to the absence of science, lack of resistance or maintenance of the means of collective protection of the platform.
    - Operations in which such objects, tools or utensils are fastened and used beyond the perimeter of the platform where the operator is located and the fastening or grasping of the same is not correct.

- Trapping of extremities between some part of the platform and parts of the work equipment due to: Operator positioning errors, accessible mobile equipment elements.

- Trapping between some part of the equipment and the floor due to: Inclination or overturning of the equipment for various reasons.

- Electrical contact with overhead power lines due to: Working in the vicinity of live power lines.

- Strikes by people or the platform/basket against moving or fixed objects located in their position vertical due to:

    - Incorrect use of the equipment.
    - Lack of order and vertical cleaning of the work area.
    - Lack of superior protective structure if the site requires it (places with beams,…).

4.1. APPLICABLE PREVENTION AND PROTECTION MEASURES

4.1.1. EXTERNAL INSPECTION, WALK AROUND OR TRANSIT PRIOR TO START-UP OF THE TELESCOPIC HANDLER

Before using any work equipment, it must be verified that its protections and conditions of use are adequate and that its connection or start-up does not represent a danger for third parties, as this is established in Royal Decree 1215/1997 in its annex II.1.4. For this reason, a daily inspection must be carried out before use in any work equipment. This type of inspection should not be confused with the more specific checks that must be carried out periodically, such as, for example, those established in Table C3 of Appendix C "Checking of lifting equipment and accessories" of the new Technical Guide for the evaluation and prevention of risks relating to the use of work equipment, published by INSHT.

This is a very important inspection as it is the one immediately prior to use. The terms "Walk around" or "Transit" are used in aviation to refer to this visual external inspection before the take-off of the aircraft: it is a quick, simple, systematic inspection, not anarchic, which prevents any element from going unverified. The secret lies in adopting a routine of beginning, end and points to verify, which implies:

- Always start the inspection (without conditions) from the same place.
- Carry it out in the same direction of rotation,
- Reviewing the same points and
- Always ending up in the same place.

In a nutshell, the inspection should include as a minimum:

- Visual inspection of welds to locate deterioration or other structural defects.
- Visual inspection to verify the absence of leaks in hydraulic circuits.
- Visual inspection to verify absence of damage to wiring and electrical connections.
- Check condition of tires, brakes, batteries and motor(s).
- Check the operation of the control systems.
- Locate emergency controls.

In addition, within this inspection, the route and working area of the MV should also be checked for holes, unevenness, gullies, obstacles, state of the ground, presence of overhead or underground electrical cables, order and cleanliness, and, in general, traffic and safety rules and the presence of signs, warnings and other information.

4.1.2. ACTIONS AND CHECKS PRIOR TO CARGO HANDLING

Actions

The first action, in any case, is to read the manufacturer's instruction manual and the work procedures established in your company. Do not begin use (see definition of "use" in Royal Decree 1215/1997 of 18 July) without ensuring that you have understood these documents.

The employer shall only permit use by suitably qualified and authorized personnel who have demonstrated that they have understood the foregoing documents. No operator should assume responsibility for operating the machine without having received appropriate training.

The operator must read and observe all warnings, cautionary notes and operating instructions printed on the machine and in the operating instructions. Both the operator and his supervisor must take all necessary safety measures to avoid all foreseeable risks in the work area; if they detect risks not contemplated in the work procedure, they must inform their superiors and, if appropriate, the Prevention Service for the correction of the procedure (it is advisable that the facts that must be communicated to the SP are established beforehand. See pages 14 and 15 of the Technical Guide for the Integration of Occupational Risk Prevention, published by INSHT).

In addition, as established in Annex II section 3.2.e) of Royal Decree 1215/1997, all lifting operations must be correctly planned, adequately supervised and carried out with a view to protecting the safety of workers.

The initial planning to ensure that the lifting equipment that is provided is suitable for the task includes:

- Mass, shape, center of gravity, grip points;
- Initial and final position of the load;
- Frequency of use;
- Environmental conditions;
- Competition of two cranes (each with a nominal capacity of 75% of the load to be lifted);
- Operator training.

In turn, task-specific planning should contain at least the following actions:

- Select the appropriate lifting accessory;
- Estimate load stability conditions;
- Perform a lifting test;
- Avoid uncontrolled movements of the load;
- Check that the load is securely seated;
- Proximity hazards (power lines, workers, other work equipment...)
- Monitoring of operations (preventive recourse) Not to be used:
- Use the machine with wind speeds higher than the maximum indicated by the manufacturer of the equipment.
- Operate the arm if it is on a vehicle for transport.
- Use the machine outside the temperature range indicated by the manufacturer.

You must:

- Use the safety belt and personal protective equipment specified by the manufacturer or made mandatory as a result of the risk assessment.
- Climb to the MV following the "Three Points of Contact" technique and facing the machine. The "Three points of contact" technique consists of two hands and one foot or one hand and two feet in permanent contact with the machine when entering or exiting the machine.

Checks:

- ✓ Check the possible existence of high voltage electrical conductions in the vertical of the equipment or in the immediate vicinity. The safety distances must be maintained, the conductors must be insulated or the supply must be cut off (if possible) while the work is being carried out. If work is to be carried out beyond the safety distance limits and the supply cut-off is not possible, the use of insulating arm MV is recommended.
- ✓ Check the circulation of machines, such as cranes or other public works machinery, in the immediate vicinity.
- ✓ Check the condition and leveling of the support surface of the equipment.
- ✓ Check that the total mass to be loaded does not exceed the maximum working load.
- ✓ Si the MT has stabilisers, check that they have been deployed in accordance with the manufacturer's instructions and that no action can be taken on them while the MT is not in use. In the transport position or within the position limits for that operation.
- ✓ Check the state of the protections and of the cabin.
- ✓ Check that the working area has been delimited in order to prevent people not involved in the work from staying or circulating in the vicinity.
- ✓ Check that repairs and maintenance have been carried out. The machine must not be started up unless repairs and maintenance have been carried out in accordance with the specifications and calendar of the manufacturer or procedure of the company (see art. 4.4 of Royal Decree 1215/1997, of 18 July).

It is recommended to perform a function test before using the MV in order to verify the handling and safety functions.

4.1.3. RULES WHEN MOVING, MOVING OR DRIVING THE EQUIPMENT

With regard to the working speed of MOTs, Royal Decree 1215/1997, establishing the minimum health and safety provisions for the use of work equipment by workers, in annex 1, section 2, point 1 a) "Conditions for the use of mobile work equipment, whether self-propelled or not", indicates that mobile work equipment with transported workers must be adapted in such a way as to reduce the risks for the worker or workers during the journey. This includes speed limitation, i.e. the speed at which mobile equipment moves should be limited in cases where sudden accelerations or decelerations and excessive speed may present a risk to the persons being transported.

With regard to the use, in Annex 2, paragraph 1, point 8 "General conditions for the use of work equipment", it is clarified that work equipment must not be subjected to excessive loads, over-pressures, speeds or stresses which could endanger the safety of the worker using it or that of third parties. Annex 2, paragraph 2, point 2, "Conditions for the use of mobile work equipment, self-propelled or otherwise", stipulates that when work equipment is maneuvered in a work area, appropriate traffic rules must be established and respected.

It is therefore the employer who, on the basis of the specific risk assessment for the particular task and taking into account the conditions of the task, the characteristics of the workplace and the instructions and recommendations of the manufacturer of the equipment, must lay down road traffic regulations and a maximum working speed which guarantee the safety and health of workers.

In the case of forklift traffic on public roads, the legislation on traffic, motor vehicle traffic and road safety must be respected.

In general, it is recommended to drive at a maximum of 10 km/h inside the premises and 20 km/h outside.

There are different systems that can help improve visibility during the handling of MTs, for example:

- Convex mirrors, which can provide additional visibility on the sides of vehicles and at the rear where the vehicle can be maneuvered. In this case, operators should be aware that the image provided by a convex mirror is distorted and that the more convex the mirror, the greater the distortion. This can increase distance estimates, leading to risky situations. In addition, images may lose reliability due to vehicle vibrations.

- Closed circuit television, consisting of a series of cameras and a monitor, to allow the operator to see at various blind spots.

- Sensors and detectors, which can give an acoustic and/or visual warning to the operator or stop the machine when an object is detected near the rear of the vehicle.

The following are some general rules when moving, moving or driving the equipment:

- Observe the appropriate traffic regulations.

- When driving, special attention must be paid to possible obstacles on the vehicle machine and its surroundings, especially in the direction of movement.

- Ensure that there are no persons, holes, potholes, abrupt unevenness, obstructions, dirt or objects that may be concealing holes or other dangers on the intended route.

- In the event of a rollover, remain seated in the seat with the seat belt correctly fastened (or other equivalent restraint system) and do not attempt to get out of the seat cabin.

- Circulate whenever possible with the arm in the lowest possible position (with and without load).

- Make sure to move the machine on level surfaces and with sufficient strength. Especially on non-permanent floors, bridges, trucks or other surfaces. To avoid tipping, do not drive on soft surfaces.

To stop the machine at high speed, first reduce it to low gear.

- For driving on slopes, use only the short gear.

- Climb and descend slopes with the "heavy end" of the MT facing the top of the hill. (Without load, the "heavy end" is the rear, and with load it is the other way around).

- Do not use high gear in restricted or narrow areas or when driving in reverse.

- When visibility is limited, another person will be placed in an advanced position to give instructions or warn the operator of dangers.

- Make sure that all non-working personnel are within a safe distance according to the manufacturer's instruction manual.

- The required braking distances at high or low speeds must be taken into account when moving.

- The MV must not be handled in a reckless or distracted manner.

- Do not overload the arm, e.g. mass stockpiling of building materials should be avoided. According to Royal Decree 1215/1997 Annex II.1.8, "Work equipment must not be subjected to excessive loads, over-pressures, speeds or tensions that could endanger the safety of the worker using it or that of third parties".

- Any anomaly detected by the operator must be communicated immediately and rectified before continuing the work. According to Royal Decree 1215/1997 Annex II. 1.4, "The equipment of shall cease to be used in the event of deterioration, breakdown or other circumstances which jeopardise the safe operation of the machinery".

- If the MV's propulsion system is combustion, it must not be used inside enclosed spaces, unless they are well ventilated. According to the Royal Decree 1215/1997 in its Annex II.2.5, "Mobile work equipment equipped with a combustion engine must not be used in work areas, unless a sufficient quantity of air is guaranteed in such areas that does not pose a risk to the safety and health of workers".

- In the event of a rollover, remain seated in the seat with the seat belt correctly fastened (or other equivalent restraint system) and do not attempt to get out of the seat. cabin.

4.1.4. RULES AFTER USE OF THE TELESCOPIC HANDLER

The prevention of accidents during the use of MTs does not end when the operator stops the equipment and descends from it. It is necessary to ensure that such equipment does not present risks while not in use and that no unauthorized person will be able to handle it. Some recommendations to take into account after using the MT are the following:

➡ At the end of the work, the machine must be parked properly and safely.

➡ All the contacts must be closed and the immobilization verified, shimming the wheels if necessary.

➡ Clean the arm of grease, oils, etc. deposited on it during work. Special attention should be paid to the use of water so as not to affect the wiring of the arm or the obligatory lubrication areas for the correct functioning of the mechanisms.

➡ Place an indicator out of service and remove the ignition keys by depositing them in the place designated for this purpose. It is possible to prevent the unauthorized setting at sea of a self-propelled work equipment if it is fitted with a key or starting device or an access code, which is available only to authorized persons.

4.1.5. INSTRUCTIONS AND SIGNALLING MANUAL. ACCESSORIES

As established by the LPRL in its article 41 "Obligations of manufacturers, importers and suppliers", the machinery must be supplied with the information indicating the correct way of use by workers, the additional preventive measures to be taken and the occupational risks involved both normal use and improper handling or use.

At present, any TM placed on the market and made available in the European Union must be accompanied by an instruction manual. In this sense, Royal Decree 1644/2008 establishes in its Annex I point 1.7 the essential requirements that must be met in terms of information. As a general rule, information and warnings on the machine should preferably be provided in the form of pictograms or easily understandable symbols (see Appendix 2 at the end of the document). When placed on the market and/or put into service in Spain, each MT must be accompanied by an instruction manual, at least in Spanish. In the latter case, the translation must be accompanied by an "Original Manual".

The general principles for drafting the manual, as well as the minimum content of the manual, are set out in sections 1.7.4.1 and 1.7.4.2 of that Annex. In addition, the Technical Guide for the assessment and prevention of risks relating to the use of work equipment, published by INSHT, includes Appendix D "General requirements to be met by the instruction manual of machinery subject to the CE marking". It should be remembered that, even if the machine does not bear the CE marking, it is compulsory to have an instruction manual for the purposes of use by workers. If necessary, the instruction manuals for equipment subject to the CE marking could be used as a guide to establish the indications concerning the use of similar "old" equipment whose manual is inadequate or unavailable.

According to standard UNE-EN 1459:2000+A3:2012, point 7 "Information for the user", the MV must have:

Instruction manual

An instruction manual written in one of the languages of the European Union must be supplied to the user with each trolley and removable accessory. If this language is not the language spoken in the country where the forklift is to be used, an additional translation must be provided to the user.

On the other hand, the workshop manual intended for use by specialist personnel, either from the manufacturer or its authorized representatives, is sufficient if it is written in one of the languages understood by these personnel.

These instructions must contain at least the following information:

- Information relating to the normal use of the truck and its field of application:
    - Information on prohibited uses of the forklift.
    - Information on the use of the equipment supplied with the forklift.
    - Information on the climatic conditions for which the forklift has been designed wheelbarrow.
    - Prohibition of use in hazardous atmospheres for which the truck has not been designed.

- Forklift information:
    - Description of the forklift, its equipment and the equipment supplied to be used in conjunction with the forklift.
    - Description of safety installations and warning plates.
    - Description of the wheels.
    - Reference of the tires that are mounted on the front and rear wheels.
    - Brands, types of tyres that can be used and required inflation pressures.
    - Marks, types of hard or elastic tyres that can be used alternately.
    - Information on the vibrations transmitted by the forklift to the hand arm system or to the operator's full body.

- Information on the noise emitted by the forklift.
- Information regarding the capacities and other performance of the forklift.
- Information on truck dimensions.
- Information regarding the use of the safety belt(s).
- Instructions for adjustment of the operator's seat.

- Information regarding the actual use of the forklift:

  - Information on the qualification and necessary training of the driver and, provided that it is on the necessary personal protective equipment.
  - Information on residual risks.
  - Information on the daily checks to be carried out before the start-up of the system.
  - Information on control organs and indicators.
  - Instructions for trolley start-up, operation and braking.
  - Information on load handling.
  - Information on slopes, loading bays and load lifting.
  - Information regarding the safe parking of the forklift.
  - Information regarding special risks arising from the use of accessories and their assembly.
  - Information regarding the possible displacement of the centre of gravity of the cargo (containers).

- Information on the installation, maintenance and recharging of accumulator batteries in the case of electric forklift trucks:

  - Information on homologated batteries and their corresponding chargers.
  - Information on the weight of the batteries and counterweights if necessary.
  - Information on the safety rules applicable to batteries.
  - Information on battery installation and replacement.

- Information on fuel loading on trucks equipped with internal combustion engines:

  - Information on homologated fuels.
  - Information on precautions to be taken when handling fuel.
  - Information on fuel filling operations.

- Transport, storage and commissioning of forklift trucks:

    - Weight and dimensions.
    - Information on the transport, loading and unloading of forklift trucks.
    - Instructions for the assembly of the forklift and the assembly of equipment and accessories.
    - Information on functional tests.
    - Information on commissioning and checks to be carried out before the initial commissioning of the forklift.
    - Information regarding the towing of the forklift and, in general, the transport of damaged forklifts.
    - Instructions for immobilization and storage of forklifts for long periods.

- Instructions for maintenance and repair:

    - Information on the qualification and necessary training of personnel involved in maintenance and repair operations.
    - Instructions on the type of operations and their periodicity. Information on qualities and quantities required.
    - Information on approved spare parts.
    - Information on maintenance operations that can be carried out directly by the operator.
    - Information on maintenance operations to be carried out by a qualified technician.
    - Information on the filling of fluids (LPG, oil, batteries).
    - Drawings and diagrams that allow maintenance operators to carry out their work correctly.

Forklift Information Plates

Trolleys must be legibly and indelibly marked with the following minimum requirements:

- Company name and full address of the manufacturer and, where applicable, its authorized representative.
- Name of trolley.
- CE marking.
- Series or type designation.
- Serial number, if available.
- The year of construction, which is the year in which the manufacturing process has been completed.
- Empty mass of the prepared truck without removable accessories and without battery for electric trucks, but with forks or fixed accessories. The mass can vary from the marked figure by ± 5%.
- Rated capacity.
- Actual capacity at maximum lift height with distance from load centre.
- Actual capacity at other lifting heights and load centre distances, if applicable.
- Actual capacity with each detachable accessory at lifting heights and load center distances authorized by the manufacturer.
- On battery electric trucks, the maximum and minimum authorized masses of the battery and the voltage value.

Traction Battery Information Plates
Traction batteries must carry an identification plate in accordance with EN 1175-1.

Information plates for interchangeable equipment

Interchangeable equipment must be legibly and indelibly marked with the following minimum information:

- Name and address of the accessory manufacturer or its authorized representative.
- Model or type.
- Serial number and year of manufacture.
- Mass of the accessory with a permissible deviation between the actual mass and the indicated mass of ± 5%.
- Distance from the centre of gravity of the accessory to the front plate mounted on the trolley.
- Rated load capacity.
- In the case of hydraulically or pneumatically actuated attachments, the maximum pressure service recommended by the manufacturer.
- Warning: "The load capacity of the combination forklift and accessory must be respected.

Fork-lift truck load abacus

Every variable reach forklift with forks must have a durable material load abacus mounted in a suitable place to be read by the operator with information on nominal and effective capacities.
This load abacus may be combined with the nameplate.

Load Abacus of Interchangeable Equipment Forklift Trucks

If the accessories used on the trolley allow a uniform load for any working position or their conditions are not recognized by the longitudinal stability indicator mounted on the machine, an appropriate load diagram must be added to the trolley.

Marking the way the forklift is lifted

The points to be used for lifting the trolley must be clearly indicated on the trolley.

Tyre inflation pressure

The specified inflation pressure must be clearly indicated on the truck.

Filling orifices

Fuel or hydraulic oil filler holes must be clearly marked on the truck in accordance with ISO 3287.

Símbolos

Residual hazard warning symbols should be placed on the truck or accessory and in the vicinity of the area where this hazard may occur. These symbols shall conform to ISO 3287.

Language

If any of the above information is given in words, it must be written in a language understood by the user in the country where the wheelbarrow is used.

ORIGINAL INTERCHANGEABLE EQUIPMENT

It is common to find references in instruction manuals to the need to use only interchangeable equipment supplied by the equipment manufacturer. It must be clear that if a manufacturer only certifies its handler for certain interchangeable equipment, its instructions must be respected, especially bearing in mind that if this is not done, the equipment cannot be guaranteed to be safe, putting the worker's health at risk.

4.1.6. MAINTENANCE, PERIODIC CHECKS AND INSPECTIONS

There is currently no specific legislation in the field of industrial safety on maintenance, periodic reviews and inspections to be carried out on TM. It should be borne in mind that the Regulation on Lifting and Handling Devices does not have any complementary technical instruction (ITC) in force for this type of equipment during the entire period of use under such conditions as to satisfy the provisions of the second subparagraph of paragraph 1.

Such maintenance shall be carried out taking into account the manufacturer's instructions or, failing that, the characteristics of the equipment, its conditions of use and any other normal or exceptional circumstances which may influence its deterioration or misalignment.

Maintenance, repair or conversion operations on work equipment the performance of which involves a specific risk for workers may only be entrusted to personnel specially trained for this purpose.

With regard to the documentary record of the operations indicated, reference is made to the comments in the Technical Guide for the evaluation and prevention of risks relating to the use of work equipment, and specifically point 1.15 of Annex II of Royal Decree 1215/1997: regardless of whether the maintenance diary is a requirement imposed by specific regulations, it is good preventive practice to keep an up-to-date record of maintenance interventions, particularly for work equipment in which the risk assessment determines the existence of high risks (for example, machines in annex IV of Royal Decree 1644/2008, or work equipment in which a failure could lead to catastrophic consequences) or for safety components. A maintenance book would provide information for future planning and inform maintenance staff and others about previous actions taken. In addition, it can be a valuable tool for complying with the requirements of Article 5 (information and training obligations).

Royal Decree 1215/1997 also establishes the need to accompany the equipment with documentary evidence of the performance of the last check (article 4.4), understanding that it applies to equipment that can be used on a rental basis, transfer of use or to comply with the obligation to coordinate business activities.

In the publication "Guía de la Manipuladora Telescópica", published by the Confederación del Alquiler (CONFALQ) in 2012, and as a guideline, a table is shown which, without being binding, is intended to be a basic guide to maintenance instructions. Neumáticos

4.1.7. TRAINING OF THE FORKLIFT OPERATOR: TELESCOPIC HANDLERS

Royal Decree 1215/1997, of 18 July, establishing the minimum health and safety provisions for the use of work equipment by workers, based on articles 18 and 19 of Law 31/1995 (Law on the Prevention of Risks at Work), article 5 and annex 2, section 2 point 1, "Conditions for the use of mobile work equipment, whether self-propelled or not" establishes an obligation on the part of the employer to ensure that workers have received specific theoretical and practical training appropriate to the use of work equipment which requires particular knowledge of it. In addition, the employer must give written authorisation to the worker trained and authorised to use the fork-lift truck. The employer may carry out this training by his own means or by external means.

In this sense, some trade associations and the manufacturers of these work equipment themselves propose a series of training courses for the driving of certain self-propelled machines that include a certificate or card that, without being official, accredits an adequate knowledge in the handling of the same.

On this provision, INSHT has prepared a non-binding Technical Guide for the assessment and prevention of risks related to the use of work equipment, the purpose of which is to help formalise regulatory obligations by facilitating the technical application of legal requirements. Minimum criteria for the training of drivers of automotive work equipment are given in Appendix M of the Guide.

APPENDIX M:
MINIMUM CRITERIA FOR THE TRAINING OF DRIVERS OF AUTOMOTIVE WORK EQUIPMENT

Theoretical training:

- Legislation relating to automotive work equipment and the prevention of occupational risks.
- Definition of works: Types of equipment, description and possible applications.
- Identification of dangers (collisions, overturning, trapping, falling objects, electrocution, explosion, fire, projection of particles, noise, vibrations, etc.).

Specific preventive measures:

- Access
- Circulation rules
- Stability rules
- Protective devices
- Safety and signalling distances - Collective and individual protection
- Auxiliary means, equipment and tools (including interchangeable equipment):
- Work equipment tools.
- Maintenance rules and basic checks, manufacturer's manual, characteristics of the main elements, protection devices, documentation, lifting systems, etc.
- Verification, identification and surveillance of the workplace and its environment.
- Interference between activities.
- Rights and obligations.

Practical training:

- Contact with the work team.
- Preparation of the team for the work, including the assembly of interchangeable equipment.
- Practices of handling the equipment, for example: Daily and periodic safety checks.
- Exercises to stabilize the equipment on different types of surfaces.
- Movements of work equipment with load and in vacuum.
- Training in handling with load.
- Work with special dangers (trenches, proximity of power lines…).
- Simulation of risk situations.
- First aid and emergency measures.

In general, there are no specific regulations regarding the qualification or experience of the person or entity training in the use of forklift trucks and there are no national regulations regulating the requirements to be met by the person who handles or makes use of them. Collective bargaining agreements may contain regulations on aspects related to training in this field. Thus, for example, Article 160 of the Fifth General Agreement of the Construction Sector establishes the content of the training module for operators of lifting devices, setting its minimum duration at 20 hours. In addition, it determines the requirements for the homologation of training entities.

Article 160.- Training content for operators of elevators.

The training content for operators of elevating devices, whose module will have a minimum duration of twenty hours, is outlined in the following manner:

A. Definition of works.

- Types of machines and equipment, main components. Tower crane, forklift, winch, mobile lifting platforms, telescopic handlers, etc.

B. Specific preventive techniques.

- Application of the health and safety plan in the use of the machine or specific work equipment. Evaluation of risks in case there is no plan.
- Collective protections (placement, uses, obligations and maintenance).
- Individual protections (placement, uses, obligations and maintenance). - Specific operator training. Authorization of use.
- Signposting.

C. Auxiliary means, equipment and tools.

- Machine or work equipment tools.
- Maintenance and checks, manufacturer's manual, characteristics of the main elements, safety devices, documentation, lifting systems, etc.

D. Verification, identification and surveillance of the workplace and its environment.

- Risks and necessary preventive measures.
- Knowledge of the workplace environment (high voltage installations, load and range limitations). Planning of tasks from a preventive point of view.
- Location of the machine or equipment.

E. Interference between activities.

- Simultaneous or successive activities. Interference with other machines in the area (cranes). - Protocols of action of the operators in case of interferences.

F. Rights and obligations.

- General and specific regulatory framework.
- Organization of prevention.
- Promotion of awareness of the importance of getting involved in the prevention of occupational risks.
- Participation, information, consultation and proposals.

The national standard UNE-58451 "Training of operators of handling trucks up to 10,000 kg" has recently been published, which gives guidance on the training to be given, although it is not compulsory. This standard includes aspects such as: characteristics of the different participants (training entities, specialised entities that bring together various training entities, instructors, trainers and operators), contents (theoretical and practical), evaluation (theoretical and practical for the different types of machines), issuance and validity of certificates, registration and custody of documentation and evaluation of competence.

Apart from the training in Annex II 2, R.D.1215/1997 also establishes the general obligation in Article 5. Obligations regarding training and information: "In accordance with Articles 18 and 19 of the Law on the Prevention of Occupational Risks, the employer must ensure that workers and workers' representatives receive adequate training and information on the risks arising from the use of work equipment, as well as on the prevention and protection measures to be adopted in application of this R.D.".

The on-the-job training must be adequate and sufficient, focused on the job and must cover theoretical and practical aspects, as indicated in article 19 of the Law on the Prevention of Occupational Risks. This is the training that the worker must receive on the risks and conditions of the job where he carries out his work with the work team. The planning and design of this training must be carried out by the preventive organisation of the company, based on the results of the risk assessment of the workplace and taking into account the person who occupies it. In this respect, see section 4.2.3 of the Guide on Quality Criteria for Prevention Services, published by INSHT.

4.1.8. INFORMATION TO THE OPERATOR OF TELESCOPIC HANDLERS

Royal Decree 1215/1997, of 18 July 1997, establishes in paragraph 1 of its article 5 that, in order to comply with the provisions of article 18 of Law 31/1995 of PRL, "the employer shall ensure that workers receive adequate training and in formation on the risks arising from the use of work equipment as well as on the prevention and protection measures to be adopted in application of this Royal Decree".

In addition, paragraph 2 specifies that "Information, preferably provided in writing, shall contain at least the particulars relating to:

- The conditions and correct use of the work equipment, taking account of the manufacturer's instructions, and any abnormal and dangerous situations or forms of use which may be foreseeable.
- Any conclusions to be drawn from experience gained in the use of work equipment.
- Any other useful preventive information.

The information must be comprehensible to the workers to whom it is addressed and include or be presented in the form of information leaflets where necessary because of its complexity or infrequent use of the equipment. The information documentation provided by the manufacturer shall be made available to workers.

As MTs are complex and, in some cases, infrequently used equipment, it is particularly desirable that the information is presented to the worker in an understandable and easily accessible form in a timely manner. As stated in the Technical Guide published by INSHT: "in order to provide information to the worker, the employer must first take into account the written information provided by manufacturers and suppliers", this does not preclude supplementing this information with information leaflets summarising the basic safety concepts to be taken into account before operating a MT. Bulky manuals are unlikely to fulfil their function if the machine is to be used only for a few hours on a particular day of the year.

According to article 41 of the LPRL: "Manufacturers, importers and suppliers must provide employers, and employers must collect from them, the information necessary to ensure that the use and handling of machinery, equipment, products, raw materials and working tools takes place without risks to the safety and health of workers, as well as to enable employers to comply with their obligations to inform workers.

Bearing this in mind, and given that, by paragraph 2 of the same article, the employer must guarantee that the information is provided to the workers in terms that are understandable to them (an obligation that is also established, as we have seen, by paragraph 2 of article 5 of Royal Decree 1215/1997), it would be advisable for manufacturers, importers and suppliers to provide the training in such a way that the employer can in turn provide it in terms that are understandable to the workers.

4.2. PREVENTION OF FREQUENT ACCIDENTS

4.2.1. PREVENTION OF ROLL-OVER OF THE TELESCOPIC HANDLER DUE TO THE ACTION OF THE WIND

The best ally for the prevention of accidents at work is common sense and we must make use of it. All workers should be aware that a machine can tip over by the action of the wind and know, from the MT instruction manual, at what wind speed they should stop working with it. Although it is possible that MVs are equipped with some kind of measuring instrument and acoustic or luminous indicators, it is recommended that workers have an idea of what wind conditions exist in the place. For this we can use the well-known Beaufort Scale of Wind Strength that is included in some manuals of platform manufacturers. Knowing this scale and the maximum wind speed recommended by the manufacturer for the MV to be used at that time is a very simple and practical measure to avoid this type of accident.
A safe behavior implies avoiding the placement of elements in the structure or in the basket that could lead to an increase in the wind resistance of the whole. Therefore, the placement of posters or other elements that increase this resistance should be avoided.

4.2.2. PREVENTION OF ACCIDENTS DUE TO OVERTURNING OF THE TELESCOPIC HANDLER DUE TO STRUCTURAL FAILURE

As with any other type of machine or metal structure, MTs are not exempt from structural failure. Structural failures must not occur if the TM was designed correctly, if the materials used in its manufacture met the mandatory standards, if the factory execution of the joints was correct, and if periodic maintenance and repairs were carried out according to the manufacturer's instructions and by experienced personnel.
The consequences of a structural failure are fatal, so even if its probability of materialization is low, it deserves special attention. It is common in this type of accident for the structural failure to occur either because of a lack of proper maintenance, or because of erroneous repairs or repairs carried out with non-original, poor quality spare parts.

Starting from the fact that the design is compliant, as well as the materials and work in the factory, the best way to prevent this type of accident is to check the joints of the structure and chassis on a regular basis, as well as those of the elements of the hydraulic system, including pins, screws, etc. and identifying possible cracks, deformations or areas of oxidation.

4.2.3. PREVENTION OF ROLLOVER ACCIDENTS OF THE TELESCOPIC HANDLER DUE TO OVERLOADING OR FAILURE TO STABILISE THE LOAD

According to the harmonized Standard UNE EN 1459:2000+A3:2012, there are a number of parameters necessary for the manufacturer to designate the nominal capacity of the truck; it would be necessary for an MV operator to understand how these parameters influence the stability of the MV when handling a load.

Lifting equipment (for loads or people) is designed for a maximum working load and, in principle, by maintaining the equipment in an appropriate manner in accordance with the manufacturer's instructions, we are certain that there will be no formation, breakage or collapse if the maximum working load is not exceeded.

If we start from a correct design of the equipment, the next measure is to make sure that the operator of the equipment knows the load limits in any of their possible positions, and respects them. The operator must have at his disposal such information and have sufficient training to understand it and apply it in the development of his activity.

The INSHT Technical Guide indicates that, when there is a significant risk of overturning, deformation, breakage or collapse, etc., due to overloads, the work equipment should be fitted, depending on the maximum working load or the moment of overturning or, where appropriate, the type of application (lifting of loads or lifting of persons), with devices such as nominal load indicators (maximum permissible load), nominal load limiters and, where appropriate, overturning moment limiters. Indicating devices provide acoustic and/or visual warning when the safety lifting limits are reached and the limiting devices order the stopping of the dangerous movement of the equipment.

Therefore, knowing the load limits, understanding them, respecting them, considering the visual or acoustic indications of the panels and, very importantly, not overriding the limiters, will control the risk.

If it is not possible to have a nominal load value for all ranges, the capacity of the equipment should be reduced by applying a reduction factor and this value should be indicated by means of the corresponding marking. Where this is necessary, it should only be done by competent personnel and always contacting the equipment manufacturer, importer or supplier beforehand for information.

4.2.4. PREVENTION OF ROLLOVER ACCIDENTS OF THE TELESCOPIC HANDLER DUE TO FAILURE OF STABILISATION.

MTs may or may not have stabilisers, but in either case stability depends, among other factors, on the resistant conditions of the soil on which they rest. If the ground is strong enough not to deform with the overall mass of the whole (mass of the MV and of the load) and its slope is lower than the limits indicated by the manufacturer, we can be sure that the MV will be stable.

The evaluation of the support surface must be carried out whether or not the MT has stabilisers. An MT can tip over when changing from hard to soft soil.

It is very important that, during use, the sensors indicating that the operating limits have been exceeded are used; in the event that these limits are exceeded, the operator must lower the arm and re-establish the arm level before continuing the work.

- Interlocking devices that prevent any movement not foreseen by the manufacturer, when the stabilisers are not used, or when they are not correctly positioned, or when the chassis is not within the inclination limits foreseen by the manufacturer.
- Or the instructions of the manufacturer of the equipment for the correct positioning of the stabilisers and the chassis within the inclination limits foreseen by the manufacturer.

The effectiveness of the stabilizers depends, in particular, on:

- Their design and construction and the maintenance of the same, with the n to avoid their collapse, due to the loads that they have to support, or to avoid that they move in an uncontrolled way, for example, by losses of fluid due to the rupture of the pipes or in the unions, or to the lack of watertightness between the plunger and the body of the hydraulic cylinders that drive them, etc..;

- The means available to regulate the inclination of the chassis of the work equipment and to check that it is within the inclination limits foreseen by the manufacturer, for example, by means of bubble levels;

- The correct positioning of them and that they are kept in this position by means of the appropriate stops or locking systems.

Among the general preventive measures to be applied, in relation to the factors that may affect the stability of the lifting equipment, the following will be considered: the resistance of the ground, the slope of the surface, the force of the wind, the load and the structural failures (which have been considered in the previous points).

In relation to the strength of the ground or surface on which the equipment has been placed, it may be necessary, for example, to place load distribution plates so that they can safely support the weight of the equipment and the maximum load to be lifted. Consideration should also be given to the need to reinforce the stability of the supporting surface under load conditions, e.g. if the equipment is very close to an excavation or trench, where the ground may sink slowly or collapse suddenly.

These measures may be of particular interest when using stabilisers, with which, in addition, in certain cases, it may be necessary to supplement the support bases of the stabiliser legs with additional bases appropriate to the intended use.

It should be noted that many basement floors, cellars and garages are not capable of withstanding the weight of some MTs and may collapse without warning. It would be advisable to have a report on the strength of the floor slab before laying an MV.

Paved areas may seem very safe, but sometimes the pavement may be on weak ground.

Sewers, underground gas, water or electricity pipes can be damaged by the mass of the whole and sink, causing the MV to lose stability and tip over. Special attention should also be paid to the presence of cracks in the ground, as they are an indicator of non-compacted fill terrains.

4.2.5. PREVENTION OF ACCIDENTS CAUSED BY CONTACT OR ELECTRIC ARC WITH LIVE PARTS

It has already been mentioned that the contact of MV with live elements can be fatal for the worker. The way to avoid such contacts is to keep the MV in any case at a distance greater than the minimum safety distance indicated by the manufacturer. This minimum safety distance depends on the voltage at which the elements of the electrical line or equipment are located. Table 5 shows an example of minimum safety distances to live parts, as stated in a manufacturer's instruction manual.

If these safety distances cannot be maintained due to the nature of the work to be carried out, insulating arm MV should be used so that the worker is not exposed to the risk.

In any case, we must haver taking into account the limit distances of the work zones listed in table 6 as they are established in the regulations applicable in Spain, by Royal Decree 614/2001, of 8 June, on minimum provisions for the protection of the health and safety of workers against electrical risk.

4.2.6. PREVENTION OF TRAPPING, CRUSHING AND COLLISION DAMAGE ACCIDENTS

It is particularly important to take measures to avoid the presence of body parts of workers or third parties in the danger zone because, as discussed in previous sections, there is a risk of entrapment and crushing between the moving parts of the structure and between these and the MT chassis, as well as with other stationary objects.

Although many of the measures have already been mentioned, we reiterate the most important ones to prevent these risks:

- Correct choice of MT: the selected MT must be suitable for the manoeuvres to be carried out when there are obstacles above it. It is just as wrong to use MVs close to their maximum range as it is to use MVs that are too large for the space in which you are going to work.
- Planning the movements to be carried out.
- Familiarisation with the equipment: it is of great importance that the operators are familiar with the equipment.
- Familiar with the team.
- Verification of the good condition of the work surface.
- Good visibility at height: you should not work with an MV if you do not have good visibility at height, as there is a risk of getting caught between the MV and higher structures. If good visibility is not available, work should be stopped until the situation is resolved.
- Distractions: Distractions can also be combated; one of the reasons for repeating training, mainly practical training, is to assimilate safe working procedures as innate. The insistence on the practice of safe working methods (training) reduces mistakes and distractions.
- Obstruction of controls.
- Do not bypass controls.
- Testing procedures of rescue.

4.2.7. PREVENTION OF ACCIDENTS DUE TO COLLISION WITH OTHER MACHINERY

Taking into account the scope of action of TM, it is more than likely that they are operating in the vicinity of other types of machinery. Any collision with another machine or element can cause the MT to overturn.

In the case of machines for lifting loads, Royal Decree 1215/1997 indicates in its Annex II section 3.2.a) that "If two or more work equipment for lifting non-guided loads are installed and or are assembled in a workplace in such a way that their fields of action overlap, adequate measures must be adopted to avoid collisions between the loads or the elements of the equipment itself". The technical guide of this royal decree, published by INSHT, indicates that the best way to avoid collision between lifting equipment or between its car gas is to position or install the lifting equipment so that its operating paths do not overlap. Among the equipment that may be affected are:

- Tower cranes
- Bridge cranes
- Mobile cranes
- Loader cranes
- Forest teams that manage and process trees in the work area
- MEWP

Likewise, MVs may collide with other equipment not dedicated to lifting non-guided loads, although, in this case, delimiting and signalling the traffic lanes, as well as the work area, it is unlikely that a collision will occur.

It is important that the minimum distances indicated in technical standards, such as UNE 58101-2 applicable to tower cranes, are respected. This avoids collision with the MV and its possible consequences. It is necessary to regulate the position of the travel limiting devices of the cranes, in such a way that their movement does not overlap with those of a MV working in a certain area for a sufficiently long time to compensate for this option.

Where it is impossible to apply such measures, other measures should be taken, for example some of those indicated in the above mentioned technical guide:

- Use a single signaler and have the MT controlled at all times.
- Maintain permanent and efficient communication between the different operators of each of the equipment that may overlap and collide.
- Conveniently mark the limits of the path to be followed by the car gas.

In those cases in which the risks can be aggravated or modified by the concurrence of diverse operations that are developed successively and simultaneously and that make necessary the control of the correct application of the work methods, the presence of the preventive resource will be resorted to.

4.2.8. PREVENTION OF ACCIDENTS DUE TO FALLING LOADS. LIFTING ACCESSORIES

In general, objects moved with the MV are bulky and/or heavy, and due to the large number of operations that can be carried out with them, it may be impossible to completely avoid the risk of objects falling, for example due to the possibility of axles that hold the load in position being broken, heat-shrinkable packaging, etc.; in this case, it is necessary to choose to delimit the work area in such a way as to prevent access to the hazardous area.

In other cases it is possible to completely avoid falling objects handled with the MV. For example, when the MV is used with the implement to turn it into a MEWP, it is possible to prevent objects from falling by applying a series of basic preventive measures such as the following:

- In order to avoid the fall of hand tools, there must be belts or other elements that allow the worker to store them safely while not operating with them. This avoids them getting into the pockets or holding several tools at the same time with the hands.
- Never leave the tools on the floor of the platform, this way we avoid that, by a blow of foot of the worker, they can fall.
- The platform floor must be fitted with a skirting board or perimeter protection to prevent objects from falling out of the passenger compartment (see the comments on the Technical Guide for the assessment and prevention of risks relating to the use of work equipment in section d) of point 2 of Annex I).

4.2.9. PREVENTION OF ACCIDENTS DUE TO THE LIFTING OF WORKERS ON FORKS OR IMPROVISED PLATFORMS

The way to prevent these accidents is to prohibit the lifting of workers both on the forks and other coupled elements not authorized by the manufacturer of the equipment. Workers may only be lifted with equipment specially designed to perform the function of lifting people.

Workers must be informed and trained on the risks posed by these practices; in addition, signs must be established prohibiting the lifting of workers with manipulators not designed for lifting people, and for which the use of MV for lifting workers is restricted to certain exceptional situations mentioned above.

In such exceptional situations, in addition to complying with the other requirements indicated in Royal Decree 1215/1997, a prior assessment of the risks and the adoption of adequate preventive measures would be necessary before carrying out the work, in accordance with section 1.3 of Annex II of the aforementioned Royal Decree and section 2 of article 4 of the Regulations on Prevention Services (Royal Decree 39/1997, of 17 January).

If the use is mixed, i.e. for the lifting of loads and for the lifting of persons, the basic machine must meet the requirements of the above mentioned directive for both functions and the platform which is connected to the basic machine must meet the requirements for interchangeable equipment, since it is used to carry out the function of lifting persons. It must therefore be compatible with the basic machine and have the appropriate controls (operating devices) and devices so that its movements and, where appropriate, those of the machine to which it is attached can be controlled from the platform itself. In this case, the assembly made up of the base machine and the platform must comply with all the relevant essential health and safety requirements of Annex I to Directive 2006/42/EC (which replaces Directive 98/37/EC), including those of paragraph 6, and it is this assembly which must be subject to the appropriate certification procedure, among those laid down by Article 12 of that Directive. If it is possible to lift people to a height of more than 3 meters, the intervention of a Notified Body is obligatory.

The corresponding EC declaration of conformity must state which type of platform is suitable for the base machine in question and, if applicable, the references of the body involved (name, address, certificate number, etc.).

If a platform fitted with suitable controls and devices is placed on the market separately, it must be accompanied by the corresponding EC declaration of conformity, which should include, among other information, the express mention of the machine or machines to which it could be fitted.
In accordance with the previous section, independently constructed platforms, which consist of a simple structure, designed to accommodate one or more persons, without the controls (actuators) and devices necessary to govern the movements of the platform itself and, in certain cases, of the machine to which it is attached, do not fall within the definition of machinery, safety components or interchangeable equipment (since their mere inclusion in a machine intended for lifting loads does not make it a machine for lifting persons) laid down by Directive 2006/42/EC and therefore do not fall within the scope of this Directive (see figure N1). Consequently, any mention of such a directive in the information used to present or market such products or any CE marking, or CE declaration of conformity with such a directive, is inappropriate.

In the Technical Note on Prevention (NTP) 955: Platforms for lifting persons coupled to equipment for lifting loads (I), published by INSHT, a series of recommendations are given on the exceptionality of the use of forklifts for lifting persons. It is indicated that:

- The user must ensure, in accordance with the recommendations of the equipment and platform manufacturer, that the platform is securely attached to the equipment forks.
- The parking brake must be applied and the transmission must be set to neutral. The driver must remain in the driver's seat for as long as the platform is operating.
- The places of intervention are limited toIn any case, those with variable reach should not exceed 6 m in height measured from the surface of the floor and the base of the silver form.
- The forklifts to be used may only be counterbalanced, retractable mast, variable reach and off-road trucks that comply with the following conditions:

    - Minimum rated load capacity: 1000 kg.
    - Total weight of the platform and payload: maximum 20 % of the nominal load capacity of the truck.
    - Equipped with two independent lifting devices (e.g. double chain).
    - Safety device to prevent the platform from falling in the event of hydraulic line breakage or hydraulic failure.

- It is recommended that the platform has an identification plate that provides the following information:

    - Name and address of manufacturer.
    - Serial number and year of manufacture.
    - Model and identification number.
    - Net weight of the platform, nominal capacity and dimensions and distance between fixing channels.
    - Maximum permissible load in kg.
    - No maximum number of persons to be transported.
    - Type of compatible forklifts.

The working area occupied by the forklift and platform must be delimited with cones, lights or signals whenever there is the possibility of approaching other vehicles or objects falling from the platform or because of the type of work being carried out. If necessary, any activity or operation that is being carried out in the vicinity of the platform should cease during the performance of work.

- The work to be carried out from the platform will be limited to the area delimited by the protections. In no case should the operator lean out or incline with part of his body outside the limits of the platform. Likewise, auxiliary elements (boxes, stairs, etc.) may not be used to gain height.

- All forklift operators as well as persons who must work on the platforms must be properly trained by providing complete instructions on the safe way of working, which should include the sequence of actions to be carried out in case of emergency, understanding as such sudden movements of the forklift or lowering of the platform among others possible.

- It is essential that the trolley is only used on good and horizontal surfaces. Operators should not forget that any slope can negatively affect the stability of the truck.

- In workplaces or areas subject to high noise a communication system, e.g. radio intercoms, should be available between the truck driver and the operator(s) on the working platform. In this case it will be necessary to have some complementary attention system such as a whistle or horn for an emergency. If signal systems are used, clear and specific signals previously known to all those involved must be used in accordance with the regulations established by RD 485/1997, on safety and health signaling.

- To carry out the different tasks the operator(s) located on the platform will have and use the PPE that are required and that will be determined by the prior and mandatory risk assessment.

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