

# MANUAL FOR THE PREVENTION OF LABOR RISKS FOR FORKLIFT TRUCKS



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**INTRODUCTION, OBJETIVES  
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## INTRODUCTION

To carry out the productive process of a company is necessary the movement of objects, products, loads, etc. The appearance of machines has decreased the worker's physical effort; The heavier loads are moved by mechanical means by means of forklifts and stacking machines.

Among the machines used, the forklift truck is one of the devices that have proven effective in internal transport and storage of materials and drivers perform an important task and great responsibility. These machines are extremely useful and safe as long as their maintenance and use are correct.

However, the handling of loads by forklift trucks has also introduced a series of risks that must be taken into account: overturning of the machine, load drop, knocks, entrapments, noise, (...), risks that the worker must know through the company.

The worker must be trained and informed of the occupational hazards in the forklift job, as required by Law 31/1995 on the Prevention of Occupational Risks. Without forgetting the knowledge about the care and maintenance of your vehicle, and the respect of safety and traffic regulations.

### REMEMBER !!!

***This manual is a simple and important guide for forklift operators in the professional category of forklift truck drivers, and for all those workers who, due to circumstances, may occasionally use forklifts, since the occasion does not exempt them from the obligations envisaged in the use and handling of forklifts.***



## OBJECTIVES

### 1. GENERAL OBJECTIVE

The objective of this course is to provide a better knowledge of the forklift as a work tool (what it is, how it is, limitations who owns, etc.); and how through its correct use you can learn all about forklifts, know their parts, the different types of trucks, their main features, their safety devices, the load and safety of forklifts and you will work the work area and safety with wheelbarrows.

The present publication aims, in short, to disseminate the basic principles of risk prevention in the use of forklifts. For this purpose, in addition to the preventive measures to be considered during the use of the equipment, those related to the loading units are included, which can cause the materials that are handled and those of the tools and implements that are attached to the trucks.

Likewise, it addresses the importance of knowing the particularities of each team, both those related to their daily use, and the obligation to know their capabilities and limitations.

For all this, it provides a better knowledge of these teams where the main risks to which they are exposed in the development of their daily work appear and the preventive measures that must be applied and taken into consideration to avoid them to the maximum.

## 2. SPECIFIC OBJECTIVES

This manual fundamentally pursues the following objectives:

- ✓ Know all the elements that make up the truck as well as its correct handling.
- ✓ Briefly describe the characteristics of these teams in their different versions.
- ✓ Know the labor safety regulations applicable to the handling of forklifts for its application: Law 31/1990 on Prevention of Occupational Risks and R.D. 1215/97 of Minimum Health and Safety Provisions for the use by workers of equipment and work machines.
- ✓ Identify the dangers associated with its use.
- ✓ Provide a set of preventive recommendations for the control of risk applicable to said hazards.
- ✓ Learn how to properly carry out the stacking of loads and their storage with the minimum risk for him and for other operators.
- ✓ Acquire the necessary skills in the handling of the truck to be able to solve quickly and accurately those situations that suppose an evident risk.
- ✓ Understand and use the operator's manual supplied by the truck manufacturer.
- ✓ Perform daily maintenance operations and be able to diagnose the possible causes that cause the most common breakdowns.
- ✓ Establish and implement the necessary criteria to direct the traffic of the trucks in the storage area and in the entire area of operations.

## UNIT III

### APPLICABLE NORMATIVE FRAMEWORK

#### 1. INTRODUCTION

Until a few years ago in our country nothing had been legislated regarding the constructive characteristics of forklifts, that is, there was no normative framework that defines and limits matters as important as constructive characteristics of the truck; what brought as a consequence that in the market a great variety of them existed depending on the construction requirements of the country of origin. Nor did they require special characteristics to the driver, except for those legislated in works of under eighteen years and women's work, aspects included in the Decree of July 26, 1957, B.O.E. of August 26 of the same year.

The incorporation of Spain to the European Economic Community, now the European Union, has brought as a consequence the incorporation by our country of all the Directives adopted by this supranational entity.

Result of this fact has been the appearance in the Spanish legislation of diverse normative, that regulate the conditions of hygiene that have to gather the forklifts, to know the Spanish legislation has diverse normative, that regulates the conditions of hygiene that have to gather the carretillas elevators Being the most important to work with forklifts, the following list of regulations (non-exhaustive relationship):

- ▶ Royal Decree 1435/92, of November 27, by which the provisions of application of Council Directive 89/392 / CEE relative to the approximation of the legislations of the member states on machines are dictated.
- ▶ Royal Decree 56/1995, of January 20, which modifies Royal Decree 1435/92, of November 27.
- ▶ Law of Prevention of Labor Risks 31/1995.
- ▶ Royal Decree 1215/97, of July 18, which establishes the minimum conditions of safety and health for the use by workers of work equipment.
- ▶ When working with forklifts, special attention must be paid to the Law on Prevention of Labor Risks 31/1995 and Royal Decree 1215/1997 on the use of work equipment.

## 2. LAW 31/1995 ON THE PREVENTION OF LABOR RISKS

The Law of Prevention of Occupational Risks has as its object the determination of the basic body of guarantees and responsibilities to establish an adequate level of protection of the health of the workers against the risks derived from the working conditions, remember the Rights and obligations of workers and entrepreneurs:

- ➡ The employer must comply with the obligations established in the regulations on prevention of occupational risks.
- ➡ In compliance with the duty of protection, the employer must guarantee the safety and health of workers at his service in all aspects related to work.
- ➡ The employer must develop a permanent action in order to improve existing levels of protection and have what is necessary for the adoption of preventive measures. The preventive action is planned by the employer based on an initial risk assessment.
- ➡ The employer must adopt the necessary measures so that the work teams are appropriate to the work that must be carried out. If the use of equipment presents specific risks, appropriate measures must be taken so that the use of the equipment is reserved for the trained personnel.
- ➡ Also the employer must provide the appropriate personal protective equipment for the performance of their duties and ensure the effective use of them when, by the nature of the work done, are necessary.

### 3. REGULATIONS THAT DEVELOP LAW 31/1995

In addition to Law 31/1995 on the Prevention of Occupational Risks, it is necessary to take into account a set of regulations that derive from the Law and that fix and specify the most technical aspects of preventive measures.

In the specific case of forklift trucks, the following list of regulations (non-exhaustive relationship) derived from Law 31/1995 Prevention of Occupational Risks must be complied with:

- ▶ Royal Decree 39/1997 approving the Regulation of Prevention Services.
- ▶ Royal Decree 485/1997 on minimum provisions regarding safety and health at work signage.
- ▶ Royal Decree 486/1997 minimum health and safety regulations in workplaces.
- ▶ Royal Decree 487/1997 on minimum safety and health provisions relating to cargo handling.
- ▶ Royal Decree 773/1997 on minimum health and safety provisions for the use by workers of personal protective equipment.
- ▶ Royal Decree 1215/1997 on minimum safety and health provisions for the use by workers of work equipment.

#### 4. USE OF WORK EQUIPMENT (R.D. 1215/97)

The one that has more incidence with respect to the driving of the forklift trucks, is the Royal Decree 1215/1997, of 18 of July, by which establish the minimum dispositions of hygiene and health for the utilization by the workers of the teams of work , highlighting:

- ➡ Driving must be reserved for workers who have received specific training for the safe driving of these work equipment.
- ➡ When a work team maneuvers in a work area, proper traffic regulations must be established and respected. Especially if the presence of people on foot is required in the working areas of the automotive equipment.
- ➡ Forklift trucks occupied by one or more workers must be conditioned and safe for all its occupants. The elevation of workers will only be allowed by work equipment and accessories provided for this purpose.
- ➡ Work equipment should be left unused if damage, breakdowns or other circumstances compromise the safety of its operation.

## 5. OBLIGATIONS OF EMPLOYERS AND WORKERS

Article 29 of the Law on the Prevention of Occupational Risks assigns the worker the obligation to ensure his own safety and health at work and for those of other people that may affect his professional activity.

In particular, workers according to their training and following the instructions of the employer must:

- ✓ Use suitably the machines, devices, tools, dangerous substances, transportation equipment and, in general, any other means with which it carries out its activity.
- ✓ Use and maintain correctly the means and protective equipment provided by the employer, requesting its replacement in case of deterioration.
- ✓ Do not put out of operation and use correctly the existing safety devices.
- ✓ Immediately inform your direct superior about any situation that, in your judgment, entails a risk to the safety and health of workers.
- ✓ Cooperate with the employer so that he can guarantee working conditions that are safe and do not entail risks for the safety and health of workers.



- ✓ Also the employer must provide the appropriate personal protective equipment for the performance of their duties and ensure the effective use of them when, by the nature of the work done, are necessary.
- ✓ Finally, it must adopt the necessary measures in terms of first aid, fire fighting and evacuation of workers.

In turn, workers have the right to effective protection in occupational safety and health, specifically to:

- ✓ Be informed and trained in preventive matters.
- ✓ Be consulted and participate in issues related to prevention of risks.
- ✓ Stop the activity in case of serious and imminent risk.
- ✓ Receive periodic monitoring of your health status based on the risks inherent in the work.

### **REMEMBER !!!**

***Failure to comply with the obligations regarding risk prevention shall be considered as a breach of employment for the purposes set forth in Article 58.1 of the Workers' Statute.***

# 2

## **DEFINITION, COMPONENTS AND TYPES OF FORKLIFT TRUCKS**

## INTRODUCTION

The forklift is a machine of generalized use in the industrial sector that allows the mechanized manipulation of the loads, allowing its elevation in height and its transport.

The tasks of handling loads in the work centers are carried out by operators through the use of forklifts and manual equipment (stackers, pallet trucks, etc.).

Among the automotive trucks are the counterweights, which are electric traction equipment or combustion engine that carry the load on the outside of the wheels so they need a special counterweight, used to load and unload trucks, as well as for other types of work, usually in wide aisle installations.

In addition, there are other variants of automotive trucks, those that do not need a special counterweight and can be used to work in narrow aisle installations because their total length is less than that of the equivalent counterbalanced truck.

## **UNIT I**

### **DEFINITION AND COMPONENTS OF TROLLEY**

#### **1. DEFINITION OF FORKLIFT TRUCK**

The forklift truck is a machine of generalized use in the industrial sector that allows the mechanized manipulation of the loads, allowing its elevation in height and its transport.

They are called automotive forklift trucks or elevators, all machines that move on the ground, motorized traction, wheels excluding those that roll on rails intended primarily to transport, push, pull or lift loads of any nature, directed by a driver who circulates on foot near the wheelbarrow or by a. In order to fulfill this function, an adaptation is necessary between the working equipment of the truck (implement) and the type of load. Also included in this concept are the trucks used for pulling or pushing trailers and loading platforms.

## 2. STRUCTURE AND COMPONENTS OF A FORKLIFT TRUCK

### A. STRUCTURE

- ➔ **Front:** mast with forks (flat, parallel and fixed length usually).
- ➔ **Central part:** driver's station.
- ➔ **Back:** counterweight.

### B. COMPONENTS

The main components of a forklift are the following:

- ➔ **Chassis or Frame:** Structure generally made of welded steel, on which all the components of the truck are installed with their loads and transmits its effect directly to the ground through the wheels (without suspension), **receiving and absorbing the loads and stresses that they originate during the displacement and handling of the load.**
- ➔ **Counterweight:** Mass fixed to the back of the frame, designed to balance the load on the counterbalanced truck.
- ➔ **Lift mast or telescopic arm:** Allow positioning and lifting of loads. The mast is formed by one or more racks, each with two parallel beams, between the beams the fork carriage slides. The mast can be moved from top to bottom, forward or backward: The masts can be:
  - ▶ Simple, to stack loads without exceeding 2 meters in height.
  - ▶ Telescopic, for stacking at high altitudes.
- ➔ **Forks:** The forks, fixed or mobile, are resistant elements that are enter under the load to be able to move it.
- ➔ **Fork carriage:** Plate fixed to the mast that allows the attachment and clamping of the forks or other implements. If necessary, a load-bearing backrest (fork plate) must be mounted behind the fork-plate to prevent the load from slipping on the operator.

- ➔ **Cargo handling accessories:** These are the complements (for example: tweezers, lateral displacements, spoons, elevators, etc.), which allows the grip and deposit of the load at the height and position chosen by the operator.
- ➔ **Motor and transmission group:** It is the set of elements that drive the axes and motor groups and directors. It includes thermal or electric motors and the different types of transmission, mechanical, hydraulic, etc.
- ➔ **Power supply system:** These are the fuel supply systems in the trucks with thermal engine and the traction batteries or the connection to the network in the electric trucks.
- ➔ **Steering system:** It consists of a steering wheel for the car-type steering in transported operator trucks or a rudder in operator trucks on foot. It can be mechanical, hydraulic or electrical.
- ➔ **Wheels:** It is the link between the machine and the floor that supports them, they can be:
  - **Pneumatics (with or without a camera)** its main characteristic is to absorb vibrations.
  - **Without air (solid or elastic)** whose lower bending gives it greater resistance to rolling and punctures.

It is necessary to maintain a correct pressure in the wheels in order to achieve the greatest surface contact with the ground. Poor contact with the bearing surface causes an increase in braking distance and significantly reduces the stability of the vehicle.

## REMEMBER !!!:

*The vibrations that occur in a truck are absorbed basically by two elements, the pneumatic wheels and the driver's seat.*

## **OPERATOR'S POSITION**

Centralize all command and control bodies. All functions must be clearly identified, visible, easily operable and ergonomic.

The position must be designed in such a way that it is impossible for the operator to accidentally contact the wheels or any aggressive moving part of the equipment itself and also to guarantee protection against exhaust gases. In him they are:

- ▶ The panel with the indicators.
- ▶ The steering wheel and controls.
- ▶ The ignition key.
- ▶ The seat that must be anatomical and equipped with suspension, adjustable and adaptable (to prevent vibrations from being transmitted to the operator since the trucks lack damping systems). It must allow its regulation in height and depth to, in this way, securely access the different mechanisms of the machine's drive.
- ▶ If the machine is equipped with a rollover protection structure, the seat must be fitted with a safety belt.

## **CONTROLS**

From the driving position it must be possible to maneuver all the control instruments necessary for the operation of the machine.

The pedals must have an anti-blazing surface and be easy to clean, and they must be arranged in such a way that there is a minimum risk of confusion.

## **SECURITY PORCH**

It is a resistant element that must protect the driver from falling load and overturning the truck. It can be covered with a vinyl surface against inclement weather. When there is a high elevation, they will have an air defense, which does not interfere with the visibility of the driver and whose resistance has been demonstrated by static and dynamic tests of the prototype.

It is mandatory, whenever there is a risk due to falling objects and in some cases if the cabin is closed it will be part of it.

## **HORQUILLAS HOLDER PLATE**

It is a rigid element, located in the front of the mast, which moves along with the loading platform, extends the support surface of the loads preventing it from falling on the driver.

## **BRAKES OF SERVICES, PARKING AND DEVICE OF INTERLOCKING**

All trucks must have an immobilization system and protection against involuntary maneuvers, are the service and parking brakes:

- ▶ **Service brake**, which is capable of stopping the vehicle, transporting the maximum specified capacity, while descending a ramp, or moving at the maximum nominal speed along a horizontal surface.
- ▶ **Parking or hand brake**, which allows to keep it immobile with its maximum admissible load, without the driver's help.
- ▶ **Interlocking device**. The truck must have an interlocking device, for example a key, which prevents its use by an unauthorized person

The hand brake and the service brake must be operated by independent systems.

## **PROTECTOR EXHAUST PIPE**

Insulating device that surrounds the exhaust pipe and prevents contact with it of materials or people avoiding possible burns or fires (only in the case of thermal machines).

Silencer with spark off and gas purifier: systems that stop and extinguish sparks of combustion and, in addition, absorb harmful gases to enable work in enclosed spaces.



## **ACOUSTIC WARNING AND LUMINOUS SIGNALING REVERSE**

Work equipment that, due to its mobility or the loads it moves, may pose a risk, for the safety of workers located in its vicinity, must be provided with acoustic warning signs, even if it never circulates outside the installation. Necessary to announce your presence in conflicting points of intersections with poor visibility. Its power must be adequate to the sound level of the attached facilities.

### **4. REQUIREMENTS TO THE MANUFACTURERS OF FORKLIFT TRUCKS.**

#### **INDICATOR PLATES**

All trucks must carry the following main indicator plates:

- ✓ Go with the CE conformity marking.
- ✓ Identification plate, where the manufacturer's name and data, load capacity and type and serial number are indicated.
- ✓ ✓ Load diagram or load capacity plate that allows to know the safe conditions of use, capacity of admissible loads, pressure of inflation of tires. Before moving with them, it is mandatory to check this diagram to avoid possible overturning of the equipment.

#### **REMEMBER!!:**

- ➔ ***It is important to check that the machine bears the nameplate of the manufacturer, the CE marking of conformity and the capacity plate of admissible loads for the actual conditions of use of the truck.***
- ➔ ***If an additional accessory is mounted on the truck, the identification plate of the accessory manufacturer, the load capacity of the accessory and, if applicable, the CE conformity marking must also be on it.***

## **INSTRUCTIONS MANUAL**

The manufacturer must deliver an "original" instruction manual with each machine and, at the time of entry into service, a translation into the official language of the country in which the equipment is used.

The manual must include all the necessary information for the correct and safe use of the machine, specifically information regarding installation, commissioning, use, maintenance, etc.

The instruction manual should always remain in good condition and with a copy of it located in the compartment of the machine, enabled for this purpose, to allow its consultation and information in any incident.

## **OTHER SPECIAL REQUIREMENTS**

Self-propelled handling trolleys that are intended to circulate on public roads must comply with the specific requirements cited in the Traffic Code. Among them, the circulation permit to request the respective competent authorities. If it is not registered, it is not compulsory but it must be borne in mind that the performance of the truck will depend directly on the characteristics of the installation and work area.

## UNIT II

### TYPES OF FORKLIFTS

#### 1. FOR THE TYPE OF ENERGY USED.

Forklifts can have two types of engines:

- ▶ **With a thermal engine**, they work with diesel engine, gasoline, liquefied gas (LPG), etc., they are wheelbarrows for outdoor and ventilated areas.
- ▶ **With an electric motor**, powered by accumulator batteries, they are own interior trolleys.
- ▶ **Mixed**, with thermal engine and electric drive or other variables.

#### 2. BY THE LOCATION OF THE LOAD.

**COUNTERWEIGHT OR VOLADIZED:** they are the most used are provided with a fork on which the load, palletized or not, is located in cantilever in relation to the wheels and balanced by the mass of the truck and its counterweight.

**NON-COUNTERWEIGHT TRUCK, RETRACTILES, STACKERS, ETC.:** Forklift stacker truck in which the load, transported between the two axles, can be cantilevered by forward of the mast, of the forks, of the fork arms or of lateral load, it is used for high stacking and storage.

#### **FORKLIFT FORKLIFF FOR STACKER OR FORKLIFT TRUCK (STORED ON THE LOAD OR "STRADDLE - CARRIERS"):**

Forklift under whose frame and supporting arms the load is placed, which the lifting system maintains and manipulates to lift, move and stack it. Normally used for the handling of freight containers.

### 3. FOR THE CHARACTERISTICS OF THEIR RUNNING TRAINS

Consider the address:

- ➔ A single traction motor.
- ➔ One traction motor for each wheel.
- ➔ Rear wheel as drive and directrix (lower turning radius).

### 4. FOR THE POSITION OF THE OPERATOR

- ➔ Transported operator sitting on the truck.
- ➔ Operator transported standing. Although in some cases it may have an auxiliary seat for temporary use by the operator, it is considered to be an operator standing on its feet.
- ➔ Operator on foot. Although in some cases a folding platform is available for the occasional transport of the operator, the truck is considered an on-foot operator.

### 5. FOR THE LOAD ELEVATION SYSTEM

**VERTICAL MAST:** The load is placed on a fork, platform or implement that mounted on the fork plate slides along vertical guides of several stages, by hydraulic systems, electrical, chains, cables, etc. raising or lowering the load.

**INCLINABLE AND TELESCOPIC ARM, TELESCOPIC HANDLER:** The load is also placed on a fork or attachment mounted on the end of a telescopic arm that reaches the desired height by extending and tilting it.

**OF SMALL ELEVATION, (FOR EXAMPLE: TRANSPALETA):** Used only to minimize the load of the ground and facilitate the movement. The load is picked up from the ground by introducing a fork or platform that rises slightly underneath it, by means of a system of mechanically or hydraulically operated levers.

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## **WORK WITH FORKLIFT TRUCKS**

## INTRODUCTION

The work and development with the operator with forklift trucks, also comes with the interrelation of the medium, the machine and the load. The

The operator is subject to strong physical and psychological pressure, some studies that forklift drivers are subjected to a tension similar to that suffered by taxi drivers in large cities, and excess fatigue and / or non-compliance with measures Appropriate security can lead to irritability, headaches and headaches caused by smoke and noise, eye fatigue, etc.

Many of the hazards involved in the handling of the trucks are the responsibility of their drivers, and often are not the driver's fault, but it can happen that someone who is not, takes a wheelbarrow that has never used, to do a job sporadic, and is not aware of what is in their hands or what is worse, it is used by all staff without prior knowledge. That is why the choice and selection of operators along with the training is of great importance.

The driver or driver must be familiar with the drive systems, safety devices and manufacturer's standards to know how the controls are used and the safety measures that must be taken.

The circulation routes of workplaces, both those located outside buildings and premises and inside them, including doors, corridors, etc., must be used in complete safety for pedestrians or vehicles circulate for them and for the personnel that work in their vicinity.



## UNIT I

### STABILITY OF THE TROLLEY

The design of the counterbalanced trucks is based on maintaining the balance between two weights that are located on opposite sides.

Its stability is determined by the position of the center of gravity, which in the case that the machine is loaded, is the combination of both weights, and loses its stability when the load is too long or too heavy

#### 1. THE STABILITY TRIANGLE AND THE CENTER OF GRAVITY

- ➔ **THE STABILITY TRIANGLE.** Side tipping occurs more easily in a forklift truck than in a car. This is because the steering axis (rear axle) of the truck is attached to the chassis only by its central part, forming with the front wheels an imaginary triangle: the stability triangle. Thus, the forklift behaves as if it had two front wheels and only one rear wheel.
- ➔ **THE CENTER OF GRAVITY.** The center of gravity is a point that behaves as if the entire weight of the load were on it.

#### **BUT, ATTENTION !**

- ▶ In objects composed of very different materials, the center of gravity may be in a seemingly strange place (very distant from the geometric center);
- ▶ In the transport of liquids, the center of gravity varies with movement; This is what is known as the "wave effect".
- ▶ To maintain the stability of a truck, the resulting center of gravity must be within the load diagram.

#### **REMEMBER !!!**

***The center of gravity of a truck moves when the mast is raised and lowered, tilts forward and backward, with it moving, as well as when ascending and descending a slope.***

## 2. FACTORS THAT INFLUENCE THE STABILITY.

It is important to note one of the factors that affect the stability of the truck, as is the distance of the load to the heel of the forks, because if this is excessive, it can cause an overload and the overturning of it.

- ➔ **Position of the loads:** it is important to adjust the load to the heel of the forks, so that the distance from this to the center of gravity of the load is as small as possible.
- ➔ **Mast position:** during the truck's movement, whether loaded or empty, it will always be retracted and tilted backwards.
- ➔ **Height of the load:** the appropriate height of the forks on the ground is 15 to 20 cm. This will be more difficult than the Vuelque truck.
- ➔ **Overload:** if the load is too heavy, the forklift can tip over. If you have to move a large load, it is better to form several batches with it to move them separately. REMEMBER: Avoid the overload due to an excessive distance between the center of gravity and the mast and carefully observe the diagram of load of the vehicle.
- ➔ **Inclination of the floor:** the risk of tipping is greater when the ground is very inclined. The maximum slope should not exceed 10%.
- ➔ **Soil characteristics:** it is safer to work on smooth, flat, clean floors; resistant to weight and acceleration and braking movements of the truck.
- ➔ **Position of loads on ramps:** in order not to overturn, the load must always be looking at the top of the ramp, whether it goes up or down.
- ➔ **Abrupt speed differences:** braking, acceleration and deceleration increase the risk of tipping.
- ➔ **Changes in the direction:** the abrupt turns of the truck can make it overturn.
- ➔ **Truck movements on ramps:** there is a risk of lateral tipping if it is traveling transversely or turns are made, and can only be lowered forward if the load is stable and the angle of inclination of the mast backwards is greater than the slope of the ramp.

## UNIT II

### THE DRIVER / TRUCKER

#### 1. SELECTION OF THE DRIVER

The most important factors that affect you and the most recommended actions for a selection of the driver are the following:

- ❖ Age not lower than 18 years, for obvious reasons of physical capacity in jobs that may compromise the development of the individual.
- ❖ Have passed an annual medical examination and do not present diseases or physical deficiencies that prevent you from operating the machines at full capacity, for example:
  - ❖ Bronchial and pulmonary diseases are sensitive to the dusty atmospheres so common in the handling of bulk materials.
  - ❖ Osteoarthritis, herniated discs and similar ailments make it impossible to drive the cart, since a high percentage of the movements are carried out backwards with the torso and the waist in different planes, also supporting the vibrations caused by the running of a machine that lacks suspension.
  - ❖ The ingestion of tranquilizing drugs, sleeping pills, etc., disables him for the task.
  - ❖ The amputation of more than one finger of a hand is a limiting factor.
  - ❖ The ability to see in both eyes should be at least 7/10, acuity and field of vision without limitations beyond normal. You must be able to distinguish the colors perfectly without a hint of color blindness.
  - ❖ The ear is another aspect that goes unnoticed in routine examinations and that has importance in committed works as it is the case of docks, foundries, etc., where the traffic of the work area includes the passage of trains, trucks or other trucks and the The noise level of the environment is high.
- ❖ It is recommended that candidates be in possession of the type B car driving license.
- ❖ Pass a training course for forklift drivers with a theoretical and practical exam. Receive a written authorization from the plant to drive carts (carnet).

## **CAPABILITIES AND ATTITUDES**

In addition to all these legal, it is recommended that the driver possess the following capabilities and attitudes.

- General intelligence: reasoning ability, comprehension, application of instructions, attention and perception.
- Attitudes: stability, integration, identification, responsibility and commitment.

## **2. RESPONSIBILITY OF THE DRIVER AND THE MANAGER**

### **DRIVER'S RESPONSIBILITY**

The economic cost of the truck and of the manipulated loads conditions that the driver must be a prepared person and therefore responsible for the equipment that he handles, it is necessary to make sure that he knows what his truck can do and the limitations of it. Avoid at all times the imprudence knowing that they had ever done and that nothing happened, to get it you should know:

- ▶ The equipment and the workplace (free height of the doors, condition of the floors, eg the presence of unevenness and obstacles, etc.).
- ▶ The loads to be moved (weight, size, characteristics), the lifting capacity and the center of gravity of the truck.
- ▶ The risks and preventive measures, we must pay special attention to the functions you are doing, a slight oversight can be the trigger of an accident.
- ▶ When a deficiency is detected, its immediate repair must be requested by the authorized personnel; and once repaired, check that the truck is back in condition before taking charge of it. Do not forget that driving a truck can cause serious accidents, if a deficiency is not detected early.

## REMEMBER !!!

- ✓ Only authorized drivers can drive a truck. The driver of the truck is responsible for the good use of his truck both in terms of general safety in the workplace and the different situations that can cause or cause by its incorrect performance.
- ✓ The driver must not carry out any repair on the truck unless it is specially authorized.
- ✓ The driving of a wheelbarrow by an unauthorized person, or the fact of leaving a driver's wheelbarrow to an unauthorized person, constitutes a serious fault.

## RESPONSIBILITY OF THE MANAGER

The manager, as part of his work, has the obligation to:

- ➔ Monitor that drivers perform work with safe habits;
- ➔ Know the rules indicated for drivers.
- ➔ Sort and plan the work taking into account safety aspects of work with forklifts.
- ➔ Keep the work area of the trucks clean and tidy;
- ➔ Observe drivers, correct them and advise them.

## 3. INDIVIDUAL PROTECTION EQUIPMENT

As for the Personal Protection equipment (PPE) recommended for Operators in charge of handling trucks, is the following:

- ➔ Mono of sleeves wide enough so that it does not disturb driving, avoiding exterior pockets and other parts susceptible to snagging.
- ➔ Resistant and flexible gloves.
- ➔ Safety footwear with metal toe cap and non-slip sole, more if the Operator must perform manual maintenance operations.
- ➔ We recommend the use of a helmet.
- ➔ Convenient use a lumbo-abdominal belt for long work hours and uneven circulation areas.

## UNIT III

### DRIVING THE FORKLIFT TRUCK

#### 1. PRELIMINARY CHECKS FOR EQUIPMENT HANDLING.

Before starting the work day, the driver must carry out the previous checks or inspections that contemplate, at least, the following aspects and that are applicable to the type of truck assigned.

- ➔ The direction.
- ➔ The horn, and the charged battery.
- ➔ The immobilization and service brakes (standing and hand).
- ➔ Clutch.
- ➔ Forks and lifting and tilting systems
- ➔ The levels of oil, water and fuel, and the absence of leaks.
- ➔ The status and inflation pressure of the tires.
- ➔ The restraints (latch) of the stops.
- ➔ The existence of cracks or formation is in the back of the load.
- ➔ The inclination of the mast and the forks, as well as checking that they move slowly.

#### REMEMBER !!!

***In case of detecting any anomaly or deficiency, place a warning label so that other workers can not use it and must communicate it, as soon as possible, to their immediate supervisor, not using it until it has been properly repaired. Any truck that is out of use due to breakdown must be properly marked.***

## 2. STARTING THE TROLLEY

Once the previous checks have been carried out and prior to starting the displacement with the truck, observe and take into account the symbols of the machine to identify possible operational and safety incidents.

### **Symbols on a thermal truck:**

- ▶ Hour meter: indicates the hours of service of the machine.
- ▶ Function control of the hour meter
- ▶ Engine temperature indicator (coolant temperature).
- ▶ Control of particle filter regeneration.
- ▶ Hydraulic oil temperature.
- ▶ Engine oil pressure.
- ▶ Control of flashing lights.
- ▶ Battery charge control.
- ▶ Control of fuel reserve.
- ▶ Air filter.

### **Control panel on an electric truck:**

- ▶ Brake.
- ▶ Travel inverter lever.
- ▶ Horn, Steering wheel.
- ▶ Lift and lower lever, Tilt lever.
- ▶ Display, Power button.
- ▶ Tilt / direction adjustment.
- ▶ Acceleration pedal, brake pedal.

## ACCESS TO THE TROLLEY

With regard to access to the truck, always do it by existing means avoiding to hold the steering wheel and the shift levers, and do not start it if you are not properly seated in the driver's position.

Check that the gear selector is in the neutral position and that the controls are correctly positioned (forward / reverse lever in neutral and parking brake blocked).

Wear the safety belt, mandatory when driving the truck and it does not have a closed cabin or restraint system and verify that there are no other workers in the area.

### REMEMBER !!!

***Fasten your seatbelt. It will help you to keep the head and the back inside the limits of the frame and the roof of the machine in case of overturning.***

## STARTING THE FORKLIFT TRUCK

The truck must be started or maneuvered only when the driver is sitting in his driving position with the safety belt on and adjusted.

When you are going to use the truck with attachments, first check the load diagram on the machine to avoid accident risks due to loss of stability.

Before assembling an accessory on the truck, check the assembly instructions in case it is necessary to depressurize the auxiliary hydraulics to secure the connection securely.

### REMEMBER !!!

***If you are going to travel on public roads in a timely manner, it is mandatory to be in possession of your driving license.***



### 3. RULES OF CIRCULATION OF THE FORKLIFT TRUCK

**The rules of the highway code must be respected**, especially in areas where other vehicles may be found. **Pedestrians always have preference:**

- ❖ First warn of your proximity by honking the horn.
- ❖ Second, make sure that you are more than 1 m away from the pedestrian.
- ❖ It is forbidden to use the forklift truck for other uses than transporting, loading and unloading goods or materials.
- ❖ Always carry out the movements of the truck with the fork or attachment at a distance of 15 cm from the ground, ie in the transport position.
- ❖ Circulate on the side of the circulation corridors provided for this purpose, keeping a prudent distance from other vehicles that precede it and avoiding overtaking.
- ❖ Only transport properly prepared loads and ensure that they will not hit roofs, ducts, etc. by reason of height of the load.
- ❖ Do not transport loads that exceed the nominal capacity.
- ❖ Do not drive above 20 km / h. in exterior spaces and 10 Km / h. in interior spaces and decrease speed in crossings and places with poor visibility.

#### REMEMBER !!!

***The displacements with the truck without load must be done with the forks at ground level, about 15 cm from the ground.***

#### 4. LIMITATIONS ON THE USE OF THE FORKLIFTS

The truck must adapt to the premises in which it is going to work and must be suitable for the resistance and the inequalities of the soil on which it is being worked and, of course, **bear in mind that the weight of the load transported must never exceed the maximum weight recommended by the manufacturer.**

#### LOCAL

A trolley compatible with the place where it must operate must be used. Thus, depending on whether you must work in the open air, in covered but well-ventilated premises or in closed premises with limited ventilation, the motive power of the machine and exhaust gas scrubbers will be chosen. Furthermore, according to the same, the truck must be provided with its own lighting, unless it only works in open-air premises and during daytime hours.

**The trucks with thermal engine are not suitable to work in places with risk of explosion.** For example, near fuel stores, paint, varnish ... There are electric trucks specially prepared to work in these places. They should not be used in places with low volume or where there is not adequate ventilation: exhaust gases can cause poisoning.

#### **IMPORTANT!!**

***It is necessary to provide a place to store the trucks as well as to carry out maintenance work.***

## **USE OF THE FORKLIFT**

- Check that it is designed for the weight of the forklift truck loaded and authorized for the use of people.
- Given its dimensions, move slowly and in a straight line.
- Once inside, turn off the engine and set the parking brake, and do not get off the truck if it is not essential.

## **SOILS**

The floors must be resistant to the passage of the trucks, must eliminate any type of holes, projections or any other obstacle in areas of circulation of trucks.

If loose objects are observed in the ground and their removal is not possible or dangerous (for example, corrosive substance), signal and notify the person in charge.

## **CIRCULATION CORRIDORS**

The width of the corridors must not be lower in a single direction to the width of the vehicle or to that of the load increased by 1 meter.

The width to circulate in two directions permanently, must not be less than twice the width of vehicles or loads increased by 1.40 meters.

## **THE STEP BY DOORS AND ZONES TOO MUCH STRAITS**

The doors must have a height greater than 50 cm from the highest point of the truck or load to be transported. The use of swing doors will require the existence of a transparent area that allows adequate visibility.

It will be necessary to take into account the existence of trusses, aerial channels, etc. in the places of step of the trucks.

## **CROSSING OF CABLES TENDID ON THE WORK AREA**

- Do not pass over a cable laid if it is not protected, or protect it with a rigid element firmly attached to the ground, signal and warn the other drivers.
- Crossing perpendicularly to the cable at very slow speed to avoid overturning the truck.
- If it is a railway, check that the road is clear.

## 5. STOPPING AND PARKING FOR A FORKLIFT

### STOPPING CART

Do not stop the truck in places that hinder the passage of vehicles and pedestrians, on ramps or in prohibited places: emergency doors, eyewash fountains, hoses, fire extinguishers and lower the forks to the ground so as not to trip over them.

***IMPORTANT !!!, Whenever the command seat is left, the perfect immobility of the vehicle must be guaranteed, no matter how short the absence.***

Even if you only descend from the truck for a few seconds, stop the engine, apply the parking brake and remove the ignition key to prevent unauthorized persons from using it.

### CARRETILLA PARKING

When you finish working with the machine, perform the following actions:

- ✓ Activate the parking brake.
- ✓ Place the shift lever in neutral position.
- ✓ Put the forks in their lowest position and tilt them forward.
- ✓ For the traction motor.
- ✓ Protects the truck against misuse; The key of contact will be in possession only of the authorized operator that will retire it when leaving the vehicle.
- ✓ Never stop the thermal trucks in areas close to places where there are gases, vapors, liquids or flammable powders and fibers, since the temperature of the exhaust pipe and the engine rise when it is turned off and can exceed the ignition temperature of these materials .

### REMEMBER !!!

***Never stop and leave the vehicle with the load lifted, or park it in places where it can hinder traffic or be hit by other mobile equipment (bridge cranes, hoists, etc.).***



**LOAD OPERATIONS UNLOADING  
AND MAINTAINING THE EQUIPMENT**

## INTRODUCTION

The operations and processes of loading and unloading where materials are handled in areas of storage and shipment of products, are areas generating risks for users and drivers of forklifts.

The aspects that affect the accident rate are related to various factors such as inadequate resistance of the storage elements, absence of protections and safety systems, distribution of inadequate routes of the handling equipment, inadequate use of the work spaces, stacks and heights of deficient materials, etc.

All of the above, together in many cases with insufficient preventive management and the absence of periodic controls, generate the risks of accidents.

**Royal Decree 1215/1997** provides that "the employer shall adopt the necessary measures so that, through proper maintenance, the work equipment is maintained throughout the time of use." Such maintenance shall be carried out taking into account the manufacturer's instructions or, otherwise, the characteristics of these equipment, its conditions of use and any other normal or exceptional circumstance that may influence its deterioration or mismatch"

It is important to note that regardless of the manufacturer's instructions, which are obviously written and directed in general to all users; these should specify the maintenance needs to the different work situations to which the truck is subjected (work shifts, aggressive working environments, regular circulation on ramps, work in environments with risk of fire or explosion, etc.), To say, they must perform maintenance that takes into account the conditions of use and any other normal or exceptional circumstance that may influence their deterioration or mismatch.

## 1. PICK UP AND DEPOSIT A LOAD

The movement of the truck and the movement of the mast are movements that must always be done individually and consecutively, never at the same time.

### COLLECT A LOAD

- ❖ Approach gently to the pallet (the pallet) that you want to pick up, perpendicular and centered, up to 30 cm. Of the same.
- ❖ Remember: Place the vertical mast and insert the forks at 15-20 cm. from the floor to the heel.
- ❖ Lift the load a few centimeters and tilt the mast backwards.
- ❖ Before backing up, look back over both shoulders, observing the load at the same time.
- ❖ Turn and move forward.

### THE ROUND LOADS

Round loads, such as drums, can be transported with forklifts equipped with special accessories, for example, an integral mechanical gripper or by special containers for drums.

### DEPOSIT A CARGO

- ❖ Approach perpendicular and centered, up to 30 cm. from the place where the load will be deposited.
- ❖ Put the vertical mast.
- ❖ Lower the load to the ground, and lower the forks a few more centimeters to detach them from the pallet.
- ❖ Look back before going back, checking that the forks come out easily.
- ❖ When the tips of the forks are about 30 cm from the load, tilt the mast back and turn to drive forward.
- ❖ To avoid the side tipping, bring the mast retracted backwards and the lower forks, no more than 15 cm from the ground.



## 2. THE WORKS AT THE LOAD SPRINGS

- ❖ Look before starting any movement to avoid falling into a vacuum.
- ❖ Know how far from the pier you are at each moment.
- ❖ Take control of loading and unloading operations.
- ❖ Immobilize the trailers until the operations of and discharge are completed.
- ❖ Establish a clear communication system with truck drivers (they must know when they can pick up a truck).
- ❖ Make sure that the loading ramp has a slight slope. Make sure it has a sufficient width, that it is strong and secure, that the side edges of the loading ramp are raised, so that the driver feels when he is touching the edge with the wheels.

## 3. THE STORAGE OF MATERIALS

### THE UNPACKED MATERIALS

- ❖ Store rigid linear materials (profiles, bars, tubes, etc.) well anchored and secured with supports.
- ❖ When the profiles are placed horizontally, place them at a distance from the passage areas and protect their ends.
- ❖ Place the bags in transversal layers, with the mouth of the bag facing the center of the pile, forming a step every 1.5 m in height.
- ❖ Store the small pieces in containers or baskets.
- ❖ Stack rounded tubes or materials in separate layers using intermediate supports and fasteners.
- ❖ Palletize the cylindrical containers for storage.

## THE SHELVES

- ❖ Expand its support surface by means of intermediate bars. Drive with attention and smoothness so as not to hit the shelves.
- ❖ Start lifting the load with the truck fully stopped. Have the load elevated as little as possible while stacking or unstacking to avoid the frontal rollover.
- ❖ When stacking loads, start with the lowest empty shelves.
- ❖ On shelves of more than 4 m in height, use forklifts with a system automatic for fixing the lifting heights.
- ❖ Do not use the forks to rectify the position of the pallet :, lift it up again to position it correctly.

## STACKINGS AT HEIGHT

- ❖ Remove or place a load in the stack by vertical movements. Before a swing, stop the maneuver, deposit the load in another place and find the cause of the movement.
- ❖ Avoid depositing directly loaded pallets on top of each other and DO NOT form stacks that exceed 6 m in height.

## REMEMBER!!!

***Although containers of up to 50 liters can be stored against the wall or forming a pyramid, do not exceed 7 levels of stacking nor a height of 5 meters.***

## UNIT II

### THE MAINTENANCE OF THE TEAM

#### 1. DAILY CHECK

##### REMEMBER!!!

- ➔ Every day, before starting up the forklift, carry out inspection and maintenance tasks.
- ➔ Check all safety equipment, protective equipment and safety switch.
- ➔ Install the battery correctly.
- ➔ If the forklift has a fault, do not start it.
- ➔ The Maintenance tasks should be carried out by qualified technical personnel.
- ➔ The driver is responsible for checking the truck every day elevator, taking notes of your observations.

##### WHEN TO DO THE DAILY REVIEW?

- ➔ At the beginning of the work shift.
- ➔ After the breaks, if it is estimated that someone has been able to use it.
- ➔ After use by a person who does not belong to the usual team.
- ➔ When, when you start working with her, something strange is observed in her operation.

##### WHAT ELEMENTS ARE REVISED? LEVELS:

- ➔ The battery charge and the level of the fuel tank.
- ➔ The cooling water of the motor.
- ➔ The hydraulic oil level.

## **IN GENERAL:**

- ➔ The good condition of the brakes.
- ➔ Smooth throttle operation.
- ➔ The engine oil and hydraulic oil.
- ➔ The smooth movement of the steering wheel and its clearance.
- ➔ The integrity and symmetry of the forks, the condition of the fork carriage and the mechanical elements of the mast.
- ➔ The operation of the flashing light and of the reversing siren and the horn.
- ➔ Undamaged and properly inflated tires.
- ➔ Operating belt, mirrors placed, clean and tight if worn.
- ➔ Battery terminals without corrosion.

## **MOST FREQUENT ANOMALIES:**

- ➔ Dripping or leakage of oil, fuel or other fluids.
- ➔ Deterioration of the electrical insulation of the hoses.
- ➔ Alteration of battery terminals.
- ➔ Loss of air in tires with inflatable tires.
- ➔ Wear of the wheels.
- ➔ Deformation of the forks. Alteration of the fork's symmetry with respect to the axle. Physical damage to the fork board and the mechanical elements of the mast.

## **REMEMBER!!!**

***Do not use the machine if there is any anomaly, and repair it if you are authorized to do so; If not, communicate it to the responsible person.***

## 2. SCHEDULED MAINTENANCE REVISIONS

### WHY ARE THEY REALIZED?

Because there are elements and anomalies of them that need a detailed and thorough inspection by someone with special knowledge.

### WHO DOES IT?

Specialized companies or people trained and authorized by the company. The operations carried out must be recorded in the maintenance sheet of the truck.

### WHEN ARE THEY REALIZED?

They are made when it indicates the most demanding of the following criteria:

- ➔ Those indicated in the forklift maintenance manuals by the manufacturer.
- ➔ The one indicated by the experience accumulated in the Company itself.
- ➔ The one that appears in the internal rules of the Company.

### WHAT ELEMENTS ARE REVISED?

In the periodic maintenance reviews, the following elements are reviewed:

The brakes, direction, warning lights, lighting, regulators, discharge valves of the lifting circuit and tilt and lift mechanisms will be periodically reviewed. Likewise, the same will be done with hydraulic systems, especially those concerning internal or external leaks.

Batteries, motors, controls, limit switches, protection devices, cables, connections and above all the good insulation status of the electrical installation must be inspected periodically.

The tires should be checked to detect any signs of deterioration of the sidewalls and tires. The pressure described by the manufacturer must be maintained.

## **THE MAINTENANCE OF THE SECURITY PORCH**

It does not have rust spots. The welds do not have cracks or breaks.

It remains tightly tied to the chassis of the machine. The deformations present do not affect its resistance. The vision for the collection and deposit of loads in height is maintained.

### **REMEMBER!!!**

***Preventive maintenance is essential for the proper functioning of the handling trucks and must only be carried out by qualified and authorized personnel.***

## **3. EXAMPLE OF MAINTENANCE PROGRAM**

### **DAILY REVISIONS OR EVERY 10 HOURS OF OPERATION**

- ➔ Check the oil level of the heat engine, the transmission fluid cooling fluid, the fuel.
- ➔ Empty the fuel prefilter.
- ➔ Check the tire pressure and the tightening of the wheel nuts.

### **REVISIONS EVERY 50 HOURS OF OPERATION**

- ➔ Clean the dry air filter cartridge (in a very dusty atmosphere) reduce this periodicity).
- ➔ Check the hydraulic oil level, brake oil, windscreen washer fluid, electrolyte of the battery.
- ➔ Clean the radiator.
- ➔ Check and adjust the tension and alignment of the lifting chains of the mast.
- ➔ Lubricate the mast and general grease.

## **REVISIONS EVERY 200 HOURS OF OPERATION**

- ➔ Check and adjust the parking brake, the tension of the alternator / fan / crankshaft belt.
- ➔ Check the oil level of the front axle differential, the oil level of the front wheel reducers.
- ➔ Empty the fuel filter.

## **REVISIONS EVERY 400 HOURS OF OPERATION**

- ➔ Carry out once a year if the forklift has not reached 400 operating hours in the year.
- ➔ Empty and change the engine oil.
- ➔ Replace the heat engine oil filter, the dry air filter cartridge, the fuel filter cartridge, the transmission oil filter, the hydraulic return oil filter cartridge.
- ➔ Control the density of the battery electrolyte.
- ➔ Clean the fuel pump.
- ➔ Check, clean and lubricate the lifting chains of the mast, control the wear of the forks.
- ➔ Lubricate the mechanism of the parking brake lever.
- ➔ Clean the cabin ventilation filter.

## **REVISIONS EVERY 800 HOURS OF OPERATION**

- ➔ (Carry out once a year if the forklift has not reached 400 hours of operation in the year).
- ➔ Empty and change the hydraulic oil.
- ➔ Clean the suction head of the hydraulic oil tank.
- ➔ Replace the hydraulic oil tank filter cap.
- ➔ Empty and change the transmission oil, the front axle differential oil, the oil of the front wheel reducers, the coolant, the fuel tank.
- ➔ Replace the dry air filter safety cartridge.

- ➔ Check the pressure of the braking circuit.
- ➔ Bleed the braking circuit.
- ➔ Check the adjustment of the brakes.
- ➔ Change the brake oil.
- ➔ Check the accessory rack, the condition of the wheels and tires, the speeds of the hydraulic movements, clean the tubular filter of the hydraulic pump.

### **REVISIONS EVERY 2,400 HOURS OF OPERATION**

- ➔ Control the transmission pressures, the converter pressure, the pressures and flow rates of the hydraulic circuits, the wear of the chain rollers, the mast guide rollers, the mast lift chains, the steering.
- ➔ Clean the hydraulic oil tank.
- ➔ Check the oscillation of the rear axle, Check and adjust the clearances of the valves, the injectors.
- ➔ Check and descale the radiator.
- ➔ Check the water pump and the thermostat, the state of the mast assembly. Control the turbo compressor.

### **REVISIONS EVERY 4,800 HOURS OF OPERATION**

- ➔ Check and adjust the brake, the steering axle, the transmission cardan, the clearance of the front wheel reducers, the alternator and the starter motor.



# 5

## **RISKS, PREVENTIVE MEASURES, AND ACTION IN CASE OF ACCIDENT**

## INTRODUCTION

The trucks are not dangerous, and have demonstrated effectiveness in the operations of internal transport and storage of materials, drivers perform an important task and great responsibility.

In the majority of the occasions, the accidents with this type of means of transportation of loads are due to errors of handling that, although they are known, do not stop repeating themselves and end up becoming routine. Statistics indicate that accidents are due to human failures, although the influence that some of them are caused by workers around machines must be taken into account.

These accidents cause injuries of varying severity: mild, serious with or without permanent and fatal disabilities.

That is why it is necessary to avoid them and the first step is to know the risks associated with forklifts that are many and varied examples the risks of falls and entrapments of the driver, falls of loads and objects transported, collisions with structures or other fixed objects, fallen by dump of the truck, falls of objects stored on the truck, etc.

There are a great variety of forklift models and brands, and it will be necessary to gather information from the manufacturer on the specific risks and their most appropriate maintenance.

Other specific risks must also be considered, such as those in the work environment in order to guarantee training and information that is best suited to the day-to-day reality. Criteria, recommendations and guidelines are intended to be used to minimize the risk of accidents and improve safety conditions. at work.

## UNIT I

### RISKS AND PREVENTIVE MEASURES FOR THE DRIVER AND PEDESTRIAN

#### 1. MANEUVERS AND DANGEROUS HABITS

##### DANGEROUS MANEUVERS

- ➔ Drive a truck without authorization for it.
- ➔ Overload or increase the counterweight of a truck.
- ➔ Lifting loads with a single fork.
- ➔ Use two trucks to move a load.
- ➔ Allowing a person to pass or stop under the forks.
- ➔ Carry out games or competitions with wheelbarrows, etc.

##### HAZARDOUS HABITS

- ➔ Perform turns without reducing the speed and braking sharply.
- ➔ Lower the front ramps with the truck loaded.
- ➔ Do not sound the horn in the corners and in places without visibility and use the reverse gear as a brake.
- ➔ Raise or lower the load while it is being transported.
- ➔ Get off the truck without stopping the engine.
- ➔ Climb the shelves.
- ➔ Do not signal the truck when it is temporarily out of use and do not block it when parking.
- ➔ Drive the truck with gloves, hands or shoes soiled with slippery products.
- ➔ Circulate with the wheelbarrow next to people.
- ➔ Do not use the safety belt, etc.

## 2. TURNING THE TROLLEY

### CAUSES

- ➔ Because the load is raised, the mast is tilted forward or extended.
- ➔ When performing abrupt maneuvers (braking suddenly when moving forward or accelerating abruptly circling backwards).
- ➔ By braking or stepping on a floor that is not completely horizontal with an overload of the truck, hitting a curb or falling into a trench, etc.
- ➔ By detaching or breaking the loading ramp of the trucks.

### PREVENTIVE MEASURES

- ➔ Do not leave your driving position while the truck is in operation.
- ➔ Avoid stops, sudden starts and quick turns.
- ➔ Slow down when driving on a descendant ramp and also decrease the load when other people or vehicles are in the work zone.
- ➔ To favor the stability of the load, if the load hinders the visibility, it goes backwards, ask for help to some person located outside the maneuver area in case of not having enough good visibility on the route.
- ➔ Do not drive on ramps whose slope exceeds 10%.
- ➔ Circular with the fork down.
- ➔ Do not transport or lift loads of greater weight than the maximum admissible.
- ➔ Ascend and descend loads slowly.
- ➔ Do not lift loads at heights for which the rear tends to rise.

### 3. INJURY AND CRUSHING DUE TO FALL OF LOAD

#### CAUSES

- ➔ Drive at excessive speed; perform excessively closed turns.
- ➔ Because the driver has not seen the pedestrian and does not have time to react.
- ➔ For working in places without adequate signage.
- ➔ Failure of the forklift brakes, etc.
- ➔ Due to the excess weight of cargo or container size.
- ➔ The load is badly stacked, poorly fastened, when it is made up of several pieces or parts.
- ➔ The ground in poor condition: passing through bumps or projections, inadequate circulation by ramps and slopes

#### PREVENTIVE MEASURES

- ➔ Organize the work correctly: make sure that the space is sufficient to maneuver, execute the work carefully and without haste.
- ➔ Signalize the work area according to the recommendations given. Pay special attention to people or objects that are in the work area. It is necessary to always stop the forklift truck when there are people in the work area. should be warned by honking the horn; you must make sure that you are more than one meter from the pedestrian.
- ➔ Use suitable containers, correctly fix the palletized loads, check that the pallets are adequate and in good condition.
- ➔ On the ramps, move slowly and in a straight line.
- ➔ Never work under a forklift truck with suspended load, or allow other workers to be placed in that position, even temporarily.
- ➔ Do not park the truck or deposit loads, even momentarily, on evacuation routes and emergency exits.

## REMEMBER!!!

- ✓ *The maximum slope of a ramp should not exceed 10%.*
- ✓ *Respect the traffic and signaling standards of the work center.*
- ✓ *Never overtake other vehicles and try to maintain the safety distance.*
- ✓ *The maximum speed allowed inside the buildings is 10 km / h.*
- ✓ *It is prohibited to transport pedestrians in the forklift*

## 4. ATTRAPMENT AND ACCIDENT

When in the proximity of pedestrians, the load loses its stability and does not assess the hazardous conditions of the work area.

### CAUSES

- ➔ Drive at excessive speed; perform excessively closed turns.
- ➔ Carry the load elevated or off-center; bring the mast forward.
- ➔ By working in places without proper signage (the driver does not see the pedestrian and does not have time to react).
- ➔ Lack of proper maintenance of the truck (brakes, wheel wear ...).
- ➔ By incorrect use of the forklift truck, example is not attentive to pedestrians; performs unforeseen sudden maneuvers or turns; start the maneuvers without first looking; it does not take action in the absence of visibility.
- ➔ By distraction of the pedestrian.

### PREVENTIVE MEASURES

- ➔ Carry out engine repairs with the engine off, whenever possible.
- ➔ Reverse when the load prevents the road from being seen or if you need to see the road you need to take your head off the side of the truck.
- ➔ If there is no visibility to maneuver, ask for help from an operator who knows the work, use sound and light warning when driving in reverse.

- ➔ Do not leave your driving position while the truck is in operation.
- ➔ Make way for other vehicles when driving on a narrow road or crossing.
- ➔ Reduce speed when crossing the platform and when traveling with other trucks.

### **REMEMBER !!!**

***Circular with fork arms 15 cm above the ground.***

## **UNIT II**

### **PREVENTIVE MEASURES IN THE FILLING OF DEPOSIT AND BATTERY CHARGE**

#### **1. PREVENTIVE MEASURES IN THE FILLING OF FUEL**

It can produce an explosion due to the presence of flammable vapors due to static electricity, or the presence of heat sources, the measures to follow to develop these operations safely are the following:

- ➔ Check that a nearby extinguisher is available.
- ➔ Stop the engine and put the ignition key in the off position.
- ➔ Fill the fuel tank in the assigned areas.
- ➔ Exit the forklift while the tank is full of fuel
- ➔ Never check the fuel level or the presence of leaks with a live flame.
- ➔ Carry out the load placing yourself in favor of the wind to avoid being splashed by the fuel.
- ➔ Check that the reservoir cap fits correctly.
- ➔ Wear protective gloves during recharging.
- ➔ In the event of fire, it releases materials from the transit areas and quickly removes the truck from the premises. If the fire is on the machine itself, use an extinguisher to control it.

## 2. PREVENTIVE MEASURES IN THE FILLING OF LIQUEFIED PETROLEUM GAS TRUCKS (LPG)

- ➔ Ventilate the area before connecting the electrical system.
- ➔ Before connecting the gas cylinders, check the perfect condition of your connection adapters.
- ➔ Do not park the truck near openings in areas below ground level.
- ➔ Use it in ventilated places, since in case of leakage, LPG becomes gaseous, creating a dangerous atmosphere.
- ➔ Use protective gloves to minimize the risk of LPG contact with the skin.

### REMEMBER !!!

***Do not leave the engine running in closed spaces.***

## 3. PREVENTIVE MEASURES IN BATTERY CHARGING

- ➔ Turn off the engine, lights and sirens.
- ➔ Before loading, visually check the condition of the connectors, battery and chargers.
- ➔ Always load them in well-ventilated spaces and bear in mind that hydrogen is an extremely flammable gas and reaches its maximum value at the end of the battery charge. If a splash of acid occurs, immediately act by pouring a large amount of water on the affected part for several minutes.
- ➔ Avoid the proximity of operations that could produce heat.
- ➔ Check that there are no metal objects on the batteries or in contact with its terminals or cables.
- ➔ Maintain the load intensity recommended by the manufacturer.
- ➔ Avoid the presence of cables or objects in places of passage in the loading area.

### REMEMBER!!!

***Do not disconnect the mains plug or the battery while the load is not finished. Sparks can be generated and the gases produced during the same can ignite.***



## UNIT III

### ACTION IN THE EVENT OF AN ACCIDENT WITH THE FORKLIFT

#### 1. ACCIDENT FOR TROLLEY ROLL

- ➔ Do not jump from the machine to avoid being crushed.
- ➔ Hold on to the porch for the part that will be on top.
- ➔ Press your legs against the seat with your legs.
- ➔ Lean forward and in the opposite direction to where the rollover will occur.
- ➔ Never release the seat belt.
- ➔ Do not jump out of the machine and hold on tightly to the steering wheel.
- ➔ Firmly supports the feet.
- ➔ Make a counterweight by leaning against the side opposite to the fall.

#### 2. BURNS BY SULFURIC ACID

- ➔ Remove clothing, rings, etc., stained with acids.
- ➔ Do not use ointments.
- ➔ Wash the area with plenty of soapy water or bicarbonated water.
- ➔ Cover with sterile gauze.
- ➔ Transfer to a medical center.

#### 3. WOUNDS

- ➔ Avoid touching the wound.
- ➔ Do not use ointments. Wash with soap and water.
- ➔ Compress the place that bleeds with clean gauze or cloth, if it continues to bleed, add more gauze on top of the previous one and make more compression. press with your fingers over the bleeding artery.
- ➔ Transfer to a medical center.

#### **4. ACCIDENT BY ELECTRICAL CONTACT**

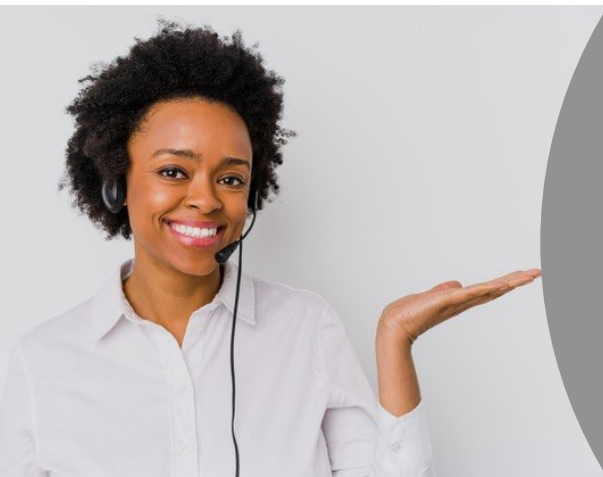
Only if possible, try to move the machine away from the cable.

In case of abandoning it, it adopts the following recommendations:

- ➔ Jump it with both feet together to avoid a voltage differential, as far as possible, and away from the power line; Under no circumstances should you get off the vehicle and cause part of your body to be in contact with the ground while others are with the machine.
- ➔ Do not touch anyone who is in contact with energized equipment.
- ➔ In the event of electrocution, cut the electric current before touching the injured person; In case this is not possible, isolate it using an object that is not an electricity conductor (example: a stick, newspaper, etc.).
- ➔ Do not use metal objects and move to a medical center.

#### **5. SPILLS OF CHEMICALS TRANSPORTED.**

Observe previously and take into account the identification and action to follow in case of spills or leaks of a chemical product, according to the instructions of the safety data sheet and the label.



**You are done!**  
**[Click here: Start Test](#)**

