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Introduction

The Machinery Directive (98/37/EC) requires under 1.1.2 c) that Industrial trucks shall be designed in such a way, that foreseeable misuse is prevented, see extract of 1.1.2 c) below:

"1.1.2. Principles of safety integration

c) When designing and constructing machinery, and when drafting the instructions, the manufacturer must envisage not only the normal use of the machinery but also uses which could reasonably be expected.

The machinery must be designed to prevent abnormal use if such use would engender a risk. In other cases the instructions must draw the user's attention to ways — which experience has shown might occur — in which the machinery should not be used."

Industrial trucks are intended for transporting and lifting loads. Nevertheless in exceptional circumstances when fitted with a work platform they may be used to lift people to carry out occasional tasks at height.

This use is exceptional (temporary and occasional) for tasks such as repairs, maintenance work or inspections for which the use of a mobile elevating work platform (MEWP) is not practical due to cost or space reasons or on account of other local circumstances, see below clause 3.1.2 of Annex II of the **Council Directive 95/63/EC of 5 December 1995 amending Directive 89/655/EEC**.

"3.1.2. Persons may be lifted only by means of work equipment and accessories provided for this purpose

Without prejudice to Article 5 of Directive 89/391/EEC, exceptionally, work equipment which is not specifically designed for the purpose of lifting persons may be used to this effect, provided appropriate action has been taken to ensure safety in accordance with national legislation and/or practice laying down appropriate supervision.

While workers are on work equipment designed for lifting loads the control position must be manned at all times. Persons being lifted must have reliable means of communication. In the event of danger, there must be reliable means of evacuating them."

It follows from the above that the combination of industrial trucks with a work platform does not have to be examined and certified in accordance to the Machinery Directive.

For longer-term or extensive work, special equipment e.g. scaffolding or a mobile elevating work platform (MEWP), must be used.

The use of work platforms with industrial trucks has been discussed for years from different points of view. This FEM document is designed to prevent abusive uses of industrial trucks e.g. lifting persons standing on the fork or on a pallet without any protection as shown in Figure 1, 2, and 3.

Such dangerous and accident-prone misuse can be prevented by a simple economic and practical solution being implemented which ensures user safety (Figure 4)

The specifications for 2 types of work platforms are set out in this FEM document, namely:

- work platforms for use on masted trucks (Figure 5) and on variable reach trucks (Figure 6)
- work platforms use on trucks operating in very narrow aisles (Figure 7)

This FEM document gives guidance on how the essential safety requirements specified in the Machinery Directive (98/37/EC) and the User Equipment Directive (95/63/EC) can be achieved. It does not exclude other solutions which give similar protection.



Figure 1

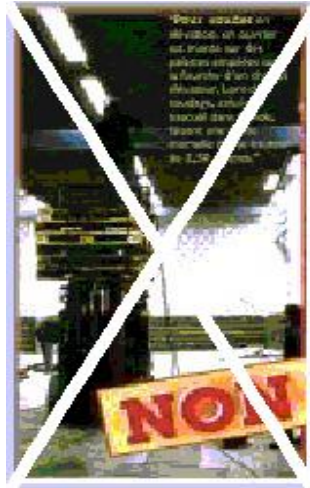


Figure 2

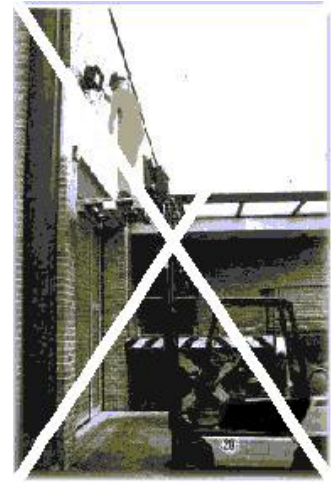


Figure 3



Figure 4



Figure 5



Figure 6

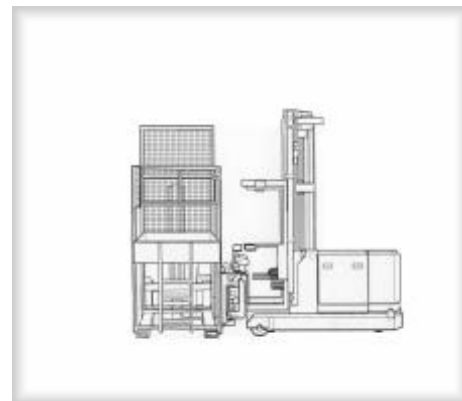


Figure 7

1 Scope

This FEM document defines the specifications related to the special features of work platforms intended for exceptional use and specifies the conditions under which they may be operated in combination with industrial trucks.

This FEM document applies to industrial trucks with an elevating mechanism in accordance with EN 1459, EN 1551, EN 1726-1 and EN 1726-2, referred to below as a “truck”,

A truck fitted with a work platform shall be controlled exclusively from the normal operator position of the truck. If this combination of a work platform with a truck is controlled from the work platform then it is assumed that the characteristics corresponds with a MEWP and is therefore outside of the scope of this FEM document.

The number of persons allowed on work platform is limited to two.

This FEM document does not apply to work platforms fitted with integrated controls (e.g. MEWP's) for lifting or travelling or extending platforms.

2 Normative References

- EN 1459 Safety of Industrial trucks – Self propelled variable reach trucks
- EN 1551 Safety of Industrial trucks – Self propelled trucks over 10 000 kg capacity
- EN 1726-1 Safety of Industrial trucks
Self propelled trucks up to and including 10 000 kg capacity, tractors with a drawbar pull up to and including 20 000 N
Part 1: General requirements
- EN 1726-2 Safety of Industrial trucks
Self propelled trucks up to and including 10 000 kg capacity, tractors with a drawbar pull up to and including 20 000 N
Part 2: Additional requirements for trucks with elevating operator position and trucks specifically designed to travel with elevated loads

3 Definitions

3.1 Work platform

A specially constructed platform or cage attached to a truck for elevating persons to carry out work at height.

3.2 Very narrow aisles (VNA)

Working area for trucks working guided within aisles with a minimum clearance of 90 mm between the outermost parts of industrial truck including its load, and the fixed parts of the surrounding area.

4 Requirements

4.1 Work platforms

4.1.1 Floor

The work platform floor shall be enclosed, level and slip-resistant. It shall not be possible for e.g. water to accumulate on the platform. Openings shall not be wider than 15 mm in any direction.

At any point the floor shall be capable of supporting a mass of 125 kg applied over any area of 0.16 m² without permanent deformation.

4.1.2 Surrounding protection (Rails and toe boards)

To prevent persons or objects falling from the work platform, surrounding protection is required consisting of a top rail, a toe board and one or more intermediate rail(s).

The top rail shall have a minimum height of 1000 mm and shall encompass the platform and be permanently attached to the floor. The toe board shall have a height of at least 150 mm.

The intermediate rails, shall be equally spaced between the top of the toe board and the underside of the top rails.

Other equally effective means of guarding between the top rail and floor, such as wire mesh, panelling and/or safety glazing may be used.

The top rail and the intermediate rail shall withstand an inner to outer horizontal force of 900 N without any permanent deformation.

4.1.3 Access

Work platforms shall have access means. When using a gate, it shall not open outwards and shall be self-latching when closed.

4.1.4 Protection against lifting system

Screens or guards shall be fitted to the work platform to protect persons from being trapped, crushed or sheared by the truck lifting mechanism or any other hazardous parts.

Screens and guards shall be capable of withstanding, without permanent deformation, vertical and horizontal forces of 900 N applied individually and concentrated at any point.

The screens and guards shall be of sufficient size to prevent persons from reaching through, over and around them into hazardous parts of the truck.

The height of the protection shall be at least 1,80 m or higher and shall be in the form of a mesh covering the whole width of the lifting gear or work platform, whichever is the greater. The mesh openings shall not exceed 50 mm in any direction.

(Protection may also be provided by using two hand controls for each person being elevated).

4.1.5 Attachment of work platform to lift truck

The work platform shall be designed in such a way that it can be securely attached to the industrial truck and prevented from shifting, tipping or sliding in both the transverse and longitudinal directions by e.g. the fork arms secured in pockets by means of bolts, bars, straps or ratchets. The fork pockets on the platform shall be enclosed.

Any loose components associated with the locking device shall be secured to the platform so that they cannot be mislaid when the platform is not in use.

In order to avoid tilting, the fork arm pockets are to be designed the maximum possible width apart. If this is not possible, tilting shall be prevented by means of additional measures, e.g. bolts and screws. Loose parts are not permitted, e.g. wedges.

4.1.6 Safety harness anchorage

If the use of a safety harness is required by a specific type of work e.g. the need to lean over the side, the anchorage shall have sufficient strength to withstand 10 000 N without any visible permanent deformation.

4.2 Minimum marking of the work platform

4.2.1 Manufacturer's plate

The following minimum details shall be attached to work platforms in a clearly legible and indelible manner (e.g. indelible lettering):

- a) Name and address of the manufacturer or authorised representative
- b) Designation of the model or type
- c) Serial number with the year of manufacturing

- d) Unladen weight of the work platform
- e) Distance of the centre of gravity of the platform from its mounting face on the truck
- f) Number of persons permitted on the work platform
- g) Carrying capacity in kg

4.2.2 Additional information

An additional plate shall be supplied by the platform manufacturer which shall be fitted to the platform in a position where the truck operator can easily read it with the following information.

- Check that the work platform is properly fixed to the truck
- Movement of the truck is not allowed if the platform is elevated.
- Check that the floor of the work platform shall be level.
- Check that the transmission is in neutral position and the parking brake is applied.

This is not required for VNA-trucks.

4.3 Specifications for the truck

4.3.1 Carrying capacity and stability

The capacity and stability of the truck with a work platform attached is sufficient if the following conditions are met:

- a) the floor area of the work platform does not exceed 800 mm x 1 200 mm
- b) or 1200 x 1200 for two persons on VNA - trucks
- c) the work platform is attached transversely to the longitudinal direction
- d) the work platform is fitted directly on the fork arms
- e) the minimum capacity of the truck depends on the sum of
 - the weight of the unladen work platform,
 - the weight of the person(s) being carried and
 - any load, e.g. tools, spare parts

it shall be at least

2 times the sum of the weight for order picking trucks and lateral and front stacking trucks, designed to travel with elevating operator position and trucks specifically designed to travel with elevated load.

3 times the sum of the weight for counterbalanced and reach trucks

5 times the sum of the weight for the variable reach trucks and pedestrian controlled trucks

but not less than 1000 kg

- f) the truck is used on a level floor. For use on different floor conditions the specification of the truck must be agreed between the user and the truck manufacturer.

4.3.2 Leakage on variable reach trucks

Work platforms shall only be fitted to variable reach trucks that comply with EN 1459 or used on trucks that have a safety mechanism which ensures that all movements are prevented if there is a leakage or failure in the hydraulic system.

4.4 Combination with attachments

Work platforms should not be fitted to trucks fitted with attachments, the movements of which could give rise to dangerous situations. These include, for example, revolving attachments or side shift with an offset of more than 100 mm.

If a side shift is fitted to the truck it shall be positioned centrally. On lateral stacking VNA truck, the lateral shift is not allowed.

4.5 Length of the fork arms

It is recommended that the fork arms should support the whole work platform but the fork arm length shall not be shorter than 75 % of the platform dimension measured in the longitudinal direction of the fork.

4.6 Additional requirements for work platforms used in very narrow aisles

A safety mechanism shall be fitted which ensures that persons on the work platform are unable to reach hazardous positions between the work platform and the racking equipment with parts of the body, e.g. head, torso, hands, arms, feet and legs.

or

In order to safeguard against crushing and shearing with parts of the racks it has to be ensured that travelling, lifting and lowering movements are only possible if the work platform is fully enclosed.

This is ensured

if the work platform is fitted with a permission switch for travelling and lifting movements for each person being carried (e.g. a two-hand switch).

or

if the work platform has a fully-closed and impenetrable fencing of at least 1,80 m in height (with a maximum mesh width of 50 mm x 50 mm). Moveable parts of the fencing must be secured by a control block which only allows travelling, lifting and lowering movements when the fencing is closed.

4.7 Overhead Guard Option

It shall be possible to fit an overhead guard to a work platform when requested.

5 Information for use

5.1 Residual Hazards

The requirements in clause 4 are suitable to minimise hazards arising from the combination of a work platform with an Industrial Truck. Residual hazards shall be addressed by the user following his risk assessment.

5.2 Instruction handbook

Each work platform must be provided with an instruction handbook in the language of the country where it is used. These instructions must contain the following information as a minimum:

5.2.1 Information about the work platform

- a) Name and address of the manufacturer
- b) Designation of the model or type
- c) Description of the work platform (functioning, dimensions, safety installations)
- d) Details of the carrying capacity (net weight, number of persons and load)

5.2.2 Information about the truck

Description of the truck required for the use with the work platform (type and capacity)

5.2.3 Operation with the work platform

- a) The platform shall only be used in combination with designated trucks
- b) Information about the training of the operator of the truck and the persons using the platform
- c) Information that no horizontal movement is allowed with an elevated platform
- d) Information about the need to wear personal protective equipment, e.g. safety harness
- e) Information about communications between the operator and the person(s) on the work platform
- f) Information about how to react in the event of a blockage of the lowering movement
- g) Information about minimum floor requirements
- h) Information about conducting operations outside
- i) Information about the attachment/assembly of the work platform
- j) Information about lifting, lowering, tilting and travelling
- k) Information about handling existing side shifter and tilt mechanism.
- l) Information about preventing truck movement with the work platform raised
- m) Information about cordoning off the place of use
- n) Information about the execution of work on electrical components from to the work platform
- o) Information about improper use of the work platform

5.2.4 Inspection and maintenance

- a) Information about checking the functions and condition of the work platform prior to use
- b) Information about maintenance
- c) Information about the purchase of spare parts
- d) Information about defects which impede safety
- e) Information about periodic checks