



# FEM

European Materials Handling Federation  
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Product Group /  
**Industrial Trucks**



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## **Guideline /**

Foot and leg protection for pedestrian  
controlled battery powered trucks

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## **Introduction**

This recommendation is intended to provide guidance of construction and use for pedestrian controlled battery powered trucks regarding foot and leg protection against frame collisions.

There are several requirements covering some foreseeable hazards in published standards regarding pedestrian controlled battery powered trucks.

However, depending on different handling situations and local arrangements of load handling logistics, other hazards may occur. One design suitable in one typical situation could lead to a hazard in another handling situation.

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If there is a contradiction between these recommendations in this document and the respective manufacturer's instructions; the statement made in the manufacturer's operating instructions shall apply.

## **1 Scope**

This guideline specifies recommendations regarding foot and leg protection and is applicable to pedestrian controlled battery powered trucks.

It does not exclude other solutions which give similar protection.

## **2 Normative References**

EN ISO 3691-1:2012	Self-propelled industrial trucks, other than driverless variable-reach trucks and burden-carrier trucks
FEM 4.004	Periodic inspection of industrial trucks

## **3 Recommendations**

### **3.1 Design recommendations**

#### **3.1.1 General**

The safety measures can be used as a single measure or in combination. The best effect depends on truck design and specific truck application. The safety measures have to be analysed to avoid other kinds of risks.

#### **3.1.2 Acceleration/Speed**

The truck should have the possibility to be adjusted by the driver to different values of acceleration and speed suitable for the current working and load handling situation.

It is recommended that the maximum acceleration should not exceed 2,3 m/s<sup>2</sup>.

### 3.1.3 Distance frame-floor

In order to avoid foot injuries, the truck frame should have a maximum clearance to the floor of 40mm at its outermost lowest point and the contour of the frame should not protrude outside the profile shown in figure 1.

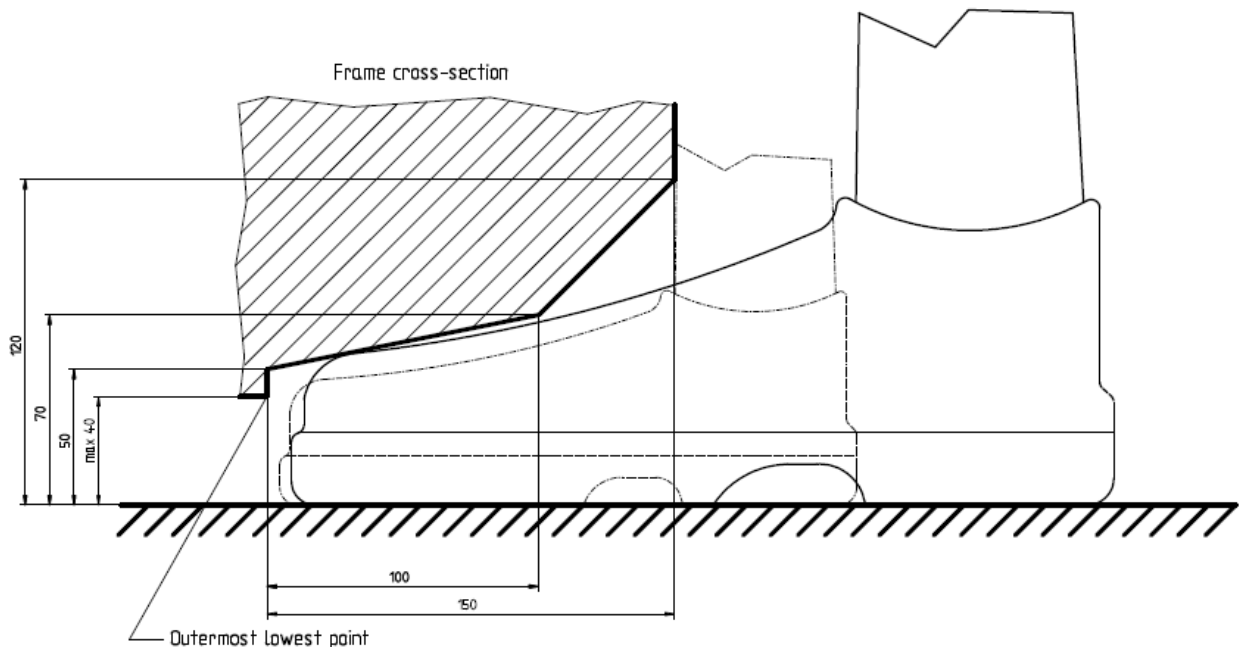


Figure 1 : Frame dimensions including 5% percentile female safety shoe and 95 % male safety shoe

### 3.1.4 Toe guarding

The frame should be designed so that it can be equipped with an additional toe guarding i.e. rubber toe guard.

### 3.1.5 Tiller arm configuration

The length and pivoting point of the tiller arm should be designed in such a way that established ergonomically principles and good manoeuvrability are met and hazards are minimized to avoid conflict between feet and frame in normal handling situations.

### 3.1.6 Contact Sensors

Contact sensors put on the frame, leading to a stop when activated, could be an optional means in very narrow handling situations.

*NOTE: The effectiveness of such systems can be restricted to a maximum speed, typically 1 km/h.*

### 3.1.7 Trucks equipped with foldable platform

If a pedestrian controlled battery powered truck is equipped with a foldable platform, a corresponding risk assessment shall be done to maintain the safety intention according to this FEM recommendation.

## 3.2 Recommendations for use

### 3.2.1 Risk assessment

A risk assessment shall be done by the person responsible for the area where the truck is to be used:

- Local legislation and company safety rules.
- Floors: uneven, slippery, objects and obstacles on floor.
- Risky situations when loading/unloading.

### 3.2.2 Training

To ensure use in safety, the operators need to know the characteristics, the instructions for use and the safety features of the truck.

The employer shall make sure that the truck driver has adequate skills and knowledge to drive a truck.

Practical and theoretical training is recommended and shall be documented to obtain that a formal training session shall be performed.

The following areas should be covered:

- General description of different truck types and use
- The design of the truck: brakes, wheels, steering, power source, lifting mechanism, operator position, functions and symbols.
- Basic principles: Load centre point, information on machine plates and capacity plates, attachments, driving on inclination, difference in behaviour when driving with and without load.
- Material handling: Pallets, aisle widths, loading and unloading procedures, visibility.
- Ergonomics: Correct way of working to avoid injuries.
- Adaptation of driving speed to loads and environmental conditions, reversing, truck acceleration.
- Operating in pedestrian areas.
- Daily service and safety inspections and checking points.

### 3.2.3 Maintenance

It is the user's responsibility to have the maintenance operations carried out according to the manufacturer's instructions.

### 3.2.4 Period Inspection

Inspection should be carried out according to FEM 4.004

The recommendations and advice contained in this Guidance Note are based on specifications, procedures and other information that have been collected from the FEM from its members. They represent what is, as far as FEM is aware, the best available data at the time of publication on the instruction and use of the equipment concerned in the general conditions described and are intended to provide guidance for such use.

The suitability of this Guidance Note must be determined by the judgement of the person applying it in accordance with the conditions in which use is envisaged and subject to all relevant statutory requirements.

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