INTERNATIONAL STANDARD

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Mobile elevating work platforms — Design, calculations, safety requirements and test methods relative to special features —

Part 1: MEWPs with retractable guardrail systems

Plates-formes élévatrices mobiles de personnel — Conception, calculs, exigences de sécurité et méthodes d'essai concernant les caractéristiques spéciales —

Partie 1: PEMP avec système de garde-corps rétractable

Reference number
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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 16653-1 was prepared by Technical Committee ISO/TC 214, *Elevating work platforms*.

ISO 16653 consists of the following parts, under the general title *Mobile elevating work platforms — Design, calculations, safety requirements and test methods relative to special features*:

— *Part 1: MEWPs with retractable guardrail systems*

— *Part 2: MEWPs with non-conductive (insulating) components*

MEWPs for orchard operations are to form the subject of a future part 3.

Introduction

The object of ISO 16653 is to define rules for safeguarding persons and objects against the risk of accident associated with the operation of special-application mobile elevating work platforms (MEWPs).

The requirements of ISO 16653 are intended to supplement or modify those of ISO 16368 (see Clause 2). Unless specified otherwise within this part of ISO 16653, all the relevant provisions of ISO 16368 are applicable in addition to the provisions of this part of ISO 16653.

ISO 16653 does not repeat all the general technical rules applicable to every electrical, mechanical or structural component.

The safety requirements of this part of ISO 16653 have been drawn up on the basis that MEWPs are periodically maintained according to manufacturers' instructions, working conditions, frequency of use and applicable regulations.

It is assumed that MEWPs will be checked for function daily before start of work and that they will not be put into operation unless all required control and safety devices are available and in working order.

If a MEWP is seldom used, the checks may be made before start of work.

Where, for clarity, an example of a safety measure is given in the text, this is not intended as the only possible solution. Any other solution leading to an equivalent level of safety is permissible.

Mobile elevating work platforms — Design, calculations, safety requirements and test methods relative to special features —

Part 1: MEWPs with retractable guardrail systems

1 Scope

This part of ISO 16653 specifies the safety requirements for mobile elevating work platforms (MEWPs) with guardrail systems. It is intended to be used in conjunction with ISO 16368.

It is applicable to such MEWPs designed for applications requiring special access to specific work areas. These MEWPs can be either self-propelled or manually propelled and are used to elevate personnel to a level at which they can place, install or retrieve objects or material on a routine basis. To facilitate operator access to the work area, the retraction of a portion of the MEWP's work platform guardrail system(s) can be necessary.

It is not applicable to powered industrial trucks used to pick and place stock or inventory.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 16368, *Mobile elevating work platforms — Design, calculations, safety requirements and test methods*[1)]

3 List of hazards

The hazards identified by the risk assessment procedure are presented in Table 1. These hazards are in addition to those specified in ISO 16368.

1) To be published. (Revision of ISO 16368:2003)

Table 1 — List of hazards

Hazards		Relevant clauses/subclauses in this part of ISO 16653
1	**Falling of persons from the platform**	4
1.1	Personal protective equipment	4.1.1
1.2	Guardrail system	4.1.2
1.3	Safety information — MEWP markings	6.1
1.4	Safety information — Operator instructions	6.2
2	**Objects falling from platform**	4.2
3	**Function speeds**	5.1, 5.2
4	**Missing or improperly positioned safety devices**	4.1.2
5	**Driving with guardrails retracted**	4.1.2.5

4 Work platform

4.1 Guardrail (protection) systems

4.1.1 General

The work platform shall be designed with a guardrail system around its periphery. For the purposes of properly accessing work areas, a portion of the guardrail system may be designed to be retractable. The work platform shall be designed to guard against falls through the use of a fall restraint system.

4.1.2 Retractable guardrail systems

4.1.2.1 The guardrail system(s) shall be designed to lock into a normal position that fully encloses the periphery of the work platform.

4.1.2.2 A portion of the guardrail system(s) shall also be designed to open and lock into one or more retracted positions.

4.1.2.3 The means used to lock the guardrail system(s) into position shall be readily accessible for inspection.

4.1.2.4 In all locked positions, the guardrails shall be constructed to withstand concentrated loads of 500 N per person, applied at the least favourable positions in the least favourable direction at 0,5 m intervals without causing permanent deformation of the guardrails.

4.1.2.5 The drive function shall be disabled when the guardrails are retracted.

4.1.2.6 The above (4.1.2.1 to 4.1.2.5) shall be verified by a design check and by visual examination.

4.1.3 Anchorage points

Each MEWP shall be equipped with one or more anchorage points that are accessible by occupants from the work platform. Anchorage point locations shall be designed for use with a fall restraint system.

4.2 Floor of work platform

The floor of the work platform shall contain a strip at the periphery where the guardrail is removable to define the boundary of the platform. The strip shall be contoured and shall not exceed 1 cm in height and 3 cm in width.

4.3 Controls

The operator controls shall be located in an area where the guardrails cannot be retracted or removed.

5 Function speeds

5.1 Maximum travel speeds in elevated travel position

Travel speeds of MEWPs of types 2 and 3 in the elevated travel position shall not exceed the following:

a) 0,75 m/s for vehicle-mounted MEWPs when using the travelling controls inside the cab;

b) 1,5 m/s for rail-mounted MEWPs;

c) 0,5 m/s for all other self-propelled MEWPs of types 2 and 3.

This shall be verified by a design check and functional test.

5.2 Speeds of extending structure

The following speeds shall not be exceeded:

a) 0,3 m/s for telescoping of the boom;

b) 0,5 m/s for slewing or rotation (horizontal speed at the outer edge of the work platform measured at maximum range).

This shall be verified be by a functional test.

6 Information for use

6.1 Markings

Information regarding the requirement to utilize the fall restraint system when the guardrail system is retracted shall be permanently and clearly marked on each work platform.

6.2 Instruction handbook

The instruction handbook shall include the following information:

— operating instructions pertaining to the proper retraction or removal, and installation, of the guardrail system(s);

— operating instructions that are unique to the conditions of use of a MEWP for which the guardrails may be retracted;

— manufacturer's fall restraint system equipment requirements (e.g. maximum lanyard length).

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