INTERNATIONAL STANDARD

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Mobile elevating work platforms — Safety principles, inspection, maintenance and operation

Plates-formes élévatrices mobiles de personnel — Principes de sécurité, inspection, entretien, mise en oeuvre et utilisation

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 214, *Elevating work platforms*.

This second edition cancels and replaces the first edition (ISO 18893:2004), which has been technically revised.

Introduction

This International Standard is one of a series of standards produced by ISO/TC 214 as part of its program of work regarding standardization of terminology, ratings, general principles (technical performance requirements and risk assessment), safety requirements, test methods, maintenance, and operation for elevating work platforms used to raise (elevate) and position personnel (and related work tools and materials).

Mobile elevating work platforms (MEWPs) are machines/devices which provide protection from falling when working at height.

The entities with responsibilities related to safe use of a MEWP are established by law in some countries. This International Standard provides guidance in the identification of those responsible.

The responsibility for safe operation of a MEWP lies with employers, managers, supervisors, operators, and others using these machines/devices. This International Standard provides requirements so that appropriate MEWPs are selected for use and positioned, used, maintained, and examined for safe use.

The safe operation of a MEWP requires the use of competent authorized persons and trained operators (see ISO 18878).

Mobile elevating work platforms — Safety principles, inspection, maintenance and operation

1 Scope

This International Standard applies to all mobile elevating work platforms (MEWPs) that are intended to position persons, tools and materials and which, as a minimum, consists of a work platform with controls, an extending structure and a chassis.

The technical safety requirements of this International Standard apply except where national or local regulations are more stringent.

For related information, see ISO 16368.

This International Standard applies to MEWPs to achieve the following objectives:

a) prevention of personal injuries, property damage, and accidents;

b) establishment of criteria for inspection, maintenance, and operation.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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*

ISO 18878, *Mobile elevating work platforms — Operator (driver) training*

IEC/TS 61813, *Live working — Care, maintenance and in-service testing of aerial devices with insulating booms*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 16368 and ISO 18878 and the following apply.

3.1
authorized person
person approved or assigned to perform a specific type of duty or duties at a specific location or locations at a work site

3.2
configuration
all positions in which a MEWP, chassis, extending structure, or work platform can be placed within intended operating limits, including creating variable rated loads

3.3
working envelope
space in which a work platform is designed to work within the specified loads and forces, under normal operation conditions

Note 1 to entry: A MEWP can have more than one working envelope.

3.4
delivery
transfer of custody, care, and control of a MEWP from a person or entity to another person or entity

3.5
maintenance
act of upkeep such as inspection, lubrication, refuelling, cleaning, adjustment, and scheduled parts replacement

3.6
modification
change(s) or addition(s) to a MEWP as originally manufactured which affects the operation, stability, safety factors, rated load, or safety of the MEWP

3.7
operation
performance of functions of a MEWP within the scope of its specifications and in accordance with the manufacturer's instructions, work rules, and applicable governmental regulations

3.8
operator
person who controls the operation of a MEWP

3.9
repair
act of restoring to good condition that which has been broken, damaged, or worn due to use, abuse, or other reasons

3.10
qualified person
person who, by possession of a recognized degree, certificate, or professional standing, or by extensive knowledge, training, and experience, has successfully demonstrated his/her ability to solve or resolve problems related to the subject matter, the work, or the project

3.11
safety-related bulletin
publication from the manufacturer of a MEWP that requires attention to ensure safe operation of the MEWP

3.12
stable
condition wherein the MEWP does not overturn, described technically as the condition in which the sum of the moments acting to overturn a MEWP is less than the sum of the moments tending to resist overturning

4 General requirements

4.1 Basic principles

The information in this International Standard shall be supplemented by good job management, safety control, and the application of sound principles of safety, training, inspection, maintenance, repair, application, and operation. All data available regarding the parameters of intended use and expected environment shall be considered. Those with direct control over the application and operation of MEWPs shall be responsible for the conformance with good safety practices. Decisions on the use and operation of the MEWPs shall always be made with due consideration for the fact that the machine will be carrying persons whose safety is dependent on those decisions as well as others in the operating vicinity.

The operation of any MEWP is subject to certain hazards that can be protected against only by the exercise of intelligence, care, and common sense and not by any device. It is essential to have qualified,

careful persons trained (see ISO 18878) in the intended use, safe operation, maintenance, and service of this type of equipment.

The operation of any MEWP used for working on energized conductors shall conform to the requirements of this International Standard and the requirements of IEC/TS 61813.

It is an essential requirement that:

a) the selection, positioning, operation, maintenance, and frequent and annual inspections of a MEWP are properly planned, appropriately supervised, and carried out in a safe manner;

b) having identified the hazards associated with the use of a MEWP, the qualified person evaluates the risks associated with these hazards and puts appropriate control measures in place as identified during the evaluation;

c) all MEWP operators be trained in accordance with ISO 18878;

d) all MEWP maintenance work be performed by a qualified person; and

e) all MEWP repair work shall be performed by a qualified person.

4.2 System of work

The system of work shall be created by the employer or user and shall include the following:

a) planning of the operation, including procedures for the recovery of persons and/or the machine in the event of an emergency (see 6.1.2.8);

b) selection, provision, and use of a suitable MEWP and work equipment associated with it;

c) preparation and maintenance of the site, as required, for use of the MEWP;

d) MEWP maintenance, including inspection(s) and repairs as recommended by the manufacturer;

e) properly trained personnel authorized to operate the MEWP;

f) prior to the start of work, familiarization of the MEWP operator with the specific machine to be used, including any local site requirements, warning of the hazards in the areas where the MEWP will be operated;

g) monitoring of the performance and supervision of the work of the operator to ensure compliance with provisions of this International Standard;

h) prevention of unauthorized use of the MEWP;

i) safety of persons not involved in the operation of the MEWP; and

j) documentation of activities required by this International Standard.

4.3 Manuals (handbooks)

The manufacturer's information which is intended to be readily available and which is necessary for the operation and daily inspection/maintenance of the MEWP shall be provided with each rental, lease, or sale delivery. The manufacturer's maintenance information shall be made available for use by trained personnel of the entity responsible for maintaining the MEWP.

The user/employer shall make sure that the operator is capable of reading and understanding the manuals (handbooks) provided by the manufacturer.

In case the manufacturer no longer exists, and the manufacturer's manuals (handbooks) are not available from other sources, the replacement manuals (handbooks) shall be provided by a qualified person.

4.4 Record retention

The following records shall be created and retained by the entity responsible (owner) for each MEWP. All records included under items b) and c) below shall be transferred to the new owner of the MEWP in conjunction with delivery.

a) Name and address of each owner of a MEWP by serial number and date of delivery shall be retained for a minimum of three years after the sale of the MEWP or until the MEWP is permanently removed from service.

b) Written records of the pre-delivery, frequent, and annual inspections on the MEWP shall include the date of inspection, deficiencies found, corrective action accomplished, and identification of the person(s) performing the inspection. These records shall be retained for a minimum of three years after the sale of the MEWP or until the MEWP is permanently removed from service.

c) Written records of all repairs, manufacturer recalls, upgrades, and approved modifications accomplished on the MEWP shall include the date work is completed, a description of the work accomplished, and identification of the person(s) performing the repair. These records shall be retained for a minimum of three years after the sale of the MEWP or until the MEWP is permanently removed from service.

4.5 Modifications

Modifications, additions, or alterations to a MEWP, or the fabrication or attaching of any framework or mounting of any attachments for holding tools or materials onto the platform or the guardrail system shall be made only with prior written permission of the manufacturer. In case the manufacturer no longer exists, modifications to MEWP shall be made in accordance with the instructions from a qualified person.

NOTE CE-approved MEWPs that have been modified might require re-certification.

5 Maintenance

5.1 Preventive maintenance

A preventive maintenance programme shall be established in accordance with the manufacturer's recommendations. The preventive maintenance programme shall be increased based on the environment and severity of use of the MEWP. The manufacturer's recommendations shall be the minimum requirements.

The preventive maintenance programme shall include the frequent and annual inspections as defined in this International Standard. All malfunctions identified shall be corrected before the MEWP is placed or returned to service.

5.2 Maintenance inspections

5.2.1 General

The MEWP shall have maintenance inspections as required to ensure proper operation. The frequency of maintenance inspections shall be determined by the manufacturer's recommendations and the operating conditions. The frequency of the maintenance inspections can be increased to be compatible with operating conditions and the severity of the operating environment, but the manufacturer's recommendations shall be the minimum requirements. MEWPs that are not in proper operating condition shall be corrected by a qualified person and the repairs shall be in conformance with the manufacturer's recommendations.

5.2.2 Pre-delivery inspection

MEWP's shall be inspected, repaired, and adjusted in accordance with the manufacturer's specifications prior to each delivery by sale, lease, rental, or loan.

5.2.3 Pre-start inspection

Before use each day or at the beginning of each shift, the MEWP shall be given a visual inspection and functional test by the operator, including but not limited to the following:

a) operating and emergency controls;

b) safety features;

c) personal protective equipment;

d) air, hydraulic, and fuel system for leaks;

e) cables and wiring harness;

f) loose, damaged, worn, or missing guards or parts;

g) tyres (where applicable, tyre pressure), wheels, and wheel fasteners;

h) instructions, warnings, control markings, and operating manual(s);

i) structural items, extending structure, and stabilizers;

j) work platform, including guardrail system, floor, anchorage, and mounting;

k) cleanliness and general signs of damage;

l) brake operation and performance;

m) lights (when applicable);

n) fluid levels including engine coolant, engine oil, and hydraulic oil;

o) pins and pin-securing devices and visible damage to the prime means of support for the work platform and extending structure;

p) operation of stabilizers/outriggers, extendable, and oscillating axles; and

q) other items specified by the manufacturer.

5.2.4 Frequent inspection

A frequent inspection shall be performed in accordance with the manufacturer's instruction on the MEWP. Unless it is determined that the frequent inspection is current, it shall be performed upon transfer of custody, for a unit that has been out of service for a period longer than three months, or unless environmental conditions require a shorter period.

The frequent inspection shall be made by a qualified person. This inspection shall include all items specified by the manufacturer for a frequent inspection and shall include the following:

a) all functions and their controls, including controls for emergency operation, for speed(s), smoothness, and limits of motion;

b) base- or ground-level controls, including the provisions for overriding of work platform controls;

c) all chain and wire rope mechanisms, for adjustment and worn or damaged parts;

d) all emergency controls, guards, and safety features are in place and in good working order;

e) lubrication of all moving parts, inspection, and replacement of filter element(s) if required, hydraulic oil, engine oil, and coolant;

f) visual inspection of structural components and other critical components such as fasteners, pins, shafts, turntable attachment devices, and locking devices;

g) instructions, warnings, and control markings are in place and legible;

h) hydraulic or pneumatic systems, for proper fluid or pressure levels and observable for proper operation, damage, leaks, or external wear;

i) electrical systems, for signs of damage, deterioration, dirt, or moisture accumulation;

j) pneumatic tyres, if applicable, for proper inflation and damage;

k) wheel nuts and bolts are in place and properly tightened;

l) lights, if applicable, for proper operation and illumination;

m) batteries, checked for adequate fluid level and connections free from corrosion, if applicable, before use of the MEWP and before recharging;

n) drive systems, brakes, steering, and speed controls for proper operation;

o) audible or light alarms, if applicable, for proper operation; and

p) communication system, if any, between platform and ground level is working properly.

The MEWP shall not be placed into service until all malfunctions and safety-related problems have been corrected.

5.2.5 Annual inspection

The MEWP owner shall ensure that an annual inspection be performed no later than 13 months from the date of the prior annual inspection. The inspection shall be performed by a qualified person for the specific make and model of MEWP. The annual inspection shall include all items specified by the manufacturer for an annual inspection.

An annual inspection shall be performed upon transfer of custody of the MEWP, unless it is determined that the annual inspection is current.

A MEWP shall not be placed back into service until all malfunctions and problems identified in the inspection have been corrected.

NOTE Some countries require that annual inspections be performed by a third party.

5.3 Maintenance personnel training

Maintenance personnel shall be trained by a qualified person to inspect and maintain the MEWP in accordance with the manufacturer's recommendations and this International Standard.

5.4 Maintenance and repair safety precautions

Before maintenance or repairs are started on MEWPs, the following precautions shall be taken, as applicable:

a) instructions and precautions provided by the MEWP manufacturer have been read and understood;

b) that only qualified personnel are performing maintenance or repair on MEWP has been ensured;

c) power plant stopped and means of starting rendered inoperative;