SLOVENSKI STANDARD
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Premične dvižne delovne ploščadi - 2. del: Dodatne varnostne zahteve za naprave za dvigovanje tovora na dvižni napravi in delovni ploščadi

Mobile elevating work platforms - Part 2: Additional safety requirements for load lifting appliances on the extending lifting structure and work platform

Fahrbahre Hubarbeitsbühnen - Teil 2: Zusätzliche Sicherheitsanforderung für Lastaufnahmemittel an Hubeinrichtung und Arbeitsbühne

Plates□formes élévatrices mobiles de personnel - Partie 2: Prescriptions de sécurité supplémentaires pour des appareils de levage fixés à la structure extensible ou à la plate□forme de travail

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53.020.99	Druga dvigalna oprema	Other lifting equipment

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Mobile elevating work platforms - Part 2: Additional safety requirements for load lifting appliances on the extending lifting structure and work platform

Plates-formes élévatrices mobiles de personnel - Partie 2 : Exigences de sécurité supplémentaires pour des appareils de levage fixés à la structure extensible ou à la plate-forme de travail

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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European foreword

This document (EN 280-2:2022) has been prepared by Technical Committee CEN/TC 98 “Lifting platforms”, the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by August 2022, and conflicting national standards shall be withdrawn at the latest by August 2022.

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For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

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Introduction

This document is a harmonized standard to provide one means for Mobile Elevating Work Platforms (MEWPs) of Type 1, equipped with a load lifting appliance and designed for lifting suspended loads, to conform to the essential health and safety requirements of the Machinery Directive 2006/42/EC.

This document is a type C standard as stated in EN ISO 12100:2010.

When provisions of this type C standard are different from those which are stated in type A or B standards, the provisions of this type C standard take precedence over the provisions of the other standards, for machines that have been designed and built according to the provisions of this type C standard.

The machinery concerned and the extent to which hazards are covered are indicated in the scope of this document.

1 Scope

This document, which is to be used in conjunction with EN 280-1:2022, specifies the additional safety requirements for MEWPs of Type 1 Group B equipped with a load lifting appliance. The load-lifting appliance is designed for lifting suspended loads only as part of the task being carried out by personnel from the work platform. This document deals with the additional hazards, hazardous situations and events relevant to load lifting appliances either on the extending lifting structure or on the work platform, when the MEWP and load lifting appliance are used as intended and under conditions of misuse which are reasonably foreseeable by the manufacturer of the MEWP. The significant hazards covered by this document are listed in Annex A.

This document does not cover the following:

a) the use of a MEWP for lifting persons as a suspended load;

b) the use of a MEWP for lifting suspended loads from a control position other than the work platform;

c) requirements for lifting accessories;

d) lifting or lowering of suspended loads for general materials handling as carried out by a crane;

e) MEWPs compliant with EN 280-1:2022, 4.4.1.5 and/or 4.4.1.6 (enhanced stability and overload criteria);

f) MEWPS others than Type1 Group B.

Load lifting appliance can be:

g) fixed load attachment points on the work platform or on the extending lifting structure where the load can be positioned in reach of the personnel on the platform;

h) lifting equipment for lifting or lowering the load with a stationary platform. The equipment is attached to the work platform or extending structure and may have a load lifting jib.

NOTE The lifting equipment can be either permanently attached or removable.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

EN 280-1:2022, *Mobile elevating work platforms - Part 1: Design calculations - Stability criteria - Construction - Safety - Examinations and tests*

EN 13001-2:2021, *Crane safety - General design - Part 2: Load actions*

EN 14492-2:2019, *Cranes - Power driven winches and hoists - Part 2: Power driven hoists*

EN 60204-32:2008, *Safety of machinery - Electrical equipment of machines - Part 32: Requirements for hoisting machines (IEC 60204 32:2008)*

EN ISO 12100:2010, *Safety of machinery - General principles for design - Risk assessment and risk reduction (ISO 12100:2010)*

EN ISO 13850:2015, *Safety of machinery - Emergency stop function - Principles for design (ISO 13850:2015)*

EN ISO 13854:2019, *Safety of machinery - Minimum gaps to avoid crushing of parts of the human body (ISO 13854:2017)*

EN ISO 13857:2019, *Safety of machinery - Safety distances to prevent hazard zones being reached by upper and lower limbs (ISO 13857:2019)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 280-1:2022, EN ISO 12100:2010, and the following apply (see also Figure 1 for some illustrations of definitions).

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at https://www.electropedia.org/

— ISO Online browsing platform: available at https://www.iso.org/obp

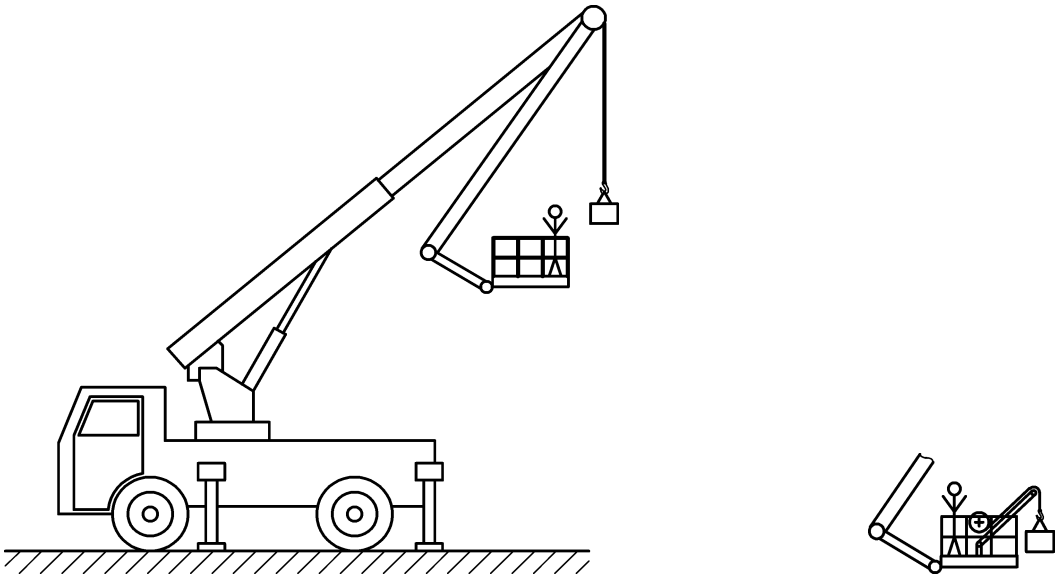
3.1
load lifting appliance
load attachment point or hoist appliance

3.2
lifting equipment
hoist with or without load lifting jibs, with or without hoist mediums and load holding device, which is permanently mounted or removable

3.3
lifting accessories
component or equipment not attached to the lifting machinery, allowing the load to be held, which is placed between the machinery and the load or on the load itself, or which is intended to constitute an integral part of the load

Note 1 to entry: Slings and their components are also regarded as lifting accessories.

3.4
load lifting jib
part of the lifting equipment which provides the necessary radius and/or height of the load holding device (definition similar to ISO 4306-1:2007)

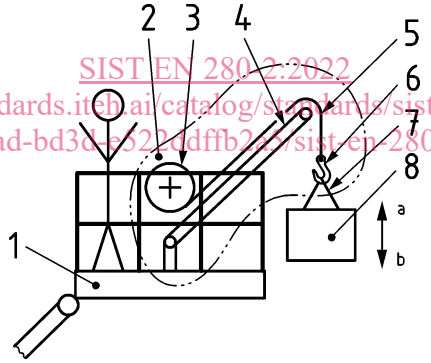


a b

Key

a boom structure load attachment point
b work platform lifting equipment

Figure 1 — Example of load lifting appliance



Key

1 work platform
2 lifting equipment
3 hoist
4 load lifting jib
5 hoist medium
6 load holding device
7 lifting accessories
8 payload
a lifting
b lowering

Figure 2 — Example of lifting equipment in the work platform

4 Safety requirements and/or protective/risk reduction measures

4.1 Fixed load-lifting attachment

4.1.1 The load-lifting attachment shall be secured so as to prevent unintentional loosening of the lifting accessories.

4.1.2 The load shall be suspended freely and guided by the movements of the extending structure of the MEWP. The hoist medium shall not change length while moving the extending structure.

4.2 Hoist appliance (hoists with/without jibs)

4.2.1 Power-operated hoists shall be designed according to EN 14492-2:2019.

4.2.2 Rope drums, rope pulleys and guides shall be designed according to EN 14492-2:2019.

Trapping and shearing points between moving parts which are within reach of persons (see EN ISO 13857:2019) on the platform or standing adjacent to the MEWP at ground level shall be avoided by providing safe clearances in accordance with EN ISO 13854:2019 or guarding.

4.2.3 The hoist lifting speed shall not exceed the work platform lifting speed by boom movement and not exceed 0,25 m/s. The hoist lowering speed shall not be more than 1,5 times of the hoist lifting speed and in no case exceed the lowering speed of the work platform.

4.2.4 Manual boom extensions shall have end stops and mechanical locks for the retracted, extended and working positions.

4.2.5 An interlock shall prevent movements of the MEWP whilst lifting or lowering the load with the lifting equipment. This interlocking device shall comply with EN 280-1:2022, 4.11 and meet a minimum Performance Level c. This requirement does not apply for human powered hoists.

4.2.6 Means to reduce the risk of collision between the suspended load and platform occupants due to the movement of the extending structure and the platform shall be provided.

Aspects to be considered include:

a) a reduced speed of the extending structure and platform;

b) platform position during the lifting, lowering and other movements of the load.

It shall not be possible to position the work platform below the load attachment point. Collisions between the suspended load and structural parts of the MEWP shall be avoided.

4.2.7 The hydraulic equipment shall comply with EN 280-1:2022, 4.9. Hydraulic hoses in the vicinity of the operators shall not pose a hazard to them (e.g. due to leakage of hot or pressurized liquids).

4.2.8 Hydraulic cylinders shall comply with EN 280-1:2022, 4.10.

4.2.9 The electrical equipment shall comply with EN 280-1:2022, 4.8 and EN 60204-32:2008.

4.2.10 The control position of the lifting equipment shall comply with EN 280-1:2022, 4.7 and have an emergency stop according to EN ISO 13850:2015. All emergency stop devices (on the MEWP and on the load lifting appliance) shall stop all movements of the MEWP and the load lifting appliance.

4.2.11 It shall be possible to activate power-operated lifting equipment from an additional position easily accessible from the ground as an overriding emergency control function. The additional control position shall comply with EN 280-1:2022, 4.7.4.

4.2.12 Means shall be provided to control lowering of the load of the hoist even in case of loss of power supply.

NOTE Use of the boom functions is permissible.

4.3 Structural and stability calculations

The load lifting appliance and its interface with the MEWP shall comply with EN 280-1:2022, 4.2.5.2 and 4.2.5.3. The force from the hoist load shall be considered when designing the MEWP (see EN 280-1:2022, 4.2.3.5). To consider dynamic effect of hoisting, the hoist load shall be multiplied by a dynamic factor in accordance with EN 13001-2:2021, 4.2.2.2, using hoisting class HC1 (see Table 1).

Wind forces on the hoist load shall be calculated in accordance with EN 13001-2:2021, 4.2.3.1.

Table 1 — Partial safety factors (based on Table 3 of EN 280-1:2022)

Clause	Loading	Partial safety factors γ_p	
		Regular loads	Occasional loads
4.2.3.1 in EN 280-1:2022	Rated load	1,34	1,22
4.2.3.2 in EN 280-1:2022	Dead weights	1,22	1,16
4.2.3.3 in EN 280-1:2022	Wind loads	–	1,22
4.2.3.4 in EN 280-1:2022	Manual force	–	1,22
4.3 in EN 280-2:2022	Dynamic hoist load	1,34	1,22

4.4 Methods to avoid overturning and exceeding permissible stresses

4.4.1 The combination of the MEWP with the load lifting appliance shall be equipped with a safety function according to EN 280-1:2022, 4.4.1.2, 4.4.1.3 and/or 4.4.1.4 which avoids the risk of overturning and exceeding the permissible stresses. In addition to the requirements in EN 280-1:2022, 4.4.1 the safety function shall also stop the powered load lifting appliance. The safety function shall comply with EN 280-1:2022, 4.11.

4.4.2 Where the rated load of the load lifting appliance is greater than the rated load of the work platform, a safety function according to EN 280-1:2022, 4.11 with at least PL c shall prevent the load of the load lifting appliance being applied to the work platform.

4.4.3 The load lifting appliance shall have a rated capacity limiter according to 4.11 of EN 280-1:2022 with at least PL c to prevent overload and to prevent permissible stresses from being exceeded.

4.4.4 The MEWP and load lifting appliance combination shall meet the stability requirements of EN 280-1:2022, 4.2.4 to prevent overturning under the least favourable combination of loads, forces and extending structure position, under foreseeable operating conditions including:

a) any possible combination of loads within the total capacity of the machine, of the load lifting appliance (from zero to the rated load of the load lifting appliance) and the loads on the work platform (from 80 kg for one person to the rated load of the work platform);