



**SLOVENSKI STANDARD**  
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**Varnost naprav in opreme v zabaviščnih parkih - 2. del: Delovanje, vzdrževanje in uporaba**

Safety of amusement rides and amusement devices - Part 2: Operation, maintenance and use

Sicherheit von Fahrgeschäften und Vergnügungseinrichtungen - Teil 2: Betrieb, Instandhaltung und Gebrauch

Sécurité des manèges et des dispositifs de divertissement - Partie 2: Installation, maintenance et exploitation

**Ta slovenski standard je istoveten z: prEN 13814-2**

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**DRAFT**  
**prEN 13814-2**

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Will supersede EN 13814:2004

English Version

**Safety of amusement rides and amusement devices - Part  
2: Operation, maintenance and use**

Sécurité des manèges et des dispositifs de  
divertissement - Partie 2: Installation, maintenance et  
exploitation

Sicherheit von Fahrgeschäften und  
Freizeiteinrichtungen - Teil 2: Betrieb, Instandhaltung  
und Verwendung

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 152.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

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## European foreword

This document (prEN 13814-2:2016) has been prepared by Technical Committee CEN/TC 152 “Fairground and amusement park machinery and structures - Safety”, the secretariat of which is held by UNI.

This document is currently submitted to the CEN Enquiry.

This document, together with its first and third parts, will supersede EN 13814:2004.

EN 13814 consists of the following parts, under the general title *Safety of amusement rides and amusement devices*:

- *Part 1: Design and Manufacture*
- *Part 2: Operation, Maintenance and Use*
- *Part 3: Requirements for inspection during design, manufacture, operation and use*

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## 1 Scope

This document specifies the minimum requirements necessary to ensure the safe maintenance, operation, inspection and testing of amusement ride and amusement devices which are intended to be installed both repeatedly without degradation or loss of integrity, and temporarily or permanently in fairgrounds and amusement parks or any other locations.

Fixed grandstands, construction site installations, scaffolding, removable agricultural structures and simple coin operated children's amusement devices, carrying not more than two children, are not covered by this document.

Existing national rules on workers' safety are not concerned by this document.

## 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.

EN 12385 (all parts), *Steel wire ropes — Safety*

prEN 13814-1:2016, *Safety of amusement rides and amusement devices — Part 1: Design and Manufacture*

prEN 13814-3:2016, *Safety of amusement rides and amusement devices — Part 3: Requirements for inspection during design, manufacture, operation and use*

EN 60947-3, *Low-voltage switchgear and controlgear — Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units (IEC 60947-3)*

EN ISO 2307, *Fibre ropes — Determination of certain physical and mechanical properties (ISO 2307)*

EN ISO 4413, *Hydraulic fluid power — General rules and safety requirements for systems and their components (ISO 4413)*

EN ISO 4414, *Pneumatic fluid power — General rules and safety requirements for systems and their components (ISO 4414)*

EN ISO 7010, *Graphical symbols — Safety colours and safety signs — Registered safety signs (ISO 7010)*

EN ISO 9554, *Fibre ropes — General specifications (ISO 9554)*

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

EN ISO/IEC 17020, *Conformity assessment — Requirements for the operation of various types of bodies performing inspection (ISO/IEC 17020)*

ISO 3864-1, *Graphical symbols — Safety colours and safety signs — Part 1: Design principles for safety signs and safety markings*

ISO 3864-3, *Graphical symbols — Safety colours and safety signs — Part 3: Design principles for graphical symbols for use in safety signs*

ISO 7001, *Graphical symbols — Public information symbols*

ISO 7165, *Fire fighting — Portable fire extinguishers — Performance and construction*

ISO 9186-1, *Graphical symbols — Test methods — Part 1: Method for testing comprehensibility*

ISO 22727, *Graphical symbols — Creation and design of public information symbols — Requirements*

### 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

#### 3.1

##### **amusement device**

arrangement of equipment that produces the desired effect of amusement or entertainment when the *passenger* (3.28) moves through it or on it primarily by his or her own action, or any other system that is not covered by the term *amusement ride* (3.2)

Note 1 to entry: In this standard, the word *device* is used to refer to an *amusement device* (3.1) or *amusement ride* (3.2).

#### 3.2

##### **amusement ride**

equipment that is designed to entertain the *passengers* (3.28) during motion including the consequence of biomechanical effect

Note 1 to entry: In this document, the *amusement ride* (3.2) or the *amusement device* (3.1) could be referred by the word *device*.

#### 3.3

##### **attendant**

any trained person appointed to work under the supervision of an *operator* (3.27), to assist in the operation of an *amusement device* (3.1) available for use by the public

#### 3.4

##### **barrier**

device intended to prevent the user from falling and from passing beneath

#### 3.5

##### **closed**

<restraint> position in which the *restraint* (3.37) is intended to remain during the operation of the device in order to restrain the *passenger* (3.28)

#### 3.6

##### **competent person**

person who can demonstrate that he has acquired through training, qualifications or experience, or a combination of these, the knowledge and skills enabling that person to perform a specified task

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### 3.7

#### **controller ride controller**

person or organisation having overall control of an *amusement device* (3.1). This may be either an individual or corporate body owning an *amusement device* (3.1) or the concessionaire or lessee who has been granted control of the device, by the owner, for a specified period

### 3.8

#### **design review**

document detailing the review of all the applicable design documents, to determine the suitability for use of a device

### 3.9

#### **design risk assessment**

##### **DRA**

document, produced by the *designer* (3.10) to ensure a safe design within the agreed scope of supply

### 3.10

#### **designer engineer**

persons or bodies that are responsible for the design of a device (or modifications thereof), including, but not limited to establishing and describing the configuration of the device, conducting appropriate risk assessment(s), establishing strength (including fatigue strength), designing and specifying electrical/electronic control systems, defining the acceptable quality level for production, defining inspection criteria and including the publication of the necessary documentation

### 3.11

#### **device log**

book or electronic data file containing all the necessary information about the use and history of any device

### 3.12

#### **fail safe**

characteristic of a system, component or device the failure of which results in a safe state

### 3.13

#### **fence**

structure designed to restrict or prevent movement across a boundary without changing level

### 3.14

#### **gate**

section of *fence* (3.13) or *barrier* (3.4) that may be opened to provide access or egress

### 3.15

#### **guardrail**

rail intended to prevent a user from falling

### 3.16

#### **guest**

persons that interact with a device

Note 1 to entry: While both are guests, a *passenger* (3.28) is active and a *spectator* (3.44) is passive.



**3.17****handrail**

rail intended to assist the user to balance

**3.18****initial approval**

design and calculation review, verification, examinations and tests executed by the *inspection body* (3.19) before a ride is first made available for public use

**3.19****inspection body**

any organisation in accordance with EN ISO/IEC 17020 capable of carrying out examination, tests and approval of devices

**3.20****latching**

means by which a latching *restraint* (3.37) is held secure against opening except by intentional action of the *passenger* (3.28), *operator* (3.27), or other means. This can include *restraints* (3.37) (e.g. drop bars) held in place by gravity, detents or other means

**3.21****licensing body**

any national authorities or bodies legally authorised to issue a permit for operation of a device and related documents

**3.22****locking**

means by which a locked *restraint* (3.37) is held secure against opening except by intentional action of the *operator* (3.27) or other means not accessible by the *passenger* (3.28)

**3.23****machinery components**

components which form part of an assembly in which at least one component moves (excluding vibration and deformation)

**3.24****major modification**

safety-related alteration to the hardware or software of an *amusement device* (3.1), including the introduction of a new *safety-related component* (3.41) or the substitution of a *safety-related component* (3.41), which results in a deviation from the current design specification

**3.25****manufacturer**

any natural or legal person who is responsible for designing and manufacturing a product with the view to placing it on the market under his own name

Note 1 to entry: Any commercial *operator* (3.27) that either places a product on the market under his own name or trademark or modifies a product in such a way that compliance with applicable requirements maybe affected should be considered to be the manufacturer and should assume the obligations of the manufacturer.

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### 3.26

#### **operation and use risk assessment**

##### **OURA**

document, produced by the *controller* (3.7), that details all of the considered risks inherent during all modes of device operation and the means taken to mitigate against them

### 3.27

#### **operator**

trained person appointed by the *controller* (3.7) to be in charge of the operation of an *amusement device* (3.1) at all times when it is intended to be available for the public

### 3.28

#### **passenger**

any person using a device

### 3.29

#### **passenger containment**

components (e.g. seating, footwells, *handrails* (3.17) and passenger restraints) designed to prevent *passengers* (3.28) from moving outside a predetermined area on a ride either as a result of the ride forces or the behaviour of the *passenger* (3.28)

### 3.30

#### **passenger reach envelope**

physical space where a *passenger* (3.28) could reach during a ride cycle while properly positioned, as defined by the ride analysis, in the *amusement ride* (3.2) or *amusement device* (3.1) and limited only by the vehicle, seat geometry, and restraint system

### 3.31

#### **passenger unit**

##### **PU**

part or parts of an *amusement ride* (3.2) in or on which the *passenger* (3.28) is intended to ride

### 3.32

#### **permit**

authorisation to operate an *amusement device* (3.1) in a particular member state granted by the legally authorised body after successful approval or examination

### 3.33

#### **platform**

horizontal or slightly inclined surface raised above the level of an adjacent area

### 3.34

#### **reasonably foreseeable misuse**

use of a machine in a way not intended by the *designer* (3.10), but which can result from readily predictable human behaviour

Note 1 to entry: prEN 13814-1:2016, Annex G (Guest Behaviour) gives a non-exhaustive list of human behaviours.

[SOURCE: EN ISO 12100:2010, 3.24, modified — Note 1 to entry has been added.]

**3.35****redundancy**

application of more than one device or system, or part of a device or system, with the objective of ensuring that in the event of one failing to perform its function another is available to perform that function

**3.36****repair**

restoration of *safety-related components* (3.41) or assemblies to an acceptable condition

**3.37****restraint**

system, device, or characteristic that is intended to inhibit or restrict the body movement and/or keep the body position to tolerate accelerations of the *passenger(s)* (3.28) while on the *amusement ride* (3.2) or *amusement device* (3.1)

**3.38****safe stop**

stop of an *amusement ride* (3.2) in a safe way and in a final safe position

**3.39****safety envelope**

theoretical or actual physical space that may be encroached by any part of a *passenger* (3.28) of an amusement ride during the ride cycle

Note 1 to entry: This is the *passenger reach envelope* (3.30) plus a suitable margin as defined in prEN 13814-1:2016, Annex I.

**3.40****safety-related control system****SRCS**

assembly of components that may be electronic, electric, electro-mechanical, hydraulic, pneumatic or mechanical combined to monitor and control an device so as to reduce risks to *guests* (3.16)

**3.41****safety-related part or component**

part or component of an *amusement device* (3.1) on which the safety of the *passengers* (3.28) is dependent as identified in the *design risk assessment* (3.9) and/or the *operation and use risk assessment* (3.26)

**3.42****service**

replacement or replenishment of components, including fluids which are designated to be replaced or replenished at specified intervals

**3.43****sideshow**

booth or similar enclosed structure containing, shows, activities or games for the entertainment of the public, where the *guest* (3.16) is not carried in any way by the structure

**3.44****spectator**

person in the vicinity of an *amusement device* (3.1). Typically defined as a person watching the operation of the *amusement device* (3.1) or waiting to gain access to the use the device