



**SLOVENSKI STANDARD**  
**SIST EN 13814-2:2019**

**01-september-2019**

**Nadomešča:**  
**SIST EN 13814:2005**

---

**Varnost naprav in opreme v zabaviških 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

<https://standards.iteh.ai/catalog/standards/sist/34770cd0-79c2-4be1-bf4a-b1a31ce6b69b/sist-en-13814-2-2019>

**Ta slovenski standard je istoveten z: EN 13814-2:2019**

---

**ICS:**

97.200.40      Igrišča      Playgrounds

**SIST EN 13814-2:2019**      en,fr,de

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST EN 13814-2:2019

<https://standards.iteh.ai/catalog/standards/sist/34770cd0-79c2-4be1-bf4a-b1a31ce6b69b/sist-en-13814-2-2019>

EUROPEAN STANDARD

EN 13814-2

NORME EUROPÉENNE

EUROPÄISCHE NORM

May 2019

ICS 97.200.40

Supersedes 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  
Vergnügungseinrichtungen - Teil 2: Betrieb,  
Instandhaltung und Gebrauch

This European Standard was approved by CEN on 13 May 2018.

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. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

<b>Contents</b>	<b>Page</b>
European foreword .....	4
<b>1 Scope</b> .....	<b>5</b>
<b>2 Normative references</b> .....	<b>5</b>
<b>3 Terms and definitions</b> .....	<b>5</b>
<b>4 Operation, maintenance and use of amusement rides and amusement devices</b> .....	<b>11</b>
<b>4.1 General</b> .....	<b>11</b>
<b>4.2 Standard documentation</b> .....	<b>11</b>
<b>4.3 Responsibilities of the controller</b> .....	<b>11</b>
<b>4.3.1 General</b> .....	<b>11</b>
<b>4.3.2 Selection and training of staff</b> .....	<b>12</b>
<b>4.3.3 Assembly disassembly</b> .....	<b>12</b>
<b>4.3.4 Care of equipment</b> .....	<b>15</b>
<b>4.3.5 Trial operations and checks</b> .....	<b>18</b>
<b>4.3.6 Operation</b> .....	<b>19</b>
<b>4.3.7 Duties for the supervision of the operation</b> .....	<b>20</b>
<b>4.3.8 Servicing (maintenance, repair and modification)</b> .....	<b>21</b>
<b>4.4 Duties of the amusement device operator</b> .....	<b>23</b>
<b>4.4.1 General</b> .....	<b>23</b>
<b>4.4.2 General requirements</b> .....	<b>24</b>
<b>4.4.3 Safe operation</b> .....	<b>24</b>
<b>4.5 Duties of the attendant</b> .....	<b>25</b>
<b>4.6 Independent inspection</b> .....	<b>26</b>
<b>4.6.1 In-service inspection</b> .....	<b>26</b>
<b>4.6.2 Reports</b> .....	<b>26</b>
<b>4.7 Emergency situations</b> .....	<b>26</b>
<b>4.7.1 General</b> .....	<b>26</b>
<b>4.7.2 Means of evacuation and escape</b> .....	<b>26</b>
<b>4.7.3 Fire</b> .....	<b>27</b>
<b>Annex A (informative) Training, qualification and experience for competent persons</b> .....	<b>29</b>
<b>Annex B (informative) Provisions prior to use</b> .....	<b>30</b>
<b>B.1 General</b> .....	<b>30</b>
<b>B.2 Operation Authorization or Permit</b> .....	<b>30</b>
<b>B.3 Competence</b> .....	<b>30</b>
<b>B.4 Operation authorization or permit for used and imported amusement devices</b> .....	<b>30</b>
<b>B.4.1 Procedure</b> .....	<b>30</b>
<b>B.4.2 Transfer</b> .....	<b>30</b>
<b>B.5 Prolongation and Transfer of the Operation Authorization or Permit</b> .....	<b>31</b>
<b>B.6 Reports for the prolongation of an operation authorization or permit</b> .....	<b>31</b>
<b>B.7 Testing</b> .....	<b>31</b>

<b>B.8</b>	<b>Inspection bodies</b> .....	<b>32</b>
<b>B.9</b>	<b>Installation Examination</b> .....	<b>32</b>
<b>B.10</b>	<b>Examples of examination intervals used by member states' regulations</b> .....	<b>32</b>
<b>B.10.1</b>	<b>General</b> .....	<b>32</b>
<b>B.10.2</b>	<b>Germany</b> .....	<b>32</b>
<b>B.10.3</b>	<b>United Kingdom</b> .....	<b>36</b>
<b>B.10.4</b>	<b>Netherlands</b> .....	<b>36</b>
<b>B.10.5</b>	<b>Italy</b> .....	<b>36</b>
	<b>Bibliography</b> .....	<b>37</b>

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[SIST EN 13814-2:2019](https://standards.iteh.ai/catalog/standards/sist/34770cd0-79c2-4be1-bf4a-b1a31ce6b69b/sist-en-13814-2-2019)

<https://standards.iteh.ai/catalog/standards/sist/34770cd0-79c2-4be1-bf4a-b1a31ce6b69b/sist-en-13814-2-2019>

**EN 13814-2:2019 (E)****European foreword**

This document (EN 13814-2:2019) 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 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 November 2019, and conflicting national standards shall be withdrawn at the latest by May 2022.

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

This document, together with its first and third parts, supersedes 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*

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

## 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.

Grandstands, construction site installations, scaffolding, removable agricultural structures, simple coin operated children's amusement devices, carrying up to three children, and recreational devices like waterslides or summer toboggan runs, playground equipment, rope courses, climbing wall, inflatable, trampolines, swimming pool equipment (this list is not exhaustive) are not covered by this document.

In terms of workers' health and safety, national regulations apply.

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

EN 13814-1:2019, *Safety of amusement rides and amusement devices — Part 1: Design and Manufacture*

EN 13814-3:2019, *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 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)*

## 3 Terms and definitions

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

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

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

### 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)

## EN 13814-2:2019 (E)

## 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 standard, the word *amusement device* is used to refer to an *amusement device* (3.1) or *amusement ride* (3.2).

## 3.3

**attendant**

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**

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

## 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 amusement device, by the owner, for a specified period

iTeh STANDARD PREVIEW  
(standards.iteh.ai)  
SIST EN 13814-2:2019  
<https://standards.iteh.ai/catalog/standards/sist/34770cd0-79c2-4be1-bf4a-b1a31ce6b69b/sist-en-13814-2-2019>

## 3.8

**design review**

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

## 3.9

**design risk assessment****DRA**

document, produced by the *designer* (3.10) as a tool for safe design, within the agreed scope of supply



**3.10****designer engineer**

person or body that is responsible for the design of an amusement device (or modifications thereof), including, but not limited to establishing and describing the configuration of the amusement 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****amusement device log**

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

**3.12****fail safe**

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

**3.13****fence**

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

**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**

person that may interact with an amusement device

**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**

organisation capable of carrying out examination, tests and approval of amusement devices

**3.20****latching restraint**

*restraint* (3.37) which 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

iTeh STANDARD PREVIEW  
(standards.iteh.ai)

SIST EN 13814-2:2019

<https://standards.iteh.ai/en/standards/sist/34770cd0-79c2-4be1-bf4a-b1a31ce6b69b/sist-en-13814-2-2019>

## EN 13814-2:2019 (E)

## 3.21

**licensing body**

national authority or body legally authorised to issue a permit for operation of an amusement device and related documents

## 3.22

**locking restraint**

*restraint* (3.37) which 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 component**

component 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**

individual or commercial entity who is responsible for designing and manufacturing a product with the view to placing it on the market under their own name

Note 1 to entry: Any commercial entity that either places a product on the market under their 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.

[standards.iteh.ai](https://standards.iteh.ai)  
b1a31ce6b69b/sist-en-13814-2-2019

## 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 an amusement device operation and the means taken to mitigate against them

Note 1 to entry: This term is explained in details in EN 13814-1:2019, 5.1.2.2.

## 3.27

**operator**

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

## 3.28

**passenger****patron**

person using an amusement 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) can 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* in a particular member state granted by the legally authorised body after successful approval and/or examination

**3.33****platform**

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

Note 1 to entry: See EN 13814-1:2019, 5.1.3.2 for maximum slope of platform.

**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 (standards.iteh.ai)

Note 1 to entry: EN 13814-1:2019, Annex F (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 will perform that function

**3.36****repair**

restoration of components 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 stable position

## EN 13814-2:2019 (E)

## 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 EN 13814-1:2019, Annex H.

## 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 amusement 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 and check on the condition 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 or waiting to gain access to the use the amusement device

## 3.45

**structural component**

calculated load bearing part which has not been classified as *machinery components* (3.23) by the *designer* (3.10)

## 3.46

**sustained acceleration**

accelerations with duration greater than or equal to 200 ms

## 3.47

**temporarily installed amusement device**

amusement device which is designed to be installed and uninstalled, the installation period of which shall not exceed more than 3 months

## 3.48

**thorough examination**

procedures and investigations necessary for the *inspection body* (3.19) to decide whether the *amusement device* (3.1) can continue to be operated safely, or whether it requires defects to be remedied immediately or within a specified time