

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Household and similar electrical appliances – Safety –
Part 2-82: Particular requirements for amusement machines and personal
service machines

Appareils électrodomestiques et analogues – Sécurité –
Partie 2-82: Exigences particulières pour les machines de divertissement et les
machines de service pour les personnes



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES –
SAFETY –****Part 2-82: Particular requirements for amusement machines
and personal service machines**

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 60335-2-82 has been prepared by IEC technical committee 61: Safety of household and similar electrical appliances.

This third edition cancels and replaces the second edition published in 2002 including its Amendment 1 (2008) and its Amendment 2 (2015). This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- It is clarified that 22.44 is not applicable to amusement machines;
- Modified some Notes to make them normative text (5.6, 11.2, 11.8, 15.2.101, 15.2.102, 15.2.104, 15.3, 19.4, 19.101, 24.101, 24.102).
- Reference to 22.106 is made in Annex R.

This bilingual version (2018-11) corresponds to the monolingual English version, published in 2017-10.

The text of this International Standard is based on the following documents:

CDV	Report on voting
61/5293/CDV	61/5379A/RVC

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

The French version of this standard has not been voted upon.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts of the IEC 60335 series, under the general title: *Household and similar electrical appliances – Safety*, can be found on the IEC website.

This part 2 is to be used in conjunction with the latest edition of IEC 60335-1 and its amendments. It was established on the basis of the fifth edition (2010) of that standard.

NOTE 1 When “Part 1” is mentioned in this standard, it refers to IEC 60335-1.

This part 2 supplements or modifies the corresponding clauses in IEC 60335-1, so as to convert that publication into the IEC standard: Safety requirements for amusement machines and personal service machines.

When a particular subclause of Part 1 is not mentioned in this part 2, that subclause applies as far as is reasonable. When this standard states “addition”, “modification” or “replacement”, the relevant text in Part 1 is to be adapted accordingly.

NOTE 2 The following numbering system is used:
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- subclauses, tables and figures that are numbered starting from 101 are additional to those in Part 1;
- unless notes are in a new subclause or involve notes in Part 1, they are numbered starting from 101, including those in a replaced clause or subclause;
- additional annexes are lettered AA, BB, etc.

NOTE 3 The following print types are used:

- requirements: in roman type;
- *test specifications: in italic type;*
- notes: in small roman type.

Words in **bold** in the text are defined in Clause 3. When a definition concerns an adjective, the adjective and the associated noun are also in bold.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

NOTE 4 The attention of National Committees is drawn to the fact that equipment manufacturers and testing organizations may need a transitional period following publication of a new, amended or revised IEC publication in which to make products in accordance with the new requirements and to equip themselves for conducting new or revised tests.

It is the recommendation of the committee that the content of this publication be adopted for implementation nationally not earlier than 12 months or later than 36 months from the date of publication.

INTRODUCTION

It has been assumed in the drafting of this International Standard that the execution of its provisions is entrusted to appropriately qualified and experienced persons.

This standard recognizes the internationally accepted level of protection against hazards such as electrical, mechanical, thermal, fire and radiation of appliances when operated as in normal use taking into account the manufacturer's instructions. It also covers abnormal situations that can be expected in practice and takes into account the way in which electromagnetic phenomena can affect the safe operation of appliances.

This standard takes into account the requirements of IEC 60364 as far as possible so that there is compatibility with the wiring rules when the appliance is connected to the supply mains. However, national wiring rules may differ.

If an appliance within the scope of this standard also incorporates functions that are covered by another part 2 of IEC 60335, the relevant part 2 is applied to each function separately, as far as is reasonable. If applicable, the influence of one function on the other is taken into account.

When a part 2 standard does not include additional requirements to cover hazards dealt with in Part 1, Part 1 applies.

NOTE 1 This means that the technical committees responsible for the part 2 standards have determined that it is not necessary to specify particular requirements for the appliance in question over and above the general requirements.

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This standard is a product family standard dealing with the safety of appliances and takes precedence over horizontal and generic standards covering the same subject.

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NOTE 2 Horizontal and generic standards covering a hazard are not applicable since they have been taken into consideration when developing the general and particular requirements for the IEC 60335 series of standards. For example, in the case of temperature requirements for surfaces on many appliances, generic standards, such as ISO 13732-1 for hot surfaces, are not applicable in addition to Part 1 or part 2 standards.

An appliance that complies with the text of this standard will not necessarily be considered to comply with the safety principles of the standard if, when examined and tested, it is found to have other features that impair the level of safety covered by these requirements.

An appliance employing materials or having forms of construction differing from those detailed in the requirements of this standard may be examined and tested according to the intent of the requirements and, if found to be substantially equivalent, may be considered to comply with the standard.

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-82: Particular requirements for amusement machines and personal service machines

1 Scope

This clause of Part 1 is replaced by the following.

This International Standard deals with the safety of electric commercial amusement machines and personal service machines, their **rated voltage** being not more than 250 V for single-phase appliances and 480 V for other appliances.

NOTE 101 Examples of appliances that are within the scope of this standard are

- amusement machines:
 - tables;
 - bowling machines;
 - dartboards;
 - driving simulators;
 - gaming machines;
 - kiddie rides;
 - laser shooting appliances;
 - pinball machines;
 - video games;
 - personal service machines;
 - card re-value machines;
 - currency dispensers;
 - luggage lockers;
 - weighing machines;
 - shoe shining appliances.

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As far as is practicable, this standard deals with the common hazards presented by appliances that are encountered by users and **maintenance persons**.

NOTE 102 Attention is drawn to the fact that

- for appliances intended to be used in vehicles or on board ships or aircraft, additional requirements may be necessary;
- in many countries, additional requirements are specified by the national authorities responsible for health, for the protection of labour and similar authorities.

NOTE 103 This standard does not apply to

- appliances intended exclusively for household use;
- appliances intended exclusively for industrial purposes;
- appliances intended to be used in locations where special conditions prevail, such as the presence of a corrosive or explosive atmosphere (dust, vapour or gas);
- appliances for washing cars;
- dispensing appliances and vending machines (IEC 60335-2-75);
- appliances within the scope of IEC 60065, such as jukeboxes and household video games;

- appliances within the scope of IEC 60950-1, such as copying machines, ticket machines and automatic teller machines;
- appliances intended to be used when a trained attendant is present, such as virtual reality systems;
- equipment intended exclusively for fairgrounds, such as carousels;
- self-balancing personal transport devices.

2 Normative references

This clause of Part 1 is applicable except as follows.

Addition:

IEC 60068-2-52:1996, *Environmental testing – Part 2: Tests – Test Kb: Salt mist, cyclic (sodium, chloride solution)*

IEC 62368-1, *Audio/video, information and communication technology equipment – Part 1: Safety requirements*

3 Terms and definitions

This clause of Part 1 is applicable except as follows.

3.1.9 Replacement: iTeh STANDARD PREVIEW
normal operation
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operation of the appliance under the following conditions

The appliance is operated in the **stand-by mode** until steady conditions are established and then under the most unfavourable conditions of normal use.

The appliance is refilled when necessary in accordance with the instructions for use, or the **instructions for maintenance**, and the next operating period started as soon as possible.

Appliances that support persons in normal use are loaded as follows:

- **kiddie rides**, 50 kg for each riding position;
- other appliances, 100 kg for the first riding position and 75 kg for each additional riding position.

Note 1 to entry: The riding position may be for a sitting or standing person.

If the instructions state that higher loads are allowed, the appliance is loaded accordingly.

Audio amplifiers are operated in accordance with the normal operating conditions specified in IEC 60065.

3.5.101

kiddie ride

moving appliance having a stationary base for use by one or two children between the ages of three and ten years, under the supervision of an adult

3.6.2 Replacement:

detachable part

part that can be removed without the aid of a **tool**, part that is removed in accordance with the instructions for use or **instructions for maintenance**, even if a **tool** or **access key** is needed for removal, or part that does not fulfil the test of 22.11

Note 1 to entry: If a part has to be removed for installation purposes, this part is not considered to be detachable even if the instructions state that it is to be removed.

Note 2 to entry: A part that can be opened is considered to be a part that can be removed.

3.6.101

access key

key or other means that gives access to the **maintenance area** but does not give access to the **service area**

Note 1 to entry: "Other means" includes a **tool** or operation by codes or signals produced by optical or electromagnetic sources.

3.6.102

override key

key or other means that is used to render an interlock inoperative

3.6.103

user area

area where access is gained without the use of an **access key** or a **tool**

3.6.104

maintenance area

area where access can only be gained by the use of an **access key**

3.6.105

service area

area where access cannot be gained by the use of an **access key** alone

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3.7.3 *Replacement:*

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thermal cut-out

device that during abnormal operation limits the temperature of the controlled part by automatically opening the circuit, or reducing the current, and constructed so that its setting cannot be altered by the user or the **maintenance person**

3.8.5 *Replacement:*

maintenance operation

operation that the user or **maintenance person** is intended to perform as stated in the instructions for use, or the **instructions for maintenance**, or as marked on the appliance

Note 1 to entry: The **instructions for maintenance** marked on the appliance, or supplied with the appliance or subsequently, are applicable only to the **user area** and the **maintenance area**.

Note 2 to entry: **Maintenance operation** includes preparing and commissioning the appliance for new operating methods. It does not include operations that are to be performed in the **service area**.

3.8.101

instructions for maintenance

instructions explaining how to carry out cleaning, replenishing, coin collecting, setting of controls and similar operations

3.8.102

maintenance person

person who maintains the appliance in accordance with the **instructions for maintenance**

3.8.103

stand-by mode

mode of the appliance when it is energized and ready for use, while filled as intended but with empty cash boxes

4 General requirement

This clause of Part 1 is applicable.

5 General conditions for the tests

This clause of Part 1 is applicable except as follows.

5.6 Replacement:

*Controls or switching devices in the **user area** are adjusted to the most unfavourable setting.*

*Controls, switching devices or other parts in the **maintenance area** are adjusted to the most unfavourable setting within the limits stated in the **instructions for maintenance**; however, controls or switching devices in the **service area** are not adjusted.*

5.9 Addition:

When alternative software is made available by the appliance manufacturer, the appliance is tested with the software that gives the most unfavourable results.

5.101 *The requirements of this standard for the **maintenance area** are applicable when the **instructions for maintenance** are being followed. If an **override key** is provided for access to the **maintenance area**, it is used before a test is carried out if this is more unfavourable.*

5.102 *When reference is made to the application of test probe B, test probe 18 of IEC 61032 is also applied in the **user area**.*

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5.103 *Appliances incorporating **transformers, electronic circuits** and lamps are tested as **motor-operated appliances** unless they incorporate a heating element, in which case they are tested as **combined appliances**.*

6 Classification

This clause of Part 1 is applicable except as follows.

6.1 Modification:

Appliances shall be **class I**, **class II** or **class III**.

6.2 Addition:

Appliances intended for outdoor use shall be at least IPX4.

Appliances that may be cleaned by water jets, or installed where water jets are liable to be used, shall be at least IPX5.

Appliances that use water jets in normal use shall be at least IPX5 unless the water jet cannot be directed at the enclosure of electrical parts, in which case it may be IPX4.

7 Marking and instructions

This clause of Part 1 is applicable except as follows.

7.1 Addition:

For appliances incorporating a socket outlet, the voltage, nature of the supply and current or power output shall be marked in the vicinity of the socket outlet.

7.3 Addition:

The requirement also applies when the adjustment has to be made by the **maintenance person**.

7.12 Modification:

The instructions concerning persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge and children playing with the appliance are not applicable.

7.12.1 Addition:

The installation instructions shall state if the appliance is suitable for outdoor use.

For appliances that are not at least IPX5, the instructions shall state that the appliance is not suitable for installation in an area where a water jet could be used.

The installation instructions for moving ride appliances shall state the free space necessary around the appliance for safe operation.

The installation instructions for **kiddie rides** shall state that the installation of a residual current device (RCD) having a rated residual operating current not exceeding 30 mA is advisable.

7.12.101 If it is necessary to take special precautions during **maintenance operations**, details of these shall be supplied. The **instructions for maintenance** shall state how to gain access to the **maintenance area**. They shall not include instructions on how to gain access to a **service area**.

Compliance is checked by inspection.

7.12.101.1 The **instructions for maintenance** for appliances incorporating an appliance inlet and intended to be partially or completely immersed in water for cleaning shall state that the connector must be removed before the appliance is cleaned and that the appliance inlet must be dried before the appliance is used again.

If the appliance is not at least IPX5, the **instructions for maintenance** shall state that the appliance must not be cleaned by a water jet.

Compliance is checked by inspection.

7.12.101.2 If the use of an **override key** allows access to moving parts, a suitable warning shall be given in the **instructions for maintenance**.

Compliance is checked by inspection.

7.12.101.3 The **instructions for maintenance** shall list any accessories that may be used with the appliance.

Compliance is checked by inspection.

7.12.101.4 For appliances using water, the **instructions for maintenance** shall give details on how to prevent freezing-up or how to ensure safe operation if freezing-up occurs.

Compliance is checked by inspection.

8 Protection against access to live parts

This clause of Part 1 is applicable.

9 Starting of motor-operated appliances

This clause of Part 1 is not applicable.

10 Power input and current

This clause of Part 1 is applicable.

11 Heating

This clause of Part 1 is applicable except as follows.

11.2 Modification:

Appliances normally fixed to the floor, and those having a mass greater than 40 kg and not provided with casters or rollers, are installed in accordance with the instructions. If no instructions are provided, the appliance is placed on the floor as close to the walls as possible.

*Other appliances, except **fixed appliances**, are placed on the floor as near to the walls as possible.*

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11.7 Replacement:

*The appliance is operated under **normal operation** until steady conditions are established.*

11.8 Addition:

*The temperature rise limits for handles and similar parts that are continuously held in normal use also applies to seats. The temperature rise of other surfaces in the **user area** shall not exceed the limits specified for handles and similar parts that are held for short periods only in normal use. Illuminated surfaces of glass or plastic that are not intended to be touched by the user are considered to be outside the **user area**.*

12 Void

13 Leakage current and electric strength at operating temperature

This clause of Part 1 is applicable.

14 Transient overvoltages

This clause of Part 1 is applicable.

15 Moisture resistance

This clause of Part 1 is applicable except as follows.