IEC 60335-2-80

Edition 4.0 2024-10
COMMENTED VERSION

INTERNATIONAL STANDARD

colour inside

Household and similar electrical appliances – Safety –
Part 2-80: Particular requirements for fans

IEC 60335-2-80:2024-10 CMV(en)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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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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9) IEC draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). IEC takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, IEC had not received notice of (a) patent(s), which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at https://patents.iec.ch. IEC shall not be held responsible for identifying any or all such patent rights.

This commented version (CMV) of the official standard IEC 60335-2-80:2024 edition 4.0 allows the user to identify the changes made to the previous IEC 60335-2-80:2015 edition 3.0. Furthermore, comments from IEC TC 61 experts are provided to explain the reasons of the most relevant changes, or to clarify any part of the content.

A vertical bar appears in the margin wherever a change has been made. Additions are in green text, deletions are in strikethrough red text. Experts' comments are identified by a blue-background number. Mouse over a number to display a pop-up note with the comment.

This publication contains the CMV and the official standard. The full list of comments is available at the end of the CMV.

IEC 60335-2-80 has been prepared by IEC technical committee 61: Safety of household and similar electrical appliances. It is an International Standard.

This fourth edition cancels and replaces the third edition published in 2015. This edition constitutes a technical revision.

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

a) alignment with IEC 60335-1:2020;
b) conversion of some notes to normative text (Clause 1);
c) introduction of requirements for infant fans (7.12, 7.12.1, 8.1.1, 11.8, 20.2, 20.101, 21.103, 22.44, 22.54, 22.102, B.22.3, B.22.4);
d) introduction of the use of test probe 19 (8.1.1, 20.2, B.22.3, B.22.4);
e) introduction of surface temperature limits (Clause 11);
f) clarification of testing of fans for use in a tropical climate (5.7, Annex P 11.8);
g) clarification of requirements for remote operation of fans (22.40, 22.49, 22.51).

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

Draft	Report on voting
61/7282/FDIS	61/7306/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

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 unless that edition precludes it; in that case, the latest edition that does not preclude it is used. It was established on the basis of the sixth edition (2020) 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: Particular requirements for fans.

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:

– 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 webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

NOTE 4 The attention of National Committees is drawn to the fact that equipment manufacturers and testing organizations can 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.

IMPORTANT – The "colour inside" logo on the cover page of this document indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

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.

Guidance documents concerning the application of the safety requirements for appliances can be accessed via TC 61 supporting documents on the IEC website:

https://www.iec.ch/tc61/supportingdocuments

This information is given for the convenience of users of this International Standard and does not constitute a replacement for the normative text in this standard.

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~~ can differ.

Other safety aspects as described in the ISO 8124 series of standards are applicable to infant fans. **1**

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.

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.

NOTE 2 ~~Horizontal and generic standards~~ Horizontal publications, basic safety publications and group safety publications 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.~~ **2**

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.

NOTE 3 Standards dealing with non-safety aspects of household appliances are:

– IEC standards published by TC 59 concerning methods of measuring performance;

– CISPR 11, CISPR 14-1 and relevant IEC 61000-3 series standards concerning electromagnetic emissions;

– CISPR 14-2 concerning electromagnetic immunity;

– IEC standards published by TC 111 concerning environmental matters. **3**

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-80: Particular requirements for fans

1 Scope

This clause of Part 1 is replaced by the following.

This part of IEC 60335 deals with the safety of electric fans for household and similar purposes, their **rated voltage** being not more than 250 V for single-phase appliances and 480 V for other appliances including direct current (DC) supplied appliances and **battery-operated appliances**. 4

~~NOTE 101~~ Examples of the types of fans that ~~are within the scope of~~ this standard is applicable to are

– ceiling fans;
– **duct fans**;
– **infant fans**;
– partition fans;
– pedestal fans;
– table fans.

This standard also applies to separate controls supplied with fans.

Infant fans are also tested to the applicable requirements of the ISO 8124 series, since it covers hazards other than those arising from the use of electricity such as toxicological hazards. 5

Appliances not intended for normal household use but which nevertheless ~~may~~ can be a source of danger to the public, such as appliances intended for use in shops, in light industry and on farms, are within the scope of this standard.

As far as is practicable, this standard deals with the common hazards presented by appliances that are encountered by all persons in and around the home. However, in general, it does not take into account:

– persons (including children) whose
  - physical, sensory or mental capabilities; or
  - lack of experience and knowledge

  prevents them from using the appliance safely without supervision or instruction;
– children playing with the appliance.

~~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~~ can be necessary;
– in many countries additional requirements are specified by the national health authorities, the national authorities responsible for the protection of labour and similar authorities.

~~NOTE 103~~ This standard does not apply to

– 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);
– fans incorporated in other appliances.

2 Normative references

This clause of Part 1 is applicable except as follows.

Addition:

IEC 60245-3, *Rubber insulated cables – Rated voltages up to and including 450/750 V – Part 3: Heat resistant silicone insulated cables*

IEC 60584-1, *Thermocouples – Part 1: EMF specifications and tolerances*

ISO 8124-1 (all parts), *Safety of toys – Part 1: Safety aspects related to mechanical and physical properties*

3 Terms and definitions

This clause of Part 1 is applicable except as follows.

~~**3.1.9** *Replacement:*~~

~~**normal operation**~~
~~operation of the appliance under the following conditions~~

~~Table and pedestal fans are operated with any oscillating mechanism in operation.~~

~~Ceiling fans are fixed to a ceiling.~~

~~Partition fans are installed in the centre of a suitable partition having dimensions at least four times the diameter of the air inlet.~~

~~**Duct fans** are installed in a duct in accordance with the installation instructions, the length of the duct being approximately four times the diameter of the fan.~~ **6**

3.5 Definitions relating to types of appliances

~~**3.101**~~**3.5.101**
duct fan
fan for installation within an enclosed airway so that the airflow is ducted on both the inlet and outlet sides

3.5.102
infant fan
fan intended for mounting on high-chairs, baby carriages, strollers, perambulators, buggies, bassinettes, cribs, playpens and similar locations **7**

3.7 Definitions relating to safety components

~~**3.102**~~**3.5.102**
suspension system
system which is used to secure the ceiling fan unit to the ceiling

~~3.103~~3.7.102
safety suspension system device
device used to secure the motor with blades of the ceiling fan to the mounting rod of the fan

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.

5.5 *Addition:*

Fans are operated with any oscillating mechanism in operation. 8

5.7 *Addition:*

For fans intended to be used in tropical climates, the tests of Clause 10, Clause 11 and Clause 13 are carried out at an ambient temperature of 40 °C ~~± 2~~ $^{+3}_{0}$ °C.

For fans marked with an ambient operating temperature, the tests of Clause 10, Clause 11 and Clause 13 are carried out at the marked value ~~± 2~~ $^{+3}_{0}$ °C.

5.10 *Addition:*

Partition fans are installed in the centre of a suitable partition having dimensions at least four times the diameter of the air inlet.

***Duct fans** are installed in a duct in accordance with the installation instructions, the length of the duct being approximately four times the diameter of the fan.* 9

6 Classification

This clause of Part 1 is applicable except as follows.

6.2 *Addition:*

Duct fans shall be at least IPX2.

6.101 Fans shall be of one of the following classes with respect to climatic conditions:

– fans for temperate climates;
– fans for tropical climates.

Compliance is checked by inspection.

7 Marking and instructions

This clause of Part 1 is applicable except as follows.

7.1 *Addition:*

Fans for tropical climates shall be marked with the letter T.

Fans intended for operation in locations where the local ambient temperature exceeds 40 °C shall be marked with the ambient operating temperature.

7.12 *Addition:*

If the instructions state that the guard has to be removed for cleaning purposes, the instructions shall state the substance of the following:

Ensure that the fan is switched off from the supply mains before removing the guard.

The instructions for ceiling fans shall include the substance of the following warning:

WARNING: If unusual oscillating movement is observed, immediately stop using the ceiling fan and contact the manufacturer, its service agent or suitably qualified persons.

The instructions for ceiling fans shall include ~~the substance of~~ the following:

– the maintenance cycle and method of maintenance;
– the weight of the appliance in kilograms;
– that the replacement of parts of the **safety suspension system device** shall be performed by the manufacturer, its service agent or suitably qualified persons.

The instructions for fans incorporating motors containing brushes shall include the substance of the following:

If it is necessary to replace the live or neutral brushes to ensure operation of the motor ~~then~~, both brushes and the earth brush shall be replaced at the same time. The brushes shall only be replaced by a suitably qualified person.

The instructions for an **infant fan** shaped or decorated like a toy shall include the substance of the following:

This is not a toy. This is an electrical appliance and must be operated and maintained by an adult. **10**

7.12.1 *Addition:*

Instructions for **fixed appliances** intended for installation above 850 mm in normal use shall include the substance of the following:

Do not mount this product lower than 850 mm from the floor. **11**

The instructions for ceiling fans shall include ~~the substance of~~ the following information:

– that the fixing means for attachment to the ceiling, such as hooks or other devices, shall be fixed with a sufficient strength to withstand 4 times the weight of the ceiling fan;
– that the mounting of the **suspension system** shall be performed by the manufacturer, its service agent or suitably qualified persons;
– that the fan is to be installed so that the blades are more than 2,3 m above the floor;
– the model or type reference of a luminaire that may be installed in a fan constructed for this purpose.

The instructions for other fans shall include ~~the substance of~~ the following information:

– whether the fan is intended for mounting in outside windows or walls (for partition fans);

– that the fan is to be installed so that the blades are more than 2,3 m above the floor (for fans intended to be mounted at high level);
– that precautions must be taken to avoid the back-flow of gases into the room from the open flue of gas or other fuel-burning appliances (for **duct fans** and partition fans).

8 Protection against access to live parts

This clause of Part 1 is applicable except as follows.

8.1.1 ~~*Modification::*~~

~~*Lamps are not removed. However, during insertion or removal of lamps, protection against contact with **live parts** of the lamp cap shall be ensured.*~~

Addition:

*Test probe 18 of IEC 61032 is not applied to ceiling fans, **duct fans**, or fans that according to the instructions are required to be mounted at a height exceeding 1,8 m above the floor.* **12**

*In addition to the use of test probe 18, test probe 19 of IEC 61032 is applied wherever test probe 18 is used and with the same test conditions used for test probe 18. For other than **infant fans**, test probe 19 of IEC 61032 is not applied to parts of fans that are located at a height greater than 850 mm in normal use, and to fans which according to the instructions are required to be mounted at a height exceeding 850 mm.* **13**

Commercial fans intended to be used in household environments, such as those used for drying carpets after professional cleaning or flooding/water damage are considered to be fans that are installed in an area open to the public. **14**

8.2 *Addition:*

*After the removal of **detachable parts** for the purposes of **user maintenance**, the **basic insulation** of internal wiring may be touched provided that it is electrically equivalent to the insulation of cords complying with IEC 60227 or IEC 60245.*

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 except as follows.

10.1 *Addition:*

Appliances are tested with shutters or similar devices in the open position.

10.2 *Addition:*

Appliances are tested with shutters or similar devices in the open position.

11 Heating

This clause of Part 1 is applicable except as follows.

11.3 *Addition:*

*Where the external **accessible surfaces** are suitably flat and access permits, then the test probe of Figure 101 is used to measure the temperature rises of external **accessible surfaces** specified in Table 101. The probe is applied with a force of 4 N ± 1 N to the surface in such a way that the best possible contact between the probe and the surface is ensured. The measurement is performed after a contact period of 30 s.*

The probe may be held in place using a laboratory stand clamp or similar device. Any measuring instrument giving the same results as the probe may be used. **15**

11.7 ~~*Replacement*~~ *Modification:* **16**

Replace the first paragraph with the following:

Appliances are operated until steady conditions are established.

11.8 *Modification:*

Replace the first paragraph with the following:

During the test, the temperature rises are monitored continuously and shall not exceed the values shown in Table 3 and Table 101. **17**

*Table 101 does not apply to ceiling fans, **duct fans** and fans which according to the instructions are required to be mounted at a height exceeding 2,3 m above the floor.* **18**

Addition:

The temperature rise limits for appliances for tropical climates are reduced by 15 K.

The temperature rise limits for fans marked with an ambient operating temperature are reduced by the difference between the marked value and 25 °C.

The temperature rise of handles or grips of vents and air shutters shall not exceed the value specified in Table 3 for surfaces of handles, knobs, grips and similar parts which are held for short periods only in normal use. **19**

Table 101 – Maximum temperature rises for specified external accessible surfaces under normal operating conditions

Surface	*Temperature rise of external accessible surfaces* [a] *K*	
	Surfaces of appliances not more than 850 mm above the floor and all surfaces of infant fans	*Surfaces of hand-held appliances and surfaces of other appliances between 850 mm and 2,3 m above the floor when installed or in normal use*
Bare metal	*38*	*42*
Coated metal [b]	*42*	*49*
Glass and ceramic	*51*	*56*
Plastic and plastic coating > 0,4 mm [c, d]	*58*	*62*
NOTE The temperature rise limits of handles, knobs, grips, keyboards, keypads and similar parts are specified in Table 3.		

[a] *Temperature rise on surfaces that are inaccessible to a 75 mm diameter probe having a hemispherical end are not measured.*

[b] *Metal is considered coated when a coating having a minimum thickness of 90 µm made of enamel, powder or non-substantially plastic coating is used.*

[c] *The temperature rise limit of plastic also applies for plastic material having a metal finish of thickness less than 0,1 mm.*

[d] *When the thickness of the plastic coating does not exceed 0,4 mm, the temperature rise limits of coated metal for underlying metal apply or the temperature rise limits for glass or ceramic material for underlying glass or ceramic material apply.*

12 ~~Void~~ Charging of metal-ion batteries

This clause of Part 1 is applicable. **20**

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.

15.1.1 *Addition:*

The outer part of fans intended to be installed in the external structure of a building is subjected to the test of IEC 60529:1989, 14.2.4 a), the part of the fan not mounted on the outside surface being protected against spray from the oscillating tube. The test is carried out with the appliance in the rest position and then in operation while supplied at ***rated voltage****, shutters or similar devices being in the open position.*

Fans marked with the second numeral of the IP system are subjected to the appropriate test of IEC 60529:1989 including IEC 60529:1989/AMD1:1999 and IEC 60529:1989/AMD2:2013 both at rest and in operation while supplied at ***rated voltage****.*

16 Leakage current and electric strength

This clause of Part 1 is applicable.

17 Overload protection of transformers and associated circuits

This clause of Part 1 is applicable.

18 Endurance

This clause of Part 1 is not applicable.

19 Abnormal operation

This clause of Part 1 is applicable except as follows.

19.1 *Addition:*

Fans incorporating shutters or similar devices operated by a control are also subjected to the test of 19.101.

19.7 *Addition:*

Separate controls are mounted on a dull, black-painted plywood board. Approximately 50 % of the area of each ventilating opening is blocked. The temperature of windings shall not exceed the values specified in Table 8 and the temperature rise of the board shall not exceed

- *50 K, for appliances with T marking;*
- *65 K, for other appliances.*

19.9 Not applicable.

19.101 *Fans incorporating shutters or similar devices that are operated automatically are supplied at* ***rated voltage*** *and operated with the shutters or similar devices held in the closed or open position, whichever is more unfavourable.*

20 Stability and mechanical hazards

This clause of Part 1 is applicable except as follows.

20.1 *Addition:*

Portable pedestal fans *having a height exceeding 1,7 m and a mass exceeding 10 kg are placed on a horizontal surface. A force of 40 N is applied to the appliance at a height of 1,5 m in the most unfavourable horizontal direction.*

The appliance shall not overturn.

NOTE 101 Suitable means can be used to prevent the appliance from sliding.

20.2 *Addition:*

*Test probe 18 of IEC 61032 is not applied to ceiling fans, **duct fans** or fans that according to the instructions are required to be mounted at a height exceeding 1,8 m above the floor.* **21**

*For **infant fans**, in addition to test probe 18, test probe 19 of IEC 61032 is applied as specified for test probe 18.* **22**

*The test probe that is similar to test probe B of IEC 61032 but having a circular stop face with a diameter of 50 mm, instead of the non-circular face is not applied to ceiling fans, **duct fans** or fans that according to the instructions are required to be mounted at a height exceeding 2,3 m above the floor.* **23**

Commercial fans intended to be used in household environments, such as those used for drying carpets after professional cleaning or flooding/water damage are considered to be fans that are installed in an area open to the public. **24**

20.101 Fan blades of **infant fans** shall be guarded **25**. Fan blades, other than those of fans for mounting at high level, shall be guarded unless their leading edges and tips are rounded with a radius of not less than 0,5 mm and

– they have a hardness less than D 60 Shore, or
– they have a peripheral speed less than 15 m/s when the fan is supplied at **rated voltage**, or
– the fan has a power output not exceeding 2 W when supplied at **rated voltage**.

Compliance is checked by inspection and by measurement.

20.102 There shall be no risk of entrapment or injury caused by movement of the oscillating head of pedestal fans or table fans.

Compliance is checked by the following test.

*Unless the entrapment point is guarded so that it cannot be touched by test probe 18 of IEC 61032, the appliance is operated at **rated voltage** and test probe 18 is placed at the entrapment point across the width and height of its opening.*

If test probe 18 is touched by the moving part, it shall not be subjected to a force exceeding 15 N.

21 Mechanical strength

This clause of Part 1 is applicable except as follows.

21.1 *Addition:*

Appliances are also subjected to the test of 21.101.

21.101 *Fan guards are subjected to a push force and a pull force of 20 N applied along the axis of the fan motor. After the test, it shall not be possible to touch dangerous moving parts with a test probe that is similar to test probe B of IEC 61032 but having a circular stop face with a diameter of 50 mm instead of the non-circular face. The test probe is applied with a force not exceeding 5 N.*

21.102 Ceiling fans shall have adequate strength.

Compliance is checked by the following test.

Ceiling fans are mounted in accordance with the installation instructions. A load equal to four times the mass of the fan is suspended from the body of the fan for 1 min.

A torque of 1 Nm is then applied to the fixed body of the fan for 1 min. The test is repeated with the torque applied in the reverse direction.

*The **suspension system** including any **safety suspension system device** shall not break and the fan shall not be damaged to such an extent that compliance with 8.1, 16.3 and Clause 29 is impaired.*

NOTE The intent is to test the parts of the ceiling fan and not the capability of the ceiling materials.

21.103 The functional part of an **infant fan** shall be constructed to withstand dropping that can be expected in normal use. Any parts that are loosened or become dislodged as a result of dropping shall not present a choking hazard.

Compliance is checked by the following test.

The functional part of the appliance is dropped from a height of 500 mm above a concrete or similar hard surface.

The test is carried out a total of five times with the functional part of the appliance being positioned so that it falls onto the surface in five different orientations.

*The appliance shall not be damaged to such an extent that compliance with 20.2 is impaired. Any parts that become dislodged or loosened to the point that they are no longer **non-detachable parts**, shall not be contained within the small parts cylinder in Figure 13.* **26**

22 Construction

This clause of Part 1 is applicable except as follows.

22.1 ~~*Addition:*~~

NOTE 101 The enclosure defined in IEC 60529 does not include guards for fan blades.

22.11 ~~*Modification*~~ *Addition:*

The 50 N force is not applied to clips used to fasten fan guards. Instead, a force of 15 N is applied in any direction to the clips in an attempt to release them.

22.40 *Addition:*

These appliances are not considered to be appliances that could give rise to a hazard when operated continuously, automatically or remotely. **27**

22.44 *Addition:*

This subclause is not applicable to **infant fans**. **28**

22.49 Not applicable. **29**

22.51 Not applicable. **30**

22.54 *Addition:*

For **infant fans**, button **cells** and **batteries** designated R1 shall not be accessible without the aid of a **tool**. **31**

22.101 Appliances having provision for attaching a luminaire shall incorporate appropriate terminals and internal wiring. The internal wiring associated with the luminaire shall have insulation at least equivalent to silicone rubber compound type IE2 complying with IEC 60245-3. This requirement is not applicable to fans incorporating a luminaire that cannot be replaced without breaking the appliance.

Compliance is checked by inspection.

22.102 The functional part of **infant fans** shall be **class III construction** with a **working voltage** of no more than 24 V.

Compliance is checked by inspection and by measurement. **32**

22.103 Ceiling fan suspension system

22.~~102~~103.1 The ceiling fan shall be constructed so that a failure of the fixing device of the motor to the mounting rod could not give rise to risk of injury to the user or surroundings.

Compliance is checked by the requirement and inspection or test of ~~22.102.1, 22.102.2, 22.102.3, 22.102.4 or 22.102.5~~ 22.103.2, 22.103.3, 22.103.4, 22.103.5 or 22.103.6, as appropriate for the design. After the test, the ceiling fan shall not be damaged to such an extent that compliance with 8.1, 16.3, 29.1 and 29.2 are impaired.

22.~~102.1~~103.2 The ceiling fan shall incorporate a device that disconnects the fan from the supply before the **suspension system** fails. An example of this construction is shown in ~~Figure 101~~ Figure 102.

Compliance is checked by the following test.

The bolt that connects the down rod to the motor is replaced with the specially prepared test pin shown in ~~Figure 102~~ Figure 103 that simulates wear on the bolt. The pin is fully inserted so that it connects the down rod to the motor.

*The fan is supplied at **rated voltage** and operated at maximum speed. The pin is then partially withdrawn so that the motor is connected to the down rod by that part of the pin having diameter b.*

The supply to the ceiling fan shall be automatically disconnected and the fan shall not be capable of operation without replacing the worn bolt.

22.~~102.2~~103.3 The ceiling fan shall be constructed so that the fan motor and blades do not fall more than 300 mm after failure of the **suspension system** and the fan shall be disconnected from the supply. An example of this construction is shown in ~~Figure 103~~ Figure 104.

Compliance is checked by the following test.

The ceiling fan is installed in accordance with the manufacturer's instructions.

A load equal to two times the mass of the ceiling fan is suspended from its body.

*The fan is supplied at **rated voltage** and operated at maximum speed.*

*The **suspension system** is then simulated to fail by disconnecting the motor from the down rod.*

The motor and fan blades shall not drop more than 300 mm from their original position and the supply to the ceiling fan shall be automatically disconnected.

22.~~102.3~~103.4 The ceiling fan shall be constructed so that the fan blades and motor are connected to the **suspension system** via a threaded down rod that is locked by means of one or more setscrews. An example of this construction is shown in ~~Figure 104~~ Figure 105.

Compliance is checked by inspection.

22.~~102.4~~103.5 The ceiling fan shall be constructed so that an additional through bolt, lock washer and nut, or the like limits the distance of drop by no more than 75 mm in case of the **suspension system** failure. An example of this construction is shown in ~~Figure 105~~ Figure 106.

Compliance is checked by inspection and measurement.

22.~~102.5~~103.6 The ceiling fan shall be constructed so that all components required to prevent the failure of the **suspension system** are treated or coated to resist corrosion. Any fixing bolts shall have a minimum diameter of 5 mm and a minimum tensile strength of 200 MPa. Any such bolts shall have provision to prevent them working loose due to vibration. An example of this construction is shown in ~~Figure 106~~ Figure 107.

Compliance is checked by inspection and measurement.

23 Internal wiring

This clause of Part 1 is applicable except as follows.

23.3 ~~*Modification*~~ *Addition:*

Instead of moving the movable part backwards and forwards, fans with an oscillating mechanism are tested as follows.

*Fans are supplied at **rated voltage** and operated under **normal operation**, the angle of oscillation being the maximum allowed by the construction. The test is carried out for 100 000 cycles of oscillation.*

24 Components

This clause of Part 1 is applicable except as follows.

24.2 *Addition:*

Appliances having a **rated power input** not exceeding 25 W may be fitted with a switch in the **supply cord**.

24.101 **Thermal cut-outs** incorporated in **duct fans** in order to comply with Clause 19 shall not be a **self-resetting thermal cut-out**.

Compliance is checked by inspection.

25 Supply connection and external flexible cords

This clause of Part 1 is applicable except as follows.

25.5 *Addition:*

Type Z attachment is allowed for **portable fans**.

26 Terminals for external conductors

This clause of Part 1 is applicable.

27 Provision for earthing

This clause of Part 1 is applicable except as follows.

27.3 *Addition:*

The allowed travel of the live and neutral brushes due to wear shall be less than the allowed travel of the earth brush so that the earthing circuit is maintained even after the appliance ceases to operate due to live and neutral brush wear.

Compliance is checked by inspection.

28 Screws and connections

This clause of Part 1 is applicable.

29 Clearances, creepage distances and solid insulation

This clause of Part 1 is applicable except as follows.

29.2 *Addition:*

The microenvironment is pollution degree 3 unless the insulation is enclosed or located so that it is unlikely to be exposed to pollution during normal use of the appliance.

30 Resistance to heat and fire

This clause of Part 1 is applicable except as follows.

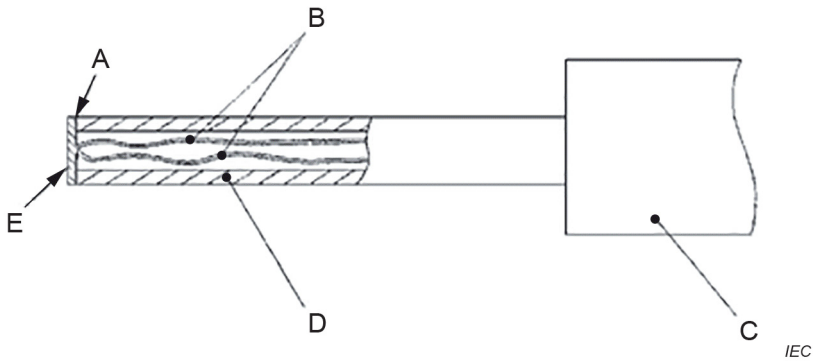
30.2.2 Not applicable.

31 Resistance to rusting

This clause of Part 1 is applicable.

32 Radiation, toxicity and similar hazards

This clause of Part 1 is applicable.



Key

A adhesive

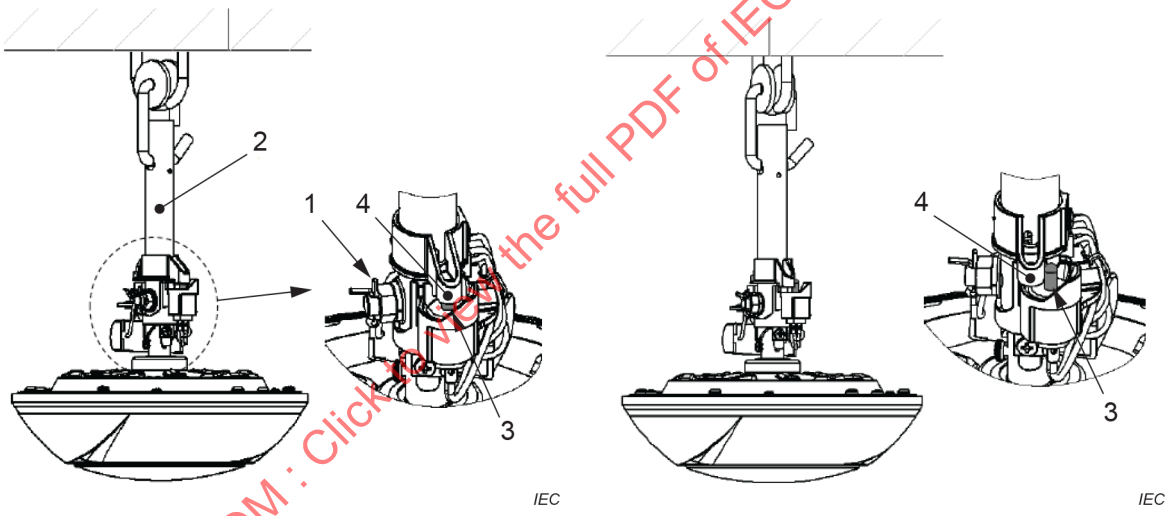
B thermocouple wires 0,3 mm diameter to IEC 60584-1 Type K

C handle arrangement permitting a contact force of 4 N ±1 N

D polycarbonate tube: inside diameter 3 mm, outside diameter 5 mm

E tinned copper disc: 5 mm diameter, 0,5 mm thick with a flat contact face

Figure 101 – Probe for measuring surface temperatures



a) Suspension system – **Before failure**

b) Suspension system – **After failure**

Key

~~A. Suspension system Definition 3.102~~

1 connecting bolt

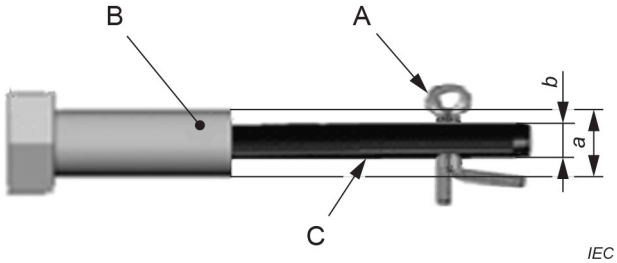
2 mounting rod

~~B. Device that disconnects the fan from the supply before the suspension system fails~~

3 electrical ~~safety~~ device (safety switch) fixed on the motor unit to disconnect the power supply before failure of the connecting bolt

4 stopper fixed on the mounting rod to initially keep safety switch in On position

Figure ~~101~~ 102 – Subclause 22.~~102.1~~103.2 – Example



Key

A stopper pin

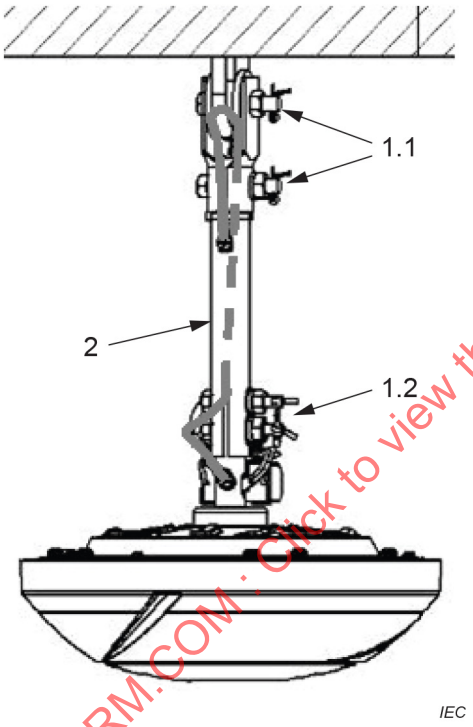
B full thickness section with length at least equal to that of the original bolt

C reduced thickness section with length at least equal to that of the original bolt

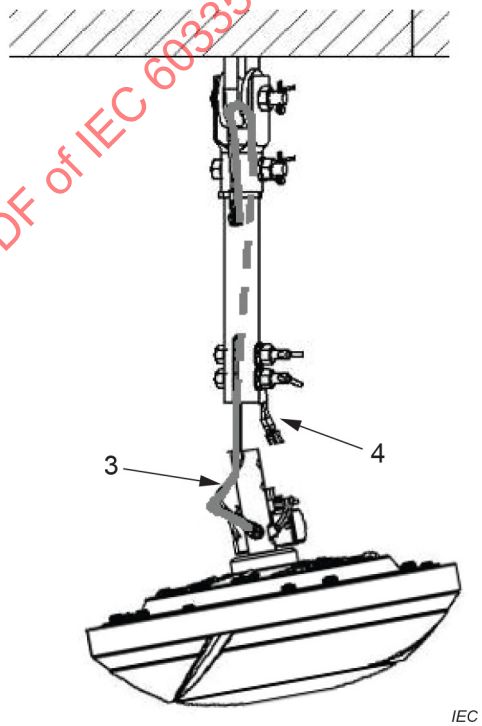
a diameter same as the original bolt that connects the down rod to the motor

b being 50 % of diameter "*a*"

Figure ~~102~~ 103 – Test pin



a) Suspension system – Before failure



b) Suspension system – After failure

Key

~~A. Suspension system Definition 3.102~~

1.1 connecting hook/bolt

1.2 connecting bolt

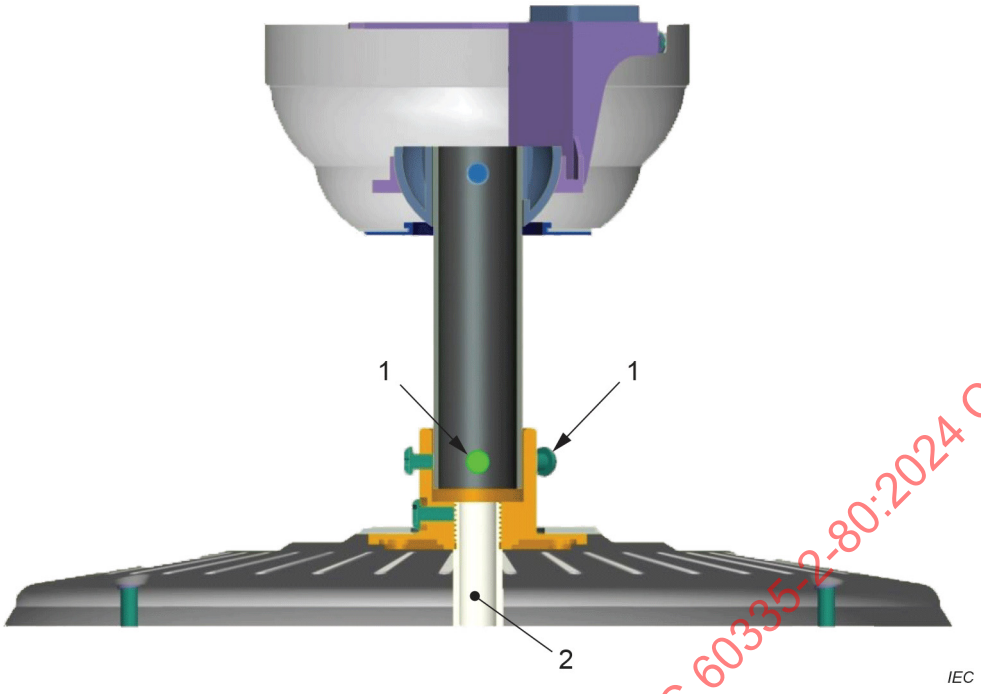
2 mounting rod

~~B. Safety suspension system Definition 3.103 after failure of the suspension system~~

3 mechanical **safety suspension system device** (safety wire) suspends the ceiling fan motor unit

4 terminal to disconnect the supply after **suspension system** failure

Figure ~~103~~ 104 – Subclause 22.~~102.2~~103.3 – Example

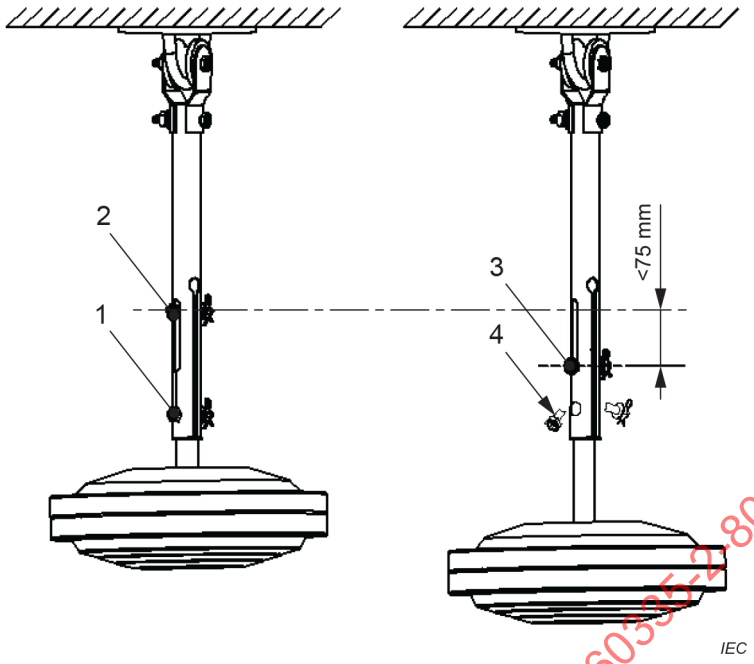


Key

1 set screws

2 threaded down rod

Figure ~~104~~ 105 – Subclause 22.~~102.3~~103.4 – Example



a) Suspension system – Before failure b) Suspension system – After failure

Key

~~A. Suspension system Definition 3.102 (fixing bolt)~~

1 fixing bolt

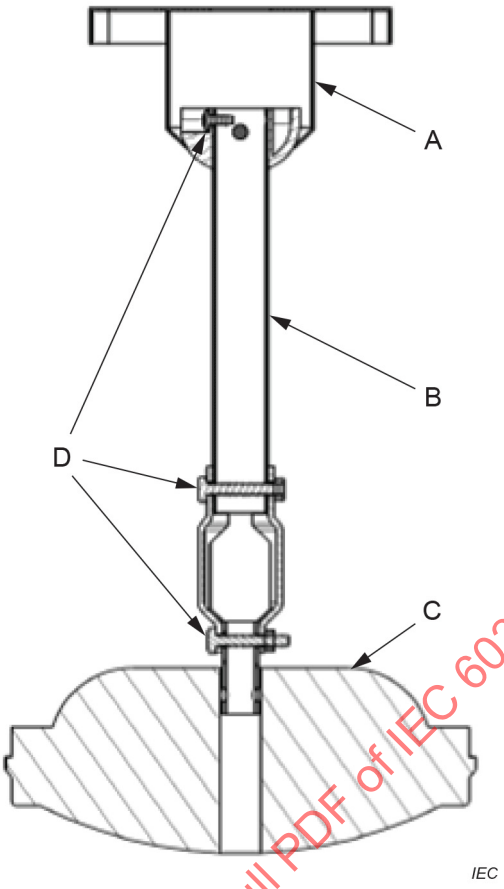
2 additional through bolt

~~B. Safety suspension system Definition 3.103 (additional through bolt) after failure of the suspension system~~

3 additional through bolt limits distance of drop

4 fixing bolt failed

Figure ~~105~~ 106 – Subclause 22.~~102.4~~103.5 – Example



Key

A mounting bracket

B mounting rod

C ceiling fan motor unit

D suspension bolts

Figure ~~106~~ 107 – Subclause 22.~~102.5~~103.6 – Example ~~1~~

Annexes

The annexes of Part 1 are applicable except as follows.

Annex B
(normative)

Battery-operated appliances, separable batteries and detachable batteries for battery-operated appliances

Annex B of Part 1 is applicable except as follows.

22 Construction

B.22.3 *Addition:*

*In addition to the use of test probe 18, test probe 19 of IEC 61032 is applied as specified for test probe 18. For other than **infant fans**, test probe 19 of IEC 61032 is not applied to parts of fans that are located at a height greater than 850 mm in normal use, and to fans which according to the instructions are required to be mounted or placed at a height exceeding 850 mm.*

B.22.4 *Addition:*

*In addition to the use of test probe 18, test probe 19 of IEC 61032 is applied as specified for test probe 18. For other than **infant fans**, test probe 19 of IEC 61032 is not applied to parts of fans that are located at a height greater than 850 mm in normal use, and to fans which according to the instructions are required to be mounted or placed at a height exceeding 850 mm.* **33**

Annex P
(informative)

Guidance for the application of this standard to appliances used in tropical climates

Annex P of Part 1 is applicable except as follows.

11 Heating

11.8 Not applicable.

Bibliography

The bibliography of Part 1 is applicable.

List of comments

1 The reference to the ISO standards is added for infant fans similar to what is done for electric toys in IEC 62115.

2 This revision is for alignment with IEC 60335-1:2020.

3 This revision is for alignment with IEC 60335-1:2020.

4 This revision is for alignment with IEC 60335-1:2020.

5 The ISO standards are applicable for infant fans to cover hazards other than those related to the use of electricity. The reference to the ISO 8124 series is added similar to what is done in the Scope of IEC 62115 for electric toys.

6 These requirements are related to installation and positioning of moving parts, so they are relocated to Subclauses 5.5 and 5.10.

7 Requirements are introduced for infant fans which are used in areas where infants are expected to have access.

8 This is relocated from Subclause 3.1.9.

9 This is relocated from Subclause 3.1.9.

10 While infant fans may be used in locations that are accessible to infants, they should not be treated as a toy.

11 This instruction is introduced so that manufacturers can state whether the appliance is intended for installation above 850 mm, in which case test probe 19 is not applied and the accessible surface temperature limits are greater.

12 Appliances located above 1,8 m are not considered to be within reach of children up to 14 years in age according to IEC Guide 117, so test probe 18 is not applied.

13 Appliance can be located on the floor where they would be accessible to children up to 3 years in age, so test probe 19 is applicable. However, with the exception of infant fans, appliances and parts of appliances located above 850 mm from the floor are not considered to be within reach of these children, so test probe 19 is not applied.

14 This revision is for alignment with IEC 60335-1:2020 and to clarify the types of appliances covered by this standard that are considered to be used in areas open to the public. For these appliances, test probe 18 is applied as specified in the Part 1 Standard.

15 Limits on the temperature rise of external accessible surfaces are introduced to address the risk of thermal injury from contact with external accessible surfaces based on IEC Guide 117 for Temperatures of touchable hot surfaces.

16 This revision maintains the requirements for appliance outlets and socket outlets and the test duration for charging of battery-operated appliances as specified in IEC 60335-1:2020.

17 Limits on the temperature rise of external accessible surfaces are introduced to address the risk of thermal injury from contact with external accessible surfaces based on IEC Guide 117 for Temperatures of touchable hot surfaces.

18 These fans are not considered to be accessible during use, so the surface temperatures are not applied.

19 This addition clarifies that these parts are considered to be held for short periods only.

20 This revision is for alignment with IEC 60335-1:2020.

21 Appliances located above 1,8 m are not considered to be within reach of children up to 14 years in age according to IEC Guide 117, so test probe 18 is not applied.

22 Infant fans can be located where they would be accessible to children up to 3 years in age, so test probe 19 is applicable.

23 Parts of appliances located above 2,3 m are not considered to be within reach of adults according to IEC Guide 117, so the modified test probe B is not applied.

24 This revision is for alignment with IEC 60335-1:2020 and to clarify the types of appliances covered by this standard that are considered to be used in areas open to the public. For these appliances, test probe 18 is applied as specified in the Part 1 Standard.

25 Since infant fans can be located where accessible to infants, the moving parts must be guarded to prevent injury.

26 Since infant fans can be located where accessible to infants, they are likely to be dropped.

27 Additional requirements for remote operation were added to IEC 60335-1:2020. However, the remote operation requirements in Subclauses 22.40, 22.49 and 22.51 are not applicable for appliances covered by this Part 2 Standard because they are not considered to give rise to a hazard when operated continuously, automatically or remotely.

28 Infant fans can be shaped or decorated like a toy. The requirements applied for infant fans are considering that these appliances are used where they would be accessible to infants.

29 Additional requirements for remote operation were added to IEC 60335-1:2020. However, the remote operation requirements in Subclauses 22.40, 22.49 and 22.51 are not applicable for appliances covered by this Part 2 Standard because they are not considered to give rise to a hazard when operated continuously, automatically or remotely.

30 Additional requirements for remote operation were added to IEC 60335-1:2020. However, the remote operation requirements in Subclauses 22.40, 22.49 and 22.51 are not applicable for appliances covered by this Part 2 Standard because they are not considered to give rise to a hazard when operated continuously, automatically or remotely.

31 Since infant fans can be located where accessible to infants, a tool is required to access batteries which present a choking hazard.

32 Since infant fans can be located where accessible to infants, the working voltage in the functional part of the fan is limited similar to the limitations on the working voltages in electric toys in IEC 62115.

33 Battery-operated appliance can be located on the floor where they would be accessible to children up to 3 years in age, so test probe 19 is applied to battery-operated appliances, detachable batteries and separable batteries. However, with the exception of infant fans, appliances and parts of appliances located above 850 mm from the floor are not considered to be within reach of these children, so test probe 19 is not applied.

IEC 60335-2-80

Edition 4.0 2024-10

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Household and similar electrical appliances – Safety – Part 2-80: Particular requirements for fans

Appareils électrodomestiques et analogues – Sécurité – Partie 2-80: Exigences particulières pour les ventilateurs

IEC 60335-2-80:2024-10(en-fr)

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

_____

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-80: Particular requirements for fans

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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9) IEC draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). IEC takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, IEC had not received notice of (a) patent(s), which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at https://patents.iec.ch. IEC shall not be held responsible for identifying any or all such patent rights.

IEC 60335-2-80 has been prepared by IEC technical committee 61: Safety of household and similar electrical appliances. It is an International Standard.

This fourth edition cancels and replaces the third edition published in 2015. This edition constitutes a technical revision.

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

a) alignment with IEC 60335-1:2020;
b) conversion of some notes to normative text (Clause 1);
c) introduction of requirements for infant fans (7.12, 7.12.1, 8.1.1, 11.8, 20.2, 20.101, 21.103, 22.44, 22.54, 22.102, B.22.3, B.22.4);

d) introduction of the use of test probe 19 (8.1.1, 20.2, B.22.3, B.22.4);

e) introduction of surface temperature limits (Clause 11);

f) clarification of testing of fans for use in a tropical climate (5.7, Annex P 11.8);

g) clarification of requirements for remote operation of fans (22.40, 22.49, 22.51).

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

Draft	Report on voting
61/7282/FDIS	61/7306/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

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 unless that edition precludes it; in that case, the latest edition that does not preclude it is used. It was established on the basis of the sixth edition (2020) 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: Particular requirements for fans.

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:

– 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 webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

NOTE 4 The attention of National Committees is drawn to the fact that equipment manufacturers and testing organizations can 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.

IMPORTANT – The "colour inside" logo on the cover page of this document indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

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.

Guidance documents concerning the application of the safety requirements for appliances can be accessed via TC 61 supporting documents on the IEC website:

https://www.iec.ch/tc61/supportingdocuments

This information is given for the convenience of users of this International Standard and does not constitute a replacement for the normative text in this standard.

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 can differ.

Other safety aspects as described in the ISO 8124 series of standards are applicable to infant fans.

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.

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.

NOTE 2 Horizontal publications, basic safety publications and group safety publications 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.

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.

NOTE 3 Standards dealing with non-safety aspects of household appliances are:

– IEC standards published by TC 59 concerning methods of measuring performance;
– CISPR 11, CISPR 14-1 and relevant IEC 61000-3 series standards concerning electromagnetic emissions;
– CISPR 14-2 concerning electromagnetic immunity;
– IEC standards published by TC 111 concerning environmental matters.

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES – SAFETY –

Part 2-80: Particular requirements for fans

1 Scope

This clause of Part 1 is replaced by the following.

This part of IEC 60335 deals with the safety of electric fans for household and similar purposes, their **rated voltage** being not more than 250 V for single-phase appliances and 480 V for other appliances including direct current (DC) supplied appliances and **battery-operated appliances**.

Examples of the types of fans that this standard is applicable to are

– ceiling fans;
– **duct fans**;
– **infant fans**;
– partition fans;
– pedestal fans;
– table fans.

This standard also applies to separate controls supplied with fans.

Infant fans are also tested to the applicable requirements of the ISO 8124 series, since it covers hazards other than those arising from the use of electricity such as toxicological hazards.

Appliances not intended for normal household use but which nevertheless can be a source of danger to the public, such as appliances intended for use in shops, in light industry and on farms, are within the scope of this standard.

As far as is practicable, this standard deals with the common hazards presented by appliances that are encountered by all persons in and around the home. However, in general, it does not take into account:

– persons (including children) whose
  - physical, sensory or mental capabilities; or
  - lack of experience and knowledge

  prevents them from using the appliance safely without supervision or instruction;
– children playing with the appliance.

Attention is drawn to the fact that

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

This standard does not apply to

– 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);
– fans incorporated in other appliances.

2 Normative references

This clause of Part 1 is applicable except as follows.

Addition:

IEC 60245-3, *Rubber insulated cables – Rated voltages up to and including 450/750 V – Part 3: Heat resistant silicone insulated cables*

IEC 60584-1, *Thermocouples – Part 1: EMF specifications and tolerances*

ISO 8124-1 (all parts), *Safety of toys – Part 1: Safety aspects related to mechanical and physical properties*

3 Terms and definitions

This clause of Part 1 is applicable except as follows.

3.5 Definitions relating to types of appliances

3.5.101
duct fan
fan for installation within an enclosed airway so that the airflow is ducted on both the inlet and outlet sides

3.5.102
infant fan
fan intended for mounting on high-chairs, baby carriages, strollers, perambulators, buggies, bassinettes, cribs, playpens and similar locations

3.7 Definitions relating to safety components

3.7.101
suspension system
system which is used to secure the ceiling fan unit to the ceiling

3.7.102
safety suspension system device
device used to secure the motor with blades of the ceiling fan to the mounting rod of the fan

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.

5.5 *Addition:*

Fans are operated with any oscillating mechanism in operation.

5.7 *Addition:*

For fans intended to be used in tropical climates, the tests of Clause 10, Clause 11 and Clause 13 are carried out at an ambient temperature of 40 °C $^{+3}_{0}$ °C.

For fans marked with an ambient operating temperature, the tests of Clause 10, Clause 11 and Clause 13 are carried out at the marked value $^{+3}_{0}$ °C.

5.10 *Addition:*

Partition fans are installed in the centre of a suitable partition having dimensions at least four times the diameter of the air inlet.

***Duct fans** are installed in a duct in accordance with the installation instructions, the length of the duct being approximately four times the diameter of the fan.*

6 Classification

This clause of Part 1 is applicable except as follows.

6.2 *Addition:*

Duct fans shall be at least IPX2.

6.101 Fans shall be of one of the following classes with respect to climatic conditions:

– fans for temperate climates;
– fans for tropical climates.

Compliance is checked by inspection.

7 Marking and instructions

This clause of Part 1 is applicable except as follows.

7.1 *Addition:*

Fans for tropical climates shall be marked with the letter T.

Fans intended for operation in locations where the local ambient temperature exceeds 40 °C shall be marked with the ambient operating temperature.

7.12 *Addition:*

If the instructions state that the guard has to be removed for cleaning purposes, the instructions shall state the substance of the following:

Ensure that the fan is switched off from the supply mains before removing the guard.

The instructions for ceiling fans shall include the substance of the following warning:

WARNING: If unusual oscillating movement is observed, immediately stop using the ceiling fan and contact the manufacturer, its service agent or suitably qualified persons.

The instructions for ceiling fans shall include the following:

– the maintenance cycle and method of maintenance;
– the weight of the appliance in kilograms;
– that the replacement of parts of the **safety suspension system device** shall be performed by the manufacturer, its service agent or suitably qualified persons.

The instructions for fans incorporating motors containing brushes shall include the substance of the following:

If it is necessary to replace the live or neutral brushes to ensure operation of the motor, both brushes and the earth brush shall be replaced at the same time. The brushes shall only be replaced by a suitably qualified person.

The instructions for an **infant fan** shaped or decorated like a toy shall include the substance of the following:

This is not a toy. This is an electrical appliance and must be operated and maintained by an adult.

7.12.1 *Addition:*

Instructions for **fixed appliances** intended for installation above 850 mm in normal use shall include the substance of the following:

Do not mount this product lower than 850 mm from the floor.

The instructions for ceiling fans shall include the following information:

– that the fixing means for attachment to the ceiling, such as hooks or other devices, shall be fixed with a sufficient strength to withstand 4 times the weight of the ceiling fan;
– that the mounting of the **suspension system** shall be performed by the manufacturer, its service agent or suitably qualified persons;
– that the fan is to be installed so that the blades are more than 2,3 m above the floor;
– the model or type reference of a luminaire that may be installed in a fan constructed for this purpose.

The instructions for other fans shall include the following information:

– whether the fan is intended for mounting in outside windows or walls (for partition fans);
– that the fan is to be installed so that the blades are more than 2,3 m above the floor (for fans intended to be mounted at high level);
– that precautions must be taken to avoid the back-flow of gases into the room from the open flue of gas or other fuel-burning appliances (for **duct fans** and partition fans).

8 Protection against access to live parts

This clause of Part 1 is applicable except as follows.

8.1.1 *Addition:*

*Test probe 18 of IEC 61032 is not applied to ceiling fans, **duct fans**, or fans that according to the instructions are required to be mounted at a height exceeding 1,8 m above the floor.*

*In addition to the use of test probe 18, test probe 19 of IEC 61032 is applied wherever test probe 18 is used and with the same test conditions used for test probe 18. For other than **infant fans**, test probe 19 of IEC 61032 is not applied to parts of fans that are located at a height greater than 850 mm in normal use, and to fans which according to the instructions are required to be mounted at a height exceeding 850 mm.*

Commercial fans intended to be used in household environments, such as those used for drying carpets after professional cleaning or flooding/water damage are considered to be fans that are installed in an area open to the public.

8.2 *Addition:*

*After the removal of **detachable parts** for the purposes of **user maintenance**, the **basic insulation** of internal wiring may be touched provided that it is electrically equivalent to the insulation of cords complying with IEC 60227 or IEC 60245.*

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 except as follows.

10.1 *Addition:*

Appliances are tested with shutters or similar devices in the open position.

10.2 *Addition:*

Appliances are tested with shutters or similar devices in the open position.

11 Heating

This clause of Part 1 is applicable except as follows.

11.3 *Addition:*

*Where the external **accessible surfaces** are suitably flat and access permits, then the test probe of Figure 101 is used to measure the temperature rises of external **accessible surfaces** specified in Table 101. The probe is applied with a force of 4 N ± 1 N to the surface in such a way that the best possible contact between the probe and the surface is ensured. The measurement is performed after a contact period of 30 s.*

The probe may be held in place using a laboratory stand clamp or similar device. Any measuring instrument giving the same results as the probe may be used.

11.7 *Modification:*

Replace the first paragraph with the following:

Appliances are operated until steady conditions are established.

11.8 *Modification:*

Replace the first paragraph with the following:

During the test, the temperature rises are monitored continuously and shall not exceed the values shown in Table 3 and Table 101.

*Table 101 does not apply to ceiling fans, **duct fans** and fans which according to the instructions are required to be mounted at a height exceeding 2,3 m above the floor.*

Addition:

The temperature rise limits for appliances for tropical climates are reduced by 15 K.

The temperature rise limits for fans marked with an ambient operating temperature are reduced by the difference between the marked value and 25 °C.

The temperature rise of handles or grips of vents and air shutters shall not exceed the value specified in Table 3 for surfaces of handles, knobs, grips and similar parts which are held for short periods only in normal use.

Table 101 – Maximum temperature rises for specified external accessible surfaces under normal operating conditions

Surface	*Temperature rise of external accessible surfaces* [a] *K*	
	Surfaces of appliances not more than 850 mm above the floor and all surfaces of infant fans	*Surfaces of hand-held appliances and surfaces of other appliances between 850 mm and 2,3 m above the floor when installed or in normal use*
Bare metal	*38*	*42*
Coated metal [b]	*42*	*49*
Glass and ceramic	*51*	*56*
Plastic and plastic coating > 0,4 mm [c, d]	*58*	*62*
NOTE The temperature rise limits of handles, knobs, grips, keyboards, keypads and similar parts are specified in Table 3.		

[a] *Temperature rise on surfaces that are inaccessible to a 75 mm diameter probe having a hemispherical end are not measured.*

[b] *Metal is considered coated when a coating having a minimum thickness of 90 µm made of enamel, powder or non-substantially plastic coating is used.*

[c] *The temperature rise limit of plastic also applies for plastic material having a metal finish of thickness less than 0,1 mm.*

[d] *When the thickness of the plastic coating does not exceed 0,4 mm, the temperature rise limits of coated metal for underlying metal apply or the temperature rise limits for glass or ceramic material for underlying glass or ceramic material apply.*

12 Charging of metal-ion batteries

This clause of Part 1 is applicable.

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.

15.1.1 *Addition:*

The outer part of fans intended to be installed in the external structure of a building is subjected to the test of IEC 60529:1989, 14.2.4 a), the part of the fan not mounted on the outside surface being protected against spray from the oscillating tube. The test is carried out with the appliance in the rest position and then in operation while supplied at ***rated voltage****, shutters or similar devices being in the open position.*

Fans marked with the second numeral of the IP system are subjected to the appropriate test of IEC 60529:1989 including IEC 60529:1989/AMD1:1999 and IEC 60529:1989/AMD2:2013 both at rest and in operation while supplied at ***rated voltage****.*

16 Leakage current and electric strength

This clause of Part 1 is applicable.

17 Overload protection of transformers and associated circuits

This clause of Part 1 is applicable.

18 Endurance

This clause of Part 1 is not applicable.

19 Abnormal operation

This clause of Part 1 is applicable except as follows.

19.1 *Addition:*

Fans incorporating shutters or similar devices operated by a control are also subjected to the test of 19.101.

19.7 *Addition:*

Separate controls are mounted on a dull, black-painted plywood board. Approximately 50 % of the area of each ventilating opening is blocked. The temperature of windings shall not exceed the values specified in Table 8 and the temperature rise of the board shall not exceed

- *50 K, for appliances with T marking;*
- *65 K, for other appliances.*

19.9 Not applicable.

19.101 *Fans incorporating shutters or similar devices that are operated automatically are supplied at* ***rated voltage*** *and operated with the shutters or similar devices held in the closed or open position, whichever is more unfavourable.*

20 Stability and mechanical hazards

This clause of Part 1 is applicable except as follows.

20.1 *Addition:*

Portable pedestal fans *having a height exceeding 1,7 m and a mass exceeding 10 kg are placed on a horizontal surface. A force of 40 N is applied to the appliance at a height of 1,5 m in the most unfavourable horizontal direction.*

The appliance shall not overturn.

NOTE 101 Suitable means can be used to prevent the appliance from sliding.

20.2 *Addition:*

*Test probe 18 of IEC 61032 is not applied to ceiling fans, **duct fans** or fans that according to the instructions are required to be mounted at a height exceeding 1,8 m above the floor.*

*For **infant fans**, in addition to test probe 18, test probe 19 of IEC 61032 is applied as specified for test probe 18.*

*The test probe that is similar to test probe B of IEC 61032 but having a circular stop face with a diameter of 50 mm, instead of the non-circular face is not applied to ceiling fans, **duct fans** or fans that according to the instructions are required to be mounted at a height exceeding 2,3 m above the floor.*

Commercial fans intended to be used in household environments, such as those used for drying carpets after professional cleaning or flooding/water damage are considered to be fans that are installed in an area open to the public.

20.101 Fan blades of **infant fans** shall be guarded. Fan blades, other than those of fans for mounting at high level, shall be guarded unless their leading edges and tips are rounded with a radius of not less than 0,5 mm and

– they have a hardness less than D 60 Shore, or
– they have a peripheral speed less than 15 m/s when the fan is supplied at **rated voltage**, or
– the fan has a power output not exceeding 2 W when supplied at **rated voltage**.

Compliance is checked by inspection and by measurement.

20.102 There shall be no risk of entrapment or injury caused by movement of the oscillating head of pedestal fans or table fans.

Compliance is checked by the following test.

*Unless the entrapment point is guarded so that it cannot be touched by test probe 18 of IEC 61032, the appliance is operated at **rated voltage** and test probe 18 is placed at the entrapment point across the width and height of its opening.*

If test probe 18 is touched by the moving part, it shall not be subjected to a force exceeding 15 N.

21 Mechanical strength

This clause of Part 1 is applicable except as follows.

21.1 *Addition:*

Appliances are also subjected to the test of 21.101.

21.101 *Fan guards are subjected to a push force and a pull force of 20 N applied along the axis of the fan motor. After the test, it shall not be possible to touch dangerous moving parts with a test probe that is similar to test probe B of IEC 61032 but having a circular stop face with a diameter of 50 mm instead of the non-circular face. The test probe is applied with a force not exceeding 5 N.*

21.102 Ceiling fans shall have adequate strength.

Compliance is checked by the following test.

Ceiling fans are mounted in accordance with the installation instructions. A load equal to four times the mass of the fan is suspended from the body of the fan for 1 min.

A torque of 1 Nm is then applied to the fixed body of the fan for 1 min. The test is repeated with the torque applied in the reverse direction.

*The **suspension system** including any **safety suspension system device** shall not break and the fan shall not be damaged to such an extent that compliance with 8.1, 16.3 and Clause 29 is impaired.*

NOTE The intent is to test the parts of the ceiling fan and not the capability of the ceiling materials.

21.103 The functional part of an **infant fan** shall be constructed to withstand dropping that can be expected in normal use. Any parts that are loosened or become dislodged as a result of dropping shall not present a choking hazard.

Compliance is checked by the following test.

The functional part of the appliance is dropped from a height of 500 mm above a concrete or similar hard surface.

The test is carried out a total of five times with the functional part of the appliance being positioned so that it falls onto the surface in five different orientations.

*The appliance shall not be damaged to such an extent that compliance with 20.2 is impaired. Any parts that become dislodged or loosened to the point that they are no longer **non-detachable parts**, shall not be contained within the small parts cylinder in Figure 13.*

22 Construction

This clause of Part 1 is applicable except as follows.

22.1

NOTE 101 The enclosure defined in IEC 60529 does not include guards for fan blades.

22.11 *Addition:*

The 50 N force is not applied to clips used to fasten fan guards. Instead, a force of 15 N is applied in any direction to the clips in an attempt to release them.

22.40 *Addition:*

These appliances are not considered to be appliances that could give rise to a hazard when operated continuously, automatically or remotely.

22.44 *Addition:*

This subclause is not applicable to **infant fans**.

22.49 Not applicable.

22.51 Not applicable.

22.54 *Addition:*

For **infant fans**, button **cells** and **batteries** designated R1 shall not be accessible without the aid of a **tool**.

22.101 Appliances having provision for attaching a luminaire shall incorporate appropriate terminals and internal wiring. The internal wiring associated with the luminaire shall have insulation at least equivalent to silicone rubber compound type IE2 complying with IEC 60245-3. This requirement is not applicable to fans incorporating a luminaire that cannot be replaced without breaking the appliance.

Compliance is checked by inspection.

22.102 The functional part of **infant fans** shall be **class III construction** with a **working voltage** of no more than 24 V.

Compliance is checked by inspection and by measurement.

22.103 Ceiling fan suspension system

22.103.1 The ceiling fan shall be constructed so that a failure of the fixing device of the motor to the mounting rod could not give rise to risk of injury to the user or surroundings.

Compliance is checked by the requirement and inspection or test of 22.103.2, 22.103.3, 22.103.4, 22.103.5 or 22.103.6, as appropriate for the design. After the test, the ceiling fan shall not be damaged to such an extent that compliance with 8.1, 16.3, 29.1 and 29.2 are impaired.

22.103.2 The ceiling fan shall incorporate a device that disconnects the fan from the supply before the **suspension system** fails. An example of this construction is shown in Figure 102.

Compliance is checked by the following test.

The bolt that connects the down rod to the motor is replaced with the specially prepared test pin shown in Figure 103 that simulates wear on the bolt. The pin is fully inserted so that it connects the down rod to the motor.

*The fan is supplied at **rated voltage** and operated at maximum speed. The pin is then partially withdrawn so that the motor is connected to the down rod by that part of the pin having diameter b.*

The supply to the ceiling fan shall be automatically disconnected and the fan shall not be capable of operation without replacing the worn bolt.

22.103.3 The ceiling fan shall be constructed so that the fan motor and blades do not fall more than 300 mm after failure of the **suspension system** and the fan shall be disconnected from the supply. An example of this construction is shown in Figure 104.

Compliance is checked by the following test.

The ceiling fan is installed in accordance with the manufacturer's instructions.

A load equal to two times the mass of the ceiling fan is suspended from its body.

*The fan is supplied at **rated voltage** and operated at maximum speed.*

*The **suspension system** is then simulated to fail by disconnecting the motor from the down rod.*

The motor and fan blades shall not drop more than 300 mm from their original position and the supply to the ceiling fan shall be automatically disconnected.

22.103.4 The ceiling fan shall be constructed so that the fan blades and motor are connected to the **suspension system** via a threaded down rod that is locked by means of one or more setscrews. An example of this construction is shown in Figure 105.

Compliance is checked by inspection.

22.103.5 The ceiling fan shall be constructed so that an additional through bolt, lock washer and nut, or the like limits the distance of drop by no more than 75 mm in case of the **suspension system** failure. An example of this construction is shown in Figure 106.

Compliance is checked by inspection and measurement.

22.103.6 The ceiling fan shall be constructed so that all components required to prevent the failure of the **suspension system** are treated or coated to resist corrosion. Any fixing bolts shall have a minimum diameter of 5 mm and a minimum tensile strength of 200 MPa. Any such bolts shall have provision to prevent them working loose due to vibration. An example of this construction is shown in Figure 107.

Compliance is checked by inspection and measurement.

23 Internal wiring

This clause of Part 1 is applicable except as follows.

23.3 *Addition:*

Instead of moving the movable part backwards and forwards, fans with an oscillating mechanism are tested as follows.

*Fans are supplied at **rated voltage** and operated under **normal operation**, the angle of oscillation being the maximum allowed by the construction. The test is carried out for 100 000 cycles of oscillation.*

24 Components

This clause of Part 1 is applicable except as follows.

24.2 *Addition:*

Appliances having a **rated power input** not exceeding 25 W may be fitted with a switch in the **supply cord**.

24.101 **Thermal cut-outs** incorporated in **duct fans** in order to comply with Clause 19 shall not be a **self-resetting thermal cut-out**.

Compliance is checked by inspection.

25 Supply connection and external flexible cords

This clause of Part 1 is applicable except as follows.

25.5 *Addition:*

Type Z attachment is allowed for **portable fans**.

26 Terminals for external conductors

This clause of Part 1 is applicable.

27 Provision for earthing

This clause of Part 1 is applicable except as follows.

27.3 *Addition:*

The allowed travel of the live and neutral brushes due to wear shall be less than the allowed travel of the earth brush so that the earthing circuit is maintained even after the appliance ceases to operate due to live and neutral brush wear.

Compliance is checked by inspection.

28 Screws and connections

This clause of Part 1 is applicable.

29 Clearances, creepage distances and solid insulation

This clause of Part 1 is applicable except as follows.

29.2 *Addition:*

The microenvironment is pollution degree 3 unless the insulation is enclosed or located so that it is unlikely to be exposed to pollution during normal use of the appliance.

30 Resistance to heat and fire

This clause of Part 1 is applicable except as follows.

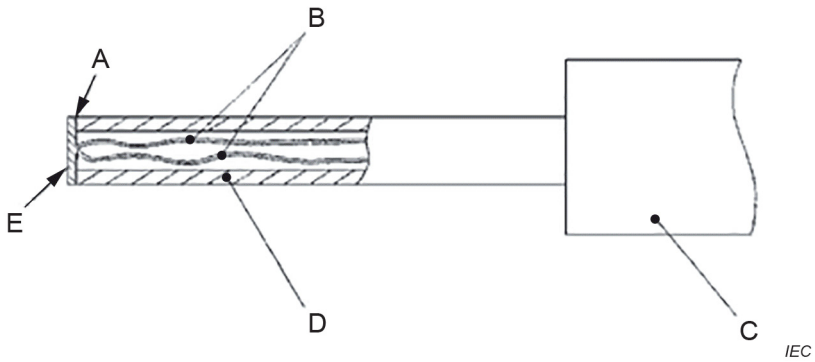
30.2.2 Not applicable.

31 Resistance to rusting

This clause of Part 1 is applicable.

32 Radiation, toxicity and similar hazards

This clause of Part 1 is applicable.



Key

A adhesive

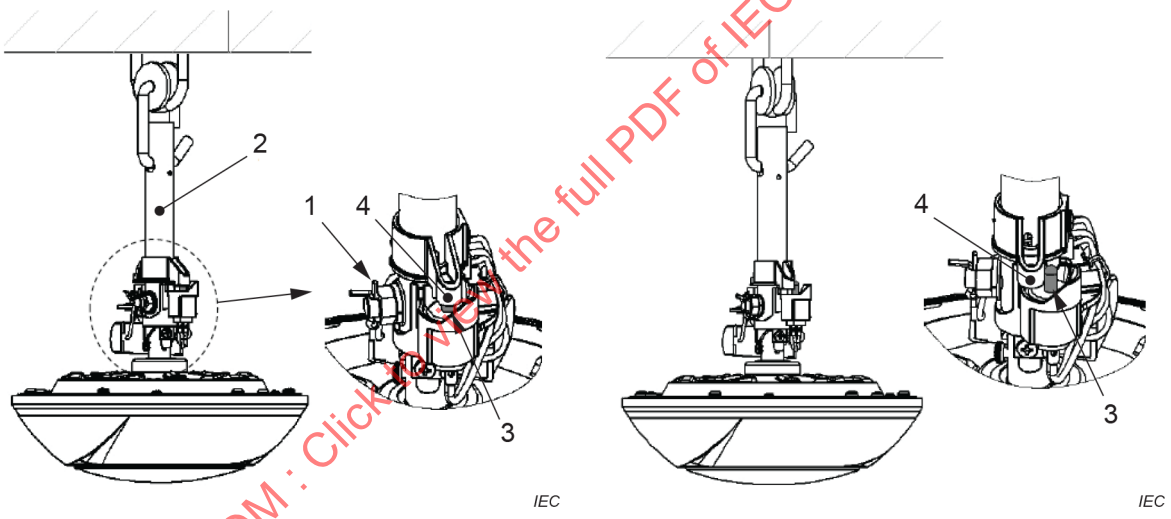
B thermocouple wires 0,3 mm diameter to IEC 60584-1 Type K

C handle arrangement permitting a contact force of 4 N ±1 N

D polycarbonate tube: inside diameter 3 mm, outside diameter 5 mm

E tinned copper disc: 5 mm diameter, 0,5 mm thick with a flat contact face

Figure 101 – Probe for measuring surface temperatures



a) Suspension system – Before failure **b) Suspension system – After failure**

Key

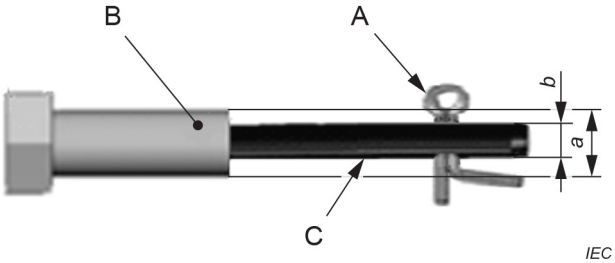
1 connecting bolt

2 mounting rod

3 electrical device (safety switch) fixed on the motor unit to disconnect the power supply before failure of the connecting bolt

4 stopper fixed on the mounting rod to initially keep safety switch in On position

Figure 102 – Subclause 22.103.2 – Example



Key

A stopper pin

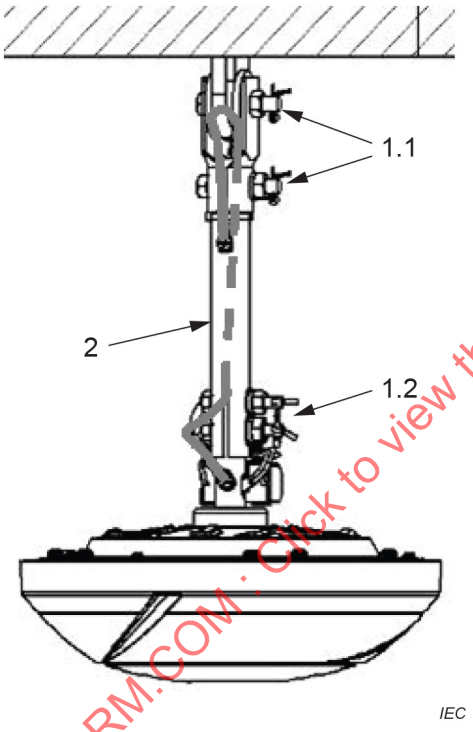
B full thickness section with length at least equal to that of the original bolt

C reduced thickness section with length at least equal to that of the original bolt

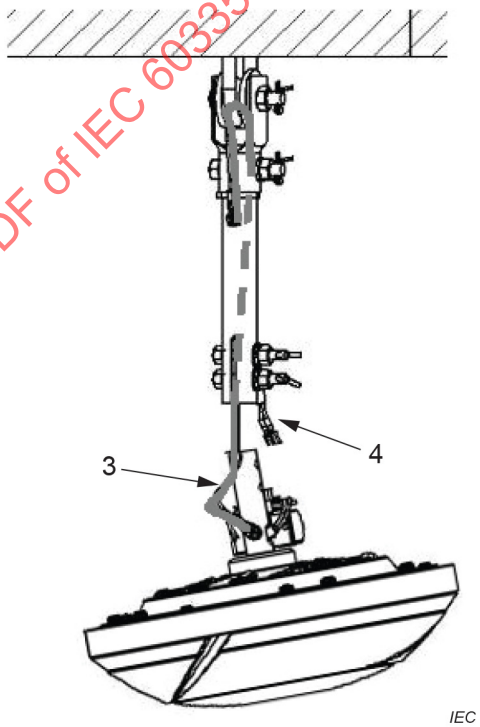
a diameter same as the original bolt that connects the down rod to the motor

b being 50 % of diameter "*a*"

Figure 103 – Test pin



a) Suspension system – Before failure



b) Suspension system – After failure

Key

1.1 connecting hook/bolt

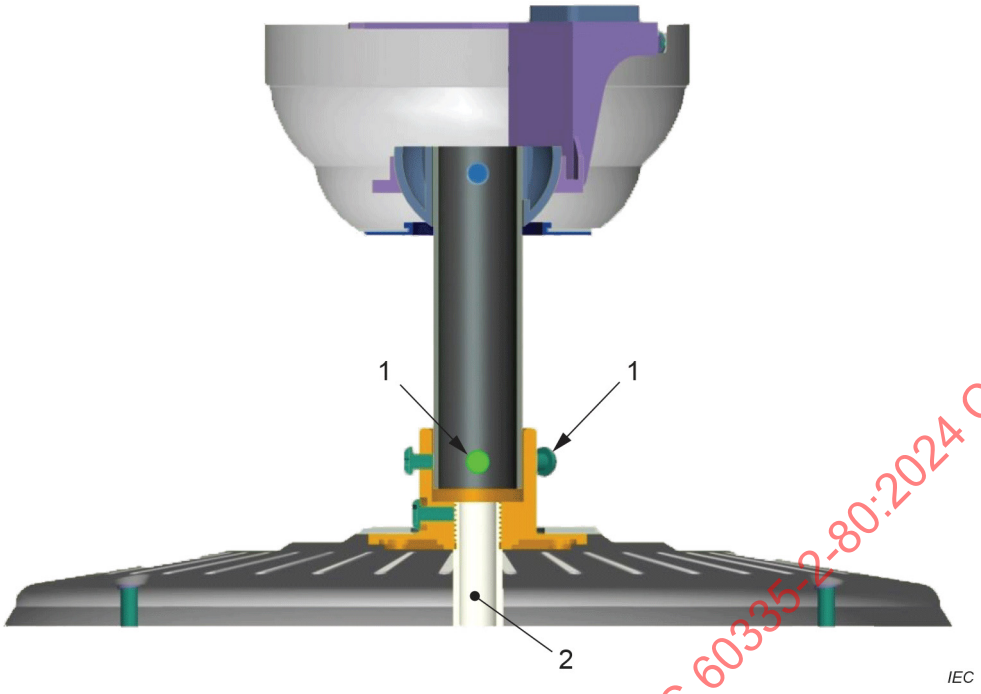
1.2 connecting bolt

2 mounting rod

3 mechanical **safety suspension system device** (safety wire) suspends the ceiling fan motor unit

4 terminal to disconnect the supply after **suspension system** failure

Figure 104 – Subclause 22.103.3 – Example

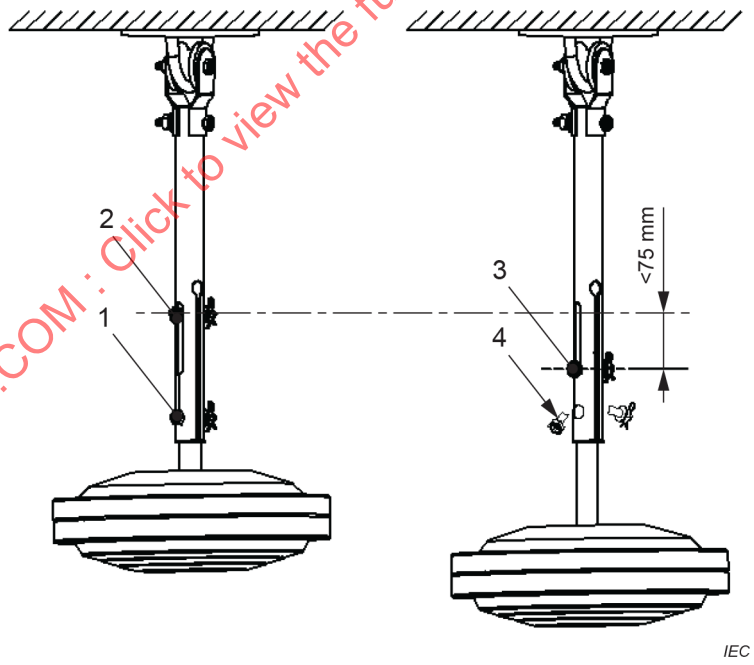


Key

1 set screws

2 threaded down rod

Figure 105 – Subclause 22.103.4 – Example



a) Suspension system – Before failure **b) Suspension system – After failure**

Key

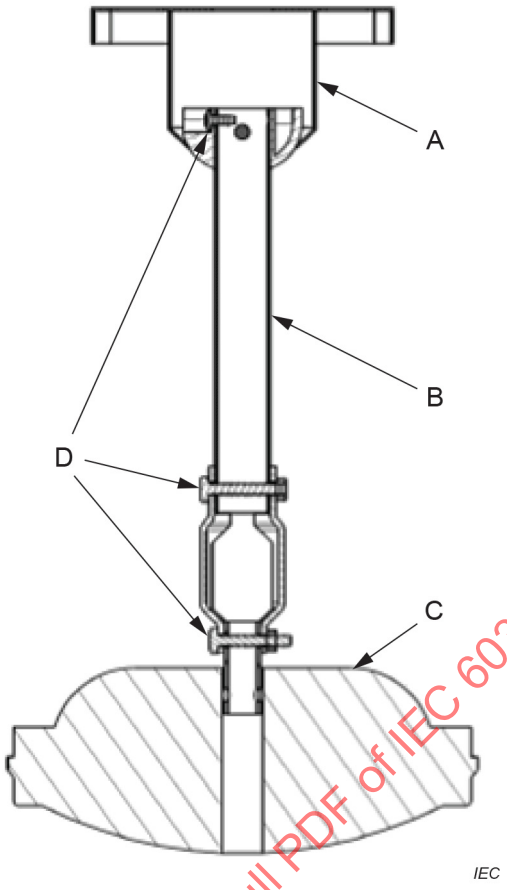
1 fixing bolt

2 additional through bolt

3 additional through bolt limits distance of drop

4 fixing bolt failed

Figure 106 – Subclause 22.103.5 – Example



Key

A mounting bracket
B mounting rod
C ceiling fan motor unit
D suspension bolts

Figure 107 – Subclause 22.103.6 – Example

Annexes

The annexes of Part 1 are applicable except as follows.

Annex B
(normative)

Battery-operated appliances, separable batteries and detachable batteries for battery-operated appliances

Annex B of Part 1 is applicable except as follows.

22 Construction

B.22.3 *Addition:*

*In addition to the use of test probe 18, test probe 19 of IEC 61032 is applied as specified for test probe 18. For other than **infant fans**, test probe 19 of IEC 61032 is not applied to parts of fans that are located at a height greater than 850 mm in normal use, and to fans which according to the instructions are required to be mounted or placed at a height exceeding 850 mm.*

B.22.4 *Addition:*

*In addition to the use of test probe 18, test probe 19 of IEC 61032 is applied as specified for test probe 18. For other than **infant fans**, test probe 19 of IEC 61032 is not applied to parts of fans that are located at a height greater than 850 mm in normal use, and to fans which according to the instructions are required to be mounted or placed at a height exceeding 850 mm.*

Annex P
(informative)

Guidance for the application of this standard to appliances used in tropical climates

Annex P of Part 1 is applicable except as follows.

11 Heating

11.8 Not applicable.

Bibliography

The bibliography of Part 1 is applicable.

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SOMMAIRE

COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE

_____

APPAREILS ÉLECTRODOMESTIQUES ET ANALOGUES – SÉCURITÉ –

Partie 2-80: Exigences particulières pour les ventilateurs

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9) L'IEC attire l'attention sur le fait que la mise en application du présent document peut entraîner l'utilisation d'un ou de plusieurs brevets. L'IEC ne prend pas position quant à la preuve, à la validité et à l'applicabilité de tout droit de brevet revendiqué à cet égard. À la date de publication du présent document, l'IEC n'avait pas reçu notification qu'un ou plusieurs brevets pouvaient être nécessaires à sa mise en application. Toutefois, il y a lieu d'avertir les responsables de la mise en application du présent document que des informations plus récentes sont susceptibles de figurer dans la base de données de brevets, disponible à l'adresse https://patents.iec.ch. L'IEC ne saurait être tenue pour responsable de ne pas avoir identifié de tels droits de brevets.

L'IEC 60335-2-80 a été établie par le comité d'études 61 de l'IEC: Sécurité des appareils électrodomestiques et analogues. Il s'agit d'une Norme internationale.

Cette quatrième édition annule et remplace la troisième édition parue en 2015. Cette édition constitue une révision technique.

Cette édition inclut les modifications techniques majeures suivantes par rapport à l'édition précédente:

a) le texte a été aligné sur l'IEC 60335-1:2020;

b) certaines notes ont été converties en texte normatif (Article 1);

c) des exigences ont été ajoutées pour les ventilateurs pour nourrissons (7.12, 7.12.1, 8.1.1, 11.8, 20.2, 20.101, 21.103, 22.44, 22.54, 22.102, B.22.3, B.22.4);

d) l'application du calibre d'essai 19 a été ajoutée (8.1.1, 20.2, B.22.3, B.22.4);

e) des limites de température de surface ont été ajoutées (Article 11);

f) les essais des ventilateurs destinés à être utilisés dans un climat tropical ont été clarifiés (5.7, Annexe P);

g) les exigences pour la commande à distance des ventilateurs ont été clarifiées (22.40, 22.49, 22.51).

Le texte de cette Norme internationale est issu des documents suivants:

Projet	Rapport de vote
61/7282/FDIS	61/7306/RVD

Le rapport de vote indiqué dans le tableau ci-dessus donne toute information sur le vote ayant abouti à son approbation.

La langue employée pour l'élaboration de cette Norme internationale est l'anglais.

Ce document a été rédigé selon les Directives ISO/IEC, Partie 2, il a été développé selon les Directives ISO/IEC, Partie 1 et les Directives ISO/IEC, Supplément IEC, disponibles sous www.iec.ch/members_experts/refdocs. Les principaux types de documents développés par l'IEC sont décrits plus en détail sous www.iec.ch/publications.

Une liste de toutes les parties de la série IEC 60335, publiées sous le titre général *Appareils électrodomestiques et analogues – Sécurité*, se trouve sur le site web de l'IEC.

La présente partie 2 doit être utilisée conjointement avec la dernière édition de l'IEC 60335-1 et ses amendements sauf si cette édition l'exclut. Dans ce cas, la dernière édition qui n'exclut pas la présente partie 2 est utilisée. Elle a été établie sur la base de la sixième édition (2020) de cette norme.

NOTE 1 L'expression "la Partie 1" utilisée dans la présente norme fait référence à l'IEC 60335-1.

La présente partie 2 complète ou modifie les articles correspondants de l'IEC 60335-1, de façon à transformer cette publication en norme IEC: Exigences particulières pour les ventilateurs.

Lorsqu'un paragraphe particulier de la Partie 1 n'est pas mentionné dans cette partie 2, ce paragraphe s'applique pour autant que cela soit raisonnable. Lorsque la présente norme mentionne "addition", "modification" ou "remplacement", le texte correspondant de la Partie 1 doit être adapté en conséquence.

NOTE 2 Le système de numérotation suivant est utilisé:

– les paragraphes, tableaux et figures qui s'ajoutent à ceux de la Partie 1 sont numérotés à partir de 101;

– à l'exception de celles qui sont dans un nouveau paragraphe ou de celles qui concernent des notes de la Partie 1, les notes sont numérotées à partir de 101, y compris celles des articles ou paragraphes qui sont remplacés;

– les annexes qui sont ajoutées sont désignées AA, BB, etc.

NOTE 3 Les caractères d'imprimerie suivants sont utilisés:

- exigences: caractères romains;
- *modalités d'essais: caractères italiques*;
- notes: petits caractères romains.

Les termes en **gras** dans le texte sont définis à l'Article 3. Lorsqu'une définition concerne un adjectif, l'adjectif et le nom associé figurent également en gras.

Le comité a décidé que le contenu de ce document ne sera pas modifié avant la date de stabilité indiquée sur le site web de l'IEC sous webstore.iec.ch dans les données relatives au document recherché. À cette date, le document sera

- reconduit,
- supprimé, ou
- révisé.

NOTE 4 L'attention des Comités nationaux est attirée sur le fait que les fabricants d'appareils et les organismes d'essai peuvent avoir besoin d'une période transitoire après la publication d'une nouvelle publication IEC, ou d'une publication amendée ou révisée, pour fabriquer des produits conformes aux nouvelles exigences et pour adapter leurs équipements aux nouveaux essais ou aux essais révisés.

Le comité recommande que le contenu de cette publication soit adopté pour application nationale (obligatoire) au plus tôt 12 mois et au plus tard 36 mois après la date de publication.

IMPORTANT – Le logo "colour inside" qui se trouve sur la page de couverture de ce document indique qu'il contient des couleurs qui sont considérées comme utiles à une bonne compréhension de son contenu. Les utilisateurs devraient, par conséquent, imprimer ce document en utilisant une imprimante couleur.

INTRODUCTION

Il a été admis par hypothèse, en établissant la présente Norme internationale, que l'exécution de ses dispositions était confiée à des personnes expérimentées et ayant une qualification appropriée.

Les documents de recommandations concernant l'application des exigences de sécurité des appareils peuvent être obtenus par le biais des documents d'accompagnement du comité d'études 61 sur le site web de l'IEC:

https://www.iec.ch/tc61/supportingdocuments

Cette information est donnée à l'intention des utilisateurs de la présente Norme internationale et ne constitue nullement un remplacement du texte normatif de la présente norme.

La présente norme reconnaît le niveau de protection internationalement accepté contre les risques électriques, mécaniques, thermiques, liés au feu et au rayonnement des appareils, lorsqu'ils fonctionnent comme en usage normal en tenant compte des instructions du fabricant. Elle couvre également les situations anormales auxquelles on peut s'attendre dans la pratique et elle tient compte de la façon dont les phénomènes électromagnétiques peuvent affecter le fonctionnement sûr des appareils.

La présente norme tient compte autant que possible des exigences de l'IEC 60364, de façon à rester compatible avec les règles d'installation quand l'appareil est raccordé au réseau d'alimentation. Cependant, des règles d'installation nationales peuvent être différentes.

D'autres aspects liés à la sécurité décrits dans la série de normes ISO 8124 s'appliquent aux ventilateurs pour nourrissons.

Si un appareil relevant du domaine d'application de la présente norme comporte également des fonctions couvertes par une autre partie 2 de l'IEC 60335, la partie 2 correspondante est appliquée à chaque fonction séparément, dans la limite du raisonnable. Si cela s'applique, l'influence d'une fonction sur les autres fonctions est prise en compte.

Lorsqu'une partie 2 ne comporte pas d'exigences complémentaires pour couvrir les dangers traités dans la Partie 1, la Partie 1 s'applique.

NOTE 1 Cela signifie que les comités d'études responsables pour les parties 2 ont déterminé qu'il n'était pas nécessaire de spécifier des exigences particulières pour l'appareil en question en plus des exigences générales.

La présente norme est une norme de famille de produits traitant de la sécurité d'appareils et a préséance sur les normes horizontales et génériques couvrant le même sujet.

NOTE 2 Les publications horizontales, les publications fondamentales de sécurité et les publications groupées de sécurité couvrant un danger ne s'appliquent pas, parce qu'elles ont été prises en considération lorsque les exigences générales et particulières ont été étudiées pour la série de normes IEC 60335.

Un appareil conforme au texte de la présente norme ne sera pas nécessairement jugé conforme aux principes de sécurité de la norme si, lorsqu'il est examiné et soumis aux essais, il apparaît qu'il présente d'autres caractéristiques qui compromettent le niveau de sécurité visé par ces exigences.

Un appareil utilisant des matériaux ou présentant des modes de construction différents de ceux décrits dans les exigences de la présente norme peut être examiné et soumis aux essais en fonction de l'objectif poursuivi par ces exigences et, s'il est jugé pratiquement équivalent, il peut être estimé conforme aux principes de sécurité de la présente norme.

NOTE 3 Les normes traitant des aspects non relatifs à la sécurité des appareils électrodomestiques sont:

– les normes IEC publiées par le comité d'études 59 concernant les méthodes de mesure de l'aptitude à la fonction;
– les normes CISPR 11 et CISPR 14-1, ainsi que les normes applicables de la série IEC 61000-3 concernant les émissions électromagnétiques;
– la norme CISPR 14-2 concernant l'immunité électromagnétique;
– les normes IEC publiées par le comité d'études 111 concernant l'environnement.

APPAREILS ÉLECTRODOMESTIQUES ET ANALOGUES – SÉCURITÉ –

Partie 2-80: Exigences particulières pour les ventilateurs

1 Domaine d'application

L'article de la Partie 1 est remplacé par le texte suivant.

La présente partie de l'IEC 60335 traite de la sécurité des ventilateurs électriques pour usages domestiques et analogues dont la **tension assignée** est inférieure ou égale à 250 V pour les appareils monophasés et à 480 V pour les autres appareils, y compris les appareils alimentés en courant continu et les **appareils alimentés par batteries**.

La présente norme s'applique aux exemples de types de ventilateurs suivants:

– les ventilateurs de plafond;
– les **ventilateurs de conduit**;
– les **ventilateurs pour nourrissons**;
– les ventilateurs de cloison;
– les ventilateurs à colonne;
– les ventilateurs de table.

La présente norme s'applique également aux dispositifs de commande fournis avec les ventilateurs.

Les **ventilateurs pour nourrissons** sont également soumis à l'essai par rapport aux exigences de la série de normes ISO 8124, dans la mesure où celle-ci couvre les dangers autres que ceux dus à l'utilisation de l'électricité, tels que les dangers toxicologiques.

Les appareils non destinés à un usage domestique normal, mais qui peuvent néanmoins constituer une source de danger pour le public, tels que les appareils destinés à être utilisés dans des magasins, chez des artisans et dans des fermes, sont compris dans le domaine d'application de la présente norme.

Dans la mesure du possible, la présente norme traite des dangers courants que présentent les appareils et auxquels sont exposés tous les individus situés à l'intérieur et autour de l'habitation. Cependant, cette norme ne tient pas compte en général:

– des personnes (y compris des enfants) dont
  - les capacités physiques, sensorielles ou mentales; ou
  - le manque d'expérience et de connaissance

  les empêchent d'utiliser l'appareil en toute sécurité sans surveillance ou instruction;
– des enfants qui jouent avec l'appareil.

L'attention est attirée sur le fait que

– pour les appareils destinés à être utilisés dans des véhicules ou à bord de navires ou d'avions, des exigences supplémentaires peuvent être nécessaires;
– dans de nombreux pays, des exigences supplémentaires sont spécifiées par les organismes nationaux de la santé, par les organismes nationaux responsables de la protection des travailleurs et par des organismes similaires.

La présente norme ne s'applique pas

– aux appareils prévus exclusivement pour des usages industriels;
– aux appareils destinés à être utilisés dans des locaux qui présentent des conditions particulières, telles que la présence d'une atmosphère corrosive ou explosive (poussière, vapeur ou gaz);
– aux ventilateurs incorporés dans d'autres appareils.

2 Références normatives

L'article de la Partie 1 s'applique, avec l'exception suivante.

Addition:

IEC 60245-3, *Conducteurs et câbles isolés au caoutchouc – Tension assignée au plus égale à 450/750 V – Partie 3: Conducteurs isolés au silicone, résistant à la chaleur*

IEC 60584-1, *Couples thermoélectriques – Partie 1: Spécifications et tolérances en matière de FEM*

ISO 8124-1 (toutes les parties), *Sécurité des jouets – Partie 1: Aspects de sécurité relatifs aux propriétés mécaniques et physiques*

3 Termes et définitions

L'article de la Partie 1 s'applique, avec les exceptions suivantes.

3.5 Définitions relatives aux types d'appareils

3.5.101
ventilateur de conduit
ventilateur destiné à être installé à l'intérieur d'un conduit d'air fermé de telle sorte que le débit d'air soit canalisé à la fois à l'entrée et à la sortie

3.5.102
ventilateur pour nourrisson
ventilateur destiné à être monté sur les chaises hautes, les landaus, les poussettes, les voitures d'enfant, les voiturettes, les bassinettes, les berceaux, les parcs et emplacements analogues

3.7 Définitions relatives aux composants de sécurité

3.7.101
système de suspension
système utilisé pour fixer l'unité de ventilation au plafond

3.7.102
dispositif de sécurité du système de suspension
dispositif utilisé pour fixer le moteur à pales du ventilateur de plafond à la tige de montage du ventilateur

4 Exigences générales

L'article de la Partie 1 s'applique.

5 Conditions générales d'essais

L'article de la Partie 1 s'applique, avec l'exception suivante.

5.5 *Addition:*

Les ventilateurs sont mis en fonctionnement avec le mécanisme oscillant éventuel en fonctionnement.

5.7 *Addition:*

Pour les ventilateurs destinés à être utilisés dans des climats tropicaux, les essais de l'Article 10, de l'Article 11 et de l'Article 13 sont effectués à une température ambiante de 40 °C $^{+3}_{0}$ °C.

Pour les ventilateurs marqués avec une température ambiante de fonctionnement, les essais de l'Article 10, de l'Article 11 et de l'Article 13 sont effectués à la valeur indiquée $^{+3}_{0}$ °C.

5.10 *Addition:*

Les ventilateurs de cloison sont installés au centre d'une paroi appropriée dont les dimensions sont au moins égales à quatre fois le diamètre de la prise d'air.

*Les **ventilateurs de conduit** sont installés dans un conduit, conformément aux instructions d'installation, la longueur du conduit étant d'environ quatre fois le diamètre du ventilateur.*

6 Classification

L'article de la Partie 1 s'applique, avec les exceptions suivantes.

6.2 *Addition:*

Les **ventilateurs de conduit** doivent être au moins IPX2.

6.101 Les ventilateurs doivent être de l'une des classes suivantes, d'après les conditions climatiques:

– ventilateurs pour climats tempérés;
– ventilateurs pour climats tropicaux.

La vérification est effectuée par examen.

7 Marquage et instructions

L'article de la Partie 1 s'applique, avec les exceptions suivantes.

7.1 *Addition:*

Les ventilateurs pour climats tropicaux doivent porter le marquage de la lettre T.

Les ventilateurs destinés à fonctionner dans des emplacements où la température ambiante locale dépasse 40 °C doivent être marqués avec la température ambiante de fonctionnement.

7.12 *Addition:*

Si les instructions indiquent qu'un protecteur doit être retiré à des fins de nettoyage, les instructions doivent indiquer en substance:

S'assurer que le ventilateur est déconnecté du réseau avant de retirer le protecteur.

Les instructions applicables aux ventilateurs de plafond doivent comporter, en substance, la mise en garde suivante:

MISE EN GARDE: Si un mouvement d'oscillation inhabituel est observé, arrêter immédiatement d'utiliser le ventilateur de plafond et contacter le fabricant, son agent de service ou des personnes qualifiées.

Les instructions pour les ventilateurs de plafond doivent comporter les informations suivantes:

– cycle d'entretien et procédé d'entretien;
– poids de l'appareil en kilogrammes;
– mention du fait que le remplacement des pièces du **dispositif de sécurité du système de suspension** doit être effectué par le fabricant, son agent de service ou des personnes qualifiées.

Les instructions applicables aux ventilateurs équipés de moteurs qui contiennent des balais doivent inclure, en substance, les indications suivantes:

S'il est nécessaire de remplacer le balai sous tension ou le balai neutre pour assurer un bon fonctionnement du moteur, ces deux balais et le balai de mise à la terre doivent être remplacés simultanément. Les balais doivent obligatoirement être remplacés par une personne qualifiée.

Les instructions pour les **ventilateurs pour nourrissons** structurés ou décorés comme des jouets doivent comporter en substance le texte suivant:

Cet appareil n'est pas un jouet. Cet appareil électrique doit être utilisé et entretenu par un adulte.

7.12.1 *Addition:*

Les instructions pour les **appareils installés à poste fixe** destinés à être installés à plus de 850 mm du sol en usage normal doivent comporter en substance le texte suivant:

Ne pas monter ce produit à moins de 850 mm du sol.

Les instructions pour les ventilateurs de plafond doivent comporter les informations suivantes:

– le dispositif de fixation au plafond, comme des crochets ou autres dispositifs, doit être fixé de manière à supporter un poids 4 fois supérieur à celui du ventilateur de plafond;
– le montage du **système de suspension** doit être effectué par le fabricant, son agent de service ou des personnes qualifiées;
– le ventilateur doit être installé de sorte que les pales soient à plus de 2,3 m du sol;
– la référence du modèle ou du type des luminaires qui peuvent être installés sur les ventilateurs construits à cet effet.

Les instructions pour les autres ventilateurs doivent comporter les informations suivantes:

– si le ventilateur est prévu pour montage dans des fenêtres ou des murs extérieurs (pour les ventilateurs de cloison);
– que le ventilateur doit être installé de façon telle que les pales soient à plus de 2,3 m du sol (pour les ventilateurs prévus pour être montés à haut niveau);
– que des précautions doivent être prises pour éviter un refoulement, à l'intérieur de la pièce, de gaz en provenance du tuyau d'évacuation d'appareils à gaz ou d'autres appareils à feu ouvert (pour les **ventilateurs de conduit** et les ventilateurs de cloison).

8 Protection contre l'accès aux parties actives

L'article de la Partie 1 s'applique, avec les exceptions suivantes.

8.1.1 *Addition:*

*Le calibre d'essai 18 de l'IEC 61032 n'est pas appliqué aux ventilateurs de plafond, aux **ventilateurs de conduit**, ni aux ventilateurs dont les instructions précisent que ceux-ci doivent être montées à plus de 1,8 m du sol.*

*En plus d'utiliser le calibre d'essai 18, le calibre d'essai 19 de l'IEC 61032 est appliqué chaque fois que le calibre d'essai 18 est utilisé, dans les mêmes conditions d'essai que le calibre d'essai 18. Pour les appareils autres que les **ventilateurs pour nourrissons**, le calibre d'essai 19 de l'IEC 61032 n'est pas appliqué sur les parties des ventilateurs situées à plus de 850 mm de hauteur en usage normal, ni aux ventilateurs dont les instructions précisent que ceux-ci doivent être montés à plus de 850 mm de hauteur.*

Les ventilateurs à usage commercial destinés à être utilisés dans des environnements domestiques, tels que ceux utilisés pour sécher les tapis après un nettoyage professionnel ou une inondation/un dégât d'eau, sont considérés comme des ventilateurs installés dans un lieu ouvert au public.

8.2 *Addition:*

*Après le retrait des **parties amovibles** à des fins d'**entretien par l'utilisateur**, l'**isolation principale** des conducteurs internes peut être touchée à condition qu'elle soit électriquement équivalente à l'isolation des câbles conforme à l'IEC 60227 ou à l'IEC 60245.*

9 Démarrage des appareils à moteur

L'article de la Partie 1 ne s'applique pas.

10 Puissance et courant

L'article de la Partie 1 s'applique, avec les exceptions suivantes.

10.1 *Addition:*

Les appareils sont soumis à l'essai avec leurs volets ou dispositifs similaires en position ouverte.

10.2 *Addition:*

Les appareils sont soumis à l'essai avec leurs volets ou dispositifs similaires en position ouverte.