IEC 60670-21

Edition 2.0 2024-12
REDLINE VERSION

INTERNATIONAL STANDARD

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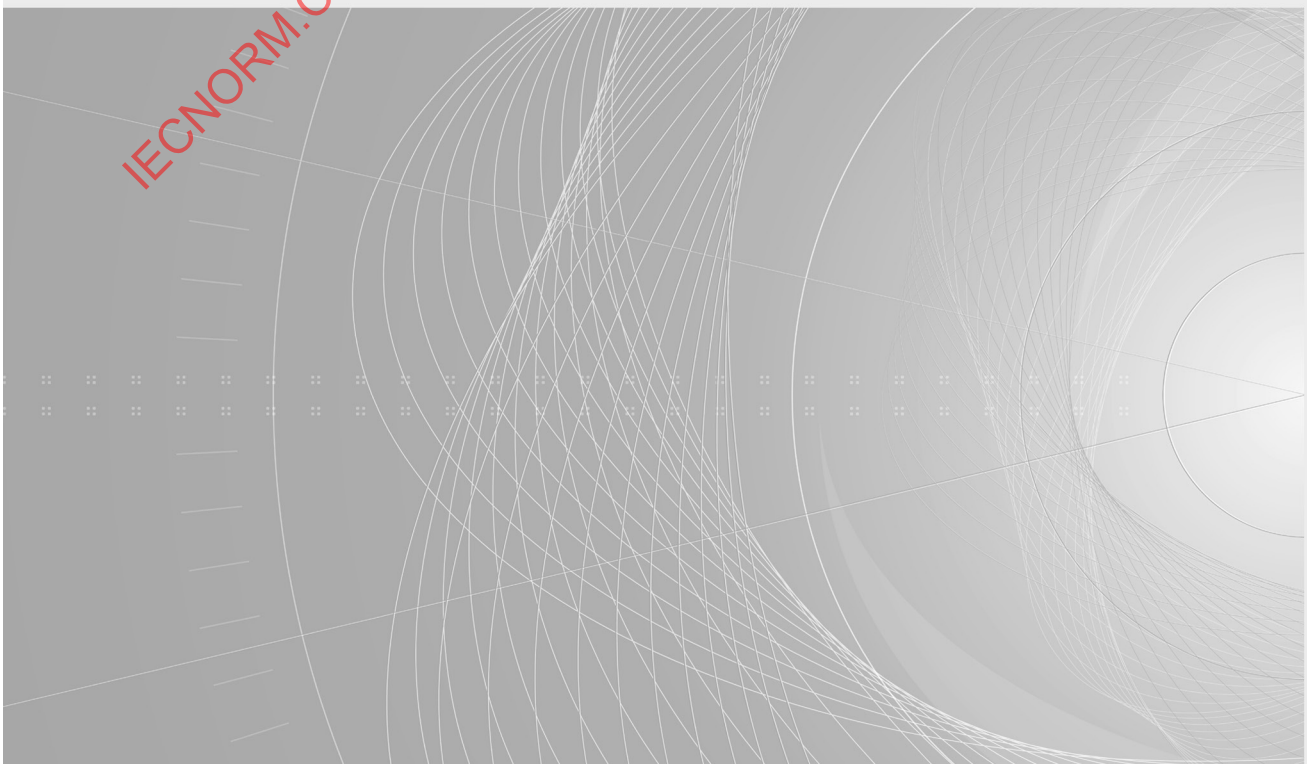
Boxes and enclosures for electrical accessories for household and similar fixed electrical installations –
Part 21: Particular requirements for boxes and enclosures with provision for suspension means



IEC 60670-21:2024-12 RLV(en)

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Boxes and enclosures for electrical accessories for household and similar fixed electrical installations –
Part 21: Particular requirements for boxes and enclosures with provision for suspension means

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 29.120.99

ISBN 978-2-8327-0111-9

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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BOXES AND ENCLOSURES FOR ELECTRICAL ACCESSORIES FOR HOUSEHOLD AND SIMILAR FIXED ELECTRICAL INSTALLATIONS –

Part 21: Particular requirements for boxes and enclosures with provision for suspension means

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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This redline version of the official IEC Standard allows the user to identify the changes made to the previous edition IEC 60670-21:2004+AMD1:2016 CSV. A vertical bar appears in the margin wherever a change has been made. Additions are in green text, deletions are in strikethrough red text.

IEC 60670-21 has been prepared by subcommittee 23B: Plugs, socket-outlets and switches, of IEC technical committee 23: Electrical accessories. It is an International Standard.

This second edition cancels and replaces the first edition published in 2004 and Amendment 1:2016. This edition constitutes a technical revision.

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

a) Complete revision of the tests and requirements of the suspension means.

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

Draft	Report on voting
23B/1534/FDIS	23B/1552/RVD

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

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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 in the IEC 60670 series, published under the general title *Boxes and enclosures for electrical accessories for household and similar fixed installations*, can be found on the IEC website.

This document is to be used in conjunction with IEC 60670-1:2024. It lists the changes necessary to convert that standard into a specific standard for housing protective devices and other power dissipating electrical equipment.

Where this document states "addition", "modification" or "replacement", the relevant requirement, test specifications or explanatory matter in IEC 60670-1:2024 shall be adapted accordingly.

Clauses and subclauses, notes, figures or tables which are additional to those in IEC 60670-1:2024 are numbered starting from 101.

Additional annexes to IEC 60670-1:2024 are numbered AA, BB, etc.

In this publication the following print types are used:

- requirements proper: in roman type.
- *test specifications: in italic type.*
- notes: in smaller roman type.

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- withdrawn, or
- revised.

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BOXES AND ENCLOSURES FOR ELECTRICAL ACCESSORIES FOR HOUSEHOLD AND SIMILAR FIXED ELECTRICAL INSTALLATIONS –

Part 21: Particular requirements for boxes and enclosures with provision for suspension means

1 Scope

Clause 1 of IEC 60670-1:2024 is applicable with the following modification:

Addition after the ~~fourth~~ third paragraph:

This document applies to boxes and enclosures for ceiling and wall mounting with provision for suspension means.

2 Normative references

Clause 2 of IEC 60670-1:2024 is applicable.

3 Terms and definitions

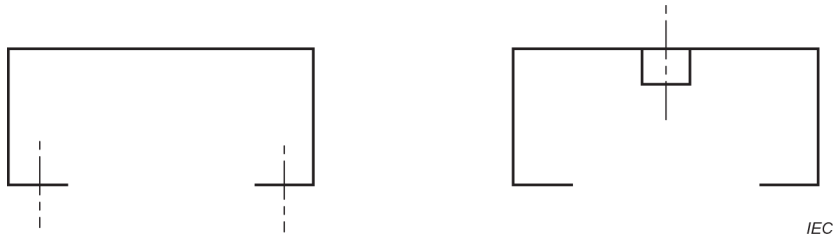
Clause 3 of IEC 60670-1:2024 is applicable with the following modification:

Addition:

3.101
box with provision for suspension means
box intended to be used for suspending and supporting mechanical loads and which accepts the suspension means

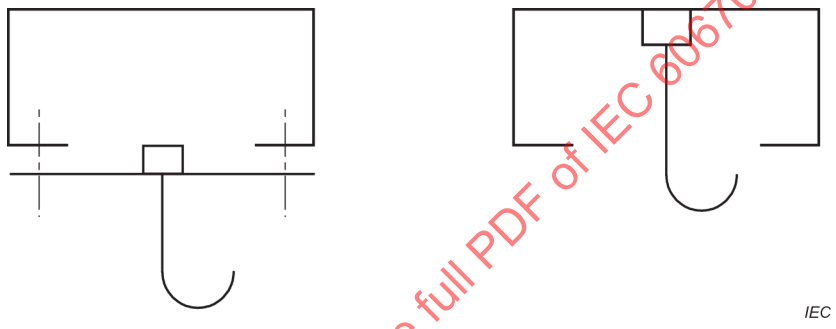
3.102
suspension means
means comprising any necessary components (hooks, brackets, etc.) which may be delivered with the box and enclosure or supplied separately ~~(see Figure 101)~~

Note 1 to entry: Examples of suspension means are shown in Figure 101.



a) Box provided with provision for suspension means

b) Suspension means



c) Box and enclosure delivered with suspension means

Figure 101 – Examples of suspension means

4 General requirements

Clause 4 of IEC 60670-1:2024 is applicable.

5 General ~~notes~~ remarks on tests

Clause 5 of IEC 60670-1:2024 is applicable.

6 Ratings

Void.

7 Classification

Clause 7 of IEC 60670-1:2024 is applicable with the following modification:

Addition to Table 1:

7.101 The provision for suspension means~~aa~~[b]	7.101.1 For ~~suspension of~~ supporting a luminaire.
	7.101.2 For ~~suspension of~~ supporting a ceiling fan.
~~aa~~[b] The suspension means may be provided with the box or not.	

8 Marking

Clause 8 of IEC 60670-1:2024 is applicable with the following modification:

8.1 General

~~*Addition after item j):*~~

~~k) the mass in kg, if the test force declared by the manufacturer is greater than 250 N for boxes and enclosures classified according to 7.101.1.~~

~~NOTE 1 In the following countries boxes for luminaire support are marked "For luminaire support". Where boxes are intended to support a mass greater than 15,8 kg, the mass is to be marked: US.~~

~~NOTE 2 In Denmark shall the marking in kg reflect a safety factor of 5 times.~~

Addition after item k):

l) for boxes and enclosures classified according to 7.101.1, the maximum supported mass in kilograms declared by the manufacturer.

NOTE 101 In the following countries boxes for luminaire support are marked "For luminaire support". Where boxes are intended to support a mass greater than 15,8 kg, the mass is to be marked: US.

NOTE 102 In the following country the marking in kilograms shall reflect a safety factor of 5 times: DK.

9 Dimensions

Clause 9 of IEC 60670-1:2024 is applicable.

10 Protection against electric shock

Clause 10 of IEC 60670-1:2024 is applicable with the following modification:

Addition:

Conductive parts of suspension means inside the box or enclosure shall be:

– protected by a layer of insulating material which complies with the tests for insulating linings, or
– located such that it will not come in contact with electrical conductors or live parts, or
– reliably connected to the earthing means complying with requirements of 11.1 when fitted as for normal use.

11 Provision for earthing

Clause 11 of IEC 60670-1:2024 is applicable.

12 Construction

Clause 12 of IEC 60670-1:2024 is applicable with the following modification:

Addition:

12.101 Provision for suspension means

Unless otherwise declared by the manufacturer, screws for fixing accessories and/or covers are not considered as provision for suspension means.

12.102 Minimum mass to be supported by suspension means

Boxes and enclosures with provision for suspension means shall be able to support a mass of at least 5 kg.

NOTE For fixing means of a luminaire, a minimum supported mass of 5 kg is given in IEC 60364-5-55:2011, 559.5.2.

Compliance is checked by the tests of 15.101.

13 Resistance to ageing, protection against ingress of solid objects and against harmful ingress of water

Clause 13 of IEC 60670-1:2024 is applicable.

14 Insulation resistance and electric strength

Clause 14 of IEC 60670-1:2024 is applicable.

15 Mechanical strength

Clause 15 of IEC 60670-1:2024 is applicable with the following modification:

Addition:

~~1.101~~15.101 Boxes and enclosures with provision for suspension means

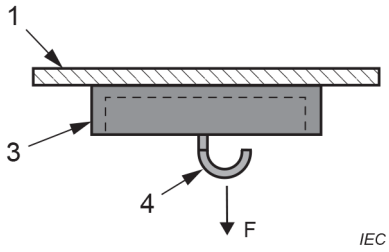
15.101.1 Boxes and enclosures with provision for suspension means shall withstand the thermal and mechanical stresses occurring in normal use.

Boxes and enclosures with provision for suspension means according to:

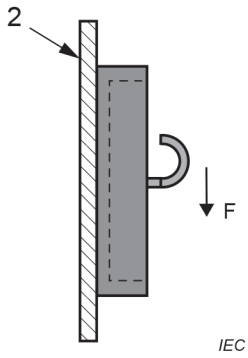
– 7.101.1 shall comply with the requirements of 15.101.~~1~~2 and 15.101.~~2~~3;

– 7.101.2 shall comply with the requirements of 15.101.~~3~~4.

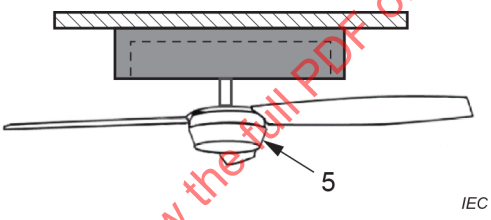
Examples of boxes and enclosures with provision for suspension means are shown in Figure 102.



a) Boxes and enclosures which are intended for suspension of loads from a ceiling.



b) Boxes and enclosures which are intended for suspension of loads from a wall



c) Boxes and enclosures which are intended to support a ceiling fan

Key

1 ceiling
2 wall
3 box
4 suspension mean
5 ceiling fan

Figure 102 – Examples of boxes and enclosures with provision for suspension means

15.101.~~1~~2 Boxes and enclosures which are intended for suspension of loads from a ceiling shall withstand a test force of 250 N or a higher test force ~~Y~~ X corresponding to five times the maximum supported mass in kilograms declared by the manufacturer.

The test force F in newtons is the result of the maximum supported mass in kilograms multiplied by the gravity and multiplied by a safety factor of 5; this value is rounded up to the next decimal, for example: 5 kg × 9,81 m/s^2 × 5 ≈ 245, gives a test force of 250 N.

NOTE ~~1~~ 101 In the following countries there is no requirement for all boxes and enclosures for suspension means to withstand 250 N and no requirement for non-metallic boxes and enclosures to withstand 90° C: UK.

NOTE ~~2~~102 In the following country, the test force Y shall correspond to 5 times the marking in kilograms as required in item k) of 8.1: DK

NOTE ~~3~~103 In Spain, there are no requirements for all boxes and enclosures for suspension means to withstand 90 °C.

Compliance is checked by the following test.

The specimen is fitted with a suspension means and installed as for normal use according to the manufacturer's instructions, any screw being tightened to two-thirds of the torque given in the relevant column of Table 4.

Greater values of torque may be used if so declared by the manufacturer, when the relevant information is provided.

~~*The suspension means is then loaded with a weight of (250 ± 5) N or with a weight (Y ± 2 %) N declared by the manufacturer, whichever is the higher, for 24 h.*~~

~~*For boxes and enclosures according to 7.1.1 and 7.1.3 the test is performed in a heating cabinet at (90 ± 2)°C.*~~

~~*For boxes and enclosures according to 7.1.2 and 7.1.4 the test is performed at ambient temperature.*~~

A test force of (250 ± 5) N, or of (X ± 2 %) N, is applied to the suspension means for 24 h at ambient temperature.

For boxes and enclosures according to 7.1.1 and 7.1.3 the test is repeated in a heating cabinet at (90 ± 2) °C for 1 h with a test force of (50 ± 1) N, or a higher test force corresponding to the mass declared by the manufacturer without considering the safety factor.

NOTE ~~4~~104 In the following country the test of this Subclause 15.101.2 shall be carried out at (80 ± 2) °C instead of (90 ± 2) °C: NL.

During the test, the box and the enclosure or the suspension means shall not become detached and the specimen shall show no damage which leads to non-compliance with this document.

15.101.~~2~~3 Boxes and enclosures which are intended ~~to be used in or on~~ for suspension of loads from a wall shall withstand a test force of 100 N or a higher test force Y corresponding to two times the maximum supported mass in kilograms declared by the manufacturer.

~~NOTE 1 This means may be screws otherwise intended for fixing a part of the box, for example the cover or cover plate.~~

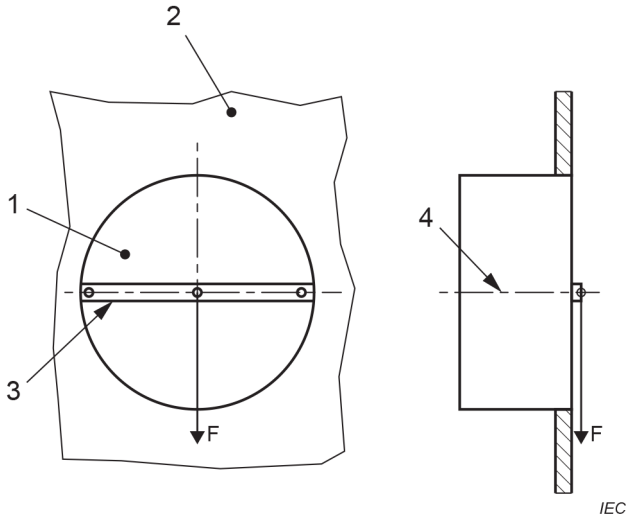
NOTE ~~2~~ In the following countries there is no requirement for all suspension means to withstand 100 N: UK.

Compliance is checked by inspection and by the following test.

The box or the enclosure including covers and cover plates (if any) shall be installed as for normal use according to the manufacturer's instructions and shall be placed in a heating cabinet, any screw being tightened to two-thirds of the torque given in the relevant column of Table 4.

~~*A force, equally distributed between each means if more than one, of (100 ± 5) N or of (Y ± 2 %) N declared by the manufacturer, is then applied for 24 h at (40 ± 2)°C perpendicularly to the wall.*~~

A force, equally distributed between each means if more than one, of (100 ± 2) N or of (Y ± 2 %) N is then applied for 24 h at (40 ± 2) °C downward at a distance not exceeding 5 mm protruding from the plane formed by the mounting surface of the luminaire as shown in Figure 103.



Key

1 test specimen

2 sheet of plywood

3 lever

4 main axis of the box

Figure 103 – Verification of suspension means intended to be used on a wall

During the test, the box or enclosure or the suspension means shall not become detached and the specimen shall show no damage which leads to non-compliance with this document.

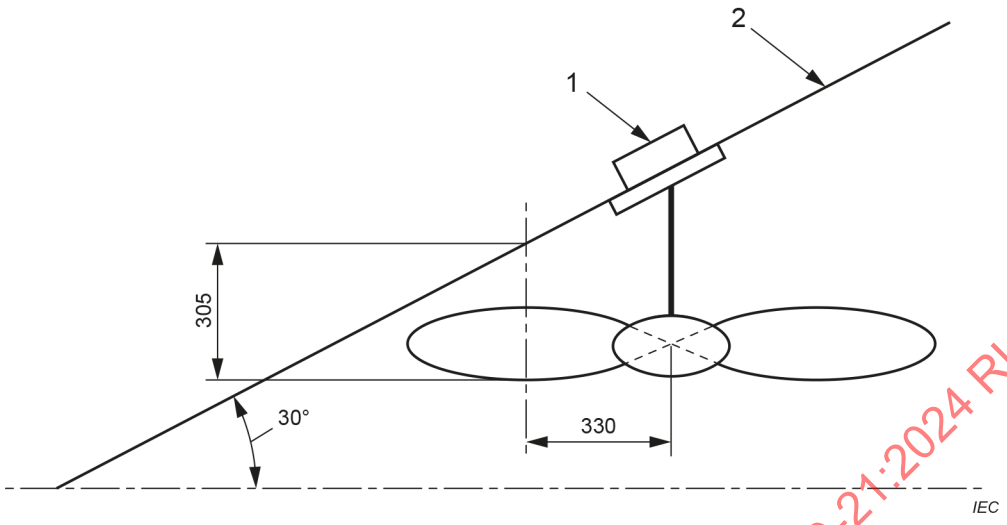
15.101.~~3~~4 Boxes and enclosures which are intended to support a ceiling fan shall withstand the thermal and mechanical stress occurring in normal use.

During the test the box or enclosure or its supporting means shall not be pulled loose from the test structure when subjected to the following tests.

One specimen shall be tested in each of the horizontal and inclined positions.

A specimen shall be mounted in accordance with the manufacturer's instructions to a supporting test structure so as to be tested while both in a horizontal position and inclined 30° from the horizontal with the mounting screws perpendicular to the ceiling and the fan blades parallel to the floor (see ~~Figure 102~~ Figure 104).

Dimensions in millimetres



Key

1 Box

2 Ceiling

Figure 104 – Inclined ceiling test

A test fan having four blades with a diameter of (1 320 ± 25) mm, weighing or ballasted to a weight of (155 ± 5) N (corresponding to a mass of (15,8 ± 0,5) kg) or the rated load Y declared by the manufacturer, whichever is higher, shall be used for the tests. A 0,392 N (corresponding to a mass of 40 g) imbalance shall be placed at the centre of gravity of one blade, measured independently from the test fan.

The test fan shall be provided with a downrod of rigid metal pipe of a length sufficient to position the lower end of the fan blades (305 ± 25) mm below the surface of the ceiling after mounting. The downrod shall be welded at the upper end to a 7,9 mm thick fan mounting bracket.

The test fan mounting bracket shall be secured to the box or enclosure in accordance with the manufacturer's instructions. Screws or nuts shall be tightened with a torque given in the relevant column in Table 4. A universal type joint mounting construction shall not be used for the test. The fan motor shall be such that the speed can be controlled.

The speed of the test fan shall be adjusted to maintain a blade tip speed of 1 220 m/min (294 r/min).

The blade pitch shall be reduced to a minimum. The fan shall operate continuously at the prescribed speed for ($24\,^{+1}_{0}$) h.

At the end of the 24 h, one of the cover retaining screws or nuts shall be loosened two full turns and the fan shall operate as specified for an additional 24 h for each mounting condition, horizontal and inclined. This additional test is not required for constructions that employ cover retaining or fan mounting screws with captive, locking type washers or locknuts.

Additionally, there shall be no stripping of threads, cracking, crazing, breaking, or visible damage to the box or enclosure or its supporting means (other than bending).

16 Resistance to heat

Clause 16 of IEC 60670-1:2024 is applicable.

17 Creepage distances, clearances and distances through sealing compound

Void.

18 Resistance of insulating material to abnormal heat and to fire

Clause 18 of IEC 60670-1:2024 is applicable.

19 Resistance to tracking

Clause 19 of IEC 60670-1:2024 is applicable.

20 Resistance to corrosion

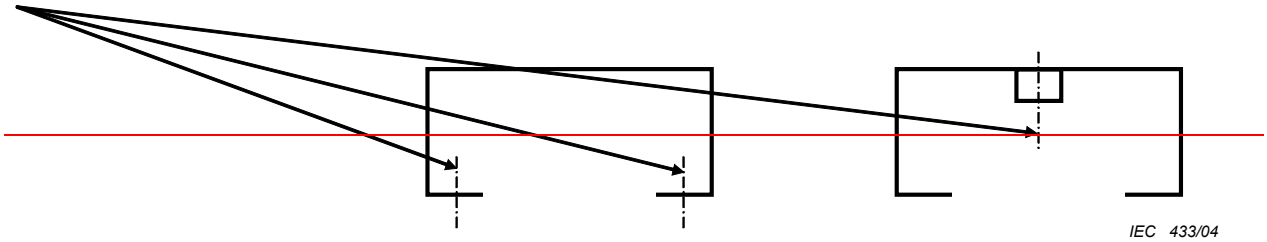
Clause 20 of IEC 60670-1:2024 is applicable.

21 Electromagnetic compatibility (EMC)

Clause 21 of IEC 60670-1:2024 is applicable.

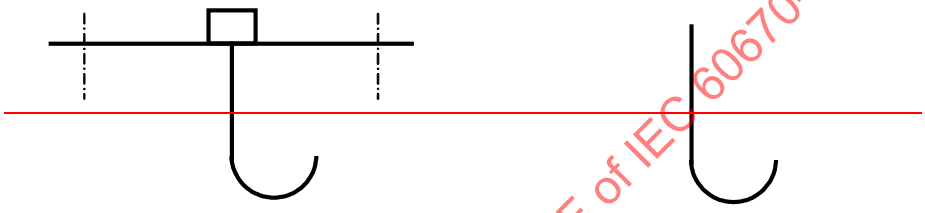
~~a) Box provided with provision for suspension means~~

~~Example of provision for suspension means~~



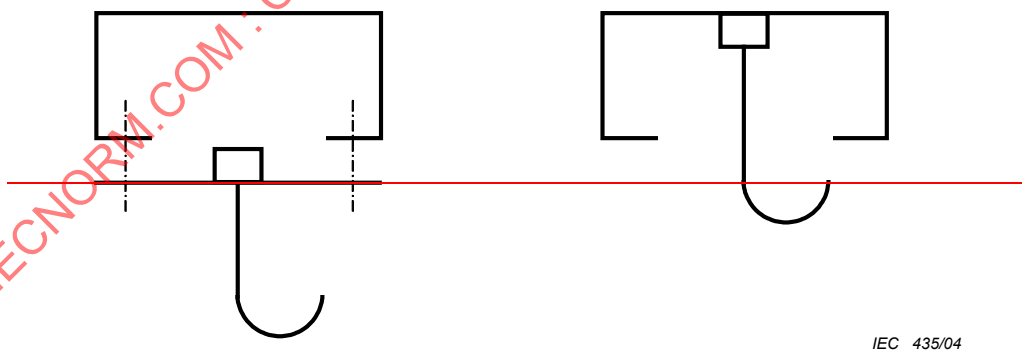
IEC 433/04

~~b) Suspension means~~



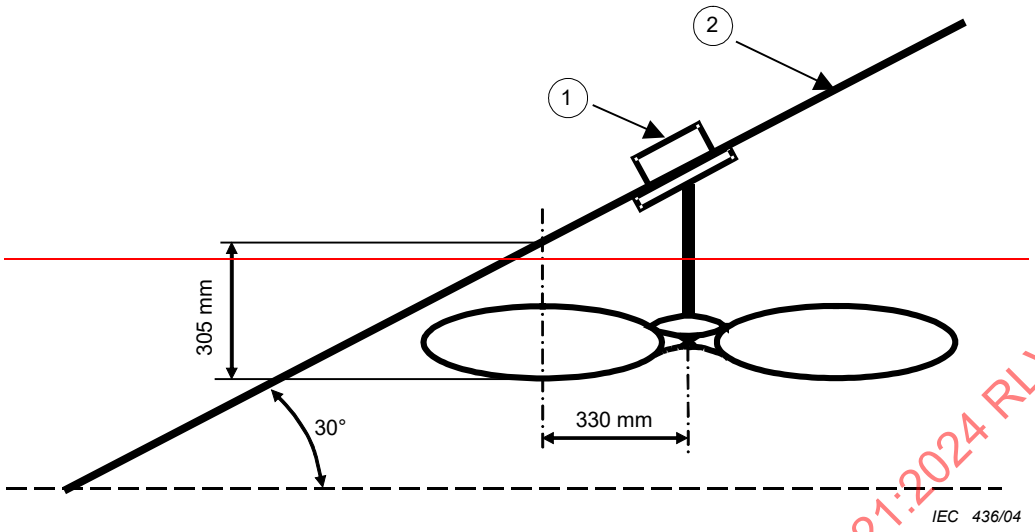
IEC 434/04

~~c) Box and enclosure delivered with suspension means~~



IEC 435/04

~~Figure 101 – Examples of suspension means~~



~~Key~~

~~1 Box~~

~~2 Ceiling~~

~~**Figure 102 – Inclined ceiling test**~~

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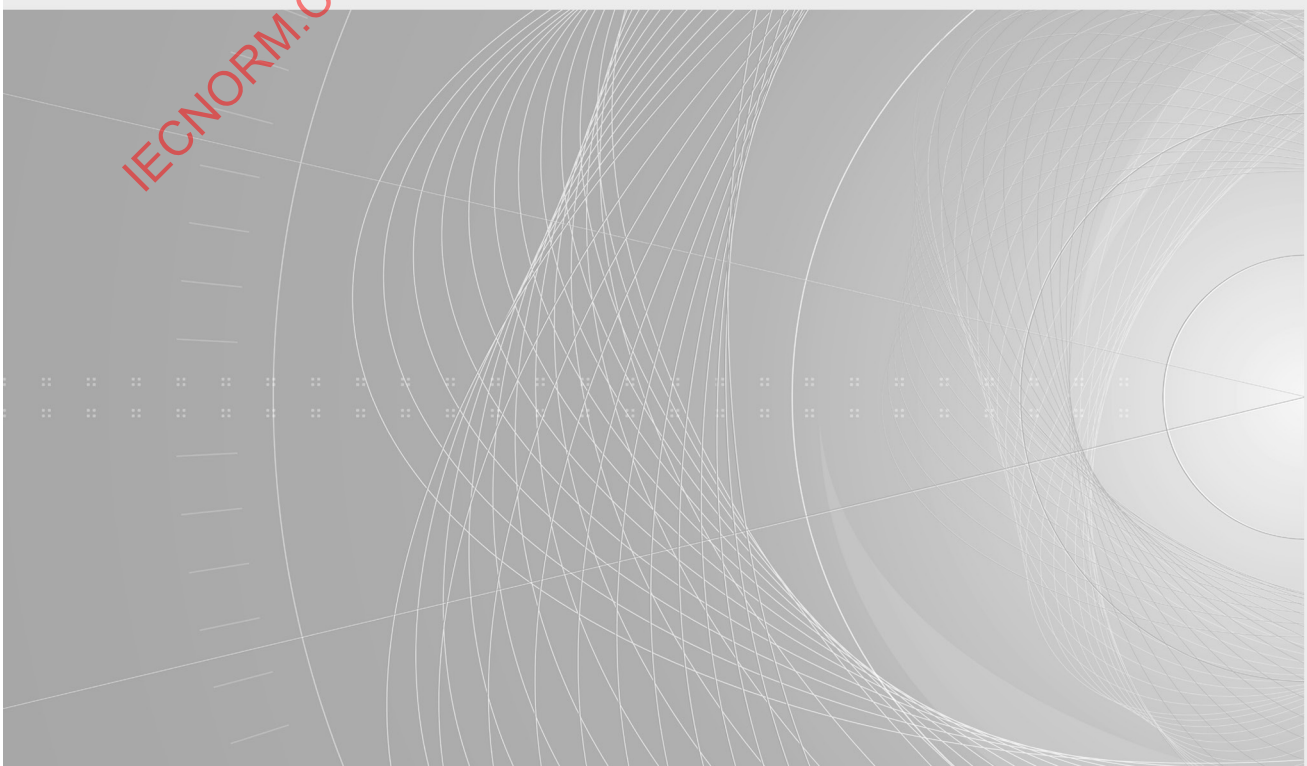
INTERNATIONAL STANDARD

NORME INTERNATIONALE

Boxes and enclosures for electrical accessories for household and similar fixed electrical installations –
Part 21: Particular requirements for boxes and enclosures with provision for suspension means

Boîtes et enveloppes pour appareillage électrique pour installations électriques fixes pour usages domestiques et analogues –
Partie 21: Règles particulières concernant les boîtes et enveloppes avec dispositifs de suspension



IEC 60670-21:2024-12(en-fr)

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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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 in the IEC 60670 series, published under the general title *Boxes and enclosures for electrical accessories for household and similar fixed installations*, can be found on the IEC website.

This document is to be used in conjunction with IEC 60670-1:2024. It lists the changes necessary to convert that standard into a specific standard for housing protective devices and other power dissipating electrical equipment.

Where this document states "addition", "modification" or "replacement", the relevant requirement, test specifications or explanatory matter in IEC 60670-1:2024 shall be adapted accordingly.

Clauses and subclauses, notes, figures or tables which are additional to those in IEC 60670-1:2024 are numbered starting from 101.

Additional annexes to IEC 60670-1:2024 are numbered AA, BB, etc.

In this publication the following print types are used:

- requirements proper: in roman type.
- *test specifications: in italic type.*
- notes: in smaller roman type.

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.

BOXES AND ENCLOSURES FOR ELECTRICAL ACCESSORIES FOR HOUSEHOLD AND SIMILAR FIXED ELECTRICAL INSTALLATIONS –

Part 21: Particular requirements for boxes and enclosures with provision for suspension means

1 Scope

Clause 1 of IEC 60670-1:2024 is applicable with the following modification:

Addition after the third paragraph:

This document applies to boxes and enclosures for ceiling and wall mounting with provision for suspension means.

2 Normative references

Clause 2 of IEC 60670-1:2024 is applicable.

3 Terms and definitions

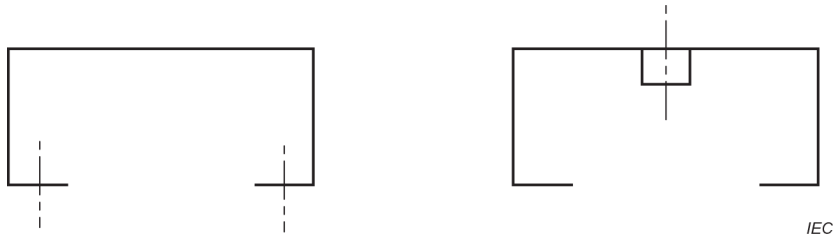
Clause 3 of IEC 60670-1:2024 is applicable with the following modification:

Addition:

3.101
box with provision for suspension means
box intended to be used for suspending and supporting mechanical loads and which accepts the suspension means

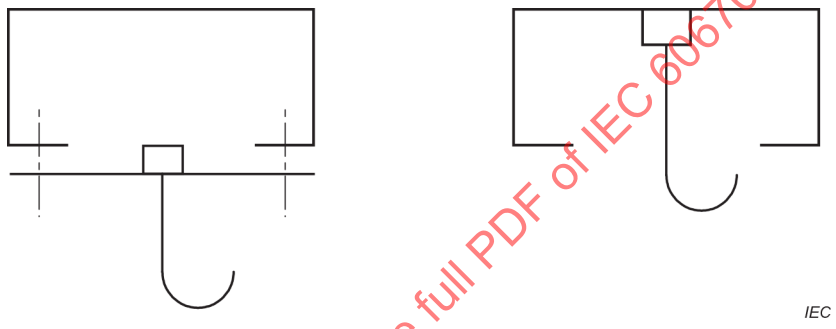
3.102
suspension means
means comprising any necessary components (hooks, brackets, etc.) which may be delivered with the box and enclosure or supplied separately

Note 1 to entry: Examples of suspension means are shown in Figure 101.



a) Box provided with provision for suspension means

b) Suspension means



c) Box and enclosure delivered with suspension means

Figure 101 – Examples of suspension means

4 General requirements

Clause 4 of IEC 60670-1:2024 is applicable.

5 General remarks on tests

Clause 5 of IEC 60670-1:2024 is applicable.

6 Ratings

Void.

7 Classification

Clause 7 of IEC 60670-1:2024 is applicable with the following modification:

Addition to Table 1:

7.101 The provision for suspension means[b]	7.101.1 For supporting a luminaire.
	7.101.2 For supporting a ceiling fan.
[b] The suspension means may be provided with the box or not.	

8 Marking

Clause 8 of IEC 60670-1:2024 is applicable with the following modification:

8.1 General

Addition after item k):

l) for boxes and enclosures classified according to 7.101.1, the maximum supported mass in kilograms declared by the manufacturer.

NOTE 101 In the following countries boxes for luminaire support are marked "For luminaire support". Where boxes are intended to support a mass greater than 15,8 kg, the mass is to be marked: US.

NOTE 102 In the following country the marking in kilograms shall reflect a safety factor of 5 times: DK.

9 Dimensions

Clause 9 of IEC 60670-1:2024 is applicable.

10 Protection against electric shock

Clause 10 of IEC 60670-1:2024 is applicable with the following modification:

Addition:

Conductive parts of suspension means inside the box or enclosure shall be:

– protected by a layer of insulating material which complies with the tests for insulating linings, or
– located such that it will not come in contact with electrical conductors or live parts, or
– reliably connected to the earthing means complying with requirements of 11.1 when fitted as for normal use.

11 Provision for earthing

Clause 11 of IEC 60670-1:2024 is applicable.

12 Construction

Clause 12 of IEC 60670-1:2024 is applicable with the following modification:

Addition:

12.101 Provision for suspension means

Unless otherwise declared by the manufacturer, screws for fixing accessories and/or covers are not considered as provision for suspension means.

12.102 Minimum mass to be supported by suspension means

Boxes and enclosures with provision for suspension means shall be able to support a mass of at least 5 kg.

NOTE For fixing means of a luminaire, a minimum supported mass of 5 kg is given in IEC 60364-5-55:2011, 559.5.2.

Compliance is checked by the tests of 15.101.

13 Resistance to ageing, protection against ingress of solid objects and against harmful ingress of water

Clause 13 of IEC 60670-1:2024 is applicable.

14 Insulation resistance and electric strength

Clause 14 of IEC 60670-1:2024 is applicable.

15 Mechanical strength

Clause 15 of IEC 60670-1:2024 is applicable with the following modification:

Addition:

15.101 Boxes and enclosures with provision for suspension means

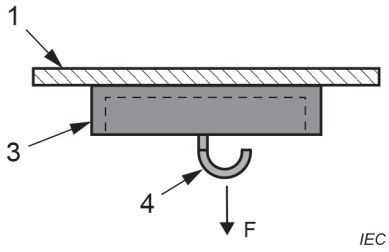
15.101.1 Boxes and enclosures with provision for suspension means shall withstand the thermal and mechanical stresses occurring in normal use.

Boxes and enclosures with provision for suspension means according to:

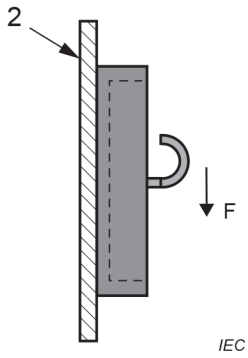
– 7.101.1 shall comply with the requirements of 15.101.2 and 15.101.3;

– 7.101.2 shall comply with the requirements of 15.101.4.

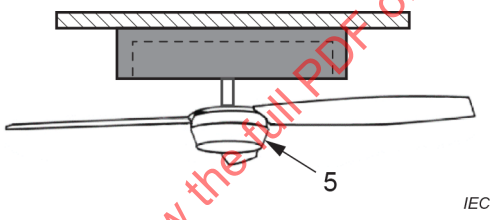
Examples of boxes and enclosures with provision for suspension means are shown in Figure 102.



a) Boxes and enclosures which are intended for suspension of loads from a ceiling.



b) Boxes and enclosures which are intended for suspension of loads from a wall



c) Boxes and enclosures which are intended to support a ceiling fan

Key

1 ceiling
2 wall
3 box
4 suspension mean
5 ceiling fan

Figure 102 – Examples of boxes and enclosures with provision for suspension means

15.101.2 Boxes and enclosures which are intended for suspension of loads from a ceiling shall withstand a test force of 250 N or a higher test force X corresponding to five times the maximum supported mass in kilograms declared by the manufacturer.

The test force F in newtons is the result of the maximum supported mass in kilograms multiplied by the gravity and multiplied by a safety factor of 5; this value is rounded up to the next decimal, for example: 5 kg × 9,81 m/s^2 × 5 ≈ 245, gives a test force of 250 N.

NOTE 101 In the following countries there is no requirement for all boxes and enclosures for suspension means to withstand 250 N and no requirement for non-metallic boxes and enclosures to withstand 90° C: UK.

NOTE 102 In the following country, the test force Y shall correspond to 5 times the marking in kilograms as required in item k) of 8.1: DK

NOTE 103 In Spain, there are no requirements for all boxes and enclosures for suspension means to withstand 90 °C.

Compliance is checked by the following test.

The specimen is fitted with a suspension means and installed as for normal use according to the manufacturer's instructions, any screw being tightened to two-thirds of the torque given in the relevant column of Table 4.

Greater values of torque may be used if so declared by the manufacturer, when the relevant information is provided.

A test force of (250 ± 5) N, or of (X ± 2 %) N, is applied to the suspension means for 24 h at ambient temperature.

For boxes and enclosures according to 7.1.1 and 7.1.3 the test is repeated in a heating cabinet at (90 ± 2) °C for 1 h with a test force of (50 ± 1) N, or a higher test force corresponding to the mass declared by the manufacturer without considering the safety factor.

NOTE 104 In the following country the test of this Subclause 15.101.2 shall be carried out at (80 ± 2) °C instead of (90 ± 2) °C: NL.

During the test, the box and the enclosure or the suspension means shall not become detached and the specimen shall show no damage which leads to non-compliance with this document.

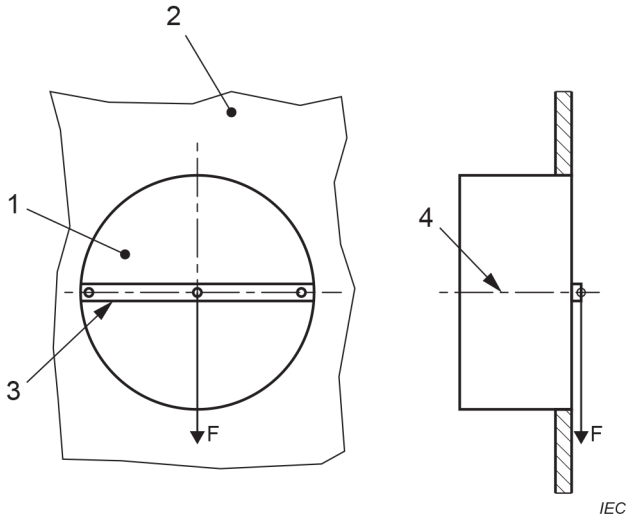
15.101.3 Boxes and enclosures which are intended for suspension of loads from a wall shall withstand a test force of 100 N or a higher test force Y corresponding to two times the maximum supported mass in kilograms declared by the manufacturer.

NOTE In the following countries there is no requirement for all suspension means to withstand 100 N: UK.

Compliance is checked by inspection and by the following test.

The box or the enclosure including covers and cover plates (if any) shall be installed as for normal use according to the manufacturer's instructions and shall be placed in a heating cabinet, any screw being tightened to two-thirds of the torque given in the relevant column of Table 4.

A force, equally distributed between each means if more than one, of (100 ± 2) N or of (Y ± 2 %) N is then applied for 24 h at (40 ± 2) °C downward at a distance not exceeding 5 mm protruding from the plane formed by the mounting surface of the luminaire as shown in Figure 103.



Key

1 test specimen

2 sheet of plywood

3 lever

4 main axis of the box

Figure 103 – Verification of suspension means intended to be used on a wall

During the test, the box or enclosure or the suspension means shall not become detached and the specimen shall show no damage which leads to non-compliance with this document.

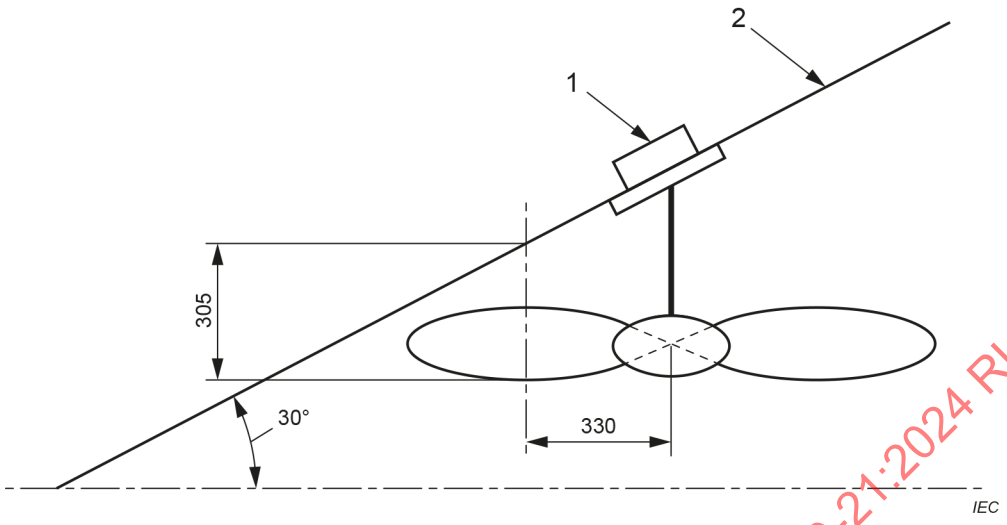
15.101.4 Boxes and enclosures which are intended to support a ceiling fan shall withstand the thermal and mechanical stress occurring in normal use.

During the test the box or enclosure or its supporting means shall not be pulled loose from the test structure when subjected to the following tests.

One specimen shall be tested in each of the horizontal and inclined positions.

A specimen shall be mounted in accordance with the manufacturer's instructions to a supporting test structure so as to be tested while both in a horizontal position and inclined 30° from the horizontal with the mounting screws perpendicular to the ceiling and the fan blades parallel to the floor (see Figure 104).

Dimensions in millimetres



Key

1 Box

2 Ceiling

Figure 104 – Inclined ceiling test

A test fan having four blades with a diameter of (1 320 ± 25) mm, weighing or ballasted to a weight of (155 ± 5) N (corresponding to a mass of (15,8 ± 0,5) kg) or the rated load Y declared by the manufacturer, whichever is higher, shall be used for the tests. A 0,392 N (corresponding to a mass of 40 g) imbalance shall be placed at the centre of gravity of one blade, measured independently from the test fan.

The test fan shall be provided with a downrod of rigid metal pipe of a length sufficient to position the lower end of the fan blades (305 ± 25) mm below the surface of the ceiling after mounting. The downrod shall be welded at the upper end to a 7,9 mm thick fan mounting bracket.

The test fan mounting bracket shall be secured to the box or enclosure in accordance with the manufacturer's instructions. Screws or nuts shall be tightened with a torque given in the relevant column in Table 4. A universal type joint mounting construction shall not be used for the test. The fan motor shall be such that the speed can be controlled.

The speed of the test fan shall be adjusted to maintain a blade tip speed of 1 220 m/min (294 r/min).

The blade pitch shall be reduced to a minimum. The fan shall operate continuously at the prescribed speed for ($24\,^{+1}_{0}$) h.

At the end of the 24 h, one of the cover retaining screws or nuts shall be loosened two full turns and the fan shall operate as specified for an additional 24 h for each mounting condition, horizontal and inclined. This additional test is not required for constructions that employ cover retaining or fan mounting screws with captive, locking type washers or locknuts.

Additionally, there shall be no stripping of threads, cracking, crazing, breaking, or visible damage to the box or enclosure or its supporting means (other than bending).

16 Resistance to heat

Clause 16 of IEC 60670-1:2024 is applicable.

17 Creepage distances, clearances and distances through sealing compound

Void.

18 Resistance of insulating material to abnormal heat and to fire

Clause 18 of IEC 60670-1:2024 is applicable.

19 Resistance to tracking

Clause 19 of IEC 60670-1:2024 is applicable.

20 Resistance to corrosion

Clause 20 of IEC 60670-1:2024 is applicable.

21 Electromagnetic compatibility (EMC)

Clause 21 of IEC 60670-1:2024 is applicable.

SOMMAIRE

COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE

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BOÎTES ET ENVELOPPES POUR APPAREILLAGE ÉLECTRIQUE POUR INSTALLATIONS ÉLECTRIQUES FIXES POUR USAGES DOMESTIQUES ET ANALOGUES –

Partie 21: Exigences particulières pour les boîtes et enveloppes avec dispositions pour dispositifs de suspension

AVANT-PROPOS

1) La Commission Électrotechnique Internationale (IEC) est une organisation mondiale de normalisation composée de l'ensemble des comités électrotechniques nationaux (Comités nationaux de l'IEC). L'IEC a pour objet de favoriser la coopération internationale pour toutes les questions de normalisation dans les domaines de l'électricité et de l'électronique. À cet effet, l'IEC – entre autres activités – publie des Normes internationales, des Spécifications techniques, des Rapports techniques, des Spécifications accessibles au public (PAS) et des Guides (ci-après dénommés "Publication(s) de l'IEC"). Leur élaboration est confiée à des comités d'études, aux travaux desquels tout Comité national intéressé par le sujet traité peut participer. Les organisations internationales, gouvernementales et non gouvernementales, en liaison avec l'IEC, participent également aux travaux. L'IEC collabore étroitement avec l'Organisation Internationale de Normalisation (ISO), selon des conditions fixées par accord entre les deux organisations.
2) Les décisions ou accords officiels de l'IEC concernant les questions techniques représentent, dans la mesure du possible, un accord international sur les sujets étudiés, étant donné que les Comités nationaux de l'IEC intéressés sont représentés dans chaque comité d'études.
3) Les Publications de l'IEC se présentent sous la forme de recommandations internationales et sont agréées comme telles par les Comités nationaux de l'IEC. Tous les efforts raisonnables sont entrepris afin que l'IEC s'assure de l'exactitude du contenu technique de ses publications; l'IEC ne peut pas être tenue responsable de l'éventuelle mauvaise utilisation ou interprétation qui en est faite par un quelconque utilisateur final.
4) Dans le but d'encourager l'uniformité internationale, les Comités nationaux de l'IEC s'engagent, dans toute la mesure possible, à appliquer de façon transparente les Publications de l'IEC dans leurs publications nationales et régionales. Toutes divergences entre toutes Publications de l'IEC et toutes publications nationales ou régionales correspondantes doivent être indiquées en termes clairs dans ces dernières.
5) L'IEC elle-même ne fournit aucune attestation de conformité. Des organismes de certification indépendants fournissent des services d'évaluation de conformité et, dans certains secteurs, accèdent aux marques de conformité de l'IEC. L'IEC n'est responsable d'aucun des services effectués par les organismes de certification indépendants.
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8) L'attention est attirée sur les références normatives citées dans cette publication. L'utilisation de publications référencées est obligatoire pour une application correcte de la présente publication.
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 60670-21 a été établie par le sous-comité 23B: Prises de courant et interrupteurs, du comité d'études 23 de l'IEC: Petit appareillage. Il s'agit d'une Norme internationale.

Cette deuxième édition annule et remplace la première édition parue en 2004 et son Amendement 1:2016. Cette édition constitue une révision technique.

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

a) les essais et exigences pour les dispositifs de suspension ont fait l'objet d'une révision complète.

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

Projet	Rapport de vote
23B/1534/FDIS	23B/1552/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.

La version française de la norme n'a pas été soumise au vote.

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/standardsdev/publications.

Une liste de toutes les parties de la série IEC 60670, publiées sous le titre général *Boîtes et enveloppes pour appareillage électrique pour installations fixes pour usages domestiques et analogues*, se trouve sur le site web de l'IEC.

Le présent document doit être utilisé conjointement avec l'IEC 60670-1:2024. Il répertorie les modifications nécessaires pour transformer cette norme en une norme spécifique pour les dispositifs de protection et autres matériels électriques ayant une puissance dissipée.

Lorsque le présent document mentionne "addition", "modification" ou "remplacement", l'exigence, les modalités d'essais ou le texte explicatif correspondant de l'IEC 60670-1:2024 doit être adapté en conséquence.

Les articles et paragraphes, notes, figures ou tableaux qui sont ajoutés à ceux de l'IEC 60670-1:2024 sont numérotés à partir de 101.

Les annexes supplémentaires dans l'IEC 60670-1:2024 sont numérotées AA, BB, etc.

Dans la présente publication, les caractères d'imprimerie suivants sont utilisés:

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

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.

BOÎTES ET ENVELOPPES POUR APPAREILLAGE ÉLECTRIQUE POUR INSTALLATIONS ÉLECTRIQUES FIXES POUR USAGES DOMESTIQUES ET ANALOGUES –

Partie 21: Exigences particulières pour les boîtes et enveloppes avec dispositions pour dispositifs de suspension

1 Domaine d'application

L'Article 1 de l'IEC 60670-1:2024 s'applique, avec la modification suivante:

Ajout après le troisième alinéa:

Le présent document s'applique aux boîtes et enveloppes pour plafonds et murs, avec des dispositions pour dispositifs de suspension.

2 Références normatives

L'Article 2 de l'IEC 60670-1:2024 s'applique.

3 Termes et définitions

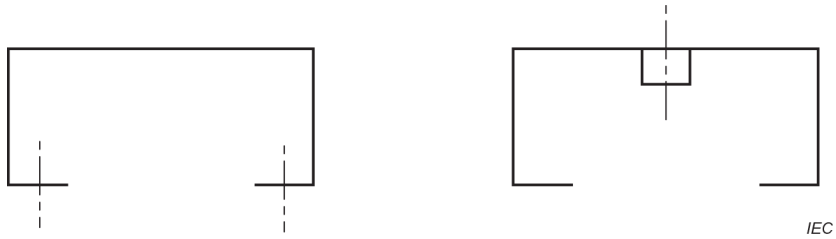
L'Article 3 de l'IEC 60670-1:2024 s'applique, avec la modification suivante:

Addition:

3.101
boîte avec dispositions pour dispositifs de suspension
boîte destinée à soutenir et suspendre des charges mécaniques et à intégrer les dispositifs de suspension

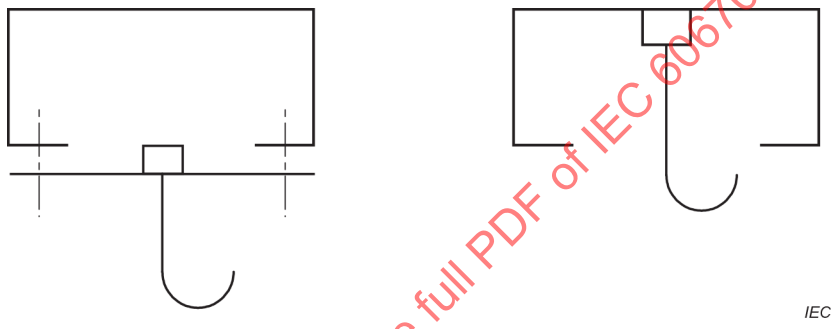
3.102
dispositif de suspension
dispositif comportant tous les composants nécessaires (crochets, fixations, etc.) qui peuvent être fournis avec la boîte et l'enveloppe ou qui peuvent être fournis séparément

Note 1 à l'article: Des exemples de dispositifs de suspension sont représentés à la Figure 101.



a) Boîte avec dispositions pour dispositifs de suspension

b) Dispositifs de suspension



c) Boîte et enveloppe équipées de dispositifs de suspension

Figure 101 – Exemples de dispositifs de suspension

4 Exigences générales

L'Article 4 de l'IEC 60670-1:2024 s'applique.

5 Généralités sur les essais

L'Article 5 de l'IEC 60670-1:2024 s'applique.

6 Caractéristiques assignées

Vacant.