BS EN 16433:2014

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Internal blinds — Protection from strangulation hazards — Test methods

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National foreword

This British Standard is the UK implementation of EN 16433:2014.

The UK participation in its preparation was entrusted to Technical Committee B/538/3, Domestic shutters and blinds.

A list of organizations represented on this committee can be obtained on request to its secretary.

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Stores intérieurs - Protection contre les risques de strangulation - Méthodes d'essai

Innere Abschlüsse - Schutz vor Strangulationsgefahren - Prüfverfahren

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

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

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Foreword

This document (EN 16433:2014) has been prepared by Technical Committee CEN/TC 33 “Doors, windows, shutters, building hardware and curtain walling”, the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by August 2014, and conflicting national standards shall be withdrawn at the latest by August 2014.

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

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

This document is part of a series of standards dealing with blinds and shutters for buildings as defined in EN 12216.

It is the intention that safety devices used in EN 13120 conform to EN 16434 for component testing and EN 16433 for functionality.

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

1 Scope

This European Standard specifies test methods for the verification of the requirements relating to the protection from strangulation.

This European Standard applies to all internal blinds as specified in EN 13120, insect screens as specified in EN 13561 and to blinds in sealed glazed units.

These products may be operated manually, with or without compensating springs, or by means of electric motors (power operated products).

Although at the time this standard has been published, no product standard exists for draperies, test methods specified in the present standard may be used for such products.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 12216, *Shutters, external blinds, internal blinds - Terminology, glossary and definitions*

EN 13120, *Internal blinds - Performance requirements including safety*

EN 13561, *External blinds and awnings - Performance requirements including safety*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 12216, EN 13120 and EN 13561 and the following apply.

3.1
head probe
test probe representing the head of a child

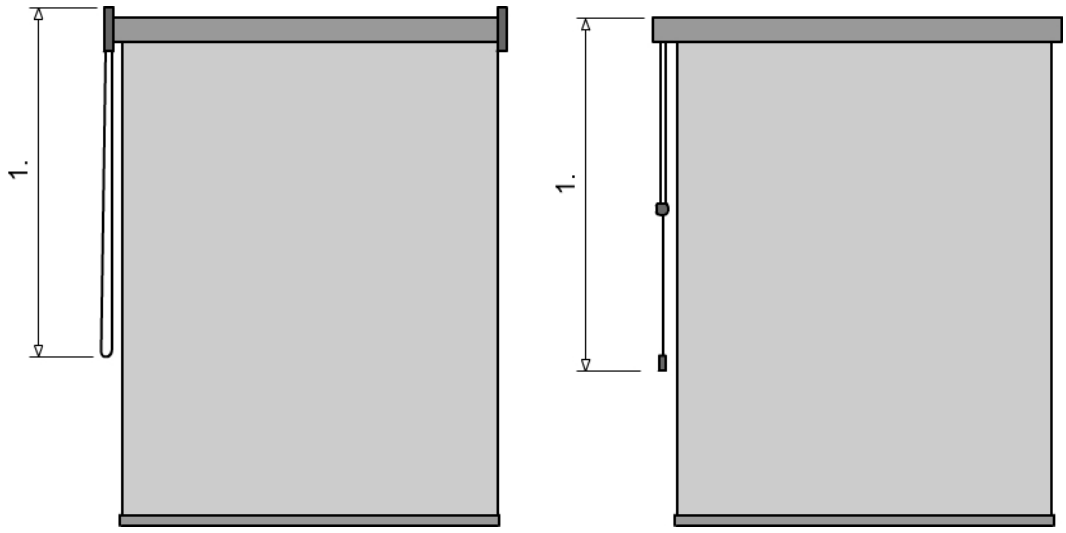
Note 1 to entry: See Figure 2.

3.2
accessibility probe
test probe representing a finger of a child

Note 1 to entry: See Figure 3.

3.3
length of pull cord(s), chain(s), ball-chain(s), tape(s) and similar
distance from the highest point of the internal blind to the bottom of the loop of a cord, chain, ball-chain, tape and similar

Note 1 to entry: See Figure 1.



Key

1 length of pull cord(s), chain(s), ball-chain(s), tape(s) and similar

Figure 1 — Illustration of the length of the pull cord(s), chain(s), ball-chain(s), tape(s) and similar

4 General

All tests defined in this standard shall be performed at 23 °C ± 5 °C. All dimensions, masses and forces shall be considered with a maximum tolerance of ± 1 %.

Although all figures show free-hanging loads to apply forces, other methods of achieving the same effect may be used. Unless otherwise specified, a pulley of 20 mm diameter shall be used to apply the loads.

Annex A presents a flowchart summarizing tests to be carried out on internal blinds.

The internal blinds shall be installed according to the manufacturer specification so that the installation, i.e. the test rig, the fixing, etc., has no influence on the results of tests.

In the context of this standard, the term “cord(s)” used shall mean “cord(s), chain(s), ball-chain(s), tape(s) and similar”.

The head probe shall have the dimensions and design specified in Figure 2. It shall be made of a rigid material and shall have a smooth finish.

NOTE This probe is taken from ANSI/WCMA A100.1–2010 and is equivalent to the small head probe defined in CEN/TR 13387:2004 (Table 3.3B) for children aged from 9 to 12 months.

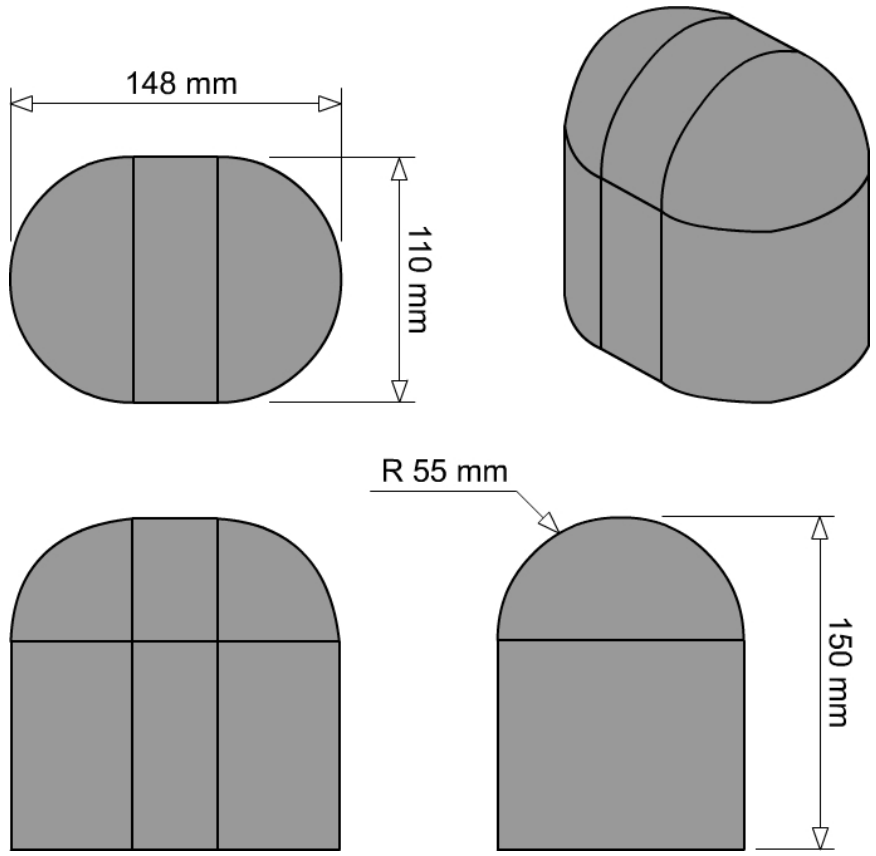


Figure 2 — Head probe dimensions

The accessibility probe shall be of the dimensions and design specified in Figure 3.

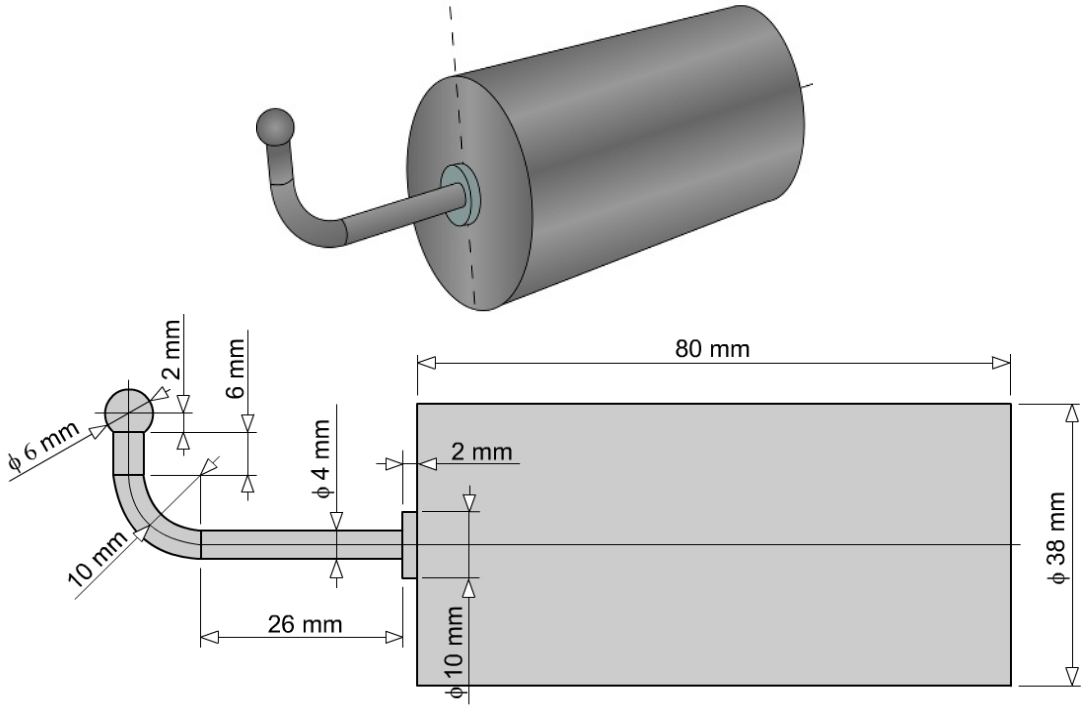


Figure 3 — Accessibility probe

5 Test sample

A test sample shall be representative of a family of products which may cover a variety of dimensions or weight of internal blinds.

In the context of this standard, a family of products is defined with regard to the utilization of common safety device(s) and any design aspect relating to protection from strangulation.

Within a family, the test sample shall be chosen so that the following conditions are fulfilled:

— Tensioning systems: this test shall be carried out on an internal blind with the maximum length of the operating cord(s).

— Breakaway systems: the tests shall be carried out on an internal blind taking into account the maximum number of pull cord(s).

— Accumulation systems: the tests shall be carried out on an internal blind taking into account the maximum length and number of pull cord(s) when the curtain is retracted.

— Inner cord(s): the tests shall be carried out on an internal blind taking into account the maximum distance between two consecutive points of attachment / retention.

Within a family of products, there is no variation in the design of the internal blind that would affect the tangling test.

6 Breakaway system

6.1 General

For the tests defined in 6.2 a test cylinder of 60 mm diameter made of a rigid material shall be inserted into the loop. The total mass specified in EN 13120 shall be gradually applied downwards. This mass shall include the mass of the cylinder. “Gradually” means there shall be no dynamic effect on the cord.

NOTE The test cylinder is intended to represent the neck of a child.

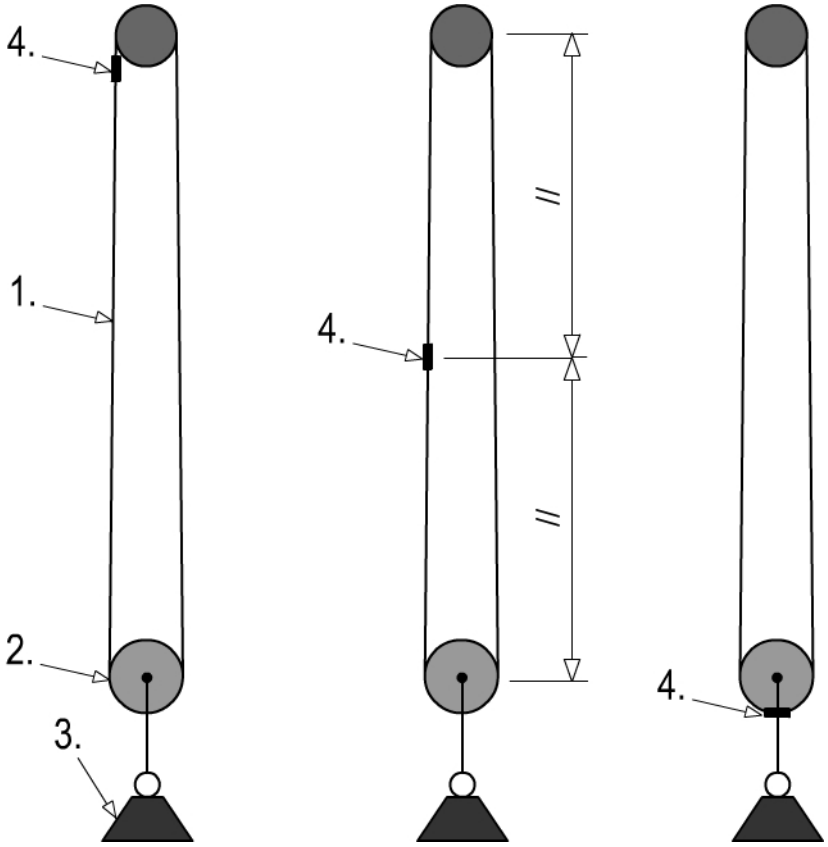
6.2 Test method

6.2.1 Operating system consisting of a pull cord(s) forming a hazardous loop

The length of the pull cord(s) shall be measured.

The test shall be carried out on the breakaway system so that a breakaway device is successively located at the highest possible position, at the lowest position (at the bottom of the loop) and in the middle of the loop (see Figure 4). After a successful breakaway test, the affected device shall be replaced.

If several breakaway devices are used, they all shall be tested in the positions mentioned above.



Key

1 looped pull cord
2 test cylinder
3 load
4 breakaway device

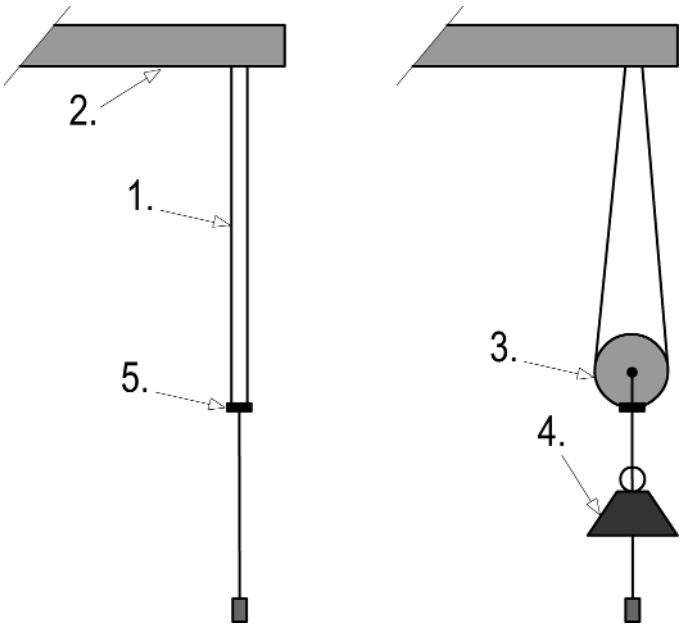
Figure 4 — Illustration of the test of a breakaway system on a looped cord (example of a single breakaway device)

If the performance of the breakaway system is independent of the position of any specific component (e.g. a breakaway device), the test shall be carried out with the loop in any position.

6.2.2 Operating system consisting of free hanging pull cord(s) connected together

The length of the pull cord(s) shall be measured.

The internal blind shall be placed in the fully retracted position (see Figure 5). If more than two cords are connected together, all possible loop combinations shall be tested.



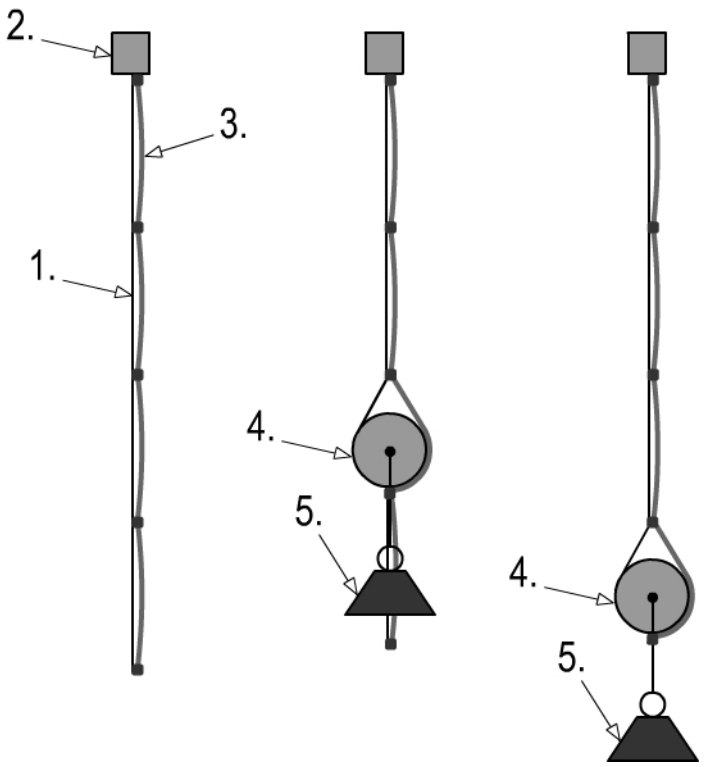
Key

1 looped pull cord
2 headrail
3 test cylinder
4 load
5 breakaway system

Figure 5 — Illustration of the test of a breakaway system on hanging pull cords connected together (example of two cords)

6.2.3 Inner cord(s) forming a hazardous loop

The test shall be carried out on the penultimate and the last panel with the internal blind in the fully extended position (see Figure 6).



Key

1 inner cord
2 headrail
3 curtain
4 test cylinder
5 load

Figure 6 — Illustration of the test of a breakaway system on an inner cord (example when a loop is created with the curtain)

7 Tensioning system

7.1 General

This subclause applies to internal blinds where the operating system consists of a continuous cord(s) forming a loop and maintained under tension by a system secured to a fixed surface (e.g. window frame, wall, ...).

It shall be verified that the tensioning system consisting of

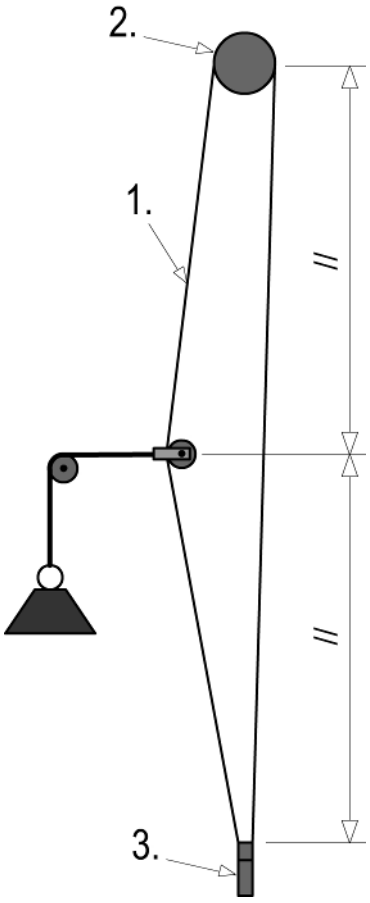
— the pull cord(s),

— the control mechanism: the pulley and its housing, and

— the fixed retaining device maintaining the cord(s) under tension,

shall not break under the application of a horizontal load applied in the middle of the cord(s) (see Figure 7).

Where a tensioning system is designed to accept more than one cord, each cord shall be tested separately.



Key

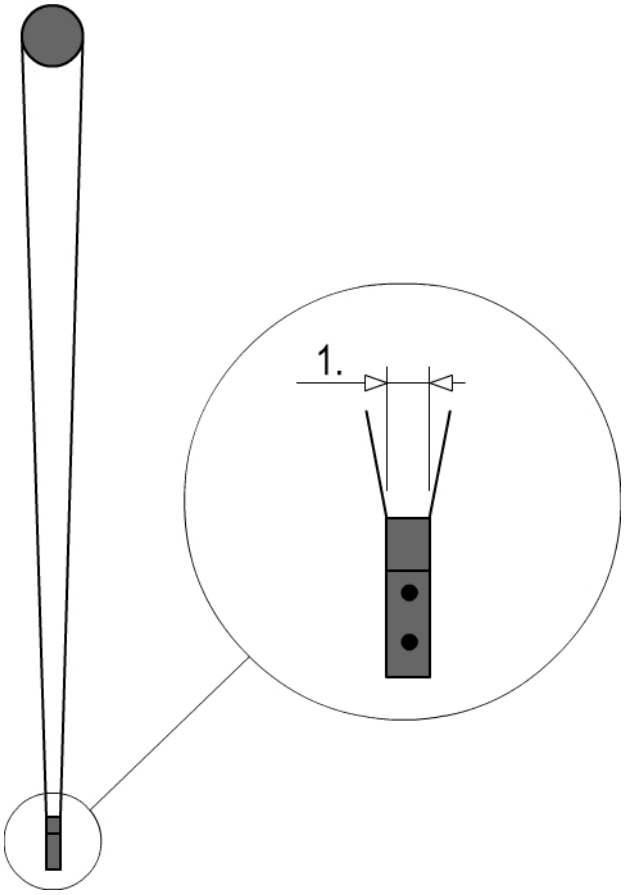
1 pull cord(s)
2 control mechanism
3 fixed retaining device

Figure 7 — Principle of the test of tensioning system

7.2 Test method

All installation positions described in the installation instructions of the manufacturer shall be tested.

The distance between the two strands of the loop shall be measured at the point of exit from the fixed tensioning system (see Figure 8).



Key

1 distance between the two strands

Figure 8 — Measurement of the distance between the two strands

The length of the pull cord(s) shall be measured.

A horizontal force shall be gradually applied in the plane and at mid-point of the height of the loop (see Figure 7) until the load defined in EN 13120 is applied to the cord. Gradually means there shall be no dynamic effect on the cord. The load shall be then maintained for 10 s.

The test shall be repeated with the force being applied in the direction perpendicular to the plane of the cord.

8 Accumulation system

8.1 General

This subclause applies to internal blinds for which extension and retraction of the curtain leads to a change in length of the pull cord(s).

It shall be verified that the full length of pull cord(s) can be accumulated at any position of the curtain, including fully retracted.

8.2 Test method

The length of the pull cord(s) shall be measured when the internal blind is in the fully extended position.

The pull cord(s) shall be accumulated according to the instructions of the manufacturer when the internal blind is in the fully retracted position.

9 Tangling test

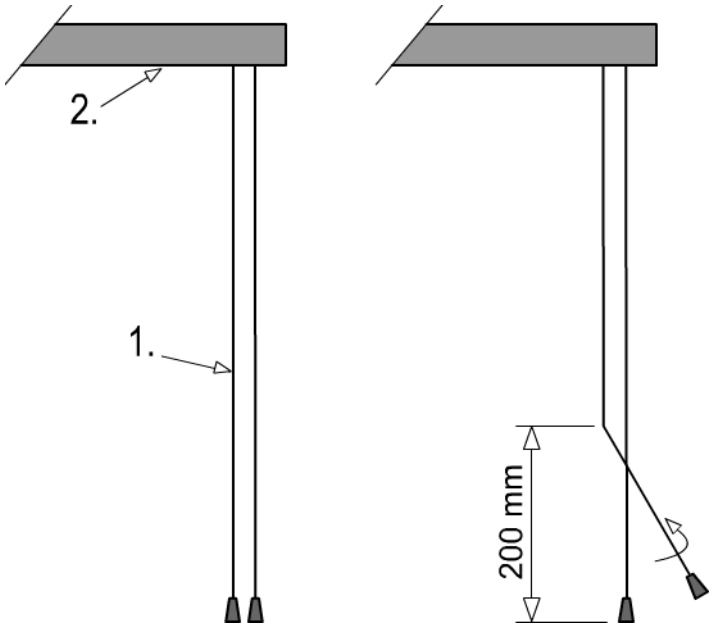
9.1 General

This subclause applies to internal blinds where the operating system consists of two free hanging pull cords.

In this situation, it shall be verified that the two cords present cannot tangle producing a hazardous loop.

9.2 Test method

One cord shall be twisted around the other 5 times. This shall be carried out by rotating one cord around the other, commencing 200 mm from their respective ends towards the open end (see Figure 9).



Key

1 pull cords

2 headrail

Figure 9 — Illustration of the tangling test

The cords shall then be released. If the cords do not separate, a cylinder of 60 mm diameter shall be inserted into the loop. The mass defined in EN 13120 shall be gradually applied to the cord. Gradually means there shall be no dynamic effect on the cord. This mass shall include the mass of the cylinder.

This test shall be carried out with the ends of the cords being at the same level. It shall be repeated 5 times.

10 Inner cords

10.1 General

It shall be verified whether inner cords are accessible. If accessible, it shall be determined whether a hazardous loop is present either by the cord itself or in combination with the curtain and/or cannot be created by pulling inner cords.

10.2 Test method

10.2.1 General

The internal blind shall be fully extended. If a cord locking mechanism is present, it shall be disengaged.

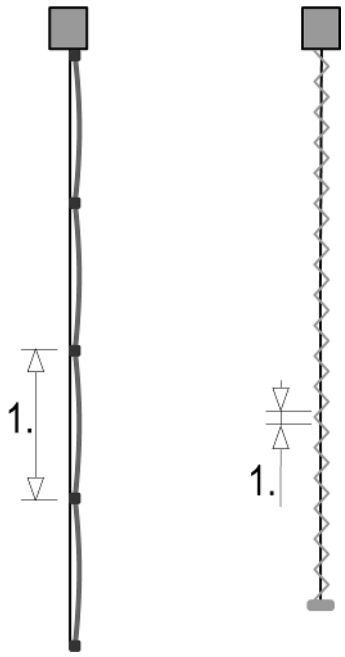
10.2.2 Accessibility of inner cords

Accessibility shall be attempted in all locations from the front, the rear or the side of the internal blinds.

The accessibility probe defined in Clause 4 shall be positioned in all possible planes. It is accepted that the curtain material of the internal blind may be deformed to allow the accessibility probe insertion. Curtain material shall not be torn or permanently damaged during this test.

10.2.3 Determination of hazardous loop

The distance between two points of attachment / retention shall be measured (see Figure 10). If the distance between attachment points varies, the greatest distance shall be considered.



Key

1 distance between points of attachment / retention

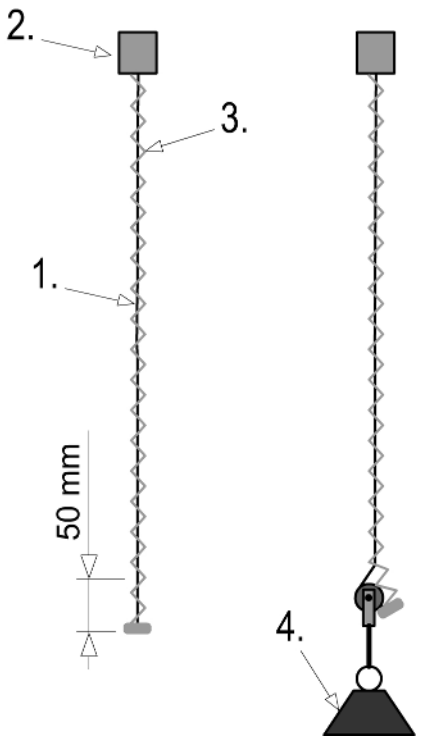
Figure 10 — Illustration of the distance between points of attachment / retention (example of a Roman Shade and a pleated blind)

The mass defined in EN 13120 shall be gradually applied vertically to the inner cord:

— 50 mm above the lowest point of attachment (usually the bottom rail) if the loop is created by inner cords themselves (e.g. venetian, pleated blinds) (see Figure 11).

— Where the distance between two attachment points is the maximum if the loop is created by inner cords in combination with the curtain (e.g Roman Shades and roll-up blinds) (see Figure 12).

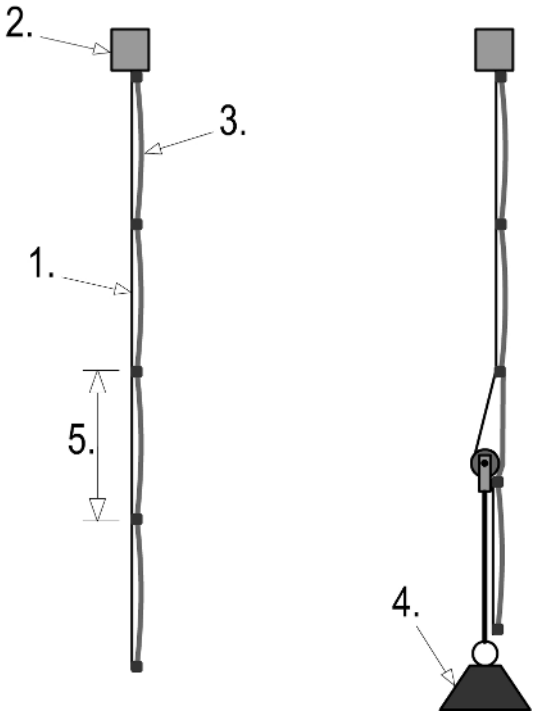
The load shall be released and it shall be attempted to insert the head probe into any remaining loop. It is acceptable that cords can be separated in order to facilitate the probe insertion. The dimension of the loop shall not be increased when carrying out this operation.



Key

1 inner cord
2 headrail
3 curtain
4 load

Figure 11 — Illustration of the inner cord test (example of a pleated blind)



Key

1 inner cord
2 headrail
3 curtain
4 load
5 maximum distance between two attachment points

Figure 12 — Illustration of the inner cord test (example of a Roman shade)

10.2.4 Use of a breakaway device

If there is a hazardous loop, the performance of the breakaway device shall be tested according to 6.2.3.

Annex A
(informative)

Flowchart of testing

The following flowchart summarizes the tests to be performed for the evaluation of internal blinds for protection from strangulation.

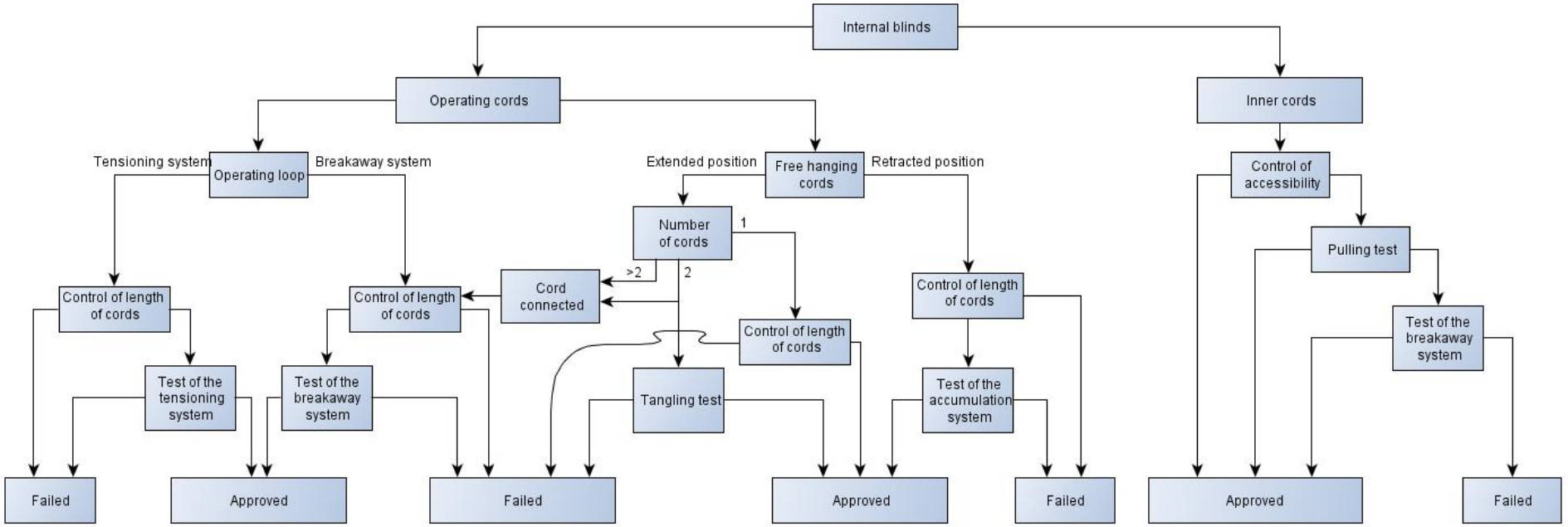


Figure A.1 — Flowchart of testing

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[1] BS 7231-1:1990, *Body measurements of boys and girls from birth up to 16.9 years - Part 1: Information in the form of tables*

[2] ANSI/WCMA A100.1-2010 (PS2), 2nd provisional American national standard for safety of corded window covering products

[3] CEN/TR 13387:2004, *Child use and care articles - Safety guidelines*

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