SLOVENSKI STANDARD
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Polkna in rolete - Merjenje sil pri ravnanju z njimi - Preskusne metode

Shutters and blinds - Measurement of operating force - Test methods

Abschlüsse - Messung der Bedienkraft - Prüfverfahren

Fermetures pour baies équipées de fenetres, stores intérieurs et extérieurs - Détermination de l'effort de manoeuvre - Méthodes d'essai

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English version

Shutters and blinds - Measurement of operating force - Test methods

Fermetures pour baies équipées de fenêtres, stores intérieurs et extérieurs - Détermination de l'effort de manoeuvre - Méthodes d'essai

Zusätzliche Schutzeinrichtungen und Abschlüsse - Messung der Bedienkraft - Prüfverfahren

This European Standard was approved by CEN on 5 September 1999.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

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

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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

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FOREWORD

This European Standard has been prepared by Technical Committee CEN/TC 33 "Doors, windows, shutters and building hardware", 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of an identical text or by endorsement, at the latest by April 2000, and conflicting national standards shall be withdrawn at the latest by June 2001.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

This document was submitted to enquiry as prEN 12046.

It is part of a series of standards on blinds and shutters for buildings as defined in standard prEN 12216.

The methods of testing are linked to the performance requirements for internal/external blinds and shutters, as defined in the standards prEN 13120, prEN 13561 and prEN 13659.

1 SCOPE

The present standard defines the test methods to be carried out to determine the operating force required for shutters and blinds.

It applies to the following products:

- **Internal blinds** : internal venetian, roller, vertical and pleated blinds

- **External blinds** : Folding arm awning, trellis arm awning, vertical roller awning, pivot arm awning, marquisolette, façade awning, roof light awning, verandah awning or conservatory awning, Dutch awning, insect screen awning, louvre array.

- **Shutters** : External venetian blind, roller shutter (vertical or projected) venetian shutter (vertical or projected), flat-closing concertina shutter, concertina shutter, sliding panel shutter).

Shutters with a projection system are also covered.

The test described establish the effort or force necessary to result

- in the movement or displacement of the curtain during both extension and retraction
- to project shutters,
- to tilt laths.

2 NORMATIVE REFERENCES

The present European standard incorportates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriated places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to the present European

standard only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies.

prEN 12216 "Terminology and definitions for blinds and shutters"
prEN 13120 "Internal blinds - Performance requirements"

3 DEFINITIONS

For the purposes of this standard, the definitions in prEN 12216, prEN 13120, prEN 13561 and prEN 13659 apply, and as follows :

3.1 Operation of the curtain

Describes the following:

- **Movement of curtain** : retraction and extension of the curtain
- **Tilting of laths** : complete cycle of lath tilting mechanism from one extreme to the other and returning to the original position. With monocommand, the laths are tilted while the curtain is being extended/retracted and using the same mechanism.
- **Projection of curtain** : sloping position achieved starting from the extended position by projection means (camstay).

3.2 Angle of projection:

It is defined by :

- **the angle of curtain in the projected position :**

- relative to the vertical for awnings fitted with arms pivoting around a fixed point - pivot arm awning, marquisolette, Dutch awning,

- relative to the horizontal for foldaway awnings
- relative to the extended but not projected curtain for projectable shutters/awnings

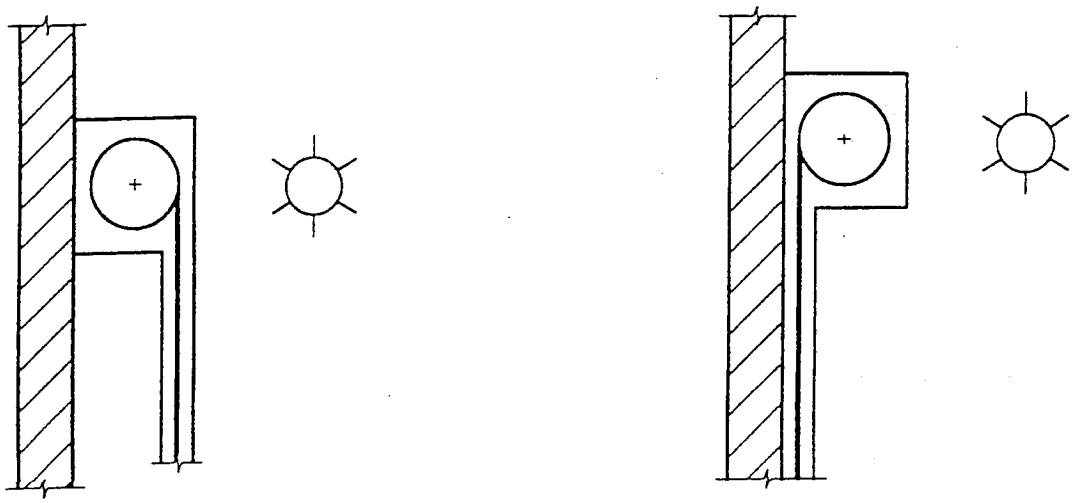
- **the angle of the roof, relative to the horizontal, for roof blinds/shutters and veranda awnings**

3.3 Variations in operation

Mechanism with one or two cords (or with a gear) which can be fixed on the wall or headbox and allows the axis of the gear to be repositioned. It comprises an operating rod (handle side) and a joining piece (to the gear).

3.4 Direction of roll-up of curtain

Roll-up is internal when the roller tube is situated on the inside of the extended curtain (fig. 1a). The roll-up is external when the roller tube is situated on the outside of the extended curtain (fig. 1b).



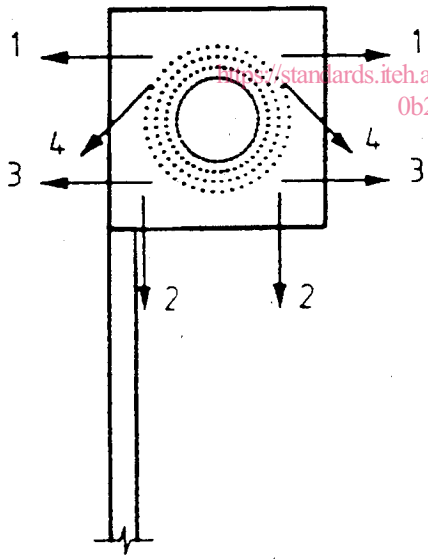
1a: internal roll-up

1b: external roll-up

Figure 1 : **Direction of rolling**

3.5 Position of exit of the operating mechanism (see figure 2)

The Exits of the mechanism can be horizontal at the top (position 1), horizontal at the bottom (position 3), vertical underneath (position 2), at an angle (position 4).



Position 1 : exit box horizontally at top
Position 2 : exit box underneath
Position 3 : exit box horizontally at bottom
Position 4 : exit box at an angle

Figure 2 : **Exit positions from box**

3.6 Unlocking of folding and trellis arm awnings

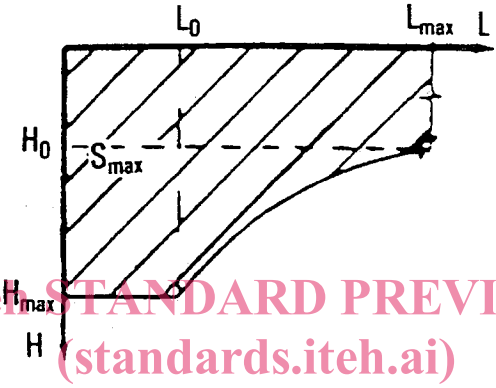
Part of retraction cycle during which the arms move from the fully extended position. This phase is characterised by a significant increase in the operating force.

4 TEST CONDITIONS

4.1 Specification of the samples

For testing a range of samples, the characteristics of the sample are established, for a given operation, supported by the technical data and the dimensional limits of the products and installation instructions supplied by the manufacturer taking into action the considerations defined in the following (exit positions from the box are described in paragraph 5 as a function of the type of operation).

Note : The technical dimensional limits of a product are the maximum dimensions for both width and height (L_{max} and H_{max}) associated with the maximum square surface area (S_{max}) as laid down by the manufacturer.



4.1.1 Size of the samples

In order to be representative of a range of samples, the sample product submitted for testing will have, according to the type of product, the following characteristics:

- ***L type sample*** : the maximum width proposed associated with the height possible for this width. L type sample is defined by : L_{max} and S_{max} with $S_{max} = L_{max} \times H_o$.

(see figure 3a)

Products with a smaller width and a surface area less than the stated maximum, will be deemed to satisfy the test values for the operating force.

The samples type L are :

- **shuttters** : wing shutter ;

- **external blinds** : roller blind without spring compensation (vertical or slopping, pivot arm awning, marquisolette, insect screen, louvre array ;

- **internal blinds** : venetian blind (cord operation), roller blind without spring compensation, vertical blind, pleated blind.

- ***H type sample*** : The maximum height proposed associated with the width possible for this height. H type sample is defined by : H_{max} and S_{max} with $S_{max} = H_{max} \times L_o$.

(See figure 3b)

Products with a smaller height and a surface area less than the stated maximum will be deemed to satisfy the test values for operating effort.

The samples type H are :

- **shutters** : roller shutter, external venetian blind, venetian shutter, flat closing concertina shutter, concertina shutter, sliding panel shutter ;

- **external blinds** : roller blinds with spring compensation ;

- **internal blinds** : venetian monocommand, roller blind with spring compensation (direct operation).

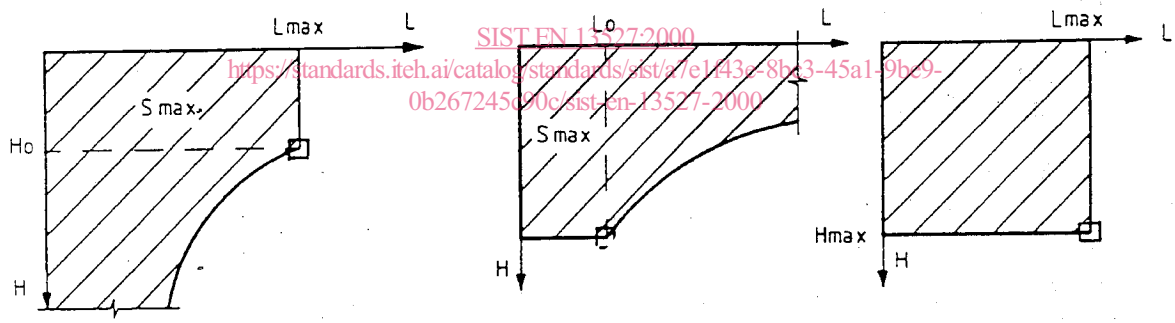
- ***H L type sample*** : the maximum width associated with the maximum height (when the 2 values are at the maximum). H L type is defined by : H_{max} and L_{max} with $S_{max} = H_{max} \times L_{max}$

Products with a smaller high or width will be deemed to satisfy the test values for operating effort.

(see figure 3c)

The sample type H L are :

- **external blinds** : folding arm awning, trellis arm awning, Dutch awning.



Equal curve S
$S_{max} = L_{max} \times H_0$

Equal curve S
$S_{max} = L_0 \times H_{max}$

a) Sample type L **b)** Sample type H **c)** Sample type HL

Figure 3 : Area of equal operating effort as a function of the dimensions of the test product

4.1.2 Angle of projection

According to the type of product the blind or shutter is tested:

- using the minimum projection angle for folding or trellis arm awnings,
- using the maximum projection angle for projecting shutters and roller blinds with projection,
- in the two extreme positions, for the maximum and minimum sloping angles for shutters and conservatory awning and roof light shutters.