BRITISH STANDARD

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12045:2000

Shutters and blinds power operated — Safety in use — Measurement of the transmitted force

The European Standard EN 12045:2000 has the status of a British Standard

ICS 91.060.50

National foreword

This British Standard is the official English language version of EN 12045:2000.

The UK participation in its preparation was entrusted by Technical Committee B/538, Doors, windows, shutters, hardware and curtain walling, to Subcommittee B/538/3, Domestic shutters and blinds, which has the responsibility to:

— aid enquirers to understand the text;

— present to the responsible European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;

— monitor related international and European developments and promulgate them in the UK.

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

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Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 8, an inside back cover and a back cover.

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English version

Shutters and blinds power operated – Safety in use – Measurement of the transmitted force

Fermetures, stores extérieurs et stores intérieurs motorisés – Sécurité d'utilisation – Mesure de l'effort de poussée

Motorangetriebene Abschlüsse und Markisen – Nutzungssicherheit – Prüfung zur Messung der Schubkräfte

This European Standard was approved by CEN on 19 November 1999.

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Foreword

This European Standard 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of an identical text or by endorsement, at the latest by December 2000, and conflicting national standards shall be withdrawn at the latest by December 2000.

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.

It is a part of a series of standards dealing with blinds and shutters for buildings as defined in prEN 12216:1996.

The methods of testing are linked to the performance requirements for internal/external blinds and shutters, as specified in prEN 13120:1998, prEN 13561:1999, and prEN 13659:1999.

1 Scope

The present standard specifies the test method for measuring the transmitted force developped by motorized shutters and blinds (hold to run control, semi-automatic or automatic) in the precise conditions of use specified in prEN 13120:1998, prEN 13561:1999, and prEN 13659:1999.

This applies to the following motorized products:

Guided internal blinds: venetian, roller, vertical and pleated blinds.

External awnings: Folding arm awning, trellis arm awning, guided vertical awning, pivot arm awning, marquisolette, façade awning, roof-light awning or conservatory awning, Dutch awning, insect screen.

Shutters: External venetian blind, roller shutter, wing shutter, flat closing concertina shutter, sliding panel shutter.

Shutters with a motorized projection system are also covered.

Motorized shutters where the hold to run control is within sight of the moving curtain are not the concern of this standard.

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

prEN 12216:1996,	*Shutters, external blinds and internal blinds – Terminology – Glossary and definitions*
prEN 13120:1998,	*Internal blinds – Performance requirements including safety*
EN 13527:1999,	*Shutters and blinds – Measurement of operating force - Test methods*
prEN 13561:1999,	*External blinds – Performance requirements including safety*
prEN 13659:1999,	*Shutters – Performance requirements including safety*

3 Terms and definitions

For the purposes of this standard, the terms and definitions given in prEN 12216:1996, prEN 13120:1998, prEN 13561:1999, and prEN 13659:1999 and the following apply:

3.1
motorized powered operation
movement of the curtain by external energy supply

3.2
hold to run control (Dead man's control)
powered operation, when movement of the curtain is caused by continuous activation of the control device. Movement ceases when the control device is released

3.3
semi automatic operation
powered operation when the control is such that:

- the setting in motion, either extension or retraction, is the result of a voluntary action on the part of the user;
- the movement occurring in the course of travel can be controlled by the user activating the control device (stopping, starting, reversing).

3.4
automatic operation
powered operation when the control device is such that one of the movements is outside the control of the user (setting in motion extension or retraction, or stopping, starting or reversing)

NOTE An automatic operation relating to extension, whereby, e.g., when setting in motion, the user cannot stop the movement during the travel. The operation can be automatic for the whole cycle. In this case, there is no possibility for the user to stop the movement in either direction, once the operation has been commenced.

3.5
transmitted force
the static force (F) exercised by the edge of the curtain, the bottom rail or front profile on a fixed obstacle during extension. Figures 1 to 4 illustrate directions of the transmitted forces

3.6
shutter with accumulating or retractable laths
shutter for which the transmitted force against an obstacle results due to the progressive accumulation of the weight of the slats

3.7
accumulation condition
the curtain being placed at 0,16 m from its fully extended position, a static force of 150 N applied to the bottom of the curtain in the direction of retraction shall cause a minimum displacement of 0,04 m

3.8
crushing area
area likely to occur in the last 0,40 m travel of the curtain, when the transmitted force is ≥ 150 N. In the case of awnings which project, the crushing zone exists if, the awning being in the fully extended position, a fixed obstacle is located less than 0,40 m from the front profile, this being situated at less than 1,80 m head height (see Figures 1 to 4)

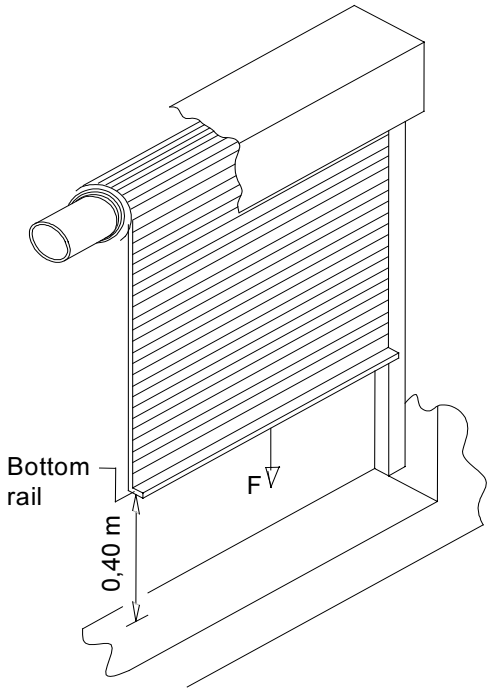

Figure 1 – Crushing area – Direction of transmitted force – Roller shutter

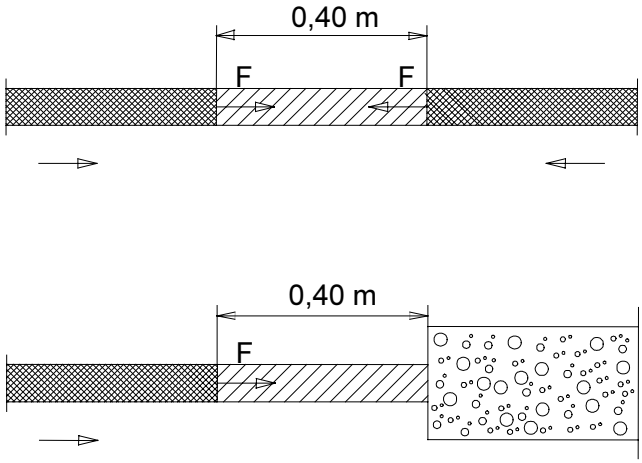

Figure 2 – Crushing area – Direction of transmitted force – Sliding panel shutter (1 or 2 leaves)

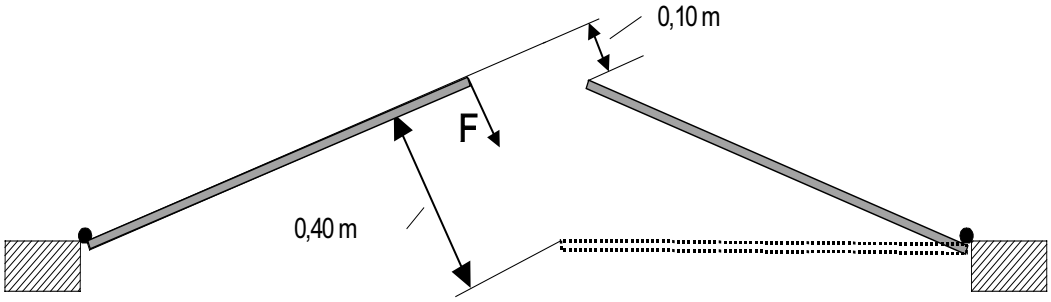

Figure 3 – Crushing area – Direction of the transmitted force – Wing shutter

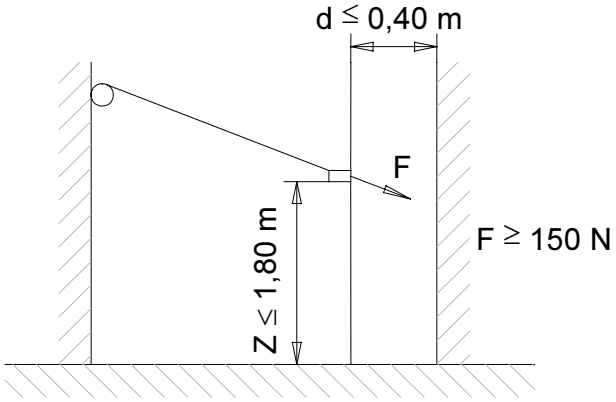

Figure 4 – Crushing area – Direction of transmitted force – Folding arms awning

3.9

shearing area (Case of conservatory awning)

area likely to occur over each fixed idling roller, by the passage of the front profile, assuming the following conditions exist simultaneously:

- The transmitted force of the front profile exceeds or is equal to 150 N;
- The front profile is lower than 1,80 m, head height;
- The distance between the front profile and the fixed roller or any associated fixed obstacle, is < 0,07 m.

See Figure 5.

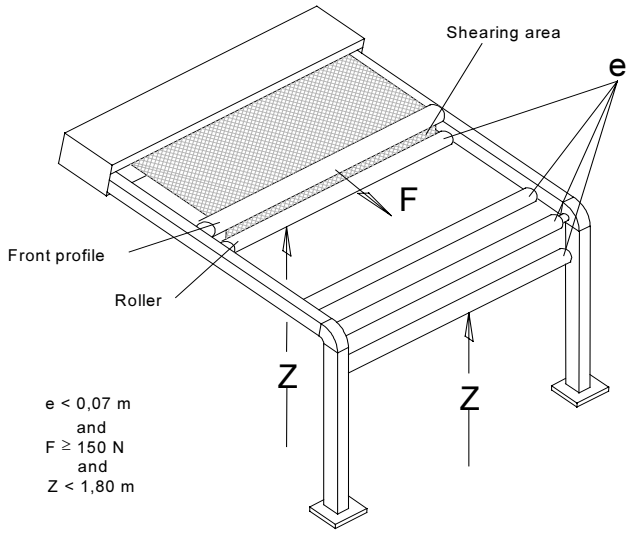

Figure 5 – Conservatory awning – Shearing area above each roller created by the passage of the front profile

4 Measurement of transmitted force

4.1 Shutters with accumulating or retractable laths – Verification of the accumulation condition

Test aim: to measure - the speed of extension of curtain, in the last 0,40 m;
- the displacement of the bottom rail in the direction of retraction under the action of a static force of 150 N.

Dimensions: the test is carried out for a height and width of product given by the manufacturer. If the accumulating condition occurs, it will be satisfied for all greater heights and smaller widths.

Test preparation: the product is provided for the test in a rigid frame and mounted according to the installation instructions of the manufacturer. It is presented vertically and extended up to a distance of 0,16 m from the fully extended position.

Test: a load of 150 N shall be applied to the middle of the bottom rail or at mid-height of the leading edge of the curtain in the direction of retraction. The displacement obtained shall be recorded.

The average speed of extension of the curtain shall be measured in the last 0,40 m.

Figure 6 illustrates an example of a test device in the case of a roller shutter.

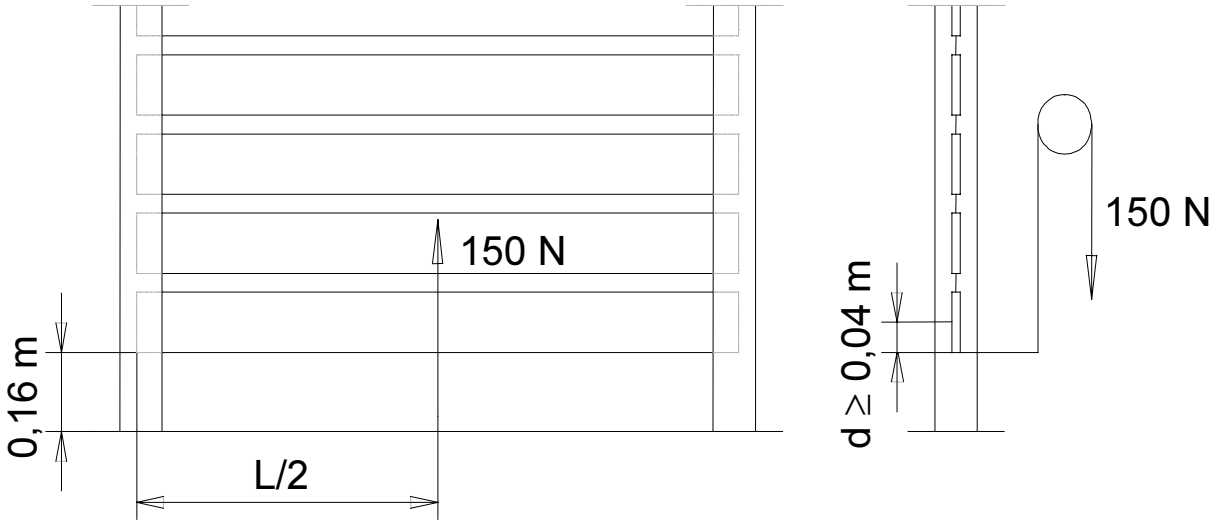

Figure 6 – Accumulating test for the laths – Roller shutter

4.2 Roller, sliding shutters, external venetian blinds, flat-closing concertina shutters

Test aim: measurement of the transmitted force, when the accumulating condition is not satisfied.

Dimensions: for a given motor, the test is carried out for the minimum dimensions specified by the manufacturer.

Test preparation: the product is provided for the test in a rigid frame and mounted according to the installation instructions of the manufacturer.

It is presented vertically so that the travel of the curtain is limited to 0,40 m (first measurement) and to 0,10 m (second measurement) from its full extension (see Figures 1 and 2).

Test: a force measuring device, dynamometer or other, accurate to 3 % is placed at the middle of the bottom rail (in the case of roller shutters or venetian blind) or at a mid-height of the leading edge (in case of sliding panel shutters or flat closing concertina shutter) in the direction of retraction.

The curtain being operated in the direction of extension, the effort required to immobilize the curtain in recorded.

The transmitted force is the highest value of the two measurements recorded.

4.3 Wing shutters

Test aim: measurement of the transmitted force and the amount of distance between the leaves out of phase (see Figure 3).

Dimensions: for a given motor, the test is carried out for the minimum dimensions specified by the manufacturer.

Test: the test is carried out as described in 4.2 (force measurement device placed at the middle of the edge of the “closing” leaf and measurements at 0,40 m and then 0,10 m of the full extension position).

Furthermore, it is verified, when the “closing” leaf is at 0,40 m of the fully extension position, the previous leaf has a minimum gap of 0,10 m, the measurement being between edges of leaves (see Figure 3).

4.4 Projection awnings, guided blinds and conservatory awnings

Test aim: measurement of transmitted force at the extended position.

Dimensions: the test is carried out at the minimum dimensions specified by the manufacturer:

- for folding and trellis arm awnings, for each type of arm,
- for other awnings and blinds, for the heaviest front profile.

Test preparation: the awning or blind provided on a rigid frame and mounted according to the manufacturer’s installation instructions and extended until the front profile is situated 0,40 m (first measurement) and to 0,10 m (second measurement) from the fully extended position, arms in the horizontal position in the case of pivot arm awning.

Test: a dynamometer, accurate to 3 %, is located at the middle of the front profile parallel to the side edge of the fabric and at right angles to the front profile or roller tube.

The awning or blind is extended, the force necessary to maintain the front profile in a stationary position shall be recorded.

The transmitted force is the highest value of the two measurements recorded.

4.5 Conservatory awnings

Test aim: measurement of the transmitted force at each idling roller and the distance between these and the front profile.

Dimensions: the test is carried out with the heaviest front profile at the minimum size of the product as specified by the manufacturer.

Test preparation: the awning is provided on a rigid frame and mounted according to the manufacturer's installation instructions.

Test: a dynamometer, accurate to 3 %, is positioned in the middle of the front profile parallel to the curtain and perpenducular to the front profile (see Figure 5). The force necessary to maintain the front profile in a stationary position at each idling roller is measured.

The transmitted force is the highest value obtained. In addition the distance between the front profile and each roller is measured at each idling roller.

5. Test report

The test report contains the following information:

a) name and address of the testing laboratory and location where the test was carried out when different from the address of the testing laboratory;

b) number, title and date of issue of this standard;

c) unique identification of the report and of each page and total number of pages of the report;

d) name and address of the client;

e) date of test;

f) details of the test method and any deviation from this standard;

g) all necessary details to identify the blind or shutter;

h) all relevant details concerning the type, specified dimensions, materials, form and construction of the blind or shutter, and its conformity with drawings provided by the manufacturer;

i) full details of the test specimen's hardware and their fittings and fixings;

j) the dimensional limits of the product (width, height, area, slopes, etc.), positions of possible operating mechanisms;

k) the dimensions of the product tested;

l) the nature of the tests carried out;

m) value of the transmitted force obtained and stated as follows: $F \geq 150$ N, or $F < 150$ N.

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