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August 2000

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European standard

French standard

NF EN 12045
August 2000

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ICS: 91.060.50

Shutters and blinds power operated

Safety in use

Measurement of the transmitted force

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

D : Motorangetriebene Abschlüsse und Markisen — Nutzungssicherheit —
Prüfung zur Messung der Schubkräfte

French standard approved

by decision of the Director General of AFNOR on July 5, 2000 taking effect on August 5, 2000.

Correspondence

The European standard EN 12045:2000 has the status of French standard.

Analysis

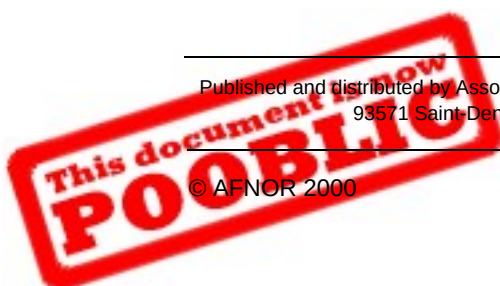
This document defines the tests for measuring the propulsive force developed by powered shutters and blinds (maintained pressure contact controls, automatic or semi-automatic controls) in operating conditions detailed in the standards NF EN 13120, NF EN 13561, NF EN 13659.

Descriptors

Technical International Thesaurus: closures, bays (structural units), windows, blinds, interior, exterior, use, safety, tests, verification, measurement.

Modifications

Corrections



National foreword

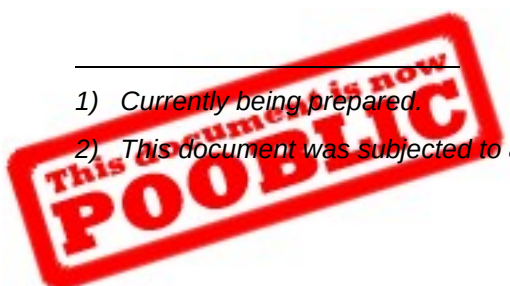
References to French standards

The correspondence between the standards figuring in the clause "Normative references" and the identical French standards is as follows:

<i>prEN 12216</i>	<i>: NF EN 12216 (classification index: P 25-505) ¹⁾</i>
<i>prEN 13120</i>	<i>: NF EN 13120 (classification index: P 25-508) ¹⁾</i>
<i>prEN 13561</i>	<i>: NF EN 13561 (classification index: P 25-511) ¹⁾</i>
<i>prEN 13659</i>	<i>: NF EN 13659 (classification index: P 25-512) ¹⁾</i>
<i>EN 13527</i>	<i>: NF EN 13527 (classification index: P 25-502) ²⁾</i>

1) Currently being prepared.

2) This document was subjected to an investigation as prEN 12046.



EUROPEAN STANDARD

EN 12045

NORME EUROPÉENNE

EUROPÄISCHE NORM

June 2000

ICS 91.060.50

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.

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

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

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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 developed by motorised 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 motorised projection system are also covered.

Motorised 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 incorporates 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

motorised 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)

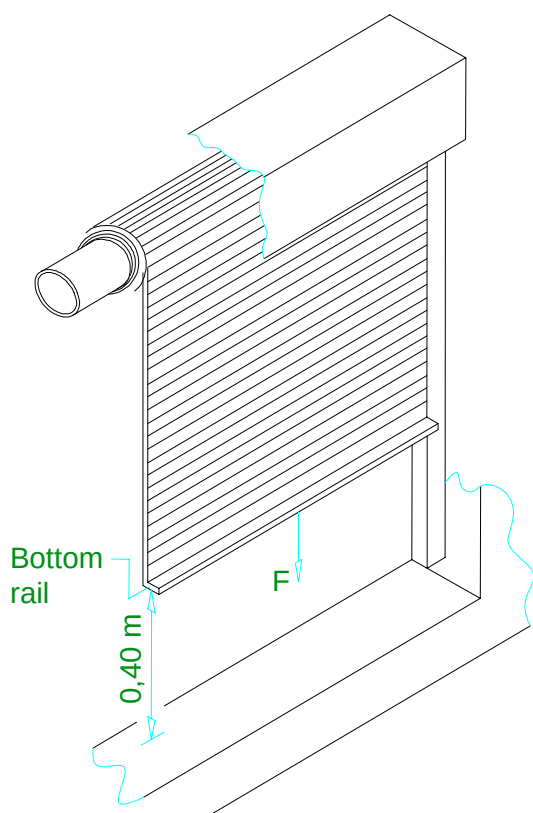


Figure 1 - Crushing area - Direction of transmitted force - Roller shutter

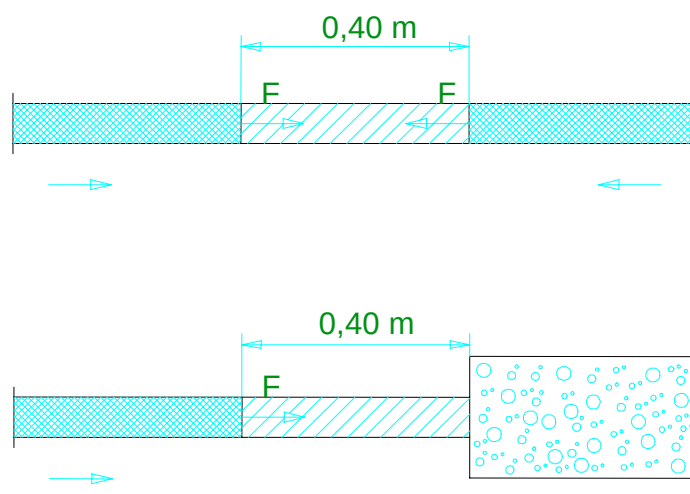


Figure 2 - Crushing area - Direction of transmitted force - Sliding panel shutter (1 or 2 leaves)

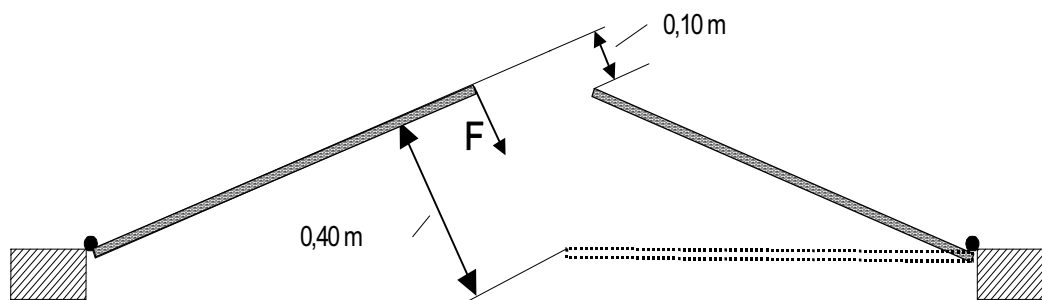


Figure 3 - Crushing area - Direction of the transmitted force - Wing shutter

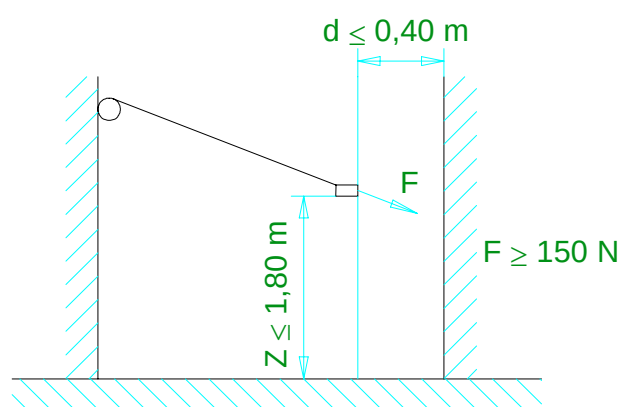


Figure 4 - Crushing area - Direction of transmitted force - Folding arms awning

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

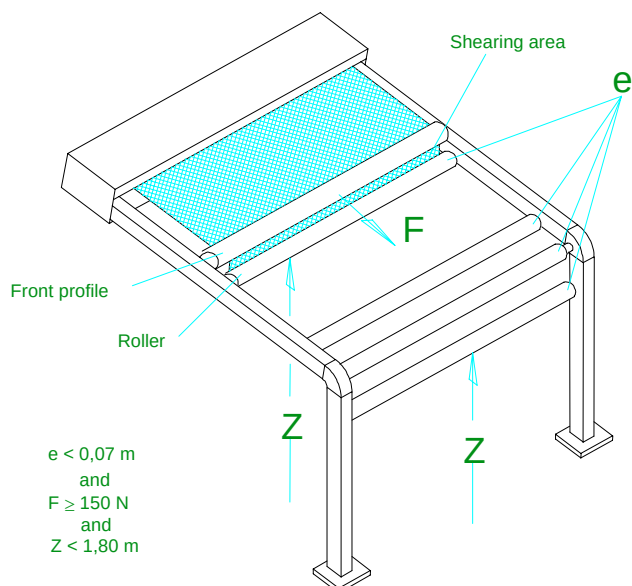


Figure 5 - Conservatory awning - Shearing area above each roller created by the passage of the

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.

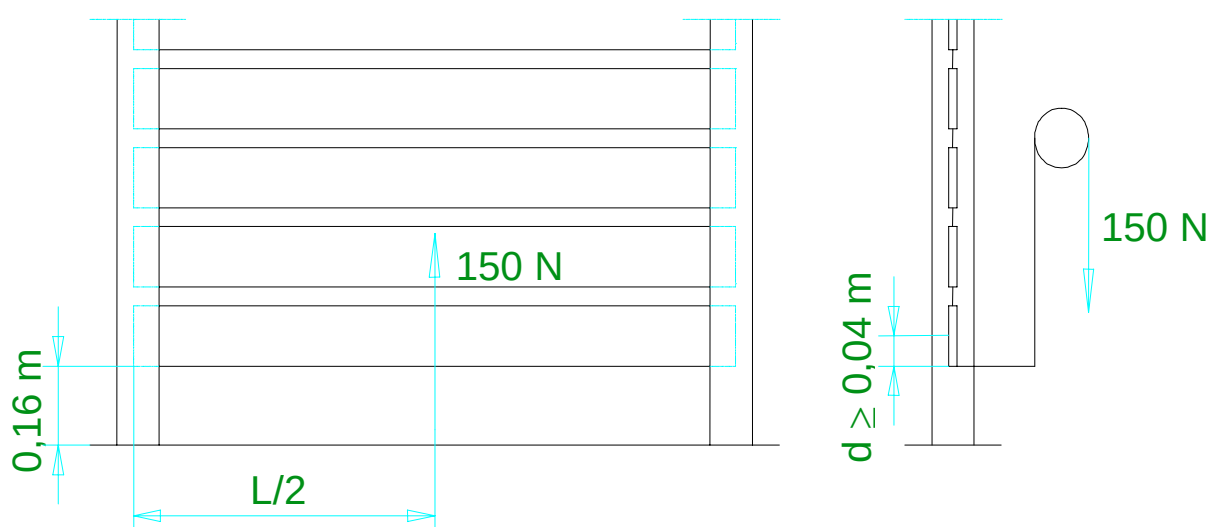


Figure 6 - Accumulating test for the laths - Roller shutter

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 immobilise the curtain is 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 perpendicular 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 : $F \geq 150 \text{ N}$, or $F < 150 \text{ N}$.