

Shutters, external and internal blinds — Misuse — Test methods

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Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 33 and a back cover.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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Contents

	Page
Foreword	3
1 Scope	4
2 Normative references	4
3 Terms and definitions	4
4 Test conditions	5
4.1 Specification of the samples	5
4.2 Test preparation	5
4.3 Nature of tests	6
4.4 Efforts to be applied	8
4.5 Laboratory conditions	9
4.6 Measuring equipment	9
4.7 Requirements for conducting the tests	9
5 Misuse relating to movement of the curtain	10
5.1 One direction of the operating mechanism	10
5.2 Operation by endless mechanism	14
5.3 Direct operation	17
5.4 Operation by gear with crank handle (T.O.)	23
5.5 Operation by winch with cable, tape or belt	26
5.6 Power operated operation	28
5.7 Summary	29
6 Misuse relating to the tilting of the laths	30
6.1 Rough operation	30
6.2 Forced operation	30
6.3 Reversed operations	30
7 Misuse relating to the projection of the curtain	31
7.1 Rough operation	31
7.2 Forced operation	31
8 Specific tests	32
8.1 Edge loading	32
8.2 Flexibility of the laths	32
9 Operation test	32
10 Test report	33

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of an identical text or by endorsement, at the latest by December 2000, and conflicting national standards shall be withdrawn at the latest by June 2001.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 standard 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

This standard specifies the tests to be carried out to determine the ability of shutters and blinds to resist abnormal use of their operating mechanisms in terms of rough, forced or reversed operation.

It applies to the following products:

- **Internal blinds:** Internal venetian blinds, roller, vertical and pleated blinds and darkening blinds.
- **External blinds:** Folding arm awnings, trellis arm awnings, vertical roller awnings, pivot arm awnings, marquisolettes, façade awnings, roof light awnings, verandah or conservatory awnings, dutch awnings, insect screen awnings and louvre arrays.
- **Shutters:** External venetian blinds, roller shutters (vertical or projected), venetian shutters (vertical or projected), flat-closing concertina shutters, concertina shutters, sliding panel shutters.

Shutters with a projection system are also covered.

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 revision of any 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 12216:1996, *Shutters, internal and external blinds - Terminology - Glossary and definitions*

prEN 13120:1998, *Internal blinds - Performance requirements including safety*

EN 13527:1999, *Shutters and Blinds - Measurement of operating forces - 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 definitions of prEN 12216:1996, prEN 13120:1998, EN 13527:1999, prEN 13561:1999 and prEN 13659:1999 apply.

4 Test conditions

4.1 Specification of the samples

These are the same samples used for the operating tests (see EN 13527:1999).

4.2 Test preparation

The sample product, blind or shutter, is submitted for test in its normal usage position, fully equipped, with the necessary operating systems and mechanisms, systems for guiding the curtain and projection system where applicable.

The complete assembly is mounted on a test rig according to recommendations in the manufacturer's technical instructions, which consists of:

- for blinds and shutters with a vertical curtain, a rigid frame simulating the opening.

The frame allows, if necessary, locking of the curtain or its projection. The support piece shall be horizontal.

- for projecting shutters with a vertical curtain, on a rigid support which simulates the wall, façade or roof, on which the test product is fixed using the positions recommended by the manufacturer and erected in compliance with the technical instructions (e.g. use of brackets) and according to the angle(s) specified in EN 13527:1999.

- for sloping or horizontal products, on a rigid support, allowing it to be tilted to the minimum and maximum angles laid down in the manufacturer's technical instructions.

After the blind or shutter has been mounted, check that it is operating normally by carrying out a complete operation: extension, retraction, locking, tilting the laths (where applicable) and all other options with which the product is equipped, with particular attention to the setting of the limit stops.

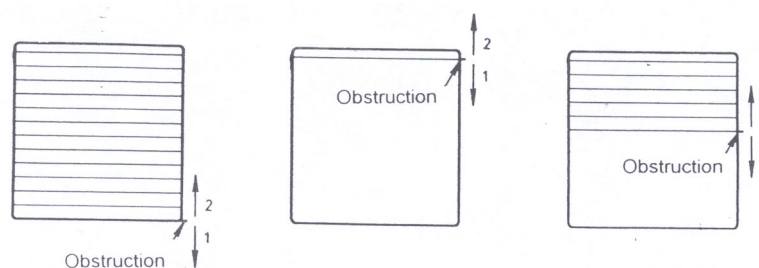
4.3 Nature of tests

The testing of the operating mechanism to determine the possibility of misuse.

4.3.1 Reminder

4.3.1.1 Misuse relating to the curtain

- **rough operation** is only possible if the moving part has significant mass and can reach excessive speed.
- **forced operation** may occur either at the fully extended or retracted position or at an intermediate position when obstructed (see Figure 1)



Direction 1: extension.

Direction 2: retraction.

a) curtain fully retracted

b) curtain fully extended

c) curtain in intermediate position, obstructed during extension and/or retraction

Figure 1 - Illustration of forced operation

Important: Certain products are not designed to withstand obstructions during the extension of the curtain in situations specified in a2, b1, c1 and c2. They will not be subjected to the corresponding tests if the operating procedure⁽¹⁾ does not warn the user of the risk of damage when the curtain is obstructed in these situations.

- **reversed operation** is only possible if continued operation within the limits of the operating force of the class:
 - once the product is fully extended, leads to the retraction of the curtain;or
 - once the product is fully retracted, leads to the extension of the curtain.

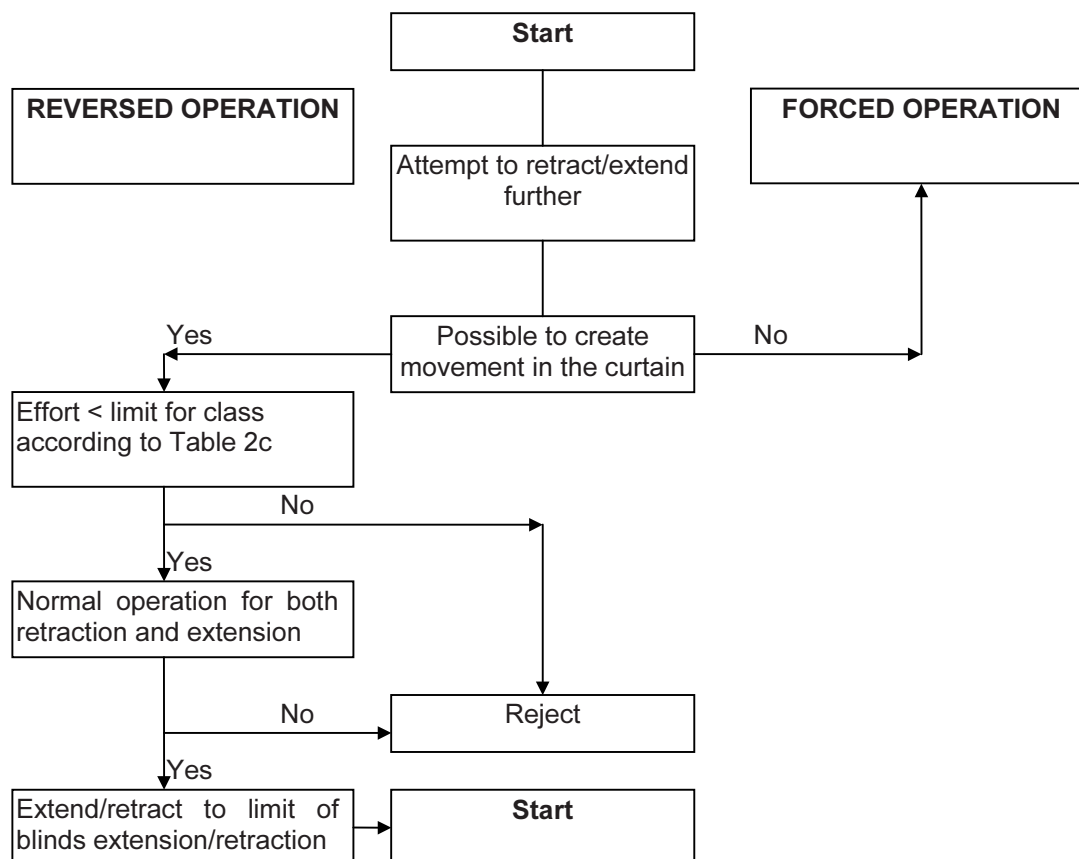
Reversed operation only refers to rolling blinds and shutters and to those products using a roll up method for extension and retraction.

⁽¹⁾ The operating procedure must be provided by the installer to his client. The installation instructions provided by the manufacturer to the installer will recall this duty.

With regard to roll up products, Movements a1 or b2 (see Figure 1) are either forced or reversed operations when the operating force is within the limits for the class.

The following flowchart shows the procedure to be followed to check tests on reversed and forced operation.

Table 1 - Flowchart



Checks on tests for reversed and forced operations on rolling products in the following situations:

- an attempt to extend further a curtain already fully extended (Movement a1);
- an attempt to retract further a curtain already fully retracted (Movement b2).

4.3.1.2 Misuse relating to the tilting of the laths

Forced operations only apply. In the case of monocommand, the forced operation applies during the tests related to movement of the curtain.

4.3.1.3 Misuse relating to the projection of the curtain

Rough and forced operations only apply.

4.3.2 Types of operation

These are described as:

- linear operation;
- one direction movement of the operating mechanism:
 - operation by tape or cord with or without reel;
- endless movement of the operating mechanism:
 - operation by cord or chain;
- direct operation:
 - operation by hand or rod or lever (only for tilting laths on wing shutters);
- rotational operation:
 - gear with crank handle;
 - winch with cord, cable or tape;
 - wand, rod or knob (only for tilting the laths of internal blinds);
- power operated mechanism.

4.4 Efforts to be applied

- Force P for linear operation.
- Torque C for rotational operation.
- Efforts developed by the motor or power operated mechanisms.

The Table 2 shows the symbols used related to the type of misuse.

Table 2 - Symbols used related to the type of misuse

Efforts applied	Type of misuse operations			
	rough	forced	reversed	Edge loading
Force	P_B	P_F	P_I	P_{el}
Torque	C_B not applicable ⁽¹⁾	C_F	C_I	-

⁽¹⁾ Operation by gear cannot be rough since it does not cause excessive speed in the movement of the curtain.

The misuse values of the forces and torques to be applied as a function of type of misuse operation are specified in the performance requirements standards, for internal blinds, external blinds, shutters.

4.5 Laboratory conditions

The tests are carried out at the ambient temperature of the laboratory, c.e. $23\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$.

4.6 Measuring equipment

– measuring forces

- linear operation: forces applied using weights.
- rotational operation: torques applied using a torque wrench with an accuracy of 3 %.

– positioning of the curtain

A tolerance of $\pm 10\text{ mm}$ is allowed.

4.7 Requirements for conducting the tests

- The tests described in the following paragraphs are carried out a number of times equal to 0,5 % of the endurance cycles for the class of the product, number designated by N for the following.
- During the forced operation test, the force P_F or the torque C_F is applied for 5 s. The curtain shall be operated in the opposite direction as is necessary to achieve the start conditions before reapplying P_F or C_F .

In the case of operation by crank handle and for Situations b1 and c1 (see Figure 1), for which the value of C_F is not achieved at the end of three turns of the handle, the test is carried out in the following manner:

- carry out the three turns of the crank handle then return to the initial position;
- carry out the procedure N times;
- At the end of each test, record any possible damage.