

Windows — Determination of the resistance to static torsion

The European Standard EN 14609:2004 has the status of a
British Standard

ICS 91.060.50

National foreword

This British Standard is the official English language version of EN 14609:2004.

The UK participation in its preparation was entrusted by Technical Committee B/538, Doors, windows, shutters, hardware and curtain walling, to Subcommittee B/538/1, Windows, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international/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.

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This British Standard was published under the authority of the Standards Policy and Strategy Committee on 16 June 2004

Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 9 and a back cover.

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Amendments issued since publication

Amd. No.	Date	Comments

© BSI 16 June 2004

ISBN 0 580 43942 9

ICS 91.060.50

English version

Windows - Determination of the resistance to static torsion

Fenêtres - Détermination de la résistance à la torsion
statiqueFenster - Ermittlung der Widerstandsfähigkeit gegen
statische Verwindung

This European Standard was approved by CEN on 1 September 2003.

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Foreword

This document (EN 14609:2004) 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of an identical text or by endorsement, at the latest by December 2004, and conflicting national standards shall be withdrawn at the latest by December 2004.

It is part of a series of standards for windows.

This document supersedes 8.2.1 Warping of EN 107:1980.

Annex A is normative.

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

1 Scope

This European Standard specifies the determination of resistance to static torsion of an open casement, expressed as loads and the resulting maximum and residual deformations.

This European Standard applies to the opening modes specified in Figures A.1 to A.5 and included in EN 12519.

This European Standard is not applicable to the sashes of sliding windows.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate 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 (including amendments).

EN 12519, Windows and pedestrian doors – Terminology.

3 Terms and definitions

For the purposes of this European Standard, the terms and definitions given in EN 12519 apply, together with the following:

3.1 static torsion

twist induced in a casement by the application of a static load to an extreme free corner edge of that casement and normal to its plane when an adjacent corner edge is secured

4 Apparatus

A surrounding substantial steel frame with movable steel supports¹⁾ into which the sub-frames containing test specimens of various dimensions can be mounted.

Means for the application of forces with an accuracy of 5 % uniformly and without shock.

An analogue or digital measuring instrument for determining measurements with an accuracy of 0,1 mm.

5 Test specimen

The test specimen shall be supplied in a fully operable condition. It shall be suitable for fixing into the surround frame in accordance with the manufacturer's published recommendations or standardized instructions.

1) A suitable frame would, for example, be of such stiffness that the mid span deflection of any member of the frame does not exceed 1/500 of its unsupported length under the action of a force of 1 kN applied at any point or direction perpendicular to the length of that member.

6 Conditioning and preparation of the test specimen

6.1 Conditioning

Storage and testing shall be carried out in a non-destructive environment within the ranges of 10 °C to 30 °C and 25 % to 75 % relative humidity.

6.2 Preparation

Remove all transport blocks, bracings, packaging and protective wrappings from the test specimen.

The test specimen shall be mounted level, square and without visible twist resulting from the use of fixing devices.

7 Procedure

When carrying out the test (see Figure A.6) the following shall be taken into account.

Having disengaged any restricting devices, open and close the test specimen five times before the test to its maximum extent or 90°, whichever is greater.

For windows with more than a single leaf the first test shall be to the main leaf.

When testing multi-function windows such as those that tilt and turn, each function shall be tested separately. The most common usage shall be tested first (e. g. tilt before turn).

To take up any slack in hinges or pivots, if fitted, apply a pre-load of 10 % of the maximum test load or a minimum of 20 N according to Figures A.1 to A.5. Remove the pre-load and measure the deformation (a_0).

Apply the static test load F according to Figures A.1 to A.5 and measure the deformation (a_1) under the test load. Remove the test load and measure the deformation (a_2).

Apply and remove all loads continuously to avoid dynamic effects. Apply the loads in increments of a maximum of 100 N and over a minimum of 1 s for each increment.

8 Expression of results

Note the loads, together with the maximum ($a_1 - a_0$) and residual ($a_2 - a_0$) deformations measured during the test. Express loads in Newtons (N) to three significant figures and deformations in millimetres (mm) to two significant figures.

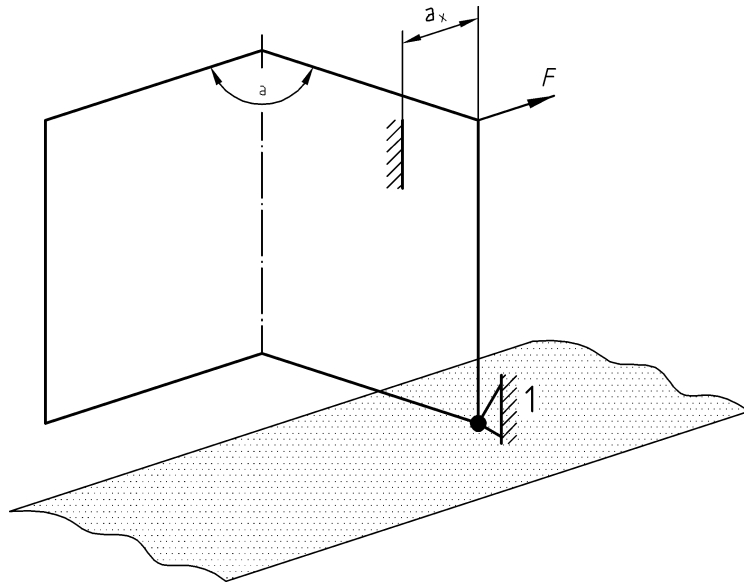
9 Test report

The test report shall contain at least the following information:

- a) reference to this European Standard;
- b) name of the test laboratory;
- c) name of the manufacturer and applicant;
- d) date of test and test report;
- e) all relevant details for identifying the test specimen and apparatus
 - the type;
 - the specified dimensions;
 - the materials;
 - form and mode of opening;
- f) test results;
- g) permanent damage to the test specimen.

Annex A (normative)

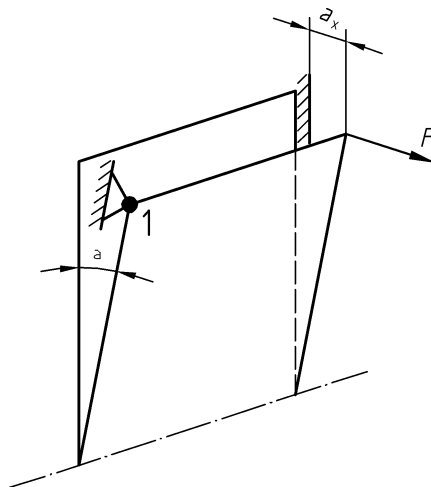
Figures



Key

- a 90° or max. opening angle
- 1 Blocked corner

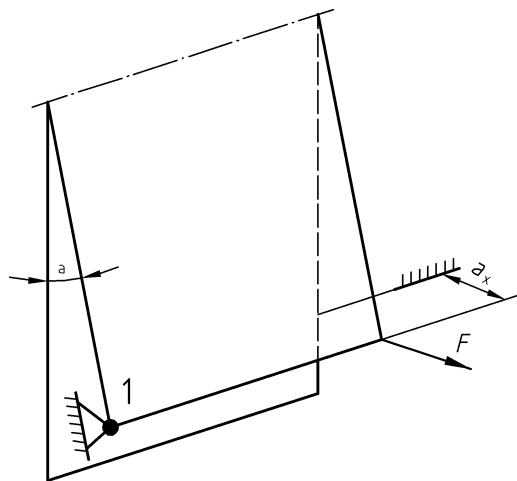
Figure A.1 — Side hung casement



Key

- a 90° or max. opening angle
- 1 Blocked corner

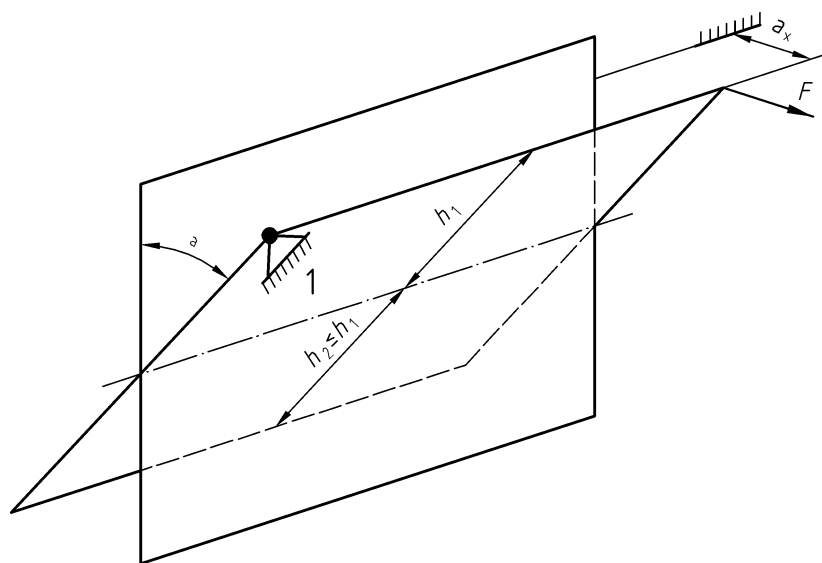
Figure A.2 — Bottom hung casement



Key

- a 90° or max. opening angle
- 1 Blocked corner

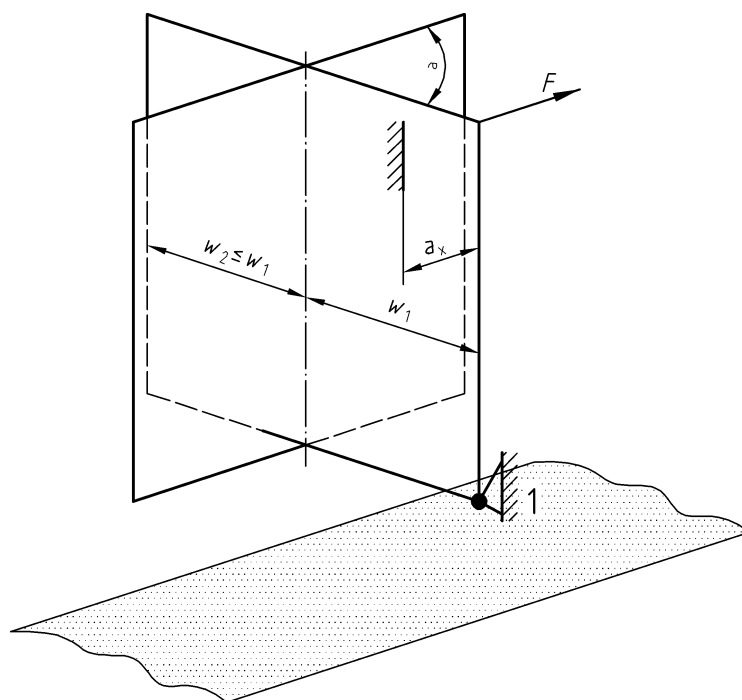
Figure A.3 — Top hung casement



Key

- a 90° or max. opening angle
- 1 Blocked corner

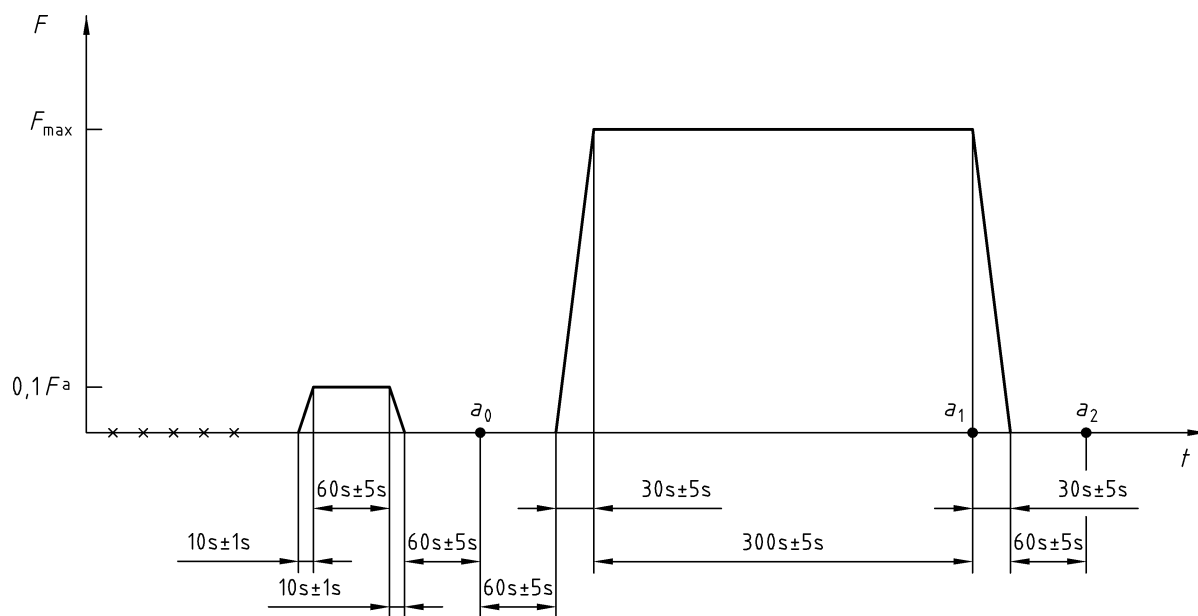
Figure A.4 — Horizontal pivot casement



Key

- a 90° or max. opening angle
- 1 Blocked corner

Figure A.5 — Vertical pivot casement



Key

F_{\max} Maximum test load

$0,1F^a$ $0,1F_{\max}$ or 20 N

t Time

X Opening and closing

O Measurement

a_x Measured values

Figure A.6 — Diagram

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