SLOVENSKI STANDARD
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Sile pri uporabi - Preskusna metoda - 1. del: Okna

Operating forces - Test method - Part 1: Windows

Bedienkräfte - Prüfverfahren - Teil 1: Fenster

Forces de manoeuvre - Méthode d'essai - Partie 1 : Fenêtres

Ta slovenski standard je istoveten z: EN 12046-1:2020

ICS:

91.060.50	Vrata in okna	Doors and windows

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English Version

Operating forces - Test method - Part 1: Windows

Forces de manoeuvre - Méthode d'essai - Partie 1 : Fenêtre

Bedienkräfte - Prüfverfahren - Teil 1: Fenster

This European Standard was approved by CEN on 12 July 2020.

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

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European foreword

This document (EN 12046-1:2020) 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of an identical text or by endorsement, at the latest by February 2021, and conflicting national standards shall be withdrawn at the latest by February 2021.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 12046-1:2003.

This document is one of a series of standards for windows.

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

1 Scope

This document specifies the test method for determining the force required when engaging or releasing the hardware of a window and when commencing the movement of a casement or sash, in both opening and closing directions.

This document is applicable to all types of openable windows where the movement is a manual operation.

This document is applicable to products of any frame material.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 12519, *Windows and pedestrian doors — Terminology*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 12519 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at https://www.iso.org/obp

3.1
manual operating forces
manual operating forces indicate the force needed to manual operate windows

3.2
linear motion
movement of casement, sash or hardware in a straight line when acted upon by an operating force; also movement through an arc of which the radius is large in proportion to the length of the arc

3.3
rotary motion
movement, usually of hardware but also applicable to a casement or sash, in a circular path when acted upon by an operating torque, e.g. the turning action of the bow of a key

3.4
sash weight
weight of the opening or closing sash including its infill (e.g. glazing)

4 Principle of test

The principle consists of measuring the minimum static force or torque required:

— to release or lock the hardware (locks or handles);

— to commence opening of the casement or sash;

— to continue opening/ closing of the sash (in the case of vertical sliding windows);

— to complete closing of the casement or sash.

Upon the clients request the tests may be performed on sashes/casements only to be opened for cleaning or maintenance mode of operation.

5 Apparatus

5.1 Test rig

A surrounding substantial steel frame with movable steel supports[1] into which the sub-frames containing test specimens of various dimensions can be mounted.

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

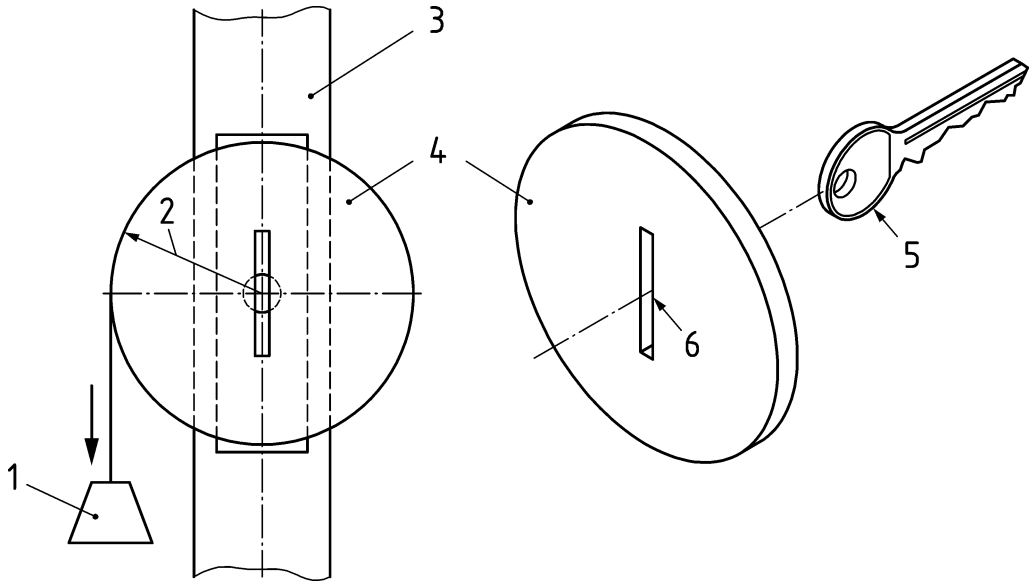
The apparatus shall consist of either:

— weights and pulleys (see Figure 1); or

— an apparatus including a measuring device, with which the required force or torque can be smoothly applied, coupled with an analogue or digital measuring instrument for determining measurements with a resolution of 1 N or 0,1 Nm, and recording equipment (see Figure 2).

In neither case shall the apparatus influence the test results.

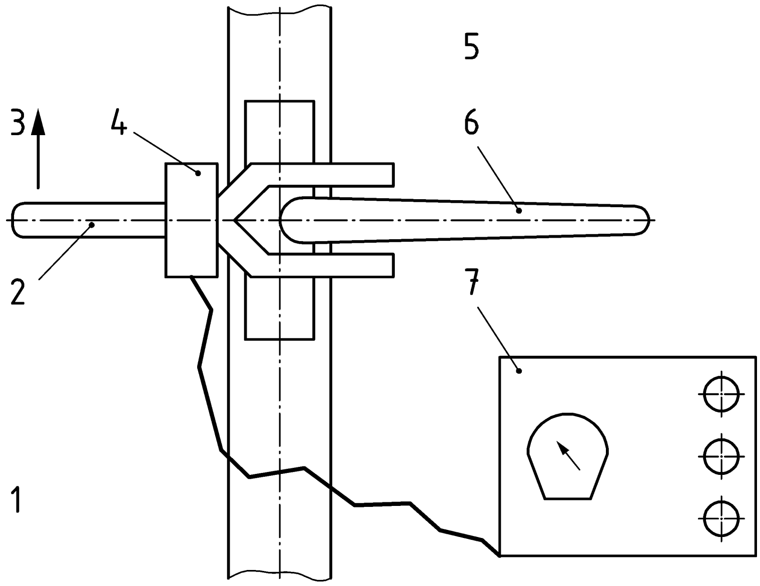
[1] For example, a suitable frame would be of such stiffness that the mid-span deflection of any member of the frame does not exceed 1/500 of its unsupported length under the action of a force of 1 kN applied at any point or direction perpendicular to the length of that member.



Key

1 weight
2 radius *r*
3 stile of sash
4 self supported pulley
5 bow of key
6 slot to suit bow of key

Figure 1 — Principle set up of weight and pulley mechanism as applied to a key



Key

1 torque meter applied to handle
2 torque meter
3 torque
4 load cell
5 window sash
6 handle
7 recording equipment

Figure 2 — Example of a torque mechanism as applied to a handle

5.2 Linear motion

A linear actuator (hydraulic cylinder or other suitable device) coupled with an electronic load cell and measuring and recording equipment, capable of smoothly reaching the required maximum force. Alternatively, a weight and pulley mechanism shall be used. The apparatus shall be mounted so that it is in line with the casement's or sash's nominal direction of travel and not deviating from it by more than ± 5°.

5.3 Rotary motion

A torque-meter capable of measuring the torque required to operate the mechanism. The equipment shall have an attachment for connection to the hardware (handle/key) which will enable correct alignment of the forces during test. Alternatively, a weight and pulley mechanism can be used.

This apparatus shall also include any measuring and recording equipment.

The connection between the measuring device and the test specimen shall be such as to avoid local damage to the test specimen and shall in no way affect its performance.

6 Test specimen

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