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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: prEN 12046-1

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English Version

Operating forces - Test method - Part 1: Windows

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

Bedienkräfte - Prüfverfahren - Teil 1: Fenster

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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

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European foreword

This document (prEN 12046-1:2018) 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 document is currently submitted to the CEN Enquiry.

This document will supersede EN 12046-1:2003.

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

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prEN 12046-1:2018 (E)

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 windows where the movement of the casement or sash 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 12519:2004, *Windows and pedestrian doors - Terminology*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 12519:2004 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 <http://www.iso.org/obp>

3.1 linear motion <https://standards.iteh.ai/catalog/standards/sist/71b60ec8-515b-4a71-ba23->
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

3.2 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

3.3 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); and
- to complete closing of the casement or sash.

5 Apparatus

5.1 Test rig

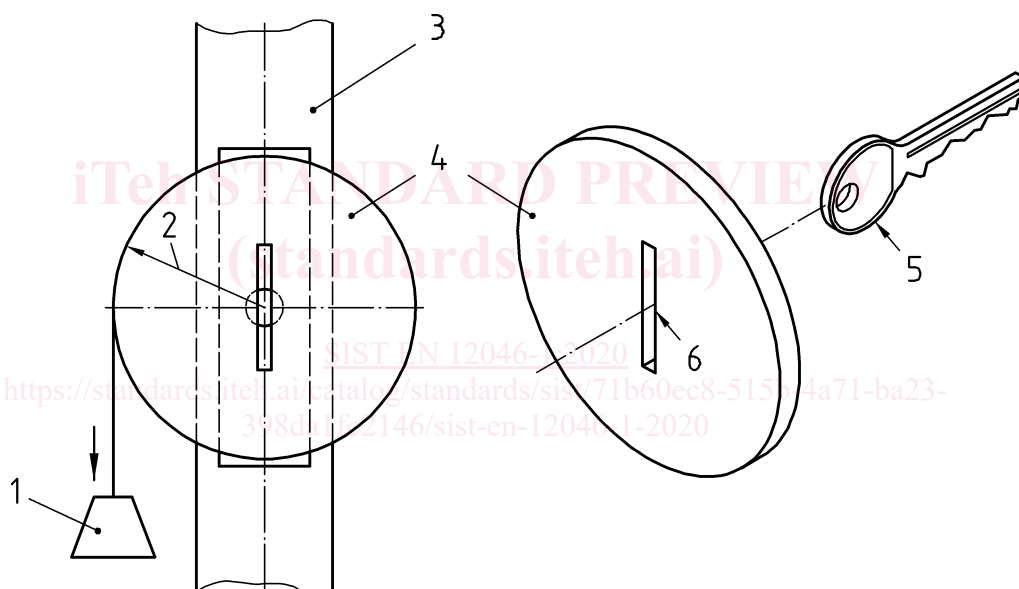
A surrounding substantial steel frame with movable steel supports¹⁾ into which the sub-frames containing test specimens of various dimensions can be mounted.

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

The apparatus shall consist of either:

- weights and pulleys (see Figures 1 and 2); or
- an apparatus other than a spring mechanism, with which the required force or torque can be smoothly applied, coupled with an analogue or digital measuring instrument for determining measurements with an accuracy of 0,1 mm, and recording equipment (see Figures 3 and 4).

In neither case shall the apparatus influence the test results.

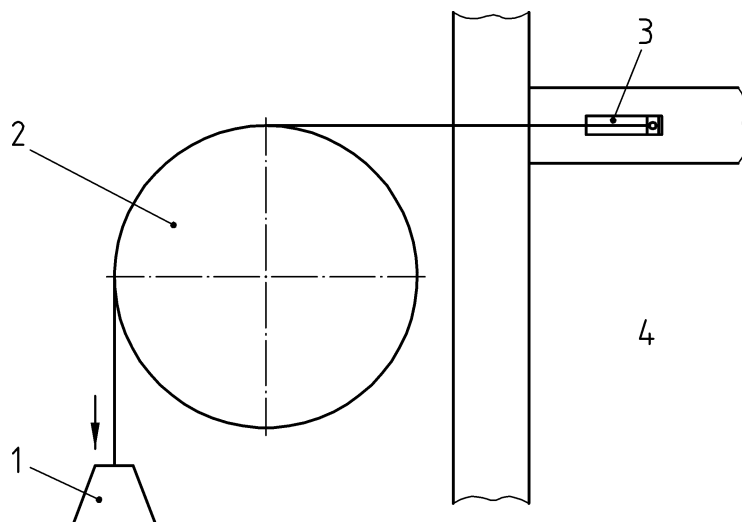


Key

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

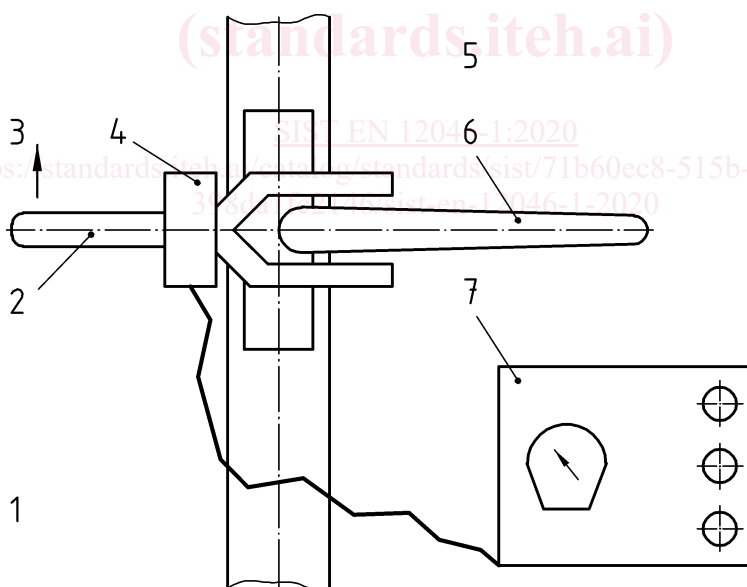
Figure 1 — Weight and pulley mechanism as applied to a key

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**

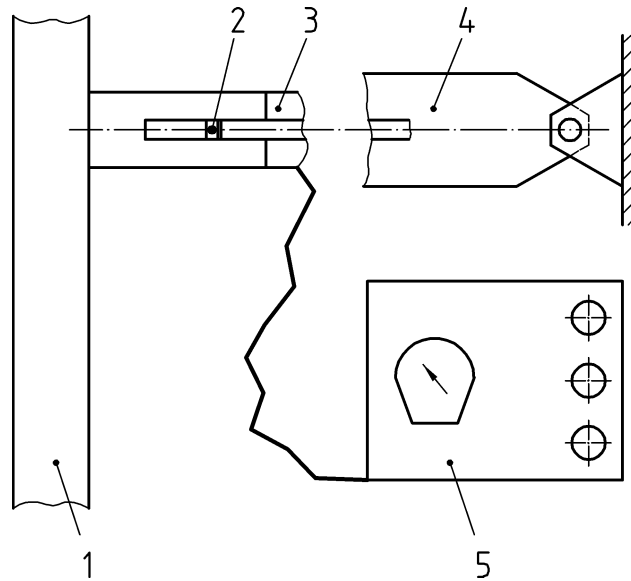
- 1 weight
- 2 pulley
- 3 lock
- 4 part of window

Figure 2 — Weight and pulley mechanism as applied to a lock

**Key**

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

Figure 3 — Torque mechanism as applied to a handle

**Key**

- 1 part of window
- 2 lock
- 3 load cell
- 4 ram
- 5 recording equipment

Figure 4 — Actuator mechanism as applied to a lock

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 $\pm 5^\circ$.

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.

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7 Conditioning and preparation of the test specimen

7.1 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.

7.2 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.

8 Procedure

8.1 Test sequence

Testing shall start with the casements or sashes of the test specimen closed and with all relevant hardware in the fully engaged position (see Figure 5).

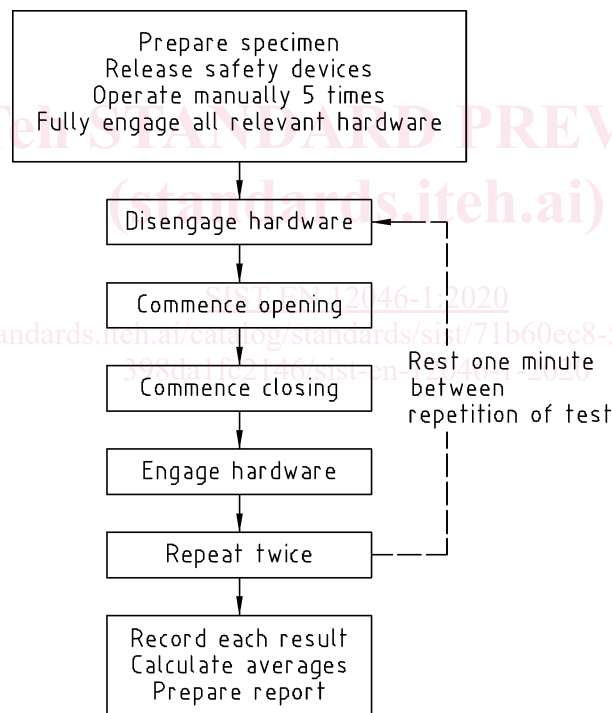


Figure 5 — Test sequence

The presence of any safety device shall not influence the test result.

Tests shall be performed on the test specimen as received and shall be immediately preceded by manual operation of all moving parts five times.

The application of forces or torques shall be arranged to avoid local damage to the test specimen.