



SLOVENSKI STANDARD
SIST-TS CEN/TS 13126-13:2005
01-januar-2005

Stavbno okovje, pritrjevalni sistemi za okna in zastekljena vrata – Zahteve in preskusne metode – 13. del: Ravnotežje drsnih oken

Building hardware, fittings for windows and door height windows - Requirements and test methods - Part 13: Sash balances

Baubeschläge - Beschläge für Fenster und Fenstertüren - Anforderungen und Prüfverfahren - Teil 13: Ausgleichgewichte für Vertikal-Schiebefenster

Quincaillerie pour le bâtiment - Ferrures de fenestres et portes-fenestres - Exigences et méthodes d'essai - Partie 13: Contre-poids pour mécanismes a guillotine

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Ta slovenski standard je istoveten z: CEN/TS 13126-13:2004

ICS:

91.190 Stavbna oprema Building accessories

SIST-TS CEN/TS 13126-13:2005 en

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TECHNICAL SPECIFICATION
SPÉCIFICATION TECHNIQUE
TECHNISCHE SPEZIFIKATION

CEN/TS 13126-13

April 2004

ICS 91.190

English version

**Building hardware, fittings for windows and door height windows
- Requirements and test methods - Part 13: Sash balances**

Quincaillerie pour le bâtiment, ferrures de fenêtres et
portes-fenêtres - Exigences et méthodes d'essai - Partie
13: Contre-poids pour mécanismes à guillotine

Baubeschläge - Beschläge für Fenster und Fenstertüren -
Anforderungen und Prüfverfahren - Teil 13:
Ausgleichgewichte für Vertikal-Schiebefenster

This Technical Specification (CEN/TS) was approved by CEN on 18 August 2003 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

CEN members are required to announce the existence of this CEN/TS in the same way as for an EN and to make the CEN/TS available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the CEN/TS) until the final decision about the possible conversion of the CEN/TS into an EN is reached.

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

Management Centre: rue de Stassart, 36 B-1050 Brussels

CEN/TS 13126-13:2004 (E)

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Foreword

This document (CEN/TS 13126-13:2004) 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.

A full contribution to the preparation of this Technical Specification has been made by the European manufacturers organisation ‘ARGE’ and National Standards institutions.

This Technical Specification is one of a series of Technical Specifications dedicated to building hardware products. It is divided into seventeen parts to incorporate all types of windows and door height windows.

Informative annex A of CEN/TS 13126-1 gives detailed schedules of the elements of components of the seventeen parts of this Technical Specification.

Normative annex B of CEN/TS 13126-1 gives schedules of the elements of components used on the 21 types of window opening functions.

Normative and informative annex to all parts of this Technical Specification are indicated in the content of the seventeen parts.

The performance tests incorporated in this standard are considered to be reproducible and as such will provide a consistent and objective assessment of the performance of these products throughout CEN Member States.

Annex A is informative while annex B is normative.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this Technical Specification: 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 United Kingdom.

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1 Scope

This Part of CEN/TS 13126 gives requirements and test methods for durability, strength, security and function of sash balances for windows and door height windows.

2 Normative references

This Technical Specification 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 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 1670, *Building hardware – Corrosion resistance – Requirements and test methods.*

EN 12519:2004, *Windows and doors - Terminology*

CEN/TS 13126-1:2004, *Building hardware – Fittings for windows and door height windows – Requirements and test methods – Part 1: Requirements common to all types of fittings*

3 Terms and definitions

For the purposes of this Technical Specification, the terms and definitions given in EN 12519:2004 for windows and doors and the following apply:

3.1

sash balances:

device, fitted in pairs, to counter-balance the mass of a vertically moving leaf throughout its full travel.

3.2

manually applied force

externally applied vertical force required to cause movement of the sliding element when the sash balances are mounted in the test apparatus with the specified test weight attached.

3.3

sliding element

part of the test apparatus representing the vertically sliding sash of the window.

3.4

test weight

weight of the sliding element plus the attached weights equalling the specified weight rating of the pair of balances.

3.5

operating cycle

movement from a starting to a stop position and returning to the starting position.

4 Classification

4.1 General

The classification for sash balances shall be in accordance with the requirements of clause 4 in CEN/TS 13126-1:2004.

4.2 Category of use (first digit)

No requirement.

4.3 Durability (second digit)

Grades shall be in accordance with 4.3 of CEN/TS 13126-1:2004.

4.4 Mass (third digit)

Grades shall be in accordance with 4.4 of CEN/TS 13126-1:2004.

4.5 Fire resistance (fourth digit)

Grades shall be in accordance with 4.5 of CEN/TS 13126-1:2004.

4.6 Safety in use (fifth digit)

Grades shall be in accordance with 4.6 of CEN/TS 13126-1:2004.

4.7 Corrosion resistance (sixth digit)

Grades shall be in accordance with 4.7 of CEN/TS 13126-1:2004.

4.8 Security (seventh digit)

Grades shall be in accordance with 4.8 of CEN/TS 13126-1:2004.

4.9 Application (eighth digit)

Five grades are identified in accordance with Table 1

- grade 1 : requiring an applied force of 70% test mass
- grade 2 : requiring an applied force of 60% test mass
- grade 3 : requiring an applied force of 50% test mass
- grade 4 : requiring an applied force of 40% test mass
- grade 5 : requiring an applied force of 30% test mass)

4.10 Test Sizes – Size limitations (ninth digit)

The designated window/door height window size in which the component has been tested shall be stated in accordance with the designated number listed in Table 1 of CEN/TS 13126-1:2004.

5 Requirements

5.1 General

The requirements of sash balances shall met in accordance with 5 of CEN/TS 13126-1:2004

5.2 Additional requirements

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5.2.1 Resistance to manually applied force

The maximum resultant force from 7.5 shall be used to classify the balances. They shall not exceed the value given in Table 1 before the durability test.

Table 1 – Applied forces

Grade	Manually applied force % maximum test mass
1	70
2	60
3	50
4	40
5	30

5.2.2 Resistance to static load

On completion of the static load test specified in clause 7 the vertical sliding sash shall continue to operate normally. The maximum travel distance at any random rest position shall not exceed 25 mm before or after the durability test.

6 Test apparatus

The sash balances shall be mounted in pairs, one either side of the test sash, in a test apparatus as specified in clause 6 of CEN/TS 13126:2003 in accordance with the manufacturer's fixing instructions

The test apparatus shall be designed to allow the sliding element and any attached test weights to travel in a vertical line throughout its full travel without obstructions and with minimal friction.

The sash shall be correctly balanced to suit the loading. Suitable means shall be provided to attach weights to the sliding element as required.

The total mass of the sliding element and any applied weights shall be within a tolerance of $\pm 5\%$ of the desired mass.

Data sheets shall be made available giving details of balance ratings, travel distance and recommendations for installation and adjustment.

Measure and record the total mass of the test sash.

7 Test methods

7.1 Samples

Ten (five pairs) samples shall be used for testing to this Technical Specification in accordance with Table 2

sample A – performance tests (3 pairs = 1 pair per travel range)

sample B – corrosion tests (1 pair)

sample C – retained for reference control (1 pair)

Table 2 – Number of samples to be tested per travel range

Travel range	Number of samples	Manufacturers published balance weight capacity
Minimum	2	Minimum
Intermediate	2	Middle
Maximum	2	Maximum

If a specimen fails to meet the appropriate acceptance requirements, two further pairs of specimens shall be tested. A pass of the second test shall be accepted but failure shall be recorded accordingly.

There shall be no breakage of any part

7.2 Procedure

Install the frame-mounted part of the specimen in a fixed position in the same manner in which it would be fitted on a window frame. This part to remain static during the test.

Fasten the sash-mounted part of the specimen to the sliding element as on a window frame.

Where the balances have a published mass range (i.e. not made and pre-tensioned to a given mass \pm fine adjustment) the test mass should be the lowest specified mass rating.

For pre-tensioned balances the test mass should be equal to the specified mass rating.

The tests in 7.3, 7.4 and 7.5 shall be carried out in succession on the same specimen.

Cycling in test 7.4 shall be for the number of cycles according to the grade selected.

- grade 3 : 10 000 cycles $\begin{matrix} +500 \\ 0 \end{matrix}$ cycles
- grade 4 : 15 000 cycles $\begin{matrix} +750 \\ 0 \end{matrix}$ cycles
- grade 5 : 25 000 cycles $\begin{matrix} +1000 \\ 0 \end{matrix}$ cycles

7.3 Static load tests

7.3.1 Variable mass capacity test

Select the lowest mass capacity.

- a) Position the sliding element with the balances 50 mm \pm 1 mm from the fully retracted position.
- b) Remove all external forces and record any movement of the sliding element over a period of 60 s $\begin{matrix} +10 \\ 0 \end{matrix}$ s.

Repeat a) and b) with the sliding element positioned 50 mm \pm 1 mm from the fully extended position.

Repeat a) and b) with the sliding element in the mid travel position \pm 5 mm.

Repeat 7.3.1 at the intermediate and highest capacity ratings.