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Building hardware, fittings for windows and door height windows - Requirements and test methods - Part 10: Arm balancing systems

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Building hardware, fittings for windows and door height windows - Requirements and test methods - Part 10: Arm balancing systems

Quincaillerie pour le bâtiment , ferrures de fenêtres et portes-fenêtres - Exigences et méthodes d'essai - Partie 10 : Compas à projection

Baudeschläge - Beschläge für Fenster und Fenstertüren - Anforderungen und Prüfverfahren - Teil 10: Senkklappflügel-Systeme

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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Contents

Foreword

This document (CEN/TS 13126-10:2004) 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.

1 Scope

This part of CEN/TS 13126 specifies the requirements and test methods for arm balancing systems 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 - Fitting 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 apply.

4 Classification

4.1 General

The classification for arm balancing systems 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)

Three grades of fittings are identified :

— grade 1 : for use on top-hung casements ;

— grade 2 : for use on bottom-hung casements ;

— grade 3 : for use on both top-hung and bottom-hung casements.

4.10 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 4 of CEN/TS 13126-1:2004.

Only one grade is identified.

5 Requirements

5.1 General

The requirements of arm balancing systems shall be met in accordance with clause 5 of CEN/TS 13126-1:2004.

When tested in accordance with 6 fitting shall conform to the following.

5.2 Mechanical strength

On completion of the static and dynamic tests specified in 7 the arm balancing system shall continue to operate. The maximum opening distance, measured between the free edge of the casement and the frame, shall not vary by more than 1 mm.

5.3 Durability

On completion of the durability test specified in 7.2.2 the arm balancing system shall continue to operate. The maximum opening distance, measured between the free edge of the casement and the frame, shall not vary by more them 1 mm.

6 Test apparatus

6.1 General

The arm balancing system shall be mounted in a test apparatus as specified in clause 6 of CEN/TS 13126-1:2004.

The test window shall be installed in a typical test apparatus as shown in Figure A.1 in accordance with the manufacturer's fixing instructions.

A set of weights or other suitable equipment shall be provided for applying measured forces.

The window shall be correctly balanced by accurate positioning of the arms.

Measure and record the opening distance between the free edge of the casement and the frame.

7 Test methods

7.1 Samples

Three samples shall be used for testing to this Technical Specification:

— sample A – performance tests ;

— sample B – corrosion tests ;

— sample C – retained for reference control.

If a specimen fails to meet the appropriate acceptance requirements, two further 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

The tests in 7.2 and 7.3 shall be carried out in succession on the same specimen.

Cycling in test 7.3 shall be at the rate of 250 cycles/h $^{+25}_{0}$ cycles/h, for the number of cycles according to the grade selected.

— grade 3 : 10 000 cycles $^{+500}_{0}$ cycles ;

— grade 4 : 15 000 cycles $^{+750}_{0}$ cycles ;

— grade 5 : 20 000 cycles $^{+1000}_{0}$ cycles.

7.3 Static load test

Open the test leaf to the fully open position.

— Apply a force of 500 N $^{+25}_{0}$ N without shock, in increments of 100 N $^{+5}_{0}$ N to the vertical centre line of the free edge and at the centre of the side rail (see Figure A.1).

Maintain force of 500 N for 60 s ± 10 s.

Measure and record the opening distance.

7.4 Durability test

Cycle the test leaf from the fully closed position to the fully open position or to 45° ± 5° of opening angle, whichever is the less.

Cycle the leaf in accordance with clause 8.2 of CEN/TS 13126-1:2004.

On completion of the test measure and record the opening distance.

7.5 Corrosion resistance

7.5.1 Neutral salt spray test

The fitting shall be mounted in a fixture similar to a window or door height window application and subjected to a neutral salt spray test in accordance with EN 1670 to determine the ability to operate after environmental exposure.

Lubrication is permitted at the commencement of the test, as recommended by the manufacturer in the installation instructions.

The fitting shall be operated once every 24 h during the test.

7.5.2 Repeat durability test

Immediately following the neutral salt spray test the fitting shall be subjected to the durability test specified in 7.4. The fitting shall be operated 20 times and the operating forces shall be measured and recorded during the final three cycles.