
Stavbno okovje, pritrjevalni sistemi za okna in zastekljena vrata – Zahteve in preskusne metode – 6. del: Oporni tečaji z različno geometrijo (s sistemom trenja ali brez njega)

(istoveten CEN/TS 13126-6:2004)

Building hardware, fittings for windows and door height windows - Requirements and test methods - Part 6: Variable geometry stay hinges (with or without a friction system)

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English version

Building hardware, fittings for windows and door height windows
- Requirements and test methods - Part 6: Variable geometry
stay hinges (with or without a friction system)

Quincaillerie pour le bâtiment, Ferrures de fenêtres et
portes-fenêtres - Prescription et méthodes d'essais - Partie
6: Compas à friction à géométrie variable

Baubeschläge, Beschläge für Fenster und Fenstertüren -
Anforderungen und Prüfverfahren - Teil 6: Scheren mit
veränderlicher Geometrie (mit oder ohne Friktionssystem)

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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Foreword

This document (CEN/TS 13126-6:2004) 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 and 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 durability, strength, security and function of mechanically operated variable geometry stay hinges (with or without a friction system).

NOTE 1 Balancing stay arms / hinges do not represent a friction system.

NOTE 2 For the purpose of this standard the friction system is achieved by friction pads or similar.

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

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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

declared minimum test opening.

minimum opening distance measured as the outward movement, from fully closed, to the furthest point of the test rig.

NOTE This depends on the size and maximum mass classification of the variable geometry stay hinge, (with or without friction system). See 7.

3.2

variable geometry stay hinge (with or without a friction system)

hinge which has one or more link arms connecting the frame to the opening casement, the point about which the casement pivots being near the outer end of a link arm. The freedom of movement of the variable geometry stay hinge system is controlled by friction between some or all of its movable components. (*see Figure 1).

NOTE Friction is usually applied either at the pivot points or between a sliding shoe and its track

3.3

pull in

characteristic of the design of variable geometry stay hinges (with or without a friction system), which maintains the non-locking edge of a casement in contact with the window frame or weather stripping when the casement fastener is closed. See Figure 1.

3.4**working stack height**

perpendicular distance between the outer faces of the frame plate and casement plate of a variable geometry stay hinge.

4 Classification**4.1 General**

The classification for variable geometry stay hinges (with or without a friction system) shall be in accordance with the requirements of clause 4 in CEN/TS 13126-1:2004.

In addition to the nine digit classification coding required in clause 9 of CEN/TS 13126-1:2004, all literature, packaging and installation instructions shall state the declared minimum opening distance.

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 application are identified for use according to the following window assemblies

- grade 1 : for use on windows having a horizontal axis of rotation as follows :
 - type C bottom-hung, inward opening or outward opening
 - type D top-hung, inward opening or outward opening
 - type H projecting top-hung, inward or outward opening
 - type J projecting bottom-hung, inward or outward opening

- type U top-hung, inward opening multi-light
- type V bottom-hung, inward opening multi-light
- grade 2 : for use on windows having a vertical axis of rotation as follows :
 - type A side-hung, inward opening
 - type B side-hung, outward opening
- grade 3 : for use on both horizontal and vertical applications

4.10 Test Sizes – Size limitations (ninth digit)

- Six sizes of window are identified for top-hung and bottom-hung casements according to Table 1
- Three sizes are identified for side-hung casements according to Table 2

Table 1 – Test window sizes related to variable geometry stay hinges (with or without a friction system) for top-hung and bottom-hung casements

Casement size	Width of casement mm	Height of casement mm	Size of variable geometry hinge
10	1 200	300	< 250
11	1 200	450	≥251≤350
12	1 200	600	≥ 351 ≤ 450
13	1 200	750	≥ 451≤550
14	1 200	900	≥ 551 ≤ 750
15	1 200	1 200	≥ 750

Table 2 – Test window sizes related to variable geometry stay hinges (with or without a friction system) for side-hung casements

Casement size	Width of casement mm	Height of casement mm	Sizes of variable Geometry hinge
1	600	1 200	< 350
5	750	1 200	>351 < 500
7	900	1 200	>501

5 Requirements

5.1 General

The requirements of variable geometry stay hinges (with or without a friction system) shall be met in accordance with clause 5 of CEN/TS 13126-1:2004.

5.2 Additional requirements

5.2.1 When tested in accordance with clause 6, the fittings shall conform to the following: Pull-in and pull-in abuse

The pull-in shall be sufficient to limit the additional displacement of the datum surfaces under the applied force of 20 N (as specified in 7.1 and 7.3) to a maximum of 0,5 mm.

5.2.2 Friction system (where applicable)

The declared minimum test opening of the variable geometry stay hinges (with or without friction system) shall be stated including their size and maximum mass classification, when tested in accordance with 7.2. If the minimum test opening is not declared the value shall be assumed to be 100 mm.

The friction of variable geometry stay hinges with a friction system shall be sufficient to maintain the open position of the test apparatus, against the applied force in either direction, as specified in Table 3.

NOTE 1 In service an additional friction or other restraining device may be required to prevent unintentional closure of the casement from an angle of opening less than the declared minimum for any selected variable geometry stay hinges (with or without a friction system).

NOTE 2 The friction ability should only be tested for variable geometry stay hinges with a friction system.

Table 3 – Hinge parameters

Declared minimum panel opening Mm	Maximum panel opening Mm	“Friction test at panel opening position” mm
≤ 100	≤ 100	Declared minimum test panel and maximum opening
100	≥100 ≤ 200	100 and maximum opening
100	≥200 ≤ 300	100, 200 and maximum opening
100	≥ 300	100, 200 and 300
200	≥200 ≤ 300	200 and maximum opening
200	≥ 300	200 and 300
300	≥ 300	300

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The friction ability shall be measured at the points detailed in column 3.

5.2.3 Durability

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At the commencement of the test and at each inspection, the maximum additional displacement of either of the two datum surfaces at the free corners of the test rig, under the applied force of 10 N_0^{+1} shall be 1,5 mm.

The friction of the variable geometry stay hinges with a friction system shall be sufficient to maintain the opening of the test rig against an applied force of 20 N. This force is applied at right angles to the plane of the rig at the mid point of the locking rail in either direction and at all openings specified in 7.4.

On completion of each 5 000 cycles all moving parts requiring lubrication, shall be lubricated unless the hardware is claimed to be maintenance free.

5.2.4 Simulated negative pressure

The maximum additional displacement measured between the two datum surfaces at the free corners of the test rig under the applied force of 10 N shall be 1,5 mm after testing in accordance with 7.5.

5.2.5 Statement of declared minimum opening

Where variable geometry stay hinges with a friction system conform to the requirements of this standard, the value of the minimum opening at which the friction level complies with the requirements of 7.2 shall be stated in the descriptive literature.

NOTE The values may vary for different sizes of variable geometry stay hinge with a friction system and/or for different mass classifications. This should be noted in the test report.

6 Test apparatus

6.1 General

The variable geometry stay hinges (with or without a friction system) shall be fitted to a test apparatus as specified in clause 6 of CEN/TS 13126-1:2004, in accordance with the manufacturer's fixing instructions.

6.2 Assembly

6.2.1 General

The variable geometry stay hinges (with or without a friction system) for projecting top-hung casements shall be mounted on a steel test apparatus as illustrated in Figure 2 for variable geometry stay hinges (with or without a friction system) or as illustrated in Figure 3 for variable geometry stay hinges (with or without a friction system) for projecting side-hung casements.

The test apparatus shall be provided with adjustable datum surfaces near the free corners of the edge of the casements, opposite to its detected locking rail, so that wear and loss of pull-in may be detected.

If the manufacturer specifies the maximum height of casement on which the variable geometry stay hinges (with or without a friction system) are to be used then the variable geometry stay hinges (with or without a friction system) shall be tested on the largest panel up to and including that height.

In all other cases variable geometry stay hinges (with or without a friction system) shall be tested on the appropriate panel size as defined in Table 1 and Table 2 according to their overall dimensions.

6.2.2 Test sizes for top-hung casements

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For tests of variable geometry stay hinges (with or without a friction system) for projecting top-hung casements the overall test sizes shall be as listed in Table 3 of CEN/TS 13126-1:2004.

6.2.3 Test sizes for side-hung casements

For tests of variable geometry stay hinges (with or without a friction system) for projecting side-hung casements the overall test sizes shall be as listed in Table 3 of CEN/TS 13126-1:2004.

6.2.4 Mounting blocks

The mounting blocks on the test apparatus shall be of suitable thickness to provide gaps between the casement and outer frame equal to the working stack height of the variable geometry stay hinges

(with or without a friction system) ${}^+1_0$ mm .

The variable geometry stay hinges (with or without a friction system) shall be positioned within the simulated window in accordance with the manufacturer's fixing instructions