



**SLOVENSKI STANDARD**  
**SIST-TS CEN/TS 13126-9:2005**  
**01-januar-2005**

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Building hardware, fittings for windows and door height windows - Requirements and test methods - Part 9: Pivot hinges

Baueschläge - Beschläge für Fenster und Fenstertüren - Anforderungen und Prüfverfahren - Teil 9: Drehlager für Schwing- und Wendefenster

Quincaillerie pour le bâtiment , ferrures de fenetres et portes-fenetres - Exigences et méthodes d'essai - Partie 9 : Pivots

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TECHNICAL SPECIFICATION  
SPÉCIFICATION TECHNIQUE  
TECHNISCHE SPEZIFIKATION

**CEN/TS 13126-9**

April 2004

ICS 91.190

English version

**Building hardware, fittings for windows and door height windows  
- Requirements and test methods - Part 9: Pivot hinges**

Quincaillerie pour le bâtiment, ferrures de fenêtres et  
portes-fenêtres - Exigences et méthodes d'essai - Partie 9 :  
Pivots

Baueschläge - Beschläge für Fenster und Fenstertüren -  
Anforderungen und Prüfverfahren - Teil 9: Drehlager für  
Schwing- und Wendefenster

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 13126-9:2004) 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

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.

**CEN/TS 13126-9:2004 (E)****1 Scope**

This part of CEN/TS 13126 specifies the requirements and test methods for durability, strength, and security of pivot hinges for windows and door height windows. It includes all pivot hinges i.e. self locking, manual locking, non-locking and pivot hinges with or without friction, with one or more rotation axis.

**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 of windows and doors apply.

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**4 Classification**

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**4.1 General**

The classification for pivot hinges 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)

Two grades are identified :

- grade 1 : pivot hinges with a horizontal axis ;
- grade 2 : pivot hinges with a vertical axis.

#### 4.10 Size limitations (ninth digit)

The designated window size in which the component has been tested shall be stated in accordance with the designated number listed in CEN/TS 13126-1:2004 Table 3.

Only one grade is identified :

- grade 1 : window size 1 400 mm x 1 400 mm (designated number 17).

### 5 Requirements

#### 5.1 General

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

#### 5.2 Durability

Three grades of durability are identified :

- grade 3 : 10 000 cycles ;
- grade 4 : 15 000 cycles ;
- grade 5 : 20 000 cycles.

##### 5.2.1 Resistance to static load

After testing in accordance with 7.2 there shall be no permanent deformation sufficient to prevent the normal operation of the pivot hinges or locking device.

##### 5.2.2 Resistance to dynamic load

After testing in accordance with 7.3.1 there shall be no more than 1° deviation from the angle measured before the test.

When tested in accordance with 7.3.2 the force required shall not exceed 100 N.

Following the durability tests in accordance with 7.4.1 and 7.4.2 repeat the static test in 7.2.2 and the dynamic tests in 7.3.1 and 7.3.2.

## CEN/TS 13126-9:2004 (E)

The pivot hinges shall conform to the requirements of 5.2.1 and 5.2.2.

### 6 Test apparatus

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

### 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 Test procedure

The test shall measure the following :

- a) the ability of the pivot hinges having a friction device to remain balanced at an opening angle ;
- b) the ability to control the movement during the opening and closing cycle ;
- c) where applicable, the ability to be retained in each of the respective open positions for ventilation and cleaning ;
- d) where applicable, check for security in each of the open positions ;
- e) measure the force required to operate the test leaf ;
- f) measure the opening angle of friction for pivots with a friction device.

Record all measurements.

When the pivot hinge has no integral locking device, and additional hardware is required to provide ventilation position or safety in the cleaning position, the pivot hinges shall be tested with such supplementary devices in place.

#### 7.3 Static Test

##### 7.3.1 General

These tests shall apply to all pivot hinges.

##### 7.3.2 Static test in ventilation position

Mount the sash in the test apparatus and secure in the ventilation position.



Gradually apply a force of  $500 \text{ N}^{+25}_0$  N without shock, in increments of  $100 \text{ N}^{+5}_0$  N, vertically at the centre of the top transom (top rail) for horizontally pivoted sashes or at the centre of the handle-side mullion of the testing frame for vertically pivoted sashes.

Maintain the force of  $500 \text{ N}$  for  $60 \text{ s}^{+10}_0$  s.

The restricting device shall limit the maximum opening at the sill to 100 mm before release.

NOTE If the pivot does not include a pre-set ventilation position the test sash should be clamped at its bottom edge before applying the force.

### 7.3.3 Static test in the reversed position.

Engage the test sash in the cleaning position.

Gradually apply a force of  $500 \text{ N}^{+25}_0$  N, without shock, in increments of  $100 \text{ N}^{+5}_0$  N vertically at the centre of the top transom (top rail) for horizontally pivoted sashes or at the centre of the handle-side mullion of the testing frame for vertically pivoted sashes.

Maintain force of  $500 \text{ N}^{+25}_0$  N for  $60 \text{ s}^{+10}_0$  s.

## 7.4 Balance and braking tests

### 7.4.1 Balance test

Open the test leaf to an angle of  $5^\circ \pm 0,5^\circ$  without pivot play, and leave for  $5 \text{ min}^{+30}_0$  s.

Remeasure and record the angle.

Set test leaf to an angle of  $20^\circ \pm 0,5^\circ$  without pivot play.

Measure and record the value of the set angle again after  $5 \text{ min}^{+30}_0$  s.

Repeat after  $60 \text{ mins}^{+1}_0$  min.

### 7.4.2 Braking test

Measure and record the force necessary to manoeuvre the test leaf at the operating handle position for both opening and closing movements.

## 7.5 Durability test

### 7.5.1 Durability test of normal opening

Operate the test leaf from closed to an opening angle of  $45^\circ^{+5}_0$  at a rate of  $250 \text{ cycles/h}^{+0}_{-25}$  cycles/h.

Three grades of durability are identified :