



# SLOVENSKI STANDARD

## SIST-TS CEN/TS 13126-8:2005

01-januar-2005

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**Stavbno okovje, pritrjevalni sistemi za okna in zastekljena vrata – Zahteve in preskusne metode – 8. del: Nagibno-vrtljivo, vrtljivo-nagibno ter vrtljivo okovje**

Building hardware, fittings for windows and door height windows - Requirements and test procedures - Part 8: Tilt and turn, Tilt-First and Turn-Only hardware

Baubeschläge - Beschläge für Fenster und Fenstertüren - Anforderungen und Prüfverfahren - Teil 8: Drehkipp-, Kippdreh- und Dreh-Beschläge

Quincaillerie pour le bâtiment , ferrures de fenetres et portes-fenetres - Exigences et méthodes d'essais - Partie 8 : Ferrures d'oscillo-battant, de battant-oscillant et d'ouvrant pivotant

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**Ta slovenski standard je istoveten z: CEN/TS 13126-8:2004**

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TECHNICAL SPECIFICATION  
SPÉCIFICATION TECHNIQUE  
TECHNISCHE SPEZIFIKATION

**CEN/TS 13126-8**

April 2004

ICS 91.190

English version

**Building hardware, fittings for windows and door height windows  
- Requirements and test procedures - Part 8: Tilt & turn, Tilt-First  
and Turn-Only hardware**

Quincaillerie pour le bâtiment, ferrures de fenêtres et  
portes-fenêtres - Exigences et méthodes d'essais - Partie 8  
: Ferrures d'oscillo-battant, de battant-oscillant et d'ouvrant  
pivotant

Baubeschläge - Beschläge für Fenster und Fenstertüren -  
Anforderungen und Prüfverfahren - Teil 8: Drehkipp-,  
Kippdreh- und Dreh-Beschläge

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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CEN/TS 13126-8:2004 (E)

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## Foreword

This document (CEN/TS 13126-8:2004) 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.

**CEN/TS 13126-8:2004 (E)****1 Scope**

This Part of CEN/TS 13126 specifies the requirements and test procedures for durability, strength, security and function of Tilt & Turn, Tilt-First and Turn-Only hardware for windows and balcony doors in accordance with the diagrams A, B and E annex A, CEN/TS 13126-1.

By means of this standard, the user of recognised tested hardware can presume, that with correct usage, the Tilt & Turn, Tilt-First or Turn-Only hardware complete mechanism for windows and balcony-doors has met the prescribed requirements.

In order to maintain the guaranteed characteristics during the utilization period, it is indispensable to comply with the manufacturers product information as well as the manufacturers maintenance & service instructions in a manner that can be proven.

**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.*

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**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 to windows and balcony-doors made of wood, PVC-U, aluminium or steel and their appropriate material combinations.

**3.1****Tilt & Turn hardware**

Tilt & Turn hardware opens and locks windows and balcony-doors. Tilt & Turn hardware is used to enable windows and balcony-doors initially into the turning position (sidehung), and then into the tilting position by operating the handle. Tilt & Turn hardware in the sense of this standard is a one-hand-operation hardware for windows and balcony-doors for structural engineering, meeting the application range requirements stated in table 1. Other Tilt & Turn hardware designs, in particular those with an increased application range are not affected by these standard.

**3.2****Tilt-First Hardware**

Tilt-First Hardware is used to enable windows and balcony-doors initially into the tilting position, and then into the turning position (sidehung) by operating the handle. The definition of terms, range of application as well as other demands made on Tilt & Turn hardware are also to be applied to Tilt-First hardware.

**3.3****Turn-Only hardware**

Turn-Only hardware is used to enable windows and balcony-doors into a turning position (sidehung) by operating the handle. The definition of terms, range of application as well as other demands made on Tilt & Turn hardware are also to be applied to Turn-Only hardware complete mechanism.

## 4 Classification

### 4.1 General

The classification for Tilt & Turn, Tilt-First or Turn-Only hardware is to 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)

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

- grade 4 : 15 000 cycles (Tilt & Turn and Tilt-First hardware)
- grade 5 : 25 000 cycles (Turn-Only hardware)

### 4.4 Mass (third digit)

The following grades are established in accordance with 4.4 of CEN/TS 13126-1:2004.  
060, 070, 080, 090, 100, 110, 120, 130, 140, 150, 160, 170, 180, 190, 200

### 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)

3 types are established in accordance with 4.9 of CEN/TS 13126-1:2004.

- type A: Side-hung window inward opening
- type B: Side-hung window outward opening
- type E: Tilt & Turn window and Tilt-First window

### 4.10 Test sizes (ninth digit)

The designated window or balcony door test-sizes, in which the hardware has been tested shall be stated with reference to the designated numbers listed in Table 4 in CEN/TS 13126-1:2004. All sizes are stated in mm, S.R.W. = Sash Rebate Width, S.R.H. = Sash Rebate Height.

- grade 1 (designated number 16): 1 300 mm wide x 1 200 mm high (window mass ≤130 kg)
- grade 2 (designated number 23): 1 550 mm wide x 1 400 mm high (window mass >130 kg)
- grade 3 (designated number 8): 900 mm wide x 2 300 mm high (balcony door size)

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The stated sizes are test sizes only. These do not relate to the maximum sizes that a window may be constructed to.

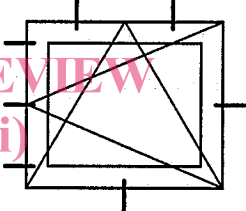
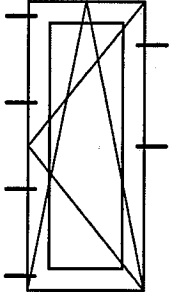
Regarding larger than recommended test-specimen sizes, the hardware-manufacturer ensures with appropriate documentation, that the forces on the hardware do not exceed the test specimen forces.

## 5 Requirements

### 5.1 General

The requirements for Tilt & Turn, Tilt-First or Turn-Only hardware shall be in accordance with clause 5 of CEN/TS 13126-1:2004.

**Table 1 – Dimensions of test apparatus and minimum number of locking points.**

Dimensions. S.R.W. X S.R.H. in mm*	Minimum number of locking points.	Diagram showing locking point positions
1 300 x 1 200 1 550 x 1 400	7	
900 x 2 300	6	

5.2 \* S.R.W. = Sash Rebate Width, S.R.H. = Sash Rebate Height.

In the case of a manufacturer choosing the option of less locking-points, the test is carried out noting the amount of locking-points in the test report.

### 5.3 Mechanical stability

#### 5.3.1 Stability of the scissor stay hardware

The scissors stay hardware must ensure that a sash, when operated incorrectly (mishandled), is securely held.



In this case (of mishandling), the hinge hardware (scissor stay with stay bearing and corner pivot rest with sash hinge) must still demonstrate a connection between the sash and the frame and afterwards function in its intended manner.

If the scissors stay hardware does not fulfill this demand, a mishandling-device must be installed. In this case the test takes place according to clause 7 with an installed mishandling-device.

### 5.3.2 Stability of hinge hardware

Hinge hardware which is understood to be scissor stay with stay bearing and corner pivot rest with sash hinge, must guide the sash securely during every operating position.

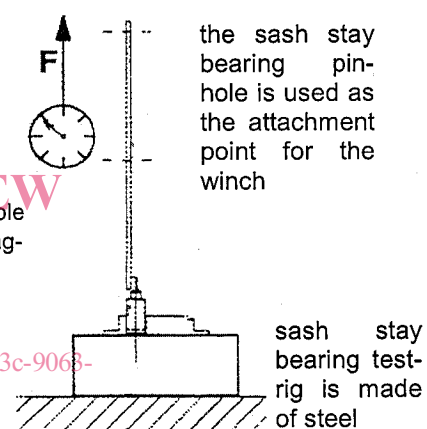
Such hinge hardware undergo supplementary static load tests, as described in the following table, which correspond to a 5-fold load value of the frame hinges under test procedures stated under clause 7 (refer to load value "F" from the following tables). The test comprise of testing 20 individual hardware components of each type of hinge hardware.

According to point 5.5 CEN/TS 13126-1:2004

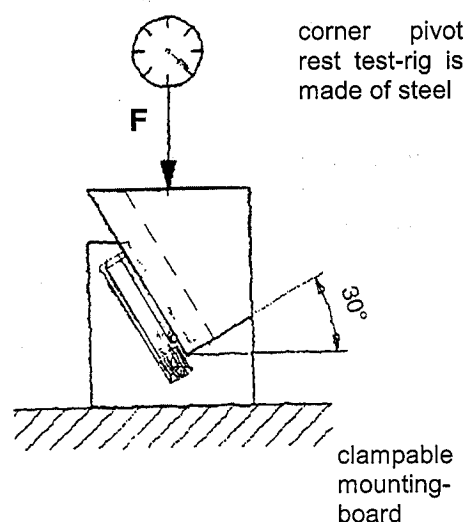
Static test for scissor stay with stay bearing

90° load-direction in opening

for test size 1 300 x 1 200 mm			for test size 1 550 x 1 400mm		
Grade	Sash mass kg	Tractive power F N	Grade	Sash mass kg	Tractive power F N
060	60	1650	140	140	3900
070	70	1900	150	150	4200
080	80	2200	160	160	4400
090	90	2450	170	170	4700
100	100	2700	180	180	5000
110	110	3000	190	190	5300
120	120	3250	200	200	5500
130	130	3500			



for test size 900 x 2 300 mm					
Grade	Sash mass kg	Tractive power F N	Grade	Sash mass kg	Tractive power F N
060	60	600	140	140	1350
070	70	700	150	150	1450
080	80	800	160	160	1550
090	90	900	170	170	1650
100	100	1000	180	180	1750
110	110	1100	190	190	1850
120	120	1150	200	200	1950
130	130	1250			



According to point 5.5 CEN/TS 13126-1:2004

Static test for corner pivot rest with sash hinge

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for test size 1 300 x 1 200 mm			for test size 1 550 x 1 400mm		
Grade	Sash mass kg	Tractive power F N	Grade	Sash mass kg	Tractive power F N
060	60	3400	140	140	8000
070	70	4000	150	150	8550
080	80	4550	160	160	9150
090	90	5100	170	170	9700
100	100	5700	180	180	10300
110	110	6250	190	190	10850
120	120	6800	200	200	11450
130	130	7400			

for test size 900 x 2 300 mm					
Grade	Sash mass kg	Tractive power F N	Grade	Sash mass kg	Tractive power F N
060	60	3050	140	140	7150
070	70	3550	150	150	7650
080	80	4000	160	160	8150
090	90	4600	170	170	8650
100	100	5100	180	180	9150
110	110	5600	190	190	9700
120	120	6100	200	200	10200
130	130	6600			

## 5.4 Durability

Two grades are established:

- grade 4 : 15 000 cycles (Tilt & Turn and Tilt-First hardware)
- grade 5 : 25 000 cycles (Turn-Only hardware)

## 5.5 Admissible tolerances

### 5.5.1 Sash Operation tolerance

The horizontal force in the vicinity of the sash support-component may not exceed 120 N in order to close the sash from the turn-position.

### 5.5.2 Handle Operation tolerance

In conjunction with a counteracting force of  $20 \begin{smallmatrix} +1 \\ 0 \end{smallmatrix}$  N per locking point:

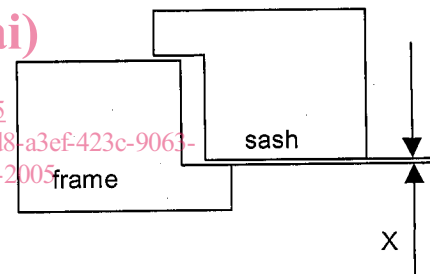
- the maximum torque applied to the handle shall not exceed 10 Nm
- the maximum force applied to the handle shall not exceed 100 N.

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### 5.5.3 Locking point deterioration tolerance

Before and after the durability test, the distance "X" between the frame surface and the sash-overlap-begin shall be measured in conjunction with a counteracting force of  $20 \begin{smallmatrix} +1 \\ 0 \end{smallmatrix}$  N per locking point.

The results shall not differ by more than 1 mm.



## 5.6 Resistance to additional loading

During and after the additional loading test, the sash shall remain in its hinge hardware, but shall not be required to operate.

## 5.7 Minimum gear resistance

The gear must withstand a minimum of 25 Nm. Upon completion of this exerted torque, the gear will perform.

## 5.8 Corrosion resistance

Two grades are identified according to EN 1670

- grade 3: high resistance (class 3)
- grade 4: very high resistance (class 4)

For Zinc galvanised surfaces on iron or steel the specified thickness of 12  $\mu\text{m}$  (class 3) is not necessary if other surface protection methods are used to comply with the requirements of ISO 4520.