



SLOVENSKI STANDARD
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Stavbno okovje - Okovje za okna in zastekljena vrata - Zahteve in preskusne metode - 3. del: Ročaji, namenjeni predvsem za vrtljivo-nagibno, nagibno-vrtljivo in vrtljivo okovje

Building hardware - Hardware for windows and door-height windows - Requirements and test methods - Part 3: Handles, primarily for Tilt and Turn, Tilt-First and Turn-Only hardware

Baubeschläge - Beschläge für Fenster- und Fenstertüren - Anforderungen und Prüfverfahren - Teil 3: Betätigungsgriffe, insbesondere für Drehkipp-, Kippdreh- und Drehbeschläge

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Building hardware - Hardware for windows and door-height windows - Requirements and test methods - Part 3: Handles, primarily for Tilt and Turn, Tilt-First and Turn-Only hardware

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This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 33.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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Foreword

This document (prEN 13126-3:2010) 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.

This document is currently submitted to the CEN Enquiry.

This document will supersede CEN/TS 13126-3:2004.

A full contribution to the preparation of this European Standard has been made by the European manufacturers’ organization ‘ARGE’ and national standards bodies.

This European Standard is one of a series of European Standards for building hardware products. It is divided into several parts incorporating all types of hardware for windows and balcony doors.

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.

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1 Scope

This part of EN 13126 specifies the requirements and test procedures for durability, strength, security and functionality of handles.

This European Standard is applicable to Tilt&Turn, Tilt-First and Turn-Only hardware for use on windows and door-height windows.

Handles may also be used on other opening types, e.g. on In-line Sliding, Tilt&Slide, Fold&Slide, horizontal and vertical-pivoting windows.

This European Standard is not applicable to the following hardware:

- a) Operation devices and door handles for door latches and door locks; → refer to EN 1906
- b) Handles with handle length > 170 mm (refer to figure B.1)
- c) Electromechanical hardware.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 1670, *Building hardware – Corrosion resistance – Requirements and test methods.*

EN 13126-1, *Building hardware for windows and door height windows – Requirements and test methods – Part 1: Requirements common to all types of hardware.*

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EN 13126-8, *Building hardware for windows and door height windows – Requirements and test methods – Part 8: Tilt&Turn, Tilt-First and Turn-Only hardware.*

EN ISO/IEC 17025 *General requirements for the competence of testing and calibration laboratories*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 13126-1 and EN 13126-8 and the following apply.

3.1**handle**

operating device with or without click mechanism, and where applicable with locking mechanism, with which the window hardware can be mechanically operated

3.2**window handle**

operating mechanism with which the window hardware can be mechanically operated and a spindle that serves as the connecting element

3.3**geared-handle**

operating mechanism with which the window hardware can be mechanically operated and a connector or fork that serves as the connecting element

3.4**click mechanism**

assembly of components to position the handle in the defined click positions that correspond with the Tilt&Turn hardware's operation positions

3.5**non-key-operated locking mechanism**

assembly of components that facilitate the handle's locked position

Example Some examples of non-key-operated locking mechanisms are push-to-open, button and thumb turn.

3.6**locking mechanism**

key-operated assembly of locking elements to achieve the handle's locked/opened status

Example An example of a locking mechanism is a locking cylinder.

3.7**operating torque** **M**

required torque to rotate a handle without click mechanism

3.8**click-out torque** **M_a**

required torque to rotate a handle out of a click position

3.9**between-clicks torque** M_0

required torque to rotate a handle between the click positions

3.10**differential value** M_d

difference between the minimum 'click-out torque' and the maximum 'between-clicks torque'

$$M_d = M_{a \text{ min}} - M_{0 \text{ max}}$$

3.11**rosette**

<for windows> screw-fixed base body located on the window profile that serves as a rotatable window handle mounting

3.12**spindle**

connecting element to transfer the torque from the window handle to the rotatable part of the window espagnolette

NOTE Square spindles are very common, but other shaped spindles are also permissible.

3.13**connector / fork**

connecting element to transfer the torque from the geared handle to the slideable part of the window espagnolette

NOTE Otherwise known as engaging piece, tongue or slider.

4 Classification**4.1 General**

The classification for handles, primarily for Tilt&Turn, Tilt-First and Turn-Only hardware shall be in accordance with the requirements of EN 13126-1.

4.2 Category of use (first digit)

The handle shall be graded 1 or 2 in accordance with Table 3

4.3 Durability (second digit)

Grades shall be in accordance with EN 13126-1 and shall receive an extension for the designated operational cycle. "90" for the Turn-Only cycle and "180" for the Tilt&Turn cycle in accordance with the following requirements:

— Grade 3/90	10.000 Turn-Only cycles
— Grade 4/90	15.000 Turn-Only cycles
— Grade 5/90	25.000 Turn-Only cycles
— Grade 3/180	10.000 Tilt&Turn cycles
— Grade 4/180	15.000 Tilt&Turn cycles

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— Grade 5/180 25.000 Tilt&Turn cycles

4.4 Mass (third digit)

No requirement

4.5 Fire resistance (fourth digit)

Grades shall be in accordance with EN 13126-1.

4.6 Safety in use (fifth digit)

Grades shall be in accordance with EN 13126-1.

4.7 Corrosion resistance (sixth digit)

Grades shall be in accordance with EN 13126-1.

4.8 Security (seventh digit)

The grade and extension shall be attributed in accordance with the following requirements.

- Grade 0: Without security
- Grade 1: 35 Nm resistance against twisting-off and forcing-off
- Grade 2: 100 Nm resistance against twisting-off and forcing-off
- Grade 3: 200 Nm resistance against twisting-off and forcing-off
- Extension 0: No locking mechanism
- Extension 1: Non-key-operated-locking mechanism ('PTO': push-to-open)
- Extension 2: Key-operated locking mechanism with ≤ 99 locking variations
- Extension 3: Key-operated locking mechanism with ≥ 100 locking variations

NOTE Table 1 shows all the permutations of the three elements of the seventh digit

Table 1 - Security

Grade	Description
0/0	Without security / without locking mechanism
1/1	35 Nm resistance against twisting-off and forcing-off / Non-key-operated locking mechanism ('PTO': push-to-open)
1/2	35 Nm resistance against twisting-off and forcing-off / Key-operated locking mechanism with ≤ 99 locking variations
1/3	35 Nm resistance against twisting-off and forcing-off / Key-operated locking mechanism with minimum 100 locking variations
2/1	100 Nm resistance against twisting-off and forcing-off / Non-key-operated locking mechanism ('PTO': push-to-open)

2/2	100 Nm resistance against twisting-off and forcing-off / Key-operated locking mechanism with ≤ 99 locking variations
2/3	100 Nm resistance against twisting-off and forcing-off / Key-operated locking mechanism with minimum 100 locking variations
3/1	200 Nm resistance against twisting-off and forcing-off / Non-key-operated locking mechanism ('PTO': push-to-open)
3/2	200 Nm resistance against twisting-off and forcing-off / Key-operated locking mechanism with ≤ 99 locking variations
3/3	200 Nm resistance against twisting-off and forcing-off / Key-operated locking mechanism with minimum 100 locking variations

4.9 Application (eighth digit)

The following grades / applications / types are identified and the hardware shall be attributed one of each.

- Applicable part of this European standard: Grade 3
- Application N: Non clickable
- Application C: Clickable
- Type 1: Window handle
- Type 2: Geared-handle

NOTE Table 2 shows all the permutations of the three elements of the eighth digit.

Table 2 - Application

Grade	Description
3/N1	Part 3 / Non clickable / Window handle
3/N2	Part 3 / Non clickable / Geared-handle
3/C1	Part 3 / Clickable / Window handle
3/C2	Part 3 / Clickable / Geared-handle

4.10 Test Sizes – Size limitations (ninth digit)

No requirement

4.11 Example of classification in accordance with 4.1 to 4.10 (informative)

1	2	3	4	5	6	7	8	9
2	4/180	-	0	1	2	2/2	3/C1	-

This denotes handles that have the following criteria:

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Digit 1	Category of use	Grade 2
Digit 2	Durability	Grade 4/180 (15 000 Tilt&Turn cycles)
Digit 3	Mass	– No requirement
Digit 4	Fire resistance	Grade 0 (no requirement)
Digit 5	Safety in use	Grade 1
Digit 6	Corrosion resistance	Grade 2
Digit 7	Security	Grade 2/2 (100 Nm resistance against twisting-off and forcing off / Key-operated locking mechanism with ≤ 99 locking variations)
Digit 8	Applicable part	Grade 3/C1 (clickable window handle)
Digit 9	Test size	– No requirement

5 Requirements

5.1 General

The requirements on handles for Tilt&Turn, Tilt-First and Turn-Only hardware shall be in accordance with EN 13126-1.

5.2 Category of use requirements

5.2.1 General

Table 3 contains the main test parameters for the category of use.

Table 3 - Main test parameters

Clause	Figure	Requirement	Symbol	Grade 1	Grade 2
5.2.2 7.3 7.5	-	Operating torques and click torques			
		Handles without click mechanism	Application	N	N
		Operating torque (before and after durability test)	M	≤ 1,4 Nm	≤ 0,8 Nm
5.2.2 7.3 7.5	-	Handles with click mechanism	Application	C	C
		Between-clicks torque (before and after durability test)	M_o	≤ 1,4 Nm	≤ 0,8 Nm
		Click-out torque (before and after durability test)	M_a	≤ 6,0 Nm	≤ 4,0 Nm
		Differential value (before and after durability test)	M_d	≥ 0,4 Nm	≥ 0,8 Nm
5.3 7.4	B.2 + B.3	Durability test			
		Grade 3: 10.000 cycles (in compliance with EN13126-1)			
		Grade 4: 15.000 cycles (in compliance with EN13126-1)			
		Grade 5: 25.000 cycles (in compliance with EN13126-1)			
5.4 7.6	B.4	Fixed spindle connection			
		Window handles with spindle (after durability test)	F	≥ 100 N	≥ 100 N
5.5 7.7.1	B.5	Free play (after durability test)			
		$F = 7,5 \text{ N} / 100 \text{ mm}$			

7.7.2		Handles with and without click mechanism	Application	N and C	N and C
		Perpendicular to the mounting plane	Δ_{PE}	≤ 6 mm	≤ 4 mm
		Handles with click mechanism	Application	C	C
		Parallel to the mounting plane in the click positions	Δ_{PA}	≤ 6 mm	≤ 4 mm
5.6 7.8	B.6 + B.7	Torsional strength			
		Initial load = 50N / F = 200 N / 85 mm / 30 s			
		Admissible deformation	Δ	≤ 5 mm	≤ 2 mm
5.7 7.9	B.8	Tensile strength - eccentric			
		50 mm / 30 s		600 N	1200 N
		No fracture during the hold time			
5.9 7.10	-	Corrosion resistance			
		Salt spray test (in compliance with EN1670)		\geq Grade 2	\geq Grade 2

5.2.2 Operating torques, between-clicks torques, click torques and differential values

On handles without click mechanisms (Application N), the operating torque M shall have a maximum value of 1,4 Nm in Grade 1 and 0,8 Nm in Grade 2, both before and after the durability test.

On handles with click mechanisms (Application C), the between-clicks torque M_0 shall have a maximum value of 1,4 Nm in Grade 1 and 0,8 Nm in Grade 2, both before and after the durability test.

On handles with click mechanisms (Application C), the click-out torque M_a shall have a maximum value of 6,0 Nm in Grade 1 and 4,0 Nm in Grade 2, both before and after the durability test.

On handles with click mechanisms (Application C), the differential value M_d shall have a minimum value of 0,4 Nm in Grade 1 and 0,8 Nm in Grade 2 before and after the durability test.

5.3 Durability

The following three grades are identified in accordance with 5.3 of this European standard and EN 13126-1, extended with the distinguishing mark "90" and "180"

— Grade 3/90: $10.000 \begin{smallmatrix} +100 \\ 0 \end{smallmatrix}$ Turn-Only cycles

— Grade 4/90: $15.000 \begin{smallmatrix} +150 \\ 0 \end{smallmatrix}$ Turn-Only cycles

— Grade 5/90: $25.000 \begin{smallmatrix} +250 \\ 0 \end{smallmatrix}$ Turn-Only cycles

— Grade 3/180: $10.000 \begin{smallmatrix} +100 \\ 0 \end{smallmatrix}$ Tilt&Turn cycles

— Grade 4/180: $15.000 \begin{smallmatrix} +150 \\ 0 \end{smallmatrix}$ Tilt&Turn cycles

— Grade 5/180: $25.000 \begin{smallmatrix} +250 \\ 0 \end{smallmatrix}$ Tilt&Turn cycles