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Building hardware - Hardware for windows and door height windows - Part 8: Requirements and test methods for Tilt and Turn, Tilt-First and Turn-Only hardware

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

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

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EUROPEAN STANDARD
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**Building hardware - Hardware for windows and door
height windows - Part 8: Requirements and test methods
for Tilt and Turn, Tilt-First and Turn-Only hardware**

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

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

This European Standard was approved by CEN on 16 July 2017.

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. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

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COMITÉ EUROPÉEN DE NORMALISATION
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EN 13126-8:2017 (E)

European foreword

This document (EN 13126-8:2017) 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 European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by May 2018, and conflicting national standards shall be withdrawn at the latest by May 2018.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 13126-8:2006.

With regard to EN 13126-8:2006, the following significant changes were made:

- EN 13126-8 now is independent from EN 13126-1; all the necessary information is included without the need of any further information from EN 13126-1;
- several editorial changes in the wording for a better understanding;
- new terms and definitions added under 3.4 - 3.12;
- under 4.1 classification system changed completely; former digits 1 (Category of use), 4 (Fire resistance), 5 (Safety in use), 7 (Security) and 8 (Applicable part) deleted; former digit 2 changed into box 1 (Durability), former digit 3 changed into box 2 (Mass), former digit 6 changed into box 3 (Corrosion resistance) and former digit 9 changed into box 4 (Test sizes);
- under 4.2 new grades for the number of cycles defined; H1 (5 000), H2 (10 000) and H3 (20 000) with the same number of cycles for the tilt and the turn cycles; refer also to 5.3;
- under 4.5 new optional test size (1 400 mm × 1 550 mm) defined for hardware for max. sash mass > 130 kg (option 2);
- under 4.6 new example of classification for Tilt and Turn hardware added in accordance with the new classification system; 2 alternative ways (table or alphanumerical) to show the classification defined;
- former Table 1 “Test sizes and minimum number of locking points” deleted;
- under 5.2.2 new values for the tractive and the compressive force added for the new test size 1 400 mm × 1 550 mm; also a formula added to calculate values not stated into the tables;
- under 5.4.1 the requirement for the horizontal force in the vicinity of the sash support-component in order to close the sash from the turn-position changed from former 120 N to 100 N;
- under Clause 6 “Test equipment and preparation for the test” additional information added for the test rig (6.1), the specimen (6.2), the mounting of the specimen (6.3), the profile and material of specimen (6.4);
- under 7.3 “General” additional information added for the testing procedure;
- under 7.4 “Adjusting the sash-mass” information added, mainly from the current version of part 1;

- under 7.6 “Durability test” new procedure defined for the test analogue the test procedure described in EN 1191:2012; former movement into the 100 mm turn position deleted completely; same number of cycles for the tilt cycles and the turn cycles.

This European Standard is one of a series of European Standards for building hardware products for windows and door height windows. This European Standard is independent of EN 13126-1.

EN 13126 consists of the following parts:

- *Building hardware — Hardware for windows and door height windows — Requirements and test methods — Part 1: Requirements common to all types of hardware;*
- *Building hardware — Requirements and test methods for windows and doors height windows — Part 2: Window fastener handles;*
- *Building hardware — Hardware for windows and door-height windows — Requirements and test methods — Part 3: Handles, primarily for Tilt&Turn, Tilt-First and Turn-Only hardware;*
- *Building hardware — Requirements and test methods for windows and doors height windows — Part 4: Espagnolettes;*
- *Building hardware — Hardware for windows and door height windows — Requirements and test methods — Part 5: Devices that restrict the opening of windows and door height windows;*
- *Building hardware — Requirements and test methods for windows and doors height windows — Part 6: Variable geometry stay hinges (with or without a friction stay);*
- *Building hardware — Requirements and test methods for windows and door height windows — Part 7: Finger catches;* <https://standards.iteh.ai/catalog/standards/sist/6089e5d4-8c6f-4176-b16c-1a317e8d06df/sist-en-13126-8-2018>
- *Building hardware — Hardware for windows and door height windows — Part 8: Requirements and test methods for Tilt and Turn, Tilt-First and Turn-Only hardware;*
- *Building hardware — Requirements and test methods for windows and door height windows — Part 9: Hardware for horizontal and vertical pivot windows;*
- *Building hardware — Requirements and test methods for windows and doors height windows — Part 10: Arm-balancing systems;*
- *Building hardware — Requirements and test methods for windows and doors height windows — Part 11: Top hung projecting reversible hardware;*
- *Building hardware — Requirements and test methods for windows and doors height windows — Part 12: Side hung projecting reversible hardware;*
- *Building hardware — Hardware for windows and balcony doors — Requirements and test methods — Part 13: Sash balances;*
- *Building hardware — Hardware for windows and balcony doors — Requirements and test methods — Part 14: Sash fasteners;*
- *Building hardware — Requirements and test methods for windows and doors height windows — Part 15: Rollers for horizontal sliding and sliding folding windows and doors;*

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- *Building hardware — Requirements and test methods for windows and doors height windows — Part 16: Hardware for Lift&Slide windows and doors;*
- *Building hardware — Requirements and test methods for windows and doors height windows — Part 17: Hardware for Tilt&Slide windows and doors;*
- *Building hardware — Requirements and test methods for windows and door height windows — Part 19: Sliding Closing Devices.*

The performance tests incorporated in this European 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.

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

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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1 Scope

This European Standard specifies the requirements and test procedures for durability, strength, security and function of Tilt and Turn, Tilt-First and Turn-Only hardware components or sets for windows and door height windows in accordance with common application as shown in informative Annex C.

NOTE To maintain the guaranteed characteristics during the utilization period, the manufacturers' product information and the manufacturers' maintenance and service instructions will be complied with in a manner that can be proven.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

NOTE The following terms and definitions apply to windows and door height windows made of wood, PVC-U, aluminium or steel and their appropriate material combinations.

3.1

Tilt and Turn

operating mode where the hardware is used to enable windows and door height windows initially into the turning position (side-hung), and then into the tilting position by operating the handle

Note 1 to entry: Tilt and Turn hardware in the sense of this European Standard is a one-hand-operation hardware for windows and door height windows for structural engineering.

3.2

Tilt-First

operating mode where the hardware is used to enable windows and door height windows initially into the tilting position, and then into the turning position (side-hung) by operating the handle

Note 1 to entry: Tilt-First hardware in the sense of this European Standard is a one-hand-operation hardware for windows and door height windows for structural engineering.

3.3

Turn-Only

operating mode where the hardware is used to enable windows and door height windows into a turning position (side-hung) by operating the handle

Note 1 to entry: Turn-Only hardware in the sense of this European Standard is a one-hand-operation hardware for windows and door height windows for structural engineering.

3.4

sample

actual hardware components which are due to be tested

3.5

specimen

window to accommodate hardware components (samples) for testing

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3.6**test rig**

testing device onto which the specimen is mounted

3.7**test equipment**

series of various testing rigs, devices and machinery enabling testing to be carried out

3.8**supporting sub frame**

supplementary fixing frame surrounding the specimen enabling it to be mounted on the test rig while testing

Note 1 to entry: Steel, aluminium or wood could be used.

3.9**fastened closed position**

position in which the sashes espagnolette-side rest up against the frame and the hardware is locked

3.10**closed position**

position in which the sashes espagnolette-side rest up against the frame, and the hardware is unlocked

3.11**positive control**

sash operation via the hardware that enables the sash to be manoeuvred from the closed position into the tilted position, and from the tilted position into the closed position

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3.12**rest time**

time in seconds of a stationary period between the different steps

Note 1 to entry: A stationary period is between the following steps:

- between a change of direction of the moving of the sash;
- between the completion of a moving of the sash and the subsequent operating of the hardware;
- between the completion of the operation of the hardware and the subsequent moving of the sash;
- between two cycles

4 Classification

4.1 General

Tilt and Turn, Tilt-First and Turn-Only hardware for windows and door height windows shall be classified in accordance with the four box coding system (see Table 1).

Table 1 — Classification system of hardware

Box	1	2	3	4
	Durability	Mass	Corrosion resistance	Test sizes

4.2 Durability (1 – first box)

The first box shall display the grade applied to the durability test in accordance with 5.3:

- grade H1: 5 000;
- grade H2: 10 000;
- grade H3: 20 000.

4.3 Mass (2 – second box)

The second box shall display the maximum tested sash-mass (weight).

The mass range starts from 10 kg and varies in steps of 5 kg up to 50 kg. After that the mass varies unlimited in steps of 10 kg. An unlimited number of grades are identified, whereby 010 is the lowest.

Table 2 — Tested sash-mass

Grade	010	015	020	025	030	035	040	045	050	060	070	080	...
Mass (kg)	10	15	20	25	30	35	40	45	50	60	70	80	...

The mass of the test sash shall be determined in accordance with the claims made by the hardware manufacturer.

4.4 Corrosion resistance (3 – third box)

The third box shall display the grade regarding corrosion resistance in accordance with 5.7.

4.5 Test sizes (4 – fourth box)

The fourth box shall display the test sizes which were used for testing the Tilt and Turn, Tilt-First and Turn-Only hardware components or sets.

All sizes are stated in mm, $SRW \times SRH$ (SRW = Sash Rebate Width, SRH = Sash Rebate Height) with a tolerance of ± 10 mm.

- 1 300 mm \times 1 200 mm (applicable only for hardware for max. sash mass ≤ 130 kg);
- 1 550 mm \times 1 400 mm (option 1 – applicable only for hardware for max. sash mass > 130 kg);
- 1 400 mm \times 1 550 mm (option 2 – applicable only for hardware for max. sash mass > 130 kg);
- 900 mm \times 2 300 mm (applicable for all hardware regardless of the sash mass).

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The stated sizes are test sizes only. They do not relate to the maximum sizes to which a window may be fabricated with the tested hardware.

The manufacturer shall ensure, in accordance with the appropriate product documentation, that with the application of the tested hardware in window sizes deviating from the test sizes, the forces on the hardware do not exceed those during the durability test.

4.6 Example of classification for Tilt and Turn hardware

a) Alternative 1: Table with boxes:

	1	2	3	4
EN 13126-8:2017	H2	080	3	1 300 × 1 200

In accordance with Clause 8 the information regarding the classification by using a table with boxes shall always be shown together with the number of this standard, EN 13126-8.

b) Alternative 2: Alphanumerical:

EN 13126-8:2017 H2-080-3-1 300 × 1 200

This denotes Tilt and Turn hardware, which have:

- box 1 durability grade H2 (10 000 cycles)
- box 2 mass 80 kg
- box 3 corrosion resistance grade 3
- box 4 test sizes $SRW = 1\,300\text{ mm}$, $SRH = 1\,200\text{ mm}$

5 Requirements**5.1 Dangerous substances**

Materials in products should not release any dangerous substances in excess of the maximum levels specified in the European material standards and any national regulations.

5.2 Mechanical stability**5.2.1 Stability of the scissor stay**

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

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

If the scissors stay does not fulfil this requirement, a mishandling device shall be installed. In this case the test takes place in accordance with Clause 7 with an installed mishandling device.

5.2.2 Mechanical strength of hinges

Hinges which have a scissor stay with a stay bearing and corner pivot rest with sash hinge shall guide the sash securely during every operating position.

Such hinges (scissor stay arm with stay bearing and corner pivot rest with sash hinge) shall be tested with static load, as described in Figure 1 and Figure 2, which correspond to a fivefold load value of the frame hinges under test procedures specified in Clause 7 (see load value “F” from Table 3 and Table 4). The test consists of testing 20 individual hardware components of each type of hinges (see 7.2).