

Building hardware — Hardware for windows and doors height windows - requirements and test methods — Part 4: Espagnolettes

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European foreword

This document (prEN 13126-4:2020) 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 EN 13126-4:2008.

With regard to EN 13126-4:2008, the following significant changes were made:

- EN 13126-4 now is independent from EN 13126-1; all 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 3.2 - 3.11;
- 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);
- under 4.6 new example of classification added in accordance with the new classification system; 2 alternative ways (table or alphanumerical) to show the classification defined;
- under 5.2 information regarding new grades for durability added
- under 5.6 handle operation tolerance added
- under Clause 6 “Test equipment and preparation for the test” additional information added for the test rig (6.1), the specimen (6.2) and the mounting of the specimen (6.3);
- under 6.2 “Specimen” the use of gaskets added in the description instead of the prior counteracting force of 20 N per locking point;
- under Clause 8 new clause added regarding marking with information from the current version of EN 13126-1;

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 — Hardware for windows and door height windows — Requirements and test methods — 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 — Hardware for windows and door height windows — Requirements and test methods — 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 — Hardware for windows and door height windows — Requirements and test methods — Part 7: Finger catches;
- 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 — Hardware for windows and doors height windows — Requirements and test methods — Part 15: Rollers for horizontal sliding and hardware for sliding folding windows;
- Building hardware — Hardware for windows and doors height windows — Requirements and test methods — Part 16: Hardware for Lift and Slide windows;
- Building hardware — Hardware for windows and doors height windows — Requirements and test methods — Part 17: Hardware for Tilt and Slide windows;
- 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 manufacturer's organization 'ARGE' and National Standards institutions.

1 Scope

This part of prEN 13126 specifies requirements and test methods for durability, strength, security and function of espagnolettes and their striker plates for use on windows and door height windows.

NOTE Espagnolettes are defined as a locking mechanism for windows and door height windows that usually have a maximum handle movement of 90 °.

This European Standard does not include door bolts within the scope of EN 12051, or locks with latch and/or dead bolt within the scope of EN 12209 or multi-point locks within the scope of prEN 15885.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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*

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1

espagnolette

locking mechanism for windows and door height windows that usually have a maximum handle movement of 90°

3.2

sample

actual hardware components which is due to be tested

3.3

specimen

window without gaskets to accommodate hardware components (samples) for testing

Note 1 to entry: The gaskets may be applied to the specimen; this shall replace the counteracting force of 20 N per locking point.

3.4

test rig

testing device onto which the specimen is mounted

3.5

test equipment

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

3.6 supporting sub frame

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

Note 1 to entry: For example wood, steel or aluminium could be used.

3.7 locked closed position

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

3.8 closed position

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

3.9 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

3.10 sash rebate width (SRW)

the sash width minus the 2 overlap (also known as "rebate leg") dimensions; it is the level, in which the hardware components for the locking mechanism works

3.11 sash rebate height (SRH)

the sash height minus the 2 overlap (also known as "rebate leg") dimensions; it is the level, in which the hardware components for the locking mechanism works

4 Classification

4.1 General

Espagnolettes 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 5.2.

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

4.3 Mass (2 – second box)

No requirements, the second box shall display the digit 0.

4.4 Corrosion resistance (3 – third box)

The third box shall display the grade regarding corrosion resistance in accordance with 5.5.

4.5 Test Sizes (4 – fourth box)

The fourth box shall display the test sizes which were used for testing the espagnolette for windows and door height windows as follows:.

All sizes are stated in mm, SRW. = Sash Rebate Width, SRH. = Sash Rebate Height:

- 600 mm wide × 1 200 mm high for windows;
- 900 mm wide × 2 300 mm high for door height windows.

NOTE 1 In the case of availability of the espagnolette in different sizes for windows and door height windows, the espagnolette should be tested in the size for door height windows only.

NOTE 2 The stated sizes are test sizes only. They do not relate to the maximum sizes to which a window may be fabricated.

NOTE 3 The espagnolette and the striker plates should be installed in the upright side of the specimen, in accordance with the respective SRH (=Sash Rebate Height) of 1 200 (window) or 2 300 mm (door height window).

4.6 Example of classification for espagnolettes (EN 13126-4)

a) Alternative 1: Table with boxes

	1	2	3	4
EN 13126-4:YYYY	H2	0	3	600/1 200

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 13126-4.

b) Alternative 2: Alphanumerical

EN 13126-4:YYYY H2-0-3-600/1 200

This denotes an espagnolette for windows, which have:

box 1	durability	grade H2 (10 000 cycles)
box 2	mass	0 – no requirement
box 3	corrosion resistance	grade 3
box 4	test sizes	SRW = 600 mm / SRH = 1 200 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 Durability

The test specified in 7.2 shall be used to ensure that the espagnolette is capable of continued operation after the durability test (with normal maintenance). The 3 grades for the number of cycles are specified following:

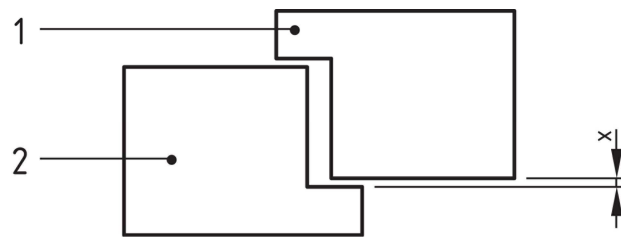
- grade H1: 5 000 cycles (+ 1 %);
- grade H2: 10 000 cycles (+ 1 %);
- grade H3: 20 000 cycles (+ 1 %).

Before and after the durability test the operating forces shall not exceed a maximum of 10 Nm. The espagnolette shall operate through its normal full range of travel to engage into the striker plates.

5.3 Locking point variable tolerance

Before and after the durability test, the distance “X” between the frame surface and the sash-overlap-edge shall be measured in conjunction with a counteracting force of 20^{+1}_0 N per locking point. The results shall not differ by more than 1 mm (see Figure 1).

NOTE This requirement does not apply to espagnolettes for sliding windows and sliding door height windows.



Key

- 1 Frame
- 2 Sash
- X Distance X

Figure 1 — Measurement of locking point variable tolerance

5.4 Minimum closing device resistance

The espagnolette shall withstand a minimum torque of 25 Nm. Upon completion of this exerted torque, the espagnolette shall operate as intended.

5.5 Corrosion resistance

Espagnolettes and striker plates shall conform to the grades listed in EN 1670, whereby grade 3 is the minimum requirement.

Unless already stated with a test report by the manufacturer, the hardware shall be tested in accordance with EN 1670.

NOTE The evaluation of the corrosion resistance is limited to the essential areas (as a rule, the visible surfaces of the installed hardware).

Exempt from the corrosion resistance evaluation are:

- rivet locations;
- locations of later processing (for example: cleaved surfaces that result from cropping the hardware components, millings etc.);
- non surface-treated parts/surfaces, provided they are not in the visible vicinity of the hardware (for example: screw guide-holes made of zinc die-cast, etc.);
- welding joints and their immediate surroundings;
- areas of corrosion as a result of contact corrosion.

5.6 Handle operation tolerance

In conjunction with a counteracting force of 20^{+1}_0 N per locking point (see 7.2):

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

6 Test equipment

6.1 Test rig

The test rig shall be so rigid that any deformation during the tests shall have no influence on the results.

The test shall be conducted on a test rig which corresponds in function and shape to the sash for which the hardware is intended. The dimensions of the test rig shall conform to 4.5.

6.2 Specimen

The espagnolette and the striker plates shall be installed in accordance with the manufacturer's fixing instructions and the test specimen shall be tested as specified in 7.2. The gaskets may be applied to the specimen; this replaces the counteracting force of 20 N per locking point. By replacing the counteracting force with the use of gaskets, it shall be ensured, that this is similar to a counteracting force of a minimum of 20 N per locking point.

The specimen to be tested shall correspond in function, shape and material for which the espagnolette is intended. The specimen shall be infilled with a glazing, or alternatively with an adequately rigid timber-based panel, PVC, steel or timber-composite material.

The hardware tested shall conform to the manufacturer's recommendations for the size of the specimen. The tolerance for the specimen (test sizes) is ± 10 mm.

The specimen shall be installed in a supporting sub-frame using common-practice building procedures. The general tolerance in this standard is +5 % unless otherwise specified.

The hardware manufacturer should provide complete test specimens for the testing institute. A drawing of the profile cross-section with relevant information should be enclosed in the test application, which also contains the necessary information for the installation of the espagnolette.

The dimensions of the specimen shall conform to 4.5

6.3 Mounting of the specimen

The supporting sub-frame with the specimen to which the samples are fastened during the test, shall be fixed to the test rig. The mounting of the supporting sub-frame on the test rig shall represent a typical application and not impair its performance during the durability test.

Instructions for the application of additional stays and other devices in the specimen shall be observed.

7 Test procedure

7.1 Samples

Four samples shall be used for testing according to this European Standard:

- | | | | |
|---|-----------|--|---------------------------------|
| — | sample A1 | – durability test | (complete specimen); |
| — | sample A2 | – minimum closing device resistance test | (espagnolette); |
| — | sample B | – corrosion resistance test | (espagnolette, striker plates); |
| — | sample C | – retained for reference control | (espagnolette, striker plates). |

Sample B should only be necessary if no test report can be supplied by the manufacturer regarding the testing of the hardware components in accordance with EN 1670.

Sample C should be retained by the test institute. Alternatively, the test institute should substitute sample C by a comprehensive documentation (description, photos etc.) of all tested components.

7.2 Durability test

7.2.1 General

Use sample A1 (specimen in accordance with 6.2) for the durability test. Inspect and ensure that the espagnolette is installed in the specimen in accordance with the manufacturer's instructions.

Install the specimen in the test rig in accordance with 6.3.

Test room ambient temperature: from 15 °C to 30 °C

If the hardware-manufacturer specifies additional requirements, which should be approved in the test report, the necessary tests should be performed and noted in the test report.

For hardware available for both left- and right-handed operation, only one of these versions shall be tested.

The grade for the number of cycles for the durability test shall be in accordance with 5.2, specified by the manufacturer.

During the cycles of the durability test according 7.2.2, the specimen is operated by use of a window-handle. The connection of the operating-equipment of the test-rig to the window-handle shall be set up in such a way that only torque during manoeuvring the window-handle and tractive force during the movements of the sash occur, which corresponds to the strain in practice.

After reaching the closed position coming from the turn position, the sash shall be brought into a distance of (3 ± 1) mm from the final closed position (measured in the vicinity of the handle). A 20 N counteracting force shall be exerted on every locking point (alternatively the pressure from the gaskets used). The sash is brought to the fastened closed position by turning the window-handle. The counteracting force of 20 N shall be valid for the entire duration of the test (alternatively the pressure from the gaskets used).

NOTE If the design of the espagnolette, in conjunction with the frame striker plates, does not have sufficient ability to pull the window sash against the window frame over the the required distance of 3 mm, the largest possible distance that the design allows must be set (in particular for example in designs with shoot bolts).

7.2.2 Procedure

The hardware is lubricated initially in accordance with the installation and product information (initial lubrication) unless an initial lubrication is not required according to the manufacturer's specifications.

Check that the specimen functions correctly, measure and record the torque to operate the espagnolette, whereby 10 Nm shall not be exceeded (see 5.6).

Measure and record the initial distance X at a locking point in the vicinity of the handle in accordance with 5.3. Mark the locking point.

Cycles shall be at a rate of 500 cycles/h; the procedure shall be in conjunction with a continuous counteracting force of 20 N per locking point as follows:

- The initial position is the locked closed position.
- The espagnolette is moved smoothly into the opening position via the handle. In this position the sash shall not be pressed onto the frame by the test equipment. The device to generate the counteracting force or alternatively the pressure of the used gaskets shall be able to remove the sash a distance from the frame. The maximum hardware related distance shall be adjusted in such a manner that the espagnolette's locking-elements (cams, bolts, hooks, etc) are able to engage into the corresponding frame striker plates in the next step of the test cycle, as a rule a distance of (3 ± 1) mm from the final closed position
- The espagnolette is moved smoothly back into the initial position via the handle, whereby the espagnolette's locking-elements engage into the corresponding striker plates.
- The espagnolette then remains in the initial position for 1 s before the next test cycle is started.

Upon completion of every 5 000 cycles, all moving and locking parts shall be lubricated, unless the hardware is specified to be maintenance-free by the hardware manufacturer.

7.2.3 Acceptance criteria

After the durability test, the following acceptance criteria shall be observed:

- The handle operation tolerance shall be in accordance with 5.6 (max. 10 Nm or max. force of 100 N applied to the end of the handle).
- The espagnolette shall operate through its normal full range of travel to engage into the striker plates.
- The locking point variable tolerance shall be in accordance with 5.3 (max. 1 mm).

7.3 Minimum closing device resistance test

7.3.1 Procedure

Use sample A2. The espagnolette shall be inserted in a test-rig that blocks the locking mechanism transmission. For example the face-plate and drive rod shall be blocked using a clamping-device.

Exert a torque of $25 \text{ Nm} \begin{smallmatrix} +1 \\ 0 \end{smallmatrix}$ Nm and maintain this torque for $60 \text{ s} \begin{smallmatrix} +1 \\ 0 \end{smallmatrix}$ s.

7.3.2 Acceptance criteria

The closing device shall operate as intended in accordance with 5.4 upon completion of this exerted torque.

7.4 Corrosion resistance

If no test report in accordance with EN 1670 can be supplied by the manufacturer, a test is necessary.

All corrosion tests shall be on original new samples (sample B) in accordance with 5.5. Any frangible positioning lugs holding components together (e.g. for cam centre positioning) shall be broken.

8 Marking

The product and/or its literature, packaging etc., shall be marked with the following:

- a) manufacturer's name or trademark, or other means of positive identification
- b) number of this European Standard
- c) the classification in accordance with Clause 4
- d) year and calendar-week of production

The information for d) may be in a coded form.

The marking shall be quoted using one or more of the following methods:

- hardware manufacturer's technical documentation (catalogue);
- accompanying documents;
- on the product label or packaging;
- by marking the product itself.

Annex A
(informative)

Flow chart of test procedure

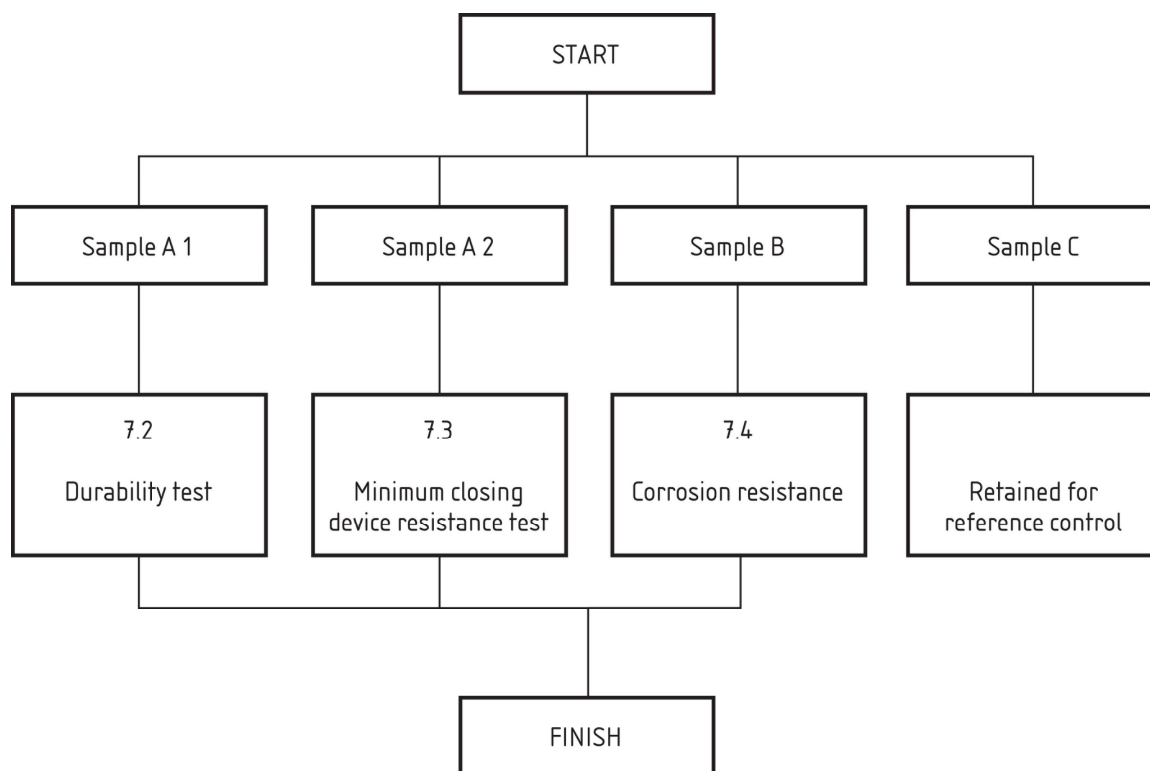


Figure A.1 — Flow chart of test procedures

Bibliography

- [1] EN 12051, *Building hardware — Door and window bolts — Requirements and test methods*
- [2] EN 12209, *Building hardware — Locks and latches — Mechanically operated locks, latches and locking plates — Requirements and test methods*
- [3] prEN 15885; *Building hardware - Requirements and test methods - Multipoint locks, latches and locking plates - Characteristics and test methods*