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Guideline

Casement stoppers for variable turning position of window sashes

Casement stoppers that are controlled via the central locking system - definitions and tests

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Note

Technical information and recommendations in this guideline are based on the state of knowledge at the time of printing. The content of the "Disclaimer" on the above-mentioned Internet site applies.

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1 Scope

The guideline at hand contains information and binding instructions for casement stoppers, which are actuated through the window handle and the associated central locking system, and their use in tilt and turn window sashes.

It must be applied both by the manufacturer of the casement stoppers (hardware manufacturer) as well as the manufacturer of the window with which it is equipped (manufacturer of windows and doors), and includes:

- definitions,
- tests on the casement stopper, as well as
- tests on the windows, which are fitted with such casement stoppers.

Casement stoppers

- are used to hold a sash in a defined turning position
- act against the accidental opening or closing of a window sash
- offer no protection against the falling out of a window
- are not fall protections according DIN 18008-4 or to the TRAV
- do not serve as a child protection
- are not intended for use as an lockable scissor for cleaning purposes
- are not intended for use as a crush guard
- are so-called comfort components and thus not safety devices in accordance with item 4.8 of DIN EN 14351-1:2016-12, and not an opening limiter according to EN 13126-5
- with the function of a turn open limiter according to the DOEB guideline, by always limiting the movement of a window sash in an intended maximum turn open position, must be evaluated according to the DOEB guideline

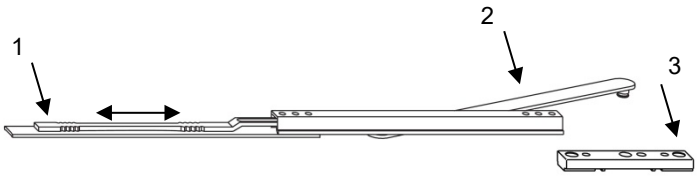
2 Definitions

2.1. Casement stoppers

Braking device, preferably with an extension arm, which is actuated through the window handle and the associated central locking system, and with which a turning window sash can be held open in almost any (variable) intermediate position. They are used to avoid the unintentional opening and closing of (not absolutely plumb-vertically installed) window sashes.

To position the sashes in the desired open position, the window handle is moved to a switching position defined by the hardware manufacturer, for example, in the usual "closed position" (0° - window handle is in the vertical position facing downward).

See example in Fig. 1 – see next page.



1 Gear teeth for coupling to the central locking system

2 Extension arm

3 Window frame part (= the linkage point of the extension arm on the window frame)

Fig. 1: : Example of a casement stopper

The installation position of the casement stopper is preferably leveled horizontally on the bottom (or the top).

Fig. 2: Preferred installation position of a casement stopper

2.2. Central locking system

Combination of interconnected hardware parts built into the sash, which are actuated through the window handle.

2.3. Movement of the sash

For this guideline the following actions shall be understood as a movement of the sash. Movement of the sash is triggered:

- for example, due to the slippage in the brake device,
- or because a designated connection point becomes loose (for example, if the extension arm becomes unhinged at its linkage point in the window frame part),
- or an overload protection becomes loose or breaks

Note: The triggering of an overload protection to protect the casement stopper or bearingpoints (hinge side supporting hardware components) is permitted. After the overload protection triggers or the coupling point is loosened the casement stopper may be dysfunctional. After hinging in the extension arm again, or resetting of the overload protection, the casement stopper must be in a working order again. In case of an overload protection through a fracture (rated break point) a new overload protection must be installed.

Movements of the sash due to an elastic deformation of the casement stopper and/or the bearing points and/or their connections do not fall under this definition.

3 Testing

3.1. Testing of the casement stopper / hardware

3.1.1. Specimen

For a testing of the casement stopper with a static load, it must be installed into a specimen according to the product documentation of the manufacturer, which corresponds to the maximum permitted sash rebate. In this test, the casement stopper is tested and not its sash- and frame-side connection. Therefore, the frame material, the profile design as well as the design of the casement stopper connection can be selected arbitrarily. The bearing points used (hinge side supporting hardware components) can also be selected freely.

A separate test must be performed for each casement stopper size.

3.1.2. General specifications regarding the test execution

- The test is performed for unfavorable opening angles where the greatest forces will occur, due to lever ratios acting on the casement stopper.
- The induction of the force is performed vertically (± 5°) relative to the plane of the sash.
- The load is initially applied in the closing direction, and then in the opening direction of the turning position (pushed closing/pulled opening).
- The testing is also performed for the end position (open position, maximum turning), provided that the casement stopper is equipped with such a limiter function.

3.1.3. Test section 1

3.1.3.1. Execution – Test section 1

- On the window handle of the braked window sash of the specimen, a force of 30 N is applied shock-free and increased linearly.
- After reaching the force of 30 N it will be maintained for (60 ± 5) s. Then the shock-free release will occur.

3.1.3.2. Acceptance criteria – Test section 1

- For opening angels > 30° the casement stopper must be able to absorb a load force of at least 30 N without any movement of the window sash occurring. With opening angles ≤ 30° a movement of the sash may already start even with lower forces.
- After the load release, permanent deformations of the casement stopper are permitted, provided the function is not impaired.
- Through the loading with a force of 30 N, no cracking or breaking may occur on any component which is relevant for the functionality of the casement stopper.
- Damages to the bearings and their attachments, for example, tears, cracks or permanent deformations are not permitted.

3.1.4. Test section 2

3.1.4.1. Execution – Test section 2

- After conclusion of the test section 1, a force will again be applied shock-free to the window handle of the braked window sash of the specimen and linearly increased to max. 100 N.
- When loaded with forces in the range between > 30 N and ≤ 100 N a movement of the sash is permitted to be observed on the window sash.
- If a movement of the window sash occurs within this range, the force will not be increased any further and a shock-free load release will be executed.
- If a movement of the window sash does not occur within this range, the force will be increased to a maximum value of 100 N, and a shock-free load release subsequently executed.

3.1.4.2. Acceptance criteria – Test section 2

- When loaded with forces in the range between > 30 N and ≤ 100 N a movement of the sash is permitted for opening angels > 30°. With opening angles ≤ 30° a movement of the sash may already start even with lower forces.
- After the load release, permanent deformations of the casement stopper are permitted, provided the function is not impaired.
- Through the loading with a force of between > 30 N and ≤ 100 N, no cracking or breaking may occur on any component which is relevant for the functionality of the casement stopper (with the exception of the overload protection).
- Damages to the bearings and their attachments, for example, tears, cracks or permanent deformations are not permitted

3.1.5. Test section 3

3.1.5.1. Execution – Test section 3

- This test section will only be performed if no movement of the window sash occurred during the test section 2. In this case, after conclusion of the test section 2, a force will again be applied shock-free to the window handle of the braked window sash of the specimen and linearly increased to max. 200 N.
- When loaded with forces in the range between > 100 N and ≤ 200 N a movement of the sash is permitted to be observed on the window sash.
- If a movement of the window sash occurs within this range, the force will not be increased any further and a shock-free load release will be executed.
- If a movement of the window sash does not occur within this range, the force will be increased to a maximum value of 200 N, and a shock-free load release subsequently executed.

3.1.5.2. Acceptance criteria – Test section 3

- When loaded with forces in the range between > 100 N and ≤ 200 N a movement of the sash is permitted for opening angels > 30°. With opening angles ≤ 30° a movement of the sash may already start even with lower forces.
- After a load exposure with a force in the range between > 100 N and ≤ 200 N the window sash must continue to be securely supported by the bearing points (hinge side supporting hardware).
- Cracks or breaks on the casement stopper or attachment thereof are permitted. The functionality of the casementstopper is not required to be provided any longer.

3.2. Testing of the complete specimen / window

3.2.1. Specimen

For the test with a static load, the casement stopper must be installed into a specimen with the maximum sash rebate width, which is intended by the manufacturer of the windows and doors. The maximum permitted sash rebate width according to the product documentation of the hardware manufacturer must be observed. During this test, the entire specimen will be tested together with the installed casement stopper, in particular their sash and frame-side connection and the interaction with the bearingpoints used.

The specimen must therefore be manufactured in such a manner, that it corresponds to the production methods of the manufacturer of windows and doors, and/or the respective system description. The specimen must be selected to represent the respective production method, whereas the most unfavorable production method must be taken into account regarding the force dissipation.

A separate test must be performed for each casement stopper size.

3.2.2. General specifications regarding the test execution

- The test is performed for unfavorable opening angles where, due to the lever ratios, the greatest forces will impact the casement stopper, it's connections as well as the bearing points.
- The induction of the force is performed vertically (± 5°) relative to the plane of the sash.
- The load is initially applied in the closing direction, and then in the opening direction of the turning position (pushed closing/pulled opening).
- The testing is also performed for the end position (open position, maximum rotation), provided that the casement stopper is equipped with such a limiter function.

3.2.3. Test section 1

3.2.3.1. Execution – Test section 1

- A force will be applied shock-free to the window handle of the braked window sash of the specimen and linearly increased to max.100 N.
- When loaded with forces in the range between > 30 N and ≤ 100 N a movement of the sash is permitted to be observed.
- If a movement of the window sash occurs within this range, the force will not be increased any further and a shock-free load release will be executed.
- If a movement of the window sash does not occur within this range, the force will be increased to a maximum value of 100 N, and a shock-free load release subsequently executed.

3.2.3.2. Acceptance criteria – Test section 1

- After the loading with a force of ≤ 100 N, no cracking or breaking (with the exception of the overload protection) may occur on any component which is relevant for the functionality of the casement stopper or its attachment points (screw connections).
- Damages to the bearings and their attachments, for example, tears, cracks or permanent deformations are not permitted.
- After the load release, the complete specimen must continue to be functional.

3.2.4. Test section 2

3.2.4.1. Execution – Test section 2

- This test section will only be performed if no movement of the window sash occurred during the test section 1.
- In this case, after conclusion of the test section 1, a force will again be applied shock-free to the window handle of the braked window sash of the specimen and linearly increased to max. 200 N.
- When loaded with forces in the range between > 100 N and ≤ 200 N a movement of the sash is permitted to be observed on the window sash.
- If a movement of the window sash occurs within this range, the force will not be increased any further and a shock-free load release will be executed.
- If a movement of the window sash does not occur within this range, the force will be increased to a maximum value of 200 N, and a shock-free load release subsequently executed.

3.2.4.2. Acceptance criteria – Test section 2

- When loaded with forces in the range between > 100 N and ≤ 200 N a movement of the sash is permitted.
- After a load exposure with a force in the range between > 100 N and ≤ 200 N the window sash must continue to be securely supported by the bearing points (hinge side supporting hardware).
- After the load release, the complete specimen is not required to be functional anymore.
- Cracks or breaks on the casement stopper or attachment thereof are permitted. The functionality of the casement stopper is not required to be provided any longer.

4 Test report

The test report on the tests according to the guideline at hand must contain the following information:

4.1. General

- Name and address of the testing laboratory
- Number, title and date of the guideline at hand
- Date and decisive identification of the test report
- Name and address of the applicant
- Date of the testing

4.2. Tests according to 3.1 (hardware testing)

- Information to uniquely identify the tested casement stopper
- Detailed description of the tested casement stopper
- Sash rebate width of the specimen
- Detailed description of the installation situation of the casement stopper in the specimen
- Description of the opening angles at which the test sequences were performed
- Results from the test section 1 (3.1.3); for the respective opening angles
- Results from the test section 2 (3.1.4); for the respective opening angles
- Results from the test section 3 (3.1.5); for the respective opening angles

4.3. Tests according to 3.2 (window testing)

- Information to uniquely identify the tested specimen
- Detailed description of the tested specimen
- (Profile geometry, dimensions, material, bearings and their attachment, the casement stopper and its attachments as well as the installation situation)
- Description of the opening angles at which the test sequences were performed
- Results from the test section 1 (3.2.3); for the respective opening angles
- Results from the test section 2 (3.1.3); for the respective opening angles

5 Intended use

The intended use of casement stoppers is the steplessly variable positioning of inward opening window sashs (unless otherwise specified in the product documentation of the hardware manufacturer) of turn-/tilt and turn windows and window doors with a variable turning position for the purpose of brief and intensive airing.

The intended use includes the compliance with all the requirements which are contained in the product- specific documents of the hardware manufacturer, for example:

- Product catalogs,
- application diagrams (max. sash sizes and weights),
- hardware installation instructions,
- operating/maintenance manuals as well as
- the guidelines VHBH and VHBE of the Gütegemeinschaft Schlösser und Beschläge, and
- applicable national laws and regulations

The following warning applies for manufacturers of windows and doors:

WARNING!

Danger of injury or death from dropping window sashes in case of an incorrect operation!

In case of an incorrect operation (= movement of the window sash which is opened and positioned in the turning direction without first disengaging the casement stopper), very high loads can be transmitted to the bearing points (hinge-side supporting hardware components) and their screw connections, which can ultimately lead to their failure. Therefore:

- Attach an operation instruction label (see Figure 3) near the window handle to avoid an incorrect operation.
- Check whether the selected combination of window profile, bearing points and their attachment is able to withstand operating errors. For this purpose, test the window sash which is opened and positioned in the turning direction according to item 3.2 of this guideline.

Fig 3 refer to the next page.

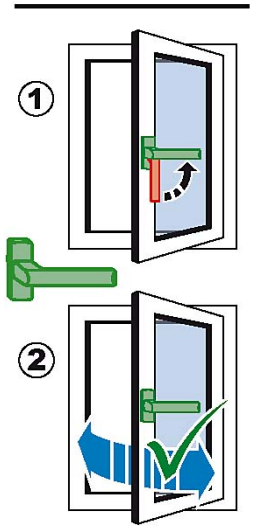
Handle-/sash-position	Meaning
	<u>Do not move the opened and positioned sash!</u> Do not perform any movement (pushed closing/pulled opening) of a window sash which is positioned in the turning direction, without first disengaging the casement stopper.
	<u>Before performing a movement of the sash, disengage the casement stopper.</u> Before initiating a movement (pushed closing/pulled opening) of the window sash which is opened and positioned in the turning direction, disengage the casement stopper by operating the window handle.
	<u>After disengaging the casement stopper the window sash may be moved.</u> Only perform a movement of the window sash (pushed closing/pulled opening) after disengaging the casement stopper through an actuation of the window handle.

Fig. 3: Example of an operation instruction label and explanation of the meaning

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