



First edition

Information brochure

## Information brochure on openable components with fall protection

Windows with fall protection requirements in accordance with German building law – what to look out for

### Contents

1	Fall protection requirements in accordance with German building law .....	3
2	Openable components with fall protection .....	4
3	Openable component with fall protection – test certificates, expert reports, project-related design authorisation, exemption under Section 38 of the Model Building Regulation .....	5
4	Risks regarding openable components with fall protection.....	6
5	General information on the use of limiting components.....	7
6	Details on individual points .....	8
7	Abbreviations .....	9
8	Literature.....	10

### Published by

Gütegemeinschaft Schlösser und Beschläge e.V.

Offerstraße 12

42551 Velbert, Germany

Phone: +49 (0)2051 / 95 06 - 0

Fax: +49 (0)2051 / 95 06 - 25

<https://www.guetegemeinschaft-schloss-beschlag.de>

<https://www.guetegemeinschaft-schloss-beschlag.de/Pruefen-Zertifizieren/Richtlinien/ISAB/>

### Notice

Technical specifications and recommendations in this information brochure are based on current knowledge at the time of printing. The content of the disclaimer on the website above applies.

## Content in detail

1	Fall protection requirements in accordance with German building law .....	3
1.1.	Preface .....	3
1.2.	Introduction .....	3
1.3.	Fall protection devices .....	3
2	Openable components with fall protection .....	4
2.1.	Partially openable components with fall protection .....	4
2.1.1.	Architecture without fall protection .....	4
2.1.2.	Preventing falling through the gap by defining gap widths.....	4
2.2.	Components with fall protection that can be fully opened by instructed, authorised persons.....	4
3	Openable component with fall protection – test certificates, expert reports, project-related design authorisation, exemption under Section 38 of the Model Building Regulation .....	5
3.1.	Why apply for a project-related design authorisation .....	5
3.2.	Please note – the building contractor must also apply for exemption from Section 38 of the Model Building Regulation .....	5
3.3.	Test certificates and expert reports for the project-related design authorisation.....	5
3.3.1.	Test concept for providing proof that forms the basis for a project-related design authorisation ...	5
3.3.2.	Project-related expert report based on the test certificates .....	6
3.3.3.	Application for a project-related design authorisation with the supreme planning authority .....	6
4	Risks regarding openable components with fall protection.....	6
4.1.	Change of building use (use scenario) .....	7
4.2.	Inspection, maintenance and repair .....	7
5	General information on the use of limiting components.....	7
6	Details on individual points .....	8
6.1.	Gap widths for partially openable components with fall protection .....	8
6.2.	Exemption from Section 38 Paragraph 3 of the Model Building Regulation by the building contractor .....	8
6.3.	Background information regarding the application for a project-related design authorisation .....	9
7	Abbreviations .....	9
8	Literature .....	10
8.1.	Other applicable documents .....	10
8.2.	Bibliography .....	10

# 1 Fall protection requirements in accordance with German building law

## 1.1. Preface

This information brochure explains fall protection requirements in accordance with German building law only. It states the current findings to an extent required for understanding the topic. This information brochure will be adjusted to reflect any amendments or addendums by the competent planning authorities or the Deutsches Institut für Bautechnik (DIBt) and republished. The respective current findings must be taken into consideration and can be accessed by following the link at the bottom of the cover.

## 1.2. Introduction

In Germany, fall protection is regulated under building law in certain construction situations. German building laws are specified by each federal state and the [federal building regulations](#), which are published by the federal states on the basis of a [Model Building Regulation](#), apply as a result. The Model Building Regulation is developed and issued by the [conference of construction ministers](#).

According to the [Model Building Regulation](#), the following points must be complied with (different descriptions are included in the federal building regulations of the different federal states):

### Section 38 Breastwork

**Paragraph 3:** *Window breasts in surfaces with a fall height of up to 12 m must be at least 0.80 m high and in surfaces with a fall height of more than 12 m at least 0.90 m high. Lower breast heights are permissible if the minimum heights stated in Paragraph 4 are achieved by using other devices such as banisters.*

**Paragraph 4:** *Other required breastwork must have the following minimum heights:*

1. *Breastwork for securing openings in walkable ceilings and roofs as well as breastwork in surfaces with a fall height between 1 m and 12 m: 0.90 m,*
2. *Breastwork in surfaces with more than 12 m fall height: 1.10 m.*

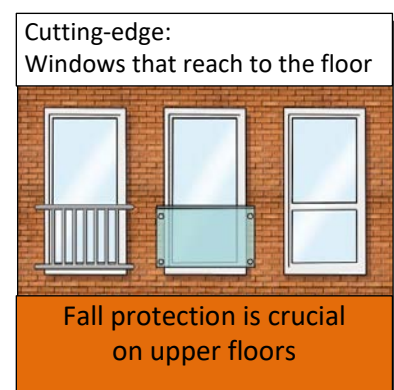
## 1.3. Fall protection devices

To prevent falling out of open windows that reach to the floor, the law (in Germany) therefore prescribes special fall protection devices as from a certain height.

The fall height to be secured is determined by the respective [federal building regulation](#). The height differences to the ground and specified dimensions, such as of banisters, therefore vary in each federal state. A breastwork generally becomes compulsory when walkable surfaces in a living space border on levels that are at least (50 to) 100 cm lower. The law permits **breastwork, banisters, grids or closed plates (e.g. glass panes in front)** as fall protection. These are subject to Paragraph 4 Nos. 1 and 2 (see Section 1.2).

[Source and photo credits: [www.fensterbau-ratgeber.de](http://www.fensterbau-ratgeber.de)]

The fall protection devices (danger to life and limb or health, safety-related properties) must comply with building requirements, i.e. all components used, including fixtures, must be regulated or carry proof of usability (general planning permit or European Technical Assessment, general test certification issued by the planning authority, approval on an individual basis or project-related design authorisation).



**Fig. 1:** Example of fall protection devices / components

## 2 Openable components with fall protection

### 2.1. Partially openable components with fall protection

#### 2.1.1. Architecture without fall protection

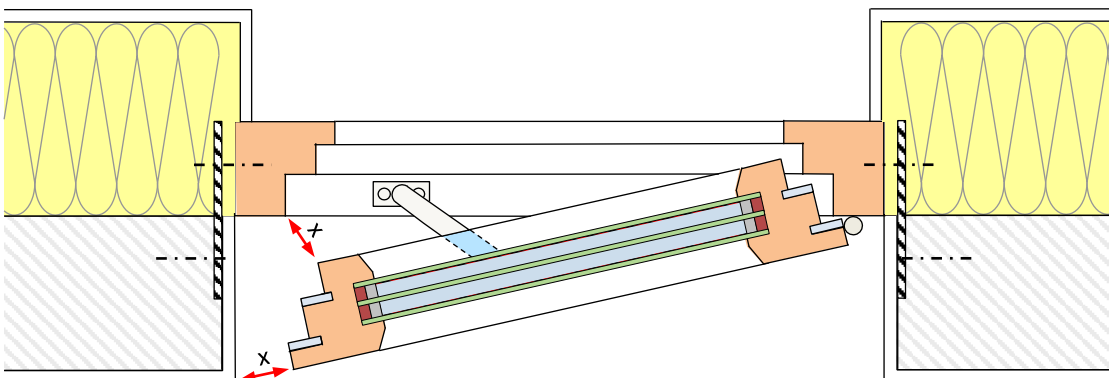
It is becoming an increasingly popular notion in architecture to use partially openable windows and French doors below the banister / breastwork height and to not install any fall protection as described in 1.3 at all. The appearance of a building or facade should not be impaired with additional devices. The costs of fall protection devices are also to be saved.

The opening is to be limited so that falling through the gap between the pane and frame or reveal can be securely prevented.

#### 2.1.2. Preventing falling through the gap by defining gap widths

Similarly to the "grid width", a gap width of 120 mm or less is often required to prevent falling through the gap in accordance with DIN 18065 "Stairs in buildings – Terminology, measuring rules, main dimensions" [5]. However, the planner can specify narrower gap widths, depending on the type of use. The required gap width should be agreed prior to execution. For details on possible gap widths go to Section 6.1.

[Source: ift guideline FE-18/1]



**Fig. 2:** Example of an openable component with fall protection; x = max. gap width (taking into consideration the planned installation situation)

### 2.2. Components with fall protection that can be fully opened by instructed, authorised persons

Apart from the notion described in Section 2.1, it is often also required for instructed and authorised persons to fully open the components after deactivating the devices that limit the width of the gap. The reason for this is usually ease of cleaning to particularly avoid labour-intensive cleaning from the outside. The designs stated in Section 2.1, and particularly in Section 2.2, pose great danger to life and limb that has to be reduced as much as possible with a number of measures.

### **3 Openable component with fall protection – test certificates, expert reports, project-related design authorisation, exemption under Section 38 of the Model Building Regulation**

#### **3.1. Why apply for a project-related design authorisation**

In contrast to the fall protection devices and their fixtures described in Section 1.3, not all of the components used for openable components with fall protection are regulated.

The usability of such openable components with fall protection, such as windows that reach to the floor with limited opening or tilting panes, must be approved in the form of a project-related design authorisation which is issued by the supreme planning authority of the respective federal state. The project-related design authorisation must be obtained prior to executing the project.

#### **3.2. Please note – the building contractor must also apply for exemption from Section 38 of the Model Building Regulation**

The building contractor must also apply for exemption from the provisions of Section 38 "Breastwork" Paragraph 3 of the Model Building Regulation (or the implementation in the federal building regulations of the respective federal state). This is usually issued by the planning authority as part of the planning permit. If the construction project does not require approval, the building contractor must apply for this exemption separately. For details go to Section 6.2.

#### **3.3. Test certificates and expert reports for the project-related design authorisation**

##### **3.3.1. Test concept for providing proof that forms the basis for a project-related design authorisation**

Proof of a suitable test concept must first be provided for the entire openable component with fall protection to obtain the required project-related design authorisation. Such test concept was presented, for example, by ift Rosenheim to the professional audience at the Rosenheimer Fenstertage 2019. ift guideline FE-18/1 [3] (performance level 3) has been issued in this respect in the meantime.

According to the test concept, a comprehensive test and assessment of the entire fall protection component (such as window, French door or ventilation gap) must first be carried out.

When closed, the requirements for glazing stated in DIN 18008-4 [5] and the fixing to the building structure stated in Section 7 must be complied with. A test must be carried out on test objects that proves that with a partially open window, the selected construction can bear the expected loads throughout the entire chain of proof, also and in particular during long-term durability tests, pendulum swing impact and manipulation tests with tools, etc. Other aspects also have to be tested and assessed.

- Test statics
- Use scenarios planned for the building
- The technical documentation belonging to the building product
  - The safety concept described in the technical documentation is reviewed and assessed:
    - Safety of authorised persons during cleaning (cleaning concept) if full opening is planned
    - Inspection, maintenance and repair concept
  - There has to be a description of who implements the safety concept and how
    - Including temporary breastwork or personal protective equipment to be used and the linkage required for this purpose (e.g. fall arrest anchors)

- Including a suitable safety instruction concept that also provides proof and documents that the required contents have been imparted
- The technical documentation must contain a description of the planned maintenance / servicing and inspection
  - It must stipulate that the work must be properly implemented at the specified intervals and that **proof** thereof must be available
  - As a rule, the work must be implemented yearly, and half-yearly for hospitals, schools, hotels, etc.
  - Any additional specifications by the manufacturers of the components used generally take precedence
  - Conclusion of a maintenance agreement (see VFF leaflet WP.01 [7], WP.02 [8] and WP.03 [9])

**⚠ Please note:** Reliable **compliance** with numerous **of the required specifications** over the period of use is **only possible in commercial buildings with professional facility management**. This is **impossible**, particularly in private households!

### 3.3.2. Project-related expert report based on the test certificates

Based on the findings after carrying out the test concept, an expert report is prepared for the respective construction project, which assesses the findings of the test of the openable components with fall protection, their applicability with regard to the construction project where they are to be used whilst taking into consideration the above points, particularly those referring to the safety concept and maintenance.

### 3.3.3. Application for a project-related design authorisation with the supreme planning authority

As stated in 1.2, German building laws are regulated by each federal state. The previously mentioned [Model Building Regulation](#) serves as an orientation aid in this case. However, the respective [federal building regulations](#) must be complied with. For details on the reason for applying for a project-related design authorisation go to Section 6.3.

**⚠ Please note:** The application for a project-related design authorisation for an openable component with fall protection must be submitted by the parties involved, but ideally by the building contractor, in accordance with Section 3.1 with the supreme planning authority of the respective federal state, with proof of testing in accordance with Section 3.3.1 and an expert report in accordance with Section 3.3.2 having to be presented. The building contractor must apply for exemption in accordance with Section 3.2. The exemption and project-related design authorisation must be obtained prior to executing the project.

## 4 Risks regarding openable components with fall protection

When using openable components with fall protection, changes to the general conditions that were assumed when issuing the project-related design authorisation can create additional risks. The applicant of the project-related design authorisation must take these into consideration when performing the risk analysis. The list below shows only some examples:

#### 4.1. Change of building use (use scenario)

- Safety concept specifications are ignored
  - Fluctuation of persons instructed in accordance with the safety concept
  - The knowledge imparted during the safety instructions is forgotten
- Users obtain "authorisation" or are able to deactivate the limiting devices without receiving the planned safety instructions
- Aids required for deactivating the limiting devices, such as special tools or keys, are accessible to some / all users without restrictions
- E.g. change from office or retail premises to private residence
  - The originally planned cleaning concept can no longer be guaranteed
  - Contrary to the original user scenario, children are present in the living space; the max. gap width may therefore be too wide


#### 4.2. Inspection, maintenance and repair

- Maintenance agreements are not concluded or terminated after some time for cost reasons
- Proper inspections, maintenance and repairs and/or compliance with the scheduled intervals are not ensured; required inspections, maintenance and repairs may not be carried out

## 5 General information on the use of limiting components

The following specifications must generally be complied with when using limiting components:

- Only components which have been intended and approved by the manufacturer for use in openable components with fall protection in accordance with ift guideline FE-18/1 [3] (performance level 3) may be used
- The limiting components may only be used together with other products according to the approved usability; the assembly instructions must be complied with
- The instructions and warnings provided by the manufacturer of the components (e.g. the manufacturer of the fixtures) must be transferred down the supply chain and **proof** provided thereof
  - The respective next party in the supply chain must be obliged to do the same
  - It therefore has to be verifiably ensured that the user has access to this information throughout the entire lifecycle of the building
  - The specifications in Regulations VHBH [1] and VHBE [2] of Gütegemeinschaft Schlösser und Beschläge must be complied with

 **Please note:** Non-compliance with these risk minimisation specifications can result in falling through openable components with fall protection and therefore to injury of life and limb.

## 6 Details on individual points

### 6.1. Gap widths for partially openable components with fall protection

Similarly to the "grid width", a gap width of 120 mm or less is often required to prevent falling through the gap in accordance with DIN 18065 "Stairs in buildings – Terminology, measuring rules, main dimensions" [6]. However, the planner can specify narrower gap widths, depending on the type of use. The required gap width should be agreed prior to execution.

The specifications of DIN EN 13126-5 "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" [4] are also "on the safe side". However, this standard only describes requirements for the fixture and not for the entire component (e.g. a window, French window or ventilation flap).

*Section 3 of DIN EN 13126-5 [4] states:*

#### **3.4 Limiter to ensure safety with max. 100 mm**

*Stable mechanical device intended for limiting the initial movement when opening an active window pane to a preset position, maximum 100 mm, to prevent accidental falling through the window*

Note: This gap width is determined in accordance with EN 13126-5 [4] without exerting any force

#### **3.5 Limiter to ensure the safety of children with max. 89 mm**

*Stable mechanical device intended for limiting the initial movement when opening an active window pane to a preset position, maximum 89 mm, to prevent small children from accidentally falling through the window (falling through of small children aged 9 to 12 months in accordance with CEN/TR 13387 [10])*

Note: This gap width is determined in accordance with EN 13126-5 [4] with exertion of a force of 350 N


### 6.2. Exemption from Section 38 Paragraph 3 of the Model Building Regulation by the building contractor

If a building contractor plans to deviate from the obligations to provide breastwork in accordance with Section 38 Paragraph 3 of the Model Building Regulation (or the implementation in the respective federal building regulation), the building contractor must be exempted from this section by the planning authority (in accordance with Section 67 Paragraph 1 Sentence 1 of the Model Building Regulation).

If the planning authority issues the exemption, the building contractor is granted the exemption as part of the building permit. If the construction project does not require approval, the building contractor must apply for this exemption separately (Section 67 Paragraph 2 Sentence 1 of the Model Building Regulation).

If the building contractor plans to use openable components with fall protection, the building contractor will generally have to present the planned technical solution as a reason for the exemption when submitting the planning application. The chance of being granted an exemption is likely going to increase if corresponding proof of suitable test concepts (2.3.2), project-related expert reports (2.3.3) and, if applicable, a project-related design authorisation can already be provided and it can therefore be proven to the planning authority that the technology is reliable.

It makes sense for the manufacturer to apply for the design approval and/or the certificate of usability *before* the building contractor applies for the exemption with the planning authority.

 **Please note:** Windows without the breastwork prescribed in Section 38 Paragraph 3 of the Model Building Regulation may only be used *in individual cases* once the building contractor has been granted the exemption.




### 6.3. Background information regarding the application for a project-related design authorisation

Section 16a "Designs" of the [Model Building Regulation](#) states:

- (1) *Designs may only be used if the buildings meet the requirements under or on the grounds of this law when using the designs and if maintained properly during a period that is adequate for the purpose and if they are fit for purpose.*
- (2) *Designs that a) materially deviate from the technical construction requirements in accordance with Section 85a Paragraph 2 No. 2 or No. 3 lit. a) or for which there are no generally acknowledged rules of technology may only be used during the construction, modification and maintenance of buildings if*
  1. *A general design approval has been issued for them by the Deutsche Institut für Bautechnik, or*
  2. *A project-related design approval has been issued by the supreme planning authority.*

As stated in Section 1, German building laws are regulated by each federal state. The previously mentioned [Model Building Regulation](#) serves as an orientation aid in this case. However, the respective [federal building regulations](#) must be complied with.

 **Please note:** The application for the project-related design authorisation for **openable components with fall protection** must be submitted to the supreme planning authority of the respective federal state or the Deutsches Institut für Bautechnik (DIBt), with proof from the tests in accordance with Section 2.3.3 and the expert report in accordance with Section 2.3.4 having to be presented.

## 7 Abbreviations

abZ	allgemeine bauaufsichtliche Zulassung (general planning permit)
abP	allgemeines bauaufsichtliches Prüfzeugnis (general test certification issued by the planning authority)
ETA	European Technical Assessment
öaB	öffenbare, absturzsichernde Bauelemente (openable components with fall protection)
TD	Technical documentation
vBG	Vorhabenbezogenen Bauarten-Genehmigung (project-related design authorisation)
ZiE	Zustimmung im Einzelfall (approval on an individual basis)

## 8 Literature

### 8.1. Other applicable documents

- [1] VHBH, "*Fixtures for windows and French windows – specifications / information regarding the product and liability*", Gütegemeinschaft Schlösser und Beschläge e.V.
- [2] VHBE, "*Fixtures for windows and French windows – specifications and information regarding end users*"; Gütegemeinschaft Schlösser und Beschläge e.V.
- [3] ift guideline FE-18-1, "*Windows with limited opening*"; ift Rosenheim (publication planned for 2021-06)
- [4] DIN EN 13126-5 "*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*", Beuth Verlag GmbH
- [5] DIN 18008-4:2013-07, "*Glass in Building – Design and construction rules – Part 4: Additional requirements for barrier glazing*"; Beuth Verlag GmbH
- [6] DIN 18065:2020-08, "*Stairs in buildings – Terminology, measuring rules, main dimensions*"; Beuth Verlag GmbH
- [7] VFF leaflet WP.01, "*Maintenance of windows, facades and external doors – maintenance / servicing and inspection – sales information*"; Verband Fenster + Fassade, Frankfurt
- [8] VFF leaflet WP.02, "*Maintenance of windows, facades and external doors – maintenance / servicing and inspection – measures and documentation*"; Verband Fenster + Fassade, Frankfurt
- [9] VFF leaflet WP.03, "*Maintenance of windows, facades and external doors – maintenance / servicing and inspection – maintenance agreement*"; Verband Fenster + Fassade, Frankfurt
- [10] CEN/TR 13387, "*Products for infants and small children – safety guidelines*"; Beuth Verlag GmbH

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- [11] ETB Regulation, "*Components that protect against falling*" – Ausschuss für Einheitliche Technische Baubestimmungen (committee for standardised technical construction regulations); Beuth Verlag GmbH
- [12] ift guideline MO-02/1, "*Wall connection of windows – Part 2: Method to determine the fitness for use of fixing systems*"; ift Rosenheim
- [13] VFF leaflet V.01 2021, "*Glazing providing fall protection – windows and facades with fall protection*"; Verband Fenster + Fassade, Frankfurt
- [14] "*Guidelines for planning and executing the installation of windows and entrance doors in new buildings and renovations*"; prepared by ift Rosenheim and RAL-Gütegemeinschaft Fenster und Haustüren e.V., Rosenheim/Frankfurt
- [15] "*Guidelines for the installation of curtain facades – planning and executing the installation in new buildings and renovations*"; prepared by ift Rosenheim and RAL-Gütegemeinschaft Fenster und Haustüren e.V., Rosenheim/Frankfurt
- [16] DIN EN 14351-1:2006+A2:2016, "*Windows and doors – Product standard, performance characteristics – Part 1: Windows and external pedestrian doorsets*"; Beuth Verlag GmbH
- [17] DIN 18055, "*Criteria for the use of windows and external doors in accordance with DIN EN 14351-1*"; Beuth Verlag GmbH

**This information brochure was developed in cooperation with:**



Fachverband Schloss- und Beschlagindustrie e.V.  
Offerstraße 12  
42551 Velbert, Germany



Prüfinstitut Schlösser und Beschläge Velbert  
Wallstraße 41  
42551 Velbert, Germany



Institut für Fenstertechnik e.V.  
Theodor-Gietl-Straße 7-9  
83026 Rosenheim, Germany



Tischler Schreiner Deutschland  
Bundesinnungsverband  
des Tischler- und Schreinerhandwerks  
Littenstraße 10  
10179 Berlin, Germany