



**SLOVENSKI STANDARD**  
**oSIST prEN 1628:2019**  
**01-julij-2019**

---

**Vrata, okna, obešene fasade, mreže in polkna - Protivlomna odpornost -  
Preskusna metoda za ugotavljanje odpornosti proti statičnim obremenitvam**

Pedestrian doorsets, windows, curtain walling, grilles and shutters - Burglar resistance -  
Test method for the determination of resistance under static loading

Türen, Fenster, Vorhangfassaden, Gitterelemente und Abschlüsse - Einbruchhemmung -  
Prüfverfahren für die Ermittlung der Widerstandsfähigkeit unter statischer Belastung

Blocs-portes pour piétons, fenêtres, façades rideaux, grilles et fermetures - Résistance à  
l'effraction - Méthode d'essai pour la détermination de la résistance à la charge statique

<https://standards.iteh.ai/catalog/standards/sist/bb8c5c46-678b-4a0d-8e99-44be3d0e8538/osist-pr-en-1628-2019>

**Ta slovenski standard je istoveten z: prEN 1628**

---

**ICS:**

13.310	Varstvo pred kriminalom	Protection against crime
91.060.50	Vrata in okna	Doors and windows

**oSIST prEN 1628:2019**

**en,fr,de**

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[oSIST prEN 1628:2019](#)

<https://standards.iteh.ai/catalog/standards/sist/bb8c5c46-678b-4a0d-8e99-4dbe3d0e8538/osist-pren-1628-2019>

EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**DRAFT**  
**prEN 1628**

May 2019

ICS 13.310; 91.060.50

Will supersede EN 1628:2011+A1:2015

English Version

## Pedestrian doorsets, windows, curtain walling, grilles and shutters - Burglar resistance - Test method for the determination of resistance under static loading

Blocs-portes pour piétons, fenêtres, façades rideaux, grilles et fermetures - Résistance à l'effraction - Méthode d'essai pour la détermination de la résistance à la charge statique

Türen, Fenster, Vorhangfassaden, Gitterelemente und Abschlüsse - Einbruchhemmung - Prüfverfahren für die Ermittlung der Widerstandsfähigkeit unter statischer Belastung

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.

This draft European Standard was established by CEN in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of 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 United Kingdom.

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.

**Warning** : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.



EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

<b>Contents</b>	<b>Page</b>
European foreword .....	5
<b>1 Scope</b> .....	<b>6</b>
<b>2 Normative references</b> .....	<b>6</b>
<b>3 Terms and definitions</b> .....	<b>7</b>
<b>4 Apparatus</b> .....	<b>8</b>
4.1 Test rig.....	8
4.2 Load applicators.....	8
4.3 Hooks.....	8
4.4 Straps.....	8
4.5 Pressure pads.....	8
4.6 Measuring equipment .....	8
4.7 Sub-frame .....	9
4.8 Tolerances .....	9
<b>5 Test specimen</b> .....	<b>9</b>
5.1 General.....	9
5.2 Preparation and examination of the test specimen .....	10
<b>6 Procedure</b> .....	<b>11</b>
6.1 Test room climate.....	11
6.2 General.....	11
6.3 Testing of group 1 and group 2 construction products.....	11
6.3.1 Loading points for group 1 and group 2 products .....	11
6.3.2 Test procedure for the infill medium retention system (product groups 1 and 2) ....	12
6.3.3 Test procedure for the leaf (product group 1, burglar resistance class 1) .....	13
6.3.4 Test procedure for the leaf (product group 1, burglar resistance classes 2 and higher) .....	13
6.3.5 Test procedure for the leaf (product group 2, burglar resistance class 1) .....	13
6.3.6 Test procedure for the leaf (product group 2, burglar resistance classes 2 and higher) .....	14
6.4 Expression of results for product groups 1 and 2 .....	14
6.5 Testing of group 3 construction products.....	14
6.5.1 Loading points.....	14
6.5.2 Loading direction .....	15
6.5.3 Loading and measurement procedure .....	15
6.5.4 Expression of results .....	16
6.6 Testing of group 4 construction products.....	16
6.6.1 General.....	16
6.6.2 Resistance of moving elements.....	16
6.6.3 Resistance of other loading points .....	17
6.6.4 Expression of results .....	17
<b>7 Test report</b> .....	<b>17</b>
<b>Annex A (normative) Test equipment</b> .....	<b>19</b>
A.1 Examples for loading points F1 and F3.....	19
A.2 Example of test rig.....	23

A.3	Examples for pressure pads for door sets, windows and shutters .....	24
A.4	Examples for pressure pads for door sets, windows and shutters in places where it is necessary to bridge any item of furniture or a lock .....	25
A.5	Examples for pressure pads for roller shutters.....	26
A.6	Examples for pressure pads for roller shutters – separate test for guide rails.....	27
A.7	Examples for pressure pads for grilles .....	28
A.8	Examples of loading equipment for sliding doors, double leaf sliding doors, sliding windows and shutters .....	29
A.9	Examples for hooks .....	30
A.10	Gap gauges.....	31
A.11	Examples of mounting arrangements for door sets .....	33
A.12	Examples of mounting arrangements for windows.....	37
A.13	Examples of mounting arrangements for wing and folding shutters.....	40
A.14	Examples of mounting arrangements for guide rails and roller shutters into the test rig.....	42
A.15	Loading points on door sets (load F3 and F2) in resistance class 1 to 6 .....	50
A.16	Loading points on door sets (load F3) in resistance class 1 to 6 .....	52
A.17	Loading points on door sets (load F1 and F3) in resistance class 1 to 6 .....	54
A.18	Loading points on door sets (load F3) in resistance class 1 to 6 .....	60
A.19	Loading points on door sets (load F3 and F3.a) in resistance class 1 .....	62
A.20	Additional loading points on door sets (load F3.a and F3) in resistance class 1 .....	63
A.21	Additional loading points on door sets (load F3, F3.a and F2) in resistance class 1 ..	65
A.22	Loading points on windows (loads F1 and F3) in resistance class 1 to 6 .....	66
A.23	Additional loading points on windows (load F3.a and F3) in resistance class 1 .....	67
A.24	Additional loading points on double hinged windows.....	68
A.25	Additional loading points on windows (load F3.a) in resistance class 1 .....	69
A.26	Additional loading points on windows (load F3.a and F3) in resistance class 1 .....	70
A.27	Loading points on windows (loads F1 and F3) in resistance class 1 to 6 .....	71
A.28	Loading points on a single leaf shutter (load F3) in resistance class 1 to 6.....	72
A.29	Loading points on a multi leaf shutter (loads F1 and F3) in resistance class 1 to 6 ...	73
A.30	Loading points on a multi leaf wing shutter (loads F1 and F3) in resistance class 1 to 6.....	74
A.31	Guide rail single test on roller shutters.....	75
A.32	Loading points on roller shutters (load F3) in resistance class 1 to 6.....	76
A.33	Loading points on roller shutters (load F2) in resistance class 1 to 6.....	77
A.34	Loading points on roller shutters (load F1) in resistance class 1 to 6.....	78
A.35	Loading points on fixed grilles (load F3) in resistance class 1 to 6 .....	79

**prEN 1628:2019 (E)**

<b>A.36</b>	<b>Loading points on moveable grilles (load F3) in resistance class 1 to 6.....</b>	<b>80</b>
<b>A.37</b>	<b>Loading points on roller grilles (load F3.2) in resistance class 1 to 6 .....</b>	<b>81</b>
<b>Annex B (normative)</b>	<b>Test sequence for static loading test in resistance classes 1 to 6 .....</b>	<b>83</b>
<b>Annex C (normative)</b>	<b>Dislocation of window hardware against the locking direction.....</b>	<b>84</b>
<b>C.1</b>	<b>General.....</b>	<b>84</b>
<b>C.2</b>	<b>Test criteria.....</b>	<b>84</b>
<b>C.3</b>	<b>Test method .....</b>	<b>84</b>
<b>Bibliography</b>	<b>.....</b>	<b>87</b>

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[oSIST prEN 1628:2019](https://standards.iteh.ai/catalog/standards/sist/bb8c5c46-678b-4a0d-8e99-4dbe3d0e8538/osist-pren-1628-2019)

<https://standards.iteh.ai/catalog/standards/sist/bb8c5c46-678b-4a0d-8e99-4dbe3d0e8538/osist-pren-1628-2019>

## European foreword

This document (prEN 1628:2019) 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 1628:2011+A1:2015.

Significant changes in this revision are:

- a) Updated editions of Normative references;
- b) Gap gauge C in Figure A.14 replaced gauge 3 in Figure A.13.

This European Standard is one of a series of standards for burglar resistant pedestrian doorsets, windows, curtain walling, grilles and shutters. The other standards in the series are:

- prEN 1627:2019, *Pedestrian doorsets, windows, curtain walling, grilles and shutters — Burglar resistance — Requirements and classification*;
- prEN 1629:2019, *Pedestrian doorsets, windows, curtain walling, grilles and shutters — Burglar resistance — Test method for the determination of resistance under dynamic loading*;
- prEN 1630:2019, *Pedestrian doorsets, windows, curtain walling, grilles and shutters — Burglar resistance — Test method for the determination of resistance to manual burglary attempts*.

[oSIST prEN 1628:2019](https://standards.iteh.ai/catalog/standards/sist/bb8c5c46-678b-4a0d-8e99-4dbe3d0e8538/osist-pren-1628-2019)

<https://standards.iteh.ai/catalog/standards/sist/bb8c5c46-678b-4a0d-8e99-4dbe3d0e8538/osist-pren-1628-2019>

**prEN 1628:2019 (E)****1 Scope**

This document specifies a test method for the determination of resistance to static loading in order to assess the burglar resistant properties of pedestrian door sets, windows, curtain walling, grilles and shutters. It is applicable to the following means of opening: Turning, tilting, folding, turn-tilting, top or bottom hung, sliding (horizontally and vertically), pivoted (horizontally and vertically) and rolling as well as fixed constructions.

It is acknowledged that there are two aspects to the burglar resistance performance of construction products, their normal resistance to forced operation and their ability to remain fixed to the building. This test method does not evaluate the performance of the fixing to the building.

The manufacturer's installation instructions will give guidance on the fixing of the product.

An example for the contents of the manufacturer's installation instructions is given in Annex A of prEN 1627:2019.

This document does not apply to doors, gates and barriers, intended for installation in areas in the reach of persons, and for which the main intended uses are giving safe access for goods and vehicles accompanied or driven by persons in industrial, commercial or residential premises, as covered by EN 13241.

**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 356:1999, *Glass in building — Security glazing — Testing and classification of resistance against manual attack*

[oSIST prEN 1628:2019](https://standards.iteh.ai/catalog/standards/sist/bb8c5c46-678b-4a0d-8e99-44bc5d028538/osist-pr-en-1628-2019)

EN 1303:2015, *Building hardware — Cylinders for locks — Requirements and test methods*

prEN 1627:2019, *Pedestrian doorsets, windows, curtain walling, grilles and shutters — Burglar resistance — Requirements and classification*

prEN 1629:2019, *Pedestrian doorsets, windows, curtain walling, grilles and shutters — Burglar resistance — Test method for the determination of resistance under dynamic loading*

prEN 1630:2019, *Pedestrian doorsets, windows, curtain walling, grilles and shutters — Burglar resistance — Test method for the determination of resistance to manual burglary attempts*

EN 1906:2012, *Building hardware — Lever handles and knob furniture — Requirements and test methods*

EN 12195-2, *Load restraint assemblies on road vehicles — Safety — Part 2: Web lashing made from man-made fibres*

EN 12209:2016, *Building hardware — Mechanically operated locks and locking plates - Requirements and test methods*



### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in prEN 1627:2019 and the following 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

##### **test specimen**

complete, fully functioning construction product as detailed in the scope of this standard

#### 3.2

##### **sub-frame**

surrounding frame into which the test specimen is mounted in accordance with the manufacturer's instructions

#### 3.3

##### **test rig**

surrounding substantial steel frame with movable steel supports into which the sub- frames containing test specimens of various dimensions can be mounted

#### 3.4

##### **load applicator**

hydraulic ram or similar loading device that can apply the test forces required

#### 3.5

##### **pressure pad**

pad fitted to the active end of the load applicator to spread the load

#### 3.6

##### **locking points**

all connecting points between the opening element and the fixed element including the following:

- main lock;
- bolts of additional locks or multi-point locks;
- hinges;
- hinge bolts;
- fixings of fixed elements;
- roller and slide bearings in guides of sliding elements;
- junction of grille bars

Note to entry: Locating wedges are not considered to be building hardware or attachment points unless they also act as a security claw/dogbolt

#### 3.7

##### **passive leaf**

leaf of a multi-leafed window or door, intended to be moved after the active leaf

iTeh STANDARD PREVIEW  
(standards.iteh.ai)

oSIST prEN 1628:2019

<https://standards.iteh.ai/catalog/standards/sist/bb8c5c46-678b-4a0d-8e99->

## prEN 1628:2019 (E)

### 3.8

#### active leaf

leaf of a multi-leafed window or door intended to be moved first to provide opening

## 4 Apparatus

### 4.1 Test rig

The test rig is consisting of a rigid steel frame with movable steel supports into which test specimens of various dimensions can be mounted, is shown in Annex A - Figure A.5. The stiffness of the rig shall be such that a 15 kN force applied to any of the defined points and normal to the plane of the test shall not cause a deflection of more than 5 mm. The test rig shall not impede the execution of the test.

### 4.2 Load applicators

The load applicators consisting of a hydraulic ram or similar loading device shall be capable of applying the required test forces progressively and without shock.

### 4.3 Hooks

A hook is shown in Figure A.12.

### 4.4 Straps

Straps shall conform to EN 12195-2 or equivalent and have a minimum tensile strength of 5kN. These straps may be used to apply some of the loads.

### 4.5 Pressure pads

Pressure pads and loading equipment are shown in Figures A.6 to A.11.

### 4.6 Measuring equipment

The measurement equipment is consisting of the following:

- a) equipment to display and/or record the forces being applied;
- b) a chronometer with seconds display for measuring the loading times;
- c) equipment for determining temperature and relative humidity;
- d) calliper and/or depth gauge;
- e) angle measuring instrument;
- f) three gap gauges as shown in Figures A.13 and A.14: gap gauge A shall be 10 mm in diameter, gap gauge B shall be 25 mm in diameter, gap gauge C shall have an elliptical form with a major diameter of 250 mm and a minor diameter of 150 mm.

**NOTE** The various gap gauges detailed in A.10 are used to evaluate the resistance to an applied load. They represent an acceptable level of deformation of the various products above which vulnerabilities may be exposed. They are not intended to represent any particular attack method but are used as a simple method to establishing failure.

## 4.7 Sub-frame

The sub-frame shall simulate the support given to the product when installed into a building and shall be taken into consideration in the manufacturer's installation instructions. It shall typically consist of the following:

- a) for group 1 to group 4 products, a rectangular metal tube 120 mm x 120 mm x 5 mm or a rectangular timber frame 100 mm x 50 mm;
- b) additionally for group 3 and group 4 products, a steel tube 40 mm x 40 mm x 3 mm; and a base plate of 8 mm steel, consisting of several segments which shall be removable for the purposes of loading, if necessary.

See Figures A.15 to A.32.

## 4.8 Tolerances

Unless stated otherwise in this European Standard, the following tolerances shall apply to the test equipment:

Load		±5 %
Dimensions	< 20 mm	±0,5 mm
	≥ 20 to 500 mm	±1,0 mm
	≥ 500 to 2 000 mm	±2,0 mm
	≥ 2 000 mm	±3,0 mm
Angle		±2°
Time		±1 %
Temperature		±2 °C
Relative humidity		±5 %

## 5 Test specimen

### 5.1 General

Each test specimen shall be a functioning product complete with its frames, hardware, guide rails, curtain, tube, roller box and accessories, as appropriate. When testing roller shutters at least two test specimens consisting of separate sections of the guide rails shall be supplied for test. These sections shall be 1 m in length (see Figure A.56).

The test specimen shall be fixed square and plumb and without twist or bend into a sub-frame. The installation shall be in accordance with the manufacturer's instructions as detailed in Clause 10 of prEN 1627:2019, including the method of fixing, packing supports, sealing requirements, etc. (see Figures A.15 to A.63). The sub-frame shall be supported by the test rig so that there will be no movement of the sub-frame during the test. The sub-frame shall simulate the support given to the product when installed into a building.

Products that are intended to be installed in orientations other than vertical (e.g. roof lights) may be installed in the vertical orientation for the purpose of this test.

NOTE 1 The product can be installed directly into a building structure as intended in practice.

**prEN 1628:2019 (E)**

For the purposes of this standard, the test specimen shall be glazed according to the relevant glazing resistance class of EN 356:1999, corresponding to the resistance class of the construction product according to prEN 1627:2019, as shown in Table 1. Security glazing, when used in an insulating glass unit, is normally positioned on the non-attack side. For the purpose of this test, the glass pane offering the highest security level shall be positioned on the attack side of the sample. Products shall be glazed in accordance with the manufacturer's specification.

**Table 1 — Test sample glazing requirements for test specimen**

Resistance class	Minimum resistance class of glazing according to EN 356:1999 fitted on the test specimen for testing purpose
RC 1 N	P4 A
RC 2 N	P4 A
RC 2	P4 A <sup>a</sup>
RC 3	P5 A <sup>a</sup>
RC 4	P6 B <sup>a</sup>
RC 5	P7 B <sup>a</sup>
RC 6	P8 B <sup>a</sup>

<sup>a</sup> The glazed infilling type fitted on the test specimen shall be the type (or one of the types) used for classification purposes.

NOTE 2 If a higher grade of glass is used on the test specimens, it may not be possible to assess the use of lower grade glass within those products without conducting further tests. This is because higher grades of glass can increase the rigidity of the product.

The test specimen used in this test may also be used for the dynamic test in accordance with prEN 1629:2019 and the pre-test in accordance with prEN 1630:2019, provided that any damage caused by these tests will not affect the result of the pre-test.

**5.2 Preparation and examination of the test specimen**

The temperature of the test specimen shall be maintained between 15 °C and 30 °C for a period of not less than 8 h prior to test.

The test specimen and sub-frame mounted in the test rig shall be visually examined for damage, defects or other particular conditions of finish, etc. These shall be recorded.

The top of the sub-frame should be propped local to the locking points, if necessary.

Each test specimen shall be examined and the direction to disengage each locking point shall be noted.

During testing the test specimen shall be closed and locked at the declared closing condition in accordance with the manufacturer's instructions.

All locking hardware that can be disengaged from the attack side without the use of a key or tool shall be disengaged during all tests.

Products in resistance class 1 shall additionally be prepared prior to the static loading test by removing all parts on the attack side that can be unscrewed, dismantled or disassembled using the tools described in prEN 1630:2019, Annex A, tool set A1. Parts must not be damaged during this procedure. The total time for this preparation procedure shall not exceed 3 min.

The parts removed during this preparation shall be recorded.

## 6 Procedure

### 6.1 Test room climate

The test room temperature shall be maintained between 15 °C and 30 °C.

The relative humidity in the test room shall be between 30 % and 70 %.

### 6.2 General

The specified test loads detailed in prEN 1627:2019 shall be applied in the order specified in 7.1 of prEN 1627:2019 at the various loading points using the load applicator. The ability of the products to resist static loading shall be assessed by means of a gap gauge, as shown in Figures A.13 and A.14.

The complete test procedure shall be carried out as shown in Annex B.

Details of the hardware shall be recorded and their performance in terms of EN 1303:2015, EN 12209:2016 and EN 1906:2012 shall be identified, where relevant.

Should the glass break during any tests, the test programme shall proceed with the broken glass *in situ*. Adhesive film may be applied to the glass to protect the tester.

When propping is needed, the restraint shall have a nominal contact area of 100 mm by 50 mm and offer restraint in the opposite direction to the applied load.

Where it is not possible to use the 100 mm by 50 mm prop smaller props may be used. Where a smaller prop is used, it should be as large as possible (up to 100 mm by 50 mm). The test report shall document where smaller props are used and the size of the prop.

The prop shall be located as close to the loading point as is practical, but should not give additional support to the leaf/infill/beading under test.

Fixed construction products and side/overpanels, that have no openable element, shall be tested in a similar manner to openable elements for group 1 and group 2 products. That is, the F1 and F3 loads will be applied to the infill and supporting frame in accordance with Clause 6.3.1.1 and 6.3.1.3.

NOTE Side/overpanels are fanlights (EN 12519) with or without glass.

### 6.3 Testing of group 1 and group 2 construction products

#### 6.3.1 Loading points for group 1 and group 2 products

##### 6.3.1.1 Loading point F1: infilling corner

The specified load shall be applied, in turn, to each corner of the infilling medium at a point as shown in Figure A.1, unless the infilling medium is circular, in which case four points shall be selected at approximately equidistant intervals around the edge. The load shall be applied in a direction to disassemble the infilling medium retention system and perpendicular to the plane of the test specimen. The F1 loads to infills will be applied with the pressure pad located nominally 5 mm from the edge of the infill, as described in Figure A.1. F1 loads on infills will be applied in the direction to disassemble the glazing/infill, i.e. loading from the outside on internally glazed windows and vice versa. Where it is unclear as to which side is the direction to disassemble the glazing/infill, e.g. cassette systems of symmetrical systems, the load will be applied from the attack side.

##### 6.3.1.2 Loading point F2: leaf corner

The specified load shall be applied, in turn, to each corner of the leaf if the adjacent locking point has a greater distance A than 350 mm from the corner as shown in Figures A.33. If no corner exists (e.g. circular product) apply the loads half way between locking points. It shall be applied in a direction to open the leaf and perpendicular to the plane of the test specimen. The distance of a hardware loading point from

## prEN 1628:2019 (E)

a corner shall be measured from the corner of the frame rebate to the centre of that hardware loading point.

F2 loads will be applied progressively and without shock over a period of 10 to 20 s within 5° of perpendicular to plane and will be maintained for a period of 8 to 12 s.

### 6.3.1.3 Loading point F3: locking points

The specified load shall be applied, in turn, to each locking point as defined in 3.6 and shown in Figures A.2 to A.4. If the distance between two adjacent locking points is less than 200 mm then a single loading point shall be used located at the midpoint between the two locking points. The load shall be applied in a direction to open the leaf. For locking points on adjacent edges the sum on their distance from the corner shall be used. The load shall be applied in a direction to open the leaf. Where the locking point has a contact length of greater than 200 mm (e.g. piano hinge or locking bar) then a load shall be applied at each end. Once two loading points have been combined, they cannot be further combined with other loading points.

For fixed construction products and side/overpanels the specified load shall be applied, in turn, to any fixing securing the infill frame into the main frame as shown in Figure A.37 a) to A.37 b) 2).

On fixed construction products that consist of a single element secured directly to the substrate then the specified load shall be applied at:

- 200 mm intervals around the edge of the product, where a fixed product is secured using a continuous fixing system (e.g. structural sealant) as shown in Figure A.37 c) 2).
- Each fixing point to the substrate as shown in Figure A.37 c) 1).

NOTE On elements with openable parts, the fixing of the mainframe adjacent to the openable sash is indirectly tested by loading the locking points with F3.

### 6.3.1.4 Loading point: F3.a: locking points

The specified load shall be applied to the leaf and, where necessary, to the frame, in a direction to disengage the associated locking point as shown in Figure A.41 to A.50. The load F3.a shall be applied in the plane of the specimen and only in association with the load applied to loading point F3 and to products in burglar resistance class 1N, as defined in prEN 1627:2019.

Where a separating force is required, a load shall also be applied to other parts of the product. The load F3.a shall be applied and maintained until the load applied to loading point F3 has been applied and removed.

NOTE There is no fixed correlation between the attack side and the loading direction, because in a realistic attack with tools, forces are applied in the direction of opening or contrary to the direction of assembly. The loading direction is therefore dependent on the construction and function of the test specimen. For products where both sides are considered to be the attack side then no additional static tests are necessary.

## 6.3.2 Test procedure for the infill medium retention system (product groups 1 and 2)

For the purpose of this test, the leaf of the test specimen shall be restrained to resist any deflection between leaf and frame due to the loads applied to the infilling medium. The restraint shall have a nominal contact area of 100 X 50 mm and offer restraint in the opposite directions to the applied load.

The load F1 shall be applied progressively and without shock over a period of 10 s to 20 s and within 5° of perpendicular to plane to each corner of the infill medium. The load shall be maintained for a period of 8 s to 12 s. If the retention system exhibits any sign of disengagement at a corner, the loading test shall be continued along each section of the retention system in an attempt to defeat the system. Subsequent loads shall be applied at intervals of a minimum of 50 mm.

When propping is needed, see 6.2.

### 6.3.3 Test procedure for the leaf (product group 1, burglar resistance class 1)

The loads shall be applied to the points in the order shown in Figures A.33 to A.38, A.42 to A.45, A.47, A.50 and A.52. For side hung products the first point to be loaded shall be the uppermost point on the hinged side. Each subsequent point down the hinged side then along the bottom, up the locking side and across the top shall be tested in turn. The load shall be applied in a direction to open the leaf and perpendicular to the plane of the test specimen.

For products that contain two or more leaves, propping of the passive leaf shall be provided as shown in Figure A.38. The passive leaf shall be tested first.

In the case of a loading point at the corner of the leaf and without an adjacent locking point within 350 mm, the load F2 shall be applied.

In the case of a loading point requiring an inplane load F3a, this load shall be applied first. With this load maintained, the corresponding load F3 shall be applied. In the case of a loading point that requires two or more inplane loads, all these loads shall be applied and maintained before the application of the relevant F3 load.

F3.a loads shall each be applied progressively and without shock over a period not exceeding 30 s. They shall be maintained until the F3 load has been applied and maintained for the required period.

Each F3 load shall be applied progressively and without shock over a period of 10 s to 20 s and within 5° of perpendicular to the plane of the test specimen. These loads shall be maintained for a period of 8 s to 12 s.

All loads shall be removed without shock.

All loading points shall be tested unless product failure occurs.

When propping is needed, see 6.2.

### 6.3.4 Test procedure for the leaf (product group 1, burglar resistance classes 2 and higher)

The test procedure for construction products in burglar resistance classes 2 and higher (product group 1) shall be as detailed in 6.3.3 except that the inplane load F3.a shall be omitted.

### 6.3.5 Test procedure for the leaf (product group 2, burglar resistance class 1)

#### 6.3.5.1 Sliding door/window

The loads shall be applied as shown in Figures A.11, A.39 and A.51.

The first test shall assess the locking mechanism ability to resist a load applied at the locking points in the direction to open the sliding leaf (force axis is in plane of the leaf).

At first, the load F3.a shall be applied in a direction to disengage the locking hardware. It shall be applied progressively and without shock over a period not exceeding 30 s. With this load F3.a maintained, a second load F3 shall be applied in the direction to open the sliding leaf.

The second load shall be applied progressively and without shock over a period not exceeding 30 s. This load shall be maintained for a period of 8 s to 12 s. After that the load F3 and subsequently also the load F3.a is removed without shock.

The second test shall assess the retention of the sliding leaf in its frame. The load F3 applied to the locking points shall be applied perpendicular to the plane of the sliding leaf at the points as shown in Figure A.39 (rectangles in the leaf corners).

In all cases, the F3 load shall be applied progressively and without shock over a period of 10 s to 20 s and within 5° of the desired direction. These loads shall be maintained for a period of 8 s to 12 s.