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English Version

Extended application of test results for fire resistance and/or smoke control for door, shutter and openable window assemblies, including their elements of building hardware - Part 20: Smoke control for doors, shutters, operable fabric curtains and openable windows

Application étendue des résultats d'essais en matière de résistance au feu et/ou d'étanchéité à la fumée des blocs-portes, blocs-fermetures et ouvrants de fenêtre, y compris leurs éléments de quincaillerie intégrés - Partie 20 : Étanchéité à la fumée des blocs-portes battants et pivotants en acier, en bois et vitrés à ossature métallique

Erweiterter Anwendungsbereich von Prüfergebnissen zur Feuerwiderstandsfähigkeit und/oder Rauchdichtigkeit von Türen, Toren und Fenstern einschließlich ihrer Baubeschläge - Teil 20: Rauchdichtigkeit von Türen, Toren, Abschlüssen und Fenstern

This draft European Standard is submitted to CEN members for formal vote. It has been drawn up by the Technical Committee CEN/TC 127.

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.

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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.

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

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European foreword

This document (FprEN 15269-20:2020) has been prepared by Technical Committee CEN/TC 127 “Fire safety in buildings”, the secretariat of which is held by BSI.

This document is currently submitted to the Formal Vote.

This document will supersede EN 15269-20:2009.

This document has been prepared under a standardization request given to CEN and CENELEC by the European Commission and the European Free Trade Association.

The EN 15269 series of standards *Extended application of test results for fire resistance and/or smoke control for door, shutter and openable window assemblies, including their elements of building hardware* currently consists of:

— *Part 1: General requirements*;

— *Part 2: Fire resistance of hinged and pivoted steel doorsets*;

— *Part 3: Fire resistance of hinged and pivoted timber doorsets and openable timber framed windows*;

— *Part 5: Fire resistance of hinged and pivoted metal framed glazed doorsets and openable windows*;

— *Part 6: Fire resistance of sliding timber doorsets* [in preparation];

— *Part 7: Fire resistance for steel sliding doorsets*;

— *Part 10: Fire resistance of steel rolling shutter assemblies*;

— *Part 11: Fire resistance for operable fabric curtains* [in preparation];

— *Part 20: Smoke control for doors, shutters and openable windows* [the present document].

Introduction

This document is one of a series of standards listed above and is intended to be used for the purpose of producing an extended application report based on the evaluation of one or more fire resistance and/or smoke control tests. These standards may also be used to identify the best selection of test specimens required to cover a wide range of product variations.

A review of the doorset construction parameters can indicate that one or more characteristics may be improved by a particular parameter variation. All evaluations need to be made on the basis of retaining the smoke control classifications obtainable from testing to EN 1634-3. However, this will never lead to an increased classification for any specific smoke performance parameter beyond that achieved during any one test unless specifically identified in the relevant Construction Parameter Variation tables within this series of standards.

Issued extended application reports after prior versions of the series EN 15269 (e.g. EN 15269-20:2009) stay valid as long as there is no change in the construction(s) described in the report.

1 Scope

This document, which is intended to be read in conjunction with EN 15269-1, covers doors, shutters, openable windows and fabric curtains of any material and of the following types:

— hinged and pivoted (e.g. metal, timber, framed glazed) doors and openable windows of single or double leaf (Table A.1);

— horizontally and vertically moving steel sliding doors of single or double leaf with and without pass doors, including telescopic doorsets (Table A.2);

— metal rolling shutters and operable fabric curtains (excluding overlapping systems) (Table A.3).

The following construction products are not covered by this standard:

— unframed glass doors and openable windows;

— sectional doors (including stacking doors);

— vertically and horizontally folding doors;

— horizontally and vertically moving timber sliding doors;

— horizontally and vertically moving framed sliding doors (metal or timber).

In this document, whenever doors are mentioned, the whole range of doors, shutters, openable windows and operable fabric curtains is included or otherwise mentioned.

This document prescribes the methodology for extending the application of test results obtained from test(s) conducted in accordance with EN 1634-3.

Subject to the completion of the appropriate test or tests, the extended application can cover all or some of the following examples:

— Ambient Temperature Smoke Control (S_a) and Medium Temperature Smoke Control (S_{200}) classifications;

— leaf/leaves;

— wall/ceiling fixed elements;

— glazed elements, louvres and/or vents;

— side, transom or overpanels;

— items of building hardware;

— decorative finishes;

— intumescent, smoke, draught or acoustic seals;

— alternative supporting construction(s).

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 179, *Building hardware - Emergency exit devices operated by a lever handle or push pad, for use on escape routes - Requirements and test methods*

EN 1125, *Building hardware - Panic exit devices operated by a horizontal bar, for use on escape routes - Requirements and test methods*

EN 1303, *Building hardware - Cylinders for locks - Requirements and test methods*

EN 1363-1, *Fire resistance tests - Part 1: General Requirements*

EN 1634-1, *Fire resistance and smoke control tests for door and shutter assemblies, openable windows and elements of building hardware - Part 1: Fire resistance test for door and shutter assemblies and openable windows*

EN 1634-3, *Fire resistance and smoke control tests for door and shutter assemblies, openable windows and elements of building hardware - Part 3: Smoke control test for door and shutter assemblies*

EN 1993-1-2, *Eurocode 3: Design of steel structures - Part 1-2: General rules - Structural fire design*

EN 12101-1:2005, *Smoke and heat control systems - Part 1: Specification for smoke barriers*

EN 13501-2, *Fire classification of construction products and building elements - Part 2: Classification using data from fire resistance tests, excluding ventilation services*

EN 15269-1, *Extended application of test results for fire resistance and/or smoke control for door, shutter and openable window assemblies, including their elements of building hardware - Part 1: General requirements*

prEN 15269-11:2016, *Extended application of test results for fire resistance and/or smoke control for door, shutter and openable window assemblies, including their elements of building hardware - Part 11: Fire resistance for operable fabric curtains*

EN 15684, *Building hardware - Mechatronic cylinders - Requirements and test methods*

EN ISO 75-1, *Plastics - Determination of temperature of deflection under load - Part 1: General test method (ISO 75-1)*

EN ISO 75-2, *Plastics - Determination of temperature of deflection under load - Part 2: Plastics and ebonite (ISO 75-2)*

EN ISO 75-3, *Plastics - Determination of temperature of deflection under load - Part 3: High-strength thermosetting laminates (ISO 75-3)*

EN ISO 13943, *Fire safety - Vocabulary (ISO 13943)*

3 Terms and definitions

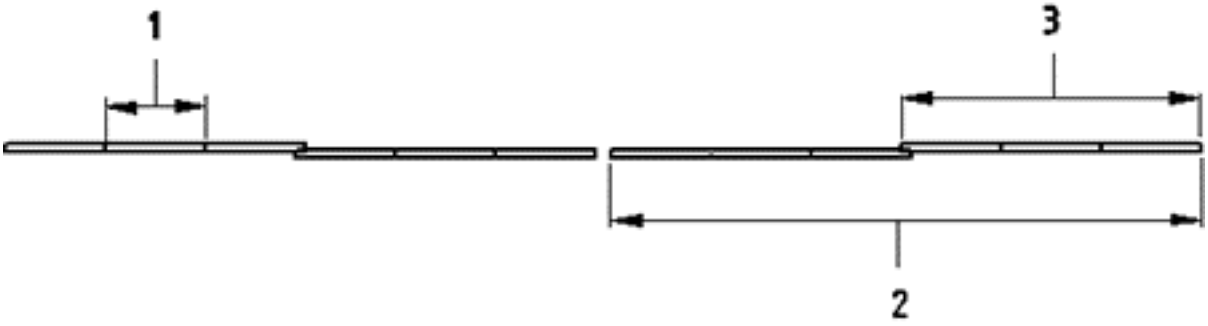
For the purposes of this document, the terms and definitions given in EN 1363-1, EN ISO 13943, EN 1634-1, EN 1634-3 and EN 15269-1 and the following apply.

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

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

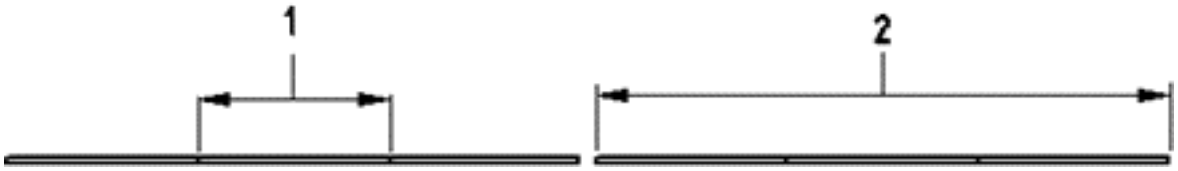
3.1
core
material fitted centrally within the thickness of a door leaf which may consist of a single sheet of material or a combination either of sheets of the same material or layers of different materials

3.2
leaf/element/panel
different parts of a sliding doorset as indicated in Figures 1 and 2 below



Key
1 panel
2 leaf
3 element

Figure 1 — Double leaf telescopic door



Key
1 panel
2 leaf

Figure 2 — Double leaf sliding door

3.3
glazed aperture
cut-out in a solid flush door filled with glass

3.4
glazed panel
glass infill in a framed door or a joinery door

3.5
properly sealed
continuous and tight sealing of any joints or gaps with a gasket or permanently elastic sealing material or a tight constructional joint

3.6
element of building hardware
synonym to “item of building hardware”, means one piece of building hardware, e.g. a lock or a lever-handle.

3.7
flexible supporting construction
constructions with studs made of metal or timber with a full-faced lining at least on one side including constructions with structural steel work or timber structure in the core

4 Determination of the field of extended application

4.1 General

In Clause 4, “doorset” stands for doors, shutters, operable fabric curtains and openable windows as well (which means for any kind of products mentioned in the scope).

4.1.1 Before there can be any consideration for extended application the doorset shall have been tested in accordance with EN 1634-3 to achieve a test result which could generate a classification in accordance with EN 13501-2 at least equal to the classification subsequently required from extended application consideration.

4.1.2 A review of the doorset construction parameters can indicate that one or more characteristics may be improved by a particular parameter variation. All evaluations shall be made on the basis of retaining the classifications obtainable from testing to EN 1634-3. However, this shall never lead to an increased classification for any specific parameter beyond that achieved during any one test.

4.1.3 All evaluations shall be made on the basis of retaining the classification obtained from testing to EN 1634-3.

4.1.4 If, by following the ensuing procedure, any part of the classification cannot be achieved by extended application rules that part of classification shall be omitted from the subsequent extended application report and classification report, if not tested. The test shall be performed from both sides Test scenario F

4.2 Procedure for evaluation

4.2.1 Identify the variations from the original test specimen(s) which are required to be covered by an extended application report.

4.2.2 Locate the variations in the appropriate parameter variation by reference to columns (1) and (2) of Tables A.1, A.2 or A.3.

4.2.3 Establish from the contents of column (3) of Tables A.1, A.2 or A.3, whether any extended application is available without the need for further testing.

4.2.4 Where this is deemed to be possible this can be recorded in the extended application report together with any appropriate restrictions and the stated rules from column (3) in Tables A.1, A.2 or A.3.

4.2.5 Where the variations required can only be achieved from additional testing according to column (4), the additional test can be made on a similar specimen type to the original test against which the extended application is sought. Alternatively, column (3) in Tables A.1, A.2 or A.3 identifies an option for alternative testing and relevant test parameters.

4.3 Procedure for maximum field of extended application

4.3.1 It is possible to provide a limited field of extended application from the results of a single test. However, where a manufacturer intends to produce a range of doors incorporating single doors and also double doors with or without glazing, with alternative elements of building hardware, etc., it is recommended that careful consideration is given to the complete range of doorset designs and options in order to minimize the testing required before testing commences.

4.3.2 Establish all the parameter variations which are required to be part of the product range.

4.3.3 Select specimens for the first tests in the series to ensure that the most important parameter variations for the manufactured products are covered.

4.3.4 Complete the first test or a series of tests and prepare a field of direct application and possibly a classification report from the results of the test(s).

4.3.5 Establish which of the original desired parameter variations have not been covered by the direct application and classification report.

4.3.6 Identify these parameter variations in Annex A and establish where an extended application is possible without further testing.

4.3.7 Record this for the extended application report together with any restrictions and rules given in column (4) in Tables A.1, A.2 or A.3.

4.3.8 Evaluate which, if any, of the desired parameter variations have not been covered by the field of direct application or the initial field of extended application derived from 4.3.7 above.

4.3.9 Select the required outstanding parameter variations from column (1) and column (2) of Tables A.1, A.2 or A.3and observe from column (3) in Tables A.1, A.2 or A.3 which are the most appropriate weakest specimen options for further testing.

4.3.10 If the complete selection of required parameter variations has not been covered by the tests completed in accordance with 4.3.9 above, an appropriate test or tests may be carried out with the additional product variations incorporated.

4.4 Interpretation of test results

4.4.1 In order to maximize the field of extended application, it is important that the test reports shall record details of any failure throughout the duration of the test.

4.4.2 Where a series of tests have been conducted, the field of extended application shall be based on the lowest performance achieved from the complete series of tests unless excessive leakage has been attributed to one or more specific construction parameter variation.

4.4.3 Where it has been possible, to identify leakage due to a specific parameter, the extended application for all other construction parameter variations can be based on the performance achieved after isolating the parameter with excessive leakage.

5 Extended application report

Prepare an extended application report in accordance with the requirements of EN 15269-1 based on the results of evaluations in accordance with the above.

6 Classification report

The classification report shall be determined from the results of the extended application report and shall be presented in accordance with EN 13501-2.

Annex A
(normative)

Construction parameter variations

The tables are designed to provide rules for the creation of extended application reports by experts in the field of smoke control testing of:

— Table A.1: hinged and pivoted doorsets.

— Table A.2: horizontally sliding doorsets (single leaf and double leaf), telescopic doorsets, (single leaf and double leaf) and single leaf vertically sliding doorsets.

— Table A.3: metal rolling shutters and operable fabric curtains (excluding overlapping systems).

The Tables A.1, A.2 or A.3 shall only be used to evaluate a field of extended application when at least one positive smoke control test to EN 1634-3 has resulted in a classification according to EN 13501-2.

The first two columns of Tables A.1, A.2 or A.3 identify possible variations to the construction details of the specimen tested.

Column (3) of Tables A.1, A.2 or A.3 gives the possibility of extending the field of application.

Where additional tests are deemed to be necessary, column (4) of Tables A.1, A.2 or A.3 defines the test scenario to be used. Where it is possible to use information from tests performed on one configuration for evidence on a different configuration, this allowance has been made in order to reduce the overall number of tests required for extended application evaluation (e.g. single action doorsets to double action doorsets).

The following test scenarios are defined and referred to in column (4) of Tables A.1, A.2 or A.3:

Test scenario A: Test shall be performed with a single or double leaf door

Test scenario B: Tests shall be performed from both sides with a single leaf door.

Test scenario C: Tests shall be performed from both sides with a double leaf door.

Test scenario D: Test shall be performed from the worst side with a double leaf door for single or double leaf doors or with a single leaf door for single leaf doors

Test scenario E: Test shall be performed from the worst side with a single leaf door for single leaf doors or a double leaf door for double leaf doors respectively

Test scenario F: Tests shall be performed from both sides with a single leaf door for single leaf doors or a double leaf door for double leaf doors respectively. If the double leaf door test leads to a leakage of ≤ 20 m^3/h, this test is sufficient for single leaf doors as well.

Test scenario G: Tests shall be performed from both sides with a single or double leaf sliding door.

Test scenario H: If the hardware does interfere with the smoke seal more than tested: Tests shall be performed from both sides with a single leaf door for single leaf doors or a double leaf door for double leaf doors respectively. If the double leaf door test leads to a leakage of ≤ 20 m^3/h, this test is sufficient for single leaf doors as well.

Otherwise: Test shall be performed on the opening face with a double leaf door for single or double leaf doors or with a single leaf door for single leaf doors

Test scenario I: Test shall be performed from one side with the part(s) changed faced to the furnace.

Where an additional test is required in column 4, the test shall be a full scale test according to EN 1634-3 at least with the size of the initial test described in 4.1.1., unless it is otherwise specified by the notified product certification body, or the details changed are limited to the tested size. The test shall be performed with the specimen tested from the side with the higher leakage achieved in the tests mentioned in 4.1.1 (worst side) unless it is otherwise specified.

Where additional tests from both sides are required, it is defined in Annex A explicitly (test scenarios B, C, F, G and H). In this case one specimen can be used for both tests. If the specimen shall be tested without a specific hardware, the hardware can be installed in the specimen, but set disengaged.

The rules for increase of the maximum size of Annex C are to be considered to all variations of Tables A.1, A.2 or A.3, if they shall be applied to a larger size. A variation must not lead to an overload or an improper deformation of any component (which might e.g. prevent to close fully). For rolling shutters and operable fabric curtains stability and limitation of deformations are crucial for the leakage. Calculation principles for stresses and strains are given in Annex D and examples for calculations for relevant parts in Annex E.

Interpolations between minimum and maximum size tested of any measure is possible if not otherwise specified in Tables A.1, A.2 or A.3. The influence of parameter variations on the statics of a doorset or curtain assembly always shall be considered by the manufacturer.

Solid timber can be replaced by other solid timber of the same or higher density. Glued timber with solid pieces of min. 10 mm thickness may be used as solid timber. Composite wood products (e.g. Medium Density Fibreboard) may not be replaced with other materials or composites. Timber doors with metal inlays shall follow the rules for metal doors. Test results achieved with a timber door with metal inlays may not be used to evaluate the extended field of application of a timber doors without metal inlays and vice versa.

If after consideration of a specific variation, additional changes are required to be made to the specimen, these may be made providing the implications on other variations are also taken into account. If two or more variations should be tested within the same specimen, those variations should not interfere (negative or positive) with each other, unless the variations are always used together.

Table A.1 — Construction parameter variations for hinged and pivoted doors and openable windows (metal, timber, framed glazed doors and openable windows) of single or double leaf, excluding unframed glass doors and openable windows

Construction parameter (1)		Variation (2)	Possibility of extension (3)	Additional evidence required (4)
A	**Door leaf**			
In certain cases, the rules given in Section A are also appropriate to side and overpanels or the door frame; where this is the case it is clearly indicated in column (1). For double leaf doorsets, both leafs shall be of the same basic construction.				
A.1	**General**			
A.1.1	Number of leafs	Single leaf from double leaf doorset	Possible for S_a if the sealing system on the lock side is already tested on the double leaf door and the leakage is not more than $3 m^3/m/h$. Otherwise not possible without an additional test. Not possible for S_{200} without an additional test	Test scenario B
A.1.2	Number of leafs	Double leaf from single leaf doorset	Not possible without additional test	Test scenario C
A.1.3	Smoke seals (fitted at leaf to frame interface) – **see Figure A.1a**	Location towards the frame rebate	Not possible without additional test	Test scenario F
A.1.4	Smoke seals (fitted at leaf to frame interface) – **see Figure A.1b**	Location away from the frame rebate	Not possible without additional test	Test scenario F
A.1.5	Smoke seals (fitted in meeting edges)	Location change	Not possible without additional test	Test scenario C
A.1.6	Smoke seals (fitted in leaf or frame)	Add/Remove	Not possible without additional test	Test scenario F
A.1.7	Intumescent seals (fitted in leaf or frame) which are separate from the smoke seal	Add / Remove / Location change / Alternative	Possible providing the smoke sealing system is not interfered Otherwise not possible without additional test	Test scenario F
A.1.8	Louvres in door leaf or panel	Add	Not possible without additional test	Test scenario F

Construction parameter (1)		Variation (2)	Possibility of extension (3)	Additional evidence required (4)
A.1.9	Louvres in door leaf or panel	Remove	Possible	
A.1.10	Louvres in door leaf or panel tested with louvre	Fitting higher or lower in the leaf	Possible	
A.1.11	Louvres in door leaf or panel tested with louvre	Fitting to the side of the tested position	Possible	
A.1.12	Louvres in door leaf or panel tested with louvre – **see Figure A.3**	Smaller size (total area)	Possible	
A.1.13	Louvres in door leaf or panel tested with louvre	Larger size (for area or dimensions)	Not possible without additional test	Test scenario F
A.1.14	Louvre tested in double leaf doorset	Change position of louvre from one leaf to the opposite leaf	Possible if the area of the louvre is not more than 15 % of door leaf area or providing that both door leafs are active or the louvre is tested in active leaf. Otherwise not possible without an additional test.	Test scenario B
A.1.15	Leaf edge rebate (to door leaf or panel – not at the meeting edges; see section A.2 for meeting edge parameters) – **see Figure A.4**	Add (added rebate shown shaded in drawings)	Possible providing the rebate does not lead to reduced compression on the seals and any stiffening components in the door leaf are not reduced Otherwise not possible without an additional test.	Test scenario F
A.1.16	Leaf edge rebate (to door leaf or panel – not at the meeting edges; see section A.2 for meeting edge parameters)	Remove	Not possible without additional test	Test scenario F
A.1.17	Change in mode of operation (single/double action)	Alternative	Possible for S_a to provide a double action doorset from a single action doorset providing the sealing system, including the area around the hinges/pivots, is unchanged, otherwise not possible	Test scenario F

<table>
<tr><th colspan="2">Construction parameter
(1)</th><th>Variation
(2)</th><th colspan="4">Possibility of extension
(3)</th><th>Additional evidence required
(4)</th></tr>
<tr><td>A.1.18</td><td>Latched condition for single leaf or double leaf doorsets – see Figure A.5</td><td>Change in latching condition</td><td colspan="4">Possible for S_a in line with the following relationship otherwise not possible without an additional test:</td><td rowspan="8">Test scenario E</td></tr>
<tr><td colspan="2" rowspan="6"></td><td rowspan="6"></td><td></td><td>tested without a latch/lock/bolt</td><td>tested with a latch/lock/bolt but unlatched</td><td>tested with a latch/lock/ bolt, latched</td></tr>
<tr><td>extension to: without a lock/latch/ bolt</td><td>as tested</td><td>possible</td><td>not possible</td></tr>
<tr><td>extension to: with a lock/latch/ bolt</td><td>possible</td><td>possible</td><td>as tested</td></tr>
<tr><td colspan="4"></td></tr>
<tr><td colspan="4">Possible for S_{200} in line with the following relationship otherwise not possible without an additional test:</td></tr>
<tr><td></td><td>tested without a latch/lock/bolt</td><td>tested with a latch/lock/bolt but unlatched</td><td>tested with a latch/lock/ bolt, latched</td></tr>
<tr><td>extension to: without a lock/latch/ bolt</td><td>as tested</td><td>possible</td><td>not possible</td></tr>
<tr><td>extension to: with a lock/latch/ bolt</td><td>not possible</td><td>not possible</td><td>as tested</td></tr>
</table>

Construction parameter (1)		Variation (2)	Possibility of extension (3)	Additional evidence required (4)
A.1.19	Additional seals (additional to the smoke sealing system) fitted in leaf or frame (e.g. noise reduction)	Add	Possible providing the sealing system is not interfered. Otherwise not possible without an additional test.	Test scenario F
A.2	**Meeting edge detail**			
A.2.1	Meeting edge detail – **see Figure A.6**	Change in edge detail	Possible for S_a for rebated details shown in Figure A.6, interchange between a) and b) only. Change from a) or b) to g) possible but not vice versa providing the smoke sealing system is not interfered. Otherwise not possible without an additional test.	Test scenario C
A.2.2	Astragal – **see Figure A.6f)**	Add	Possible	
A.2.3	Astragal – **see Figure A.6f)**	Remove	Not possible without additional test	Test scenario C
A.3	**Size variations**			
A.3.1	Size of leaf or panel (area, width, height)	Decrease	Possible	

Construction parameter (1)		Variation (2)	Possibility of extension (3)	Additional evidence required (4)
A.3.2	Height/width/area of door leaf	Increase	The size may be increased based on the calculation in Annex C and the following limitations: a) The sealing system is unchanged. b) For hinged or pivoted latched doors: Size increase is permitted up to 25 % height, 25 % width and 25 % in area without additional movement restrictors as locks, bolts, hinges etc. For larger size increases up to 25 % height, 25 % width and 50% in area the number of movement restrictors shall be increased according to the size change, maintaining positions between movement restrictors and distances from leaf corners as tested. c) For hinged or pivoted unlatched doors: Not possible without an additional test. Otherwise not possible without an additional test.	Test scenario F
A.3.3	Thickness of the door leaf or panel	Increase	Possible for S_a Possible for S_{200} steel and metal framed doors excluding timber doors with metal inlay. For S_{200} timber doors: possible for door leaves without metal inlay Otherwise not possible without an additional test. Possible to interpolate between the smallest and largest tested thickness.	Test scenario F
A.3.4	Thickness of the door leaf or panel	Decrease	Not possible without an additional test. Possible to interpolate between the smallest and largest tested thickness.	Test scenario F
A.4	**Materials and constructions**			

Construction parameter (1)		Variation (2)	Possibility of extension (3)	Additional evidence required (4)
A.4.1	Density of core material of leaf or panel	Increase/decrease	Possible for S_a doorsets. Possible for S_{200} providing the increase/decrease is not greater than 25 %. Otherwise not possible without an additional test.	Test scenario A
A.4.2	Pattern of core material of leaf or panel **– see Figure A.7**	Increase number of pieces	Possible for S_a. Possible for S_{200} by 50 % providing the test included more than one joint. Possible also proportionately with a leaf/panel size increase. For double leaf doorsets, the rule shall be applied to each leaf separately. Otherwise not possible without additional test.	Test scenario A
A.4.3	Pattern of core material of leaf or panel	Decrease number of pieces	Possible for S_a. Possible for S_{200} steel based doorsets providing the fixing technique is unchanged and possible for S_{200} timber based doorsets by up to 50 % providing one joint in the core material remains. Possible also proportionately with a leaf/panel size decrease. For double leaf doorsets, the rule shall be applied to each leaf separately, otherwise not possible without additional test.	Test scenario A
A.4.4	Number of layers of identical core material of leaf or panel	Increase number of layers	Possible for S_a. Possible for S_{200} steel based doorsets providing the fixing technique to the toplayer/coverplate (e.g. steelsheet of the steeldoor) is unchanged. Possible for S_{200} timber based doorsets providing the test included more than two joints and the fixing technique to the toplayer/coverplate is unchanged. Otherwise not possible without additional test.	Test scenario A

Construction parameter (1)		Variation (2)	Possibility of extension (3)	Additional evidence required (4)
A.4.5	Number of layers of identical core material of leaf or panel	Decrease number of layers	Possible for S_a. Possible for S_{200} providing the fixing technique to the toplayer/coverplate (e.g. steelsheet of the steeldoor) is unchanged. Otherwise not possible without additional test.	Test scenario A
A.4.6	Number of layers of different materials – **see Figure A.25**	Change	Rules A.4.4 and A.4.5 can be used for change of any non-metal based layer of composite core materials.	
A.4.7	Type of core material in leaf or panel (single thickness or in combination of different layers)	Change of manufacturer (same product type)	Possible	
A.4.8	Type of core material in leaf or panel (single thickness or in combination of different layers)	Alternative composition of same basic product type	Possible for S_a. Possible for S_{200} providing the density is not changed by more than 25 %. Otherwise not possible without an additional test.	Test scenario D
A.4.9	Type of core material in leaf or panel (single thickness or in combination of different layers)	Alternative	Not possible without an additional test.	Test scenario F
A.4.10	Facings (for timber doorsets)	Alternative type without metal	Possible for S_a based on direct application. Possible for S_{200} to interchange wood based facings without any metal-sheets/foils based on the direct application for S_{200} doorsets and providing the alternative is of the same or higher density and the same or greater thickness (subject to A.4.9) and that the assembly technique is not changed, otherwise not possible without additional test	Test scenario F

Construction parameter (1)	Variation (2)	Possibility of extension (3)	Additional evidence required (4)
A.4.11 Facings (for timber doorsets)	Alternative type with metal	Possible for S_a based on direct application. Possible for S_{200} to interchange wood based facings with metal-sheets/foils based on the direct application for S_{200} doorsets and providing the alternative is of the same or higher density, same or lower expansion coefficient and thickness of the metal layer and the same or greater over-all thickness (subject to A.4.9) and that the assembly technique is not changed, otherwise not possible without additional test.	Test scenario D
A.4.12 Facings (for timber doorsets)	Increase in thickness	Possible providing the sealing system will not be affected. Otherwise not possible without an additional test	Test scenario D
A.4.13 Facings (for timber doorsets)	Decrease in thickness	Not possible without an additional test	Test scenario D
A.4.14 Type of adhesives used in leaf or panel	Change of supplier/manufacturer for identical composition	Possible	
A.4.15 Type of adhesives used in leaf or panel	Alternative composition	Possible for S_a. Not possible for S_{200} without an additional test.	Test scenario D
A.4.16 Amount of adhesive / m^2	Increase	Possible	
A.4.17 Amount of adhesive / m^2	Decrease	Not possible without an additional test	Test scenario D
A.4.18 Glued area (partially or fully glued)	Increase	Possible	
A.4.19 Glued area (partially or fully glued)	Decrease	Not possible without an additional test	Test scenario D

Construction parameter (1)		Variation (2)	Possibility of extension (3)	Additional evidence required (4)
A.4.20	Metal protective sheet (internally mounted) used in leaf or panel	Add	Possible for S_a. Possible for S_{200} providing the sheet is not fixed to the leaf's material (so that the sheet can expand without affecting the leaf) and thickness is ≤ 2mm. Otherwise not possible without an additional test.	Test scenario E
A.4.21	Metal protective sheet (internally mounted) used in leaf or panel	Remove	Possible for S_a. Possible for S_{200} providing the sheet was not fixed to the leaf's material (so that the sheet can expand without affecting the leaf) and thickness was ≤ 1mm for timber based doors or ≤ 2mm for steel based doors respectively. Otherwise not possible without an additional test.	Test scenario E
A.4.22	Cross-section dimension of stiffening elements in leaf or panel	Increase	Possible for S_a. Possible for S_{200} for timber doors. Possible for S_{200} for steel doors in line with A.3.3 only to adapt to the changed thickness. Otherwise not possible without an additional test.	Test scenario D
A.4.23	Cross-section dimension of stiffening elements in leaf or panel	Decrease	Not possible without additional test.	Test scenario D
A.4.24	Framing elements of leaf or panel for timber doors with/without metal inlay	Change of species	Possible providing the density is the same or higher. Otherwise not possible without an additional test.	Test scenario D
A.4.25	Jointing technique (leaf edges, stiffening elements, etc.) - not for metal framed doors (see chapter A.7)	Alternative (e.g. welding / riveting / screwing / glueing)	Possible for S_a. Possible for S_{200} providing the stiffness of the leaf is not reduced. Otherwise not possible without an additional test.	Test scenario D

Construction parameter (1)		Variation (2)	Possibility of extension (3)	Additional evidence required (4)
A.4.26	Decorative leaf or panel edge detail – **see Figure A.9**	Shape	Possible providing the alternative shape doesn't interfere with the sealing system. Otherwise not possible without an additional test.	Test scenario D
A.4.27	Dimension of smoke seals (fitted in leaf or frame) – **see Figure A.2**	Increase	Possible providing the part of the increase doesn't affect the functional part of the sealing system.(e.g. the increase is located in the seal base). Possible to interpolate between the smallest and biggest tested size of the smoke seal (same shape type). Otherwise not possible without additional test.	Test scenario F
A.4.28	Dimension of smoke seals (fitted in leaf or frame) – **see Figure A.2**	Decrease	Possible providing the part of the decrease doesn't affect the functional part of the sealing system.(e.g. the decrease is located in the seal base). Possible to interpolate between the smallest and biggest tested size of the smoke seal (same shape type). Otherwise not possible without additional test.	Test scenario F
A.4.29	Type of smoke seals (fitted in leaf or frame)	Change of supplier/manufacturer	Possible if the composition, material, size and shape are identical (identical means within the limits of the specified production features e.g. shore-hardness). Otherwise not possible without an additional test.	Test scenario F
A.4.30	Type of smoke seals (fitted in leaf or frame)	Alternative material	Not possible without additional tests.	Test scenario F
A.4.31	Dimensions of gaps between frame and leaf and between the meeting edges for double leaf doors	Increase / Decrease	Possible in line with direct application. Possible separately for each gap on each edge (top, bottom, hinge side, lock side) according to the following rule: X = (A+B)/2 (X = the maximum permitted gap size, A = the maximum measured gap size, B = the mean measured gap size, X can be rounded up to the next 0,5 step (e.g.: 1,7 is rounded up to 2,0 mm)) Otherwise not possible without an additional test.	Test scenario F

Construction parameter (1)		Variation (2)	Possibility of extension (3)	Additional evidence required (4)
A.4.32	Type of steel sheet and steel stiffening elements (not applicable for metal framed doors, see chapter A.7)	Mild steel to stainless steel	Possible for S_a. Not possible for S_{200} without an additional test.	Test scenario E
A.4.33	Type of steel sheet and steel stiffening elements (not applicable for metal framed doors, see chapter A.7)	Stainless steel to mild steel	Possible	
A.4.34	Thickness of rebate (door leaf to frame/door leaf to door leaf) **– see Figure A.21**	Increase	Not possible for door leaf to door leaf without an additional test. Possible for door leaf to frame, providing the sealing system is not affected. Otherwise not possible without an additional test	Test scenario F
A.4.35	Thickness of rebate (door leaf to frame/door leaf to door leaf) **– see Figure A.21**	Decrease	Not possible for door leaf to door leaf without an additional test. Possible for door leaf to frame, providing the sealing system is not affected. Otherwise not possible without an additional test	Test scenario F
A.4.36	Thickness of steel cover sheet	Increase	Possible for S_a.. Possible for S_{200} to a maximum of 10 %. Otherwise not possible without an additional test.	Test scenario D
A.4.37	Thickness of steel cover sheet	Decrease	Not possible without an additional test.	Test scenario D
A.5	**Decorative and / or protective finishes**			
A.5.1	Decorative laminates/timber veneers on the face and/or edges (on leaf, panel or frame)	Add	Possible up to a thickness of 3 mm and providing the sealing system is not affected and for timber doors the decorative finish is without metal inlay. Otherwise not possible without an additional test.	Test scenario D

Construction parameter (1)		Variation (2)	Possibility of extension (3)	Additional evidence required (4)
A.5.2	Decorative laminates/timber veneers on the face and/or edges (on leaf, panel or frame)	Remove	Possible providing the tested thickness of decorative laminates/timber veneers is not more than 1.5 mm and the sealing system is not affected. Otherwise not possible without an additional test.	Test scenario D
A.5.3	Decorative plastics edging (on leaf or panel)	Add	Possible providing the sealing system is not affected. Otherwise not possible without an additional test.	Test scenario F
A.5.4	Decorative plastics edging on the edges (on leaf or panel)	Remove	Possible providing the sealing system is not affected. Otherwise not possible without an additional test	Test scenario F
A.5.5	*unused (see A.5.3)*			
A.5.6	*unused (see A.5.4)*			
A.5.7	Species of timber lippings on leaf or panel	Change of species	Possible	
A.5.8	Lippings on leaf or panel	Change size	Possible providing the sealing system is not affected. Otherwise not possible without an additional test	Test scenario F
A.5.9	Lippings on leaf or panel	Add	Possible providing the sealing system is not affected. Otherwise not possible without an additional test	Test scenario F
A.5.10	Lippings on leaf or panel	Remove	Possible providing the sealing system is not affected. Otherwise not possible without an additional test	Test scenario F
A.5.11	Protective plates – face fixed (kick plates / push plates / protective plates) on leaf or panel – only for timber doors with/without metal inlay	Recessed to unrecessed	Possible providing the sealing system is unaffected. Otherwise not possible without an additional test.	Test scenario F

Construction parameter (1)		Variation (2)	Possibility of extension (3)	Additional evidence required (4)
A.5.12	Protective metal plates – face fixed (kick plates / push plates / protective plates) on leaf or panel – only for timber doors with/without metal inlay	Unrecessed to recessed	Possible for plates up to 1.5 mm thick providing the sealing system is unaffected. Otherwise not possible without an additional test.	Test scenario F
A.5.13	Protective elements for steel doors – face fixed (kick plates/push plates/armour plates)– **see Figure A.10.** Not applicable to metal framed doors and timber doors with metal inlays	Add	Possible for S_a providing the sealing system is not affected. Possible for S_{200} for one piece no thicker than 1,5 mm up to 800 mm from the base of the leaf or limited to maximum two pieces no thicker than 3 mm per face with a width or height of up to 250 mm (second dimension is limited to the door leaf width/height) providing the sealing system is not affected. Otherwise not possible without an additional test.	Test scenario D
A.5.14	Protective elements for timber doors with/without metal inlays – face fixed (kick plates/push plates/armour plates)– **see Figure A.10.** Not applicable to timber framed doors	Add	Possible for S_a providing the sealing system is not affected. Possible for S_{200} for one piece per face no thicker than 1,5 mm and with a width/height of up to 250 mm, mounted below the handle and providing the sealing system is not affected. Otherwise not possible without an additional test.	Test scenario D
A.5.15	Protective elements – face fixed (kick plates/push plates/armour plates)	Remove	Possible for S_a providing the sealing system is not affected. For S_{200} not possible without an additional test.	Test scenario F
A.5.16	Protective elements for timber or metal framed doors – face fixed (kick plates/push plates/armour plates)	Add	Possible for S_a providing the sealing system is not affected. Possible for S_{200} for one piece no thicker than 1,5 mm up to 300 mm from the base of the leaf providing the sealing system is not affected. Otherwise not possible without an additional test.	Test scenario F

Construction parameter (1)	Variation (2)	Possibility of extension (3)	Additional evidence required (4)
A.5.17 Attachment technique of protective elements (as described above) on leaf or panel	Alternative (adhesive / screw)	Possible providing the sealing system is not affected. Otherwise not possible without an additional test.	Test scenario F
A.5.18 Mouldings (on the face of the leaf, panel or glazed aperture)	Add	Possible providing the sealing system is not affected. Otherwise not possible without an additional test.	Test scenario F
A.5.19 Mouldings (on the face of the leaf, panel or glazed aperture)	Remove	Possible providing the sealing system is not affected. Otherwise not possible without an additional test.	Test scenario F
A.6 Joinery Type timber framed doorsets This section refers to doorsets which are made using a perimeter, and where applicable internal, framing made of solid or laminated timber based materials, and which include one or more panels. The panels/apertures are normally formed using the perimeter and internal framing sections. This section covers specific rules for these types of doorsets only. For variations on glazed panels, refer to Section F.			
A.6.1 Cross-section dimension of perimeter / intermediate framing elements in leaf or panel	Increase	Possible	
A.6.2 Intermediate framing in leaf or panel	Remove	Possible	
A.6.3 Intermediate framing in leaf or panel	Add	Not possible without an additional test	Test scenario D
A.6.4 Panel size	Increase	Possible only for an proportional increase in line with A.3.2 Otherwise not possible without an additional test	Test scenario D
A.6.5 Panel size	Decrease	Possible	
A.6.6 Panel construction	Alternative	Possible in line with rule F.1.10 Otherwise not possible without an additional test	Test scenario D

Construction parameter (1)	Variation (2)	Possibility of extension (3)	Additional evidence required (4)
A.7 Metal framed doorsets This section refers to doorsets which are made using a perimeter, and where applicable internal, framing made of metal with or without thermal break, and which include one or more panels. The panels/apertures are normally formed using the perimeter and internal framing sections. This section covers specific rules for these types of doorsets only. For variations on glazed panels, refer to Section F. The following rules can also be applied to profiles in side and over panels.			
A.7.1 Profile material	Change metal	For S_a possible to interchange between mild and stainless steel. For S_{200} possible to change from stainless to mild steel. Otherwise not possible without an additional test.	Test scenario F
A.7.2 Profile geometry – **see Figures A.29 and A.30**	Modification	Possible to interpolate between the smallest and biggest tested base body cross section. Possible to modificate the profile outside of the base body (e.g. small lips or noses) providing the sealing system is not affected. Otherwise not possible without an additional test.	Test scenario F
A.7.3 Thermal break – **see Figure A.30**	Add/Remove	For S_a possible providing the new profile has an equal or higher stiffness (It, Ix and Iy) and the sealing system is not affected. For S_{200} removing is possible providing the new profile has an equal or higher stiffness (It, Ix and Iy). Otherwise not possible without an additional test.	Test scenario F
A.7.4 Thermal break	Change manufacturer	For S_a possible providing the sealing system is not affected. For S_{200} possible for the same type of material and same geometry, otherwise not possible without an additional test.	Test scenario F
A.7.5 Thermal break	Change size (distance between metal profiles)	For S_a possible. For S_{200} possible to interpolate between the smallest and biggest tested thermal break. Otherwise not possible without an additional test.	Test scenario F

Construction parameter (1)	Variation (2)	Possibility of extension (3)	Additional evidence required (4)
A.7.6 Thermal break	Modificate geometry of thermal break without change of distance between metal profiles	Possible to modify the thermal break providing the new thermal break has an equal or higher stiffness (It, Ix and Iy) and providing the sealing system is not affected, otherwise not possible without an additional test.	Test scenario F
A.7.7 Thermal break	Change material	For S_a possible. Otherwise not possible without an additional test.	Test scenario F
A.7.8 Profile infill – **see Figure A.30**	Add	For S_a possible. For S_{200} possible for non metal infills providing they are not force-fitted connected to the profile and are non stiffening otherwise not possible without an additional test.	Test scenario F
A.7.8.1 Profile infill **– see Figure A.30**	Increase thickness	For S_a possible. For S_{200} possible for non metal infills providing they are not force-fitted connected to the profile and are non stiffening otherwise not possible without an additional test.	Test scenario F
A.7.9 Profile infill **– see Figure A.30**	Remove	For S_a possible, otherwise not possible without an additional test.	Test scenario F
A.7.9.1 Profile infill **– see Figure A.30**	Decrease thickness	For S_a possible, otherwise not possible without an additional test.	Test scenario F
A.7.10 Profile infill	Alternative composition of same basic product type	Possible for S_a. Possible for S_{200} providing the density is not changed by more than 25 %. Otherwise not possible without an additional test.	Test scenario F
A.7.11 Profile infill	Change of supplier/manufacturer for identical composition or the same type according to a product standard	Possible for S_a. Possible for S_{200} providing the density is not changed by more than 25 %. Otherwise not possible without an additional test.	Test scenario F

Construction parameter (1)		Variation (2)	Possibility of extension (3)	Additional evidence required (4)
A.7.12	Profile connections - corner jointing and horizontal/vertical glazing bars jointing	Connection method: gluing, grouting, welding, screwing	Any interchange possible beside change to screwing without sealing the joint, otherwise not possible without an additional test.	Test scenario F
A.7.13	Profile connections – corner jointing	Connection: butt joint, mitre joint	Possible to change from butt joint to mitre joint but not vice versa and providing the sealing system is not affected, otherwise not possible without an additional test.	Test scenario F
A.7.14	Profile connections – coupling – **see Figure A.30**	Add	For S_a possible providing the joint is sealed properly and the sealing system is not affected. For S_{200} possible to interpolate between the smallest and highest number of couplings. Otherwise not possible without an additional test.	Test scenario F
A.7.15	Profile connections – coupling – **see Figure A.30**	Remove	Possible to interpolate between the smallest and highest number of couplings. Otherwise not possible without an additional test.	Test scenario F
A.7.16	Surface mounted metal sheets (e.g. protective elements) on profiles	Add	For S_a possible providing the sealing system is not affected, otherwise not possible without an additional test.	Test scenario F
A.7.17	Surface mounted metal sheets (e.g. protective elements) on profiles	Remove	Not possible without an additional test.	Test scenario F
A.7.18	Vertical glazing bars) – **see Figure A.31**	Add	Possible if at least one stile was tested in the door leaf providing the same glass-retention and sealing system is used. The distance of the additional stile to the closing edge shall be larger than tested. Otherwise not possible without an additional test.	Test scenario F
A.7.19	Horizontal rails (glazing bars) – **see Figure A.32**	Add	Possible if at least one rail was tested in the door leaf providing the same glass-retention and sealing system is used. The distance of the additional rail to the top edge shall be larger than tested. Otherwise not possible without an additional test.	Test scenario F

Construction parameter (1)		Variation (2)	Possibility of extension (3)	Additional evidence required (4)
A.7.20	Vertical stiles and horizontal rails (glazing bars) – **see Figure A.33**	Change angle	Possible if tested in accordance to Figure A.33. Otherwise not possible without an additional test.	Test scenario F
A.7.21	Vertical stiles and horizontal rails (glazing bars)	Remove (completely)	Possible providing the size of the glass is not bigger then the biggest tested glass-size, otherwise not possible without an additional test.	Test scenario F
A.7.22	Vertical stiles and horizontal rails (glazing bars)	Decrease number	Possible providing the size of the glass is not bigger then the biggest tested glass-size, otherwise not possible without an additional test.	Test scenario F
B.	**Door Frame**			
B.1.	**General**			
B.1.1	Position of a door above floor level	Alternative	Possible	
B.1.2	Position of door frame within the thickness of the supporting construction **– see Figure A.26**	Alternative	Possible providing the door frame does not project beyond the face of the supporting construction more than tested. Otherwise not possible without an additional test.	Test scenario F
B.1.3	Change of Position of door frame from “within the supporting construction” to “on the face” of the supporting construction **– see Figure A.27**	“Within” to “on the face”	Possible	
B.1.4	Change of Position of door frame from “within the supporting construction” to “on the face” of the supporting construction **– see Figure A.27**	“On the face” to “Within”	Not possible without an additional test	Test scenario D

Construction parameter (1)		Variation (2)	Possibility of extension (3)	Additional evidence required (4)
B.1.5	Threshold/bottom frame member at the bottom of the doorset (three-sided to four-sided frame) **– see Figure A.8**	Add (including replacement of threshold sealing)	Possible for S_a. Possible for S_{200} providing the tested bottom sealing system is maintained or replaced by the sealing system tested at the upper edges of the door leaf and the height of the door leaf is not more then 50% of the maximum tested height. Otherwise not possible without an additional test.	Test scenario E
B.1.6	Threshold at the bottom of the doorset	Remove	Possible for S_a Not possible for S_{200} without an additional test:	Test scenario D
B.1.7	Change of Position of door frame "on the face" of the supporting construction **– see Figure A.27**	Alternative	Possible	
B.1.8	Frame profile	Change from corner to wrap around or block	Possible providing the rebate depth is maintained, otherwise not possible without an additional test	Test scenario F
B.2	**Materials and Constructions**			
B.2.1	External Dimensions	Increase	Possible providing the rebate depth is maintained. For blockframe projected/face width increase is limited up to 300 mm, for face-mounted frames without limit, otherwise not possible without an additional test	Test scenario D
B.2.2	External Dimensions	Decrease	Possible for S_a providing the rebate depth is maintained and the connection to the wall is properly sealed. Otherwise not possible without an additional test.	Test scenario F
B.2.3	Profile connections – coupling – **see Figure A.30**	Add	Possible providing the joint is sealed properly and the sealing system is not affected. For blockframe projected/face overall width is limited up to 300 mm, for face-mounted frames without limit. Otherwise not possible without an additional test.	Test scenario F

Construction parameter (1)	Variation (2)	Possibility of extension (3)	Additional evidence required (4)
B.2.4 Profile connections – coupling – **see Figure A.30**	Remove	Possible	
B.2.5 Thermal break – **see Figure A.30**	Add/Remove	For S_a possible providing the sealing system is not affected. For S_{200} removing is possible. Otherwise not possible without an additional test.	Test scenario F
B.2.6 Type of frame material (timber)	Change timber type	Possible for timber and laminated timber.	
B.2.7 Type of frame material (timber)	Timber to derived timber product and vice versa	For Sa: derived timber product to timber possible Otherwise not possible without an additional test	Test scenario D
B.2.8 Type of frame material (derived timber product)	Change type	Possible providing the density is the same or higher and the finished surface is covered all-over by a dense material (e.g. foil, laminate, veneer). Otherwise not possible without an additional test.	Test scenario D
B.2.9 Type of frame material (metal)	Change metal type (e.g. mild steel, stainless steel, aluminium)	Possible for S_a. Possible for S_{200} if they are fixed directly to the supporting construction (directly in the sense of a close contact, the distance between frame and supporting construction shall not exceed 30mm). Otherwise not possible without an additional test.	Test scenario D
B.2.10 Type of frame material	Interchange material (timber and steel)	Possible for steel to timber (but not vice versa) providing the sealing system is not interfered. Otherwise not possible without an additional test.	Test scenario F
B.2.11 Thickness of steel	Increase	Possible	
B.2.12 Thickness of steel	Decrease	Possible up to a maximum of 25% decrease. Otherwise not possible without an additional test.	Test scenario D

Construction parameter (1)		Variation (2)	Possibility of extension (3)	Additional evidence required (4)
B.2.13	Type of infill material (in any frame)	Alternative material or without infill material	Possible for S_a where seal to supporting construction is unchanged. Possible for S_{200} where seal to supporting construction is unchanged and providing the density of the infill material is not decreased. If tested without infill material, any other material is allowed. Otherwise not possible without an additional test.	Test scenario D
B.2.14	Assembling technique for timber based frame members	Alternative	Possible to change from nails to screw fixings, or from butt joint to mortice and tenon joint. Also possible to change from staples to nails or screws. Otherwise not possible without an additional test.	Test scenario D
B.2.15	Assembling technique for metal frame members	alternative (welding / riveting / screwing)	Possible providing the meeting edge is properly sealed. Otherwise not possible without an additional test.	Test scenario A
B.3	**Protection**			
B.3.1	Protection of frame members – **see Figure A.11**	Add/Remove	Possible providing the protection does not interfere with the smoke seal. Otherwise not possible without an additional test.	Test scenario F
C.	**Building hardware**			
C.1	**General** It is a requirement of this document, that all items of building hardware are in accordance with the relevant technical specification and that the building hardware is appropriate to the class of use of the door. Where hardware can be removed, no openings or holes should remain or they should be sealed/closed properly.			
C.1.1	Latches / locks, bolts (flush, mortiсed, internal or surface mounted) and strike plates	Alternative	Possible providing the hardware does not interfere with the smoke seal more than tested otherwise not possible without additional test	Test scenario F
C.1.2	Strike plates	Add / remove	Possible providing the hardware does not interfere with the smoke seal more than tested otherwise not possible without additional test	Test scenario F

Construction parameter (1)	Variation (2)	Possibility of extension (3)	Additional evidence required (4)
C.1.3 Number of latches / locks, bolts (flush, morticed, internal or surface mounted) and strike plates for metal doors (steel doors and metal framed doors) and timber doors with metal inlay	Increase	If the hardware does not interfere with the smoke seal: Possible for S_a. Possible for S_{200} providing that the distance between the original and the additional lock/latch at latch position is not more than 500 mm. Or possible for S_{200} providing the additional locks/latches are at least one above and at least one below of the main lock/latch. For double leaf doors the locking system shall fix both leaves in the same way. Otherwise not possible without additional test	Test scenario H
C.1.4 Number of latches / locks and strike plates for timber doors without metal inlay	Increase	Possible providing the hardware does not interfere with the smoke seal more than tested otherwise not possible without additional test	Test scenario F
C.1.5 Number of latches / locks, bolts (flush, morticed, internal or surface mounted) and strike plates	Decrease	Not possible without an additional full size test unless originally tested with the latch bolt(s) withdrawn	Test scenario D
C.1.6 Position of lock assembly – single element **– see Figure A.12**	Alternative	Possible by 200 mm in each direction providing the hardware does not interfere with the smoke seal more than tested. Otherwise not possible without additional test	Test scenario D
C.1.7 Position of latches / locks and strike plates – multi-point locks (including locks/latches to the top frame member and/or to the bottom) **– see Figure A.28**	Alternative	The alternative position of the latch/lock may vary within the minimum and the maximum of the originally tested distance between lock/latch and any unlocked/unlatched doorleaf edge. Otherwise not possible without additional test	Test scenario D
C.1.8 Strike plates	Alternative	Possible providing the hardware does not interfere with the smoke seal more than tested and providing, that the penetration depth of the latch is not less than tested. Otherwise not possible without additional test	Test scenario H

Construction parameter (1)	Variation (2)	Possibility of extension (3)	Additional evidence required (4)
C.1.9 Latches / locks – **see Figure A.13**	Exchange internal for external and vice versa	Possible only for internal to external providing the hardware does not interfere with the smoke seal more than tested and providing, that the penetration depth of the latch is not less than tested. Otherwise not possible without additional test	Test scenario H
C.1.10 Size of leaf cut-out for through items	Increase/decrease	Possible to decrease. Possible to increase providing the through items are sealed and sealed in the same way as tested. Otherwise not possible without additional test	Test scenario A
C.1.11 Function of latches / locks (e.g. From normal use to panic use or vice versa)	Alternatives	Possible	
C.1.12 Door handles, push pads and emergency exit devices to EN 179 or panic devices to EN 1125	Add / Alternative	Possible to add or exchange face mounted elements providing any break through being limited to screw fixings and their covering. Otherwise not possible without additional test	Test scenario A
C.1.13 Door handles, push pads and emergency exit devices to EN 179 or panic devices to EN 1125	Remove	Possible but the lock assembly shall remain as tested and providing the removal does not expose any areas of potential weakness beneath the element. Otherwise not possible without additional test.	Test scenario A
C.1.14 Dimension of hinges	Increase	Possible providing the hardware does not interfere with the smoke seal more than tested. Otherwise not possible without additional test.	Test scenario F
C.1.15 Dimension of hinges	Decrease	Possible	
C.1.16 Hinge fixing type	Alternative	Possible providing the hardware does not interfere with the smoke seal more than tested. Otherwise not possible without additional test.	Test scenario F

Construction parameter (1)	Variation (2)	Possibility of extension (3)	Additional evidence required (4)
C.1.17 Hinges	Alternative	Possible providing the hardware does not interfere with the smoke seal more than tested and for S_{200} possible only for metal components with the same or higher strength. Otherwise not possible without additional test.	Test scenario F
C.1.18 Dimension of dog bolts	Increase	Possible providing the hardware does not interfere with the smoke seal more than tested. Otherwise not possible without additional test.	Test scenario F
C.1.19 Dimension of dog bolts	Decrease	Possible for S_a Not possible for S_{200} without an additional test	Test scenario F
C.1.20 Number of hinges/dog bolts	Increase	Possible providing the hardware does not interfere with the smoke seal more than tested. Otherwise not possible without additional test.	Test scenario F
C.1.21 Number of hinges/dog bolts	Decrease	Not possible without an additional test	Test scenario F
C.1.22 Hinges / dog bolts of the same type	Change of manufacturer	Possible	
C.1.23 Hinges or dog bolts of the same type	Alternative material	Possible for S_a. Possible for S_{200} for metal components with the same or higher strength otherwise not possible without an additional test	Test scenario F
C.1.24 Type of hinges except single axis spring hinges	Alternative type	Follow rule C.1.17	
C.1.25 Single axis spring hinges	Change from single axis spring hinge to single axis hinge	Follow rule C.1.17	
C.1.26 Single axis spring hinges	Change of type from a Single axis hinge to a single axis spring hinge	Follow rule C.1.17	

Construction parameter (1)	Variation (2)	Possibility of extension (3)	Additional evidence required (4)
C.1.27 Distance from top of upper hinge to top of door leaf or from bottom of lower hinge to bottom of door	Increase	Possible to a maximum variation of 100 mm. Otherwise not possible without additional test	Test scenario A
C.1.28 Distance from top hinge to top of door leaf or from bottom of lower hinge to bottom of door	Decrease	Possible to a maximum variation of 100 mm. Otherwise not possible without additional test	Test scenario A
C.1.29 Distance (x and y) between intermediate movement restrictors (i.e. hinges or dog bolts) **– see Figure A.14**	Increase	For S_a possible For S_{200} possible in line with the height increase following A.3.2 up to a maximum of 30 %. Otherwise not possible without additional movement restrictors or without additional test	Test scenario A
C.1.29.1 Distance (x and y) between intermediate movement restrictors (i.e. hinges or dog bolts) **– see Figure A.14**	Decrease	Possible	
C.1.30 Position of intermediate movement restrictors (i.e. hinges or dog bolts) **– see Figure A.14**	Variation	Possible for S_a doors limited to a maximum variation of 300 mm Possible for S_{200} doors limited to a maximum variation of 100 mm Otherwise not possible without additional test	Test scenario A
C.1.31 Door closer positioning on face of doorset	Alternative side	Possible	
C.1.32 Concealed door closer positioning in the head/frame of doorset	Change position, manufacturer or product	Possible providing the hardware does not interfere with the smoke seal more than tested and remaining holes are sealed properly otherwise not possible without additional test	Test scenario F
C.1.33 Door closer (leaf or frame mounted)	Exchange concealed for face fixed	Possible providing the hardware does not interfere with the smoke seal more than tested otherwise not possible without additional test	Test scenario F

Construction parameter (1)	Variation (2)	Possibility of extension (3)	Additional evidence required (4)
C.1.34 Door closer (leaf or frame mounted)	Exchange face fixed for concealed	Possible for steel doors only, providing the hardware does not interfere with the smoke seal more than tested and remaining holes are sealed properly otherwise not possible without additional test	Test scenario F
C.1.35 Door closer face fixed	Change position, manufacturer or product	Possible providing the hardware does not interfere with the smoke seal more than tested otherwise not possible without additional test	Test scenario F
C.1.36 Floor/transom mounted closing devices/pivots with single action accessories (shoe and top centre)	Exchange from hinged to pivoted	Possible for S_a providing the sealing system is not affected and originally tested with 2 hinges with not more than 300 mm distance to the edges of the doorleaf (measured from hinge center) Otherwise not possible without an additional test	Test scenario F
C.1.37 Floor/transom mounted closing devices/pivots with single action accessories (shoe and top centre)	Exchange from pivoted to hinged	Possible for S_a providing the sealing system is not affected. Otherwise not possible without an additional test	Test scenario F
C.1.38 Power cable and protective conduits (door or frame) **– see Figure A.15**	Add	Possible providing the hardware does not interfere with the smoke seal more than tested otherwise not possible without additional test	Test scenario F
C.1.39 Power cable and protective conduits (fitted door or frame) **– see Figure A.15**	Remove	Possible	
C.1.40 Door viewer	Add	Possible providing the door viewer is not bigger than 15 mm in diameter and is sealed properly. Otherwise not possible without additional test	Test scenario A
C.1.41 Door viewer	Remove	Possible	
C.1.42 Key tubes	Add	Not possible without additional test	Test scenario F
C.1.43 Alarm contacts and proximity switches	Additional/alternative	Possible providing the hardware does not interfere with the smoke seal more than tested otherwise not possible without additional test	Test scenario F

Construction parameter (1)	Variation (2)	Possibility of extension (3)	Additional evidence required (4)
C.1.44 Face mounted elements (e.g. door signs, coordinating devices, hold-open devices, sensors, power operated devices, finger protectors, etc.) on the door leaf or frame	Add	Possible glued, welded or providing that any break through is limited to screw fixings/rivetings and their covering and that the fixings do not break both sides. Otherwise not possible without additional test.	Test scenario A
C.1.45 Face mounted elements (e.g. door signs, coordinating devices, hold-open devices, sensors, power operated devices, finger protectors, etc.) on the door leaf or frame	Remove	Possible	
C.1.46 Threshold seal including drop seals	Add	Possible if the smoke sealing system is not interfered, otherwise not possible without additional test	Test scenario F
C.1.47 Threshold seal excluding drop seals	Remove	Possible for S_a doors. Otherwise not possible without additional test.	Test scenario F
C.1.48 Threshold seal including drop seals	Alternative System (e.g. automatic seals to static seals)	Possible for S_a doors. Otherwise not possible without additional test.	Test scenario F
C.1.49 Threshold seal	Alternative type of the same system	Possible for S_a doors. Otherwise not possible without additional test.	Test scenario F
C.1.50 Drop seals	Remove	Possible for S_a doors. Otherwise not possible without an additional test	Test scenario F

Construction parameter (1)		Variation (2)	Possibility of extension (3)	Additional evidence required (4)
C.1.51	Drop seals	Alternative	Possible for S_a doors. Possible for S_{200} doors if the alternative type has been tested successfully in a door of the same type (steel / timber / framed…) and thickness (±10 %) and according to the number of door leaves (single for single, double for double and single). Otherwise not possible without an additional test	Test scenario F
C.1.52	Letter plates	Alternative type	Not possible without additional test.	Test scenario F
C.1.53	Letter plates	Alternative size	Possible to decrease the size for the same types. Otherwise not possible without additional test.	Test scenario F
C.1.54	Letter plates	Add	Not possible without additional test.	Test scenario F
C.1.55	Letter plates	Remove	Possible	
C.1.56	Letter plates	Alternative position in the door leaf	Possible providing that no stiffening elements of the door leaf are interfered. Otherwise not possible without additional test.	Test scenario F
C.1.57	Cylinders	Add / remove / alternative	Add/alternative: Possible providing the door was previously tested with a standard cylinder according to EN 1303 or EN 15684. Remove: In any case any remaining holes shall be covered properly. Otherwise not possible without additional test.	Test scenario A
D	**Support / attachment - door leaf to framing**			
D.1.	**General**			
D.1.1	Gap dimensions (door leaf to frame)	Increase / decrease	see Table A.1 - A.4.31	

Construction parameter (1)	Variation (2)	Possibility of extension (3)	Additional evidence required (4)
E Side / transom panels and flush over panels			
E.1. Panel arrangements Before there can be any consideration for the variation in side and over panel arrangements, the doorset shall have been tested in accordance with EN 1634–3 to achieve a test result which could generate a classification in accordance with EN 13501–2 at least equal to the classification subsequently required from extended application considerations. If the original doorset test was conducted only on a single leaf doorset without side/over panels then only the single leaf door arrangements from the following variations will be permissible. If the original doorset test was conducted only on a double leaf doorset without side/over panels then only the double leaf door arrangements from the following variations will be permissible. If a variation is not covered, an additional test will be necessary.			
E.1.1 Side / transom / flush over panel arrangement	Variation of tested arrangement	A successful test on an arrangement indicated on the left hand column of Table B.1 would allow the variations in arrangement indicated by a “x” in the same row assuming the fixing/retention method of the panelling system is retained. Otherwise not possible without additional test. It is not possible to mix up timber framed timber doors with metal framed timber doors.	Test scenario F
E.1.2 Hinged / removable over panel system	from hinged to removable or vice versa	Possible providing the smoke sealing system is not changed. Otherwise not possible without additional test.	Test scenario A
E.1.3 Height/width/area of side / transom / flush over panel	decrease	Possible	

Construction parameter (1)		Variation (2)	Possibility of extension (3)	Additional evidence required (4)
E.1.4	Height/width/area of side / transom / flush over panel	Increase	Increase in dimension is possible providing the sealing system is unchanged and subject to the following rules: For S_{200} doorsets with a maximum tested leakage rate of 80 % of the leakage rate referred in EN 13501–2, the size may be increased up to 100 % in width and/or height but not more than increase of 1 m in any dimension. For S_a doorsets with a maximum tested leakage rate of 80 % of the leakage rate referred in EN 13501–2, the size may be increased up to 100 % in width and/or height. Possible to combine the maximum tested size of each side, transom and/or flush over panel (no interchange between side, transom and flush-over panel) Otherwise not possible without additional test.	Test scenario A
E.1.5	Vertical stiles (glazing bars) in side / transom / flush over panel	Add	Possible if at least one stile was tested in the door leaf or side- or overpanel, providing the same glass-retention and sealing system is used. Otherwise not possible without an additional test.	Test scenario F
E.1.6	Horizontal rails (glazing bars) in side / transom / flush over panel	Add	Possible if at least one rail was tested in the door leaf or side- or overpanel, providing the same glass-retention and sealing system is used. Otherwise not possible without an additional test.	Test scenario F
F	**Panel infills (glazing or non-transparent materials) for door leaf or side / over panels** Before there can be any consideration for glazing in door leaf, side and/or over panel arrangements, the doorset shall have been tested without glazing in accordance with EN 1634–3 to achieve a test result which could generate a classification in accordance with EN 13501–2 at least equal to the classification subsequently required from extended application considerations - this is not applicable for framed glazed doors. Wherever “glass” or “glazed” is mentioned, it is also applicable to non-transparent panels/infills, unless it is excluded explicitly.			
F.1	**General**			
F.1.1	Glazed apertures	Add	Not possible without additional test.	Test scenario F

Construction parameter (1)		Variation (2)	Possibility of extension (3)	Additional evidence required (4)
F.1.2	Glazed aperture	Remove	Possible	
F.1.3	Panel/infill	Interchange Glass pane to non-glass infill and vice versa	Possible for S_a providing the smoke sealing system is not influenced and the surface is solid and plain. For S_{200} only possible to change from non-glass infill to glass pane providing the glass is fire rated or will not fracture at temperatures up to 200°C (e.g. TGU, laminated Glass). Otherwise not possible without additional test.	Test scenario A
F.1.4	Number of glazed panels for framed doors only	Increase	Possible in line with the rules given in A.7.18 and A.7.19 Possible for side- and/or transom panels. Otherwise not possible without additional test.	Test scenario A
F.1.5	Thickness of glass	Increase	Possible providing the smoke sealing system of the glazing is not influenced except adapting the system to the new thickness of the glass. Otherwise not possible without additional test.	Test scenario A
F.1.6	Thickness of glass	Decrease	Possible for S_a up to 10% decrease providing the smoke sealing system of the glazing is not influenced except adapting the system to the new thickness of the glass. Otherwise not possible without additional test.	Test scenario F
F.1.7	Dimensions of each pane – **see Figure A.16**	Increase	Possible providing the glass is sealed as tested and the distance between the edge of the glazing and the edge of the door or the distance between two glazings is not decreased. Otherwise not possible without additional test.	Test scenario F
F.1.8	Dimensions of each pane – **see Figure A.17**	Decrease	Possible for S_a. For S_{200}: possible to decrease the size in line to the decrease of the door leaf. Possible to decrease down to the dimensions of a smaller tested glazing. Possible if tested the door without glazing. Otherwise not possible without additional test.	Test scenario F

Construction parameter (1)		Variation (2)	Possibility of extension (3)	Additional evidence required (4)
F.1.9	Type of glass **– see Figure A.24** (including IGU with additional integrated functional parts, e.g. blinds, shutters, slats) - only for glass, not for intransparent panels	Change of manufacturer and/or glass type	Possible for S_a. For S_{200}: Not possible for single float-glass-panes and combinations, where the float-glass-pane stands alone on the surface (e.g. IGU). Possible if the glass is fire rated or will not fracture at temperatures up to 200°C (e.g. TGU, laminated Glass). Otherwise not possible without an additional test.	Test scenario F
F.1.10	Type of intransparent panel	Change of manufacturer and/or type	Possible to change the manufacturer for the same composition. Possible for S_a providing the smoke sealing system is not influenced and the surface is solid and plain. For S_{200} possible providing the smoke sealing system is not influenced and the installation allows proper elongation, one or more of the following changes can be done: - Change coversheet from stainless steel to mild steel to aluminium with same or less thickness - Change coversheet from mild steel or aluminium to stainless steel with a thickness of at least – 30 % less - Change from metal coversheet to glass coversheet - Change of mineral board - Change density of mineral wool - Change of derived timber products except such with metal inlays Otherwise not possible without an additional test.	
F.1.11	Materials of glazing beads without changing the seals	Alternative	Possible providing that any openings or holes should be sealed or closed properly. Otherwise not possible without an additional test.	Test scenario F

Construction parameter (1)	Variation (2)	Possibility of extension (3)	Additional evidence required (4)
F.1.12 Geometry of glazing beads without changing the seals	Alternative	Possible providing that any openings or holes should be sealed or closed properly. Otherwise not possible without an additional test.	Test scenario F
F.1.13 Glazing beads	"On both sides" to "on one side"	Possible providing the pane is properly sealed, otherwise not possible without an additional test.	Test scenario F
F.1.14 Glazing beads	Change to "without glazing beads" for flush panels	Not possible without an additional test.	Test scenario F
F.1.15 Change of glass sealing system	Alternative	Possible to change from dry glazing to wet glazing, but not vice versa. Otherwise not possible without an additional test.	Test scenario F
F.1.16 Glazing bead fixing technique	Alternative (welding / riveting / screwing / nailing / clipped)	Possible for S_a. For S_{200} possible to change from clipped to the others. Possible to interchange between welding, riveting, screwing and nailing. Otherwise not possible without an additional test.	Test scenario F
F.1.17 Position of glazing bead fixings	Alternative	Possible to decrease the distance between fixings. Otherwise not possible without an additional test.	Test scenario F
F.1.18 Shape of glazing – **see Figure A.18**	Alternative	Possible providing the new shape is within the area of the tested glass and the rules for size decreasing are fulfilled. Otherwise not possible without an additional test	Test scenario F
F.1.19 Number of glazed apertures – **see Figure A.19** (not applicable to framed doors)	Increase	Possible for S_a providing the air leakage rate is calculated proportionately. Otherwise not possible without an additional test.	Test scenario F
F.1.20 Number of glazed apertures	Decrease	Possible for S_a. For S_{200} possible to decrease the number down to the smallest number tested, possible if tested the door without glazing. Otherwise not possible without additional test	Test scenario F

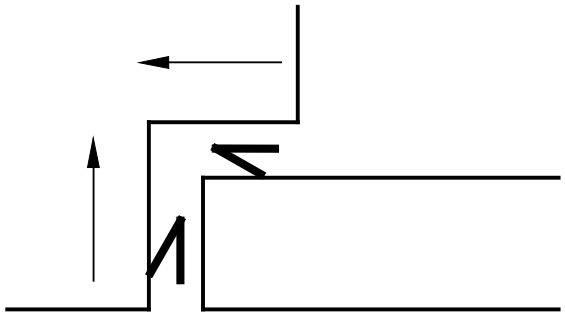
Construction parameter (1)	Variation (2)	Possibility of extension (3)	Additional evidence required (4)
F.1.21 Smallest tested distance between the edge of glazing and the perimeter of the door leaf / panel	Increase	Possible	
F.1.22 Smallest tested distance between the edge of glazing and the perimeter of the door leaf / panel	Decrease	Not possible without additional test.	Test scenario F
F.1.23 Distance between glazed apertures	Increase	Possible	
F.1.24 Smallest tested distance between glazed apertures **– see Figure A.20**	Decrease	Not possible without additional test.	Test scenario F
F.1.25 Additional glass pane on the surface of framed doors (glued or mechanical fixed) – only for glass, not for intransparent panels **– see Figure A.22**	Add	Possible	
F.1.26 Additional glass pane on the surface of framed doors (glued or mechanical fixed) **– see Figure A.23**	Remove	Not possible without additional test.	Test scenario F
F.1.27 Type of smoke seals of the panel/infill	Change of supplier / manufacturer	Possible if the composition, material, size and shape are identical (identical means within the limits of the specified production features e.g. shore-hardness). Otherwise not possible without an additional test.	Test scenario F

Construction parameter (1)		Variation (2)	Possibility of extension (3)	Additional evidence required (4)
F.1.28	Glazing gaskets	Decrease thickness (uncompressed)	Possible up to a maximum of 50 % providing the pressure on the glass is not reduced. Otherwise not possible without an additional test.	Test scenario F
F.1.29	Glazing gaskets	Increase thickness (uncompressed)	Possible up to a maximum of 20 %. Otherwise not possible without an additional test.	Test scenario F
F.1.30	Glazing gaskets	Change cross-section shape	Possible providing the cross-sectional area is not decreased more than 50 % or not increased higher than 20 %. Otherwise not possible without an additional test.	Test scenario F
G	**Supporting construction and attachment (technique) of door frame or side / over panels**			
G.1	**General**			
G.1.1	Supporting construction	Flexible to rigid	Possible for S_a. For S_{200} in line with field of direct application. Otherwise not possible without an additional test.	Test scenario F
G.1.2	Supporting construction	Rigid to flexible	Possible providing that the gap between the frame member and the wall is sealed at least on one side. Otherwise not possible without an additional test.	Test scenario F
G.1.3	Supporting construction	Flexible standard supporting construction (filled with or without wool) to modified flexible construction	Possible providing the door is mounted in the same manner and the modified flexible construction is of the board covered type (on both sides) with studs/tubes/profiles made from metal or timber. Otherwise not possible without an additional test.	Test scenario F

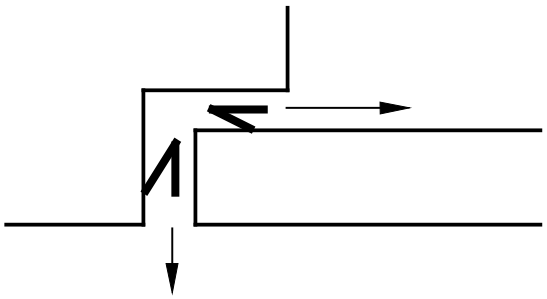
Construction parameter (1)	Variation (2)	Possibility of extension (3)	Additional evidence required (4)
G.1.4 Flexible supporting construction of board covered type covered on one side	Alternative flexible construction	Possible providing the door is mounted in the same manner and the alternative flexible construction is of the same type (board covered on one or both sides). For S_{200} providing that in the test the studs were mounted on the high temperature side. For S_a It is possible to change from metal studs to timber studs and vice versa. For S_{200} it is possible only to change from metal to timber studs. Otherwise not possible without an additional test.	Test scenario F, studs always on high temperature side
G.1.5 Supporting construction	Standard supporting construction to associated and vice versa	Possible for S_a providing that the gap between the frame member and the wall is sealed at least on one side. Otherwise not possible without an additional test.	Test scenario F
G.1.6 Type of fixings	Alternative type and/or manufacturer	Possible	
G.1.7 Number and/or size of fixings	Increase	Possible	
G.1.8 Number and/or size of fixings	Decrease	Possible in line with size and/or weight decrease of the door. Otherwise not possible without an additional test.	Test scenario F
G.1.9 Distance between fixings	Increase	Not possible without an additional test	Test scenario F
G.1.10 Distance between fixings	Decrease	Possible	
G.1.11 Fixing to floor	Cleated to sunk	Possible	
G.1.12 Fixing to floor	Sunk to cleated	Possible	
G.1.13 Gap between door leaf and floor	Increase	Possible for S_a For S_{200} possible in line with direct application. Otherwise not possible without an additional test.	Test scenario F
G.1.14 Gap between door leaf and floor	Decrease	Possible for S_a. Possible for S_{200} if tested sealing system can be maintained. Otherwise not possible without an additional test.	Test scenario F

Construction parameter (1)	Variation (2)	Possibility of extension (3)	Additional evidence required (4)
G.1.15 Gap between door frame and wall	Increase	Possible as long as the gapsize is within the tolerances of the used sealing system of the gap. Otherwise not possible without additional test.	Test scenario F
G.1.16 Gap between door frame and wall	Decrease	Possible as long as the gapsize is within the tolerances of the used sealing system of the gap. Otherwise not possible without additional test.	Test scenario F
G.1.17 Sealing of the gap between door frame and wall	Alternative seal fitting to gap size	Possible.	
G.1.18 Supporting construction	Alternative rigid construction	Possible as long as the gap between frame and wall is sealed properly. Otherwise not possible without additional test.	Test scenario F

Figures relating to Table A.1



a)



b)

Figure A.1 — Smoke seals (fitted at leaf to frame interface)

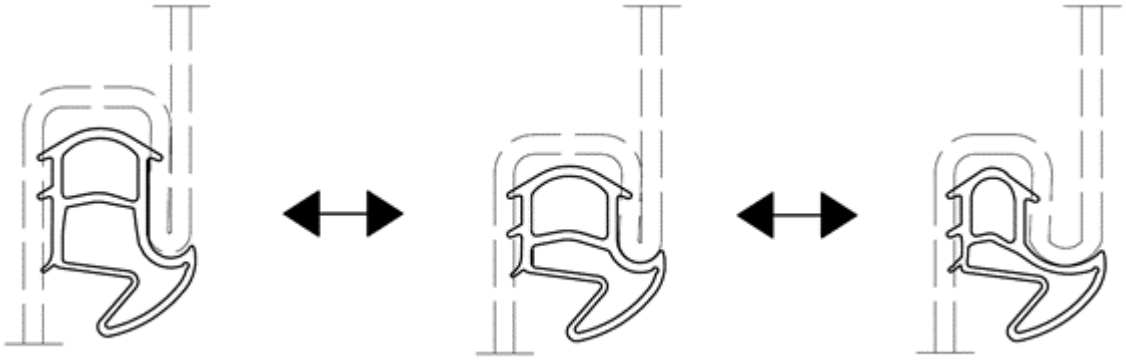


Figure A.2 — Dimension of smoke seals (fitted in leaf or frame)

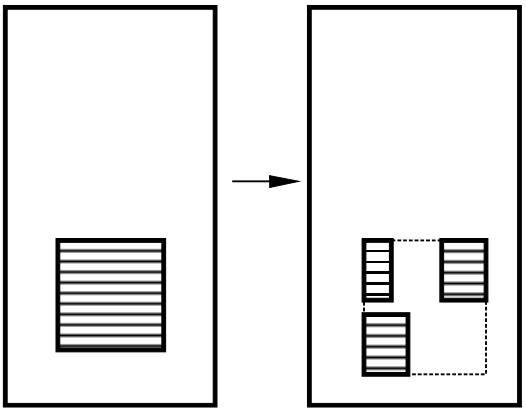


Figure A.3 — Louvres in door leaf of panel tested with louvre

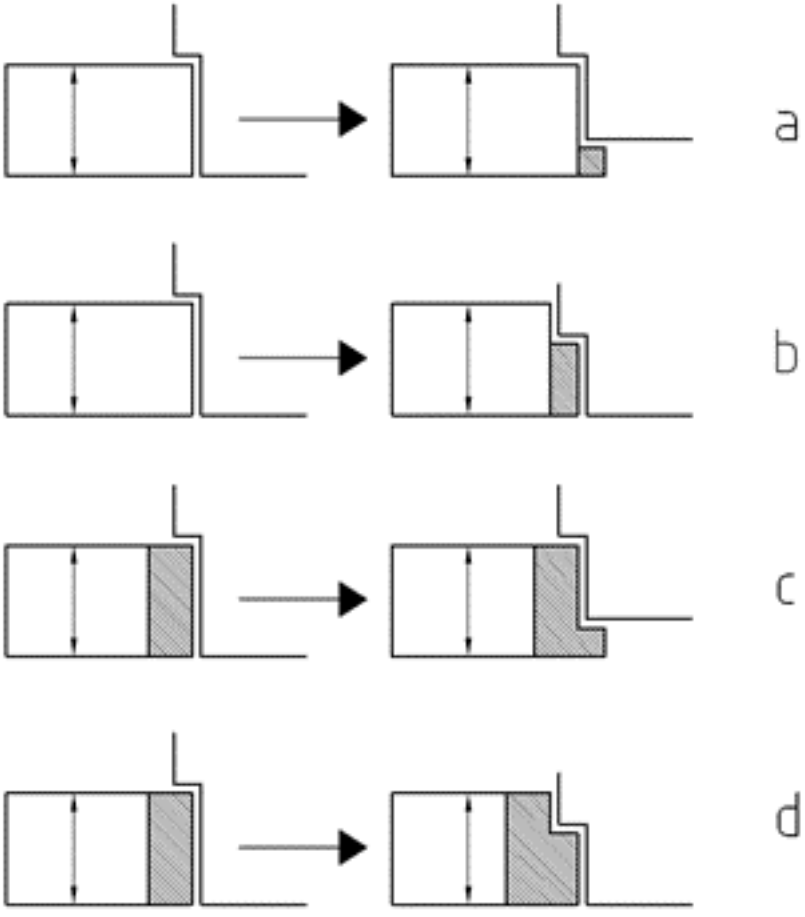
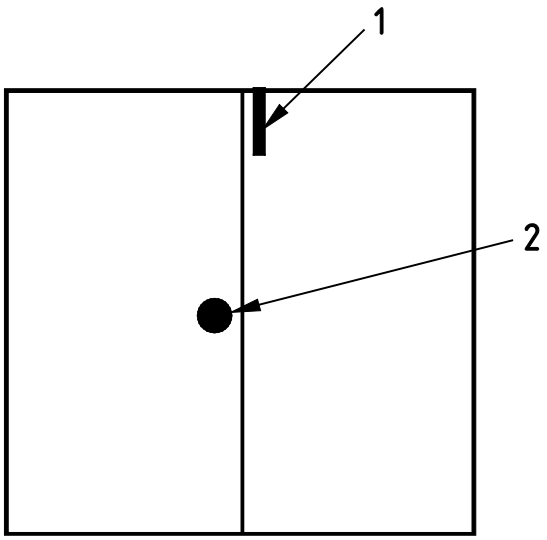


Figure A.4 — Leaf edge rebate (to door leaf or panel – not at the meeting edges)

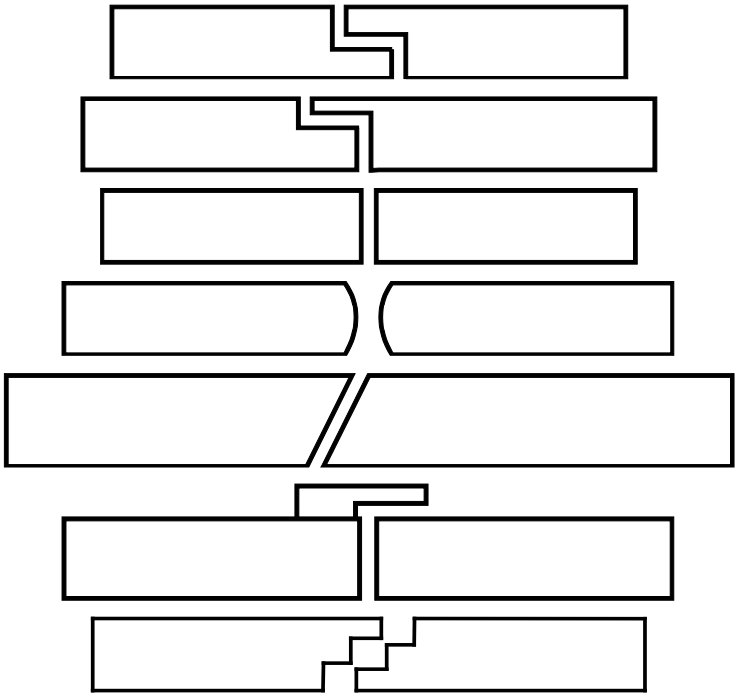


Key

1 = bolt

2 = latch

Figure A.5 — Latched condition for double leaf doorsets



a) = equal rebate

b) = unequal rebate

c) = square edges

d) = rounded edges

e) = offset (slanted)

f) = astragal

g) = double rebated

Figure A.6 — Meeting edge details

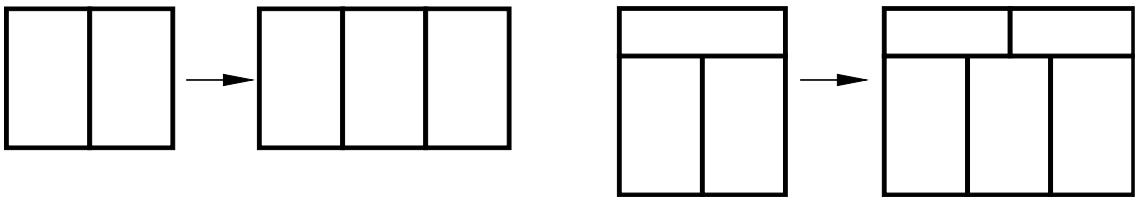


Figure A.7 — Pattern of core material of leaf or panel (2 examples shown)

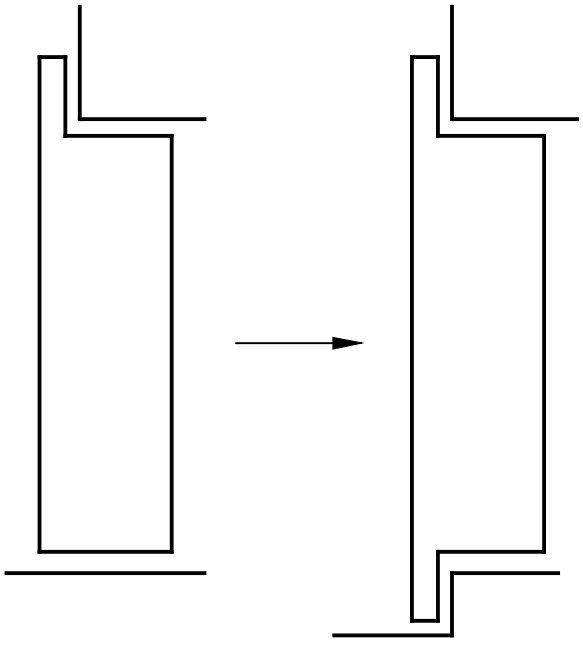


Figure A.8 — Threshold at the bottom of the door leaf or panel

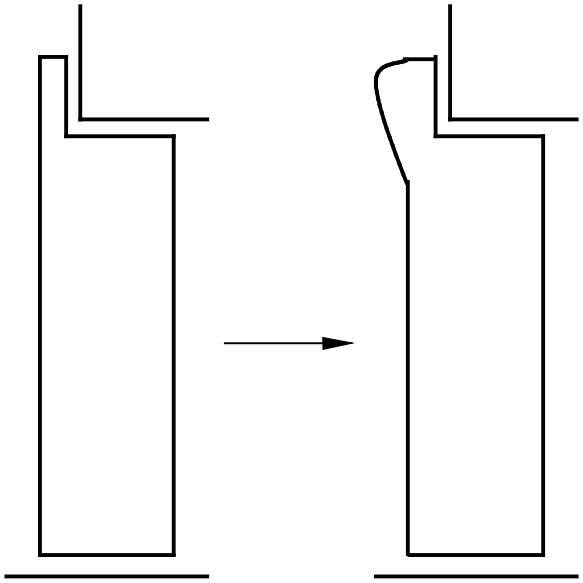


Figure A.9 — Decorative leaf or panel edge details (example only)

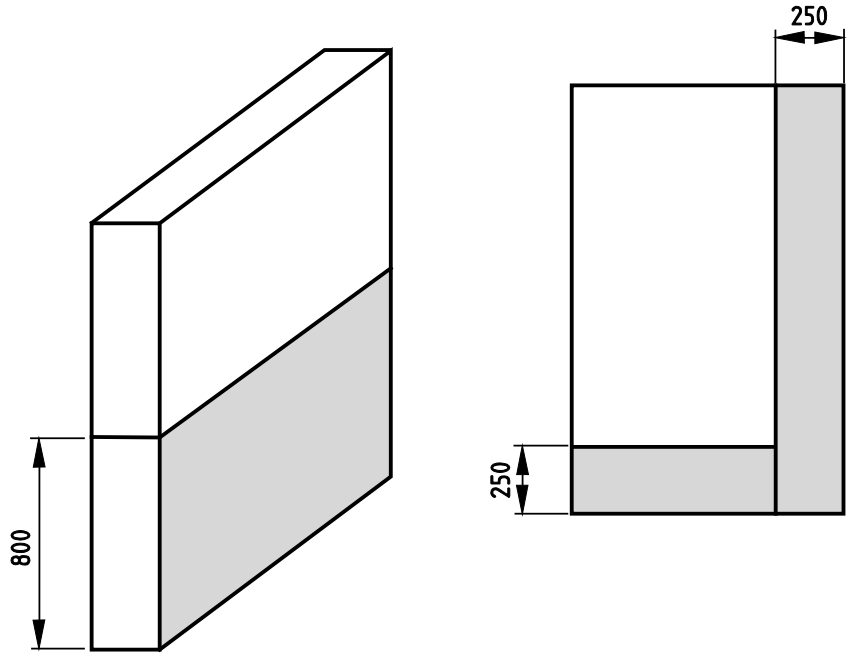


Figure A.10 — Protective plates

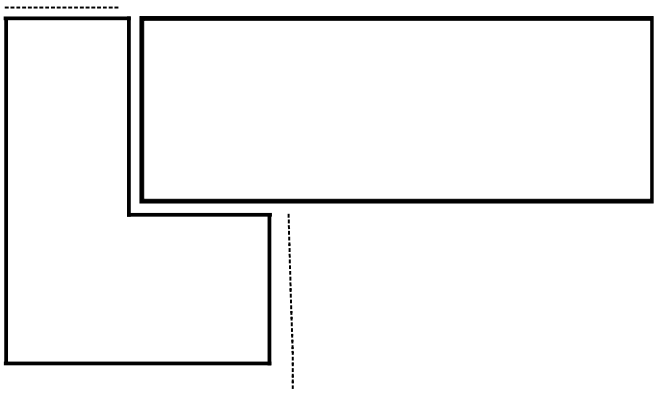


Figure A.11 — Protection of frame members

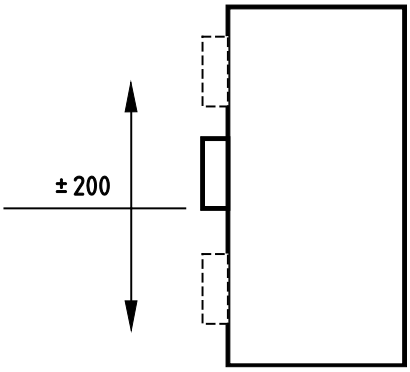


Figure A.12 — Position of lock assembly

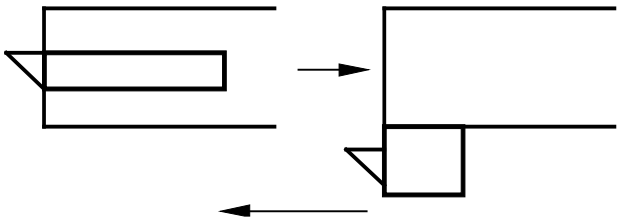


Figure A.13 — Latches / locks

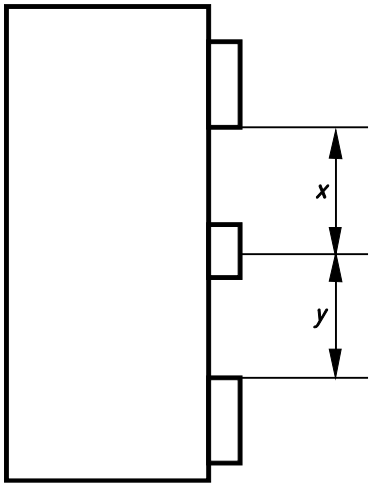


Figure A.14 — Position of intermediate movement restrictors (i.e. hinges or dog bolts)

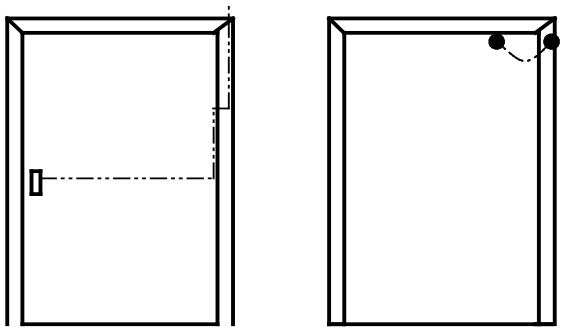
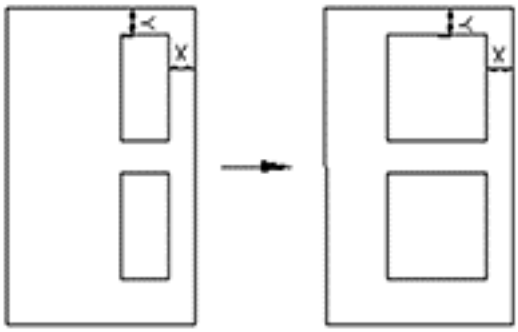


Figure A.15 — Power cable and protective conduits for electric locks (door or frame)



Key

X = tested distance to closing edge

Y = tested distance to top edge

Figure A.16 — Dimensions of each pane

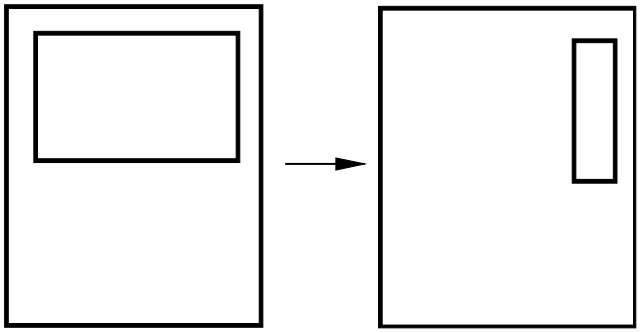
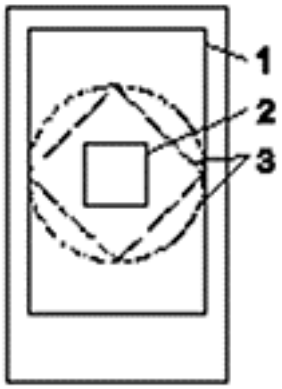


Figure A.17 — Dimensions of each pane



Key

1 max. tested glass

2 min. tested glass

3 new shape

Figure A.18 — Shape of glazing

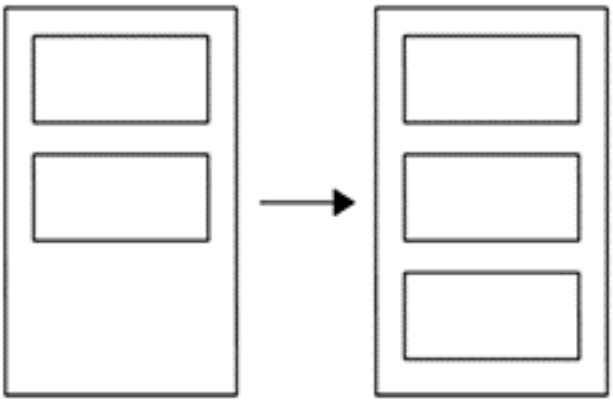


Figure A.19 — Number of glazed apertures

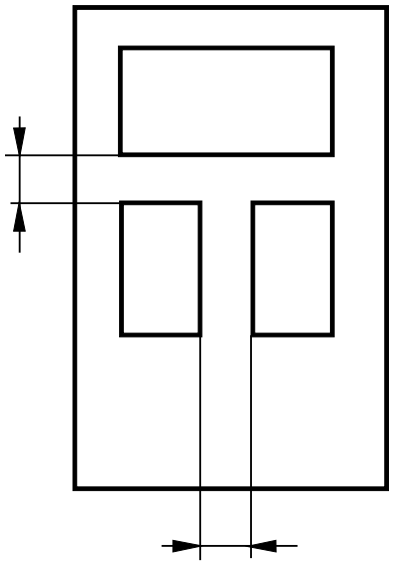


Figure A.20 — Distance between glazed apertures

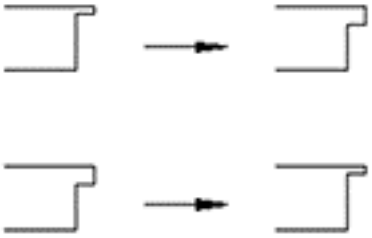


Figure A.21 — Increasing/Decreasing door leaf rebate

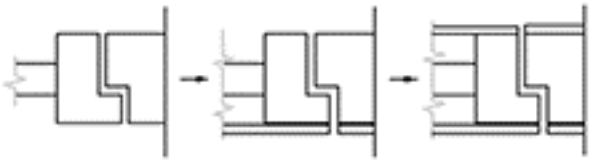


Figure A.22 — Additional glass pane on the surface of framed doors (add)

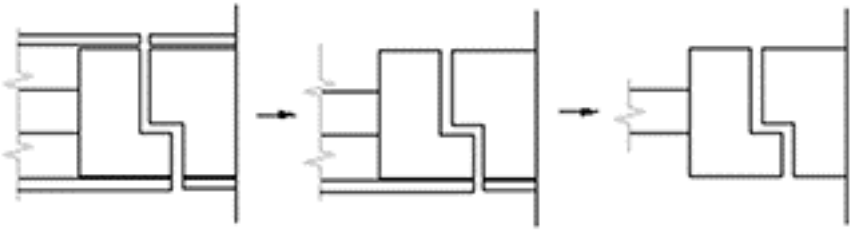


Figure A.23 — Additional glass pane on the surface of framed doors (remove)

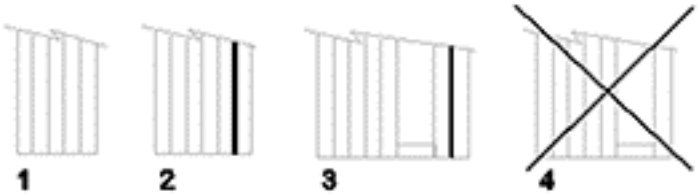


Figure A.24 — Type of glass (change)

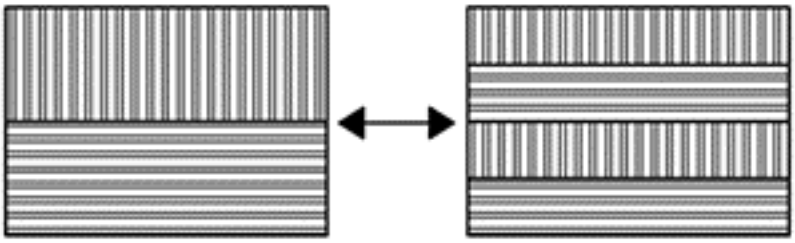
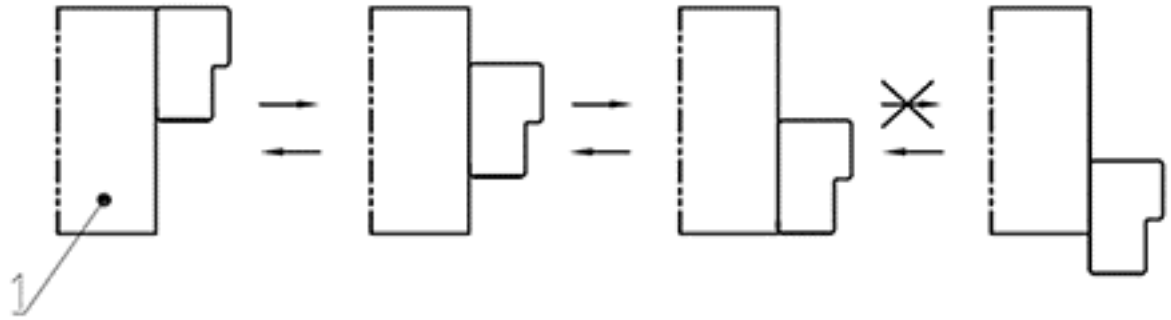


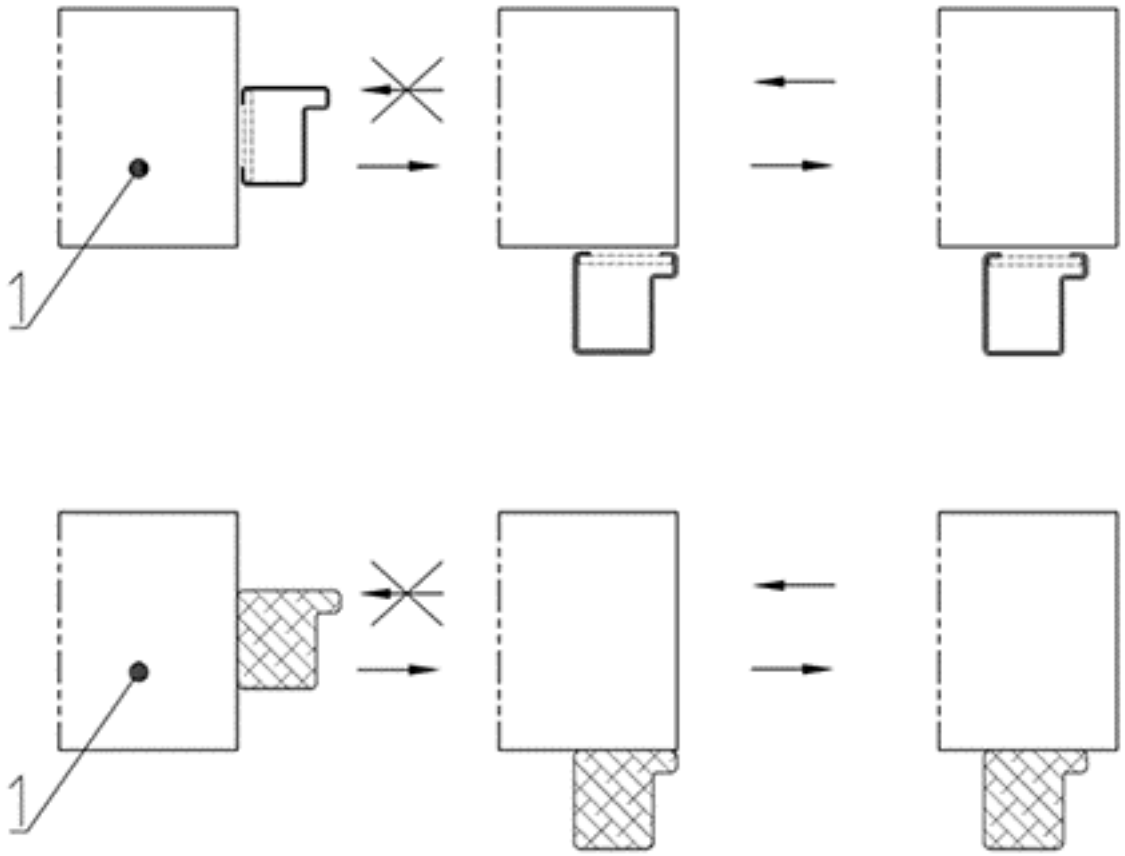
Figure A.25 — Number of layers of different materials



Key

1 supporting construction: all kinds of constructions inkluding composite walls (e.g. shells)

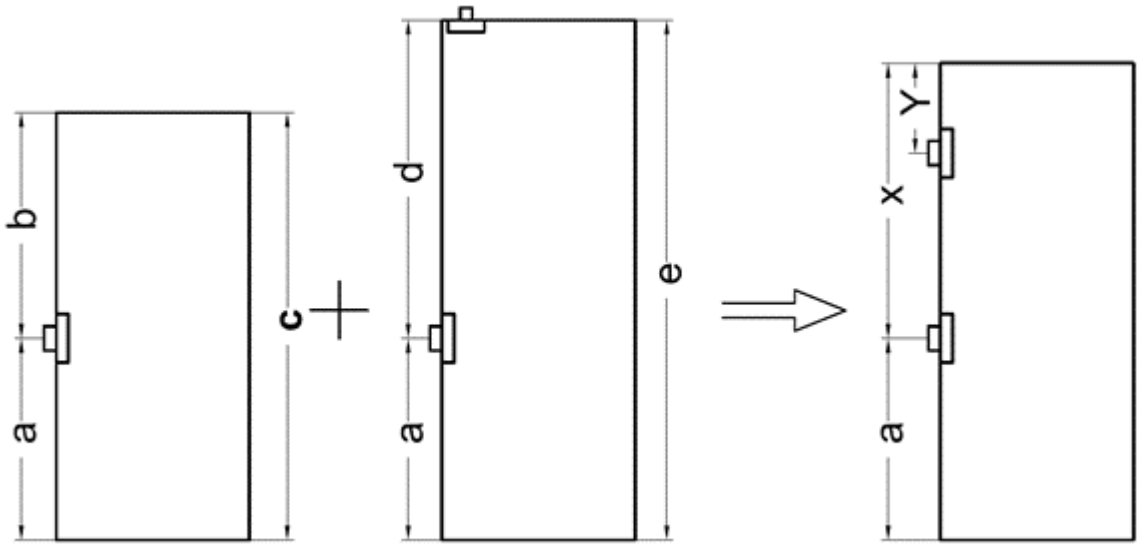
Figure A.26 — Position of frame



Key

1 supporting construction: all kinds of constructions inkluding composite walls (e.g. shells)

Figure A.27 — Position of frame



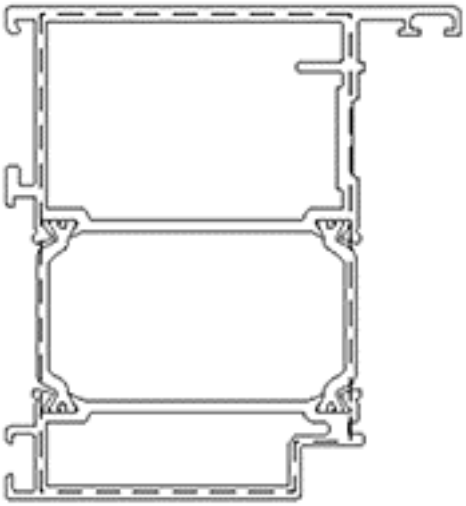
Key

Conditions: $d \geq b$

$x \leq d$

$y \leq b$ or $y \leq a$

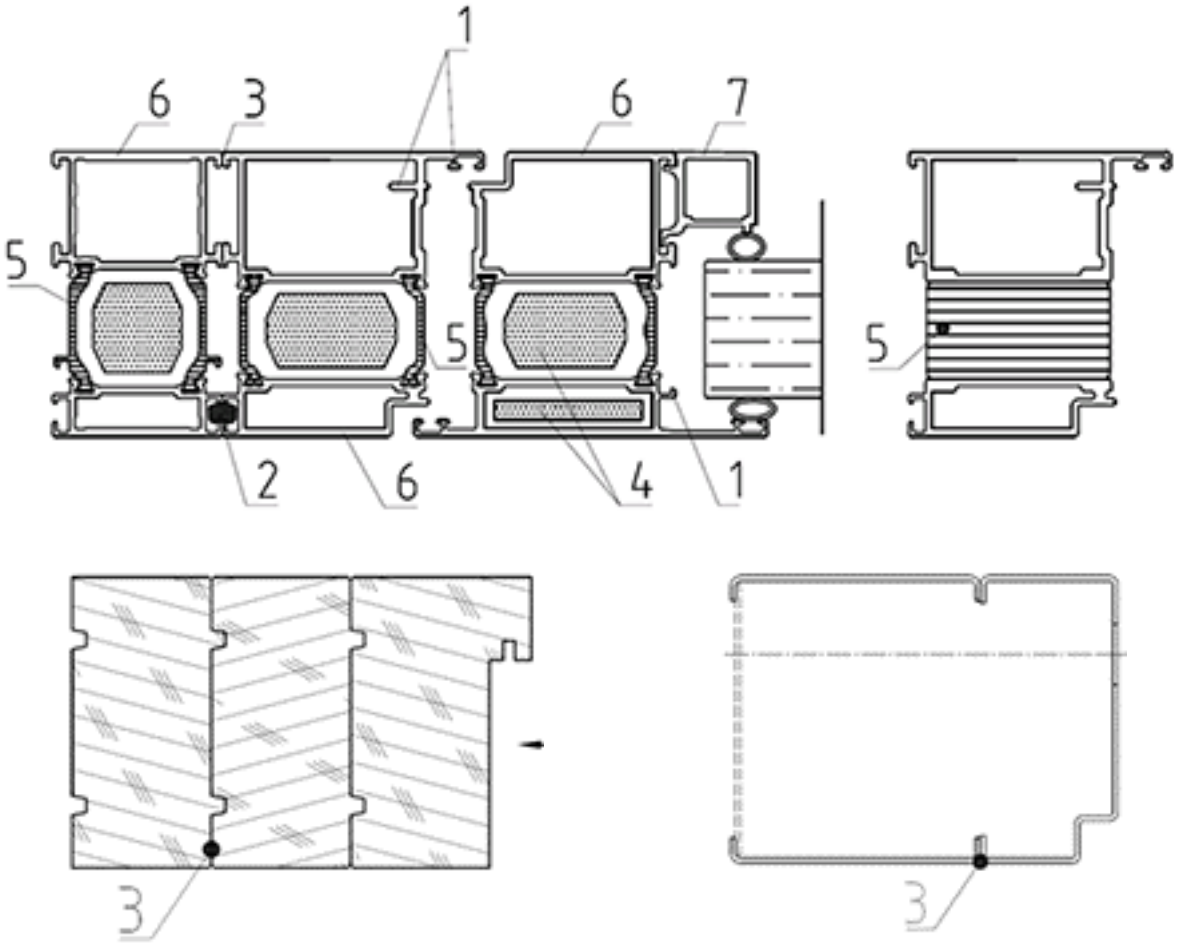
Figure A.28 — Alternative Position of latches / locks and strike plates – Multi-point locks



Key

= base body

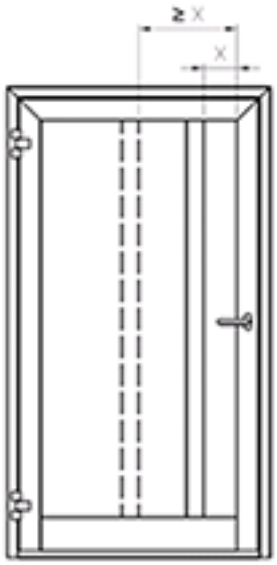
Figure A.29 — Profile geometry



Key

1 noses and lips
2 proper sealing
3 profile coupling
4 profile infill
5 thermal break
6 profile
7 glazing bead

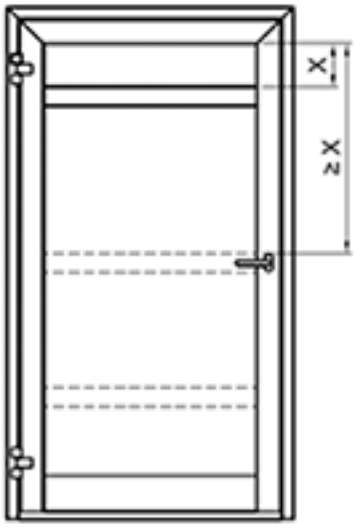
Figure A.30 — Profile geometry



Key

X = tested distance to closing edge

Figure A.31 — Vertical stiles (glazing bars) – add



Key

X = tested distance to top edge

Figure A.32 — Horizontal rails (glazing bars)– add

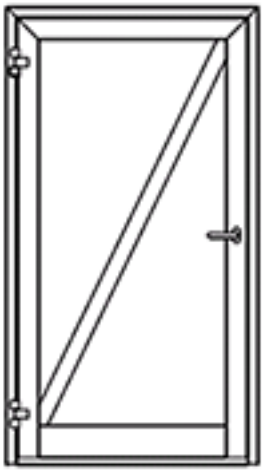


Figure A.33 — Vertical stiles and horizontal rails (glazing bars)– change angle

Table A.2 — Construction parameter variations for steel sliding doors - horizontally sliding doorsets (single and double), telescopic doorsets (single and double) and single vertically sliding doorsets

Construction Parameter	Variation	Possibility of extension	Additional Evidence Required
(1)	(2)	(3)	(4)
A Door leaf			
A1 General			
A.1.1 number of leaves (not applicable for vertically sliding doors)	single leaf from double leaf door test	Not possible without an additional test	Test scenario B
A.1.2 number of leaves (not applicable for vertically sliding doors)	double leaf from single leaf door test	not possible without an additional test	Test scenario C
A.1.3 number of elements of telescopic single leaf and symmetric double leaf doors - **see Figure A.34**	decrease	possible	
A.1.4 number of elements of telescopic single leaf and symmetric double leaf doors - **see Figure A.34**	increase	Possible providing the telescopic edge detail is tested and the calculation result according to Annex C is within the classification limits Otherwise not possible without an additional test.	Test scenario E
A.1.5 number of elements of telescopic double leaf doors - **see Figure A.34**	decrease	possible	
A.1.6 number of elements of telescopic double leaf doors (not applicable for vertically sliding doors)	increase	Possible providing the telescopic edge detail is tested and the calculation result according to Annex C is within the classification limits Otherwise not possible without an additional test.	Test scenario E

Construction Parameter	Variation	Possibility of extension	Additional Evidence Required
(1)	(2)	(3)	(4)
A.1.7 number of panels per leaf / element**- see Figure A.35**	increase	Possible for doors made of modular panels where the basic test shall be performed with at least 3 panels per leaf, and as long as the calculation result according to Annex C is within the classification limits and if necessary the rules A.2.2 to A.2.4 are fulfilled. Otherwise not possible without an additional test.	Test scenario E
A.1.8 number of panels per leaf / element**- see Figure A.36**	decrease	Possible for S_a For S_{200}: Possible if tested without expansion joint. For leaves tested with expansion only possible to remove panels via width decrease. Otherwise not possible without an additional test.	Test scenario F
A2 Size variations / single or multiple panel construction			
A.2.4 size (area, width, height) of door leaf	decrease	Possible	

Construction Parameter	Variation	Possibility of extension	Additional Evidence Required
(1)	(2)	(3)	(4)
A.2.2 width of door leaf - **see Figure A.37**	increase	Possible up to a size where the calculation result given in Annex C is within the classification limits and for S_{200} providing that the following additional conditions A-G are fulfilled: A) for doors made of modular panels the basic test shall be performed with at least 3 panels per leaf. B) the distance between supporting elements (e.g. rollers) and the door leaf edges and the distance between each supporting element shall not be increased, and the number of panel joints between the supporting elements shall not be increased, i.e. additional supporting element (stiffening finger or roller) is required. C) the distance between fixings of the supporting elements (e.g. rollers) and the fixings of the track to the supporting construction is not increased in the closed position of the door. D) the increase without any bottom guides is limited to 50 %. E) for increase larger than 50 %: the bottom edge shall be guided. The distance between the guiding points is not larger than the original tested width. F) for double leaf doors with asymmetric leaves: the splitting may be as asymmetric as tested up to symmetric. G) the load change on the track shall be considered Otherwise not possible without an additional test.	Test scenario E
A.2.3 height of door leaf **– see Figure A.38**	increase	Possible up to a size where the calculation result given in Annex C is within the classification limits and for S_{200} providing that the following additional conditions A and B are fulfilled: A) The track is made of steel B) the load change on the track shall be considered. Otherwise not possible without an additional test.	Test scenario E

Construction Parameter	Variation	Possibility of extension	Additional Evidence Required
(1)	(2)	(3)	(4)
A.2.4 area of door leaf	increase	Possible up to a size where the calculation result given in Annex C is within the classification limits, but limited to a maximum of 250 % increase. Possible to combine width (A.2.2) and height (A.2.3) increase. Otherwise not possible without an additional test.	Test scenario E
A.2.5 width of vertical door leaf panel	increase	possible up to the widest tested panel otherwise not possible without an additional test	Test scenario F
A.2.6 width of vertical door leaf panel for a sliding door with more than one panel	decrease	possible providing the width of the panel is between the tested minimum and maximum width of the panels, otherwise not possible without an additional test	Test scenario F
A.2.7 height of vertical door leaf panel	increase	possible in line with rules for the increasing of height of door leaves	
A.2.8 height of vertical door leaf panel	decrease	possible in line with rules for the decreasing of height of door leaves	
A.2.9 area of vertical door leaf panel	increase	possible in line with rules for increase of the width and height of door panels which may be combined	
A.2.10 number of horizontal joints between panels	increase	Possible, if tested with minimum one horizontal joint up to a number where the calculation result is within the classification limits otherwise not possible without an additional test	Test scenario F
A.2.11 number of horizontal joints between panels	decrease	Possible for S_a For S_{200}: Possible if tested without expansion joint. For leaves tested with expansion only possible to remove panels via height decrease. Otherwise not possible without an additional test.	Test scenario F
A.2.12 thickness of the door leaf	increase	Possible if the sealing system is not changed, otherwise not possible without an additional test	Test scenario E

Construction Parameter	Variation	Possibility of extension	Additional Evidence Required
(1)	(2)	(3)	(4)
A.2.13 thickness of the door leaf	decrease	Not possible without an additional test	Test scenario F
A3 Materials and constructions			
A.3.1 density of core material	increase	Possible for S_a. Possible for S_{200} providing the increase is not greater than 50 % otherwise not possible without an additional test	Test scenario A
A.3.2 density of core material	decrease	Possible for S_a. Possible for S_{200} providing the decrease is not greater than 50 % otherwise not possible without an additional test	Test scenario A
A.3.3 thickness of core material	increase	in line with A.2.12	
A.3.4 thickness of core material	decrease	in line with A.2.13	
A.3.5 pattern of core material **- see Figure A.37**	increase number of pieces	Possible for all non-metal based materials. Otherwise not possible without an additional test.	Test scenario F
A.3.6 pattern of core material - **See Figure A.38**	decrease number of pieces	Possible for all non-metal based materials. Otherwise not possible without an additional test.	Test scenario F
A.3.7 number of layers of identical core material - **See Figure A.39**	increase	Possible for S_a. Possible for S_{200} doorsets providing the fixing technique to the toplayer/coverplate (e.g. steelsheet of the steeldoor) is unchanged. Otherwise not possible without additional test.	Test scenario A
A.3.8 number of layers of identical core material - **See Figure A.40**	decrease	Possible for S_a. Possible for S_{200} doorsets providing the fixing technique to the toplayer/coverplate (e.g. steelsheet of the steeldoor) is unchanged. Otherwise not possible without additional test.	Test scenario A
A.3.9 number of layers of different materials - **See Figure A.41**	increase	Rule A.3.7 can be used for change of any non-metal based layer of composite core materials	

Construction Parameter	Variation	Possibility of extension	Additional Evidence Required
(1)	(2)	(3)	(4)
A.3.10 number of layers of different materials - **See Figure A.42**	decrease	Rule A.3.8 can be used for change of any non-metal based layer of composite core materials.	
A.3.11 core material (single thickness or in combination of different layers)	change of supplier / manufacturer (same product type)	possible	
A.3.12 type of core material (single thickness or in combination of different layers)	alternative composition of same basic product type	Possible for S_a Possible for S_{200} providing the density is not changed by more than 25 %. Otherwise not possible without an additional test.	Test scenario D
A.3.13 amount of adhesives / m2 – Products < Euroclass A1	increase	Possible	
A.3.14 amount of adhesives / m2 – Products < Euroclass A1	decrease	Not possible without an additional test.	Test scenario D
A.3.15 amount of adhesives / m2 – Products of Euroclass A1	increase	Possible	
A.3.16 amount of adhesives / m2 – Products of Euroclass A1	decrease	Not possible without an additional test.	Test scenario D
A.3.17 type of adhesives	change of supplier / manufacturer of identical material with identical composition and properties	Possible	
A.3.18 type of adhesives	alternative composition	Possible for S_a. For S_{200} not possible without an additional test.	Test scenario D

Construction Parameter	Variation	Possibility of extension	Additional Evidence Required
(1)	(2)	(3)	(4)
A.3.19 metal armour sheet (internally mounted) - **See Figure A.43 a)**	add	Possible for S_a. For S_{200} possible providing the sheet is not fixed to the leaf's material (so that the sheet can expand without affecting the leaf) and thickness is ≤ 1mm for timber based doors or ≤ 2mm for steel based doors. Otherwise not possible without an additional test.	Test scenario E
A.3.20 metal armour sheet (internally mounted) - **See Figure A.43 b)**	remove	Possible for S_a. For S_{200} not possible without an additional test.	Test scenario E
A.3.21 thickness of steel sheet, (if not part of the interlock system)	increase	Possible for S_a doors. Possible for S_{200} doors to a maximum of 10 %. Otherwise not possible without an additional test.	Test scenario D
A.3.22 thickness of steel sheet, (if not part of the interlock system)	decrease	Not possible without an additional test.	Test scenario D
A.3.23 type of steel sheet	Mild to stainless	Possible for S_a. Not possible for S_{200} without an additional test.	Test scenario D
A.3.24 type of steel sheet	stainless to mild	Possible	
A.3.25 type of steel for stiffeners and profiles	mild to stainless	Possible for S_a. Not possible for S_{200} without an additional test.	Test scenario D
A.3.26 type of steel for stiffeners and profiles	stainless to mild	Possible	

Construction Parameter	Variation	Possibility of extension	Additional Evidence Required
(1)	(2)	(3)	(4)
A.3.27 cross - section dimension of stiffening elements	increase	Possible for S_a. Possible for S_{200} for timber doors. Possible for S_{200} for steel doors in line with A.2.12 only to adapt to the changed thickness. Otherwise not possible without an additional test.	Test scenario D
A.3.28 cross - section dimension of stiffening elements	decrease	Not possible without an additional test.	Test scenario D
A.3.29 number of intermediate stiffening elements per panel	increase	Possible for S_a. For S_{200} possible proportional to the increase of height or width of the panel, rounded to the nearest whole number of stiffeners. Otherwise not possible without an additional test	Test scenario F
A.3.30 number of intermediate stiffening elements per panel	decrease	Possible proportional to the decrease of height or width of the panel, rounded to the nearest whole number of stiffeners. Otherwise not possible without an additional test	Test scenario F
A.3.31 spacing of intermediate stiffening elements per panel	increase	In line with A.3.6 possible proportional to the increase of height or width of the panel. Otherwise not possible without an additional test	Test scenario F
A.3.32 spacing of intermediate stiffening elements per panel	decrease	In line with A.3.7 possible proportional to the increase of height or width of the panel. Otherwise not possible without an additional test	Test scenario F
A.3.33 distance between stiffening element fixing points - **see Figure A.44 b)**	increase	not possible without an additional test	Test scenario D
A.3.34 distance between stiffening element fixing points - **see Figure A.44 a)**	decrease	possible	

Construction Parameter	Variation	Possibility of extension	Additional Evidence Required
(1)	(2)	(3)	(4)
A.3.35 jointing technique (leaf edges, stiffening elements, etc.)	alternative (welding / riveting / screwing)	Possible for S_a. Possible for S_{200} providing the stiffness of the leaf is not reduced. Otherwise not possible without an additional test.	Test scenario D
A.3.36 Overlap of door leaf edge, - **see Figure A.61, measure 2**	Increase	Possible providing the sealing system is not changed. Otherwise not possible without an additional test	Test scenario F
A.3.37 Overlap of door leaf edge, - **see Figure A.61, measure 2**	Decrease	Possible providing the sealing system is not changed and proper mounting is possible (e.g. edge distance for screws) Otherwise not possible without an additional test	Test scenario F
A.3.38 Intumescent seals	change of location	Possible providing the smoke sealing system is not interfered Otherwise not possible without additional test	Test scenario F
A.3.39 dimension of intumescent seals	decrease	Possible providing the smoke sealing system is not interfered Otherwise not possible without additional test	Test scenario F
A.3.40 dimension of intumescent seals	increase	Possible providing the smoke sealing system is not interfered Otherwise not possible without additional test	Test scenario F
A.3.41 intumescent seals	remove	Possible providing the smoke sealing system is not interfered Otherwise not possible without additional test	Test scenario F
A.3.42 intumescent seals	add	Possible providing the smoke sealing system is not interfered Otherwise not possible without additional test	Test scenario F
A.3.43 intumescent seals	change of manufacturer / supplier	Possible providing the smoke sealing system is not interfered Otherwise not possible without additional test	Test scenario F
A.3.44 intumescent seals	alternative material	Possible providing the smoke sealing system is not interfered Otherwise not possible without additional test	Test scenario F
A.3.45 non intumescent smoke seals - Products of Euroclass A1	location	Not possible without an additional test	Test scenario F

Construction Parameter	Variation	Possibility of extension	Additional Evidence Required
(1)	(2)	(3)	(4)
A.3.46 non intumescent smoke seals – Products < Euroclass A1	location	Not possible without an additional test	Test scenario F
A.3.47 non intumescent smoke seals - Products of Euroclass A1	add	Not possible without an additional test	Test scenario F
A.3.48 non intumescent smoke seals - Products of Euroclass A1	remove	Not possible without an additional test	Test scenario F
A.3.49 non intumescent smoke seals – Products < Euroclass A1	add	Not possible without an additional test	Test scenario F
A.3.50 non intumescent smoke seals – Products < Euroclass A1	remove	Not possible without an additional test	Test scenario F
A.3.51 dimension of non intumescent smoke seals - Products of Euroclass A1	increase	Possible providing the part of the increase doesn't affect the functional part of the sealing system.(e.g. the increase is located in the seal base). Possible to interpolate between the smallest and biggest tested size of the smoke seal (same shape type). Otherwise not possible without additional test.	Test scenario F
A.3.52 dimension of non intumescent smoke seals - Products of Euroclass A1	decrease	Possible to interpolate between the smallest and biggest tested size of the smoke seal (same shape type). Otherwise not possible without additional test.	Test scenario F
A.3.53 dimension of non intumescent smoke seals – Products < Euroclass A1	increase	Possible providing the part of the increase doesn't affect the functional part of the sealing system.(e.g. the increase is located in the seal base). Possible to interpolate between the smallest and biggest tested size of the smoke seal (same shape type). Otherwise not possible without additional test.	Test scenario F

Construction Parameter	Variation	Possibility of extension	Additional Evidence Required
(1)	(2)	(3)	(4)
A.3.54 dimension of non intumescent smoke seals – Products < Euroclass A1	decrease	Possible to interpolate between the smallest and biggest tested size of the smoke seal (same shape type). Otherwise not possible without additional test.	Test scenario F
A.3.55 smoke seals	change of manufacturer / supplier	Possible if the composition, material, size and shape are identical (identical means within the limits of the specified production features e.g. shore-hardness). Otherwise not possible without an additional test.	Test scenario F
A.3.56 type of smoke seals	alternative material (Euroclass A1 to Euroclass A1, < Euroclass A1 to Euroclass A1)	Not possible without an additional test	Test scenario F
A.3.57 type of smoke seals	alternative material (Euroclass A1 to < Euroclass A1, < Euroclass A1 to < Euroclass A1)	Not possible without an additional test	Test scenario F
A.3.58 Type of core material in leaf or panel (single thickness or in combination of different layers)	Alternative	Possible for S_a providing the material has the same thickness as tested. Otherwise not possible without an additional test.	Test scenario D
A.3.59 Additional seals (additional to the smoke sealing system) fitted in leaf or frame (e.g. noise reduction)	Add	Possible providing the sealing system is not interfered. Otherwise not possible without an additional test.	Test scenario F
A.3.60 Additional seals (additional to the smoke sealing system) fitted in leaf or frame (e.g. noise reduction)	Remove / Alternative (size, shape, manufacturer, material…)	Not possible without an additional test.	Test scenario F
A4. Decorative and / or protective finishes			

Construction Parameter	Variation	Possibility of extension	Additional Evidence Required
(1)	(2)	(3)	(4)
A.4.1 paints without contribution to fire resistance	add	Possible for all paints with a smooth finish. Otherwise not possible without an additional test.	Test scenario F
A.4.2 paints without contribution to fire resistance	interchange	Possible for all paints with a smooth finish. Otherwise not possible without an additional test.	Test scenario F
A.4.3 thickness of paints with positive contribution to fire resistance	increase	Not possible without an additional test	Test scenario F
A.4.4 thickness of paints with positive contribution to fire resistance	decrease	Not possible without an additional test	Test scenario F
A.4.5 type of paints with positive contribution to fire resistance	change of manufacturer / supplier	Possible only for identical product (identical chemical composition and identical manufacturing process). Otherwise not possible without an additional test	Test scenario F
A.4.6 type of paints with positive contribution to fire resistance	alternative material	Not possible without an additional test	Test scenario F
A.4.7 decorative laminates and timber veneers on the face - **See Figure A.45 a)**	add	Possible only for finishes without metal inlay: for decorative laminates up to 2 mm and timber veneers with a smooth surface up to 3 mm thickness. In the area of the smoke seal the surface shall be full faced. Possible if the sealing system is not interfered. Otherwise not possible without an additional test	Test scenario F
A.4.8 decorative laminates and timber veneers on the face - **See Figure A.45 b)**	remove	Possible if the sealing system is not interfered. Otherwise not possible without an additional test	Test scenario F

Construction Parameter	Variation	Possibility of extension	Additional Evidence Required
(1)	(2)	(3)	(4)
A.4.9 decorative laminates and timber veneers on the edges - **See Figure A.46 a)**	add	Possible for decorative laminates and timber veneers up to 1,5 mm thickness with a smooth surface. In the area of the smoke seal the surface shall be full faced. Possible if the sealing system is not interfered. Otherwise not possible without an additional test	Test scenario F
A.4.10 decorative laminates and timber veneers on the edges - **See Figure A.46 b)**	remove	Possible if the sealing system is not interfered. Otherwise not possible without an additional test	Test scenario F
A.4.11 types and thickness of decorative laminates and timber veneers on the face	change material content, increase, decrease	Possible in line with rules A.4.7 to A.4.8	
A.4.12 types and thickness of decorative laminates and timber veneers on the edges	change material content, increase, decrease	Possible in line with rules A.4.9 to A.4.10	
A.4.13 attachment technique of laminates on the face	Alternative (adhesive / rivet / screw)	Possible if the sealing system is not interfered. Otherwise not possible without an additional test	Test scenario F
A.4.14 attachment technique of laminates on the edges	alternative (adhesive / rivet / screw)	Possible if the sealing system is not interfered. Otherwise not possible without an additional test	Test scenario F
A.4.15 signs with and without adhesive – face fixed	add	Possible if the sealing system is not interfered. Otherwise not possible without an additional test	Test scenario F
A.4.16 attachment technique for signs added to doors	selection (adhesive / rivet / screw)	Possible if the sealing system is not interfered. Otherwise not possible without an additional test	Test scenario F

Construction Parameter	Variation	Possibility of extension	Additional Evidence Required
(1)	(2)	(3)	(4)
A.4.17 Protective elements – face fixed (kick plates/push plates) **– see Figure A.10**	Add	Possible for Sa doors providing the sealing system is not affected. Possible for S200 steel doors for one piece up to 800 mm from the base of the leaf or limited to maximum two pieces per face with a width or height of up to 250 mm (second dimension is limited to the door leaf width/height) providing the sealing system is not affected and the thickness is ≤ 1.5 mm. Otherwise not possible without an additional test.	Test scenario D
A.4.18 Protective elements – face fixed (kick plates/push plates)	Remove	Possible for Sa doors providing the sealing system is not affected. For S_{200} not possible without an additional test.	Test scenario F
B. Wall/Ceiling/Floor Fixed Elements (Frame/Suspension System)			
B.1. General			
B1.9 wall fixed element (frame) at the bottom of the door **– see Figure A.47 a)**	add	Possible for Sa doors. For S_{200} possible providing the interlock construction has been tested at top or side edges of the door, otherwise not possible without an additional test	Test scenario D
B1.10 wall fixed element (frame) at the bottom of the door	remove	Possible for Sa doors. For S_{200} not possible without an additional test	Test scenario D
B1.11 height of doorset above floor - **see Figure A.47 b) and c)**	Alternative	Possible	
B.2. Materials and constructions			
B.2.1 Intumescent seals	change of location	Possible if the smoke sealing system is not interfered. Otherwise not possible without an additional test.	Test scenario F

Construction Parameter	Variation	Possibility of extension	Additional Evidence Required
(1)	(2)	(3)	(4)
B.2.2 dimension of intumescent seals	decrease	Possible if the smoke sealing system is not interfered. Otherwise not possible without an additional test	Test scenario F
B.2.3 dimension of intumescent seals	increase	Possible if the smoke sealing system is not interfered. Otherwise not possible without an additional test	Test scenario F
B.2.4 intumescent seals	remove	Possible if the smoke sealing system is not interfered. Otherwise not possible without an additional test	Test scenario F
B.2.5 intumescent seals	add	Possible if the smoke sealing system is not interfered. Otherwise not possible without an additional test	Test scenario F
B.2.6 intumescent seals	change of manufacturer / supplier	Possible if the smoke sealing system is not interfered. Otherwise not possible without an additional test	Test scenario F
B.2.7 intumescent seals	alternative material	Possible if the smoke sealing system is not interfered. Otherwise not possible without an additional test	Test scenario F
B.2.8 non intumescent seals (draught / smoke / acoustic etc.) - Products of Euroclass A1	location	Not possible without an additional test	Test scenario F
B.2.9 non intumescent seals (draught /smoke / acoustic etc.) – Products < Euroclass A1	location	Not possible without an additional test	Test scenario F
B.2.10 non intumescent seals (draught /smoke / acoustic etc.) - Products of Euroclass A1	add	Possible if the smoke sealing system is not interfered. Otherwise not possible without an additional test	Test scenario F
B.2.11 non intumescent seals (draught / smoke / acoustic etc.) - Products of Euroclass A1	remove	Not possible without an additional test	Test scenario F

Construction Parameter	Variation	Possibility of extension	Additional Evidence Required
(1)	(2)	(3)	(4)
B.2.12 non intumescent seals (draught /smoke / acoustic etc.) - Products of < Euroclass A1	add	Possible if the smoke sealing system is not interfered. Otherwise not possible without an additional test	Test scenario F
B.2.13 non intumescent seals (draught / smoke / acoustic etc.) – Products < Euroclass A1	remove	Not possible without an additional test	Test scenario F
B.2.14 dimension of non intumescent seals (draught / smoke / acoustic etc.) - Products of Euroclass A1	increase	Not possible without an additional test	Test scenario F
B.2.15 dimension of non intumescent seals (draught / smoke / acoustic etc.) - Products of Euroclass A1	decrease	Not possible without an additional test	Test scenario F
B.2.16 dimension of non intumescent seals (draught / smoke / acoustic etc.) – Products < Euroclass A1	increase	Not possible without an additional test	Test scenario F
B.2.17 dimension of non intumescent seals (draught / smoke / acoustic etc.) – Products < Euroclass A1	decrease	Not possible without an additional test	Test scenario F
B.2.18 draught / smoke seals	change of manufacturer / supplier	Possible if the composition, material, size and shape is identical. Otherwise not possible without an additional test	Test scenario F
B.2.19 type of draught / smoke seals	alternative material (Euroclass A1 to Euroclass A1, < Euroclass A1 to Euroclass A1)	Not possible without an additional test	Test scenario F

Construction Parameter	Variation	Possibility of extension	Additional Evidence Required
(1)	(2)	(3)	(4)
B.2.20 type of draught / smoke seals	alternative material (Euroclass A1 to < Euroclass A1, < Euroclass A1 to < Euroclass A1)	Not possible without an additional test	Test scenario F
B.2.21 interlocking depth of interlock system (=”tightness” in Direct Application EN 1634–1)	decrease	Not possible without an additional test	Test scenario F
B.2.22 interlocking depth of interlock system (=”tightness” in Direct Application EN 1634–1)	increase	Possible if the smoke sealing system is not interfered. Otherwise not possible without an additional test	Test scenario F
B.2.23 material thickness of interlock system	change	Possible to increase the steel thickness if the smoke sealing system is not interfered. Otherwise not possible without an additional test	Test scenario F
B.2.24 type of infill material of interlock system	change of supplier / manufacturer of identical material with identical composition and properties	Possible	
B.2.25 type of infill material of interlock system	alternative material	Possible if the leak-tightness of the interlock system is not worse. Otherwise not possible without an additional test.	Test scenario F
B.2.26 jointing technique	alternative (welding / riveting / screwing)	Possible to interchange between riveting and screwing providing the centre distances are not exceeded, fixings are made from the same materials and cross section dimension of the alternative is not smaller. Possible to change from riveting or screwing to welding, providing the centre distances are not exceeded. Possible to change from spot welding to riveting or screwing, providing the centre distances are not exceeded, fixings are made from steel and the steel sheets have a minimum thickness of 1 mm. Otherwise not possible without an additional test	Test scenario A

Construction Parameter	Variation	Possibility of extension	Additional Evidence Required
(1)	(2)	(3)	(4)
B.2.27 type of steel of interlock and suspension system (separate and combined systems)	mild to stainless	Possible for S_a. For S_{200} not possible without an additional test.	Test scenario F
B.2.28 type of steel of interlock and suspension system (separate and combined systems)	stainless to mild	Possible	
B.2.29 metal thickness of suspension system combined with interlock system	increase	Possible if the smoke sealing system is not interfered. Otherwise not possible without an additional test.	Test scenario F
B.2.30 metal thickness of suspension system combined with interlock system	decrease	Possible in relation to the decrease of mass of the door leaf and if the smoke sealing system is not interfered. Otherwise not possible without an additional test.	Test scenario F
B.2.31 cross - section dimensions of suspension system combined with interlock system	increase	Possible if the smoke sealing system is not interfered. Otherwise not possible without an additional test.	Test scenario F
B.2.32 cross - section dimensions of suspension system combined with interlock system	decrease	Possible in relation to the decrease of mass of the door leaf and if the smoke sealing system is not interfered. Otherwise not possible without an additional test.	Test scenario F
B.2.33 metal thickness and cross-section of suspension system separate to interlock system	increase	possible	
B.2.34 metal thickness and cross-section of suspension system separate to interlock system	decrease	Possible in relation to the decrease of mass of the door leaf and if the smoke sealing system is not interfered. Otherwise not possible without an additional test.	Test scenario F

Construction Parameter	Variation	Possibility of extension	Additional Evidence Required
(1)	(2)	(3)	(4)
B.2.35 suspension system - alternative material for roller	interchange	Possible for S_a. For S_{200} possible for all materials with a melting point higher than 200 °C Otherwise not possible without an additional test.	Test scenario A with the rollers in the furnace
B.2.36 suspension system - alternative fixing method **– see Figure A.48**	wall to soffit or vice versa	Possible if the smoke sealing system is not interfered. Otherwise not possible without an additional test.	Test scenario F
B.2.37 distance between fixing points of wall / ceiling fixed elements	increase	Not possible without an additional test.	Test scenario A with maximum load on fixing point
B.2.38 distance between fixing points of wall / ceiling fixed elements	decrease	possible	
B.2.39 distance between top of door leaf and bottom of guide and distance between top of guide and bottom of wall / ceiling mounted elements (not applicable for vertically sliding doors) **- see Figure A.49**	increase	Possible if the smoke sealing system is not interfered. Otherwise not possible without an additional test.	Test scenario F
B.2.40 distance between top of door leaf and top of guide and distance between top of guide and bottom of wall / ceiling mounted elements (not applicable for vertically sliding doors)	decrease	possible	

Construction Parameter	Variation	Possibility of extension	Additional Evidence Required
(1)	(2)	(3)	(4)
B.2.41 position of the fixing point of the suspension system to the door leaf (not applicable for vertically sliding doors) – **see Figure A.62**	variation from top to vertical edge and vice versa	Not possible without an additional test	Test scenario F
B.2.42 distance between fixing points of interlock system	increase	Not possible without an additional test	Test scenario A with maximum load on fixing point
B.2.43 distance between fixing points of interlock system	decrease	Possible	
B.2.44 bottom guide rollers or pegs (not applicable for vertically sliding doors)	add	Possible	
B.2.45 bottom guide rollers or pegs (not applicable for vertically sliding doors)	remove	Not possible without an additional test	Test scenario F
B.2.46 bottom guide rollers or pegs (not applicable for vertically sliding doors)	alternative	Possible for S_a. For S_{200} possible for all materials with a melting point higher than 200 °C Otherwise not possible without an additional test.	Test scenario A.
B.3. Decorative and / or protective finishes on fixed elements			
B.3.1 paints without contribution to fire resistance	add	Possible	
B.3.2 paints without contribution to fire resistance	interchange	Possible	

Construction Parameter	Variation	Possibility of extension	Additional Evidence Required
(1)	(2)	(3)	(4)
B.3.3 thickness of paints with positive contribution to fire resistance	increase	Possible for S_a. Otherwise not possible without an additional test.	Test scenario F
B.3.4 thickness of paints with positive contribution to fire resistance	decrease	Possible for S_a. For S_{200} possible, if the smoke sealing system is not interfered. Otherwise not possible without an additional test.	Test scenario F
B.3.5 type of paints with positive contribution to fire resistance	change of manufacturer / supplier	Possible for S_a. For S_{200} possible only for identical product (identical chemical composition and identical manufacturing process), otherwise not possible without an additional test	Test scenario F
B.3.6 type of paints with positive contribution to fire resistance	alternative material	Possible for S_a. For S_{200} not possible without an additional test	Test scenario F
B.3.7 decorative laminates and timber veneers on the face / edges	add	Possible up to a thickness of 1.5 mm and providing the sealing system is not interfered. Otherwise not possible without an additional test.	Test scenario F
B.3.8 decorative laminates and timber veneers on the face / edges	remove	Possible up to a thickness of 1,5 mm and providing the sealing system is not interfered. Otherwise not possible without an additional test.	Test scenario F
B.3.9 types and thickness of decorative laminates and timber veneers on the face / edges	change material content, increase, decrease	Possible providing the sealing system is not interfered. The increase is possible by a maximum of 1,5 mm. Otherwise not possible without an additional test.	Test scenario F
B.3.10 types of decorative laminates and timber veneers on the face / edges	colour, pattern	Possible if the smoke sealing system is not interfered. Otherwise not possible without an additional test.	Test scenario F
B.3.11 attachment technique of laminates	alternative (adhesive / rivet / screw)	Possible if the smoke sealing system is not interfered. Otherwise not possible without an additional test.	Test scenario F

Construction Parameter	Variation	Possibility of extension	Additional Evidence Required
(1)	(2)	(3)	(4)
C. Hardware			
C.1. General It is a requirement of this document, that all items of building hardware are in accordance with the relevant technical specification and that the building hardware is appropriate to the class of use of the door. Where hardware can be removed, no openings or holes should remain or they should be sealed/closed properly.			
C.1.1 latches and locks internally mounted	add to door leaf tested without latch or lock	Possible if the smoke sealing system is not interfered. Otherwise not possible without an additional test.	Test scenario F
C.1.2 latches and locks internally mounted	alternative	Possible providing the hardware does not interfere with the smoke seal more than tested. Otherwise not possible without additional test	Test scenario F
C.1.3 latches and locks externally mounted	add to door leaf tested without latch or lock	Possible if the smoke sealing system is not interfered and providing any break through being limited to screw fixings and their covering. Otherwise not possible without an additional test.	Test scenario F
C.1.4 latches and locks externally mounted	alternative	Possible providing the hardware does not interfere with the smoke seal more than tested. Otherwise not possible without additional test	Test scenario F
C.1.5 number of latches / locks **– See Figure A.50**	Increase	Possible if the smoke sealing system is not interfered. Otherwise not possible without an additional test.	Test scenario F
C.1.6 number of latches / locks **– See Figure A.51**	Decrease / Remove	Possible providing originally tested with latch / lock bolt withdrawn and all relevant holes in the door leaf face and edge are appropriately infilled and closed, otherwise not possible without an additional test Otherwise not possible without an additional test.	Test scenario F
C.1.7 position of latches / locks	alternative	Possible to vary the position up to 200 mm. Otherwise not possible without an additional test.	Test scenario F

Construction Parameter	Variation	Possibility of extension	Additional Evidence Required
(1)	(2)	(3)	(4)
C.1.8 latches / locks	exchange internal to external	Possible providing the original door was tested with latch / lock bolt withdrawn. Otherwise not possible without an additional test.	Test scenario F
C.1.9 Door handles, push pads and emergency exit devices to EN 179 or panic devices to EN 1125	Add / Alternative	Possible to add or exchange face mounted elements providing any break through being limited to screw fixings and their covering. Otherwise not possible without additional test	Test scenario F
C.1.10 Door handles, push pads and emergency exit devices to EN 179 or panic devices to EN 1125	remove	Possible but the lock assembly shall remain as tested and providing the removal does not expose any areas of potential weakness beneath the element. The removal of the building hardware shall not result in less restraint on the door leaf. Otherwise not possible without an additional test.	Test scenario F
C.1.11 metal self closing devices (e.g. counterweight systems, spring loaded systems)	add	Possible if the smoke sealing system is not interfered. Otherwise not possible without an additional test.	Test scenario F
C.1.12 self closing and opening devices (pneumatic and/or hydraulic systems and/or electric systems)	add	Possible if the smoke sealing system is not interfered. Otherwise not possible without an additional test.	Test scenario F
C.1.13 self closing devices (all systems)	remove	Possible providing the system was not activated during the test. Otherwise not possible without an additional test	Test scenario F
C.1.14 self closing devices (all systems incl. inclined track)	alternative	Possible if the smoke sealing system is not interfered. Otherwise not possible without an additional test.	Test scenario F
C.1.15 mass and dimension of self closing devices (e.g. counterweight systems, spring loaded systems)	increase	Possible if the smoke sealing system is not interfered more than tested. Otherwise not possible without an additional test.	Test scenario F

Construction Parameter	Variation	Possibility of extension	Additional Evidence Required
(1)	(2)	(3)	(4)
C.1.16 mass and dimension of self closing devices (e.g. counterweight systems, spring loaded systems)	decrease	Possible in line with decreasing the door mass and if the smoke sealing system is not interfered more than tested. Otherwise not possible without an additional test.	Test scenario F
C.1.17 location of metal self closing devices (e.g. counterweight systems, spring loaded systems)	change	Possible if the smoke sealing system is not interfered more than tested. Otherwise not possible without an additional test.	Test scenario F
C.1.18 power operated systems (opening and closing device, not for the case of fire)	addition / alternative	Possible if the smoke sealing system is not interfered. Otherwise not possible without an additional test.	Test scenario F
C.1.19 power operated systems (opening and closing device, not for the case of fire)	remove	Possible	
C.1.20 location of power operated systems (opening and closing device, not for the case of fire)	change	Possible if the smoke sealing system is not interfered. Otherwise not possible without an additional test.	Test scenario F
C.1.21 release mechanism (hold open)	addition / alternative	Possible to add or exchange face mounted elements providing any break through being limited to screw fixings and their covering and providing the smoke sealing system is not interfered. Otherwise not possible without an additional test.	Test scenario F
C.1.22 braking system (regulation of opening and/or closing speed of the door leaf)	addition / alternative	Possible to add or exchange face mounted elements providing any break through being limited to screw fixings and their covering and providing the smoke sealing system is not interfered. Otherwise not possible without an additional test.	Test scenario F

Construction Parameter	Variation	Possibility of extension	Additional Evidence Required
(1)	(2)	(3)	(4)
C.1.23 damping cylinder	addition / alternative	Possible to add or exchange face mounted elements providing any break through being limited to screw fixings and their covering and providing the smoke sealing system is not interfered. Otherwise not possible without an additional test.	Test scenario F
C.1.24 preparation of door and frame including provision of fixing plates or internal conduit type components to receive additional hardware	add / additional	Possible to add fixing plates, each with a maximum dimension of 10 % of the length and width of the original tested door leaf size. Otherwise not possible without an additional test. Possible to add conduit type components.	Test scenario F
C.1.25 internal power cable and protective conduits (door or wall fixed element)	add	Possible if the smoke sealing system is not interfered. Otherwise not possible without an additional test.	Test scenario F
C.1.26 external power cable and protective conduits (door or wall fixed element)	add	Possible if the smoke sealing system is not interfered. Otherwise not possible without an additional test.	Test scenario F
C.1.27 internal and external power cable and protective conduits (door or wall fixed element)	remove	Possible	
C.1.28 alarm contacts and proximity switches	add	Possible if the smoke sealing system is not interfered. Otherwise not possible without an additional test.	Test scenario F
C.1.29 alarm contacts and proximity switches	remove	Possible	
C.1.30 alarm contacts and proximity switches	alternative	Possible if the smoke sealing system is not interfered. Otherwise not possible without an additional test.	Test scenario F

Construction Parameter	Variation	Possibility of extension	Additional Evidence Required
(1)	(2)	(3)	(4)
C.1.31 door signs (face mounted)	add	Possible glued, welded or providing that any break through is limited to screw fixings/rivetings and their covering and that the fixings do not break both sides and providing the smoke sealing system is not interfered Otherwise not possible without additional test.	Test scenario F
C.1.32 door signs (face mounted)	remove	Possible	
C.1.33 cylinders	Add / remove / alternative	Add/alternative: Possible providing the door was previously tested with a standard cylinder according to EN 1303. Remove: In any case any remaining holes shall be covered properly. Otherwise not possible without additional test.	Test scenario A
D. Support / attachment – door leaf to framing - Not applicable to sliding doors			
E. Side / transom panels and flush over panels - Not applicable to sliding doors			
F. Glazing for door leaf			
F.1 General For doors with or without glass, the doorset shall have been tested without glazing in accordance with EN 1634–3 to achieve a test result which could generate a classification in accordance with EN 13501–2 at least equal to the classification subsequently required from extended application considerations, except there are specific rules given below.			
F.1.1 Glazed aperture	add	Not possible without an additional test	Test scenario G
F.1.2 Glazed aperture	remove	Possible for S_a. For S_{200} possible if glazed panel ≤ 15 % of area of the door leaf. Otherwise not possible without additional test	Test scenario G
F.1.3 thickness of glass – **See Figure A.52 a)**	increase	Possible providing the smoke sealing system of the glazing is not influenced except adapting the system to the new thickness of the glass. Otherwise not possible without additional test.	Test scenario F

Construction Parameter	Variation	Possibility of extension	Additional Evidence Required
(1)	(2)	(3)	(4)
F.1.4 thickness of glass – **See Figure A.52 b)**	decrease	Possible for S_a providing the smoke sealing system of the glazing is not influenced except adapting the system to the new thickness of the glass. Otherwise not possible without additional test.	Test scenario F
F.1.5 dimensions of each pane – **See Figure A.53**	increase	Possible providing the glass is properly sealed and the distance between the edge of the glass pane and the edge of the door or the distance between two glass panes is not decreased. For door leaves made of elements, this rule is applicable to each element. In any case the increase is limited to +100 % (area). Otherwise not possible without additional test.	Test scenario G
F.1.6 dimensions of each pane – **See Figure A.54**	decrease	The size of glazed openings may be reduced from that tested and the aspect ratio may be changed providing that no perimeter dimension is increased, and providing that for S_{200} applications the glass type is not changed. Otherwise not possible without additional test.	Test scenario G
F.1.7 glass type	change of manufacturer and/or glass type	Possible for S_a. For S_{200}: Not possible for single float-glass-panes and combinations, where the float-glass-pane stands alone on the surface (e.g. IGU). Possible for S_{200} if the glass is fire rated resistant or will not fracture at temperatures up to 200°C (e.g. TGU, laminated Glass). Otherwise not possible without an additional test.	Test scenario G
F.1.8 materials and geometry of edge fixing technique without changing the seals (with the same glass)	alternative	Possible providing that any openings or holes should be sealed or closed properly and melting points are higher than 200 °C. Otherwise not possible without an additional test.	Test scenario G

Construction Parameter	Variation	Possibility of extension	Additional Evidence Required
(1)	(2)	(3)	(4)
F.1.9 glazing frame attachment techniques (rivets/screws) – **See Figure A.55**	Alternative (welding / riveting / screwing / clipped)	Possible for S_a. For S_{200} possible to change from clipped to the others. Possible to interchange between welding, riveting and screwing. Otherwise not possible without an additional test.	Test scenario G
F.1.10 number of glazing frame attachment fixings	Alternative	Possible to decrease the distance between fixings. Otherwise not possible without an additional test.	Test scenario G
F.1.11 shape of glazing	Alternative	Possible providing the new shape is within the area of the tested glass and the rules for size decreasing are fulfilled. Otherwise not possible without an additional test	Test scenario G
F.1.12 number of glazed apertures	increase	Possible providing the door was originally tested with a solid panel on rear and front edges and at least one glazed panel in between, the glass is properly sealed continuous, the number of glazed apertures per panel is not increased and providing the minimum horizontal distance between the edge of the glazing and the panel edge is not decreased. Otherwise not possible without an additional test.	Test scenario G
F.1.13 number of glazed apertures per panel – **See Figure A.56**	decrease	Possible for S_a. Possible for S200 if tested according to rule F.1.12, or possible where the total tested glazed aperture is ≤ 25 % of the area of the panel. Otherwise not possible without an additional test	Test scenario G
F.1.14 minimum distance between the edge of glazing and the perimeter of the door leaf /panel – **See Figure A.57**	increase	Possible	

Construction Parameter	Variation	Possibility of extension	Additional Evidence Required
(1)	(2)	(3)	(4)
F.1.15 minimum distance between the edge of glazing and the perimeter of the door leaf / panel **– See Figure A.58**	decrease	Not possible without an additional test	Test scenario G
F.1.16 distance between glazed apertures within one panel **– See Figure A.59**	increase	Possible	
F.1.17 distance between glazed apertures within one panel **– See Figure A.59**	decrease	Not possible without an additional test	Test scenario G
F.1.18 Pane/infill	Interchange Glass pane to non-glass infill and vice versa	Possible providing the smoke sealing system is not influenced and the surface is solid and plain. For S_{200} only possible to change from non-glass infill to glass pane. Otherwise not possible without additional test.	Test scenario F
F.1.19 Change of glass sealing system	Alternative	Possible to change from dry glazing to wet glazing, but not vice versa. Otherwise not possible without an additional test.	Test scenario G
F.1.20 Type of smoke seals of the panel/infill	Change of supplier / manufacturer	Possible if the composition, material, size and shape are identical (identical means within the limits of the specified production features e.g. shore-hardness). Otherwise not possible without an additional test.	Test scenario G
G Supporting construction and attachment (technique)			
G1 General			
G.1.1 supporting construction	flexible to rigid	Possible for S_a. For S_{200} in line with field of direct application. Otherwise not possible without an additional test.	Test scenario F

Construction Parameter	Variation	Possibility of extension	Additional Evidence Required
(1)	(2)	(3)	(4)
G.1.2 supporting construction	rigid to flexible	Possible providing that the gap between the frame member and the wall is sealed at least on one side. Otherwise not possible without an additional test.	Test scenario G
G.1.3 gap between door leaf and floor covering	Increase	Possible for S_a. Possible in line with direct application. Otherwise not possible without an additional test	Test scenario F
G.1.4 gap between door leaf and floor covering	Decrease	Possible for S_a. Possible for S_{200} if tested sealing system can be maintained. Otherwise not possible without an additional test.	Test scenario F
G2 Modified supporting construction			
G.2.1 strengthening of flexible standard supporting construction **– See Figure A.60**	Flexible standard supporting construction (filled with or without wool) to modified flexible construction	Possible providing the door is mounted in the same manner and the modified flexible construction is of the board covered type (on both sides) with studs/tubes/profiles made from metal or timber. Otherwise not possible without an additional test.	Test scenario F
G.2.2 density of material of rigid supporting construction	increase	Possible	
G.2.3 density of material of supporting construction	decrease	Possible	
G.2.4 supporting construction	change from standard supporting construction (see EN 1363–1) to protected structural steel supporting construction	Possible	
G.2.5 fixings for wall fixed elements in the same supporting construction	change of manufacturer / type / size	Possible in line with rules G.2.8 to G.2.12	

Construction Parameter	Variation	Possibility of extension	Additional Evidence Required
(1)	(2)	(3)	(4)
G.2.6 Flexible supporting construction of board covered type covered on one side	Alternative flexible construction	Possible providing the door is mounted in the same manner and the alternative flexible construction is of the same type (board covered on one or both sides). For S_{200} providing that in the test the studs were mounted on the high temperature side. For S_a It is possible to change from metal studs to timber studs and vice versa. For S_{200} it is possible only to change from metal to timber studs. Otherwise not possible without an additional test.	Test scenario F
G.2.7 Supporting construction	Standard supporting construction to associated and vice versa	Possible for S_a providing that the gap between the frame member and the wall is sealed at least on one side. Otherwise not possible without an additional test.	Test scenario F
G.2.8 Type of fixings	Alternative type and/or manufacturer	Possible	
G.2.9 Number and/or size of fixings	Increase	Possible	
G.2.10 Number and/or size of fixings	Decrease	Possible in line with size and/or weight decrease of the door. Otherwise not possible without an additional test.	Test scenario G
G.2.11 Distance between fixings	Increase	Not possible without an additional test	Test scenario G
G.2.12 Distance between fixings	Decrease	Possible	
G.2.13 Gap between door frame and wall	Increase	Possible as long as the gapsize is within the tolerances of the used sealing system of the gap. Otherwise not possible without additional test.	Test scenario F
G.2.14 Gap between door frame and wall	Decrease	Possible as long as the gapsize is within the tolerances of the used sealing system of the gap. Otherwise not possible without additional test.	Test scenario F
G.2.15 Sealing of the gap between door frame and wall	Alternative seal fitting to gap size	Possible.	

Construction Parameter	Variation	Possibility of extension	Additional Evidence Required
(1)	(2)	(3)	(4)
H. Steel Hinged Pass Doors			
H.1 General The rules according to table A1: items A3, items A4 and items F of this standard, which are practicable also for pass doors, are transferable. The following parameters are special for steel hinged pass doors. Pass doors shall be tested together with the sliding door it belongs to. The rules are not applicable to double leaf pass doors.			
H.1.1 pass door	Add (to single and/or double leaf door)	Not possible without an additional test	Test scenario G
H.1.2 pass door	remove	Possible	
H.1.3 position of pass door	alternative	Possible, if tested with at least one panel between the edge of the door leaf and the panel with the pass door. Otherwise not possible without additional test.	Test scenario A
H.2 Size variations / single or multiple panel construction			
H.2.1 size (area, width, height)	decrease	Possible	
H.2.2 size (area, width, height)	increase	Not Possible	Test scenario A
H.3. Hardware For pass doors the rules given in Table A.1 sector C (hardware) are applicable.			
H.4 Support / attachment - door leaf of pass door to door leaf of sliding door			
H.4.1 Dimensions of gaps between frame (threshold) and leaf	Increase / Decrease	Possible in line with direct application (for hinged doors). Possible for S_a for the gap between leaf and bottom frame and/or any thresholds. Possible separately for each gap on each edge (top, bottom, hinge side, lock side) according to the following rule: X = (A+B)/2 (X = the maximum permitted gap size, A = the maximum measured gap size, B = the mean measured gap size. X can be rounded up to the next 0,5 step (e.g.: 1,7 is rounded up to 2,0 mm) Otherwise not possible without an additional test.	Test scenario A

Construction Parameter	Variation	Possibility of extension	Additional Evidence Required
(1)	(2)	(3)	(4)
H.4.2 gap between door leaf and floor covering	Increase	Possible for S_a. Possible in line with direct application. Otherwise not possible without an additional test	Test scenario A
H.4.3 gap between door leaf and floor covering	Decrease	Possible for S_a. Possible for S_{200} if tested sealing system can be maintained. Otherwise not possible without an additional test.	Test scenario A
I. Orientation of sliding door			
I.1 Orientation	Vertically sliding door out of a horizontally sliding door	Possible up to the tested size of single leaf horizontally sliding door providing that the following additional conditions A-E are fulfilled: A) the panels shall be constructed like tested and have the same panel arrangement (orientation) within the door leaf. B) All the sealing systems of the wall fixed elements (frame members) for the vertical sliding door have been tested successfully with a horizontal sliding door. The wall fixed elements (e.g. rail, labyrinth) can change from horizontal to vertical orientation and vice versa C) The gaps between wall fixed elements and door leaf remain as tested D) The sealings remain as tested E) Changing the construction of the rail from horizontal to vertical orientation is possible (e.g. adaption for rolling apparatus) Otherwise not possible without an additional test.	Test scenario B
I.2 Orientation	Horizontally sliding door out of a vertically sliding door	Not possible without an additional test	Test scenario E

Figures relating to Table A.2

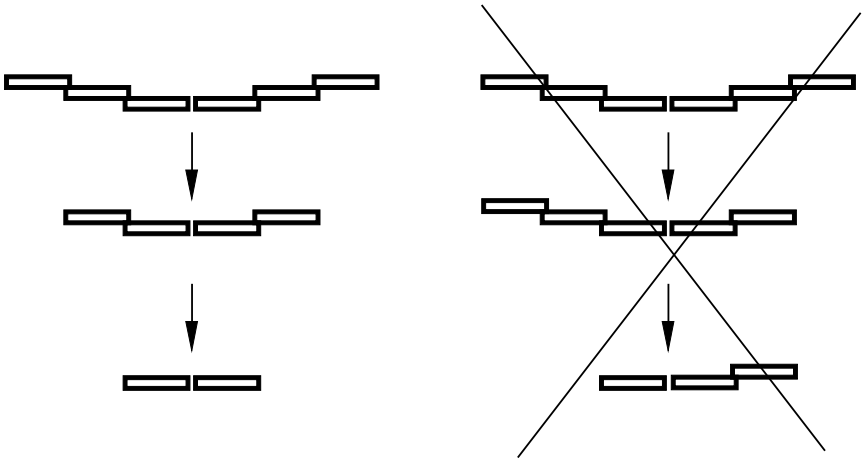


Figure A.34 — Number of elements of telescopic doors

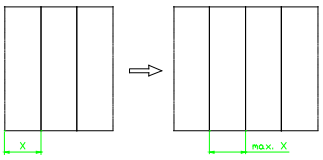


Figure A.35 — Number of panels per leaf / element (increase)

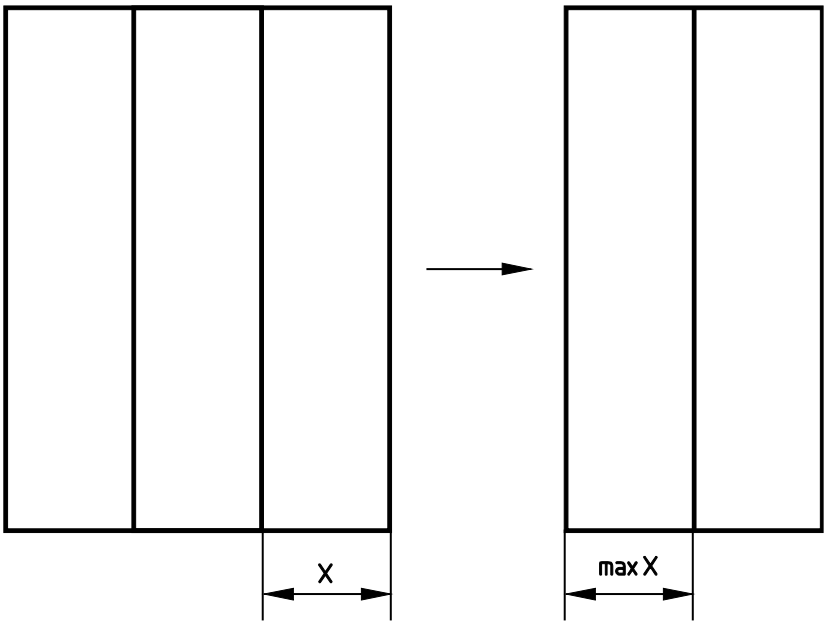


Figure A.36 — Number of panels per leaf / element (decrease)

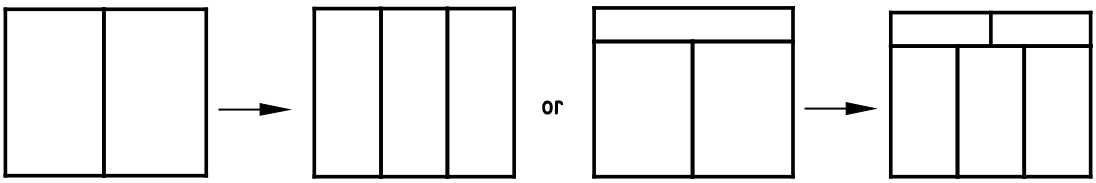


Figure A.37 — Pattern of core material (increase number of pieces)

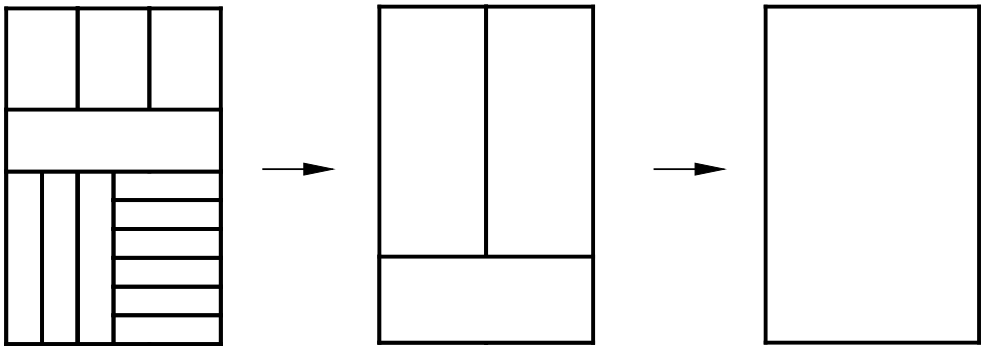


Figure A.38 — Pattern of core material (decrease number of pieces)

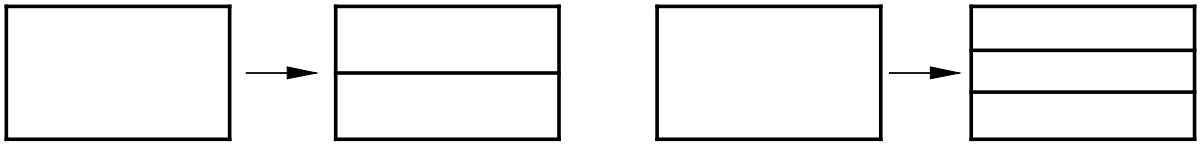


Figure A.39 — Number of layers of identical core material (2 examples shown)

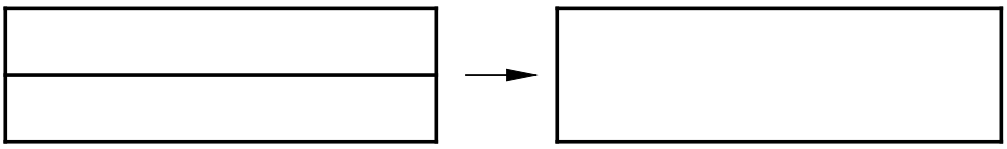


Figure A.40 — Number of layers of identical core material

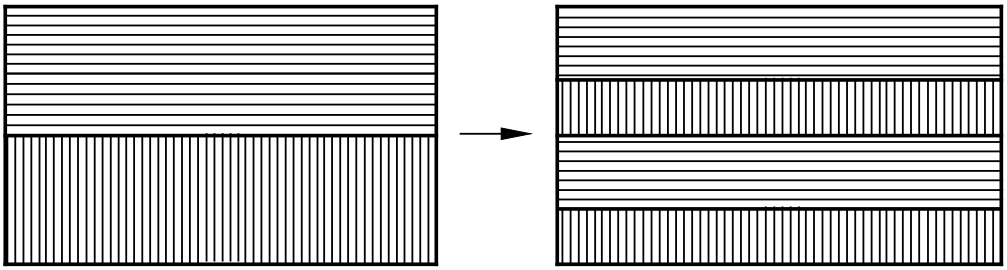


Figure A.41 — Number of layers of different materials (Increase)

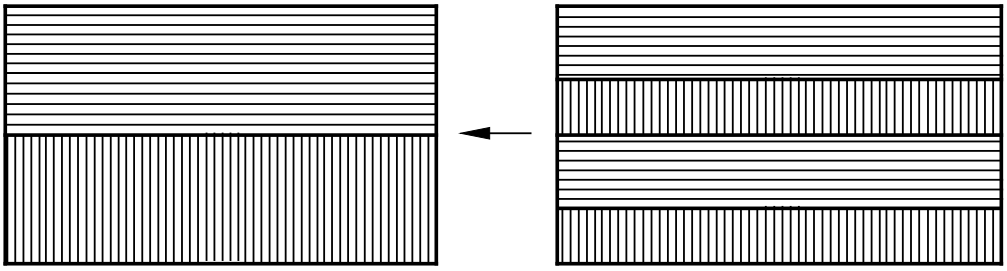
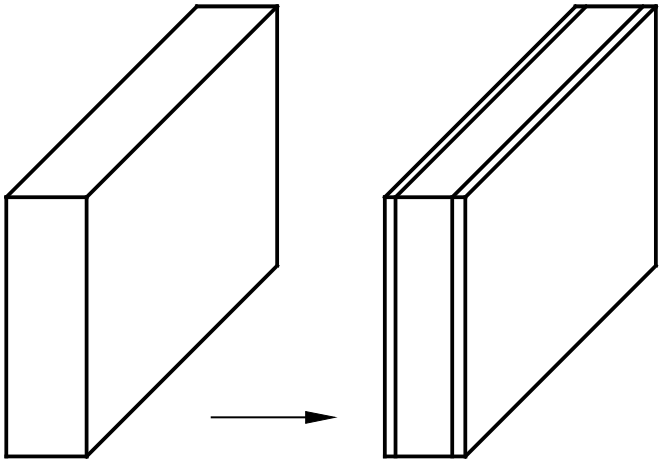
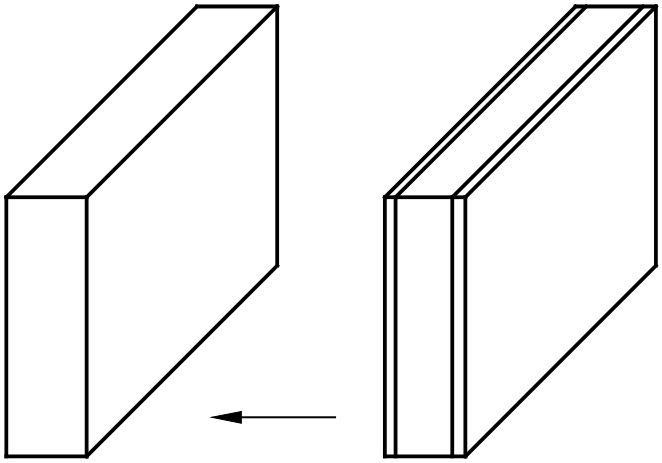


Figure A.42 — Number of layers of different materials (Decrease)

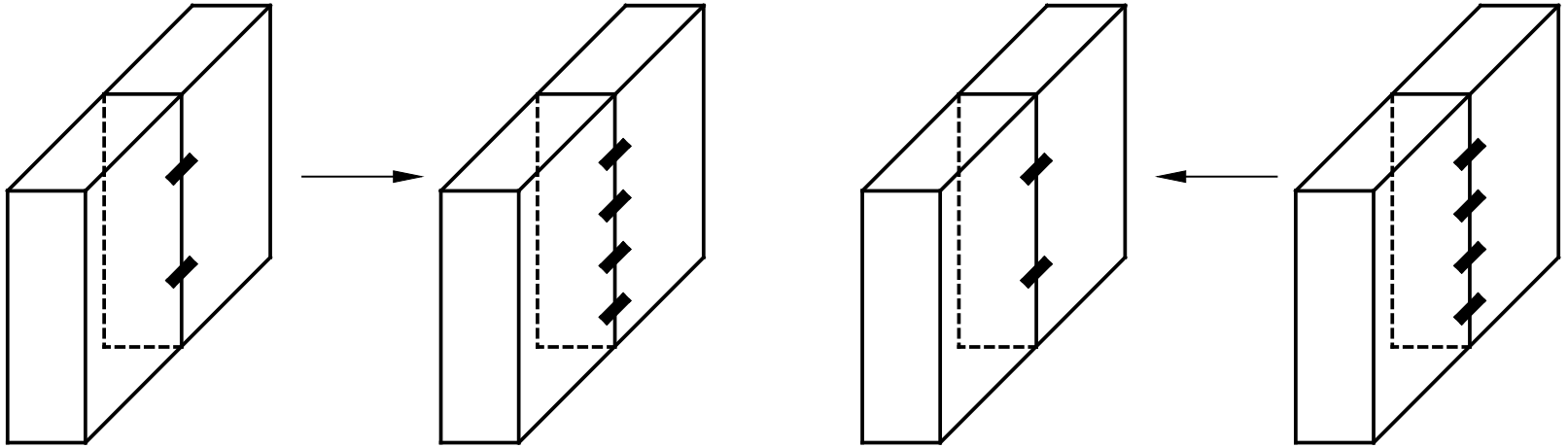


a) Metal armour sheet (internally or externally mounted, Add)



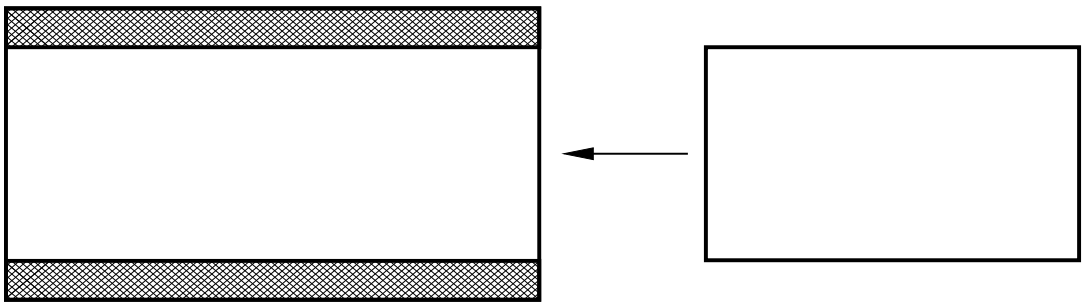
b) Metal armour sheet (internally mounted, Remove)

Figure A.43 — Metal armour sheet

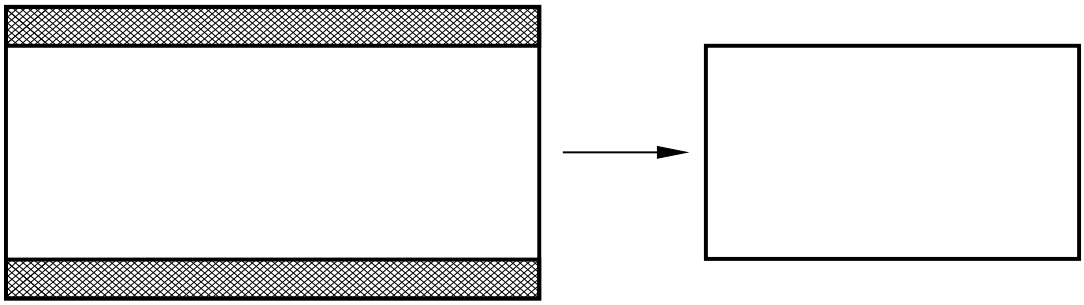


a) Distance between stiffening element fixing points (Decrease) b) Distance between stiffening element fixing points (Increase)

Figure A.44 — Distance between stiffening element fixing points

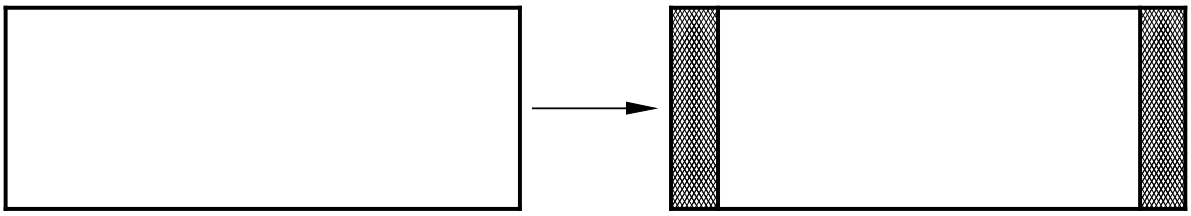


a) Decorative laminates and timber veneers on the face (Add)

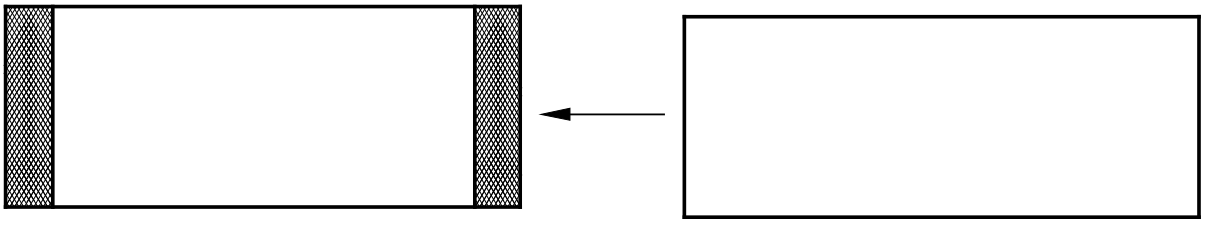


b) Decorative laminates and timber veneers on the face (Remove)

Figure A.45 — Decorative laminates and timber veneers on the face

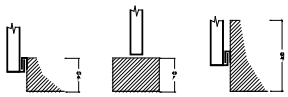


a) Decorative laminates and timber veneers on the edges (Add)



b) Decorative laminates and timber veneers on the edges (Remove)

Figure A.46 — Decorative laminates and timber veneers on the face



a) **b)** **c)**

Figure A.47 — Height of doorset above floor (alternative options)

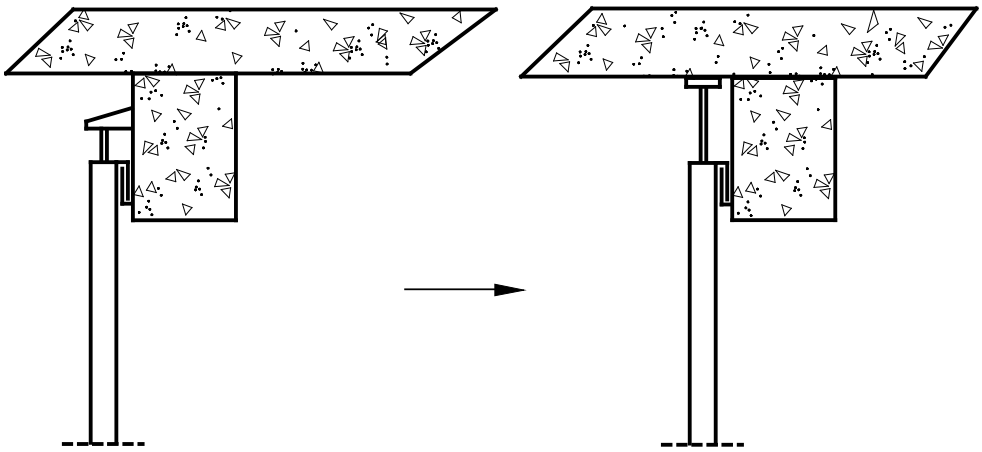


Figure A.48 — Suspension system – alternative fixing method

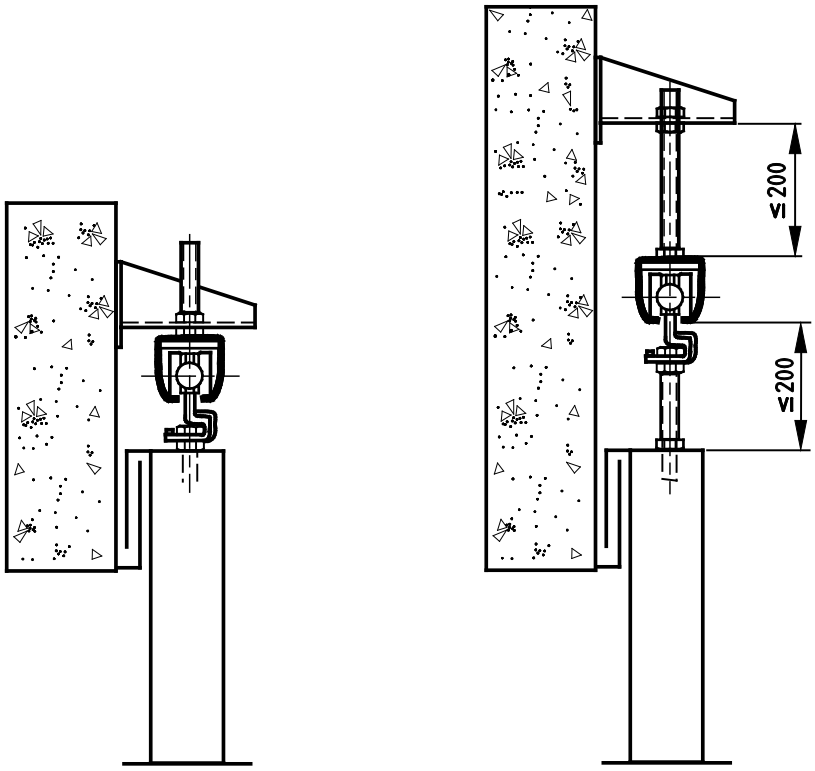


Figure A.49 — Distance between top of door leaf and bottom of guide and distance between top of guide and bottom of wall / ceiling mounted elements

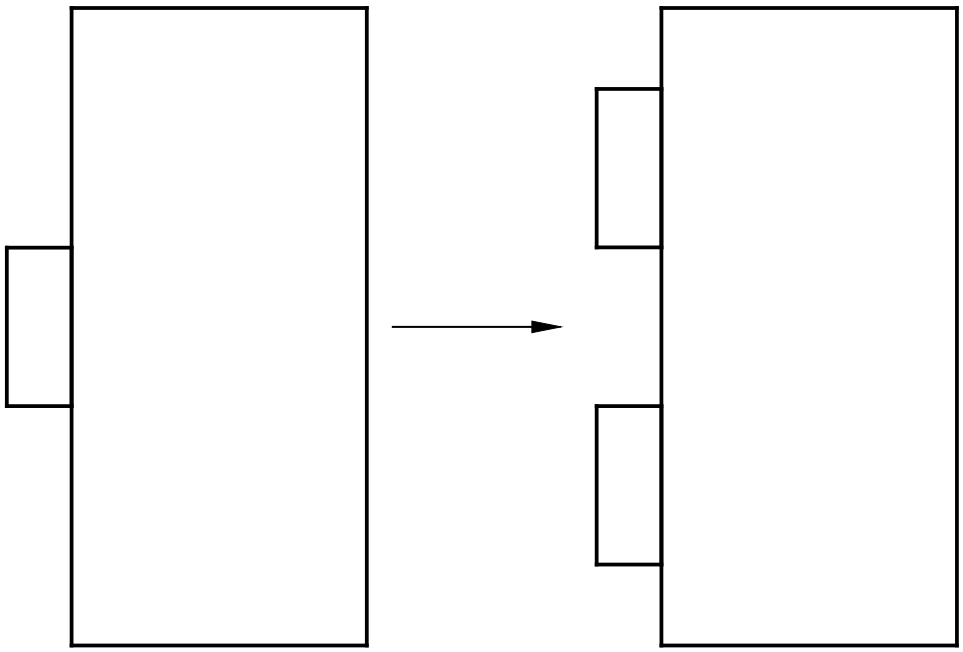


Figure A.50 — Number of latches / locks (and strike plates) (Increase)

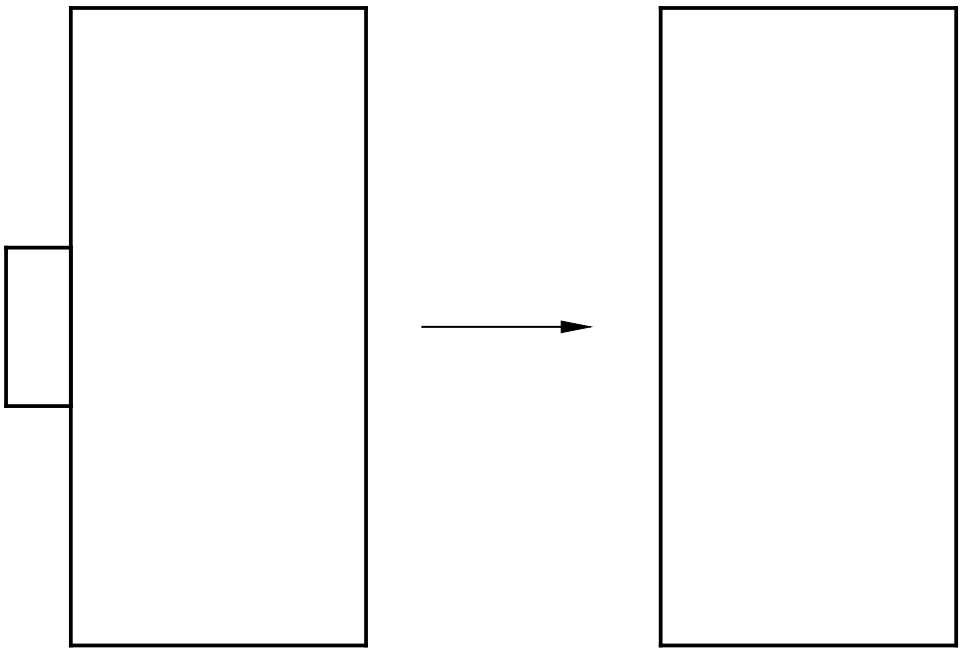
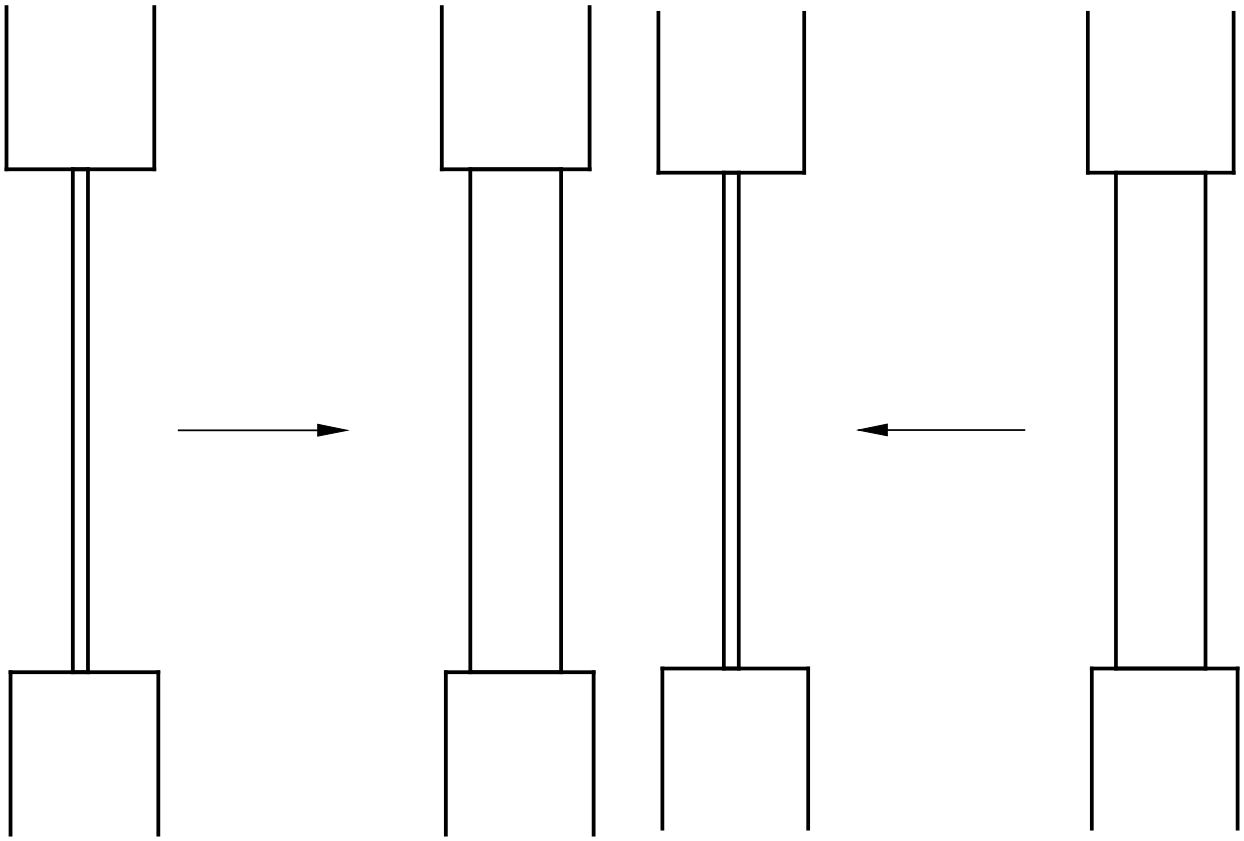


Figure A.51 — Number of latches / locks (and strike plates) (Decrease)



a) Thickness of glass (Increase) **b) Thickness of glass (Decrease)**

Figure A.52 — Thickness of glass

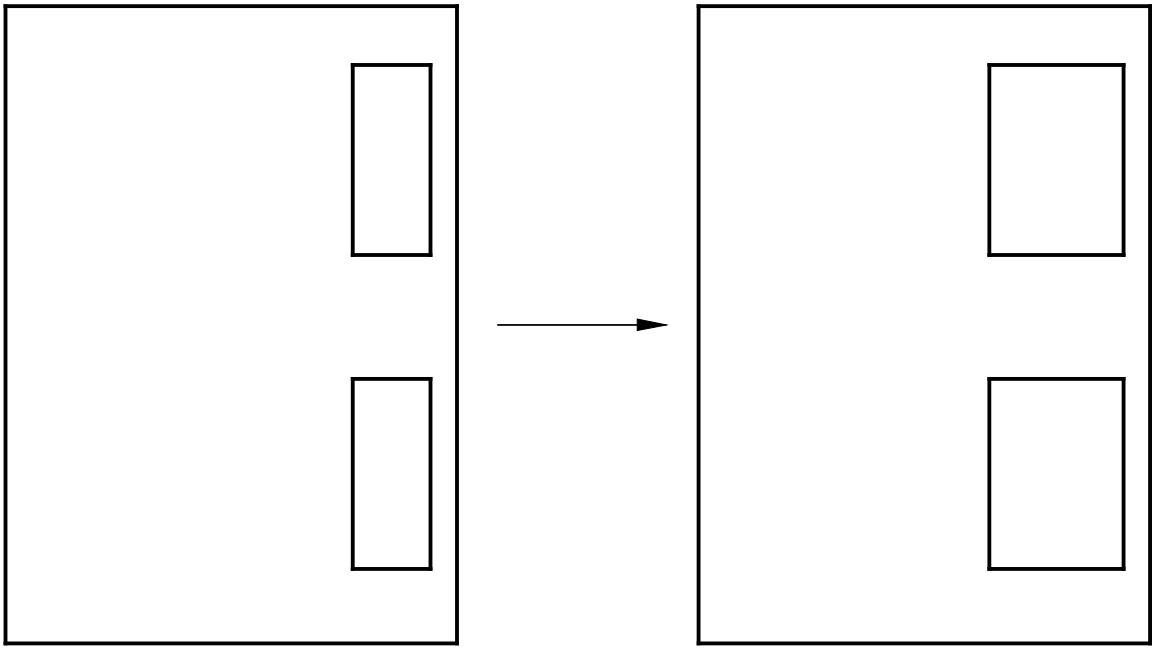


Figure A.53 — Dimensions of each pane (Increase)

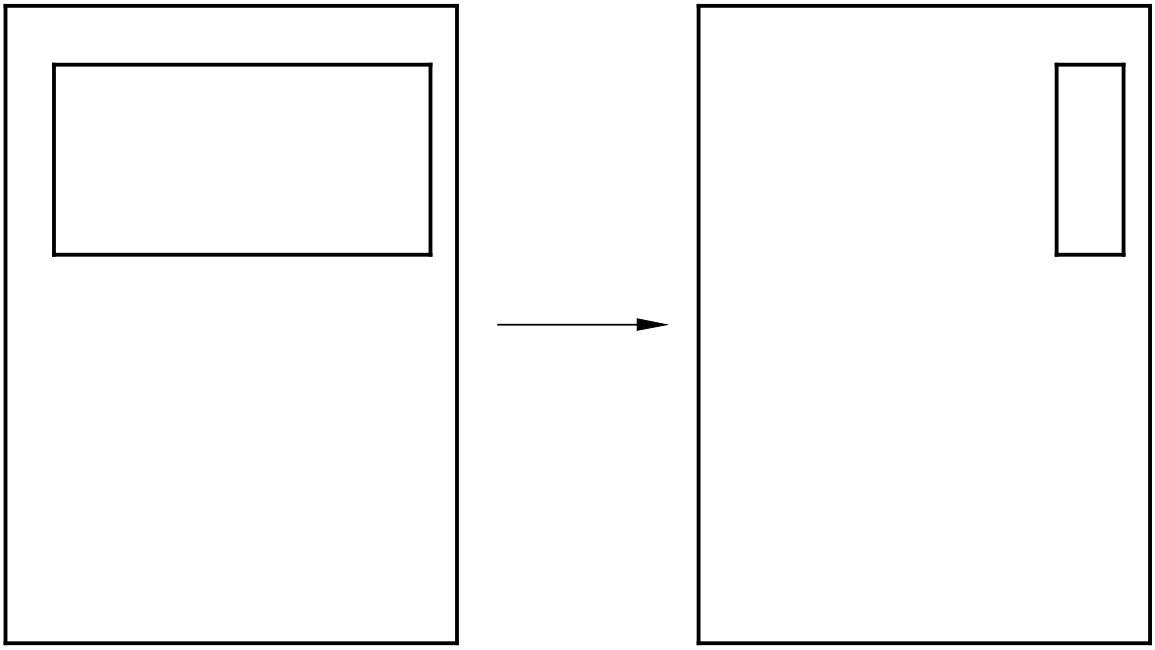


Figure A.54 — Dimensions in each pane (Decrease)

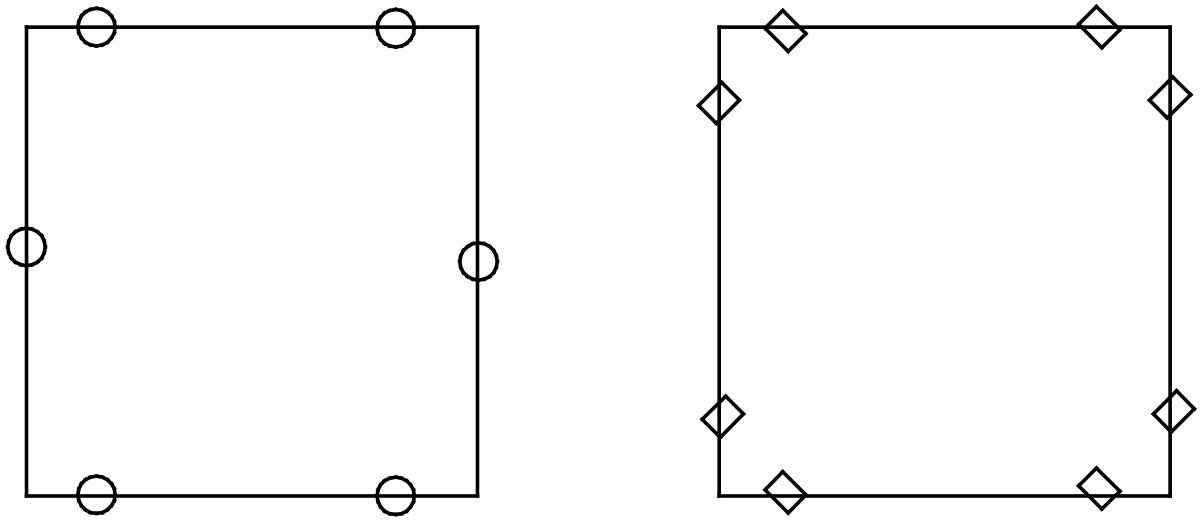


Figure A.55 — Glazing frame attachment techniques (rivets/screws)

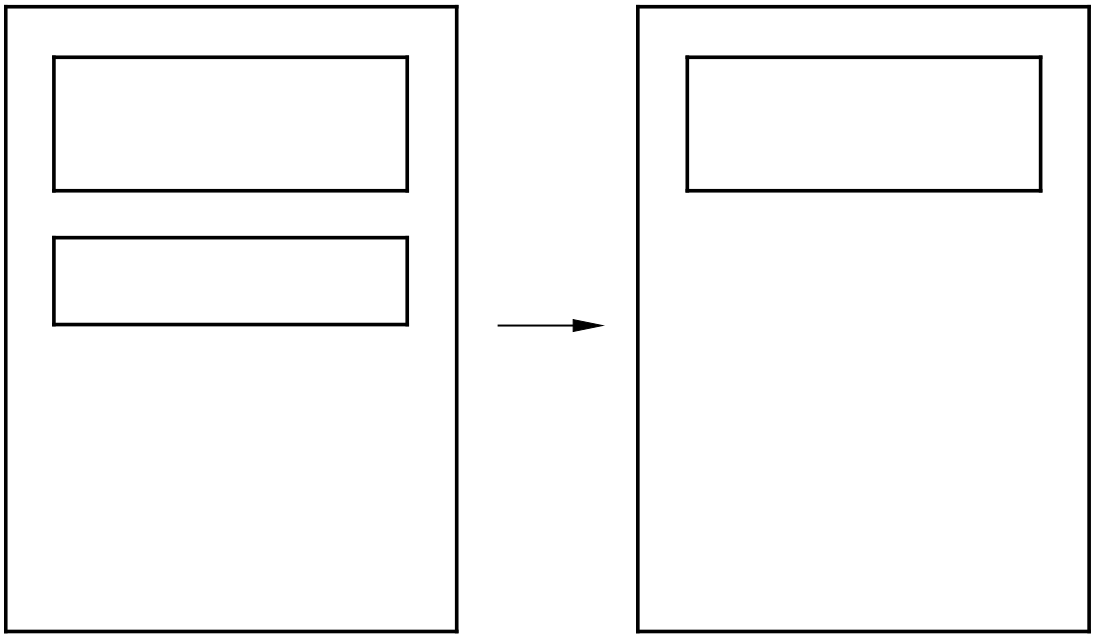


Figure A.56 — Number of glazed apertures per panel (Decrease)

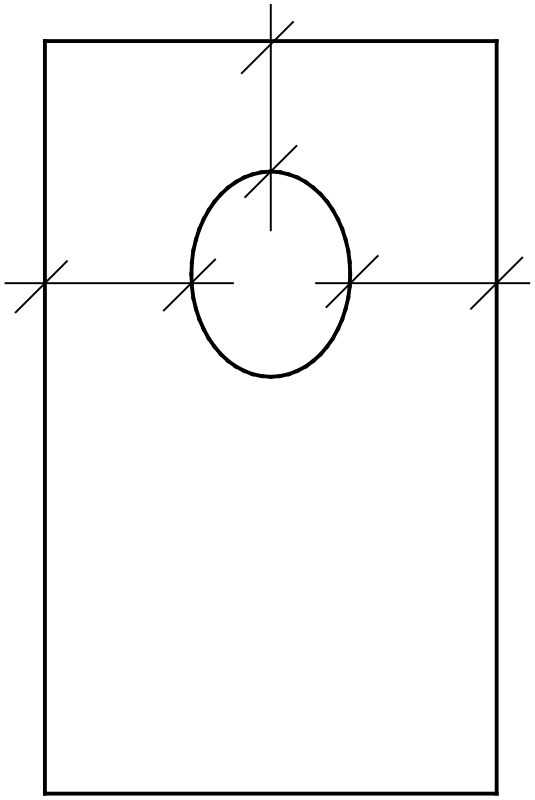


Figure A.57 — Distance between the edge of glazing and the perimeter of the door leaf / panel

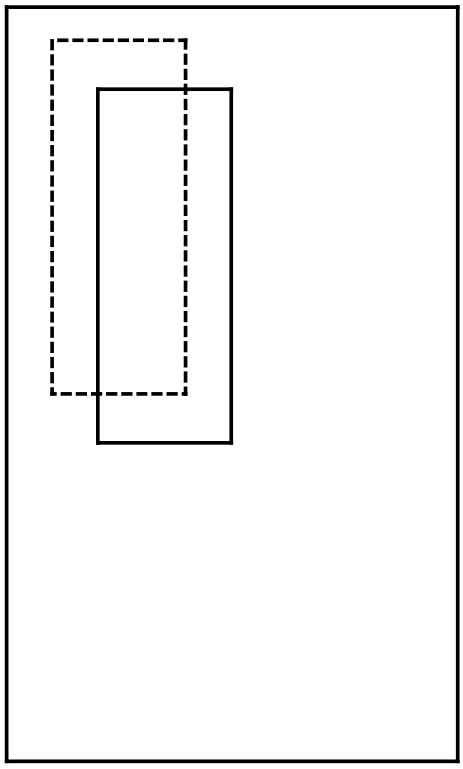


Figure A.58 — Minimum distance between the vertical edges of glazing and door panel and distance between the top edges of glazing and door panel

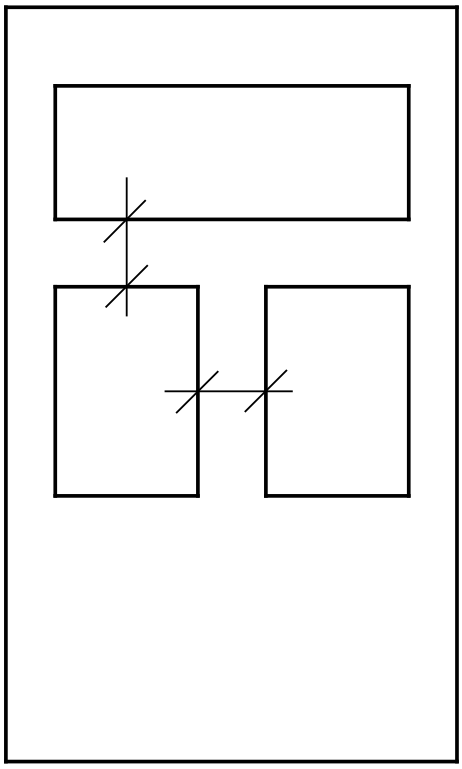


Figure A.59 — Distance between glazed apertures

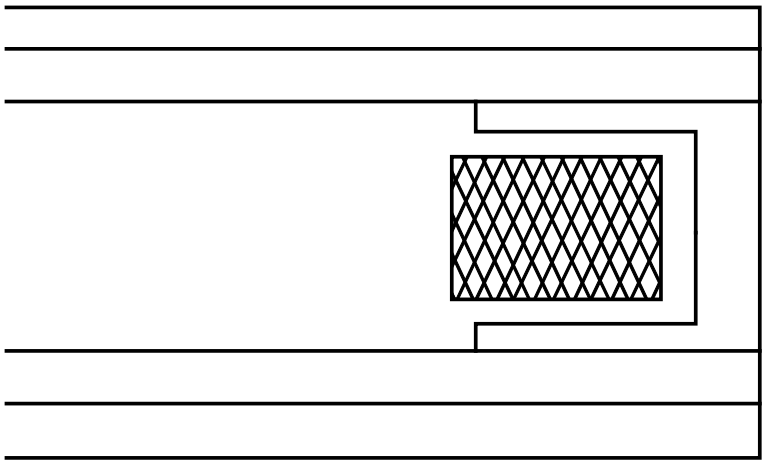


Figure A.60 — Strengthening of flexible standard supporting construction

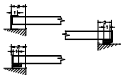


Figure A.61 — Overlap of door leaf edge (increase / decrease)

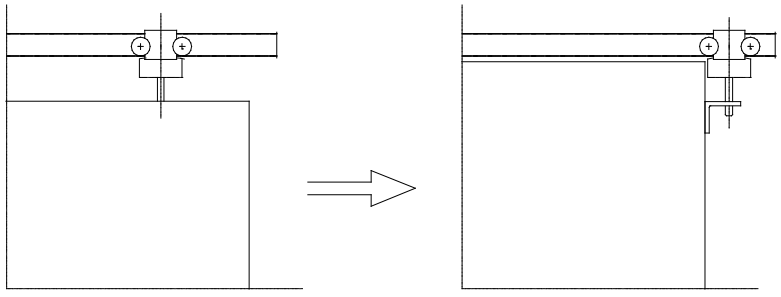


Figure A.62 — Position of the fixing point of the suspension system

Table A.3 — Construction parameter variations for metal rolling shutters and operable fabric curtains (excluding overlapping systems)

Construction parameter (1)	Variation (2)	Possibility of extension (3)	Additional evidence required (4)
A General (See Figure A.63 for an example of a General Arrangement of rolling shutter resp. fabric curtain construction)			
A.1 Size variations / construction			
A.1.1 Width between vertical guides **– See Figure A.64**	Decrease	Possible	
A.1.2 Width between vertical guides **- See Figure A.64**	Increase	For metal shutters and fabric curtains: Possible up to a size calculated acc. to Annex C and Annex D and providing the position of curtain in relation to sealing (in the area of the sealing system) is unchanged and unaffected by e.g. bending of shutter/curtain and/or bottom bar. In addition for fabric curtains: Possible providing the static requirements for fixings and load-bearing parts are met and the requirements for bottom bars of prEN 15269-11 are satisfied. Otherwise not possible without an additional test.	Test scenario B
A.1.3 Height from floor level to centre line of barrel **- See Figure A.65**	Decrease	Possible providing the curtain is shortened the same amount and the position of the curtain to the guides and the sealing system are not affected. Otherwise not possible without an additional test.	Test scenario B

Construction parameter (1)	Variation (2)	Possibility of extension (3)	Additional evidence required (4)
A 1.4 Height from floor level to centre line of barrel **- See Figure A.65**	Increase	For metal shutters: Possible up to a size calculated acc. to Annex C.III and providing the position of curtain in relation to sealing (in the area of the sealing system) is unchanged and unaffected by e.g. bending of curtain. For fabric curtains: Possible providing the static requirements for fixings and load-bearing parts are met, the requirements of prEN 15269-11:2016, Annex B are satisfied and providing the position of curtain in relation to sealing (in the area of the sealing system) is unchanged and unaffected by e.g. bending of curtain and/or bottom bar. In addition for S_{200} for metal shutters and fabric curtains: Possible providing the position of the bottom sealing in relation to the floor is unchanged and unaffected as well. Otherwise not possible without an additional test.	Test scenario B
A 1.5 Expansion allowances between the end of the lath and guide **- See Figure A.133**	Decrease	For steel shutters: possible for S_a, not possible for S_{200}. Possible for fabric curtains.	Test scenario A
A 1.6 Expansion allowances between the end of the lath and guide **- See Figure A.133**	Increase	Possible providing sealing system is not affected. Otherwise not possible without an additional test.	Test scenario B
A 1.7 Mounting	Face fixed to within opening	Not possible without an additional test.	Test scenario B
A 1.8 Mounting	Within opening to face fixed	Possible providing the sealing to the wall remains the same as in the opening. Otherwise not possible without an additional test.	Test scenario B
A 1.9 Area	Decrease / Increase	Possible providing rules A1.1 - A1.4 are satisfied. Combination of these rules is possible. Otherwise not possible without an additional test.	Test scenario B

Construction parameter (1)	Variation (2)	Possibility of extension (3)	Additional evidence required (4)
A.2 Materials and constructions			
A.2.1 Insulation material whether intumescent or not	Change	See part-specific subsequent rules.	
A.2.2 Density of insulation material	Increase	See part-specific subsequent rules.	
A.2.3 Density of insulation material	Decrease	See part-specific subsequent rules.	
A.2.4 Intumescent material	Change of supplier and/or manufacturer	See part-specific subsequent rules.	
A.2.5 Intumescent material	Alternative material	See part-specific subsequent rules.	
A 2.6 Thickness of insulation material other than curtains	Increase	See part-specific subsequent rules.	
A.2.7 Thickness of insulation material other than curtains	Decrease	See part-specific subsequent rules.	
B Curtain			
B.1 Laths (of metal shutter curtains)			
B.1.1 Size (height of lath) **- See Figure A.66**	Decrease	Not possible without an additional test	Test scenario B
B.1.2 Size (height of lath) **- See Figure A.67**	Increase	Not possible without an additional test	Test scenario B
B.1.2A Size (height of lath) **- See Figure A.67**	Interpolate between / combine largest and smallest height tested	Possible (also for combination of tested and/or interpolated laths. The leakage of the worse height is to be assumed)	
B.1.3 Thickness of steel	Decrease	Not possible without an additional test.	Test scenario A

Construction parameter (1)	Variation (2)	Possibility of extension (3)	Additional evidence required (4)
B.1.4 Thickness of steel	Increase	Possible for S_a Otherwise not possible without an additional test	Test scenario A
B.1.5 Thickness of insulation material **- See Figure A.68**	Decrease	Not possible without an additional test	Test scenario A
B.1.6 Thickness of insulation material **- See Figure A.69**	Increase	Possible for S_a Otherwise not possible without an additional test.	Test scenario A
B.1.7 Density of insulation material	Increase	Possible for S_a. Possible up to 30 % for S_{200}. Otherwise not possible without an additional test.	Test scenario A
B.1.8 Density of insulation material	Decrease	Possible for S_a up to 30 %. Otherwise not possible without an additional test	For S_a test scenario A. For S_{200} test scenario B.
B.1.9 Material	Mild steel to stainless steel or aluminium	Possible for S_a Not possible for S_{200} without an additional test.	Test scenario B.
B.1.10 Material	Stainless steel or aluminium to mild steel	Possible	
B.1.11 Number of laths on barrel when door is in closed position	Decrease	Possible providing the sealing system is not affected. Otherwise not possible without an additional test.	Test scenario B.
B.1.12 Number of laths on barrel when door is in closed position	Increase	Possible providing the sealing system is not affected. Otherwise not possible without an additional test.	Test scenario B.
B.1.13 Shape (single skin) – **See Figure A.70**	Change	Not possible without an additional test.	Test scenario B.

Construction parameter (1)	Variation (2)	Possibility of extension (3)	Additional evidence required (4)
B.1.14 Single skin to double skin or double skin to single skin – **See Figure A.71**	Change	Not possible without an additional test.	Test scenario B.
B.2 Endlocks (of metal shutter curtains, see Figure A.72 for example of endlock)			
B.2.1 Size and shape	Decrease	Possible providing sealing system is not affected. Otherwise not possible without an additional test.	Test scenario B.
B.2.2 Size and shape	Increase	Possible providing sealing system is not affected. Otherwise not possible without an additional test.	Test scenario B.
B.2.3 Thickness **- See Figure A.72**	Decrease	Possible providing sealing system is not affected. Otherwise not possible without an additional test.	Test scenario B.
B.2.4 Thickness **- See Figure A.72**	Increase	Possible providing sealing system is not affected. Otherwise not possible without an additional test.	Test scenario B.
B.2.5 Material	Steel to malleable iron	Possible	
B.2.6 Material	Malleable iron to steel	Possible	
B.2.7 Material	Steel to plastic	Possible providing sealing system is not affected. Otherwise not possible without an additional test.	Test scenario B.
B.2.8 Material	Plastic to steel	Possible	
B.2.9 Material	Steel to aluminium	Possible	
B.2.10 Material	Aluminium to steel	Possible	
B.3. Endlock Fixings (for metal shutter curtains)			
B.3.1 Size (diameter)	Decrease	Possible	
B.3.2 Size (diameter)	Increase	Possible providing sealing system is not affected. Otherwise not possible without an additional test.	Test scenario B

Construction parameter (1)	Variation (2)	Possibility of extension (3)	Additional evidence required (4)
B.3.3 Type	Change (rivets, screws, welding, glueing)	Possible	
B.3.4 Material	Change	Possible	
B.3.5 Number	Decrease	Possible	
B.3.6 Number	Increase	Possible	
B.4 Bottom Rail (for metal shutter curtains. For fabric curtains see B.9)			
B.4.1 Size **- See Figure A.73**	Decrease	Not possible without an additional test.	Test scenario B
B.4.2 Size **- See Figure A.74**	Increase	Possible providing sealing system is not affected. Otherwise not possible without an additional test.	Test scenario B
B.4.3 Thickness of steel	Decrease	Not possible without an additional test.	Test scenario B
B.4.4 Thickness of steel	Increase	Possible for S_a. Possible for segmented bottom rails of length ≤ 1m (and 2 segments minimum). Possible for S_{200} by 50 %, otherwise not possible without an additional test.	Test scenario B
B.4.5 Material	Stainless steel or aluminium to mild steel	Possible	
B.4.6 Material	Mild steel to stainless steel or aluminium	Possible for S_a. Not possible for S_{200} without an additional test.	Test scenario B
B.4.7 Material of safety edge **- See Figure A.134**	Change	Possible for S_a. Possible for S_{200} providing sealing system is not affected. Otherwise not possible without additional test	Test scenario B

Construction parameter (1)	Variation (2)	Possibility of extension (3)	Additional evidence required (4)
B.4.7A Material of bottom sealing **- See Figure A.134**	Change	Possible for S_a. Otherwise not possible without an additional test.	Test scenario B
B.4.8 Construction **- See Figure A.75**	Change from T-section to flat	Not possible without an additional test.	Test scenario B
B.4.9 Construction **- See Figure A.76**	Change from flat to T-section	Not possible without an additional test.	Test scenario B
B.4.10 Expansion allowances between the end of the bottom rail and guide or safety edge and guide or bottom seal and guide **- See Figure A.133**	Decrease	Possible for S_a. Not possible for S_{200} without an additional test.	Test scenario B
B.4.11 Expansion allowances between the end of the bottom rail and guide or safety edge and guide or bottom seal and guide **- See Figure A.133**	Increase	Possible providing sealing system is not affected. Otherwise not possible without additional test	Test scenario B
B.4.12 Construction **- See Figure A.77**	Change from T-section to double angles	Not possible without an additional test.	Test scenario B
B.4.13 Construction **- See Figure A.78**	Change from double angles to T-section	Not possible without an additional test.	Test scenario B
B.4.14 Construction **- See Figure A.79**	Change from insulated to T-section	Not possible without an additional test.	Test scenario B
B.4.15 Construction **- See Figure A.80**	Change from T-section to insulated	Not possible without an additional test.	Test scenario B
B.5 Bottom rail fixings (for metal shutter curtains. For fabric curtains see B.10)			

Construction parameter (1)	Variation (2)	Possibility of extension (3)	Additional evidence required (4)
B.5.1 Size	Decrease	Possible subject to total cross-section of fixings not being changed by more than 30 %. Otherwise not possible without an additional test.	Test scenario A
B.5.2 Size	Increase	Possible providing sealing system is not affected. Otherwise not possible without an additional test.	Test scenario B
B.5.3 Type	Change (welding / riveting / screwing / clipped)	Possible to change from clipped to the others. Possible to interchange between welding, riveting, and screwing. If changed to riveting, the rivets have to be tight or properly sealed. Otherwise not possible without an additional test.	Test scenario B
B.5.4 Material	Change	Possible for metal fixings. Possible for non-metal fixings providing the alternative fixings have the same or higher heat deflection temperature acc. to EN ISO 75-1, EN ISO 75-2, EN ISO 75-3 or the heat deflection temperature is > 200°C, otherwise not possible without an additional test.	Test scenario B
B.5.5 Number	Decrease	Not possible without an additional test.	Test scenario A
B.5.6 Number	Increase	Possible	
B.6 Fabric of curtain (for fabric curtains)			
B.6.1 Fabric	Change material	Not possible without an additional test.	Test scenario B
B.6.2 Fabric	Change manufacturer	Possible providing the tightness achieved in a small scale test according to EN 12101–1:2005, Annex C is the same or better, otherwise not possible without an additional test	Test scenario B

Construction parameter (1)	Variation (2)	Possibility of extension (3)	Additional evidence required (4)
B.7 Joint technique in fabric of curtain - See Figure A.135			
B.7.1 Seam variation **- See Figure A.135**	Change	Possible in accordance with Figure A.136 and providing the sealing system is not affected. Otherwise not possible without an additional test.	Test scenario B
B.7.2 Seaming material e.g. stitch material, staple material etc.	Change	Not possible without an additional test.	Test scenario B
B.7.3 Seam type e.g. stitch to staple etc.	Change	Not possible without an additional test.	Test scenario B
B.7.4 Stitch length/distance between staples	Change	Not possible without an additional test.	Test scenario B
B.7.5 Distance of seam to selvedge (distance r) **- See Figure A.135**	Decrease	Not possible without an additional test.	Test scenario B
B.7.6 Distance seam to selvedge (distance r) **- See Figure A.135**	Increase	Possible providing sealing system is not affected. Otherwise not possible without an additional test.	Test scenario B
B.7.7 Joint orientation	Vertical to horizontal/ Horizontal to vertical	Possible providing sealing system is not affected. Otherwise not possible without an additional test.	Test scenario B
B.7.8 Distance between stitching inside one seam joint	Change	Possible ± 10 % Otherwise not possible without an additional test.	Test scenario B
B.7.9 Spacing of joints (distance t) **- See Figure A.135**	Increase/decrease	Possible providing sealing system is not affected. Otherwise not possible without an additional test.	Test scenario B
B.7.10 Stitching method	Machine to hand	Not possible without an additional test.	Test scenario B
B.7.11 Stitching method	Hand stitching to machine	Possible	
B.7.12 Overlap (not sewed)	Overlap dimensions	Not applicable for smoke control curtains as overlapping systems are not in the scope of this standard.	

Construction parameter (1)	Variation (2)	Possibility of extension (3)	Additional evidence required (4)
B.7.13 Double seam	Distance of seams	Possible up to ± 5mm. Possible > 5 mm up to 50 mm providing the tightness achieved in a small scale test according to EN 12101–1:2005, Annex C is the same or better, otherwise not possible without an additional test Note: possibly B.7.5 or B.7.6 to be considered and overlap may have to be adjusted	Test scenario B
B.8 Fabric curtain restraining system in side guides			
B.8.1 System Change **– see Figure A.137**	Continuous to intermittent and vice versa	Not possible without an additional test.	Test scenario B
B.8.2 Intermittent system: Distance of fixings	Increase	Not possible without an additional test.	Test scenario B
B.8.3 Intermittent system: Distance of fixings	Decrease	Possible providing sealing system is not affected. Otherwise not possible without an additional test.	Test scenario B
B.8.4 Material	Mild steel to stainless steel	Possible	
B.8.5 Material	Stainless steel to mild steel	Possible	
B.8.6 Material	Change of basic material	Not possible without an additional test.	Test scenario B
B.8.7 Size of curtain restraining element **– see Figure A.138**	Increase	Not possible without an additional test.	Test scenario B
B.8.8 Size of curtain restraining element **– see Figure A.138**	Decrease	Not possible without an additional test.	Test scenario B

Construction parameter (1)	Variation (2)	Possibility of extension (3)	Additional evidence required (4)
B.9 Bottom rail (for fabric curtains. For metal shutter curtains see B.4)			
B.9.1 Mass per linear metre	Decrease	Not possible without an additional test.	Test scenario A
B.9.2 Mass per linear metre	Increase	Possible providing sealing system is not affected. Otherwise not possible without an additional test.	Test scenario A
B.9.3 Cross section detail	Alternative	Not possible without an additional test.	Test scenario B
B.9.4 Thickness of steel	Decrease	Not possible without an additional test.	Test scenario A
B.9.5 Thickness of steel	Increase	Possible providing sealing system is not affected. Otherwise not possible without an additional test.	Test scenario A
B.9.6 Material	Stainless steel to mild steel	Possible.	
B.9.7 Material	Mild steel to stainless steel	Possible.	
B.9.8 Material	Change of basic material	Not possible without an additional test.	Test scenario B
B.9.9 Safety edge	Add	Not possible without an additional test.	Test scenario B
B.9.10 Safety edge	Remove	Possible for S_a in line with B.9.1/B.9.2. Not possible without an additional test.	Test scenario B
B.9.11 Safety edge	Change	Not possible without an additional test.	Test scenario B
B.10 Bottom rail fixings (for fabric curtains. For metal shutter curtains see B.5)			
B.10.1 Size	Decrease	Not possible without an additional test.	Test scenario A
B.10.2 Size	Increase	Possible providing sealing system is not affected. Otherwise not possible without an additional test.	Test scenario A

Construction parameter (1)	Variation (2)	Possibility of extension (3)	Additional evidence required (4)
B.10.3 Type	Change	Not possible without an additional test.	Test scenario A
B.10.4 Material	Stainless steel to mild steel	Possible	
B.10.5 Material	Mild steel to stainless steel	Possible	
B.10.6 Material	Change of basic material	Not possible without an additional test.	Test scenario A
B 10.7 Spacing	Increase	Not possible without an additional test.	Test scenario A
B 10.8 Spacing	Decrease	Possible providing sealing system is not affected. Otherwise not possible without an additional test.	Test scenario A
B.11 Multi fabric curtain system (supplied as a single system) - See Figure A.137			
B.11.1 Distance between curtains (d)	Increase	Possible providing sealing system is not affected. Otherwise not possible without an additional test.	Test scenario B
B.11.2 Distance between curtains (d)	Decrease	Possible providing sealing system is not affected. Otherwise not possible without an additional test.	Test scenario B
B.11.3 Number of curtains	Decrease	Not possible without an additional test.	Test scenario B
B.11.4 Number of curtains	Increase	Possible providing sealing system is not affected. Otherwise not possible without an additional test. NOTE: A change of system is not possible. But it is possible to add a curtain.	Test scenario B
B.12 Insulation material in multi fabric curtain systems			
B.12.1 Insulation material whether intumescent or not	Change	Possible providing sealing system is not affected and the air permeability according to EN 12101-1 at ambient temperature and at 200°C (for S_{200}) is the same or lower. Otherwise not possible without an additional test.	Test scenario B

Construction parameter (1)	Variation (2)	Possibility of extension (3)	Additional evidence required (4)
B.12.2 Density of insulation material	Increase	Possible providing sealing system is not affected and the air permeability according to EN 12101-1 at ambient temperature and at 200°C (for S_{200}) is the same or lower. Otherwise not possible without an additional test.	Test scenario B
B.12.3 Density of insulation material	Decrease	Possible providing sealing system is not affected and the air permeability according to EN 12101-1 at ambient temperature and at 200°C (for S_{200}) is the same or lower. Otherwise not possible without an additional test.	Test scenario B
B.12.4 Intumescent material	Change of supplier and/or manufacturer	Possible providing sealing system is not affected and the air permeability according to EN 12101-1 at ambient temperature and at 200°C (for S_{200}) is the same or lower. Otherwise not possible without an additional test.	Test scenario B
B.12.5 Intumescent material	Alternative material	Possible providing sealing system is not affected and the air permeability according to EN 12101-1 at ambient temperature and at 200°C (for S_{200}) is the same or lower. Otherwise not possible without an additional test.	Test scenario B
B.12.6 Thickness of insulation material other than curtain	Increase	Possible providing sealing system is not affected and the air permeability according to EN 12101-1 at ambient temperature and at 200°C (for S_{200}) is the same or lower. Otherwise not possible without an additional test.	Test scenario B
B.12.7 Thickness of insulation material other than curtain	Decrease	Possible providing sealing system is not affected and the air permeability according to EN 12101-1 at ambient temperature and at 200°C (for S_{200}) is the same or lower. Otherwise not possible without an additional test.	Test scenario B
C. Guides			
C.1 Section			

Construction parameter (1)	Variation (2)	Possibility of extension (3)	Additional evidence required (4)
C.1.1 Shape from channel to wind-lock type **- See Figure A.81**	Change	Possible providing sealing system is not affected. Otherwise not possible without an additional test.	Test scenario B
C.1.2 Shape from wind-lock type to channel **- See Figure A.82**	Change	Not possible without an additional test.	Test scenario B
C.1.3 Depth **- See Figure A.83**	Decrease	Possible for S_a providing sealing system is not affected and the overlap of the curtain in the guide rail is not smaller as tested. therwise not possible without an additional test.	Test scenario B
C.1.4 Depth **- See Figure A.84**	Increase	Possible	
C.1.5 Width **- See Figure A.85**	Decrease	Not possible without an additional test	Test scenario B
C.1.6 Width **- See Figure A.86**	Increase	Not possible without an additional test	Test scenario B
C.1.7 Material thickness	Decrease	Not possible without an additional test	Test scenario B
C.1.8 Material thickness	Increase	Possible for S_a. Possible by up to 100 %, otherwise not possible without an additional test.	Test scenario A.
C.1.9 Material	Stainless steel or aluminium to mild steel	Possible	
C.1.10 Material	Mild steel to stainless steel or aluminium	Possible for S_a. Possible for S_{200} providing the guides are fixed directly to the supporting construction	Test scenario B
C.1.11 Expansion allowances **- See Figure A.133**	Decrease	Possible for S_a. Not possible for S_{200} without an additional test.	Test scenario B
C.1.12 Expansion allowances **- See Figure A.133**	Increase	Possible	
C.2 Guide fixing section			

Construction parameter (1)	Variation (2)	Possibility of extension (3)	Additional evidence required (4)
C.2.1 Size **- See Figure A.87**	Decrease	Not possible without an additional test	Test scenario A
C.2.2 Size **- See Figure A.88**	Increase	Possible	
C.2.3 Thickness	Decrease	Not possible without an additional test	Test scenario A
C.2.4 Thickness	Increase	Possible	
C.2.5 Material	Stainless steel or aluminium to mild steel	Possible	
C.2.6 Material	Mild steel to stainless steel or aluminium	Possible	
C.2.7 Expansion allowances	Decrease	Possible	
C.2.8 Expansion allowances	Increase	Possible	
C.2.9 Shape **- See Figure A.89**	Change	Possible providing stiffness is same or greater	
C 2.10 Continuous section to short sections	Change	Possible providing the distance of fixings is not reduced, otherwise not possible without an additional test	Test scenario A
C.2.11 Short sections to continuous sections	Change	Possible providing the distance of fixings is not reduced, otherwise not possible without an additional test	Test scenario A
C 2.12 Flag type including endplate **- See Figure A.90**	From Merge to Separate	Possible	
C 2.13 Flag type including endplate **- See Figure A.91**	From Separate to Merge	Possible	
C.3 Fixings to supporting construction			
C.3.1 Size	Decrease	Possible in line with size decrease of the curtain's width, otherwise not possible without an additional test	Test scenario A
C.3.2 Size	Increase	Possible	

Construction parameter (1)	Variation (2)	Possibility of extension (3)	Additional evidence required (4)
C.3.3 Spacing	Decrease	Possible	
C.3.4 Spacing	Increase	Not possible without an additional test	Test scenario A
C.3.5 Number	Decrease	Not possible without an additional test	Test scenario A
C.3.6 Number	Increase	Possible	
C.3.7 Material or Type	Alternative material and/or type	Possible providing the fixings have an equal or better pullout strength, otherwise not possible without an additional test	Test scenario A.
D Barrel			
D.1 Tube			
D.1.1 Outside diameter **- See Figure A.92**	Decrease	Possible providing the position of curtain in relation to sealing (in the area of the sealing system) is unchanged and unaffected, otherwise not possible without an additional test.	Test scenario B
D.1.2 Outside diameter **- See Figure A.93**	Increase	Possible providing the position of curtain in relation to sealing (in the area of the sealing system) is unchanged and unaffected, otherwise not possible without an additional test.	Test scenario B
D.1.3 Wall thickness **- See Figure A.94**	Decrease	Possible	
D.1.4 Wall thickness **- See Figure A.95**	Increase	Possible	
D.1.5 Material	Alternative material and/or manufacturer	Possible for metals. Possible for non-metal tubes providing the alternative material has the same or higher heat deflection temperature acc. to EN ISO 75-1, EN ISO 75-2, EN ISO 75-3 or the heat deflection temperature is > 200°C, otherwise not possible without an additional test	Test scenario I
D.1.6 Expansion allowances	Decrease	Possible for S_a. Possible for S_{200} providing the position of curtain in relation to sealing (in the area of the sealing system) is unchanged and unaffected, otherwise not possible without an additional test.	Test scenario I

Construction parameter (1)	Variation (2)	Possibility of extension (3)	Additional evidence required (4)
D.1.7 Expansion allowances	Increase	Possible	
D.1.8 Shape **- See Figure A.96**	Change	Possible providing the position of curtain in relation to sealing (in the area of the sealing system) is unchanged and unaffected, otherwise not possible without an additional test.	Test scenario B
D.2 Shafts			
D.2.1 Outside diameter **- See Figure A.97**	Decrease	Possible	
D.2.2 Outside diameter **- See Figure A.98**	Increase	Possible	
D.2.3 Type **- See Figure A.99**	Solid to hollow	Possible	
D.2.4 Type **- See Figure A.100**	Hollow to solid	Possible	
D.2.5 Material	Alternative	Possible for metals. Possible for non-metal tubes providing the alternative material has the same or higher heat deflection temperature acc. to EN ISO 75-1, EN ISO 75-2, EN ISO 75-3 or the heat deflection temperature is > 200°C, otherwise not possible without an additional test.	Test scenario I
D.2.6 Expansion allowances (lateral)	Decrease	Possible for S_a. Possible for S_{200} providing the position of curtain in relation to sealing (in the area of the sealing system) is unchanged and unaffected, otherwise not possible without an additional test.	Test scenario I
D.2.7 Expansion allowances (lateral)	Increase	Possible	
D.2.8 Shape **- See Figure A.101**	Change	Possible	
D.2.9 Stub shafts **- See Figure A.102**	Continuous axle	Possible	
D.2.10 Continuous axle **- See Figure A.103**	Stub shafts	Possible	

Construction parameter (1)	Variation (2)	Possibility of extension (3)	Additional evidence required (4)
D.2.11 Shaft end retention	Remove	Not possible without an additional test	Test scenario A
D.2.12 Shaft end retention	Add	Possible for S_a. Possible for S_{200} providing expansion is permitted, otherwise not possible without an additional test.	Test scenario I
D.3 Endcaps (Infill at end of tube usually mild steel or casting which sometimes carries a bearing if the shaft is fixed).			
D.3.1 Thickness	Decrease	Possible	
D.3.2 Thickness	Increase	Possible	
D.3.3 Material	Alternative material and/or manufacturer	Possible for metals and for S_a. Possible for S_{200} for non-metal materials providing the alternative material has the same or higher heat deflection temperature acc. to EN ISO 75-1, EN ISO 75-2, EN ISO 75-3 or the heat deflection temperature is > 200°C, otherwise not possible without an additional test.	Test scenario I
D.4 Curtain to barrel Fixings			
D.4.1 Size	Decrease	Possible	
D.4.2 Size	Increase	Possible	
D.4.3 Number	Decrease	Possible in line with the decrease of curtain width, otherwise not possible without an additional test	Test scenario A
D.4.4 Number	Increase	Possible	

Construction parameter (1)	Variation (2)	Possibility of extension (3)	Additional evidence required (4)
D.4.5 Material	Alternative material and/or manufacturer	Possible for metals and for S_a. Possible for S_{200} for non-metal materials providing the alternative material has the same or higher heat deflection temperature acc. to EN ISO 75-1, EN ISO 75-2, EN ISO 75-3 or the heat deflection temperature is > 200°C, otherwise not possible without an additional test.	Test scenario I
D.4.6 Spacing	Decrease	Possible	
D.4.7 Spacing	Increase	Not possible without an additional test	Test scenario B
D.5 Springs either inside barrels or externally mounted			
D.5.1 Springs	Delete	Possible	
D.5.2 Springs	Add	Possible	
D.5.3 Size	Decrease	Possible	
D.5.4 Size	Increase	Possible	
D.5.5 Number	Decrease	Possible	
D.5.6 Number	Increase	Possible	
D.5.7 Material	Alternative material and/or manufacturer	Possible	
E Barrel/shaft end supports			
E.1 Support brackets/endplates			
E.1.1 Size **- See Figure A.104**	Decrease	Possible	
E.1.2 Size **- See Figure A.105**	Increase	Possible	
E.1.3 Material thickness	Decrease	Possible	

Construction parameter (1)	Variation (2)	Possibility of extension (3)	Additional evidence required (4)
E.1.4 Material thickness	Increase	Possible	
E.1.5 Material	Alternative material and/or manufacturer	Possible for metals and for S_a. Possible for S_{200} for non-metal materials providing the alternative material has the same or higher heat deflection temperature acc. to EN ISO 75-1, EN ISO 75-2, EN ISO 75-3 or the heat deflection temperature is > 200°C, otherwise not possible without an additional test.	Test scenario I
E.1.6 Shape general	Flat end plate to open bracket assembly	Possible	
E.1.7 Shape general	Open bracket assembly to flat end plate	Possible	
E 1.8 Shape	Fabrication detail	Possible	
E.2 Support brackets/endplates Fixings			
E.2.1 Size	Decrease	Possible	
E.2.2 Size	Increase	Possible	
E.2.3 Material	Alternative material and/or manufacturer	Possible for metals and for S_a. Possible for S_{200} for non-metal materials providing the alternative material has the same or higher heat deflection temperature acc. to EN ISO 75-1, EN ISO 75-2, EN ISO 75-3 or the heat deflection temperature is > 200°C, otherwise not possible without an additional test.	Test scenario I
E.2.4 Number	Decrease	Possible	
E.2.5 Number	Increase	Possible	
E.2.6 Spacing	Decrease	Possible	
E.2.7 Spacing	Increase	Possible	

Construction parameter (1)	Variation (2)	Possibility of extension (3)	Additional evidence required (4)
E.3 Shaft Bearings and / or arrestor			
E.3.1 Size	Decrease	Possible	
E.3.2 Size	Increase	Possible	
E.3.3 Material	Change	Possible for metals and for S_a. Possible for S_{200} for non-metal materials providing the alternative material has the same or higher heat deflection temperature acc. to EN ISO 75-1, EN ISO 75-2, EN ISO 75-3 or the heat deflection temperature is > 200°C, otherwise not possible without an additional test.	Test scenario I
E.3.4 Type	Alternative type and/or manufacturer	Possible for metals and for S_a. Possible for S_{200} for non-metal materials providing the alternative material has the same or higher heat deflection temperature acc. to EN ISO 75-1, EN ISO 75-2, EN ISO 75-3 or the heat deflection temperature is > 200°C, otherwise not possible without an additional test.	Test scenario I
E.4 Shaft Cups			
E.4.1 Size **- See Figure A.106**	Decrease	Possible	
E.4.2 Size **- See Figure A.107**	Increase	Possible	
E.4.3 Material	Alternative material and/or manufacturer	Possible for metals and for S_a. Possible for S_{200} for non-metal materials providing the alternative material has the same or higher heat deflection temperature acc. to EN ISO 75-1, EN ISO 75-2, EN ISO 75-3 or the heat deflection temperature is > 200°C, otherwise not possible without an additional test.	Test scenario I

Construction parameter (1)	Variation (2)	Possibility of extension (3)	Additional evidence required (4)
E.4.4 Type **- See Figure A.108**	Alternative type and/or manufacturer	Possible for metals and for S_a. Possible for S_{200} for non-metal materials providing the alternative material has the same or higher heat deflection temperature acc. to EN ISO 75-1, EN ISO 75-2, EN ISO 75-3 or the heat deflection temperature is > 200°C, otherwise not possible without an additional test.	Test scenario I
E.5 Shaft bearing/cup fixings			
E.5.1 Size	Decrease	Possible	
E.5.2 Size	Increase	Possible	
E.5.3 Material	Alternative material and/or manufacturer	Possible for metals and for S_a. Possible for S_{200} for non-metal materials providing the alternative material has the same or higher heat deflection temperature acc. to EN ISO 75-1, EN ISO 75-2, EN ISO 75-3 or the heat deflection temperature is > 200°C, otherwise not possible without an additional test.	Test scenario I
E.5.4 Number	Decrease	Possible	
E.5.5 Number	Increase	Possible	
E.5.6 Type	Alternative type, material and/or manufacturer	Possible for metals and for S_a. Possible for S_{200} for non-metal materials providing the alternative material has the same or higher heat deflection temperature acc. to EN ISO 75-1, EN ISO 75-2, EN ISO 75-3 or the heat deflection temperature is > 200°C, otherwise not possible without an additional test.	Test scenario I
E.6 Supports (Additional bracings used with extended motor plates back to structure)			
E.6.1 Support **- See Figure A.109**	Add	Possible	

Construction parameter (1)	Variation (2)	Possibility of extension (3)	Additional evidence required (4)
E.6.2 Support **- See Figure A.110**	Delete	Possible	
E.6.3 Size **- See Figure A.111**	Decrease	Possible	
E.6.4 Size **- See Figure A.112**	Increase	Possible	
E.6.5 Thickness	Decrease	Possible	
E.6.6 Thickness	Increase	Possible	
E.6.7 Number	Decrease	Possible	
E.6.8 Number	Increase	Possible	
E.6.9 Material	Alternative material and/or manufacturer	Possible for metals and for S_a. Possible for S_{200} for non-metal materials providing the alternative material has the same or higher heat deflection temperature acc. to EN ISO 75-1, EN ISO 75-2, EN ISO 75-3 or the heat deflection temperature is > 200°C, otherwise not possible without an additional test.	Test scenario I
E.6.10 Cross-section, length or orientation	Alternative	Possible	
F Casing/Hood			
F.1.1 Casing/Hood - **See Figure A.113**	Add	Possible providing expansion does not affect the load bearing parts and the sealing system. Otherwise not possible without an additional test.	Test scenario B
F.1.2 Casing/Hood **-- See Figure A.114**	Delete	Possible for Sa providing the sealing system is unaffected and unchanged, otherwise not possible without an additional test.	Test scenario B
F.1.3 Size **- See Figure A.115**	Decrease	Possible providing the sealing system is unaffected and unchanged, otherwise not possible without an additional test.	Test scenario B

Construction parameter (1)	Variation (2)	Possibility of extension (3)	Additional evidence required (4)
F.1.4 Size **- See Figure A.116**	Increase	Possible providing the sealing system is unaffected and unchanged, otherwise not possible without an additional test.	Test scenario B
F.1.5 Material thickness	Decrease	Possible	
F.1.6 Material thickness	Increase	Possible for Sa. Possible for S_{200} providing the sealing system is unaffected and unchanged, otherwise not possible without an additional test.	Test scenario I
F.1.7 Material (metal)	Alternative material	Possible for Sa. Possible for S_{200} providing the sealing system is unaffected and unchanged or the heat expansion coefficient is the same or lower, otherwise not possible without an additional test.	Test scenario I
F.1.8 Shape **- See Figure A.117**	Change	Possible for Sa. Possible for S_{200} providing the sealing system is unaffected and unchanged, otherwise not possible without an additional test.	Test scenario B
F2 Casing/Hood Fixings			
F.2.1 Size	Decrease	Possible	
F.2.2 Size	Increase	Possible	
F.2.3 Number	Decrease	Possible in line with decrease of width or providing the sealing system is unaffected and unchanged, otherwise not possible without an additional test	Test scenario B
F.2.4 Number	Increase	Possible	
F.2.5 Spacing	Decrease	Possible	
F.2.6 Spacing	Increase	Possible providing the sealing system is unaffected and unchanged, otherwise not possible without an additional test	Test scenario B

Construction parameter (1)	Variation (2)	Possibility of extension (3)	Additional evidence required (4)
F.2.7 Material or type	Alternative material, type and/ or manufacturer	Possible for metals and for S_a. Possible for S_{200} for non-metal materials providing the alternative material has the same or higher heat deflection temperature acc. to EN ISO 75-1, EN ISO 75-2, EN ISO 75-3 or the heat deflection temperature is > 200°C, otherwise not possible without an additional test.	Test scenario I
G Drive systems			
G.1 Drive systems excluding tubular motors			
G.1.1 External drive system **- See Figure A.118**	Add	Possible	
G.1.2 External drive system **- See Figure A.119**	Delete	Possible	
G.1.3 Internal drive systems i.e. where any part e.g. gears, chains, sprockets or motors is located inside the casing **- See Figure A.120**	Add	Possible	
G.1.4 Internal drive systems i.e. where any part e.g. gears, chains, sprockets or motors is located inside the casing **- See Figure A.121**	Delete	Possible	
G.1.5 Material	Alternative material	Possible	
G.1.6 Type	Alternative type and/or manufacturer	Possible	
G.2 Tubular motors			

Construction parameter (1)	Variation (2)	Possibility of extension (3)	Additional evidence required (4)
G.2.1 Tubular motor	Add	Possible for Sa. Possible for S200 providing the motor has already passed a test with the same or higher load at 200°C. Otherwise not possible without an additional test.	Test scenario I
G.2.2 Tubular motor	Delete	Possible	
G.2.3 Type	Alternative type and/or manufacturer	Possible for Sa. Possible for S200 providing the motor has already passed a test with the same or higher load at 200°C. Otherwise not possible without an additional test.	Test scenario I
G.3. Drive system Fixings			
G.3.1 Size	Decrease	Possible	
G.3.2 Size	Increase	Possible	
G.3.3 Type	Change type and/or manufacturer	Possible	
G.3.4 Material	Change material and/or manufacturer	Possible for metals and for S_a. Possible for S_{200} for non-metal materials providing the alternative material has the same or higher heat deflection temperature acc. to EN ISO 75-1, EN ISO 75-2, EN ISO 75-3 or the heat deflection temperature is > 200°C, otherwise not possible without an additional test.	Test scenario I
G.3.5 Number	Decrease	Possible	
G.3.6 Number	Increase	Possible	
H Supports for barrel and/or casing (discontinuous)			
H.1.1 Support for barrel and/or casing**- See Figure A.122**	Add	Possible	

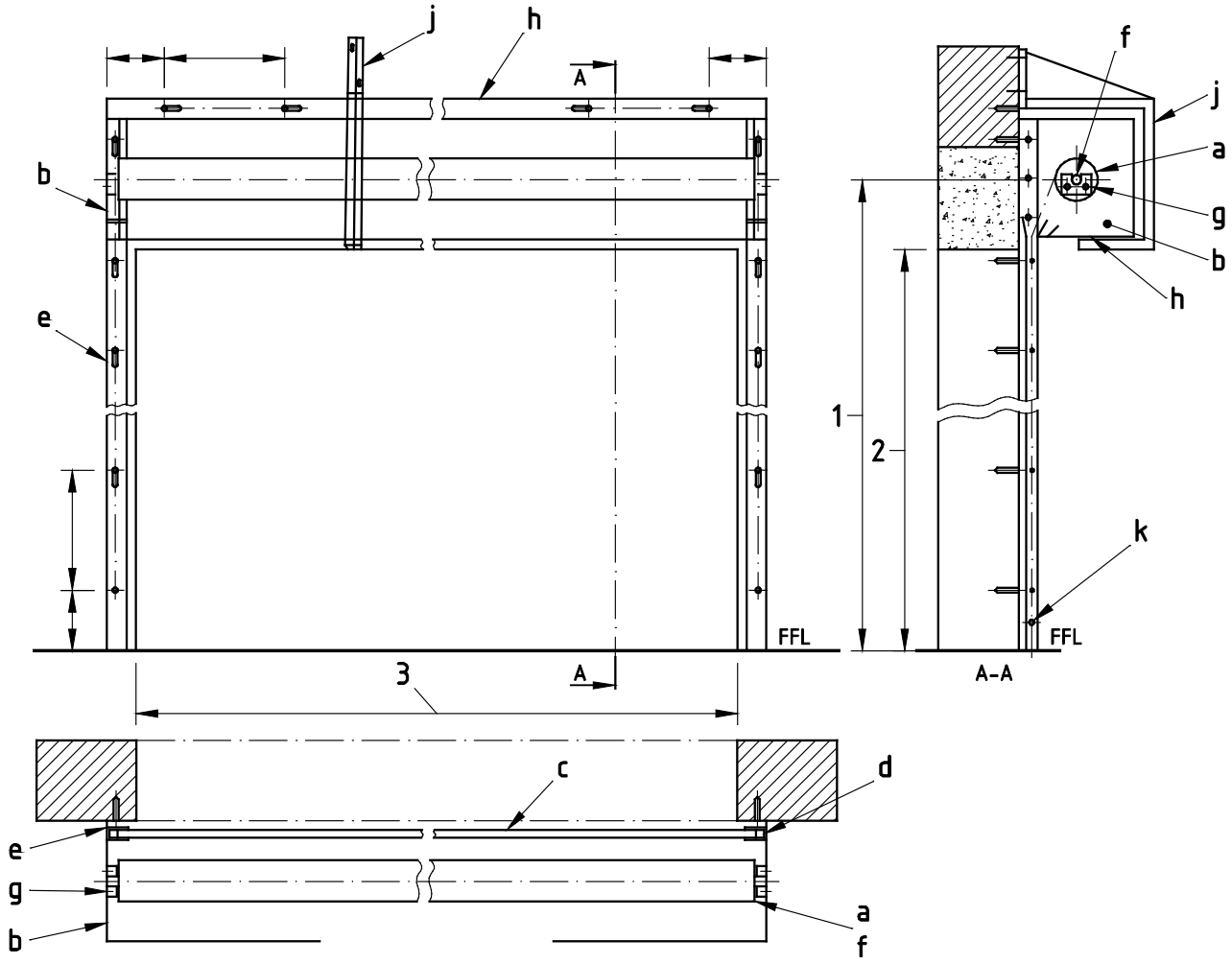
Construction parameter (1)	Variation (2)	Possibility of extension (3)	Additional evidence required (4)
H.1.2 Support for barrel and/or casing **- See Figure A.123**	Delete (Remove)	Not possible without an additional test.	Test scenario B
H.1.3 Cross section, size and material thickness	Change	Increase possible. Decrease not possible without an additional test.	Test scenario A
H.1.4 Material	Change material and/or manufacturer	Possible for metals and for S_a. Possible for S_{200} for non-metal materials providing the alternative material has the same or higher heat deflection temperature acc. to EN ISO 75-1, EN ISO 75-2, EN ISO 75-3 or the heat deflection temperature is > 200°C, otherwise not possible without an additional test.	Test scenario I
H.1.5 Number	Decrease	Possible to reduce the number in line with reduced width down to a minimum of one. Otherwise not possible without an additional test.	Test scenario B
H.1.6 Number	Increase	Possible	
H.1.7 Shape/orientation **- See Figure A.124**	Change	Possible	
H.1.8 Spacing between barrel support bracket locations	change	Possible to reduce the number in line with reduced width down to a minimum of one. Otherwise not possible without an additional test.	Test scenario B
H.1.9 Location **- See Figure A.125**	Inside casing to outside	Possible	
H.1.10 Location **- See Figure A.126**	Outside casing to inside	Possible providing the sealing system is unaffected and unchanged. Otherwise not possible without an additional test.	Test scenario I
H.2 Barrel/Casing Support Fixings			
H.2.1 Size	Decrease	Possible	
H.2.2 Size	Increase	Possible	

Construction parameter (1)	Variation (2)	Possibility of extension (3)	Additional evidence required (4)
H.2.3 Number	Decrease	Possible	
H.2.4 Number	Increase	Possible	
H.2.5 Spacing	Decrease	Possible	
H.2.6 Spacing	Increase	Possible	
H.2.7 Material	Alternative material and/or manufacturer	Possible for metals and for S_a. Possible for S_{200} for non-metal materials providing the alternative material has the same or higher heat deflection temperature acc. to EN ISO 75-1, EN ISO 75-2, EN ISO 75-3 or the heat deflection temperature is > 200°C, otherwise not possible without an additional test.	Test scenario I
H.2.8 Type of fixings	Alternative material type and/or manufacturer	Possible for metals and for S_a. Possible for S_{200} for non-metal materials providing the alternative material has the same or higher heat deflection temperature acc. to EN ISO 75-1, EN ISO 75-2, EN ISO 75-3 or the heat deflection temperature is > 200°C, otherwise not possible without an additional test.	Test scenario I
J Supporting construction and attachment (technique) of door frame/components The wall connection shall be sealed properly in line with the tests. Changes shall be tested with test scenario B.			
J.1 General			
J.1.1 Supporting construction **- See Figure A.127**	flexible to rigid	Possible for S_a. For S_{200} in line with field of direct application. Otherwise not possible without an additional test.	Test scenario A
J.1.2 Supporting construction **- See Figure A.128**	rigid to flexible	Possible providing that the gap between the frame member and the wall is sealed at least on one side. Otherwise not possible without an additional test.	Test scenario A

Construction parameter (1)	Variation (2)	Possibility of extension (3)	Additional evidence required (4)
J.1.3 Supporting construction **- See Figure A.129**	Modified (strengthened) flexible construction to rigid	Possible	
J.1.4 Attachment technique	Alternative tang (= built-in fixing or anchor) to plug, screw or rivet and vice versa	Possible	
J.1.5 Attachment technique	Plug, screw, rivet to welding and vice versa	Possible	
J.1.6 Type of fixings	Alternative type, material and/or manufacturer	Possible for metals and for S_a. Possible for S_{200} for non-metal materials providing the alternative material has the same or higher heat deflection temperature acc. to EN ISO 75-1, EN ISO 75-2, EN ISO 75-3 or the heat deflection temperature is > 200°C, otherwise not possible without an additional test.	Test scenario I
J.1.7 Gap between shutter bottom rail and floor	Increase	Possible for S_a, Otherwise not possible without an additional test. NOTE A gap at the bottom will lead to a leakage above limit acc. to S_{200}	Test scenario A
J.1.8 Gap between shutter bottom rail and floor	Decrease	Possible	
J.2 Modified supporting construction			
J.2.1 Supporting construction **- See Figure A.130**	Change from standard supporting construction to protected structural steel supporting construction	Possible	

Construction parameter (1)	Variation (2)	Possibility of extension (3)	Additional evidence required (4)
J.2.2 Supporting construction	Chance from standard supporting construction to unprotected steel supporting construction	Possible	
J.2.3 Supporting construction	Change from standard supporting construction to timber supporting construction	Possible	
K Decorative and/or protective finishes			
K.1.1 Paints without contribution to fire resistance	Add	Possible	
K.1.2 Paints without contribution to fire resistance	Alternative	Possible	
K.1.3 Thickness of paints with positive contribution to fire resistance	Increase	Possible for S_a providing the sealing system is not affected. For S_{200}: Possible up to a maximum of 10 % of mean dry film thickness. Otherwise not possible without additional test.	Test scenario I
K.1.4 Thickness of paints with positive contribution to fire resistance	Decrease	Possible providing the sealing system is not affected. Otherwise not possible without additional test.	Test scenario I
K.1.5 Type of paints with positive contribution to fire resistance	alternative	Possible providing the sealing system is not affected. Otherwise not possible without additional test.	Test scenario I

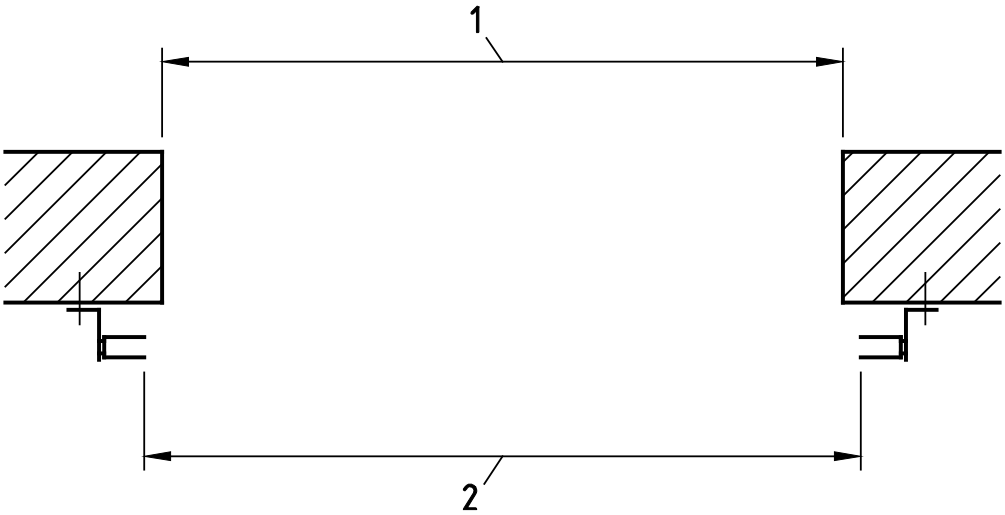
Figures relating to Table A.3



Key

a barrel
b end plate/bracket
c curtain
d guide
e guide fixing angle
f shaft
g shaft cup/support
h coil casing/hood
j barrel/casing support bracket
k bottom rail

Figure A.63 — Example of a general arrangement of metal rolling shutter and curtain assembly

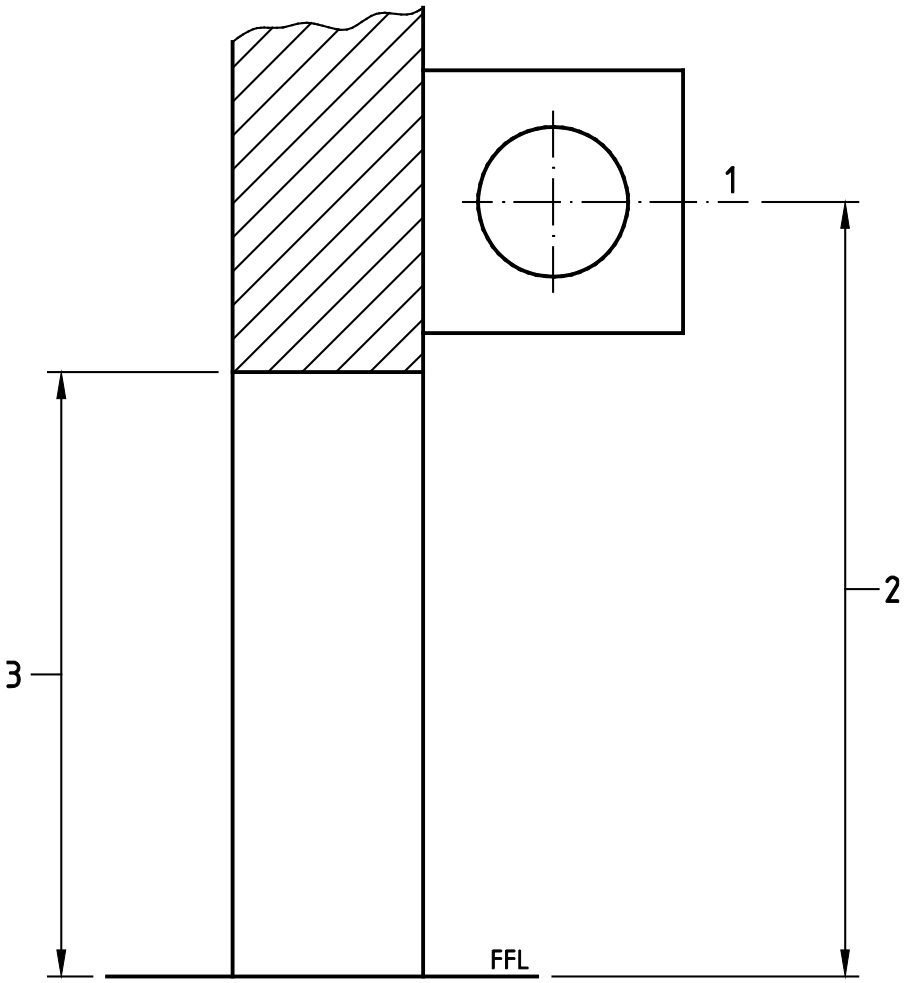


Key

1 opening width

2 width between guides

Figure A.64 — Width between guides



Key

1 centre line of barrel

2 height to centre line of barrel

3 opening height

Figure A.65— Height to centre-line of barrel

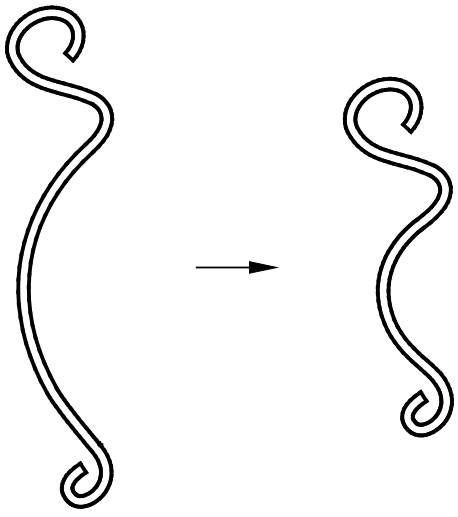


Figure A.66 — Lath – height decrease

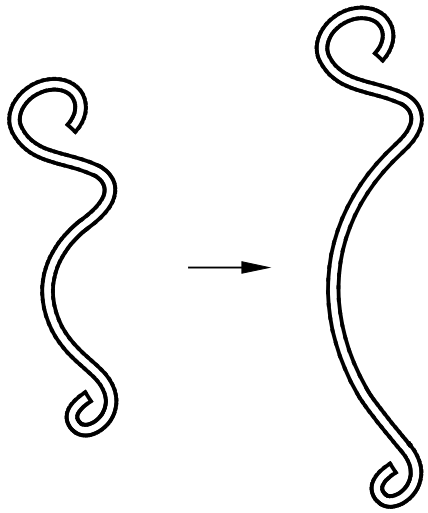


Figure A.67 — Lath – height increase

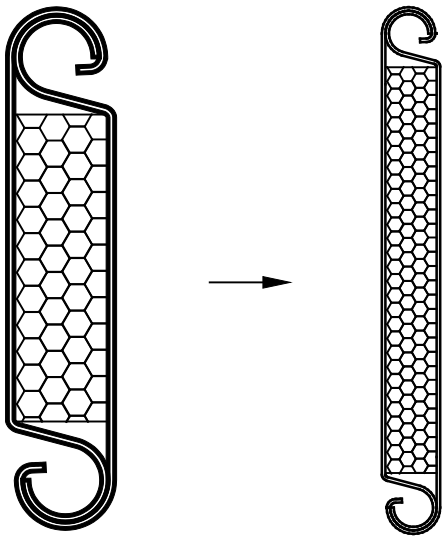


Figure A.68 — Thickness of insulation - decrease

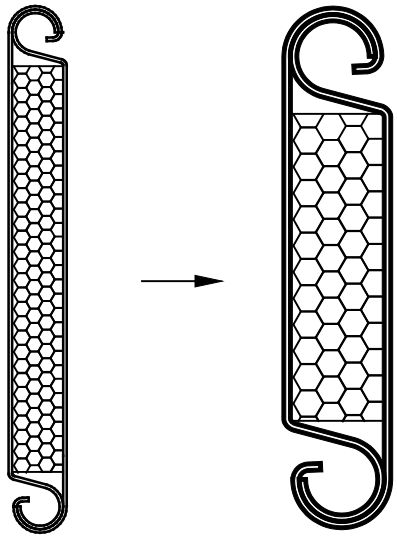


Figure A.69 — Thickness of insulation - increase

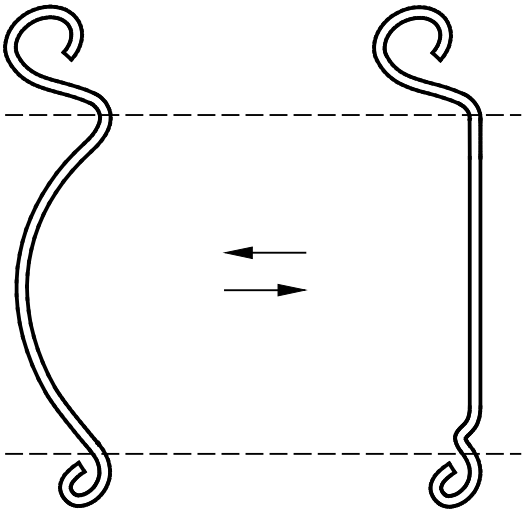


Figure A.70 — Shape of lath

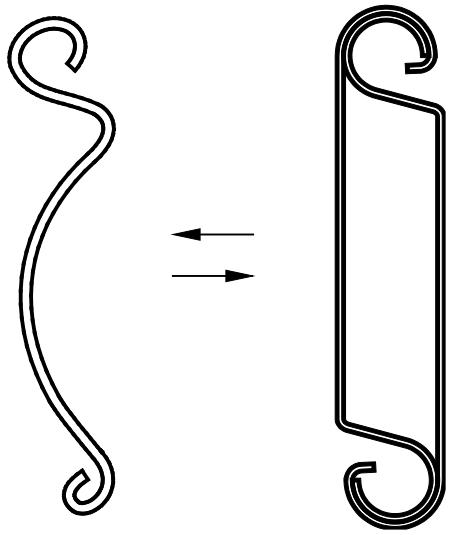
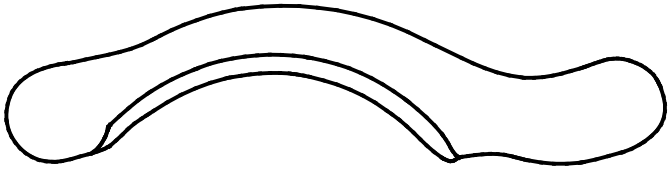


Figure A.71 — Type of lath



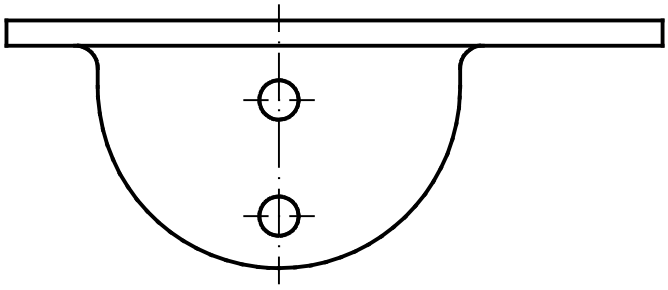


Figure A.72 — Endlocks

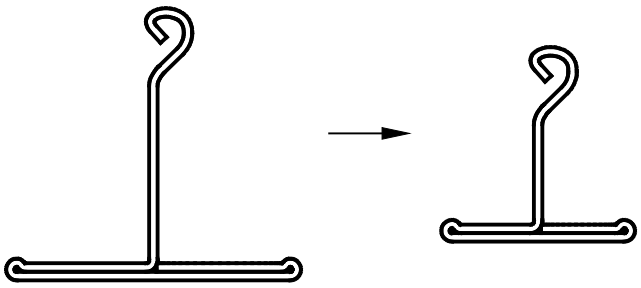


Figure A.73 — Bottom rail - decrease

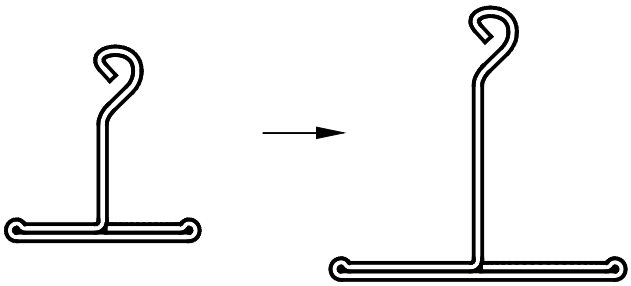


Figure A.74 — Bottom rail - increase

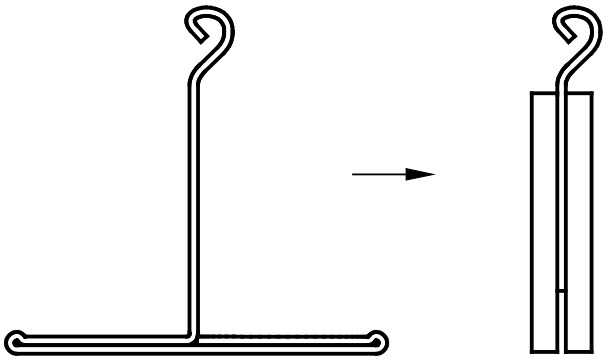


Figure A.75 — Bottom rail – T to flat

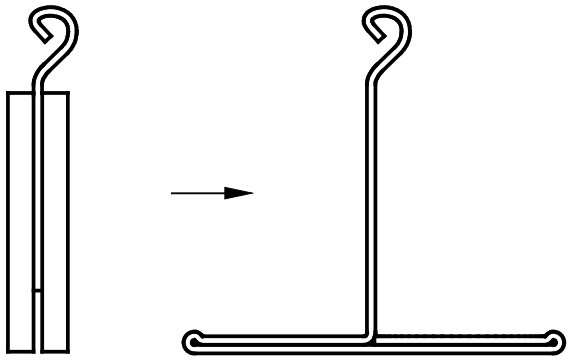


Figure A.76 — Bottom rail – flat to T

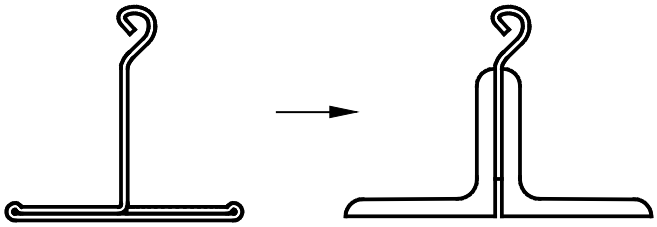


Figure A.77 — Bottom rail – T to double angle

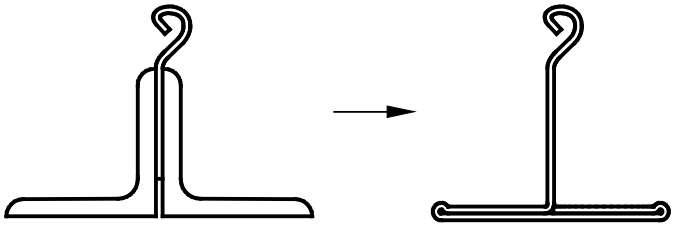


Figure A.78 — Bottom rail – double angle to T

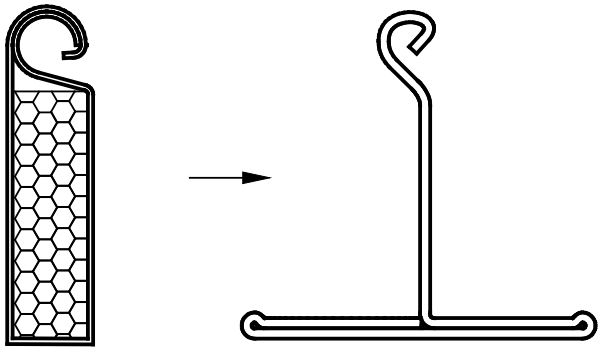


Figure A.79 — Bottom rail – insulated to T

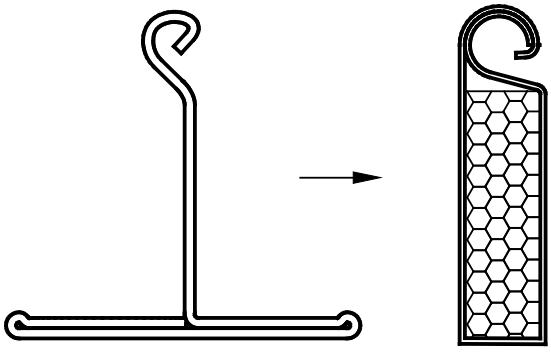


Figure A.80 — Bottom rail – T to insulated

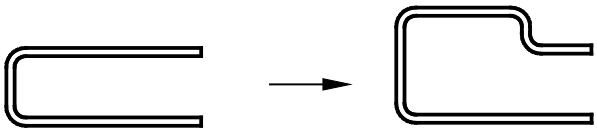


Figure A.81 — Guide – channel to wind-lock

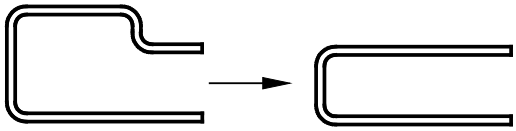


Figure A.82 — Guide – wind-lock to channel

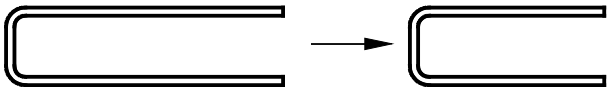


Figure A.83 — Guide – depth decrease

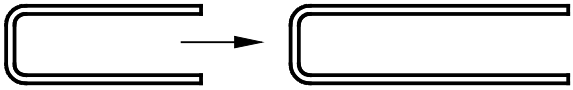


Figure A.84 — Guide – depth increase

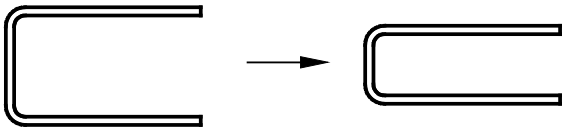


Figure A.85 — Guide – width decrease

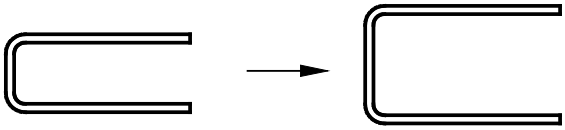


Figure A.86 — Guide – width increase

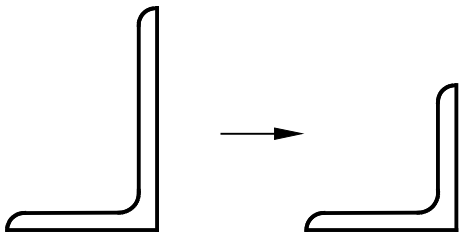


Figure A.87 — Guide fixing – section decrease

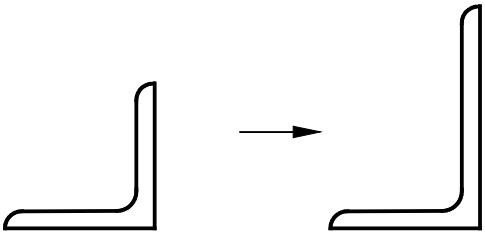


Figure A.88 — Guide fixing – section increase

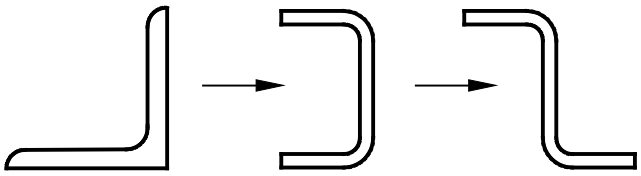
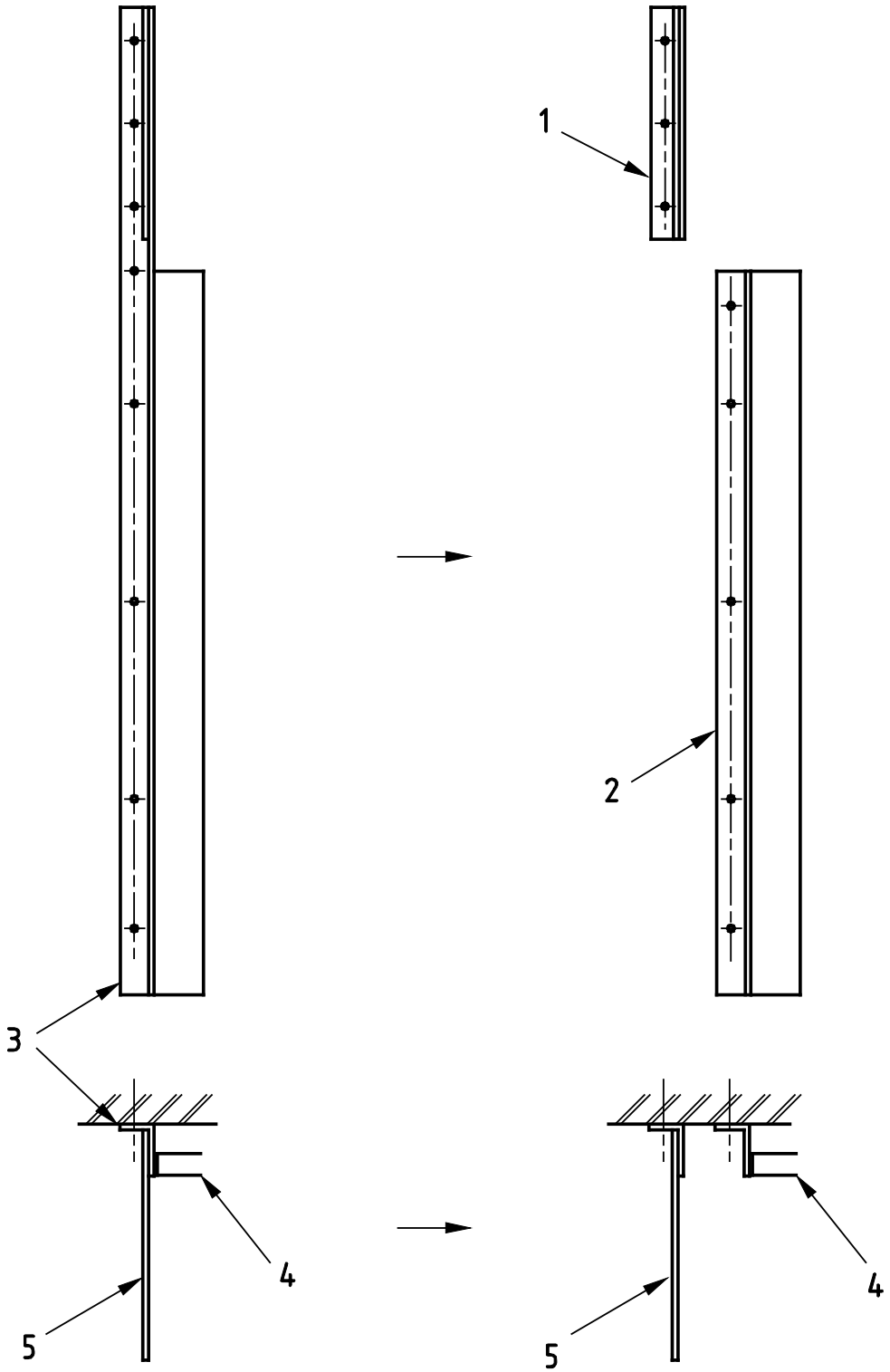


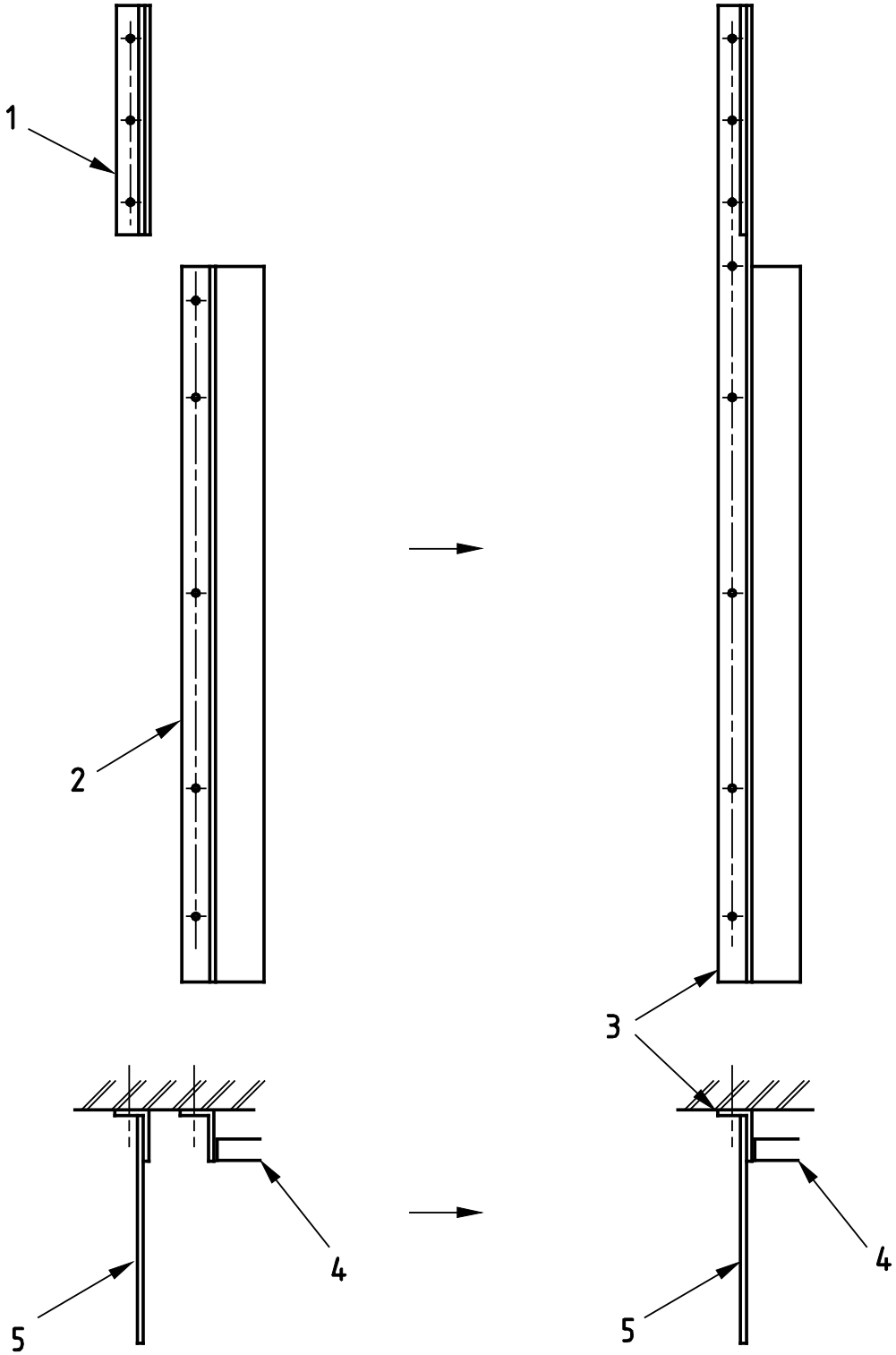
Figure A.89 — Shape of guide fixing – section change



Key

1 endplate support
2 guide support
3 full height angle support
4 guide
5 endplate

Figure A.90 — Flag guides to separate type



Key

1 endplate support
2 guide support
3 full height angle support
4 guide
5 endplate

Figure A.91 — Separate guides to flag type

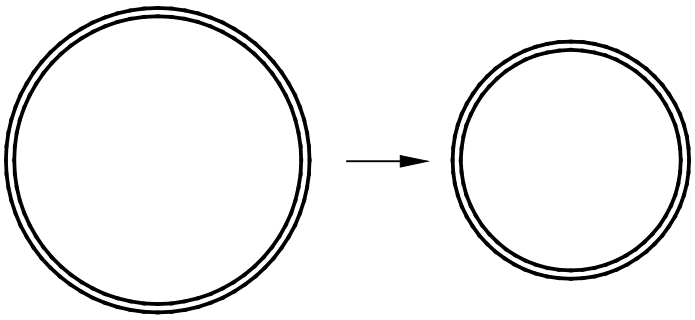


Figure A.92 — Barrel – outside diameter decrease

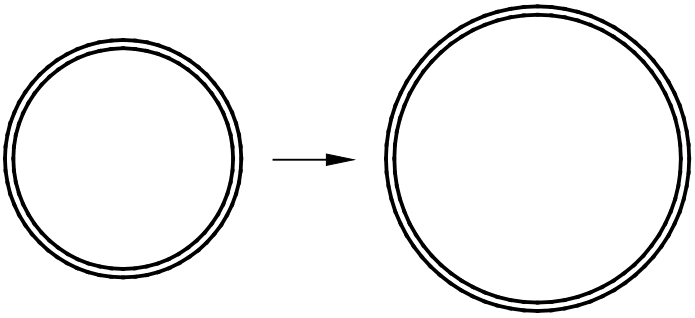


Figure A.93 — Barrel – outside diameter increase

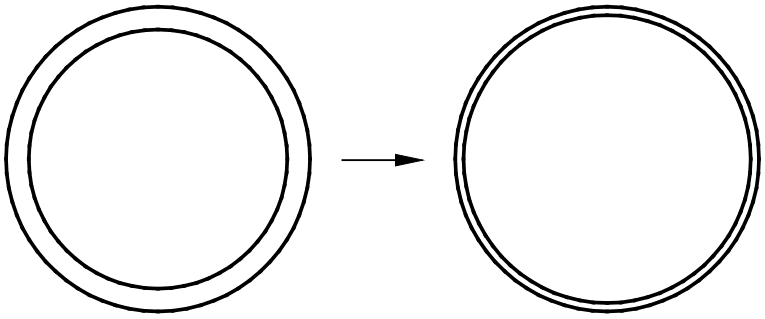


Figure A.94 — Barrel – wall thickness decrease

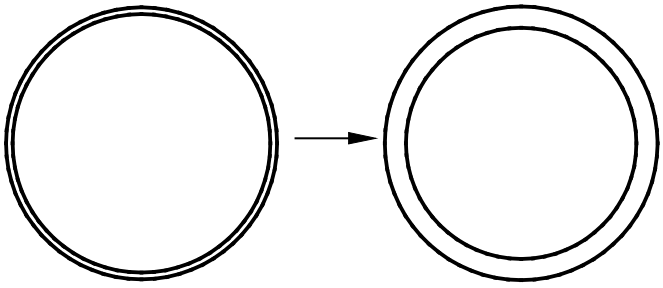


Figure A.95 — Barrel – wall thickness increase

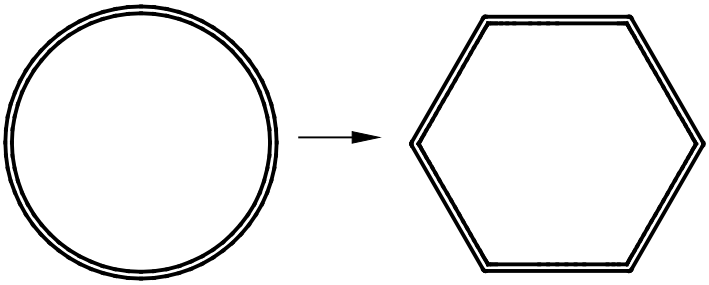


Figure A.96 — Barrel – shape change

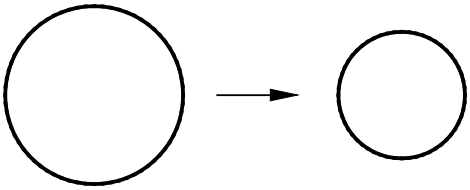


Figure A.97 — Shaft – outside diameter decrease

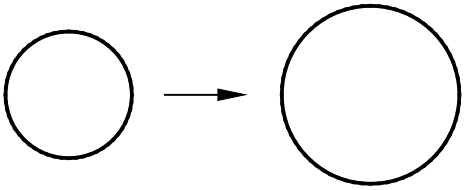


Figure A.98 — Shaft – outside diameter increase

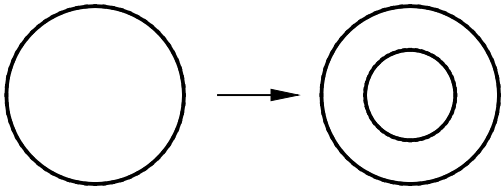


Figure A.99 — Shaft – solid to hollow

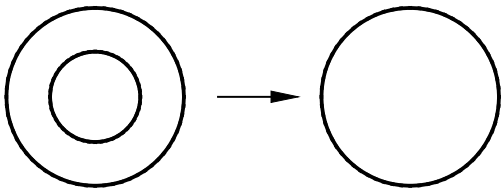


Figure A.100 — Shaft – hollow to solid

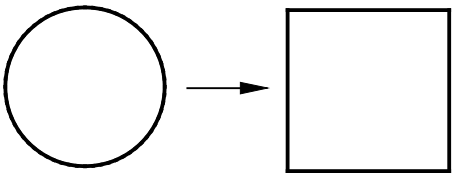


Figure A.101 — Shaft – shape change

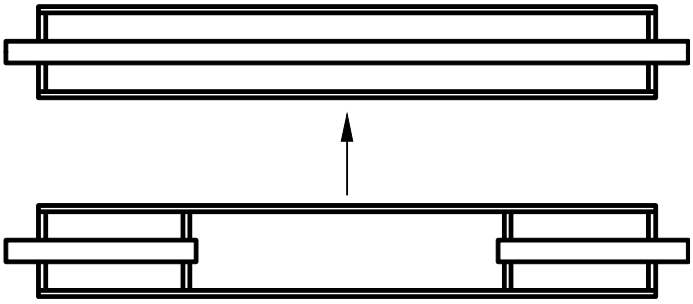


Figure A.102 — Barrel – stub shaft to continuous axle

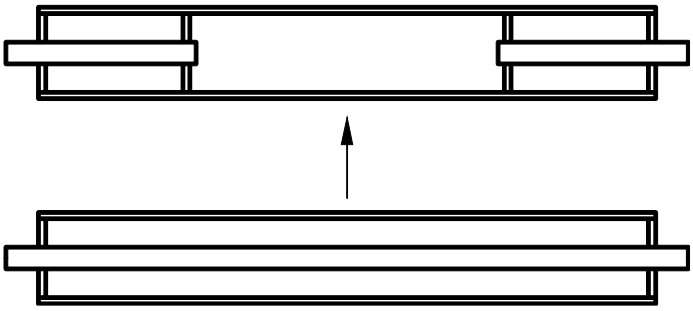


Figure A.103 — Barrel – continuous axle to stub shaft

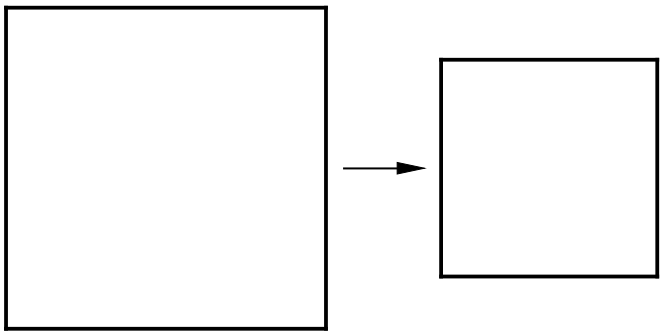


Figure A.104 — Support brackets/endplates - decrease

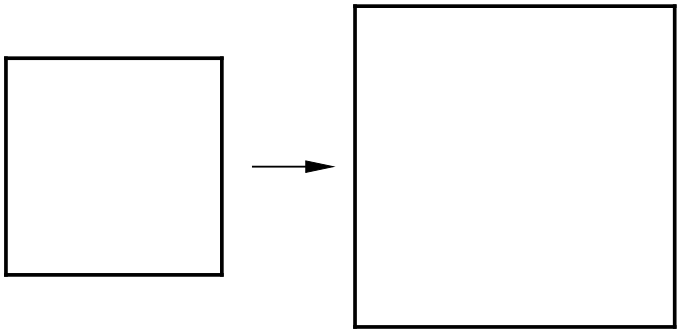


Figure A.105 — Support brackets/endplates - increase

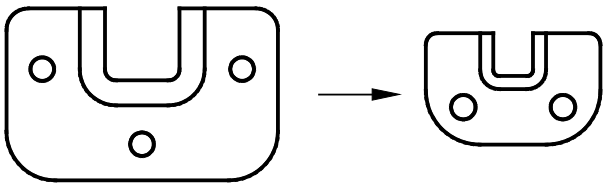


Figure A.106 — Shaft – cup size decrease

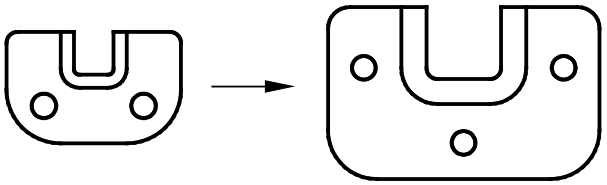


Figure A.107 — Shaft – cup size increase

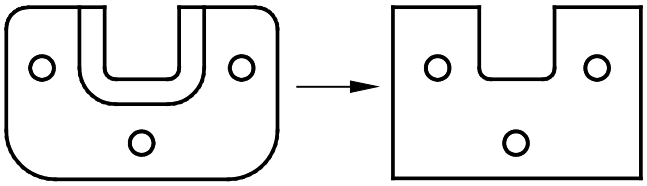


Figure A.108 — Shaft – cup type change

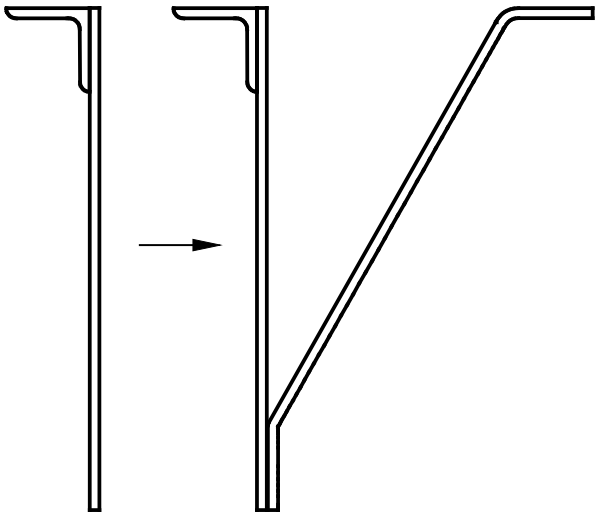


Figure A.109 — Support bracings - add

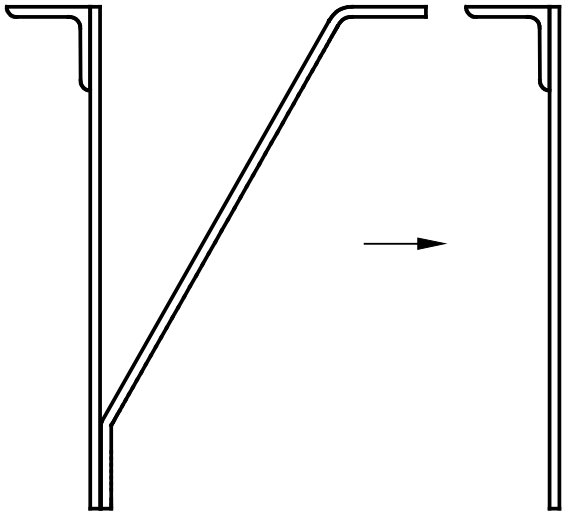


Figure A.110 — Support bracings - delete

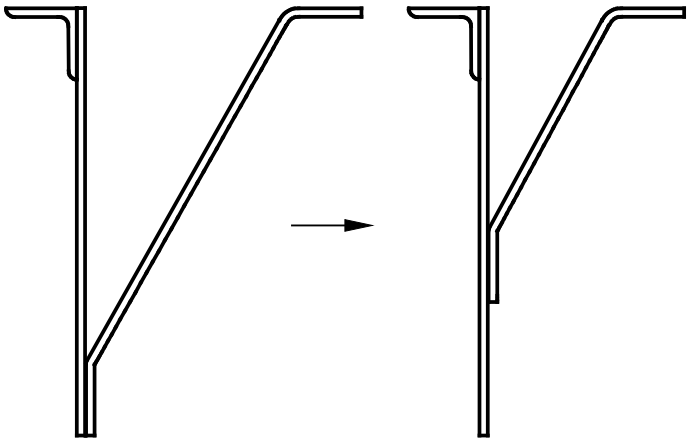


Figure A.111 — Support bracings – size decrease

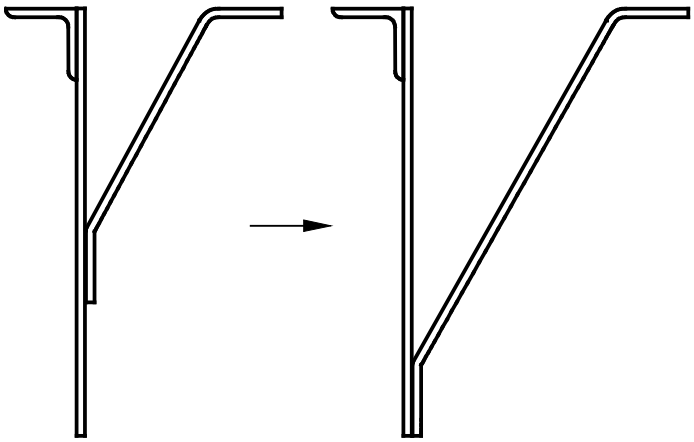


Figure A.112 — Support bracings – size increase

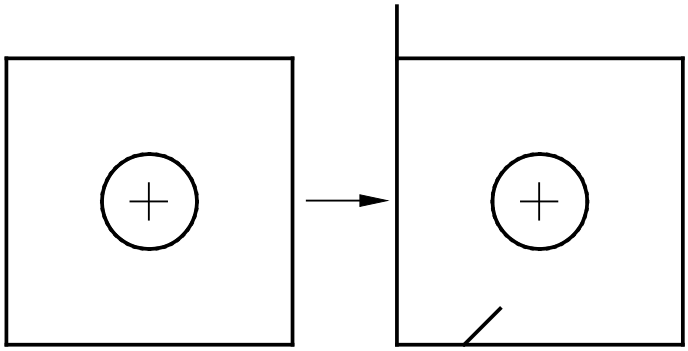


Figure A.113 — Casing/Hood - add

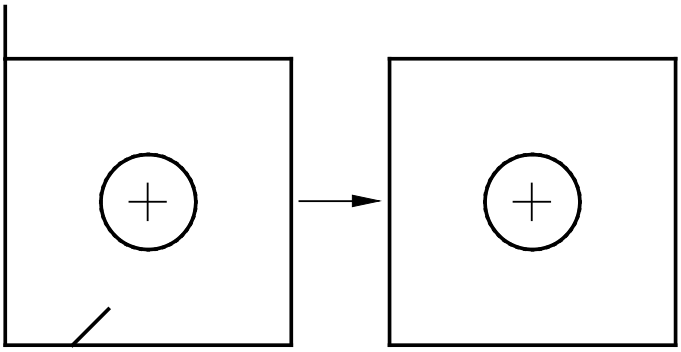


Figure A.114 — Casing/Hood - delete

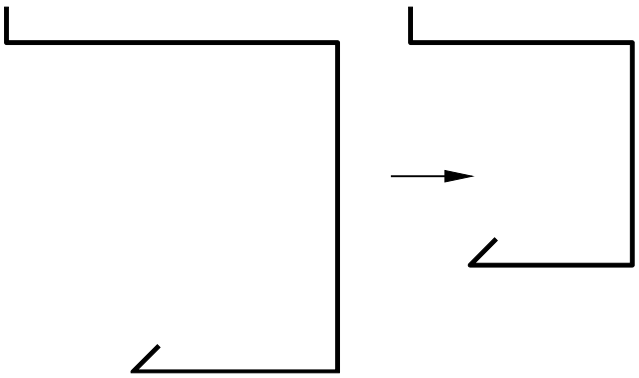


Figure A.115 — Casing/Hood – size decrease

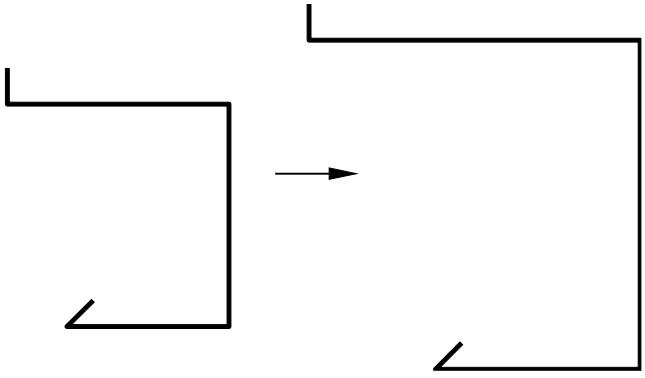
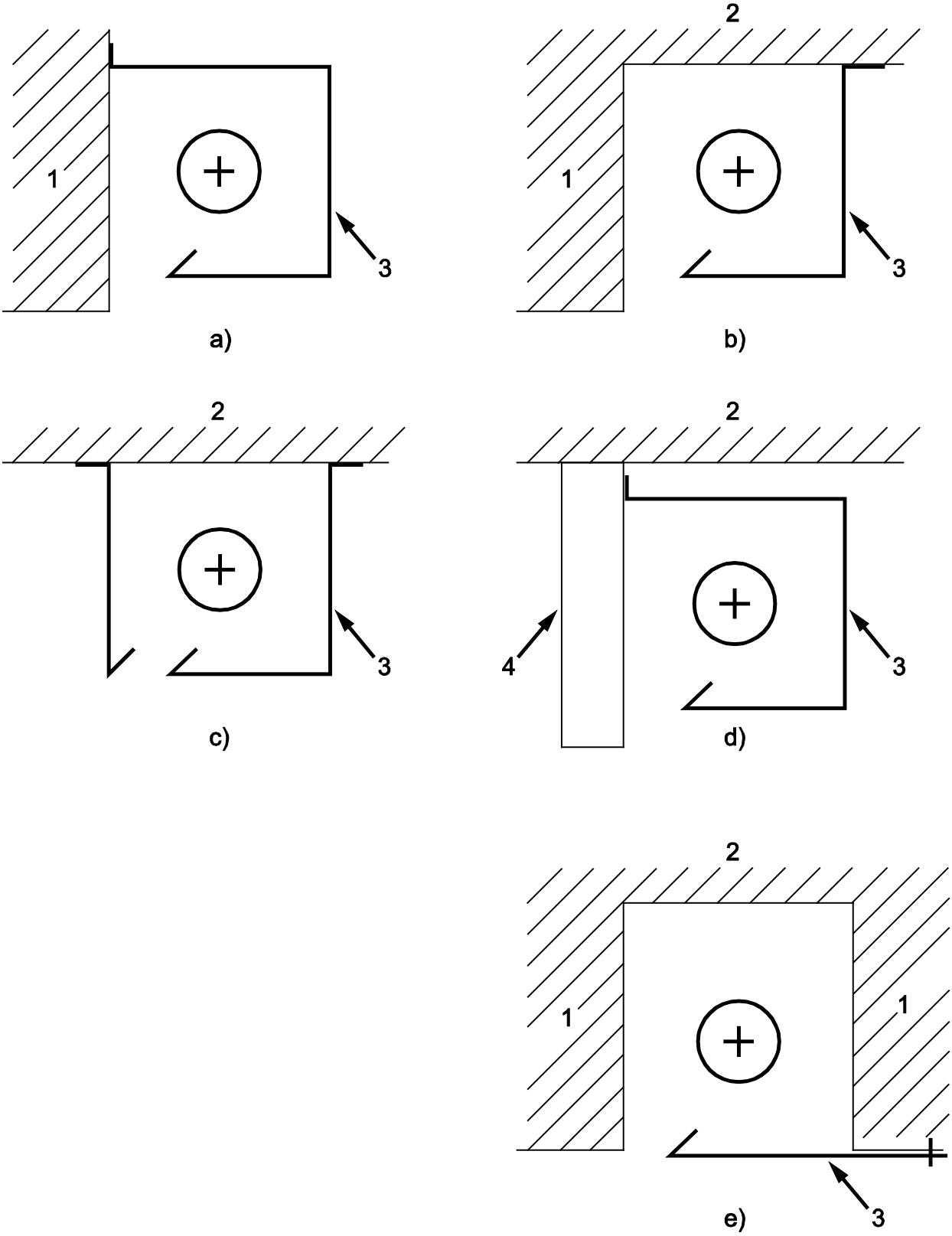


Figure A.116 — Casing/Hood – size increase



Key

a) lintel fixing
b) soffit/lintel fixing
c) soffit fixing
d) soffit/fascia fixing

e) niche fixing

1 lintel

2 soffit

3 casing

4 insulated fascia

NOTE Insulated fascia is part of specimen and not supporting construction.

Figure A.117 — Casing/Hood – shape change

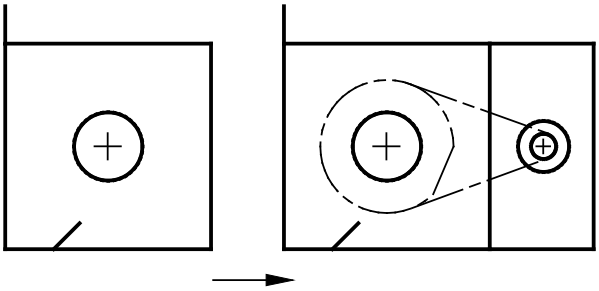


Figure A.118 — External drive system - add

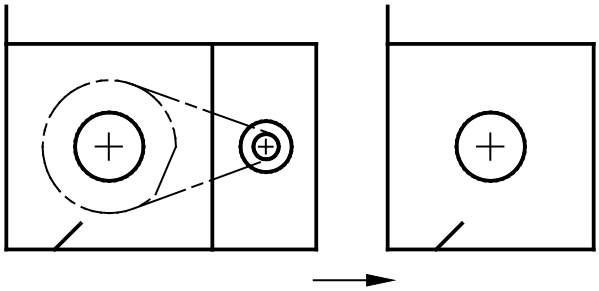


Figure A.119 — External drive system - delete

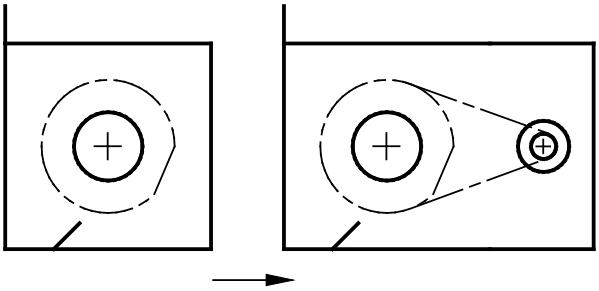


Figure A.120 — Internal drive system - add

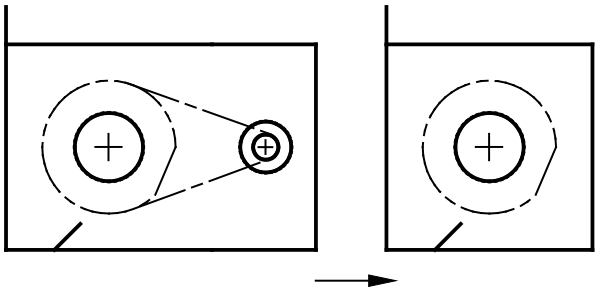


Figure A.121 — Internal drive system - delete

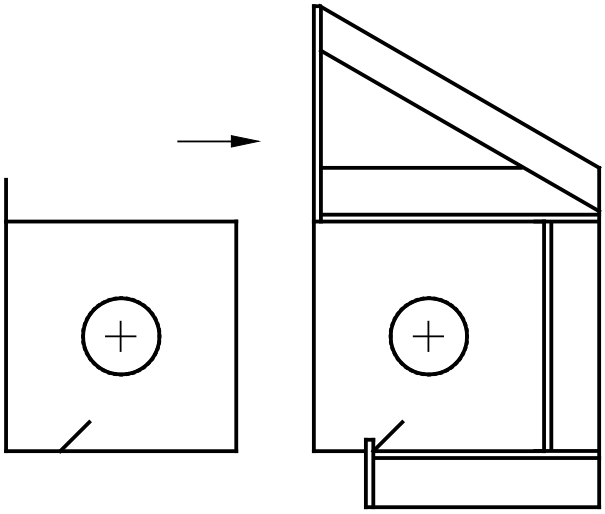


Figure A.122 — Barrel/Casing supports - add

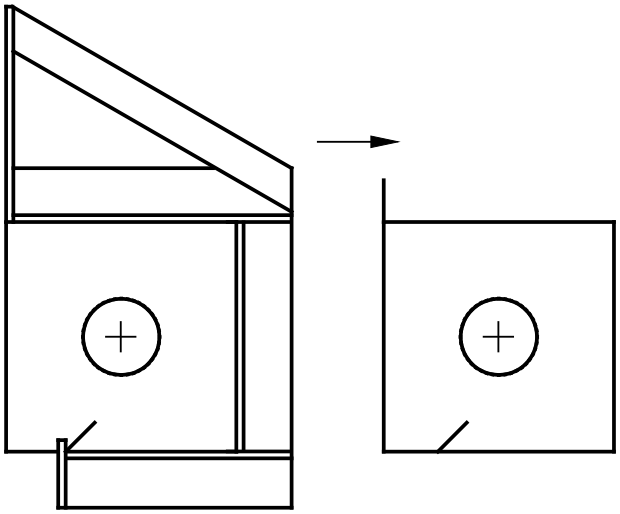


Figure A.123 — Barrel/Casing supports - delete

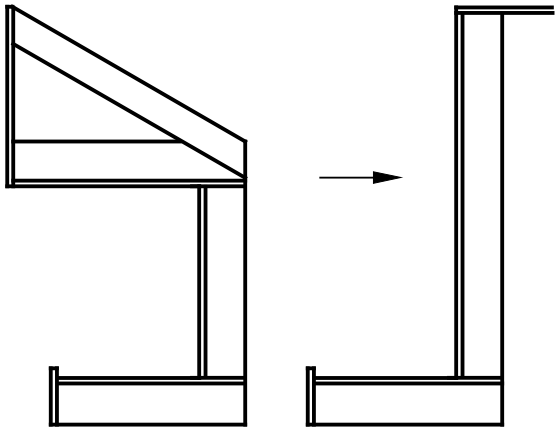


Figure A.124 — Barrel/Casing support shape/orientation - change

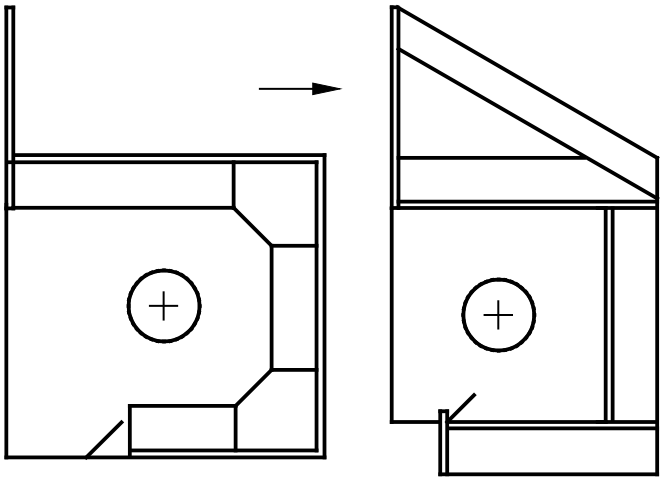


Figure A.125 — Barrel/Casing support – location inside to outside

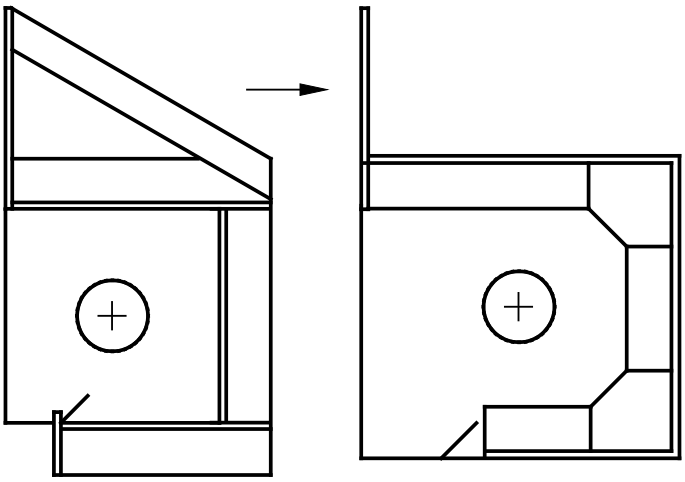


Figure A.126 — Barrel/Casing support – location outside to inside

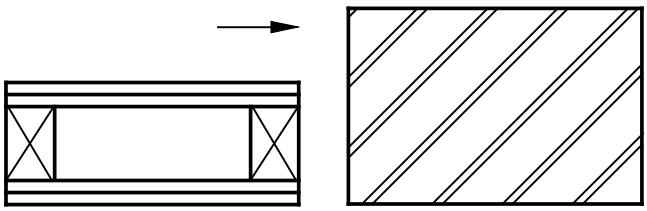


Figure A.127 — Standard flexible supporting construction to rigid

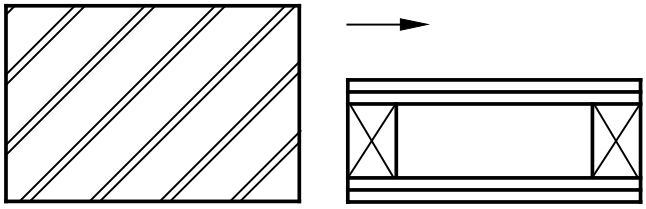


Figure A.128 — Rigid supporting construction to standard flexible

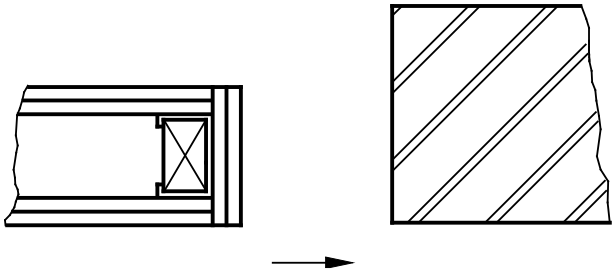


Figure A.129 — Modified (strengthened) flexible supporting to rigid

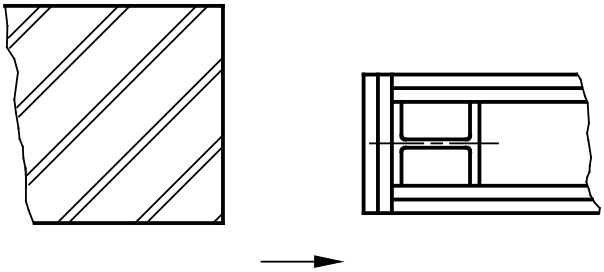
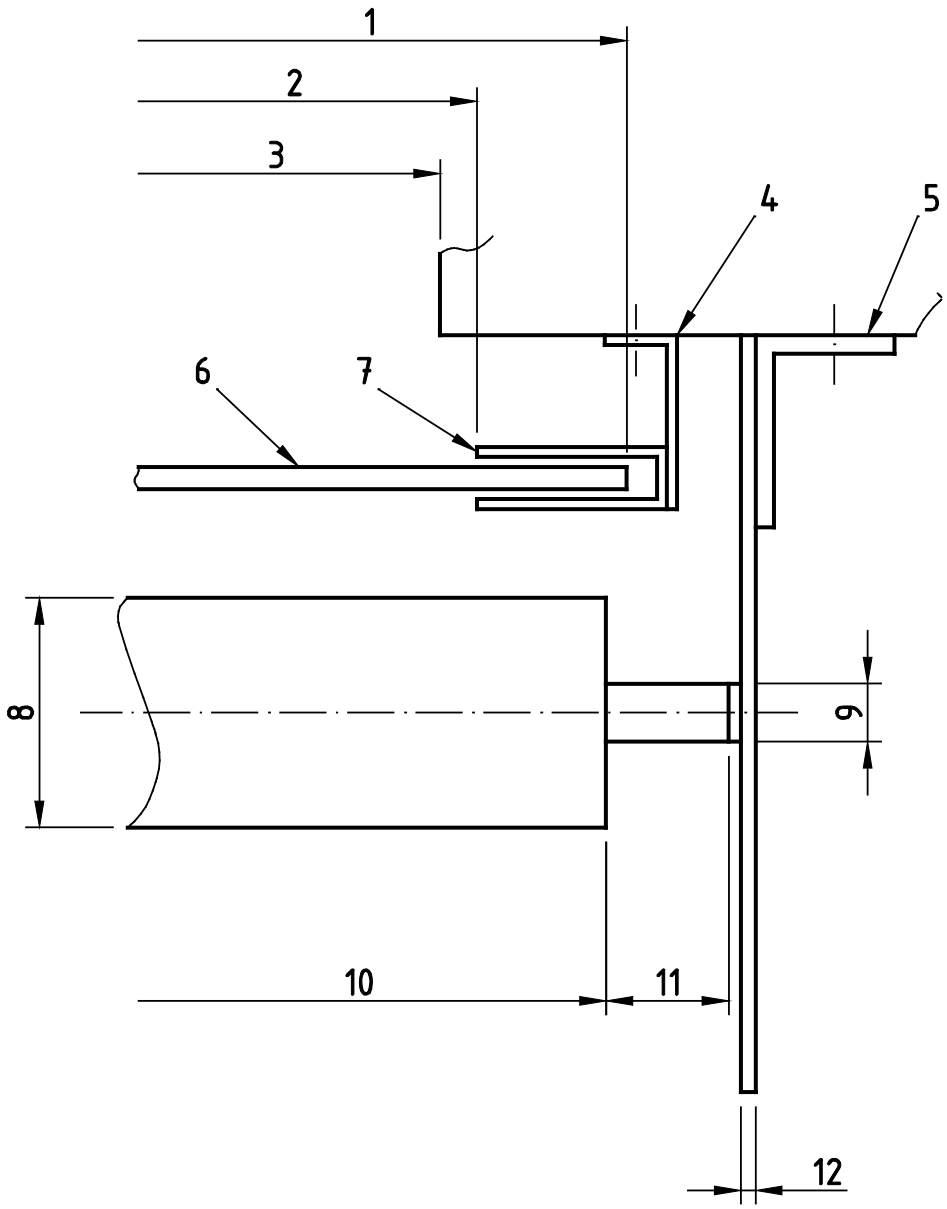


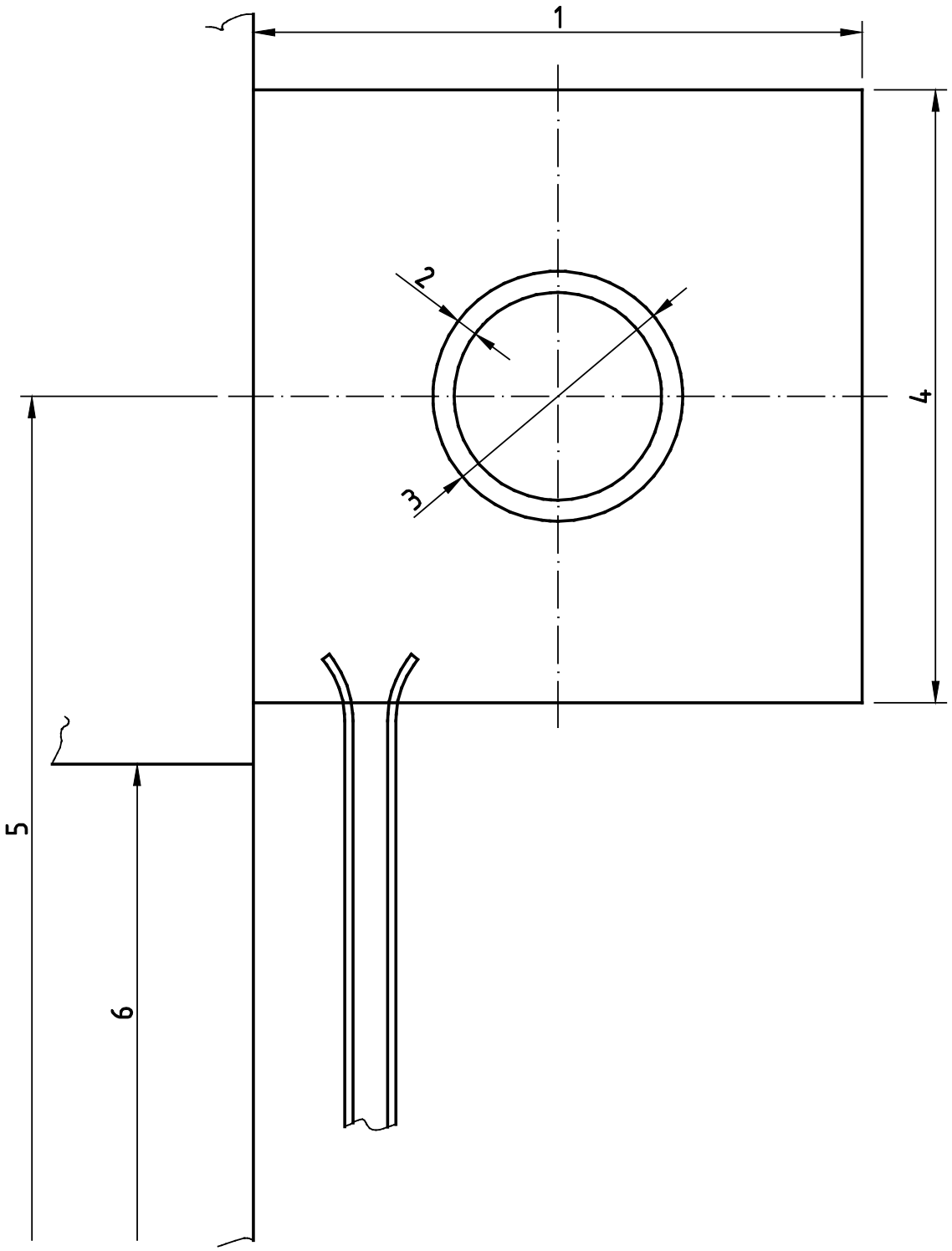
Figure A.130 — Standard supporting construction to structural steel



Key

1 lath length/curtain width
2 width between guides
3 opening width
4 guide fixing angle
5 end plate fixing angle
6 laths
7 guide
8 barrel diameter
9 axle diameter
10 barrel length
11 axel length
12 end plate thickness

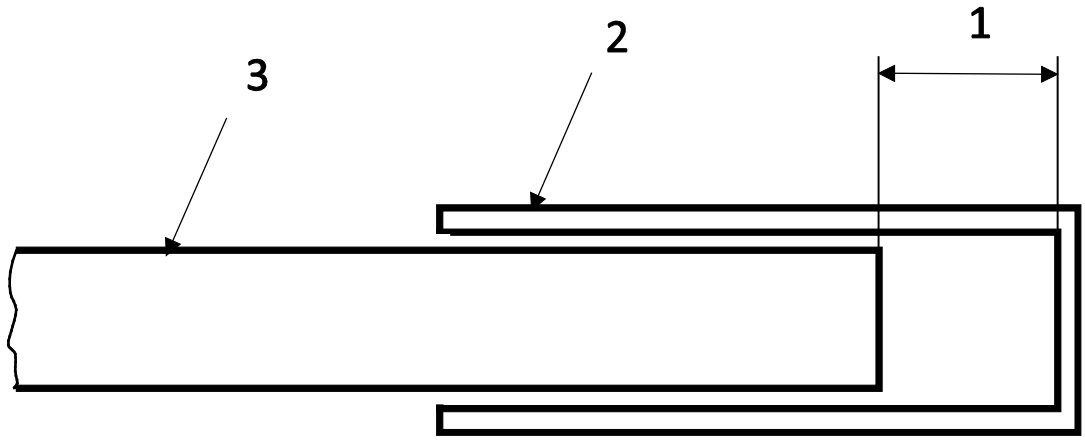
Figure A.131 — General terms and components used in rolling shutter or curtain assembly (partial plan view)



Key

1 end plate width
2 wall thickness
3 barrel diameter
4 end plate height
5 height to centre line of barrel
6 opening height

Figure A.132 — General terms and components used in rolling shutter or curtain assembly (section view)



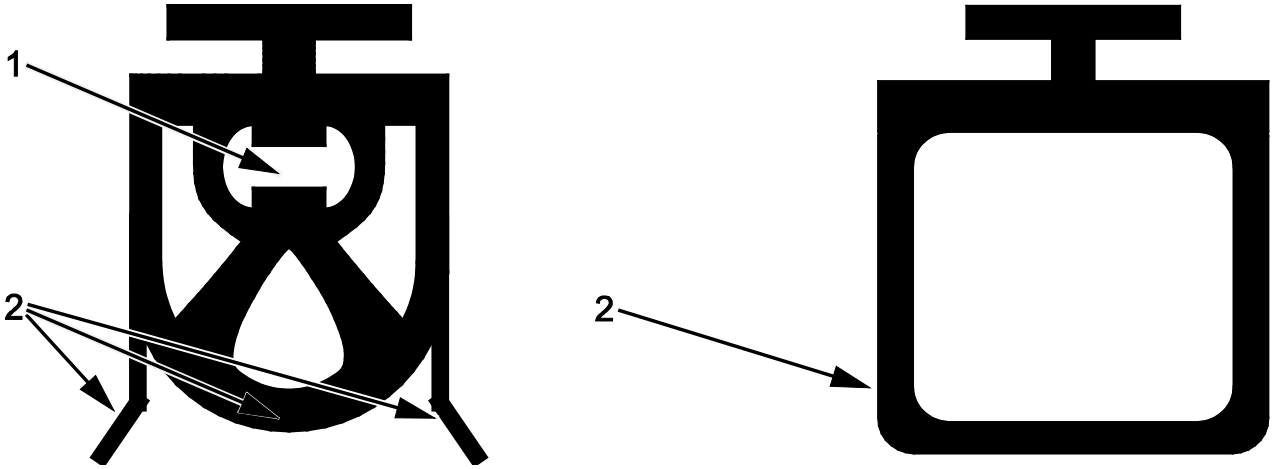
Key

1 expansion allowance

2 guide

3 lath, bottom rail, safety edge or bottom seal

Figure A.133 — Expansion allowance

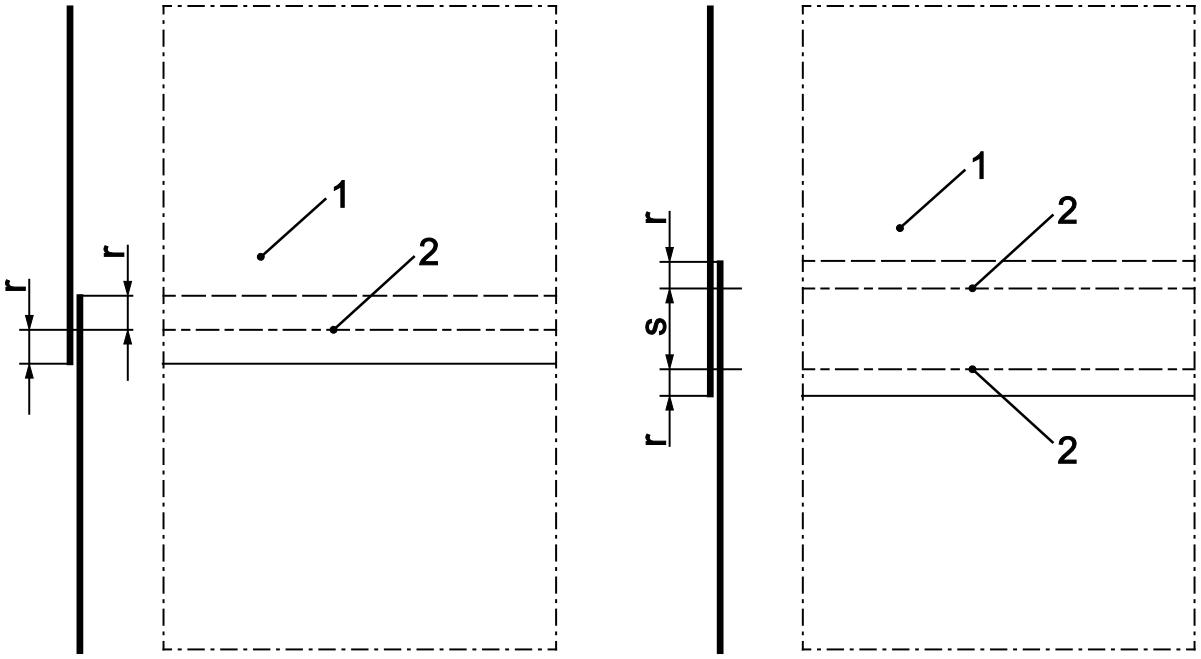


Key

1 safety edge

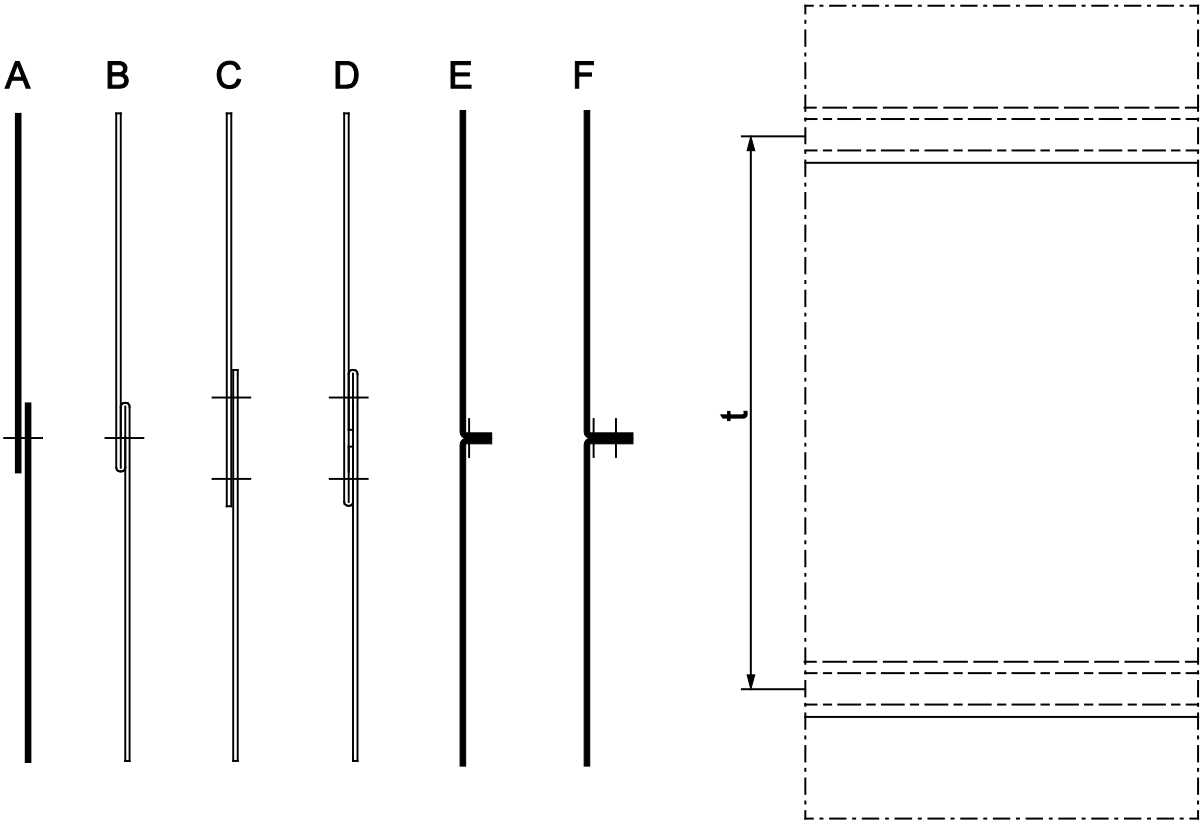
2 bottom sealing

Figure A.134 — Bottom sealing with and without safety edge



a) Single seam

b) Double seam



c) Different kinds of joints

d) Distance between interconnections

Key

1 fabric

2 seam

Figure A.135 — Joint techniques in fabric of curtain

		To					
		A	**B**	**C**	**D**	**E**	**F**
From	**A**		Yes	Yes	Yes	No	No
	B	No		No	Yes	No	No
	C	No	No		Yes	No	No
	D	No	No	No		No	No
	E	No	No	No	No		Yes
	F	No	No	No	No	No	

For A, B, C, D, E, F: see Figure A.135.

Figure A.136 — Seam variation

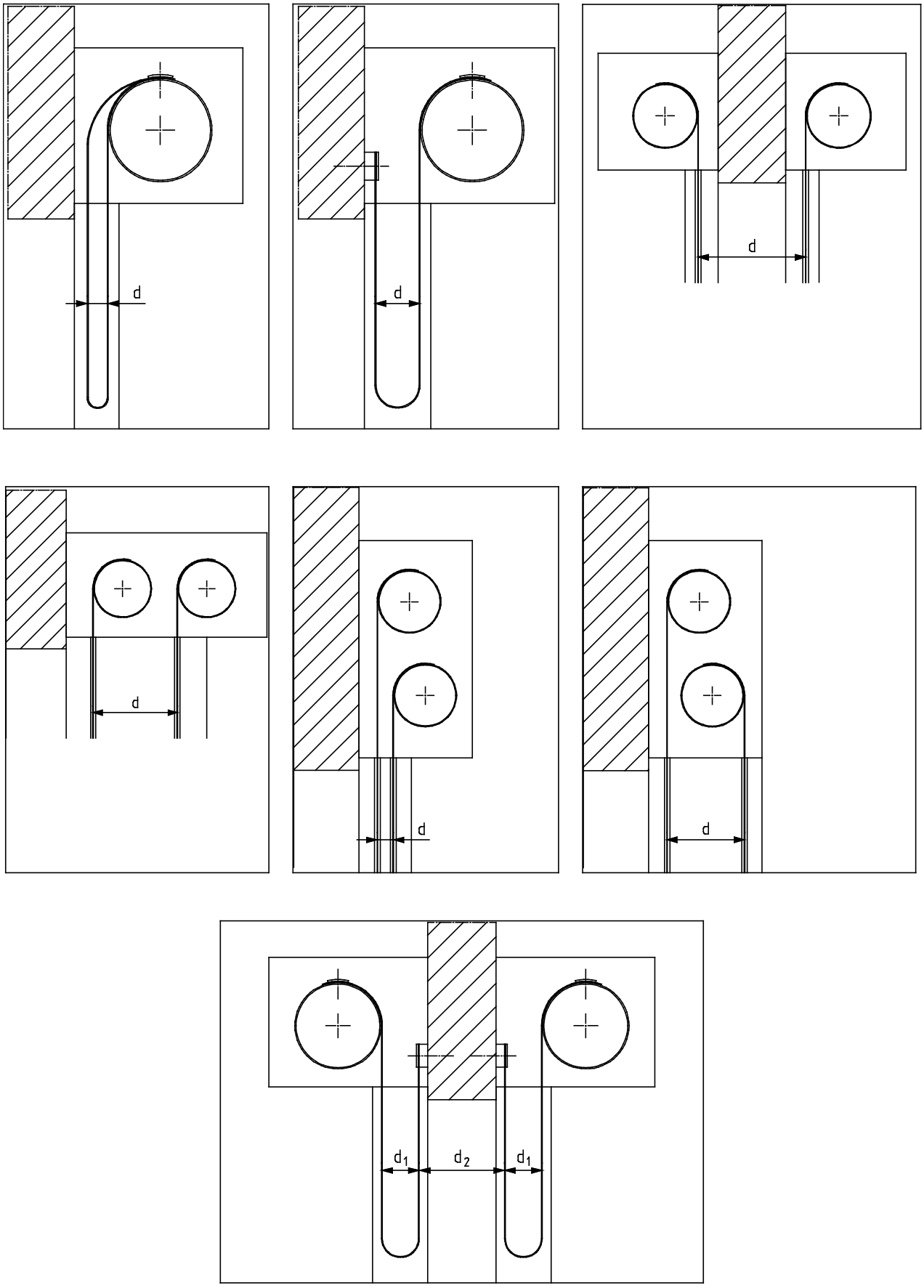


Figure A.137 — Multi fabric curtain system (supplied as a single system)

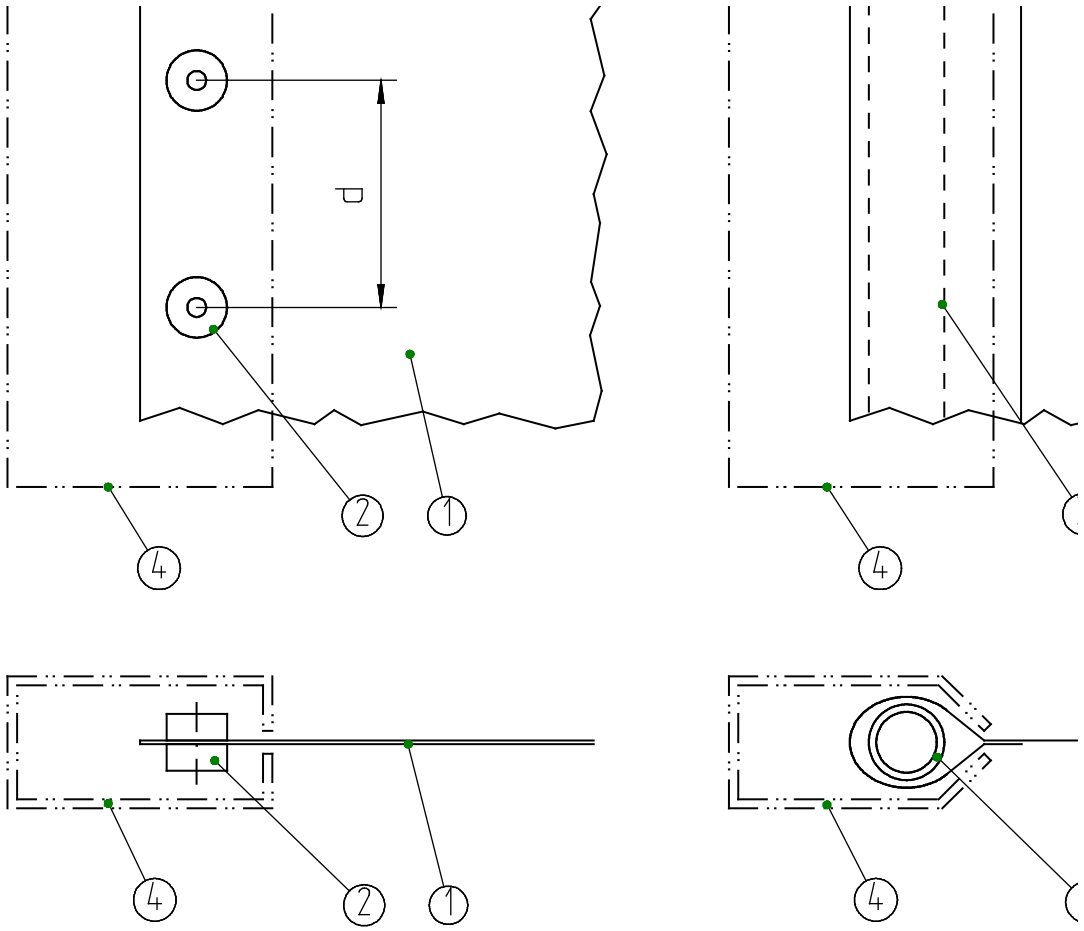


Figure A.138 — Restraining System

Key

1 curtain
2 intermittent restraining system
3 continuous restraining system
4 side guide
d distance of fixings

Annex B
(normative)

Arrangements for hinged and pivoted doorsets incorporating side and/or overpanels

General: For all double leaf doors in Figure B.1 the active leaf is always the left hand leaf.

A successful test on the configuration shown below in Table B.1 will cover the marked variations for timber doorsets in steel frame.

Table B.1 — Timber doorsets in steel frame

Successful tested arrangement	Covered arrangement																																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
1	x	x	x	x	x	x	x	x	x	x	x	x									x	x	x	x								
2		x		x	x	x		x	x	x	x	x									x	x	x	x								
3			x	x	x	x			x	x		x									x	x		x								
4				x	x	x			x	x		x									x	x		x								
5				x	x	x			x	x		x									x	x		x								
6						x			x	x		x									x	x		x								
7	x	x	x	x	x	x	x	x	x	x	x	x									x	x	x	x								
8		x		x	x	x		x	x	x	x	x									x	x	x	x								
9									x																							
10										x		x										x	x	x								
11										x	x	x										x	x	x								
12										x		x										x	x	x								
13													x	x	x	x					x	x	x	x								
14														x	x	x					x	x	x	x								
15														x	x	x					x	x	x	x								
16																x					x	x	x	x								
17	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x								
18		x		x	x	x		x	x	x	x	x		x	x	x		x		x	x	x	x	x								
19	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x								
20		x		x	x	x		x	x	x	x	x		x	x	x		x		x	x	x	x	x								
21									x												x											
22																						x	x	x								
23																						x	x	x								
24																						x	x	x								
25										x	x	x										x	x	x	x	x	x				x	
26										x												x				x					x	
27										x	x	x										x	x	x	x	x	x				x	
28										x												x	x	x		x		x			x	
29										x	x	x										x	x	x	x	x	x	x	x	x	x	x
30												x										x	x	x			x			x	x	x
31																															x	
32																															x	x

A successful test on the configuration shown below in Table B.2 will cover the marked variations for timber doorsets in timber frame.

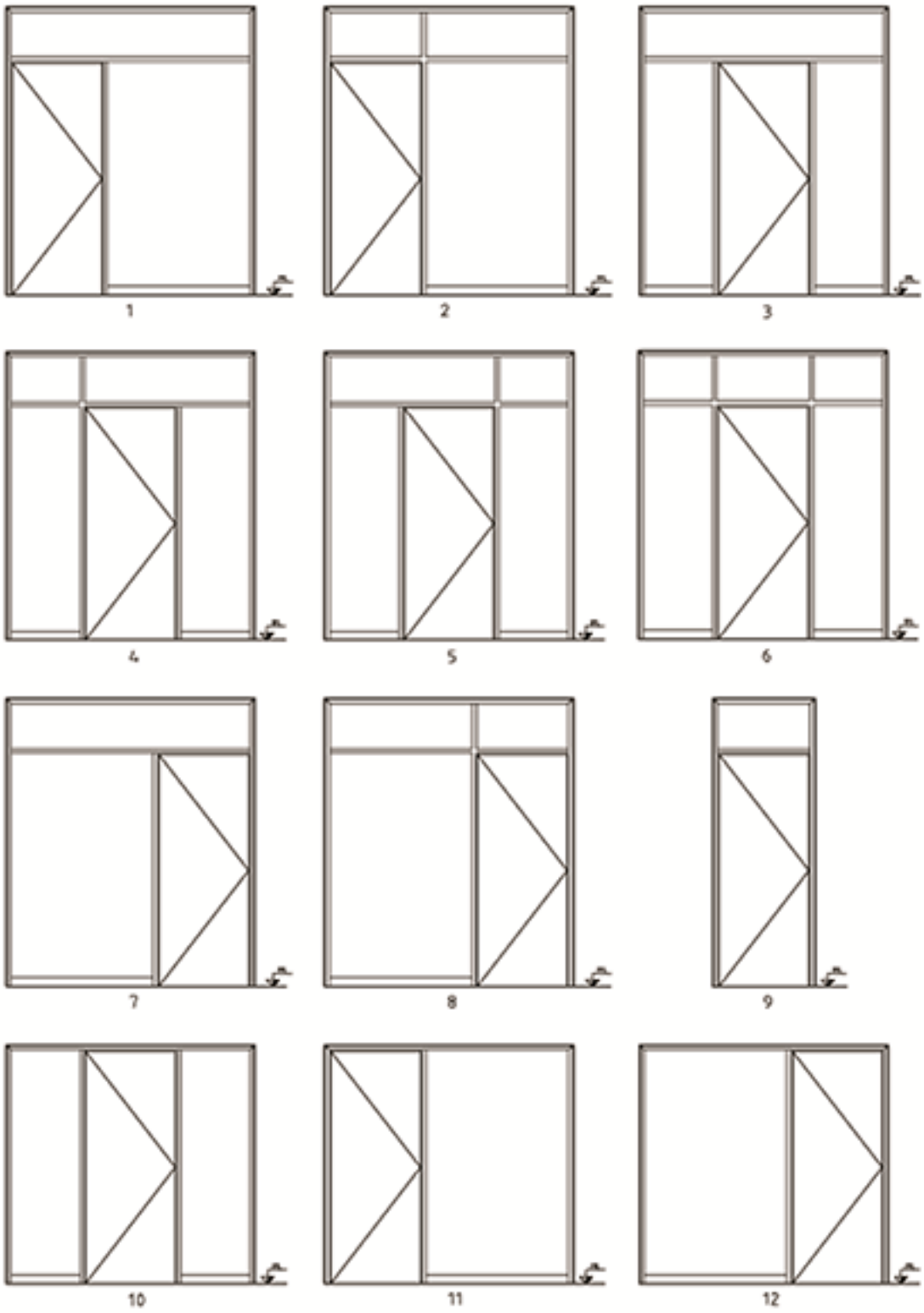
Table B.2 — Timber doorsets in timber frame

Successful tested arrangement	Covered arrangement																																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
1	x	x	x	x	x	x	x	x	x	x	x	x									x	x	x	x								
2		x		x	x	x		x	x	x	x	x									x	x	x	x								
3			x	x	x	x			x	x		x									x	x	x	x								
4				x	x	x			x	x		x									x	x	x	x								
5				x	x	x			x	x		x									x	x	x	x								
6						x			x	x		x									x	x	x	x								
7							x	x	x			x									x	x	x	x								
8								x	x			x									x	x	x	x								
9									x																							
10										x		x										x	x	x								
11										x	x	x										x	x	x								
12												x										x	x	x								
13													x	x	x	x					x	x	x	x								
14														x	x	x					x	x	x	x								
15														x	x	x					x	x	x	x								
16																x					x	x	x	x								
17	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x								
18		x		x	x	x		x	x	x	x	x		x	x	x		x		x	x	x	x	x								
19							x	x	x			x							x	x	x	x	x	x								
20								x	x			x								x	x	x	x	x								
21									x												x											
22										x	x	x										x	x	x								
23										x	x	x										x	x	x								
24										x	x	x										x	x	x								
25										x	x	x										x	x	x	x	x	x				x	
26										x												x	x	x		x					x	
27												x										x	x	x			x				x	
28										x												x	x	x		x		x			x	x
29												x										x	x	x			x		x		x	x
30										x	x	x										x	x	x	x	x	x	x	x	x	x	x
31																															x	
32																															x	x

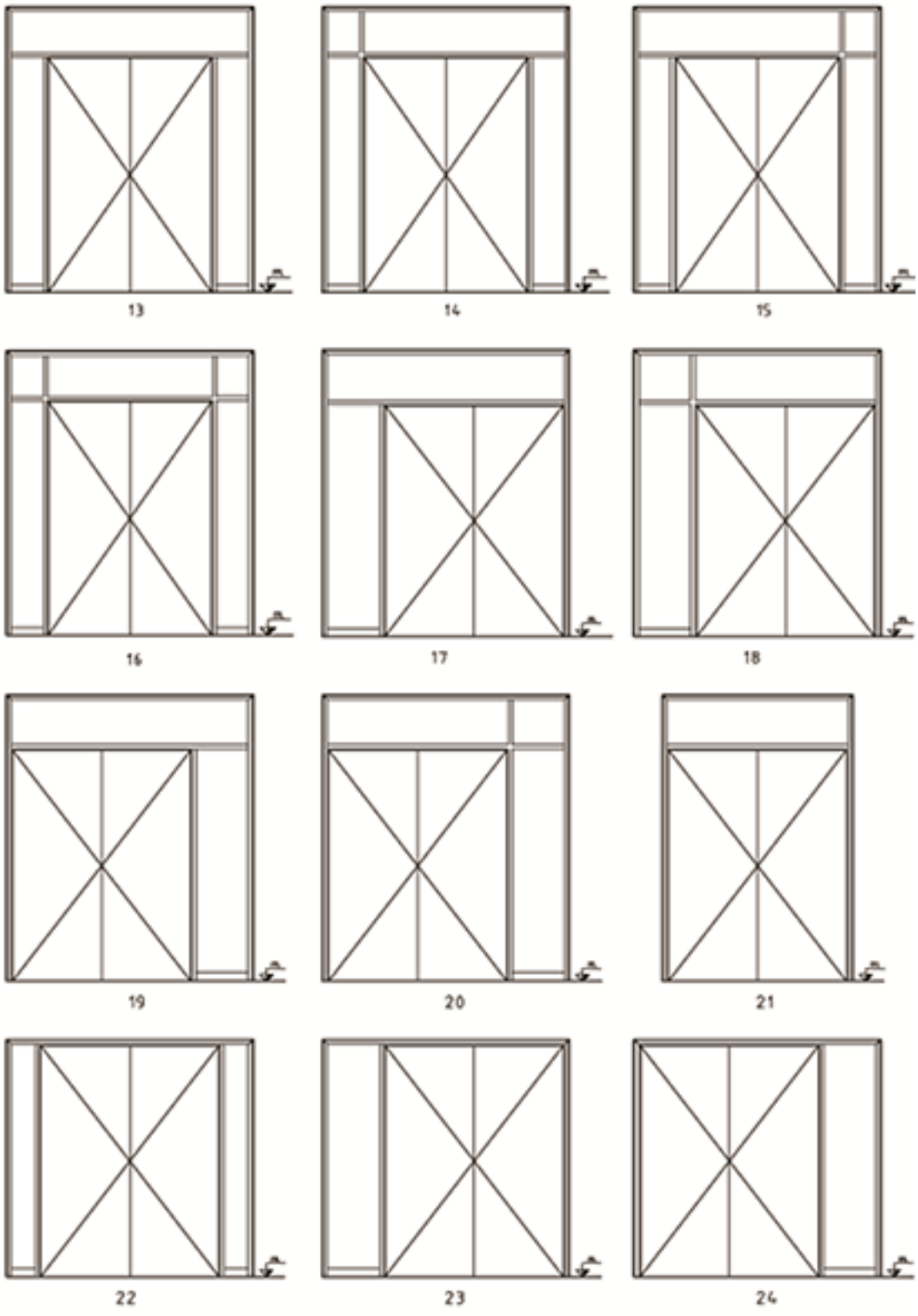
A successful test on the configuration shown below in Table B.3 will cover the marked variations for steel doorsets in steel frame and metal framed doorsets in metal frame.

Table B.3 — Steel doorsets in steel frame and metal framed doorsets in metal frame

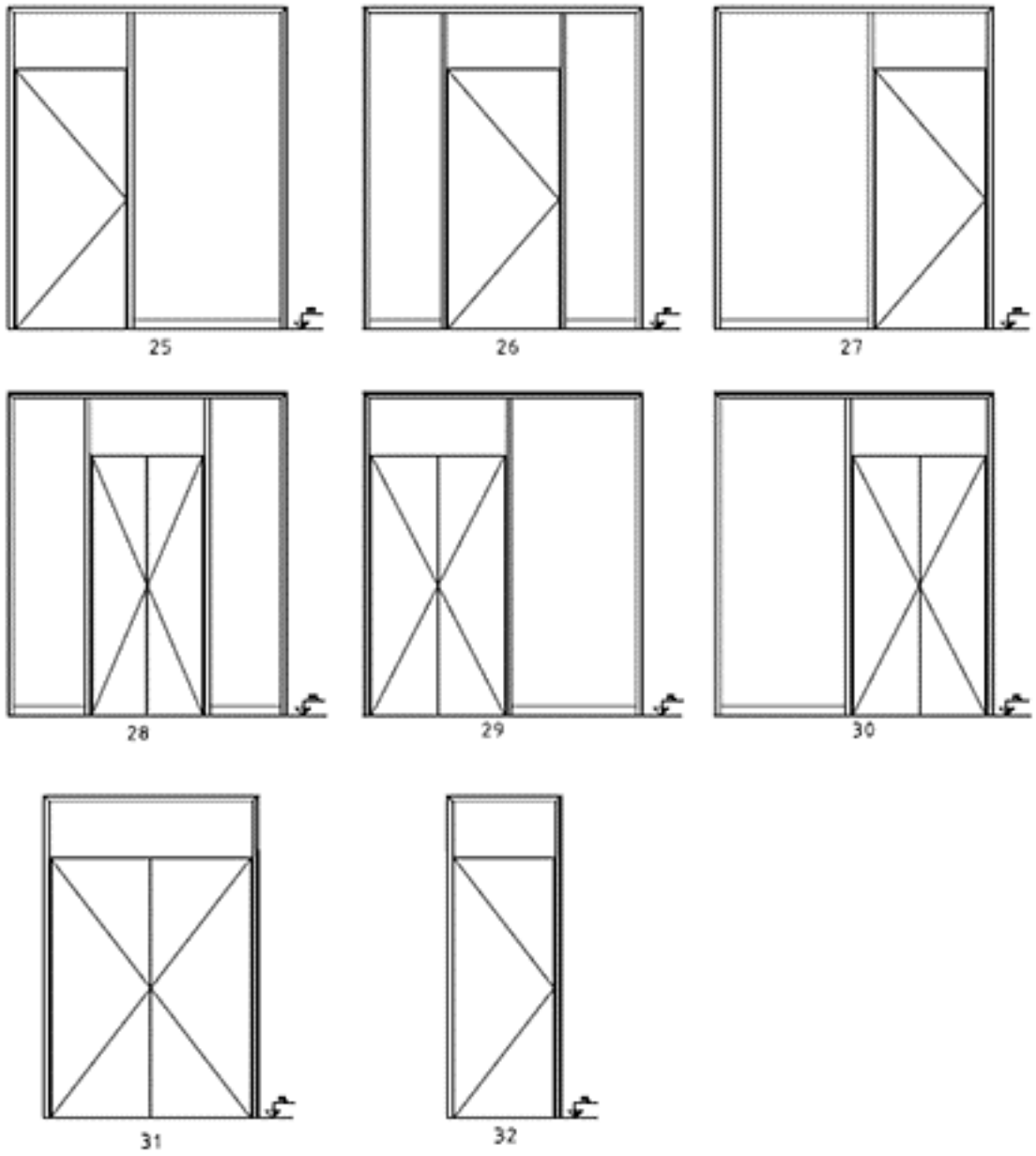
Successful tested arrangement	Covered arrangement																																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
1	x	x	x	x	x	x	x	x	x	x	x	x									x	x	x	x								
2		x		x	x	x		x	x	x	x	x									x	x	x	x								
3			x	x	x	x		x	x	x		x									x	x	x	x								
4				x	x	x		x	x	x		x									x	x	x	x								
5				x	x	x		x	x	x		x									x	x	x	x								
6						x		x	x	x											x	x	x	x								
7			x	x	x	x	x	x	x	x		x								x	x	x	x	x								
8				x	x	x		x	x	x		x								x	x	x	x	x								
9									x																							
10										x	x	x										x	x	x								
11										x	x	x										x	x	x								
12										x	x	x										x	x	x								
13													x	x	x	x					x	x	x	x								
14														x	x	x					x	x	x	x								
15														x	x	x					x	x	x	x								
16																x					x	x	x	x								
17							x	x	x	x	x	x	x	x	x	x	x	x			x	x	x	x								
18								x	x	x	x	x		x	x	x		x		x	x	x	x	x								
19	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x								
20		x		x	x	x		x	x	x	x	x		x	x	x		x		x	x	x	x	x								
21									x												x											
22										x	x	x										x	x	x								
23										x	x	x										x	x	x								
24										x	x	x										x	x	x								
25										x	x	x										x	x	x	x	x	x					
26										x	x	x										x	x	x		x						
27										x	x	x										x	x	x		x	x					
28										x	x	x										x	x	x		x		x		x		
29										x	x	x										x	x	x	x	x	x	x	x	x	x	x
30										x	x	x										x	x	x			x			x		
31																															x	
32																															x	x



a)



b)



c)

Figure B.1

Annex C
(normative)

Calculation methods

The following rules are valid for single and double leaf doors and any kind of industrial doors including curtains, the calculation is based on the length of leaking gaps and/or leakage per unit area.

The subsequent calculation methods can be applied only, if the doors were tested from both sides successfully where

— the area was at least 3 m^2 for single leaf doors and/or 6 m^2 for double leaf doors and

— the door height was minimum 2500 mm

The calculated doors can be classified as S_a and/or S_{200} according to EN 13501-2.

a) For S_a doors:

The calculation can be done, when the tested leakage was not more than 80 % of the allowed leakage, that means 2,4 m^3/h per meter leaking gap length.

The maximum calculated leakage may not be larger than 3 m^3/h per meter gap length according to EN 13501-2.

Easy calculation for S_a of the maximum length of leaking gap:

$$l_{\max} = \frac{Q_l^{\max}}{Q_l^{tested}} \cdot l_{tested} \text{ with } Q_l^{\max} = 3\frac{m^3}{h \cdot m}$$

Definition Leaking gap length:

For pivoted single and double leaf doors and industrial doors the length of the leaking gap includes the gaps on hinge side and lock side and on the top between door leaf and frame. In case of additional gaps within the door leaf e.g. a door within the leaf, the length of these gaps are added.

For any other type of smoke control doors the leaking gap length is calculated by adding the length of any gap between door leaf and frame and between leafs of multi leaf doors except the gap on the bottom to the floor and the length of any connection without a sealing between parts of door leafs.

b) For S_{200} doors (excluding fabric curtains):

The calculation can be done, when the tested leakage was not more than 80 % of the allowed leakage. For single leaf doors this is 16 m^3/h and for double leaf doors 24 m^3/h. The following conditions shall both be fulfilled. If one calculation gives a smaller door then the other, the smaller door is possible only.

The maximum calculated leakage may according to EN 13501-2 not be larger than 20 m^3/h for single leaf doors and 30 m^3/h for double leaf doors.

1) Based on area:

The maximum leakage is divided by the area of test specimen to get the leakage per m². The leakage per m² is multiplied with the area of the increased door. The maximum area can be calculated as follows:

$$area_{\max} = \frac{Q_{spec}^{\max}}{Q_{spec}^{tested}} \cdot area_{tested} \text{ with } Q_{spec}^{\max} = 20\frac{m^3}{h} \text{ or } Q_{spec}^{\max} = 30\frac{m^3}{h}$$

The area is calculated as area of clear opening.

2) Based on length of leaking gap:

The maximum leakage is divided by the length leaking gap squared (l^2) of test specimen to get leakage per gap length. The leakage per gap length is multiplied with the length of leaking gap squared (l^2) of the increased door. The maximum gap length can be calculated as follows:

$$l_{\max} = \sqrt{\frac{Q_{spec}^{\max}}{Q_{spec}^{tested}} \cdot l_{tested}^2} \text{ with } Q_{spec}^{\max} = 20\frac{m^3}{h} \text{ or } Q_{spec}^{\max} = 30\frac{m^3}{h}$$

For any other type of smoke control doors the leaking gap length l is calculated by adding the length of any gap between door leaf and frame and between leafs of multi leaf doors including the gap on the bottom to the floor and the length of any connection without a sealing between parts of door leafs.

NOTE The calculation is based on the square of the gap length to consider additional effects due to deformation of doors at high temperature.

Annex D
(normative)

Stress calculation method for metal rolling shutter and fabric curtain assemblies

The general methodology for checking the proposed specifications is based on accepted engineering principles for calculation of stresses and/or strains.

The values for material properties such as Young's Modulus shall be taken from manufacturer's material data sheet or general sources like EN 1993-1-2 for ambient temperature (20°C) for S_a or for 200 °C for S_{200}.

NOTE For clarification of terms used in these calculations, refer to Figures A.131 and A.132.

The stress in the various loadbearing components including fixings of the tested rolling shutter resp. curtain assemblies can be calculated using the basic engineering methodology outlined in the examples given in Annex E, as applicable. The calculated stresses in the tested components shall be used as the limiting stress for those same components in any assessment calculations that are carried out for the parameter variation.

Annex E
(informative)

Examples for stress calculations for load-bearing components of metal rolling shutter and fabric curtain assemblies

E.1 Barrel calculations

By calculating the moment of inertia (I_B) and section modulus (Z_B) for the barrel, the barrel bending stress (σ_B) can be calculated assuming free deflection.

$$\text{Curtain weight } (W_L) = \left[\left(\frac{\pi\ D_B \times L_L}{2}\right) + \left(L_L \times h_{SA}\right)\right] \times \left[\rho_L\right] \text{ (kg)}$$

where

D_B = Barrel outside diameter (m)

L_L = Lath length (m)

h_{SA} = Height of shutter/curtain aperture (m)

ρ_L = Weight per unit area of lath (kg/m²)

$$\text{Barrel assembly weight } (W_{BA}) \text{ (N)} = \left[\left(W_B + W_L\right) \times \left(9.81\right)\right]$$

where

W_B = Weight of barrel including springs, axles, tubular motor, etc. (kg)

W_L = Full weight of curtain including bottom rail (kg)

$$\text{Barrel moment of inertia } (I_B): = \left[\left(\frac{\pi\ {D_B}^4}{64}\right) - \left(\frac{\pi\ \left(D_B - 2t_B\right)^4}{64}\right)\right] \quad \left(\text{mm}^4\right)$$

where

D_B = Barrel outside diameter (mm)

t_B = Barrel wall thickness (mm)

$$\text{Barrel section modulus } (Z_B): = \left[\frac{I_B}{D_B/2}\right] \quad \left(\text{mm}^3\right)$$

where

I_B = Barrel moment of inertia (mm⁴)

D_B = Barrel outside diameter (mm)

$$\text{Barrel stress } (\sigma_B): = \left[\frac{W_{BA} \times L_B}{8 \times Z_B} \right] \quad \left(\text{N/mm}^2 \right)$$

where

W_{BA} = Barrel assembly weight (N)

L_B = Barrel length (mm)

Z_B = Barrel section modulus (mm^3)

Substituting the deformation factor (E_B) for Young's Modulus then allows a value for theoretical barrel deflection to be calculated.

$$\text{Free deflection of barrel } (d_B): = \left[\left(\frac{5}{384} \right) \times \left(\frac{W_{BA} \times {L_B}^3}{E_B \times I_B} \right) \right] \quad \left(\text{mm} \right)$$

where

W_{BA} = Barrel assembly weight (N)

L_B = Barrel length (mm)

E_B = Barrel deformation factor (N/mm^2)

I_B = Barrel moment of inertia (mm^4)

E.2 Barrel support bracket calculations

Support brackets may be required to limit effects of barrel deflection during test conditions for example:

a) For metal rolling shutter resp. curtain assemblies without a casing where the calculated barrel deflection leads to a reduction of the distance between the underside of the barrel and the underside of the lintel being less than that distance observed at the end of the classification period.

b) For metal rolling shutter resp. curtain assemblies with a casing where the calculated barrel deflection exceeds the distance between the underside of the barrel and the bottom of the casing.

The barrel support system calculation methodology uses the general principle of a balanced system in which the theoretical barrel deflection is reduced to an acceptable level by supporting the barrel with one or more barrel support brackets.

When barrel support brackets are used in only one location, the support brackets at that location shall be capable of supporting at least 62,5 % of the barrel assembly weight. Where barrel support brackets are used at two locations, the support brackets at each location shall be capable of supporting at least 31,25 % of the barrel assembly weight.

The following formulae calculate the maximum load that can be supported by a given number of brackets. Wr 1 is the maximum theoretical load that can be supported, Wr 2 is the self-load of the bracket, and Wr 3 is the load applied by the casing. The maximum total load that can then be supported is Wr_{Total}. It should be noted that brackets may be positioned at no more than two locations. Where a single bracket is required it shall be placed at the location of largest deflection. Where brackets are required at two locations they shall be at a maximum of 20 % of the barrel length apart, and they shall be equally spaced at the location of largest deflection.

Barrel support stress:

$$\text{Wr 1 (bracket potential support):} = \left[\frac{I_{SB} \times \sigma_{SB} \times n}{a \times y}\right] \quad \text{(N)}$$

where

I_{SB} = Support bracket moment of inertia (mm^4)

σ_{SB} = Support bracket maximum stress (N/mm^2)

n = Number of barrel supports

a = Distance between centreline of axle and rear of barrel support bracket (mm)

y = Distance between barrel support centre of gravity and the point of highest stress (mm)

$$\text{Wr 2 (bracket component):} = \left[\frac{b \times A_{SB} \times 7.85 \times g \times n}{10^6}\right] \quad \text{(N)}$$

where

b = Barrel support length (mm)

A_{SB} = Support bracket cross-sectional area (mm^2)

n = Number of barrel supports

g = 9,81 (ms^{-2})

$$\text{Wr 3 (casing hood component):} = \left[\frac{t_{CH} \times L_{CH} \times b \times 7.85 \times g}{10^6}\right] \quad \text{(N)}$$

where

t_{CH} = Casing thickness (mm)

L_{CH} = Casing length (mm)

b = Casing soffit length (mm)

g = 9,81 (ms^{-2})

Wr_{Total} = Wr 1 – Wr 2 – Wr 3 (N)

If there are no supports required 'Wr_{Total}' equals 0. If supports are required 'Wr_{Total}' equals the sum of Wr 1, Wr 2, and Wr 3.

If barrel support brackets are required, the following shall apply:

$$Wr_{Total} \geq (W_{BA} \times 0{,}625)/n$$

where

W_{BA} = Barrel assembly weight (N)

n = Number of barrel support brackets

E.3 Axle calculations

The resultant load on each axle is calculated:

$$\text{Axle section modulus } (Z_A): \left[\frac{{D_A}^3 \times \pi}{32}\right] \text{ (mm}^3\text{)}$$

where

D_A = Axle diameter (mm)

From this the resultant bending and shear stress in the proposed axle can be calculated.

$$\text{Axle bending stress } (\sigma_{A1}): = \left[\frac{\left(W_A + (g \times W_{AL})\right) \times L_A}{Z_A}\right] \text{ (N/mm}^2\text{)}$$

where

W_A = 50 % of barrel assembly weight (N)

W_{AL} = Motor weight (kg)

L_A = Axle length (mm)

Z_A = Axle section modulus (mm^3)

g = 9,81 (ms^{-2})

$$\text{Axle shear stress } (\sigma_{A2}): = \left[\frac{4 \times \left(W_A + (g \times W_{AL})\right)}{{D_A}^2 \times \pi}\right] \text{ (N/mm}^2\text{)}$$

where

W_A = 50 % of barrel assembly weight (N)

W_{AL} = Motor weight (kg)

D_A = Axle diameter (mm)

Sufficient allowance shall be made in the axle bearing design for the movement of the end of the axle due to thermal expansion and deflection of the barrel.

E.4 Endplate calculations

Only the bending stress in the endplates is considered, as a rolling shutter resp. curtain assembly stability failure would occur by excessive bending of the endplate prior to any shear failure occurring. The bending stresses are calculated as follows:

Weight of fixing angle (W_{EEL}): $= \left[\frac{h_E \times A_{FA} \times \rho_{Steel} \times g}{1 \times 10^9} \right]$ (N)

where

h_E = Endplate height (mm)

A_{FA} = Fixing angle cross-sectional area (mm²)

ρ_{steel} = density of steel = 7850 kg/m³

g = 9,81 (ms⁻²)

Endplate horizontal cross-sectional area (A_E) $= \left[w_E \times t_E \right]$ (mm²)

where

w_E = Endplate width (mm)

t_E = Endplate thickness (mm)

The area and length correction factors give a value that describes the relationship between the endplate fixing angle and the endplate.

Area correction factor (ϕ): $= \left[\frac{A_{FA}}{A_E} \right]$ (dimensionless)

where

A_{FA} = Fixing angle cross-sectional area (mm²)

A_E = Endplate cross-sectional area (mm²)

Length correction factor (φ): $= \left[\frac{L_{FA}}{w_E} \right]$ (dimensionless)

where

L_{FA} = Fixing angle leg length (attached to endplate) (mm)

w_E = Endplate width (mm)

Endplate bending stress (σ_{EB}): $= \left[\frac{\left(W_E \times L_E\right) + \left(W_M \times L_M\right)}{\gamma \times w_E \times t_E^2 / 6} \right] \left(N/mm^2\right)$

where

W_E = 50 % of barrel assembly weight (N)

L_E = Axle end bearing length (mm)

W_M = Load on endplate due to motor (N)

L_M = Effective motor shaft length (mm)

γ = $\left[1 + \phi + \varphi \right]$ (dimensionless)

t_E = Endplate thickness (mm)

Endplate self-weight weight (W_{ESL}): $= \left[\frac{h_E \times w_E \times t_E \times \rho_{Steel} \times g}{1 \times 10^9} \right]$ (N)

where

h_E = Endplate height (mm)

w_E = Endplate width (mm)

t_E = Endplate thickness (mm)

ρ_{steel} = density of steel = 7850 kg/m^3

g = 9,81 (ms^{-2})

Eccentric loading (W_{EL}): $= \left[W_A + W_{AL} \right]$ (N)

where

W_A = 50 % of barrel assembly weight (N)

W_{AL} = Weight on endplate from motor (N)

Total endplate load (W_T): $= \left[W_{EL} + W_{ESL} + W_{EEL} \right]$ (N)

where

W_{EL} = Eccentric loading (N)

W_{ESL} = Endplate self-weight (N)

W_{EEL} = Fixing angle weight (N)

Shear stress in all endplate fixing bolts (τ_{EFB}) $= \left[\frac{W_T}{n_B \times a_B} \right]$ (N/mm²)

where

W_T = Total endplate weight (N)

n_B = Number of bolts

a_B = Area of bolt taken at root diameter (mm²)

Tensile force in top endplate fixing bolt (F_{EFB})

$$= \left[\frac{\left[\left(W_{AL} \times y_{AL} \right) + \left(W_A \times y_A \right) + \left(W_{ESL} \times y_{ESL} \right) + \left(W_{EEL} \times y_{EEL} \right) \right] \times y_{EFBN}}{\left({y_{EFB1}}^2 + {y_{EFB2}}^2 + ... + {y_{EFBN}}^2 \right)} \right] \text{ (N)}$$

where

W_{AL} = Motor weight (N)

y_{AL} = Distance from wall to motor centreline (mm)

W_A = 50 % of barrel assembly weight (N)

y_A = Distance from wall to axle centreline (mm)

W_{ESL} = Endplate self-weight (N)

y_{ESL} = Distance from wall to endplate centreline (mm)

W_{EEL} = Fixing angle weight (N)

y_{EEL} = Distance from wall to endplate fixing angle centreline (mm)

$y_{EFB1\ to\ N}$ = Distance from bottom of endplate to each fixing bolt, where N is the total number of bolts counting from bottom to top.(mm)

Tensile stress in top endplate fixing bolt (σ_{EFB}) $= \left[\frac{F_{EFB}}{a_{EFB}} \right]$ (N/mm²)

where

F_{EFB} = Tensile force in top endplate fixing bolt (N)

a_{EFB} = Area of top endplate fixing bolt (mm²)

The maximum principle stresses in the bolts resulting from the combined stresses can then be calculated.

Maximum principle tensile stress in top endplate fixing bolt

$$\sigma_{EFBmax} = \left[\frac{\sigma_{EFB}}{2} + \frac{1}{2} \sqrt{{\sigma_{EFB}}^2 + 4{\tau_{EFB}}^2} \right] \text{ (N/mm²)}$$

Maximum principle shear stress in top endplate fixing bolt $\tau_{\mathrm{EFBmax}} = \frac{1}{2}\sqrt{\sigma_{\mathrm{EFB}}{}^{2} + 4\tau_{\mathrm{EFB}}{}^{2}}$ (N/mm²)

where

τ_{EFB} is the shear stress in all endplate fixing bolts; and

σ_{EFB} is the tensile stress in top endplate fixing bolt.