BS EN 15269-2:2012

BSI Standards Publication

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 2: Fire resistance of hinged and pivoted steel doorsets

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National foreword

This British Standard is the UK implementation of EN 15269-2:2012.

The UK participation in its preparation was entrusted to Technical Committee FSH/22/-/5, Fire resistance tests for doors.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

ISBN 978 0 580 64316 3

ICS 13.220.50; 91.060.50

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 December 2012.

Amendments issued since publication

Date	Text affected

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 15269-2

September 2012

ICS 13.220.50; 91.060.50

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 2: Fire resistance of hinged and pivoted steel doorsets

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 fenêtres, y compris leurs éléments de quincaillerie - Partie 2: Résistance au feu des blocs-portes battants et pivotants en acier

Erweiterter Anwendungsbereich von Prüfergebnissen zur Feuerwiderstandsfähigkeit und/oder Rauchdichtigkeit von Türen, Toren und Fenstern einschließlich ihrer Baubeschläge - Teil 2: Feuerwiderstandsfähigkeit von Drehflügeltüren aus Stahl

This European Standard was approved by CEN on 20 July 2012.

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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Ref. No. EN 15269-2:2012: E

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Foreword

This document (EN 15269-2:2012) has been prepared by Technical Committee CEN/TC 127 “Fire safety in buildings”, the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by March 2013, and conflicting national standards shall be withdrawn at the latest by March 2013.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

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

EN 15269, *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,* consists of the following parts:

— *Part 1: General requirements*

— *Part 2: Fire resistance of hinged and pivoted steel doorsets* (the present document)

— *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*[1)]

— *Part 6: Fire resistance of sliding timber doorsets*[1)]

— *Part 7: Fire resistance of sliding steel doorsets*

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

— *Part 11: Fire resistance of operable fabric curtains*[1)]

— *Part 20: Smoke control for hinged and pivoted steel, timber and metal framed glazed doorsets*

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1) In preparation.

Introduction

This document is one of a series of standards 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 European Standards may also be used to identify the best selection of test specimens required to cover a wide range of product variations.

Before there can be any consideration for extended application, the doorset will need to have been tested in accordance with EN 1634-1 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.

1 Scope

This European Standard covers single and double leaf, hinged and pivoted, steel based doorsets. It prescribes the methodology for extending the application of test results obtained from fire resistance test(s) conducted in accordance with EN 1634-1.

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

— integrity (E), integrity/radiation (EW) or integrity/insulation (EI_1 or EI_2) classification;

— door leaf;

— ventilation grilles and/or louvres

— wall/ceiling fixed elements (frame/suspension system);

— glazing for door leaf, side, transom and flush over panels;

— items of building hardware;

— decorative finishes;

— intumescent, smoke, draught or acoustic seals;

— alternative supporting construction(s).

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

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

EN 1634-2, *Fire resistance and smoke control tests for door, shutter and openable window assemblies and elements of building hardware — Part 2: Fire resistance characterisation test for elements of building hardware*

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

EN 15254-4:2008+A1:2011, *Extended application of results from fire resistance tests — Non-loadbearing walls — Part 4. Glazed constructions*

EN 15269-1:2010, *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*

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN1363-1, EN ISO 13943, EN 1634-1, EN 1634-2 and EN 15269-1 and the following apply.

3.1
full scale test
test of a full size doorset in accordance with EN 1634-1

3.2
small scale test
test on elements of building hardware in accordance with EN 1634-2 and where the decision process, given in EN 1634-2, permits its use

3.3
effective rebate depth
dimension of the door leaf thickness of overlapping adjacent edges of door leaf relative to the door frame, transom or side panel or other door leaf flush overpanel

Note 1 to entry: At the meeting edges and for rebated leaves this dimension will be the rebate where the intumescent seal is fitted or, if no seal is fitted, the depth of the largest rebate.

Note 2 to entry: An example is shown in Figure C.1.

3.4
panel
component of a door leaf separated from other elements by joints which break through the total door thickness

Note 1 to entry: A door leaf can consist of one or more panels.

4 Determination of the field of extended application

4.1 General

4.1.1 Before there can be any consideration for extended application, a representative doorset shall have been tested and classified in accordance with EN1634-1 and EN 13501-2 respectively in order to establish a classification for the doorset.

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 1634-1, including those lower than the test duration. However, this shall never lead to an increased classification for any specific parameter beyond that achieved during any one test unless specifically identified in the relevant Construction Parameter Variation tables.

4.1.3 If, when following the extended application procedure, any part of the classified product cannot be covered by the extended application rules, that part shall be omitted from the subsequent extended application report and classification report.

4.2 How to use extended application rules in Annex A

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 Annex A.

4.2.3 Review the type of classification to be retained from column (3) and establish from the contents of column (4) whether any extended application is available beyond the direct application rules in EN 1634-1 without the need for further testing.

4.2.4 Where this is deemed possible, it can be recorded in the extended application report together with any appropriate restrictions and the stated rules from column (4) of Annex A.

4.2.5 Where the variations required can only be achieved from additional testing, the additional test can be made on a similar specimen type i.e. a doorset of the same or more onerous configuration where the leaf construction is fundamentally the same as tested. Alternatively, column (5) 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 an extended field of application from a single test. However, if a manufacturer intends to produce a range of doors incorporating single doors and also double doors, with or without side, transom or flush over panels, with or without glazing, with or without louvres or ventilation grilles, with alternative elements of building hardware, etc., it is recommended that careful consideration be given to the complete range of doorset designs and options in order to minimise 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 Determine which are the most important specification requirements and incorporate as many as possible into the specimen(s) for the first tests in the series.

4.3.4 Conduct the first fire resistance test or a series of tests and then establish which of the original desired parameter variations have not been covered by the fire resistance tests, including direct application possibilities.

4.3.5 Identify these parameter variations in Annex A and establish if any extended application is possible without further testing.

4.3.6 Record this for the extended application report together with any restrictions and rules given in column (4) in Annex A.

4.3.7 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 4.3.5.

4.3.8 Determine if the product range is to include only single leaf doorsets or if the range is to also include double leaf configurations. Where only single doorsets are to be part of the product range, the outstanding construction parameter variations shall only be incorporated into specimens for the single leaf doorsets. Where single leaf and double leaf doorsets are to be included in the product range, the outstanding construction parameter variations for the extended application of single leaf doorsets may be incorporated into either repeated single leaf doorset tests or, in the weakest option, as defined in column (5) of the table in Annex A, double leaf doorset configurations.

4.3.9 Select the required outstanding parameter variations from column (1) and column (2) of Annex A and observe from column (5) in Annex A 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 4.3.8 and 4.3.9 above, then an appropriate test or tests may be repeated with the additional product variations incorporated.

4.4 Analysis of test results

4.4.1 In order to maximise the extended field of application, it is important that the test reports shall record details of any premature integrity and/or insulation failure also record details of any distortion to evaluate low, medium and high distortion (see Annex A).

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 premature failure has been attributed to one or more specific construction parameter variations.

4.4.3 Where it has been possible to identify specific parameter failures, the extended application for all other construction parameter variations can be based on the performance achieved after isolating the premature failure(s).

5 Extended application report

Prepare an extended application report in accordance with the requirements of EN 15269-1:2010, Clause 6 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 presented in accordance with EN 13501-2.

Annex A
(normative)

Construction parameter variations

The table below is designed to be used by experts competent in the field of fire resistance testing of hinged and pivoted steel doorsets.

The table shall only be used to assess a field of extended application when at least one positive fire resistance test to EN 1634-1 has generated a classification according to EN 13501-2.

The first two columns identify possible variations to the construction details of the specimen tested.

The influence of variation on performance characteristic is identified from column (3) as integrity, insulation or radiation (E, I or W respectively). For some parameters, it is necessary to evaluate whether the specimen displayed a high, medium or low level of distortion during the test. Where this is the case, the following levels shall be used to establish high, medium and low distortion doorsets as measured using the maximum relative movement at any position between the edge of the door leaf and door frame or between the meeting edges of door leaves or the relative movement of the framing members for panelled systems. The measurements shall be taken from the start of the test at any time during the complete required classification period. The deflections shall be measured at the positions given in EN 1634-1:

— low <40 % of effective rebate depth;

— medium ≥ 40 % and ≤ 85 % of effective rebate depth;

— high >85 % of effective rebate depth.

The effect of the change in each parameter is evaluated for each characteristic in column (3) under E for effects on integrity, I for effects on insulation (whether an I1 or I2) and W for the effects on radiation.

These evaluations lead to the judgement of the possibility of extending the field of application, the results of which are given in column (4). In certain cases in column (4), it is a requirement to achieve Category B, the requirements for which are given in EN 1634-1.

Where additional tests are deemed to be necessary, the type of specimen approved for incorporation of the changed parameter is defined in column (5). 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.

Where an additional test is required in column (5), the test is a full scale test with the specimen opening outwards (away from the furnace) unless otherwise specified.

In order to maximise the possible field of application from a minimum number of tests, the parameter changes have been spread over a series of test specimens. The recommended tests for each parameter is dependant upon the classification required and the preferred direction of testing as indicated in column (5).

Where more than a single parameter variation is required, the influence on other variations shall also be taken into account.

Table A.1 — Construction parameter variations

Key to symbols in column (3) (which is informative only)

> - higher performance anticipated
< - lower performance anticipated
= - no significant change in performance anticipated
≥ - equal or higher performance anticipated
≤ - equal or lower performance anticipated
>=< - the influence on performance could be worse, equal or better hence variations not possible unless specific, limited conditions are identified

Construction Parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional Evidence Required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
A Door leaf In certain cases, the rules given in Section A are also appropriate to side, transom and flush over panels or the door frame. Where this is the case, it is clearly indicated at the beginning of the relevant section. For double leaf doorsets, both leaves shall be of the same basic construction.						
A.1 General						
A.1.1 Number of leaves **- See Figure A.1** only applicable to doorsets tested without transom and/or flush over panels. See Annex B	Single leaf from double leaf test	≤	≥	≥	Not possible without an additional test	Additional test single leaf doorset
A.1.2 Number of leaves only applicable to doorsets tested without transom and/or flush over panels. See Annex B	Double leaf from single leaf test	<	≤	≤	Not possible without additional test (s)	Additional test (s) double leaf doorset (open outwards and inwards for EI doors, open outwards for E or W doors)

Construction Parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional Evidence Required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
A.1.3 Number of panels per leaf (primary or secondary)	Add (one panel per leaf – on any leaf)	=	=	=	Possible if tested at least one leaf (single, primary or secondary) with the minimum of two panels, panel size not increased and the intended jointing technique centrally located in the door leaf otherwise not possible without an additional test	Additional test single leaf or double leaf doorset
A.1.4 Number of panels per leaf(primary or secondary) - **See Figure A.2**	Reduce (one panel per leaf)	=	=	=	Possible providing the tested width of the panel is not increased otherwise not possible without an additional test	Additional test single leaf or double leaf doorset
A.1.5 Intumescent seals between frame and door leaf/leaves **- See Figure A.3**	Location towards the frame rebate	>=<	>=<	>=<	Not possible without an additional test	Additional test single leaf or double leaf doorset
A.1.6 Intumescent seals between frame and door leaf/leaves **– See Figure A.4**	Location away from the frame rebate	>=<	>=<	>=<	Not possible without an additional test	Additional test single leaf or double leaf doorset
A.1.7 Intumescent seals between meeting edges of the door leaves	Location	>=<	>=<	>=<	Not possible without additional test (s)	Additional test (s) double leaf doorset (open outwards and inwards for EI doors, open outwards for E or W doors)
A.1.8 Non-intumescent seals between frame and door leaf/leaves (draught/smoke/acoustic etc.) – Euroclass A1, e.g. ceramic products (fitted in leaf or frame) - **See Figure A.5**	Location	=	=	=	Any movement possible providing no modifications of the construction are required otherwise not possible without an additional test	Additional test single or double leaf doorset if the seal is positioned between the meeting edges of the door leaves the additional test shall be a double leaf doorset
A.1.9 Non-intumescent seals between meeting edges of the door leaves (draught/smoke/acoustic etc.) - Euroclass A1, e.g. ceramic products	Location	>/=/<	>/=/<	>/=/<	No movement possible without an additional test	Additional test double leaf doorset

Construction Parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional Evidence Required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
A.1.10 Non-intumescent seals between door leaves and/or frames (draught/smoke/acoustic etc.) – < Euroclass A1 (fitted in leaf or frame) **- See Figure A.6**	Location	>/=/<	>/=/<	>/=/<	No movement possible without an additional test	Additional test single or double leaf doorset, if the seal is positioned between the meeting edges of the door leaves the additional test shall be a double leaf doorset
A.1.11 Non-intumescent seals between door leaves and/or frames (draught/smoke/acoustic etc.) - Euroclass A1, e.g. ceramic products (fitted in leaf or frame). **- See Figure A.7**	Add	=	=	=	Possible for doors without intumescent seals and providing the gap between door leaf and door frame is not increased otherwise not possible without an additional test	Additional test single or double leaf doorset, if the seal is positioned between the meeting edges of the door leaves the additional test shall be a double leaf doorset
A.1.12 Non-intumescent seals between door leaves and/or frames (draught/smoke/acoustic etc.) - Euroclass A1, e.g. ceramic products (fitted in leaf or frame) **- See Figure A.8**	Remove	≤	≤	≤	Not possible without an additional test	Additional test single or double leaf doorset, if the seal is positioned between the meeting edges of the door leaves the additional test shall be a double leaf doorset
A.1.13 Non-intumescent seals between door leaves and/or frames (draught/smoke/acoustic etc.) – < Euroclass A1 (fitted in leaf or frame) **- See Figure A.9**	Add	≤	≤	≤	Not possible without an additional test	Additional test single or double leaf doorset, if the seal is positioned between the meeting edges of the door leaves the additional test shall be a double leaf doorset

Construction Parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional Evidence Required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
A.1.14 Non-intumescent seals between door leaves and/or frames (draught/smoke/acoustic etc. – < Euroclass A1 (fitted in leaf or frame) **- See Figure A.10**	Remove	>/=/<	>/=/<	=	Not possible without an additional test	Additional test single or double leaf doorset, if the seal is positioned between the meeting edges of the door leaves the additional test shall be a double leaf doorset
A.1.15 Ventilation grilles (louvres) in door leaf tested without ventilation grille **- See Figure A.11 a)**	Add	≤	≤	≤	Not possible without an additional test	Additional test single or double leaf doorset
A.1.16 Ventilation grilles (louvres) in door leaf **- See Figure A.11 b)**	Remove	>/=/<	≥	≥	Possible providing the cut out is less than 25 % of the door leaf area otherwise not possible without an additional test	Additional test single or double leaf doorset
A.1.17 Ventilation grilles (louvres) in door leaf tested with ventilation grille	Location in vertical direction	≤	≤	≤	Possible for lower location than tested otherwise not possible without an additional test	Additional test single or double leaf doorset
A.1.18 Ventilation grilles (louvres) in door leaf tested with ventilation grille **- See Figure A.12**	Location in horizontal direction	=	=	=	Possible providing the distance between the edge of the louvre and the perimeter of the door leaf is not decreased and providing any internal stiffening elements are not affected otherwise not possible without an additional test	Additional test single or double leaf doorset
A.1.19 Ventilation grilles (louvres) in door leaf tested with ventilation grille**- See Figure A.13 a)**	Smaller size	≥	≥	≥	Possible for one or more louvres smaller than that tested specimen providing the location is inside the perimeter of the tested louvre and minimum spacing between cut outs is not less than 100 mm otherwise not possible without an additional test	Additional test single or double leaf doorset

Construction Parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional Evidence Required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
- See Figure A.13 b)	Larger size	≤	≤	≤	Not possible without an additional test	Additional test single or double leaf doorset
A.1.20 Rebate (door leaves to frames) **- See Figure A.14 a)**	Add	≥	≤	≥	**EI** Not possible without an additional test unless the original test had additional thermocouples positioned 100 mm and/or 25 mm from the edge of the notional rebate (i.e. 100-x) where x means the width of the added rebate and dimension y (overlap) shall not be decreased by a maximum of three times the steel thickness of the door leaf	Additional test single or double leaf doorset
					E, EW Possible providing no decrease of dimension y (overlap) or leaf edge thickness by a maximum of three times the steel thickness of the door leaf otherwise not possible without an additional test	Additional test single or double leaf doorset
A.1.21 Rebate (meeting edges) **- See Figure A.14 b)**	Add (one rebate)	≥	≥	≥	Possible if the doorset included one rebate and the added rebate is of the same design/material as that tested otherwise not possible without an additional test	Additional test double leaf doorset (added rebate away from the fire)
A.1.22 Rebate (door leaves to frames) **- See Figure A.15**	Remove	≤	≤	≤	Not possible without an additional test	Additional test single or double leaf doorset (open inwards)
A.1.23 Rebate (meeting edges)	Remove	≤	≤	≤	Not possible without an additional test	Additional test double leaf doorset (open inwards)
A.1.24 Latched condition for single and double leaf doorsets	Change in latching	>=<	=	=	Possible in line with the following relationship:	Additional test to include the

Construction Parameter	Variation	Influence of variation on performance characteristic			Possibility of extension				Additional Evidence Required
(1)	(2)	(3)			(4)				(5)
		E	I	W					
	condition					tested without a latch/lock	tested with a latch/lock but unlatched	tested with a latch/lock latched	required latching condition -
					extension to: without a lock/latch	-	possible	not possible	
					extension to: with lock/latch but unlocked/ unlatched	not possible	-	not possible	
					extension to: with a lock/latch, latched	not possible	possible	-	
A.2 Size variations /single or multiple panel construction									
A.2.1 Size (area, width, height) all distortions	Decrease	≥	≤	≥	Possible in line with direct application or for EI doors possible from the size tested down to the size of a second test specimen in the same design using direct application rules otherwise not possible without an additional test				For single leaf doorsets additional test single leaf or double leaf doorset , for double leaf doorsets additional test double leaf doorset

Construction Parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional Evidence Required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
A.2.2 Height – all distortions	Increase	≤	=	≤	Possible in line with direct application or possible to a maximum addition equal to the tested dimension between the latch and top of the door leaf providing an additional top hinge/dog bolt together with additional latch in the area of the top free corner are incorporated and additionally **(for EW)** an emitted radiation calculation in accordance with EN 1363-2 within the 15 KW limit or possible for doorsets which have achieved category B up to: 15 % for high distortion 20 % for medium distortion and 25 % for low distortion providing overlap of door leaf to frame header is not reduced and distance between top hinge and top of door leaf is equal to or less than tested and additional **(for EW)** an emitted radiation calculation in accordance with EN 1363-2 within the 15 KW limit or new test to a taller door	Door sizes beyond the direct application are based on testing of model specimen to maximum size that can be accomodated in a standard furnace For single leaf doorsets additional test single leaf or double leaf doorset , for double leaf doorsets additional test double leaf doorset

Construction Parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional Evidence Required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
A.2.3 Width - all distortions	Increase	≤	=	≤	Possible in line with direct application or possible for doorsets which have achieved category B up to: 15 % for high distortion 20 % for medium distortion and 25 % for low distortion, providing overlap of door leaf to frame jamb is not reduced and additional **(for EW)** an emitted radiation calculation in accordance with EN 1363-2 within the 15 KW limit or new test to a wider door	Door sizes beyond the direct application are based on testing of model specimen to maximum size that can be accomodated in a standard furnace for single leaf doorsets additional test single leaf or double leaf doorset , for double leaf doorsets additional test double leaf doorset
A.2.4 Area - all distortions	Increase	≤	=	≤	Possible in line with direct application or where height is achieved by additional latch and hinge / dog bolt full width extension can be applied or possible for doorsets which have achieved category B up to: 20 % for high distortion 25 % for medium distortion and 30 % for low distortion, providing overlap of door leaf to frame header and frame jamb is not reduced and distance between top hinge and top of the door leaf is equal to or less than tested and additional **(for EW)** an emitted radiation calculation in accordance with EN 1363-2 from within the 15 KW limit or new test to a bigger door	Additional test see A.2.2 and/or A.2.3

Construction Parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional Evidence Required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
A.2.5 Thickness of the door leaf based on high distortion	Increase	>/=/<	≥	≥	Not possible without an additional test	Additional test single or double leaf doorset
based on medium distortion		>/=/<	≥	≥	Possible providing the same increase of thickness of core material by a maximum of 10 % otherwise not possible without an additional test	Additional test single or double leaf doorset
based on low distortion		>/=/<	≥	≥	Possible providing the same increase of thickness of core material by a maximum of 25 % otherwise not possible without an additional test	Additional test single or double leaf doorset
A.2.6 Thickness of the door leaf - all distortions	Decrease	>/=/<	≤	≤	**E** Possible by a maximum of 10 % otherwise not possible without an additional test **EI, EW** not possible without an additional test	Additional test single for single leaf doorsets or double leaf for double leaf doorsets additional test single for single leaf doorsets or double leaf for double leaf doorsets
A.3. Materials and constructions						
A.3.1 Density of core material (organic or Euroclass A1) – all distortions	Increase	>/=/<	≥	≥	Possible by a maximum of 15 % (nominal value) of each core material of the door leaf above 15 % not possible without an additional test	Additional test single or double leaf doorset
A.3.2 Density of core material (organic or Euroclass A1) – all distortions	Decrease	>/=/<	≤	≤	**E** possible **EI, EW** not possible without an additional test	Additional test single or double leaf doorset

Construction Parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional Evidence Required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
A.3.3 Thickness of core material **- See Figure A.16** based on high distortion	Increase	>/=/<	≥	≥	Not possible without an additional test	Additional test single or double leaf doorset
based on medium distortion		>/=/<	≥	≥	Possible by a maximum of 10 % in accordance with thickness of door leaf and providing that no single element of the core is reduced in thickness otherwise not possible without an additional test	Additional test single or double leaf doorset
based on low distortion		>/=/<	≥	≥	Possible by a maximum of 25 % in accordance with thickness of door leaf and providing that no single element of the core is reduced in thickness otherwise not possible without an additional test	Additional test single or double leaf doorset
A.3.4 Thickness of core material **- See Figure A.17**	Decrease	>/=/<	≤	≤	**E** Possible by a maximum of 10 % for a low distortion doorset otherwise not possible without an additional test **EI, EW** not possible without an additional test	Additional test single for single leaf doorsets or double leaf for double leaf doorsets
A.3.5 Pattern of core material **- See Figure A.18**	Increase number of pieces	>/=/<	≤	≤	**E** Possible **EI, EW** Possible proportional to any size increase providing the original test specimen includes horizontal and / or vertical joint (s) between the core material pieces as appropriate otherwise not possible without an additional test	Additional test single or double leaf doorset

Construction Parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional Evidence Required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
A.3.6 Pattern of core material **- See Figure A.19**	Decrease number of pieces	≥	≥	≥	Possible	-
A.3.7 Number of layers of identical and/or different materials **- See Figure A.20**	Increase	>/=/<	>/=/<	>/=/<	Not possible without an additional test	Additional test single or double leaf doorset
A.3.8 Number of layers of identical and/or different materials **- See Figure A.21**	Decrease	>/=/<	>/=/<	>/=/<	Not possible without an additional test	Additional test single or double leaf doorset
A.3.9 Type of core material (single thickness or in combination of different layers)	Change of supplier/manufacturer of identical material with identical composition and properties	=	=	=	Possible	-
A.3.10 Type of core material (single thickness or in combination of different layers)	Alternative composition	>/=/<	>/=/<	>/=/<	Not possible without an additional test	Additional test single or double leaf doorset
A.3.11 Amount of adhesive / m^2 – organic based (< Euroclass A1)	Increase	≤	=	=	Not possible without an additional test	Additional test single or double leaf doorset
A.3.12 Amount of adhesive / m^2 – organic based (< Euroclass A1)	Decrease	≤	≤	≤	Possible	-
A.3.13 Amount of adhesive / m^2 – inorganic based (Euroclass A1),	Increase	=	=	=	Possible providing no intumescent content otherwise not possible without an additional test	Additional test single or double leaf doorset
A.3.14 amount of adhesive / m^2 – inorganic based (Euroclass A1),	Decrease	≤	≤	≤	Not possible without an additional test	Additional test single or double leaf doorset

Construction Parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional Evidence Required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
A.3.15 Type of adhesive	Change of manufacturer for identical composition	=	=	=	Possible for identical chemical composition otherwise not possible without an additional test	Additional test single or double leaf doorset
A.3.16 Type of adhesive	Alternative composition	>/=/<	>/=/<	>/=/<	Not possible without an additional test	Additional test single or double leaf doorset
A.3.17 Metal armour sheet (internally mounted) **- See Figure A.22 a)**	Add	≤	≤	≤	Not possible without an additional test	Additional test single or double leaf doorset
A.3.18 metal armour sheet (internally mounted) - **See Figure A.22 b)**	Remove	≤	≤	≤	Not possible without an additional test	Additional test single or double leaf doorset
A.3.19 Electronic security mesh **- See Figure A.23 a)**	Add	=	=	=	Possible for mesh thickness to a maximum of 1,0 mm with an inorganic coating – face fixed or internally mounted otherwise not possible without an additional test also not possible for organic coated mesh without additional test	Additional test single or double leaf doorset
A.3.20 Electronic security mesh **- See Figure A.23 b)**	Remove	=	=	=	Possible	-
A.3.21 Thickness of steel sheet	Increase	≤	≤	≤	Possible to a maximum of 10 % above 10 % not possible without an additional test	Additional test single or double leaf doorset
A.3.22 Thickness of steel sheet	Decrease	≥	≥	≥	Possible to a maximum of 25 % above 25 % not possible without an additional test	Additional test single or double leaf doorset

Construction Parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional Evidence Required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
A.3.23 Type of steel sheet	Mild to stainless	>/=/<	>/=/<	>/=/<	Possible only for low and medium distorsion latched door leaves providing that the material thickness shall not be increased but may be decreased up to a maximum of 20 % otherwise not possible without an additional test	Additional test single or double leaf doorset
A.3.24 Type of steel sheet	Stainless to mild	>/=/<	>/=/<	>/=/<	Possible only for latched door leaves providing that the material thickness shall not be decreased but may be increased up to a maximum of 25 % otherwise not possible without an additional test	Additional test single or double leaf doorset
A.3.25 Cross-section dimension of stiffening elements **- See Figure A.24 a)**	Increase	≥	≤	≥	**E & EW** Possible up to a maximum increase of 50 % **EI** Not possible without an additional test	Additional test single or double leaf doorset
A.3.26 Cross-section dimension of stiffening elements **- See Figure A.24 b)**	Decrease	≤	=	=	Not possible without an additional test	Additional test single or double leaf doorset
A.3.27 Number of intermediate stiffening elements **- See Figure A.25 a)**	Increase	≥	≤	≤	**E** Possible **EI, EW** Possible proportional to the increase of height or width of the panel, as appropriate, rounded to the nearest whole number of stiffeners otherwise not possible without an additional test	Additional test single or double leaf doorset
A.3.28 Number of intermediate stiffening elements **- See Figure A.25 b)**	Decrease	≤	≥	≥	Possible proportional to the decrease of height or width of the panel, as appropriate, rounded to the nearest whole number of stiffeners otherwise not possible without an additional test	Additional test single or double leaf doorset

Construction Parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional Evidence Required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
A.3.29 Stiffening elements **- See Figure A.26**	Location	>/=/<	=	=	Possible within a maximum of 10 % of original separating dimension otherwise not possible without an additional test	Additional test single or double leaf doorset
A.3.30 Number of stiffening element fixing points **- See Figure A.27 a)**	Increase	≥	=	=	Possible	-
A.3.31 Number of stiffening element fixing points **- See Figure A.27 b)**	Decrease	≤	=	=	Possible if proportionately in line with a leaf size decrease otherwise not possible without an additional test	Additional test single or double leaf doorset
A.3.32 Overlap dimension of leaf edge rebate (between leaf and frame) **- See Figure A.28 a)**	Increase	≥	≤	>/=/<	**E, EW** Possible **EI** Possible providing the original test had additional thermocouples positioned 100mm or 25mm from the edge of the notional rebate otherwise not possible without an additional test	Additional test single or double leaf doorset (open outwards)
A.3.33 Overlap dimension of panel edge rebate (meeting edges) **- See Figure A.28 b)**	Increase	≤	≥	>/=/<	**E, EW** Possible **EI** Possible providing the original test had additional thermocouples positioned 100mm or 25mm from the edge of the notional rebate otherwise not possible without an additional test	Additional test double leaf doorset
A.3.34 Overlap dimension of leaf edge rebate (between leaf and frame) **- See Figure A.29 a)**	Decrease	≤	≥	>/=/<	Not possible without an additional test	Additional test single or double leaf doorset

Construction Parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional Evidence Required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
A.3.35 Overlap dimension of panel edge rebate (meeting edges) - **See Figure A.29 b)**	Decrease	≤	≥	>/=/<	Not possible without an additional test	Additional test double leaf doorset
A.3.36 Additional overlapping edge at the bottom of the door leaf **- See Figure A.30 a)**	Add	≥	≤	>/=/<	**E, EW** possible **EI** possible providing the tested overlapping edge at the top of the leaf is added at the bottom of the leaf and providing a fourth frame member is added otherwise not possible without an additional test	Additional test single or double leaf doorset
A.3.37 Additional overlapping edge at the bottom of the door leaf **- See Figure A.30 b)**	Remove	≤	≥	>/=/<	Possible providing the gap between the bottom of the door leaf and the floor remains the same as the original test specimen otherwise not possible without an additional test	Additional test single or double leaf doorset
A.3.38 Leaf edge detail (between leaf and frame and meeting edges**) - See Figure A.31**	Shape	=	=	=	Straight overlap may be changed to cranked overlap (but not *vice versa*) providing the overlap dimension and the gap between the leaf and the frame or the meeting edges are not changed; more significant modifications shall to be subjected to an additional test	Additional test single or double leaf doorset
A.3.39 Jointing/assembly technique (leaf edges, stiffening elements etc.) for leaf or frame **- See Figure A.32**	Alternative (welding/ riveting/screwing)	=	=	=	Possible to interchange only between welding, riveting and screwing, providing that the centre distances are not exceeded, fixings are made from the same materials and cross section dimension of the alternative (welds/rivets/screws) is not smaller otherwise not possible without an additional test	Additional test single or double leaf doorset

Construction Parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional Evidence Required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
A.3.40 Dimension of intumescent seals (leaf or frame fitted) **- See Figure A.33 a)**	Increase	>/=/<	>/=/<	>/=/<	Not possible without an additional test	Additional test single or double leaf doorset
A.3.41 Dimension of intumescent seals (leaf or frame fitted) **- See Figure A.33 b)**	Decrease	≤	≤	≤	Not possible without an additional test	Additional test single or double leaf doorset
A.3.42 Type of intumescent seals (leaf or frame fitted)	Change of supplier/manufacturer	>/=/<	>/=/<	>/=/<	Possible but only for identical composition otherwise not possible without an additional test	Additional test single or double leaf doorset
A.3.43 Type of intumescent seals (leaf or frame fitted)	Alternative material	>/=/<	>/=/<	>/=/<	Not possible without an additional test	Additional test single or double leaf doorset
A.3.44 Dimension of draught/smoke seals (Euroclass A1); e.g. ceramic products (leaf or frame fitted) **– See Figure A.34 a)**	Increase	≥	=	=	Possible providing the gap between door leaf and door frame is not increased otherwise not possible without an additional test	Additional test single or double leaf doorset
A.3.45 Dimension of draught/smoke seals (Euroclass A1); e.g. ceramic products (leaf or frame fitted) **- See Figure A.34 b)**	Decrease	≤	=	=	Not possible without an additional test	Additional test single or double leaf doorset
A.3.46 Dimension of draught/smoke seals (< Euroclass A1) - leaf or frame fitted **– See Figure A.35 a)**	Increase	≤	≤	≤	Possible up to a maximum of 30 % in any cross sectional dimension and up to a maximum of 20 % mass providing the same material and the same manufacturer and providing the gap between door leaf and frame is not increased otherwise not possible without an additional test	Additional test single or double leaf doorset

Construction Parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional Evidence Required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
A.3.47 Dimension of draught/smoke seals (< Euroclass A1) (leaf or frame fitted) **- See Figure A.35 b)**	Decrease	≥	≥	≥	Possible up to a maximum of 30 % in any cross sectional dimension providing the same material and the same manufacturer otherwise not possible without an additional test	Additional test single or double leaf doorset
A.3.48 Type of draught/smoke seals (leaf or frame fitted)	Change of supplier/manufacturer	>/=/<	=	=	Possible for Euroclass A1 material or for identical chemical composition where known otherwise not possible without an additional test	Additional test single or double leaf doorset
A.3.49 Type of draught/smoke seals (leaf or frame fitted)	Alternative material (changing to a equal or higher Euroclass)	=	=	=	Possible	-
A.3.50 Type of draught/smoke seals (leaf or frame fitted)	Alternative material (changing to a lower Euroclass)	≤	≤	≤	Not possible without an additional test	Additional test single or double leaf doorset
A4. Decorative and/or protective finishes						
A.4.1 Paints without contribution to fire resistance (on leaf or frame)	Addition	=	=	=	Possible in line with direct application beyond the field of direct application rules not possible without an additional test	Additional test single or double leaf doorset
A.4.2 Paints without contribution to fire resistance (on leaf or frame)	Interchange	=	=	=	Possible	-
A.4.3 Thickness of paints with positive contribution to fire resistance (on leaf or frame)	Increase	≥	≥	≥	Possible up to a maximum of 25 % in mass per m² otherwise not possible without an additional test	Additional test single or double leaf doorset

Construction Parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional Evidence Required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
A.4.4 Thickness of paints with positive contribution to fire resistance (on leaf or frame)	Decrease	≤	≤	≤	Not possible without an additional test	Additional test single or double leaf doorset
A.4.5 type of paints with positive contribution to fire resistance (on leaf or frame)	change of supplier/manufacturer	>/=/<	>/=/<	=	Possible but only for identical composition otherwise not possible without an additional test	Additional test single or double leaf doorset
A.4.6 Type of paints with positive contribution to fire resistance (on leaf or frame)	Alternative material	>/=/<	>/=/<	>/=/<	Not possible without an additional test	Additional test single or double leaf doorset
A.4.7 Decorative laminates and timber veneers on the face (on leaf or frame) **- See Figure A.36**	Add	>/=/<	≥	≥	Possible in line with direct application otherwise not possible without additional test	Additional test single or double leaf doorset
A.4.8 Decorative laminates and timber veneers on the face (on leaf or frame) **- See Figure A.37**	Remove	≥	≤	≤	E Possible EI, EW Not possible without an additional test	Additional test single or double leaf doorset
A.4.9 Decorative laminates and timber veneers on the edges (on leaf or frame) **- See Figure A.38**	Add	≤	≤	≤	Not possible without an additional test	Additional test single or double leaf doorset
A.410 Decorative laminates and timber veneers on meeting edges	Add	≤	≤	≤	Not possible without an additional test	Additional test double leaf doorset
A.4.11 Decorative laminates and timber veneers on the edges (on leaf or frame) **- See Figure A.39**	Remove	≥	=	=	Possible providing the gap dimension is retained between door leaf and frame otherwise not possible without additional test	Additional test single or double leaf doorset

Construction Parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional Evidence Required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
A.4.12 Types and thickness of decorative laminates and timber veneers on the face (on leaf or frame)	Change material content, increase, decrease	>/=/<	>/=/<	>/=/<	Possible in line with direct application beyond the field of direct application rules not possible without an additional test	Additional test single or double leaf doorset
A.4.13 Types and thickness of decorative laminates and timber veneers on the edges (leaf to frame)	Change material content, increase, decrease	>/=/<	>/=/<	>/=/<	Not possible without an additional test	Additional test single or double leaf doorset
A.4.14 Types and thickness of decorative laminates and timber veneers on the meeting edges	Change material content, increase, decrease	>/=/<	>/=/<	>/=/<	Not possible without an additional test	Additional test double leaf doorset
A.4.15 Types of decorative laminates and timber veneers on the face/edges (on leaf or frame)	Colour, pattern	=	=	=	Possible in line with direct application otherwise not possible without additional test	Additional test single or double leaf doorset
A.4.14 Protective elements – face fixed (kick plates/push plates/armour plates) **- See Figure A.40**	Add	>/=/<	>/=/<	>/=/<	Possible for one piece up to 800 mm from the base of the leaf providing no thicker than 1,5 mm or limited to maximum two pieces per face at 250 mm in width or height (for E and EW doors the elements shall be Euroclass A1). For acceptable fixing methods see A4.16 otherwise not possible without an additional test	Additional test single or double leaf doorset
A.4.15 Protective elements – face fixed (kick plates/push plates/armour plates)	Remove	>/=/<	>/=/<	>/=/<	Not possible without an additional test	Additional test single or double leaf doorset

Construction Parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional Evidence Required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
A.4.16 Attachment technique for elements added to doors	Selection (adhesive/rivet/screw)	=	=	=	**E, EI, EW** only selection of Euroclass A1 material for fixings possible and for EI doors providing no through connection **EI** all selections possible within the area where thermocouples shall be placed and providing no through connection otherwise not possible without an additional test	Additional test single or double leaf doorset
A.4.17 Mouldings/profiles **- See Figure A.41**	Add	≤	=	≤	**EI** Possible only for mouldings/profiles which will not change the structural rigidity of the leaf and providing no break through to opposite face. Additionally for **E, EW** possible only for mouldings / profiles which will not change the structural rigidity of the leaf and for inorganic Material (Euroclass A1) otherwise not possible without an additional test	Additional test single or double leaf doorset
A.4.18 Mouldings/profiles **- See Figure A.41**	Remove	≥	≤	≤	**E** Possible providing the removal will not change the structural rigidity of the leaf **EI, EW** Not possible without an additional test	Additional test single or double leaf doorset
B. Door Frame						
B.1. General ***For intumescent/draught/smoke seals refer to sections A.1***						
B.1.1 Threshold/sill/frame member to bottom of door frame	Add	≥	≥	≥	Possible	-

Construction Parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional Evidence Required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
B.1.2 Threshold/sill/frame member to bottom of door frame	Remove	≤	≤	≤	Possible providing the gap between the bottom of the door leaf and the floor level remains the same as the original test specimen otherwise not possible without an additional test	Additional test single or double leaf doorset
B.1.3 Height of hatch door frame above floor **- See Figure A.42**	Variation	>/=/<	>/=/<	>/=/<	Possible to position in all locations providing tested to simulate a finished floor level 1,5 m below the doorset i.e. with 8,5 pascals at the base of the doorset otherwise not possible without an additional test	Additional test single or double leaf doorset at required height
B.2. Materials and constructions						
B.2.1 Overall dimensions and shape **- See Figure A.43**	Increase	≥	≥	≥	Possible providing that the cross section detail at the overlap/rebate position (shown in bold in Figure A.43) is retained or the overlap dimension is increased otherwise not possible without an additional test	Additional test single or double leaf doorset
B.2.2 Overall dimensions and shape **- See Figure A.44**	Decrease	≤	≤	≤	Not possible without an additional test	Additional test single or double leaf doorset
B.2.3 Type of infill material	Change of supplier/manufacturer of material with identical composition and properties	=	=	=	Possible	-

Construction Parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional Evidence Required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
B.2.4 Type of infill material – **See Table B.2.4**	Alternative material	=	=	=	Possible providing the infill material is Euroclass A1 or A2-s1, d0 and is in accordance with the following table otherwise not possible without an additional test	Additional test can be single or double leaf doorset

Table B.2.4 – Possible frame infill materials

Test with	Allows this material						
	No infill	Mineral wool	Gypsum board	Gypsum plaster	Mortar	Concrete	PU Foam
No infill	Yes	No for EI doors Yes for E and EW doors	No for EI doors Yes for E and EW doors	No for EI doors Yes for E and EW doors	No for EI doors Yes for E and EW doors	No for EI doors Yes for E and EW doors	No
Mineral wool	No	Yes *)	Yes	Yes	Yes	Yes	No
Gypsum board	No	No	Yes *)	Yes	Yes	Yes	No
Gypsum plaster	No	No	No	Yes *)	Yes	Yes	No
Mortar	No	No	No	Yes	Yes *)	Yes	No
Concrete	No	No	No	No	No	Yes *)	No
PU Foam	No	No	Yes	Yes	Yes	Yes	Yes

NOTE Mineral wool = glass, ceramic or stone wool of same or better reaction to fire classification

*) Density can be increased but not decreased.

Construction Parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional Evidence Required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
B.2.5 Thickness of metal **- See Figure A.45 a)**	Increase	≥	=	=	**E** possible **EI, EW** possible in line with direct application or possible to a maximum of 50 % providing original test satisfied B overrun above 50 % needs an additional test using a specimen with maximum required thickness	Additional test single or double leaf doorset
B.2.6 Thickness of metal **- See Figure A.45 b)**	Decrease	≤	=	=	Not possible without an additional test	Additional test single or double leaf doorset
B.2.7 Type of metal	Mild to stainless	=	=	=	Possible providing that the material thickness shall not be increased but may be decreased up to a maximum of 20 % otherwise not possible without an additional test	Additional test single or double leaf doorset
B.2.8 Type of metal	Stainless to mild	=	=	=	Possible providing that the material thickness shall not be decreased but may be increased up to a maximum of 25 % otherwise not possible without an additional test	Additional test single or double leaf doorset

Construction Parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional Evidence Required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
C. Hardware This document references EN 1634-2 where appropriate as the means to extend the parameters of building hardware. In general, this document provides additional guidance over and above that contained in EN 1634-2. It is a requirement of this document that all items of building hardware are in accordance with the relevant product standard including the requirements of the relevant supporting standards and that the door assembly onto which the building hardware will be fitted is appropriate to the intended durability of self-closing class (C Classification). Building hardware shall be suitable for use on fire doorsets and the suitability shall be demonstrated as specified in the component product standard. For the purpose of this European Standard, when the suitability for use on fire doorsets is demonstrated by a successful full size fire test to EN 1634-1 or a small scale fire test to EN 1634-2, the test specimen shall be representative of the intended doorsets' construction and for the required classification period.						
C.1. General						
C.1.1 Latches/locks and strike plates	Alternative	>/=/<	>/=/<	=	Possible providing that the alternative lock is of the same type (internally mounted/morticed or surface mounted), complies with the relevant product standard, is suitable for use on the original doorset and has passed a full size fire test to EN 1634-1 or a small scale fire test to EN 1634-2. Each of the linear dimensions shall be no larger than tested successfully in the original doorset, and the latch bolt shall have a similar or greater engagement. Additionally, for internal locks, the amount of material removed from the door leaf shall be as tested in the original doorset or less. Any additional component should be metal and the distance between the intumescent protection, if fitted, and the lock forend or the strike plate shall remain as tested otherwise not possible without an additional test	Equal or greater latch bolt engagement for single and double doors additional full scale test can be single leaf doorset (opening inwards) Smaller latch bolt engagement for single additional full scale test can be single leaf doorset (opening inwards) and for double doors double leaf doorset (opening inwards and outwards)

Construction Parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional Evidence Required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
C.1.2 Number of latches/locks and strike plates - **See Figure A.46**	Increase	≥	≥	=	Possible providing the component has been successfully tested in a full scale or small scale test and the cross-section dimension of the component is smaller or equal than the original one otherwise not possible without an additional test	Additional full size test can be single or double leaf doorset
C.1.3 Number of latches/locks and strike plates **- See Figure A.47**	Decrease	≤	≤	=	Not possible without an additional full size test unless originally tested with latch bolt (s) withdrawn otherwise not possible without an additional test	For single doors additional full size test can be single or double leaf doorset. For double doors additional full size test shall be double leaf doorset
C.1.4 Locking system	Exchange single latch/lock to multipoint locking system	≥	≤	=	**E and EW** Possible for internal or surface mounted systems providing the central lock is the same as original or providing the full system has been successfully tested in a full scale test EI Possible for surface mounted systems providing the full system has been successfully tested in a full scale test otherwise not possible without an additional test Not possible for internal systems without an additional test	For single doors additional full size test can be single or double leaf doorset (opening inwards or outwards) For double doors additional full size test shall be double leaf doorset (opening outwards)

Construction Parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional Evidence Required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
C.1.5 Locking system	Exchange multipoint locking system to single latch/lock	≤	≤	=	Possible providing the locking system has been tested in a full scale test with only the central latch in an engaged position and all others in disengaged condition and any connecting rods are not fixed to the door leaf otherwise not possible without an additional test	For single doors additional full size test can be single or double leaf doorset (opening inwards) For double doors additional full size test shall be double leaf doorset (opening inwards)
C.1.6 Position of single latch/lock/strike plate - **See Figure A.48**	Alternative	≤	≤	≤	Possible 300 mm variation for category B doors and possible 200 mm variation for category A otherwise not possible without an additional test	For single doors additional full scale test can be single or double leaf doorset. For double doors additional full scale test shall be double leaf doorset
C.1.7 Position of multiple latches/locks/strike plates (with or without connecting rods) - **See Figure A.49**	Alternative	=	=	=	Possible providing the latches/locks have been tested in a full scale test with only the central latch in an engaged position and all others in disengaged condition Where the latches/locks have been tested in an engaged condition the distance from top of door leaf to top latch and bottom of door leaf to bottom latch cannot be changed. Possible variation of intermediate lock/latch only, plus or minus 200 mm otherwise not possible without an additional test	For single doors additional full scale test can be single or double leaf doorset. For double doors additional full scale test shall be double leaf doorset
C.1.8 Latches/locks and strike plates of the same type	Change of supplier/manufacturer	>/=/<	=	=	Possible providing the component has been tested in a full scale or small scale test otherwise not possible without an additional test	Additional full scale test can be single or double leaf doorset (opening inwards or outwards)

Construction Parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional Evidence Required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
C.1.9 Latches/locks and strike plates of the same type	Alternative material	>/=/<	=	=	Possible to interchange between mild steel and stainless steel or possible providing the component has been tested in a full scale or small scale test otherwise not possible without an additional test	Additional full scale test can be single or double leaf doorset
C.1.10 Latches/locks **- See Figure A.50 a)**	Exchange internal for external	>/=/<	≥	=	Not possible without an additional test	For single doors additional full scale test can be single or double leaf doorset. For double doors additional full scale test shall be double leaf doorset
C.1.11 Latches/locks **- See Figure A.50 b)**	Exchange external for internal	>/=/<	≤	=	Not possible without an additional test	For single doors additional full scale test can be single or double leaf doorset. For double doors additional full scale test shall be double leaf doorset
C.1.12 Face mounted operating device (e.g. handles, knobs, panic bars, push or touch pads)	Exchange operating devices retaining latch/lock	=	=	=	Possible for metal components or possible for non-metallic face mounted components providing the components have been subjected to a full scale test and with any break through being limited to screw fixings and their covering otherwise not possible without an additional test	Additional full scale test can be single or double leaf doorset

Construction Parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional Evidence Required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
C.1.13 Face mounted operating device (e.g. handles, knobs, panic bars, push or touch pads)	Remove				Possible to remove face mounted components providing the internal lock/latch assembly remains as tested and any remaining holes are adequately covered otherwise not possible without an additional test	Additional full scale test can be single or double leaf doorset
C.1.14 Panic exit device or emergency exit device	Exchange internal for external	>/=/<	≥	=	Not possible without an additional test	For single doors additional full scale test can be single or double leaf doorset. For double doors additional full scale test shall be double leaf doorset
C.1.15 Panic exit device or emergency exit device	Exchange external for internal	>/=/<	≤	=	Not possible without an additional test	For single doors additional full scale test can be single or double leaf doorset. For double doors additional full scale test shall be double leaf doorset
C.1.16 Panic exit device or emergency exit device of the same type	Change of supplier/manufacturer	>/=/<	=	=	Possible providing the component has been tested in a full scale test otherwise not possible without an additional test	Additional full scale test can be single or double leaf doorset (opening inwards or outwards)
C.1.17 Dimension of hinges	Increase	≥	=	=	Possible to increase any dimension up to a maximum of 50 % providing any inumescent seal and the position and type of fixing shall remain as tested otherwise not possible without an additional test	Additional full scale test can be single or double leaf doorset. or small scale test according EN 1634-2

Construction Parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional Evidence Required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
C.1.18 Dimension of hinges	Decrease	≤	=	=	Possible providing the component has been tested in an full scale or small scale test and all fixing details are replicated from the full scale test otherwise not possible without an additional test	Additional full scale test can be single or double leaf doorset or small scale test according EN 1634-2
C.1.19 Dimension of dog bolts **- See Figure A.51**	Increase	≥	≥	≥	Possible to increase any dimension up to a maximum of 50 % providing any inumescent seal and the shape remains unchanged otherwise not possible without an additional test	Additional full scale test can be single or double leaf doorset or small scale test according EN1634-2
C.1.20 Dimension of dog bolts **- See Figure A.52**	Decrease	≤	≤	≤	Not possible without an additional test	Additional full scale test can be single or double leaf doorset
C.1.21 Bolts (flush, internal and surface mounted) – **See figure A.53**	Add	>/=/<	>/=/<	=	Possible to add surface mounted bolts for single and double leaf doorsets **E, EW** Possible to add internal mounted bolts for single and double leaf doorsets **EI** Possible to add internal mounted bolts for secondary leaf on double leaf doorsets otherwise not possible without an additional test	Additional full scale test can be single or double leaf doorset (opening inwards or outwards)

Construction Parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional Evidence Required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
C.1.22 Bolts (flush, internal and surface mounted)	Remove	>/=/<	>/=/<	=	Possible if tested with the bolt withdrawn otherwise not possible without an additional test	For single doors additional full scale test can be single or double leaf doorset. For double doors additional full scale test shall be double leaf doorset
C.1.23 Bolts (flush, internal and surface mounted)	Alternative	>/=/<	>/=/<	=	Possible providing the component has been tested in a full scale or small scale test otherwise not possible without an additional test	Additional full scale test can be single or double leaf doorset
C.1.24 Bolts (flush, internal and surface mounted)	Change of supplier/manufacturer	>/=/<	=	=	Possible	-
C.1.25 Number of hinges/dog bolts **- See Figure A.54 a)**	Increase	≥	≥	≥	Possible	-
C.1. 26 Number of hinges/dog bolts **- See Figure A.54 b)**	Decrease	≤	≤	≤	Not possible without an additional test	Additional full scale test can be single or double leaf doorset
C.1.27 Hinges/dog bolts of the same type	Change of supplier/manufacturer	=	=	=	Possible	-
C.1.26 Type of hinges **- See Figure A.55**	Alternative material/type	>/=/<	=	=	Possible providing the component has been tested in a full scale or small scale test according EN 1634-2 and providing any intumescent seal, the position and type of fixing shall remain as tested otherwise not possible without an additional test	Additional full scale test can be single or double leaf doorset or small scale test according EN 1634-2

Construction Parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional Evidence Required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
C.1.29 Type of dog bolts **- See Figure A.56**	Alternative material/type/shape	>/=/<	>/=/<	>/=/<	Possible providing the component has been tested in a full scale or small scale test according EN1634-2 otherwise not possible without an additional test	Additional full scale test can be single or double leaf doorset or small scale test according EN 1634-2
C.1.30 Distance from top of upper hinge to top of door **- See Figure A.57** based on all distortions	Increase	≤	=	=	Not possible without an additional test	Additional full scale test can be single or double leaf doorset
C.1.31 Distance from top of upper hinge to top of door **- See Figure A.57**	Decrease	≥	=	=	Possible	-
C.1.32 Distance from bottom of lower hinge to bottom of door **- See Figure A.58**	Increase	≤	=	=	Not possible without an additional test	Additional full scale test can be single or double leaf doorset
C.1.33 Distance from bottom of lower hinge to bottom of door - **See Figure A.58**	Decrease	≥	=	=	Possible	-
C.1.34 Distances between top and bottom hinges and intermediate movement restrictors (i.e. hinges or dog bolts) **- See Figure A.59**	Increase	≤	=	=	Possible in line with direct application only	-
C.1.35 Distances between top and bottom hinges and intermediate movement restrictors (i.e. hinges or dog bolts) **- See Figure A.59**	Decrease	≥	=	=	Possible	
C.1.36 Fixing technique for hinges (door leaf, frame)	Alternative (welding or riveting or screwing)	>/=/<	=	=	Possible providing the alternative fixing technique has been tested in a full scale test otherwise not possible without an additional test	Additional full scale test can be single or double leaf doorset

Construction Parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional Evidence Required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
C.1.37 Armature of an electrically powered separate hold open device	Add	=	=	=	Possible providing that the component is face mounted, made of metal or Euroclass A1 material and that any break through is limited to screw fixings and their covering otherwise not possible without an additional test	Additional full scale test can be single or double leaf doorset
C.1.38 Electrically powered hold open device	Exchange original concealed for alternative face mounted	>/=/<	≥	=	Possible providing that the alternative unit complies with the EN 1155, is suitable for use on the original doorset and no voids remain in the doorset. The cable shall be external or, if it is internal, it shall require the same preparation in the door leaf and in the frame as tested in the original doorset. The intumescent protection, if fitted, shall remain the same as tested otherwise not possible without an additional test	Further test is to include the required item tested in accordance with EN 1634-1 or EN 1634-2 on a representative doorset construction
C.1.39 Electrically powered hold open device	Exchange original face mounted for alternative concealed	>/=/<	≤	=	Not possible without an additional test	Further test is to include the required item tested in accordance with EN 1634-1 or EN 1634-2 on a representative doorset construction

Construction Parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional Evidence Required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
C.1.40 Electrically powered hold open device	Change of manufacturer/ alternative	>/=/<	>/=/<	=	Possible providing that the alternative and the original door devices are of the same type, internal or surface mounted, the alternative device complies with the EN 1155 and is suitable for use on the original doorset. For concealed items, the size of the alternative item cannot be greater than tested in the original doorset and the material removed from the door shall be as tested or less. The cable shall be external or, if it is internal, it shall require the same preparation in the door leaf and in the frame as tested in the original doorset. The intumescent protection, if fitted, shall remain the same as tested otherwise not possible without an additional test	Further test is to include the required item tested in accordance with EN 1634-1 or EN 1634-2 on a representative doorset construction
C.1.41 Face fixed door closer (face fixed to face fixed, mounted on the closing or opening side of the doorset) – **see Figure A.60**	Alternative fitting positions in accordance with table below	-	-	-	Possible providing the closer has been tested in a full scale test in disengaged condition, with the door leaf opening outwards and is in accordance with the table below otherwise not possible without an additional test	Additional full scale test can be single or double leaf doorset

Tested	Allows			
A	A	-	C	-
B	-	B	C	D
C	-	-	C	-
D	-	-	C	D

Construction Parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional Evidence Required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
C.1.42 Face fixed door closer	Alternative	=	=	=	Possible providing the alternative closer has been tested in a full scale or small scale test according EN1634-2 otherwise not possible without an additional test	Additional full scale test can be single or double leaf doorset or small scale test according EN 1634-2
C.1.43 Concealed door closer (mounted in the door leaf or the frame)	Alternative	=	=	=	Possible providing the closer has been tested in a full scale test with the door leaf opening outwards, and that the size of the cut-out is not increased from that tested If tested with EI doors only, the result is only applicable to EI doors but if tested on uninsulated E doors the result is applicable to EI, EW and E doors otherwise not possible without an additional test	Additional full scale test can be single or double leaf doorset
C.1.44 Concealed door closer	Change of location (door leaf to frame or *vice versa*)	>/=/<	>/=/<	>/=/<	Not possible without an additional test	Additional full scale test can be single or double leaf doorset
C.1.45 Door closer **- See Figure A.61 and A.62**	Change of location (concealed for face mounted or *vice versa*)	>/=/<	>/=/<	>/=/<	Not possible without an additional test	Additional full scale test can be single or double leaf doorset

Construction Parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional Evidence Required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
C.1.46 Power cable and protective conduits for electric locks (fitted in the door leaf or frame) **- See Figure A.63**	Add	=	=	=	Possible to add power cable and conduit providing the positioning of such cable or conduit shall not detract from the rigidity of any stiffening element and the conduit inside the door leaf and frame is made of metal. Where the door leaf and the frame are connected via a cable transfer device it also has to be metal and any cut out in the door leaf and frame should not reduce the intumescent seal, if any. Where the cable is outside the leaf and frame the conduit has to be of metal and have a diameter not greater than 16 mm, otherwise not possible without an additional test	Additional full scale test can be single or double leaf doorset
C.1.47 Spy holes/key tubes **- See Figure A.64**	Add	=	=	=	Possible providing that the component has been tested in either a full scale or small scale test according EN 1634-2 in a similar leaf construction otherwise not possible without an additional test	Additional full scale test can be single or double leaf doorset or small scale test according EN 1634-2
C.1.48 Alarm contacts and proximity switches	Add	=	=	=	Possible	-
C.1.49 Alarm contacts and proximity switches	Alternative	=	=	=	Possible	-
C.1.50 Door signs (Euroclass A1)	Add	=	=	=	Possible providing that any break through is limited to screw fixings and their covering and that the fixings do not break both sides otherwise not possible without an additional test	Additional full scale test can be single or double leaf doorset or small scale test according EN 1634-2

Construction Parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional Evidence Required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
C.1.51 Door signs (< Euroclass A1)	Add	=	=	=	Possible for EI doorsets only providing that the fixing do not break both sides and the location is at least 100 mm from the edge of the door leaf otherwise not possible without additional test.	Additional full scale test can be single or double leaf doorset or small scale test according EN 1634-2
C.1.52 Pivots with single action accessories (shoe & top centre) with or without floor/transom mounted closing devices	Exchange from hinges	≤	≤	≤	Not possible without an additional test	Additional test to include the specific closer and accessories For single leaf doorsets additional full scale test single leaf or double leaf doorset , for double leaf doorsets additional full scale test double leaf doorset
C.1.53 Pivots with single action accessories (shoe & top centre) with or without floor/transom mounted closing devices	Exchange to hinges				Possible providing the hinges, including fixing technique and hinge positions, have been successfully tested on a similar doorset and providing a previously proven closing device is added otherwise not possible without additional test.	Additional full scale test can be single or double leaf doorset
D. Support / attachment - door leaf to framing						
D.1. General						
D1.1. Gap dimensions (door leaf to frame)	Increase/decrease	≤	≤	≤	Possible in line with direct application beyond the field of direct application rules not possible without an additional test	Additional test can be single or double leaf doorset (worst case direction)

Construction Parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional Evidence Required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
E. Side / transom panels and flush over panels Existing direct application rules for size variations, side and over panels, door leaves and frames are also applicable for variations in side, transom panels and flush over panels.						
E.1. Side, over and transom 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 1634-1 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 doorset without side/over panels then only the single door arrangements from the following variations will be permissible. If the original doorset test was conducted only on a double doorset without side/over panels then only the double door arrangements from the following variations will be permissible. Variations outside the arrangements in Figures B.1 and B.2 together with Tables B.1 and B.2 are possible if the proposed alternative arrangement is covered by variations permitted in other parts of this European Standard. If a variation is not covered, an additional test will be necessary.						
E.1.1 Side/transom panel arrangement **- See Annex B – Figure B.1**	Additional or variations of alternative arrangements in accordance with Table B.1 in Annex B	≤	≤	≤	A successful test on an arrangement indicated in the left hand column of Table B.1 would allow the variations in arrangement indicated by an 'X' in the same row assuming the fixing/retention method of the panelling system is retained. otherwise not possible without additional, specific test.	Test using test specimens according Annex B – Figure B.1 (opening outwards from the furnace)
E.1.2 Side/flush over panel arrangement **- See Annex B – Figure B.2**	Additional or variations of alternative arrangements in accordance with Table B.2 in Annex B	≤	≤	≤	A successful test on an arrangement indicated in the left hand column of Table B.2 would allow the variations in arrangement indicated by an 'X' in the same row assuming the fixing/retention method of the panelling system is retained otherwise not possible without additional, specific test.	Test using test specimen according Annex B - Figure B.2 (open outwards from the furnace)

Construction Parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional Evidence Required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
E.1.3 Hinged flush over panel arrangement instead of fixed panel	Alternative	≤	≤	≤	Not possible without an additional test	Test using test specimen according Annex B - Figure B.2 incorporating hinged over panel (open outwards from the furnace)
E.1.4 Fixed flush over panel arrangement instead of hinged panel	Alternative	≥	≥	≥	Possible	-
E.1.5 Cut outs in panels (penetration)	Add	>/=/<	>/=/<	>/=/<	Possible within the size limits of the intended penetration system	-
E.2. General For variations of intumescent/draught/smoke seals, the rules defined in section A.1 are applicable for side/transom panels and flush over panels. For variations of ventilation grilles (louvres), the rules defined in A.1. are applicable for side/transom panels and flush over panels. For variations of rebates to panel edges, the rules defined in A.1. are applicable for side/transom panels and flush over panels.						
E.3. Size variations						

Construction Parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional Evidence Required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
E.3.1 Size (area, width, height) – all distortions	Decrease	≥	≥	≥	**E, EW** possible **EI** possible in line with direct application or possible providing the distance between the fixing points is reduced by at least 25 % or from the size tested down to size of a second test specimen in the same design otherwise not possible without an additional test	Additional test smaller leaf/panel arrangement incorporating single or double leaf doorset
E.3.2 Size (area, width, height) - all distortions **- See Figure A.65**	Increase	≤	=	≤	Possible in line with direct application or to a combination of the maximum tested size of each side, transom and/or flush over panel (no interchange between side, transom and flush over panel). An example of the maximum size doorset arrangement tested in a standard size furnace to which direct application can be applied is given in Figure A.65 otherwise not possible without an additional test	Additional test larger leaf/panel arrangement incorporating single or double leaf doorset
E.3.3 Thickness of the panel (excluding glazing covered in Section F) based on high distortion	Increase	≥	≥	≥	Not possible without an additional test	Additional test single or double leaf doorset with a panel
based on medium distortion		>/=/<	≥	≥	Possible providing the same increase of thickness of core material by a maximum of 10 % otherwise not possible without an additional test	Additional test single or double leaf doorset with a side, over and transom panel arrangement

Construction Parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional Evidence Required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
based on low distortion		>/=/<	≥	≥	Possible providing the same increase of thickness of core material by a maximum of 25 % otherwise not possible without an additional test	Additional test single or double leaf doorset with side, over and transom panel arrangement
E.3.4 Thickness of the panel (excluding glazing covered in Section F)	Decrease	>=<	≤	≤	**E** possible to a maximum of 10 % otherwise not possible without an additional test **EI, EW** not possible without an additional test	Additional test single or double leaf doorset with a side, over and transom panel arrangement
E.4. Materials and construction For further "Materials and Construction" parameters, refer to section A.3 If additional tests need to be conducted, the specimen shall incorporate appropriate side/transom and flush over panel arrangements. For variations of intumescent/draught/smoke seals, the rules defined in section A.3 are applicable for side/transom and flush over panel arrangements.						
E.4.1 Material of panel	Alternative	=	=	=	Not possible without an additional test	Additional test single or double leaf doorset with a panel
E.4.2 Type of steel sheet	Mild to stainless	=	=	=	Possible providing that the material thickness shall not be increased but may be decreased up to a maximum of 20 % otherwise not possible without an additional test	Additional test single or double leaf doorset with a panel

Construction Parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional Evidence Required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
E.4.3 Type of steel sheet	Stainless to mild	=	=	=	Possible providing that the material thickness shall not be decreased but may be increased up to a maximum of 25 % otherwise not possible without an additional test	Additional test single or double leaf doorset with a panel
E.5 Decorative and/or protective finishes For further "Decorative and/or protective finishes" parameters, refer to section A.4.						
F. Glazing for door leaf/leaves or side/transom and flush over panels						
F. 1 General Glass panels on their own do not have a classification. The fire resistance classification is derived from testing in specific edge framing techniques. Where fire performance classifications are referred to in this section, they may be determined by alternative testing of glass panels of the same or larger height and/or width to those tested by the particular door test(s). Where "similar edge fixing technique" is referred to, this means that the technique used in the original door test should be replicated exactly in terms of the retention detail or that the technique may be modified to accommodate a technique proven in an alternative test to determine fire performance characteristics. For double leaf doorsets, both leaves shall be similarly glazed unless tested to show maximum and minimum amounts of leaf cut out in opposing leaves of the same double leaf doorset after which time any sizes of leaf cut out in between those tested are acceptable.						
F.1.1 Glazed aperture	Add	>=<	>=<	>=<	Not possible without an additional test	Additional full scale test can be single or double leaf doorset
F.1.2 Glazed aperture	Remove	>=<	>=<	>=<	Possible in line with direct application otherwise not possible without an additional test	For single leaf doorsets additional full scale test single leaf or double leaf doorset , for double leaf doorsets additional full scale test double leaf doorset

Construction Parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional Evidence Required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
F.1.3 Glazed aperture	Transposition between leaves	-	-	-	Possible in accordance with the table below otherwise not possible without an additional test	Additional full scale test can be single or double leaf doorset in accordance with the table below

Tested			Allows		
no. of leaves		glazed aperture	single leaf doorset	double leaf doorset	
				primary	secondary
single		Yes	Yes	Yes	Yes/No *)
double	primary	Yes	Yes	Yes**)	Yes**)
	secondary	Yes			
double	primary	Yes	Yes	Yes	Yes/No *)
	secondary	No			
double	primary	No	No	No	Yes
	secondary	Yes			

In addition, all relevant D.A. rules apply.
*) the "yes" only applies where the primary and secondary leaves are of identical construction, e.g. double swing unlatched doors.
**) for double leaf doorsets, it is possible to remove glazings from one of the leaves providing the doorset of the same design has been tested without glazing.

Construction Parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional Evidence Required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
F.1.4 Glazed aperture	Size variation between smallest and largest tested glazed aperture	-	-	-	Possible in accordance with the table below otherwise not possible without an additional test	Additional full scale test can be single or double leaf doorset in accordance with the table below

Tested		Allows		
no. of leaves	dimension of glazed aperture	single leaf doorset (range of dimension)	double leaf doorset (range of dimension) primary leaf	secondary leaf
single	largest	largest minus 25 % up to largest	largest minus 25 % up to largest	largest minus 25 % up to largest
single (two tests)	smallest + largest	smallest up to largest	smallest up to largest	smallest up to largest
double primary	largest	smallest up to largest	smallest up to largest	smallest up to largest
double secondary	smallest			
double primary	smallest	smallest	smallest	smallest up to largest
double secondary	largest			
double primary	largest	largest minus 25 % up to largest	largest minus 25 % up to largest	largest minus 25 % up to largest
double secondary	none			
double primary	none	none	none	largest minus 25 % up to largest
double secondary	largest			

Rules in D.A. relating to distance between the edge of glazing and the perimeter of each leaf are applicable.

Construction Parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional Evidence Required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
F.1.5 Thickness of glass **- See Figure A.66 a)**	Increase	≥	≥	≥	Possible to exchange one thickness of fire-resistant glass for another with the same (or better) fire resistance performance provided that it can be demonstrated that the new glass of the thickness required is within the same glass product family (same manufacturer) and has a similar edge fixing technique only modified to accommodate the alternative thickness and that the alternative thickness does not add more than 25 % to the weight of the door leaf otherwise not possible without an additional test Glass Product Family is defined in EN 15254-4:2008+A1:2011, 3.7.	Additional full scale test can be single or double leaf doorset
F.1.6 Thickness of glass **- See Figure A.66 b)**	Decrease	>/=/<	>/=/<	>/=/<	Possible to exchange one thickness of fire-resistant glass for another with the same (or better) fire resistance performance provided that it can be demonstrated that the new glass of the thickness required is within the same glass product family (same manufacturer) and has a similar edge fixing technique only modified to accommodate the alternative thickness otherwise not possible without an additional test Glass Product Family is defined in EN 15254-4:2008+A1:2011, 3.7.	Additional full scale test can be single or double leaf doorset
F.1.7 Dimensions of each glazed aperture **- See Figure A.67**	Increase	≤	≤	>/=/<	Possible to increase the size and change the aspect ratio in line with EN 15254-4 providing the distance between the edge of glazing and the perimeter of the door leaf/panel is not decreased otherwise not possible without an additional test	Additional full scale test can be single or double leaf doorset in accordance with F.1.4

Construction Parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional Evidence Required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
F.1.8 Dimensions of each glazed aperture **- See Figure A.68**	Decrease	≥	≥	>/=/<	Possible in line with direct application otherwise not possible without an additional test	Additional full scale test can be single or double leaf doorset in accordance with F.1.4
F.1.9 Type of glass	Change of glass type	=	=	=	Possible to exchange one type of fire-resistant glass for another with the same (or better) fire resistance classification provided that it can be demonstrated that both glasses are within the same glass product family (same manufacturer) and have at least the same or increased nominal thickness. For glass covered by the product standards EN 572-9, EN 1748-2 and EN 13024-2, it is possible to exchange one type of fire-resistant glass for another with the same (or better) fire resistance classification provided that it can be demonstrated that the new glass is within the same glass Product Standard and has a similar edge fixing technique. otherwise not possible without an additional test	Additional full scale test can be single or double leaf doorset
F.1.10 Materials and geometry of edge fixing technique (with the same glass type)	Alternative	>/=/<	>/=/<	>/=/<	Not possible without an additional test	Additional full scale test to EN 1634-1 can be single or double leaf doorset or for low distortion doors only to EN 1364-1
F.1.11 Decorative capping **- See Figure A.69**	Add or exchange	>/=/<	=	=	Possible providing the edge fixing technique is not affected and the capping is Euroclass A1 otherwise not possible without an additional test	Additional full scale test can be single or double leaf doorset

Construction Parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional Evidence Required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
F.1.12 Type and number of edge fixings (e.g. clips, screws, rivets)	Alternative	=	=	=	Possible to interchange between fixings providing centre distances are not exceeded and providing the critical components have a melting point higher than 850 ºC but where it is proven that the critical components have been successfully tested with a melting point lower than 850 ºC, these may be interchanged with similar components otherwise not possible without an additional test	Additional full scale test can be single or double leaf doorset
F.1.13 Shape of glazing	interchange between rectangular and round	=	=	=	Possible to change the shape of the tested glass in line with EN 15254-4 providing the distance between the edge of glazing and the perimeter of the door leaf/panel is not decreased otherwise not possible without an additional test	Additional full scale test can be single or double leaf doorset
F.1.14 Number of glazed apertures **- See Figure A.70**	Increase	=	≤	≥	Possible providing the distance between glazed apertures has been tested, providing this distance is not reduced and providing the tested glazed area is not to be exceeded (smallest tested distance between edge of panes and perimeter of door leaf/panel is not decreased) otherwise not possible without an additional test	Additional full scale test can be single or double leaf doorset
F.1.15 Number of glazed apertures **- See Figure A.71**	Decrease	=	≥	≤	Possible to reduce to a minimum of one (in line with F.1.2) providing this distance between the apertures is not reduced otherwise not possible without an additional test	Additional full scale test can be single or double leaf doorset
F.1.16 Smallest tested distance between the edge of glazing and the perimeter of the door leaf/panel **- See Figure A.72**	Increase	≥	≥	=	Possible	-

Construction Parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional Evidence Required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
F.1.17 Smallest tested distance between the edge of glazing and the perimeter of the door leaf/panel **- See Figure A.73**	Decrease	≤	≤	=	Not possible without an additional test	Additional full scale test can be single or double leaf doorset
F.1.18 Distance between glazed apertures	Increase	≥	≥	=	Possible	-
F.1.19 Distance between glazed apertures **- See Figure A.74**	Decrease	≤	≤	=	Not possible without an additional test	Additional full scale test can be single or double leaf doorset
G Supporting construction and attachment (technique) of door frame or side / transom panels / flush over panels						
G1 General						
G.1.1 Supporting construction	Flexible to rigid	>/=/<	>/=/<	>/=/<	Not possible without an additional test	Additional full scale test can be single or double leaf doorset
G.1.2 Supporting construction	Rigid to flexible	>/=/<	>/=/<	>/=/<	**E** possible in line with direct application **EI, EW** not possible without an additional test	Additional full scale test can be single or double leaf doorset
G.1.3 Supporting construction	Standard to associated and *vice versa*	>/=/<	>/=/<	>/=/<	Not possible without an additional test	Additional full scale test can be single or double leaf doorset
G.1.4 Attachment technique	Alternative built-in frame anchor to plug & screw and *vice versa*	>/=/<	>/=/<	>/=/<	Possible providing the fixings are appropriate to the construction and have been successfully tested in similar supporting construction and the distance between the fixings is not increased otherwise not possible without an additional tes	Additional full scale test can be single or double leaf doorset

Construction Parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional Evidence Required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
G.1.5Type of fixings	Alternative manufacturer/supplier	=	=	=	Possible	-
G.1.6 Type of fixings	Alternative material	≤	≤	≤	Possible to interchange between alternative fixing material providing centre distances are not increased and providing the critical components have a melting point higher than 850 ºC. Where it is proven that the critical components have been successfully tested with a melting point lower than 850 ºC, these may be interchanged with similar components. otherwise not possible without an additional test	Additional full scale test can be single or double leaf doorset
G.1.7 Number and size of fixings	Increase	≥	≥	≥	Possible	-
G.1.8 Number and size of fixings	Decrease	≤	≤	≤	Not possible without an additional test	Additional full scale test can be single or double leaf doorset with or without a panel in the same type of supporting construction
G.1.9 Distance between fixings	Increase	≤	≤	≤	Possible in line with direct application rules (15 % limit for size variations) when “B” category has been achieved otherwise not possible without an additional test	Additional full scale test can be single or double leaf doorset with or without a panel
G.1.10 Distance between fixings	Decrease	≥	≥	≥	Possible	-
G.1.11 Fixing to floor **- See Figure A.75 a)**	Cleated to sunk	≥	≥	≥	Possible	-

Construction Parameter	Variation	Influence of variation on performance characteristic			Possibility of extension	Additional Evidence Required
(1)	(2)	(3)			(4)	(5)
		E	I	W		
G.1.12 Fixing to floor **- See Figure A.75 b)**	Sunk to cleated	≤	≤	≤	Not possible without an additional test	Additional full scale test can be single or double leaf doorset with or without a panel
G.1.13 Gap between door leaf and floor **- See Figure A.76**	Increase	≤	≥	≥	Possible up to a 50 % increase in the tested gap size but limited to a maximum of 25 mm total gap size otherwise not possible without an additional test	Additional full scale test can be single or double leaf doorset
G.1.14 Gap between door leaf and floor **- See Figure A.77**	Decrease	≥	≥	≥	Possible	-
G.2 Modified supporting construction						
G.2.1 Standard flexible supporting construction **- See Figure A.78**	Strengthened to accommodate fixing requirements	>/=/<	>/=/<	>/=/<	Not possible without an additional test	Additional full scale test can be single or double leaf doorset
G.3 Associated supporting construction						
G.3.1 Material and assembly technique	Change	>/=/<	>/=/<	>/=/<	Not possible without an additional test	Largest size arrangement to be tested in each different associated construction

Figures referred to in Annex A

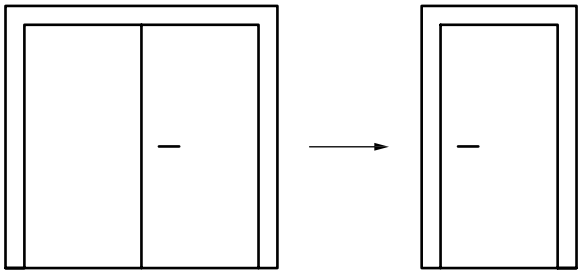
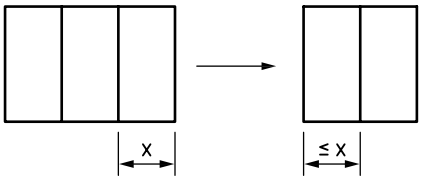


Figure A.1 — Number of leaves



Key

X tested width

Figure A.2 — Number of panels per leaf

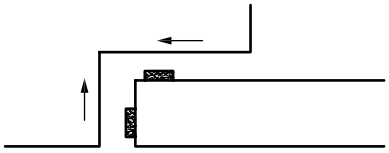


Figure A. 3 — Intumescent seals between frame and door leaf/leaves

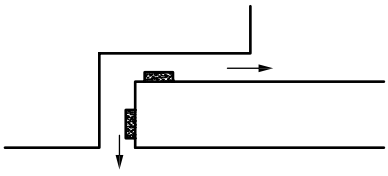


Figure A.4 — Intumescent seals between frame and door leaf/leaves

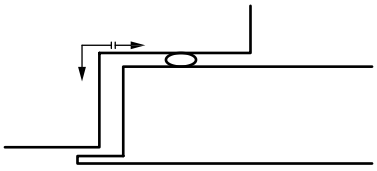


Figure A.5 — Non-intumescent seals between frame and door leaf/leaves — Euroclass A1, (fitted in leaf or frame) — Location

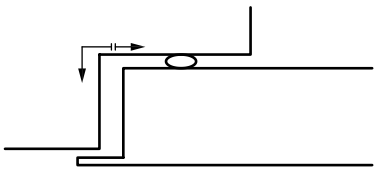


Figure A.6 — Non-intumescent seals between frame and door leaf/leaves — Euroclass A1, (fitted in leaf or frame) — Location

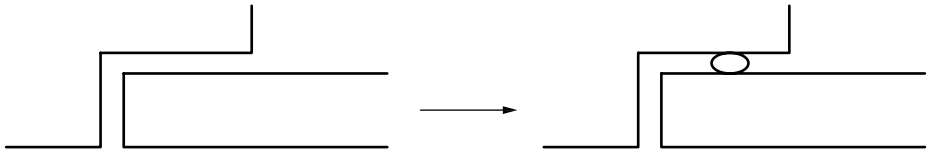


Figure A.7 — Non-intumescent seals between frame and door leaf/leaves — Euroclass A1, (fitted in leaf or frame) — Add

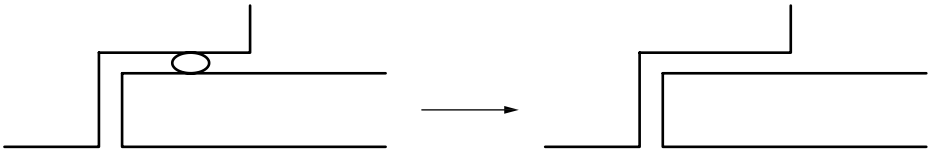


Figure A.8 — Non-intumescent seals between frame and door leaf/leaves — Euroclass A1, (fitted in leaf or frame) — Remove

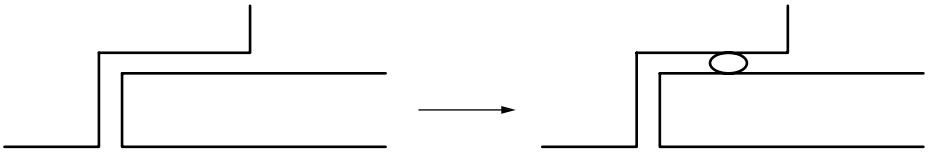


Figure A.9 — Non-intumescent seals between frame and door leaf/leaves — < Euroclass A1, (fitted in leaf or frame) — Add

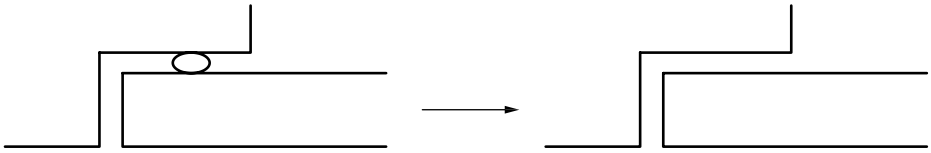


Figure A.10 — Non intumescent seals between frame and door leaf / leaves — < Euroclass A1, (fitted in leaf or frame) — Remove

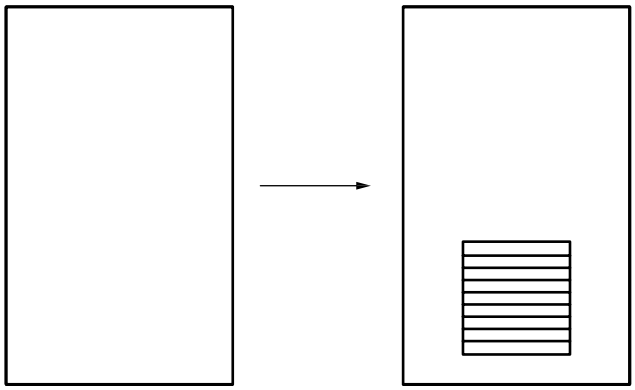


Figure A.11 a) — Ventilation grilles (louvres) in door leaf tested without ventilation grille — Add

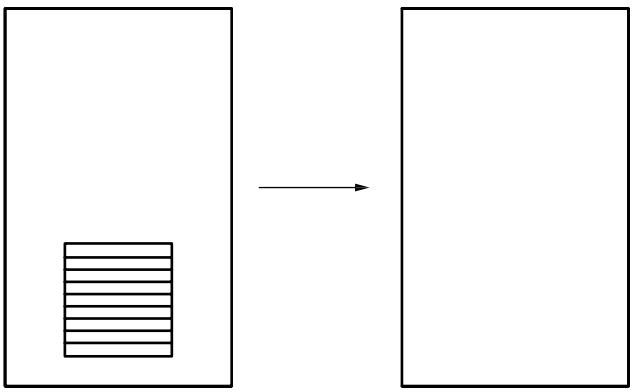


Figure A.11 b) — Ventilation grilles (louvres) in door leaf — Remove

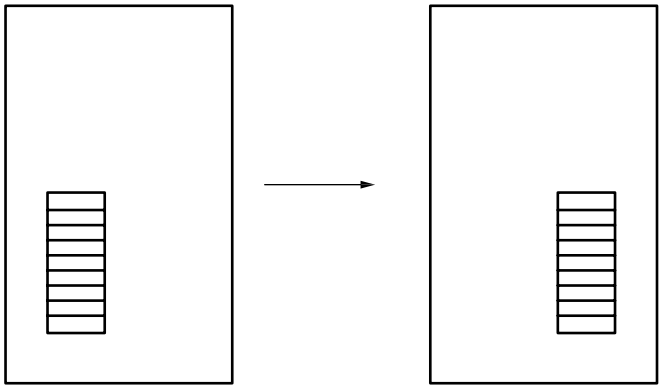


Figure A.12 — Ventilation grilles (louvres) in door leaf tested with ventilation grille (Location in horizontal direction)

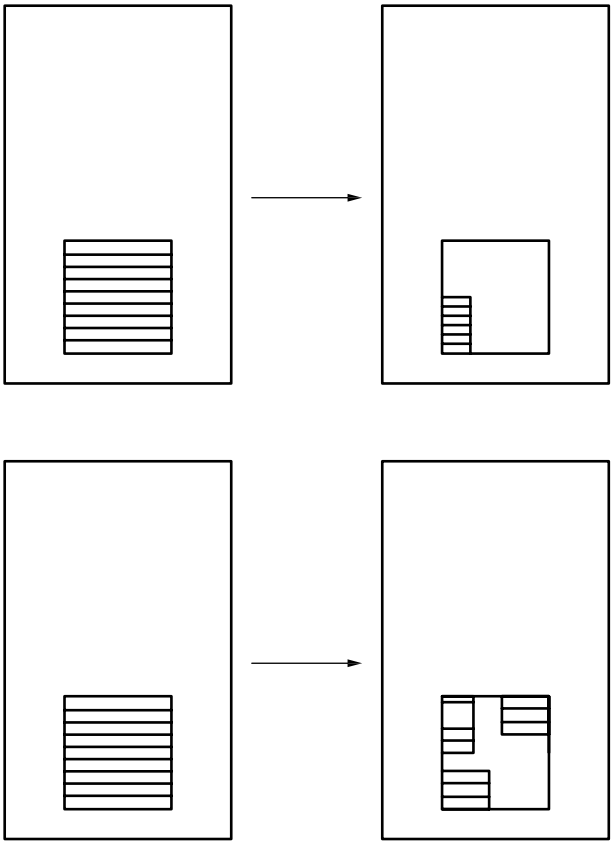


Figure A.13 a) — Ventilation grilles (louvres) in door leaf tested with ventilation grille (Smaller size)

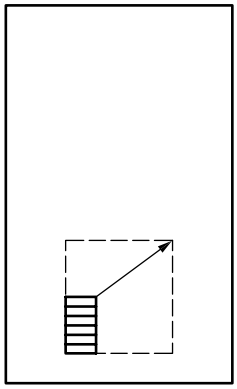
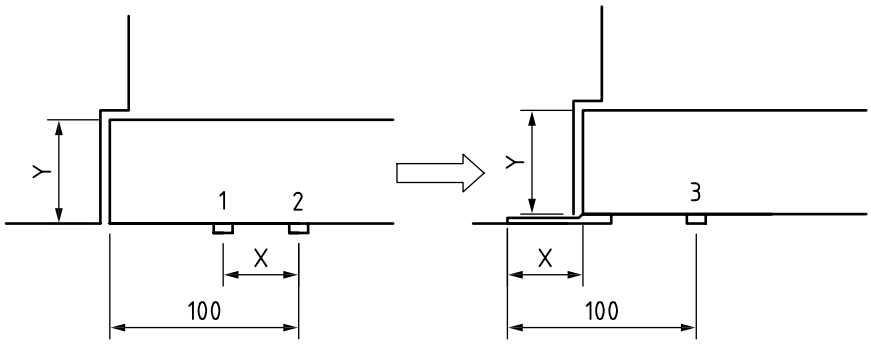


Figure A.13 b) — Ventilation grilles (louvres) in door leaf tested with ventilation grille (Larger size)

Dimensions in millimetres



Key

1 additional thermocouple
2 essential thermocouple
3 notional thermocouple position
X rebate width, Y overlap dimension

Figure A.14 a) — Rebate (door leaves to frames) — Add

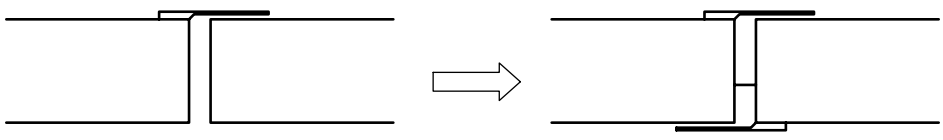


Figure A14 b) — Rebate (meeting edges) — Add (one rebate)

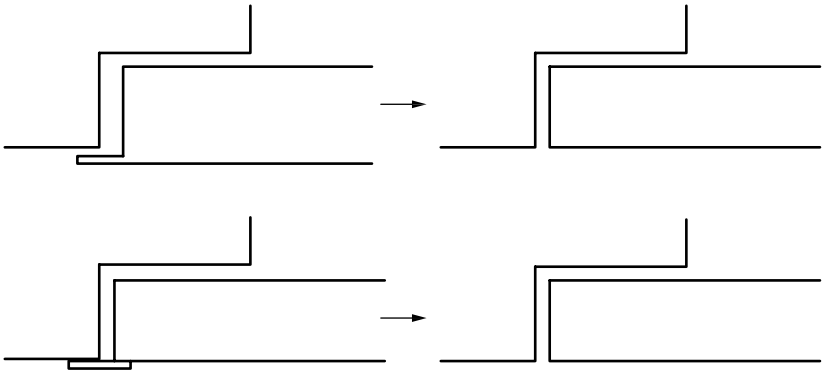


Figure A.15 — Rebate (door leaves to frames) — Remove

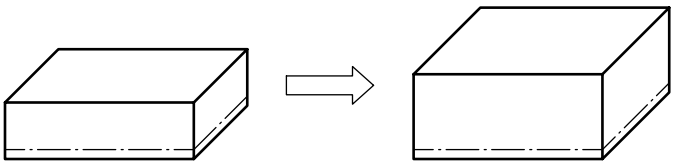


Figure A.16 — Thickness of core material — Increase

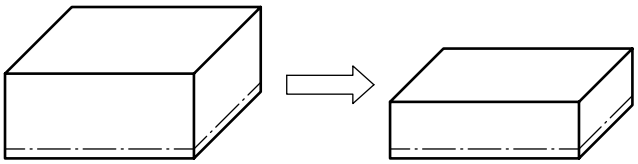


Figure A.17 — Thickness of core material — Decrease

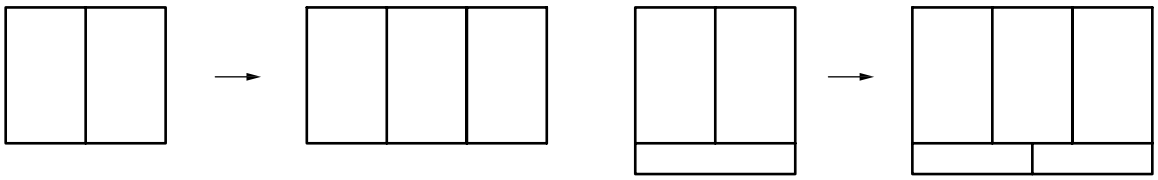
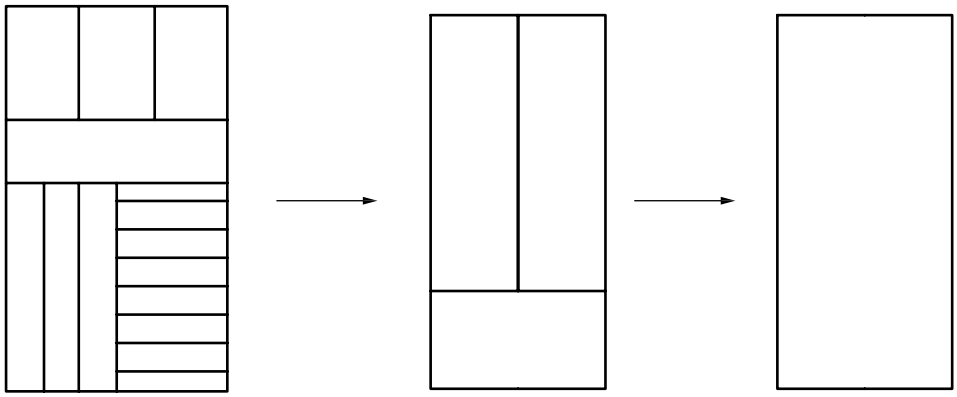


Figure A.18 — Pattern of core material (Increase number of pieces) — two examples shown



FigureA.19 — Pattern of core material — Decrease number of pieces

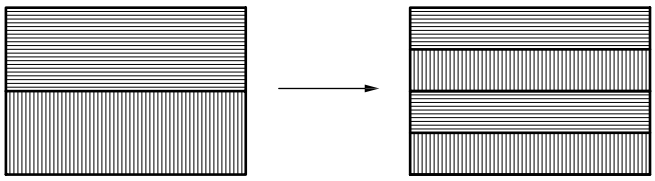


Figure A.20— Number of layers of identical and/or different materials — Increase

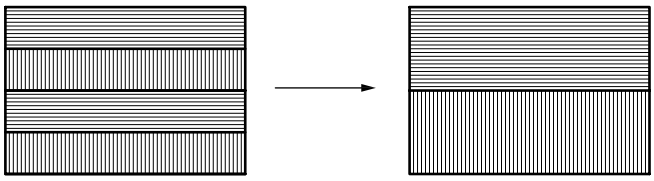


Figure A.21 — Number of layers of identical and/or different materials — Decrease

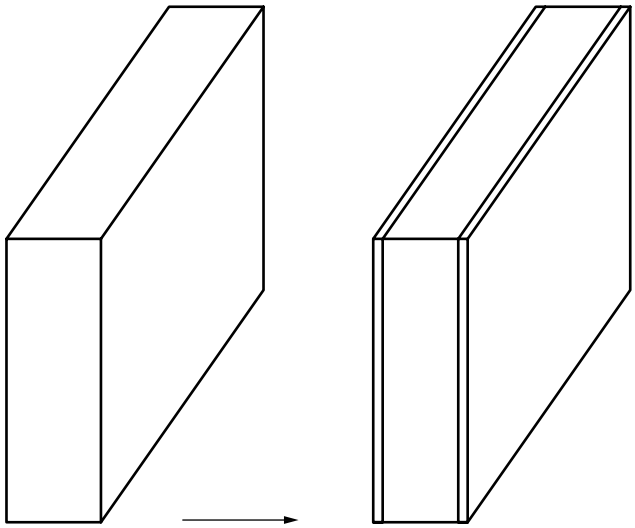


Figure A.22 a) — Metal armour sheet (internally mounted) — Add

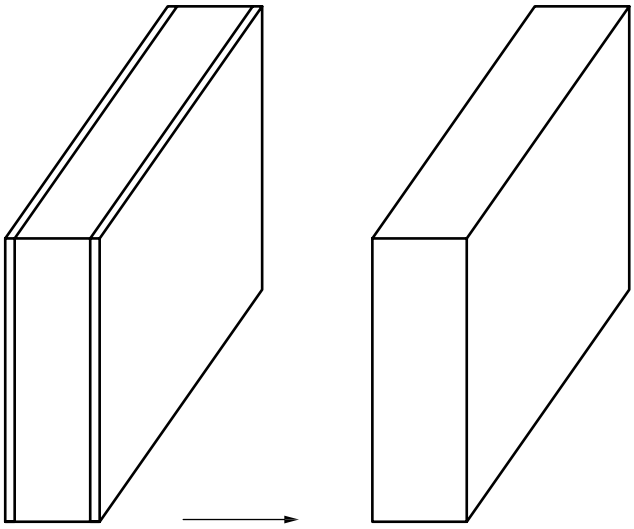
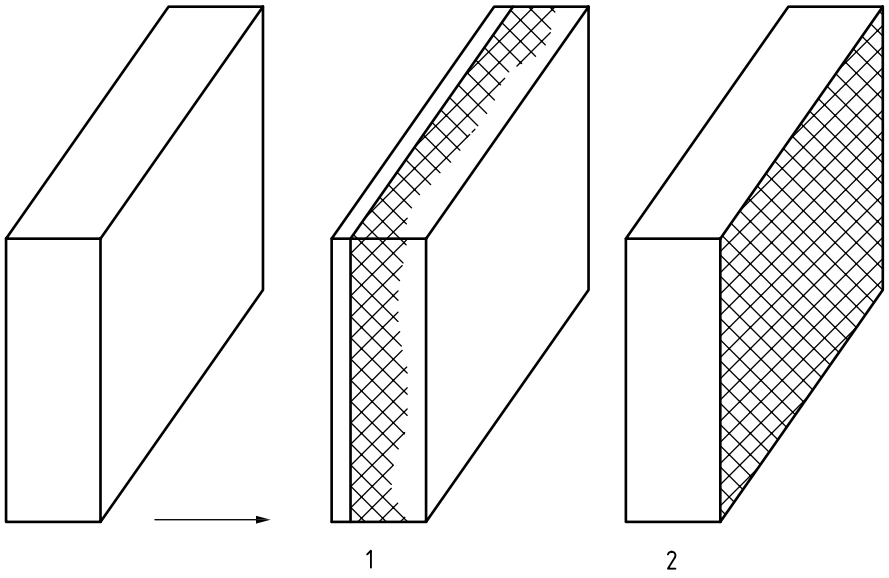


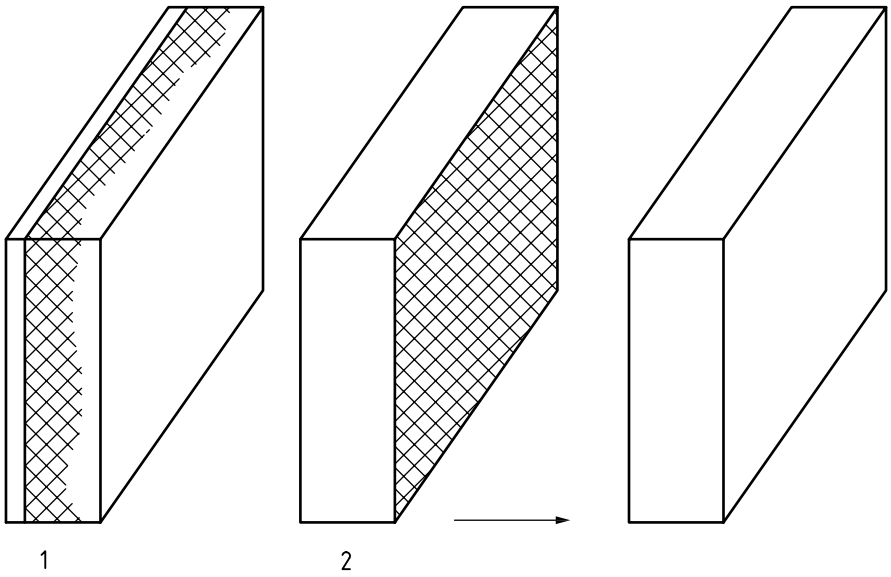
Figure A.22 b) — Metal armour sheet (internally mounted) — Remove



Key

1 internal
2 face fixed

Figure A.23 a) — Electronic security mesh — Add



Key

1 internal
2 face fixed

Figure A.23 b) — Electronic security mesh — Remove

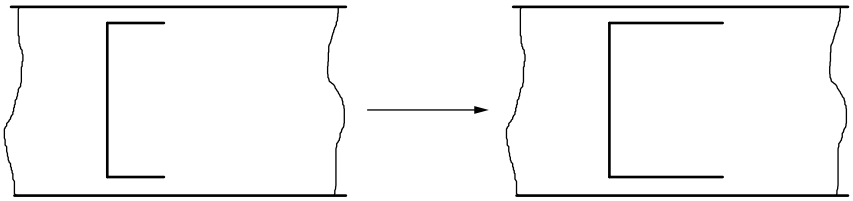


Figure A.24 a) — Cross-section dimension of stiffening elements — Increase

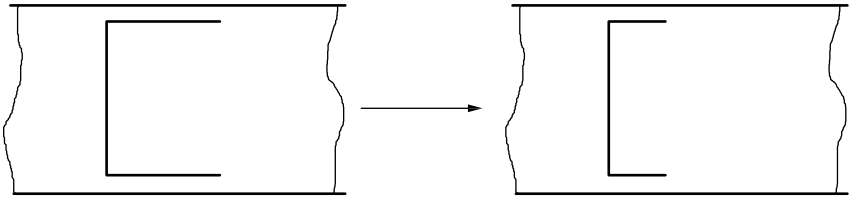


Figure A.24 b) — Cross-section dimension of stiffening elements — Decrease

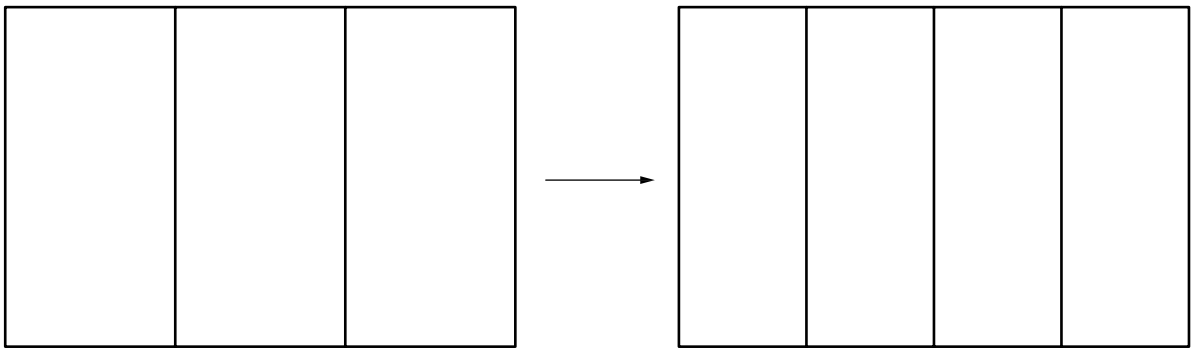


Figure A.25 a) — Number of intermediate stiffening elements — Increase

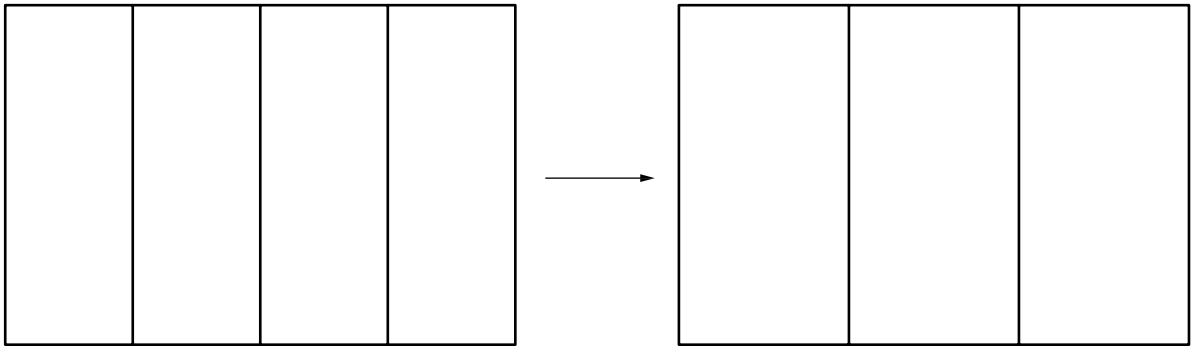


Figure A.25 b) — Number of intermediate stiffening elements — Decrease

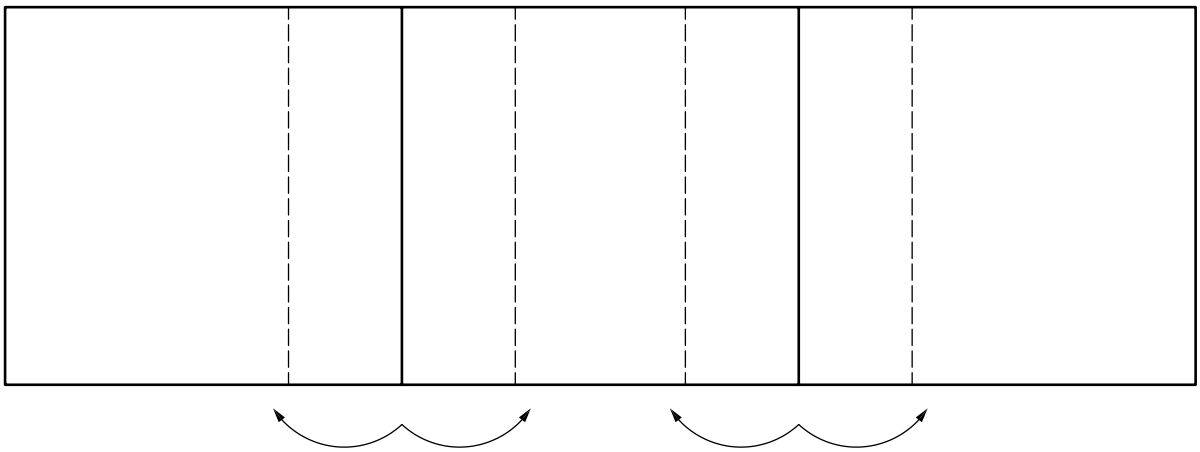


Figure A.26 — Stiffening elements — Location

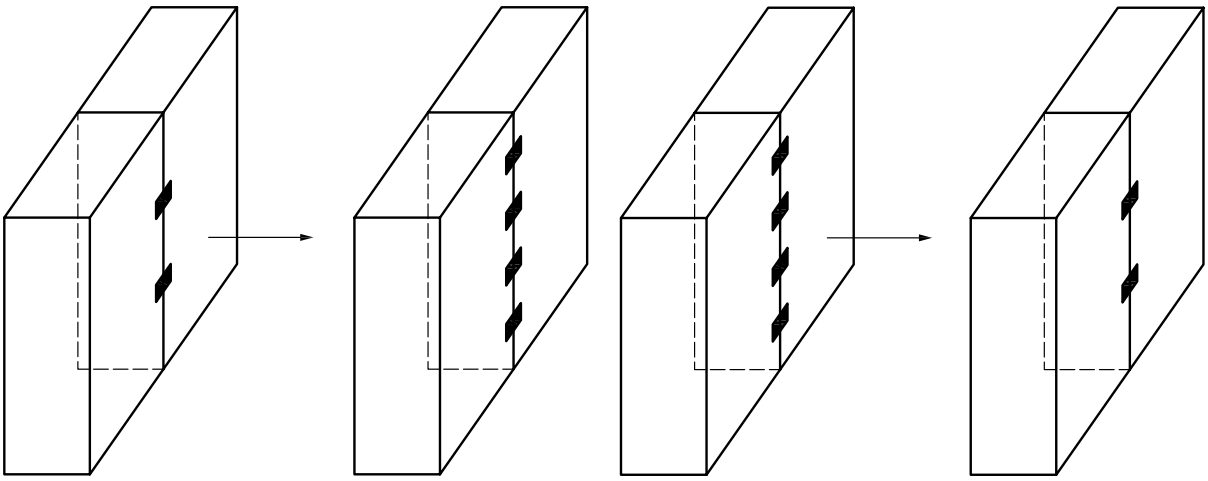
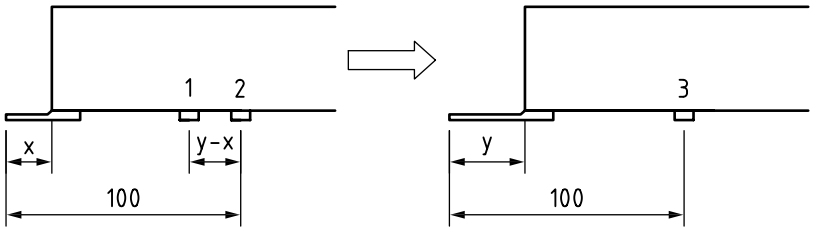


Figure A.27 a) — Number of stiffening element fixing points — Increase

Figure A.27 b) — Number of stiffening element fixing points — Decrease

Dimensions in millimetres

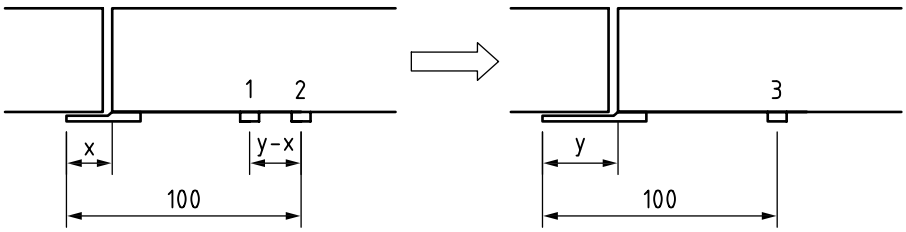


Key

1 additional thermocouple
2 essential thermocouple
3 notional thermocouple position
Y>X overlap dimensions

Figure A.28 a) — Overlap dimension of leaf edge rebate (between leaf and frame) — Increase

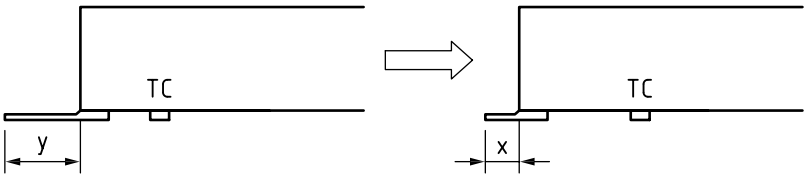
Dimensions in millimetres



Key

1 additional thermocouple
2 essential thermocouple
3 notional thermocouple position
Y>X overlap dimensions

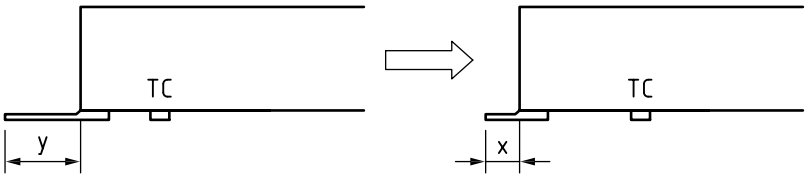
Figure A.28 b) — Overlap dimension of panel edge rebate (meeting edges) — Increase



Key

TC thermocouple
Y>X overlap dimensions

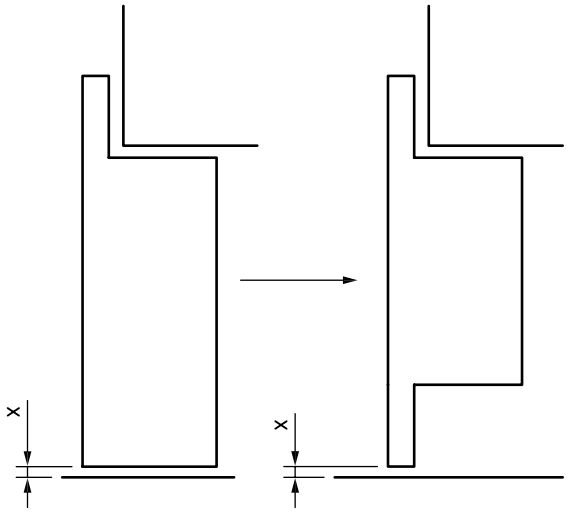
Figure A.29 a) — Overlap dimension of leaf edge rebate (between leaf and frame) — Decrease

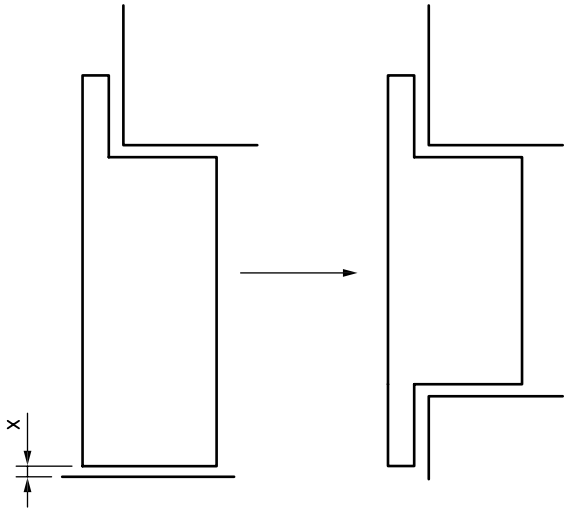


Key

TC thermocouple
Y>X overlap dimensions

Figure A.29 b) — Overlap dimension of panel edge rebate (meeting edges) — Decrease

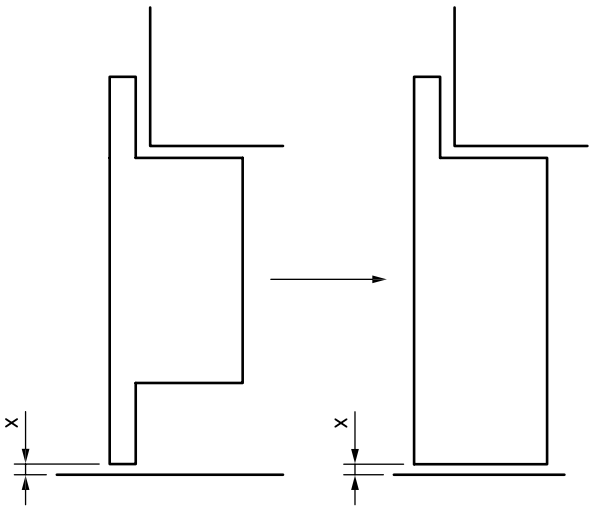




Key

X gap

Figure A.30 a) — Additional overlapping edge at the bottom of the door leaf — Add



Key

X gap

Figure A.30 b) — Additional overlapping edge at the bottom of the door leaf — Remove

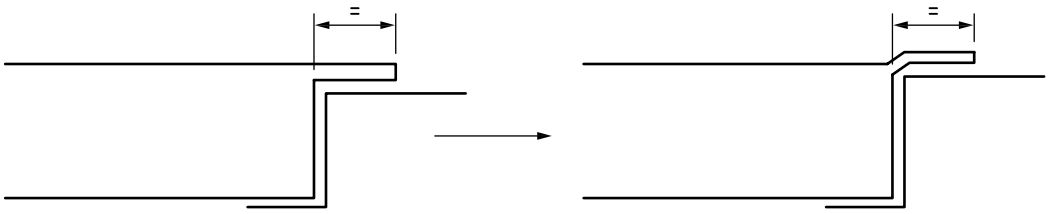
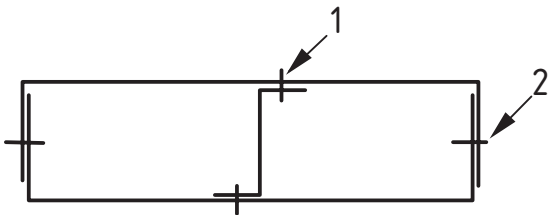


Figure A.31 — Leaf edge detail — Shape



Key

1 stiffening elements
2 leaf edges

Figure A.32 — Jointing/assembly technique (Alternative — welding/riveting/screwing)

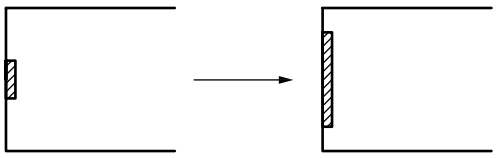


Figure A.33 a) — Dimension of intumescent seals (leaf or frame fitted) — Increase

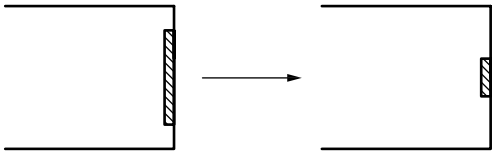


Figure A.33 b) — Dimension of intumescent seals (leaf or frame fitted) — Decrease

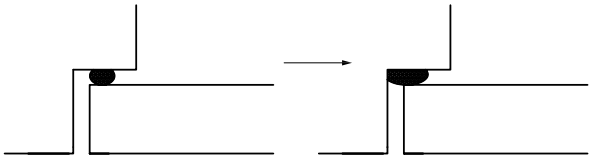


Figure A.34 a) — Dimension of draught/smoke seals (Euroclass A1) — leaf or frame fitted — Increase

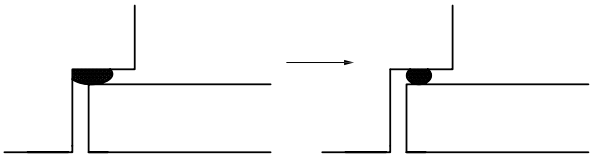


Figure A.34 b) — Dimension of draught/smoke seals (Euroclass A1) — leaf or frame fitted — Decrease

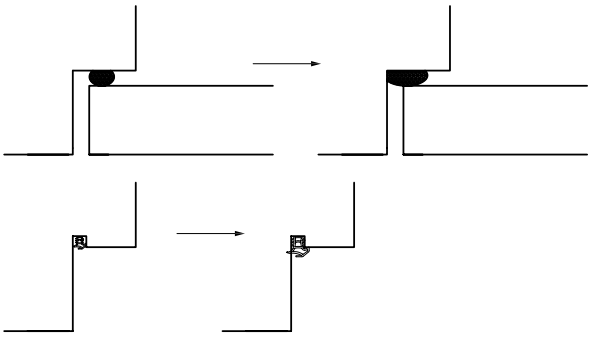


Figure A.35 a) — Dimension of draught/smoke seals (< Euroclass A1) — leaf or frame fitted — Increase (two examples shown)

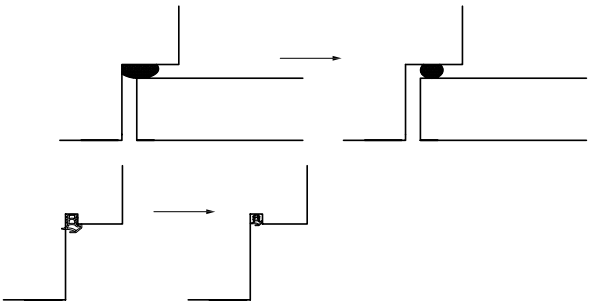


Figure A.35 b) — Dimension of draught/smoke seals (< Euroclass A1) — leaf or frame fitted — Decrease (two examples shown)

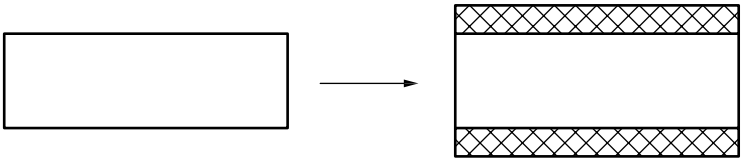


Figure A.36 — Decorative laminates and timber veneers on the face (on leaf or frame) — Add

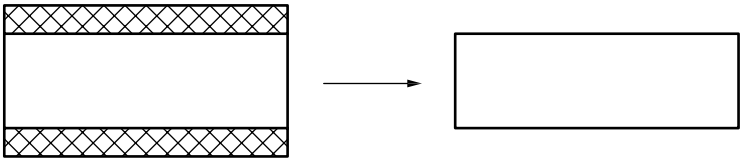


Figure A.37 — Decorative laminates and timber veneers on the face (on leaf or frame) — Remove

Figure A.38 — Decorative laminates and timber veneers on the edges (on leaf or frame) — Add

Figure A.39 — Decorative laminates and timber veneers on the edges (on leaf or frame) — Remove

Dimensions in millimetres

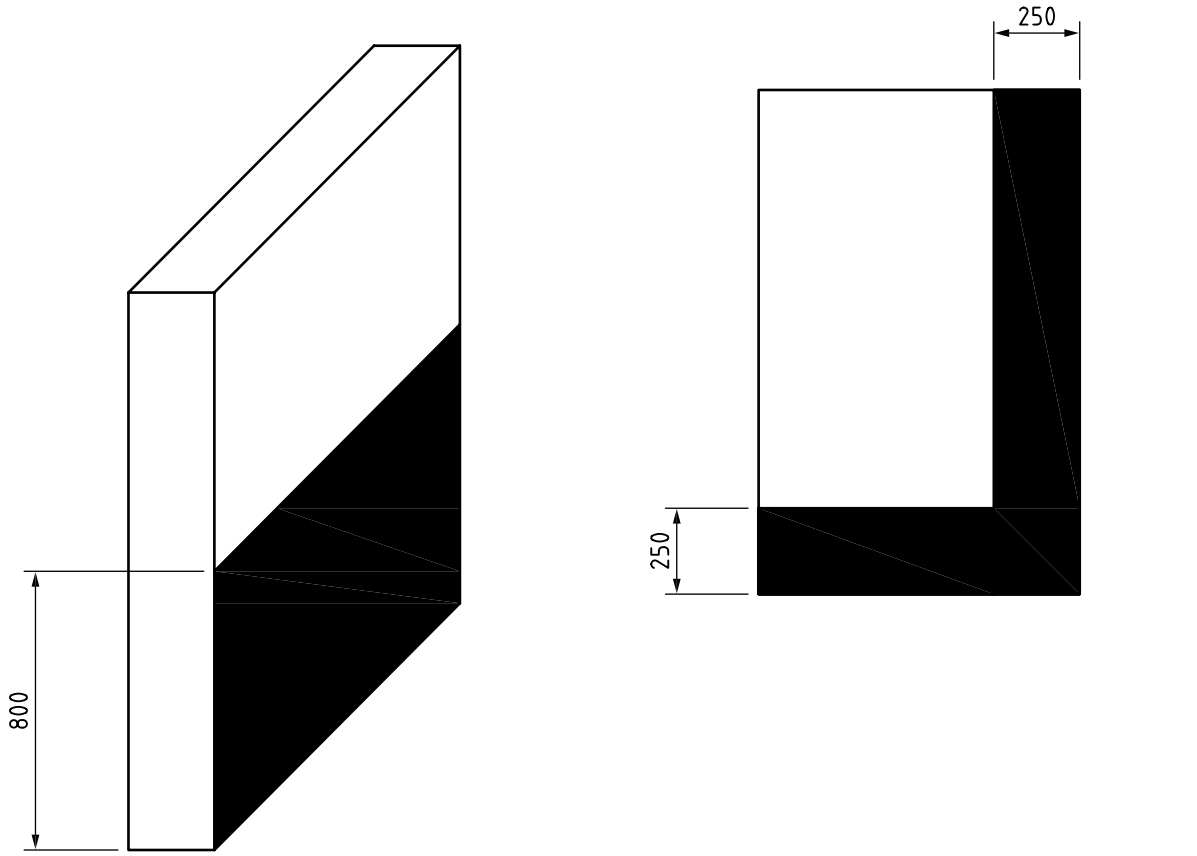
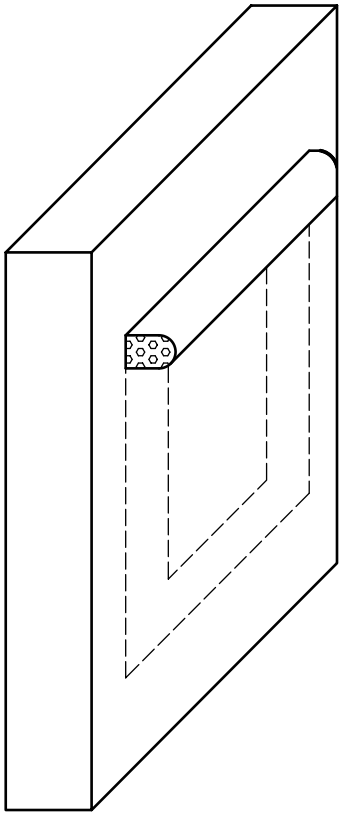


Figure A.40 — Protective elements — face fixed (kick plates/push plates/armour plates) — Add



Key

1 moulding/profile

Figure A.41 — Mouldings/profiles — Add/Remove

Dimensions in millimetres

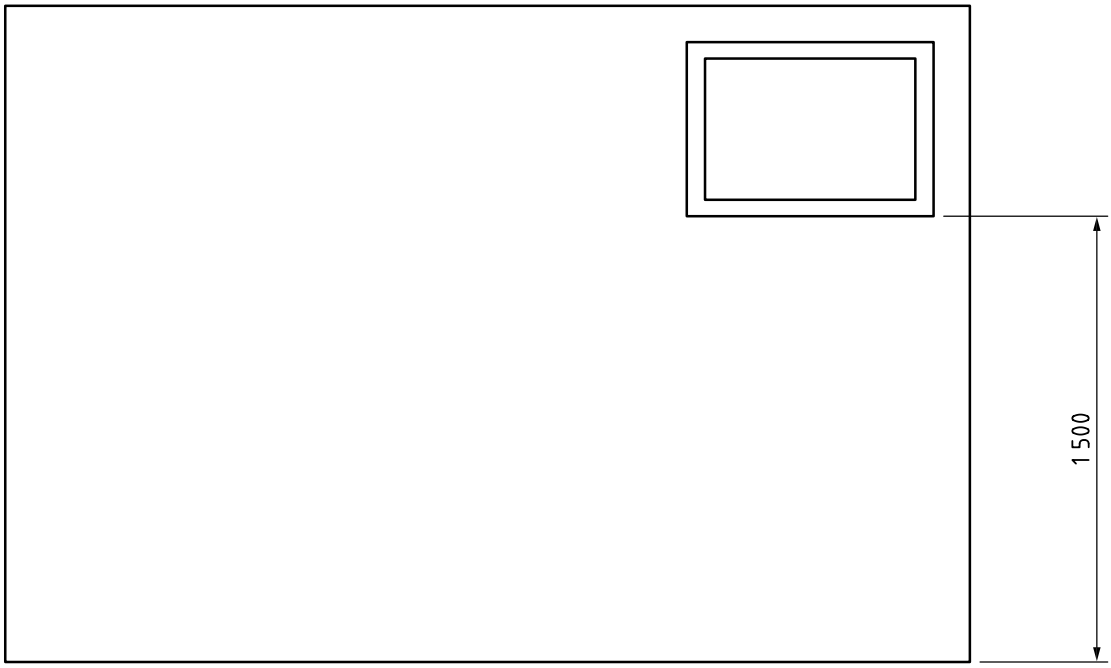


Figure A.42 — Height of hatch door frame above floor — Variation

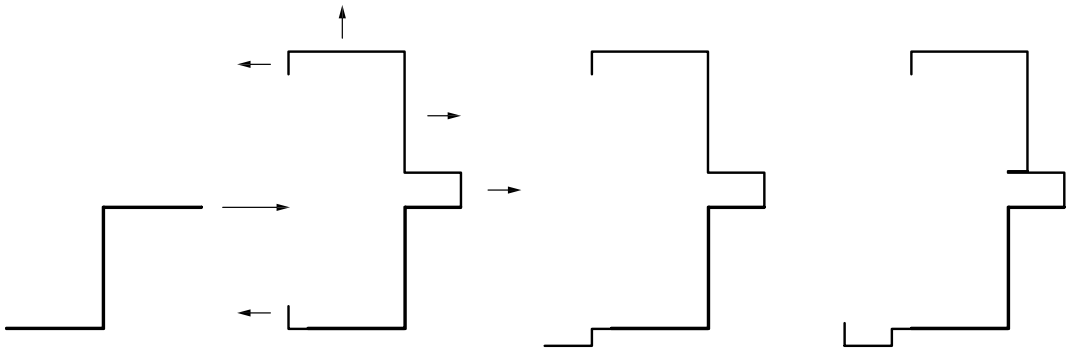


Figure A.43 — Overall dimensions and shape — Increase

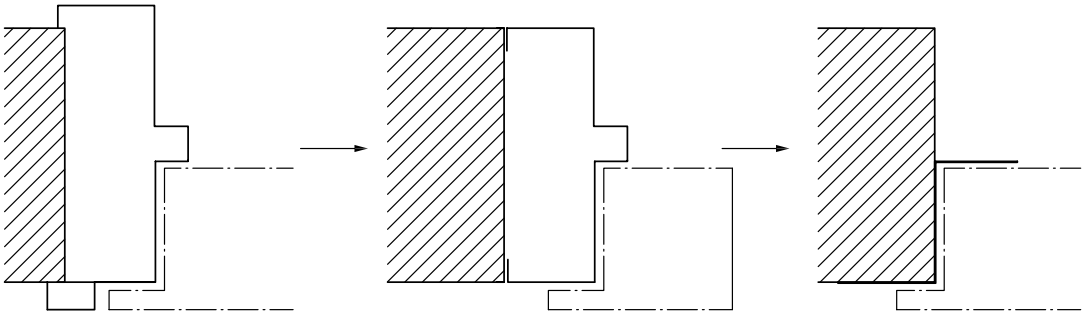


Figure A.44 — Overall dimensions and shape — Decrease

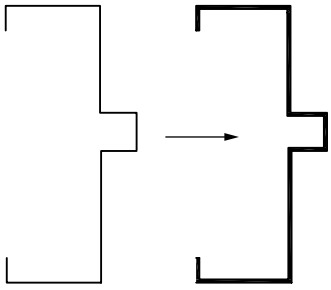


Figure A.45 a) — Thickness of metal — Increase

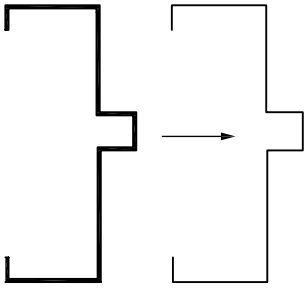


Figure A.45 b) — Thickness of metal — Decrease

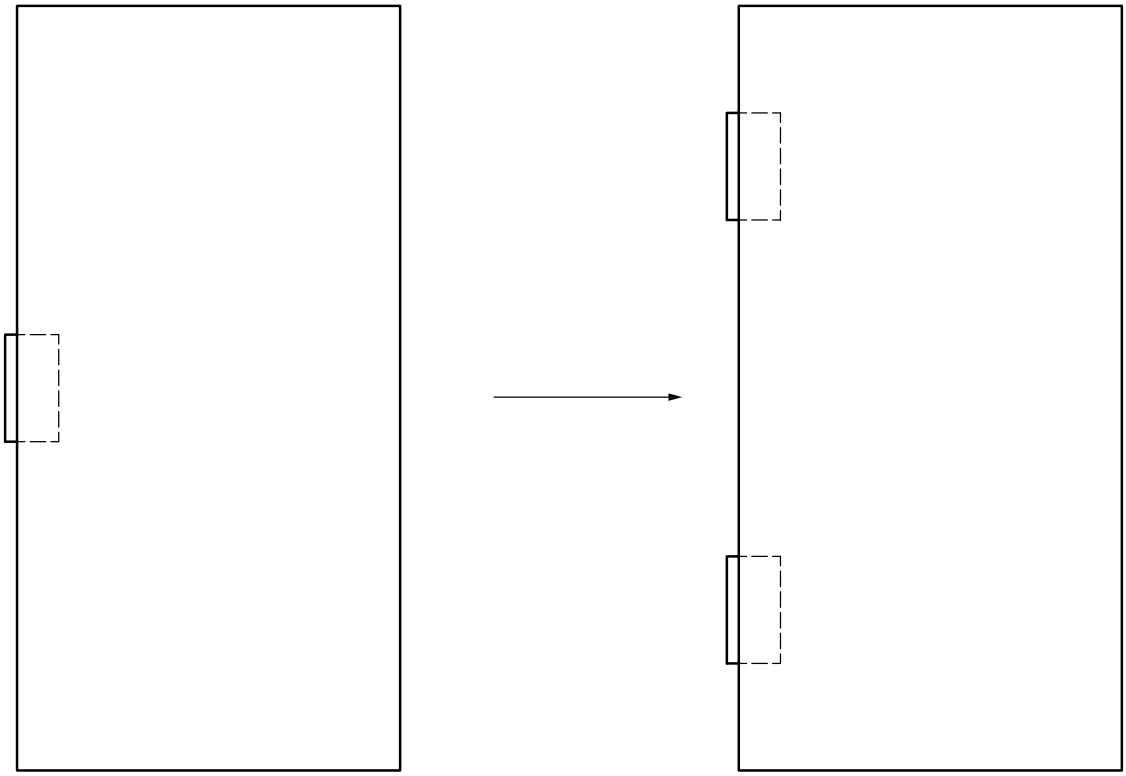


Figure A.46 — Number of latches/locks and strike plates — Increase

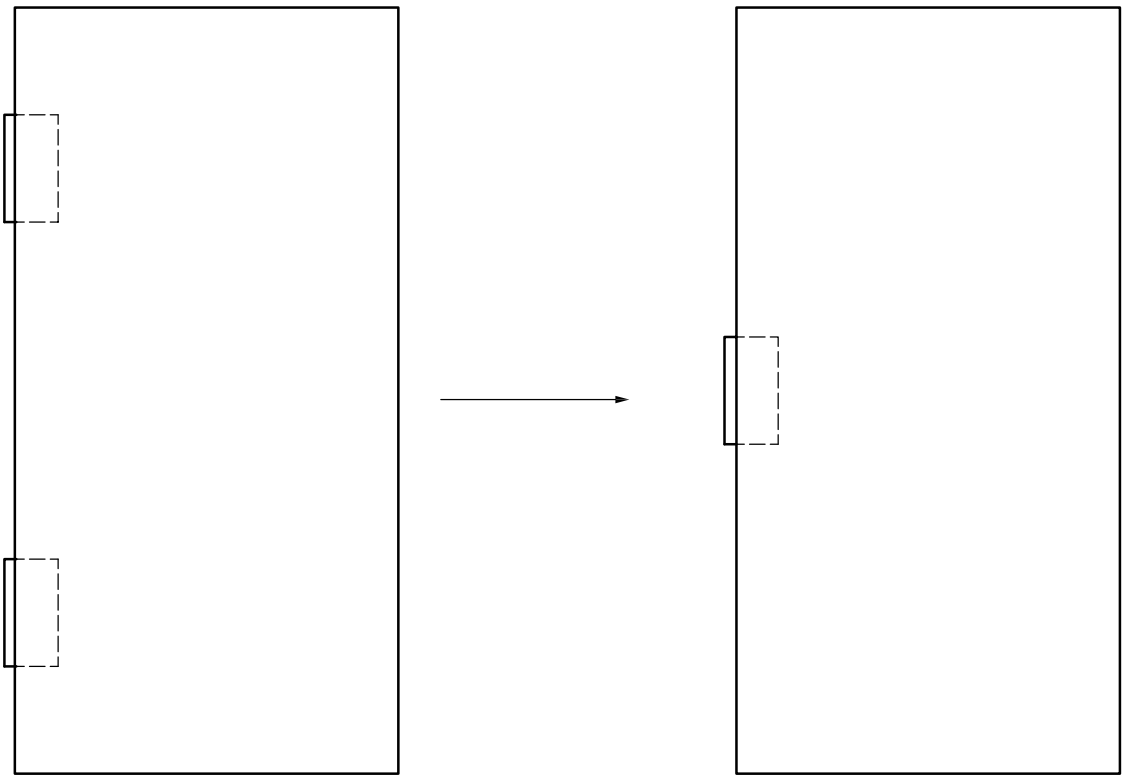


Figure A.47 — Number of latches/locks and strike plates — Decrease

Dimensions in millimetres

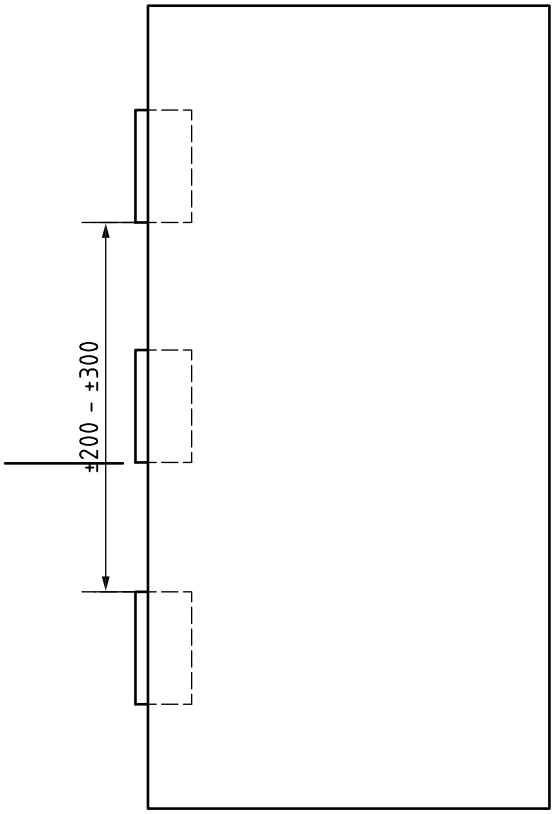


Figure A.48 — Position of single latch/lock and strike plate — Alternative

Dimensions in millimetres

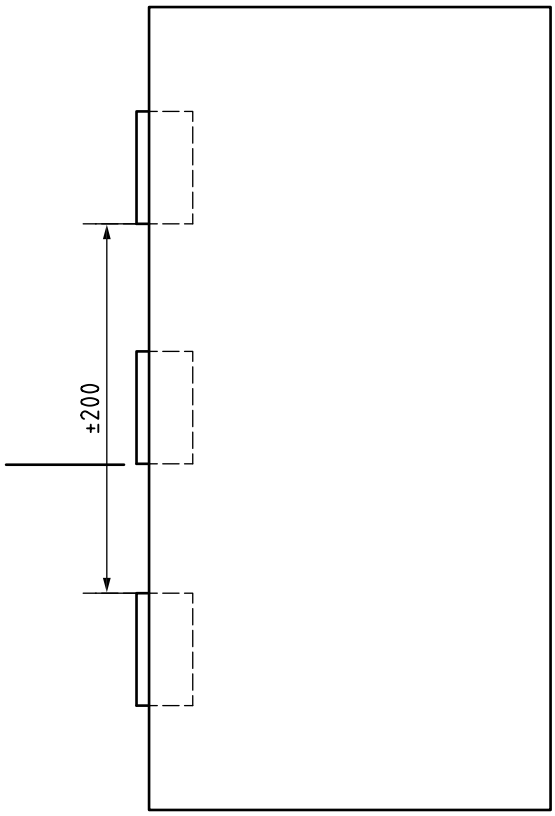


Figure A.49 — Position of multiple latches/locks/strike plates (with or without connecting rods) — Alternative

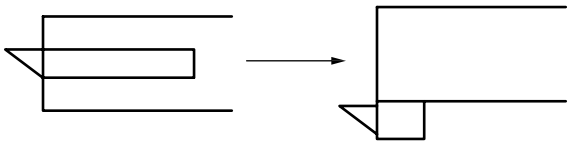


Figure A.50 a) — Latches/locks — Exchange internal for external

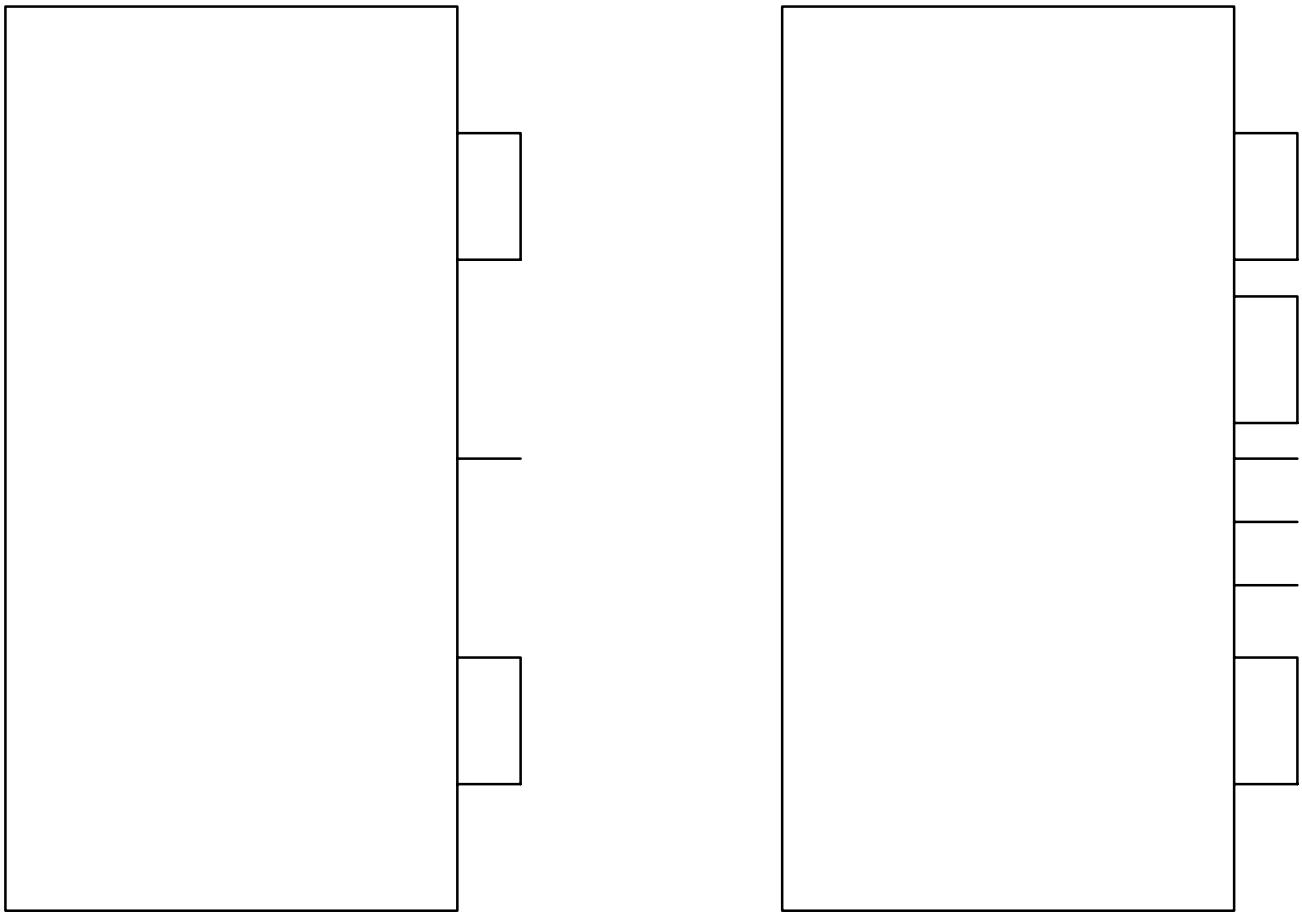


Figure A.50 b) — Latches/locks — Exchange external for internal

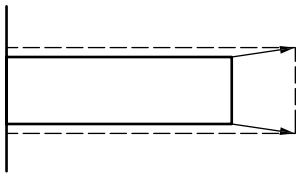


Figure A.51 — Dimension of dog bolts — Increase

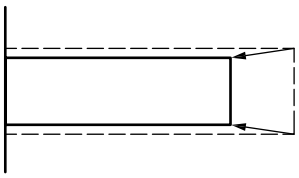
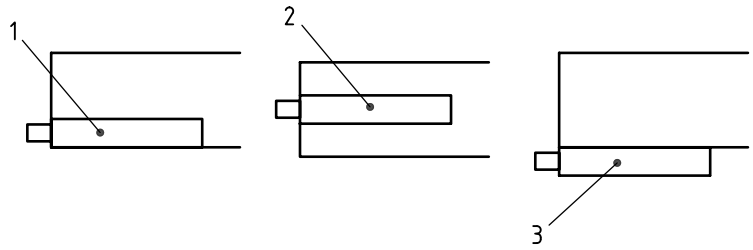


Figure A.52 — Dimension of dog bolts — Decrease



Key

1 flush
2 internal mounted
3 surface mounted

Figure A.53 — Bolts (flush, internal and surface mounted) — Add

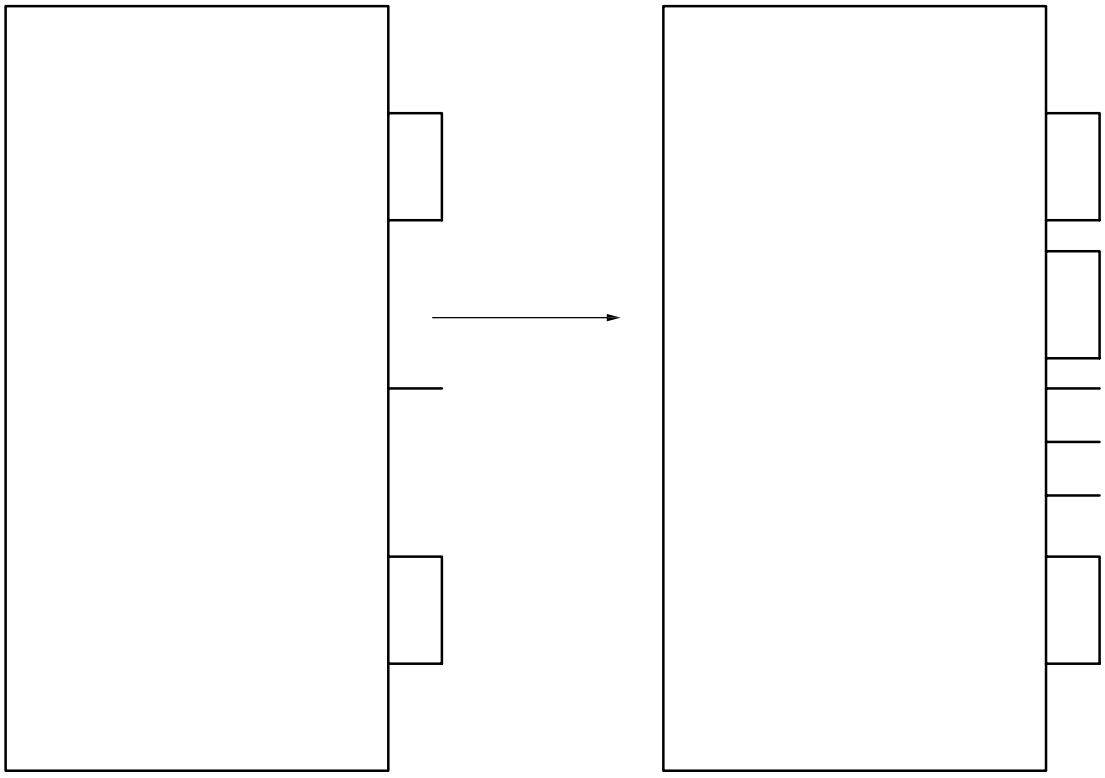


Figure A.54 a) — Number of hinges/dog bolts — Increase

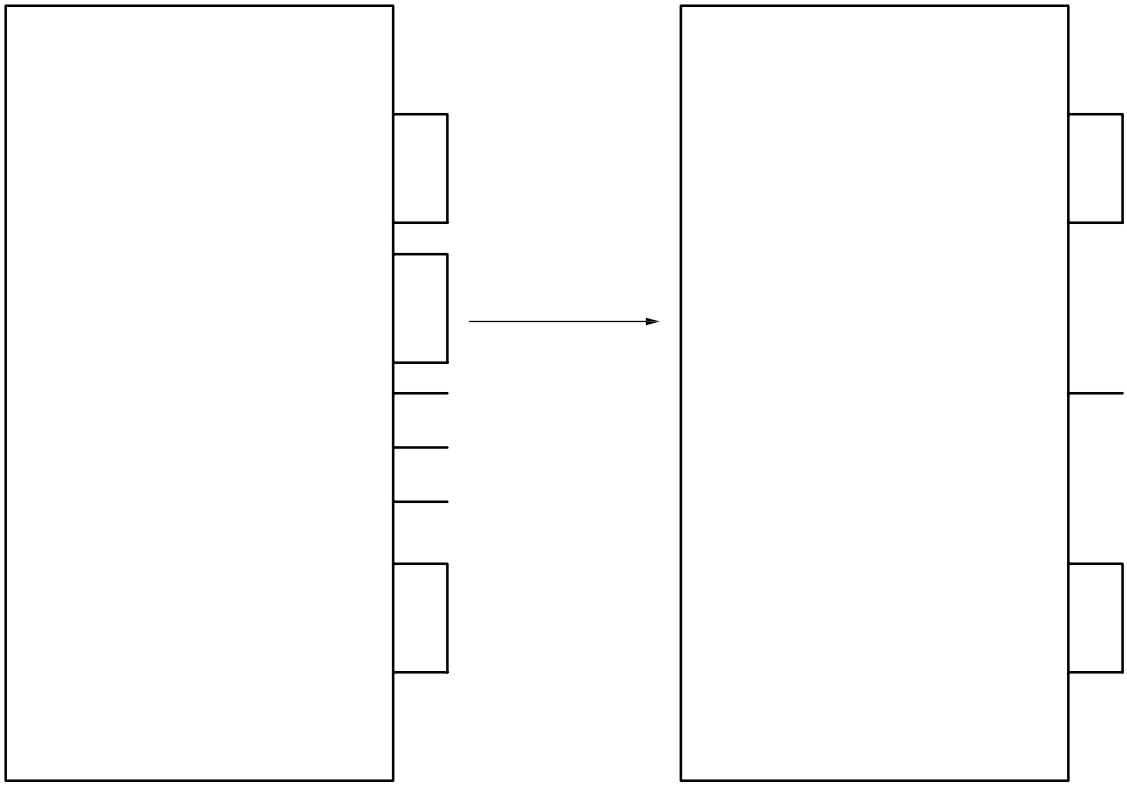


Figure A.54b — Number of hinges/dog bolts — Decrease

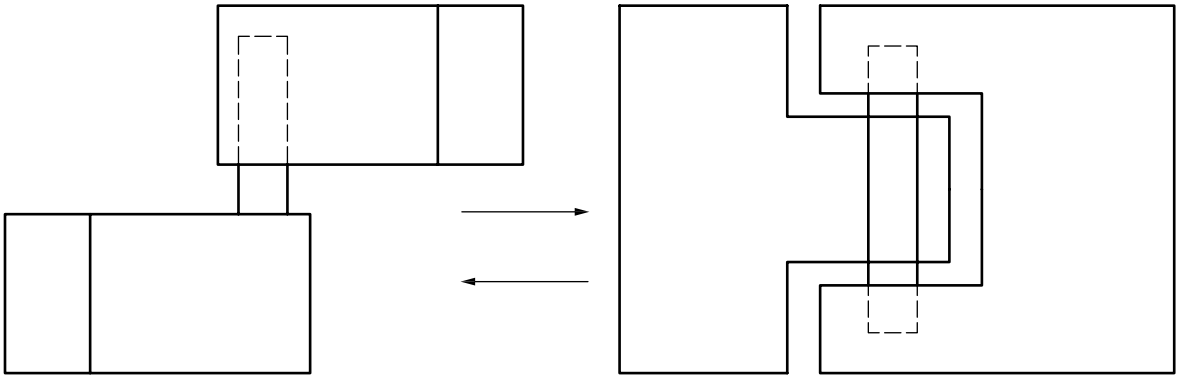


Figure A.55 — Type of hinges — Alternative material/type

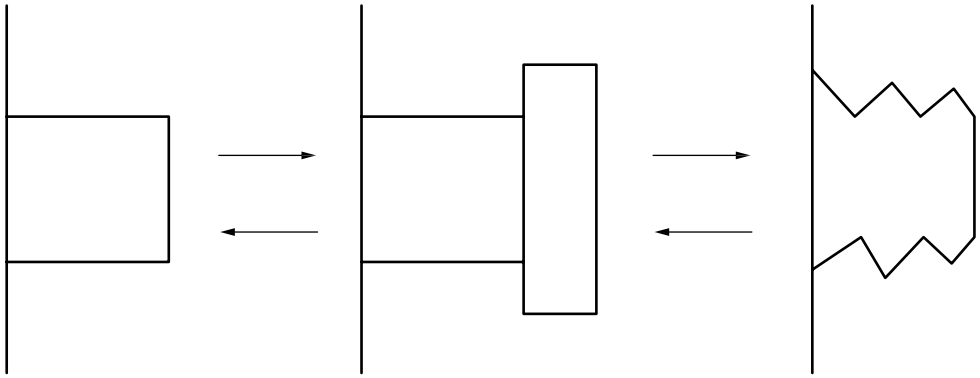


Figure A56 — Type of dog bolts — Alternative material/type/shape

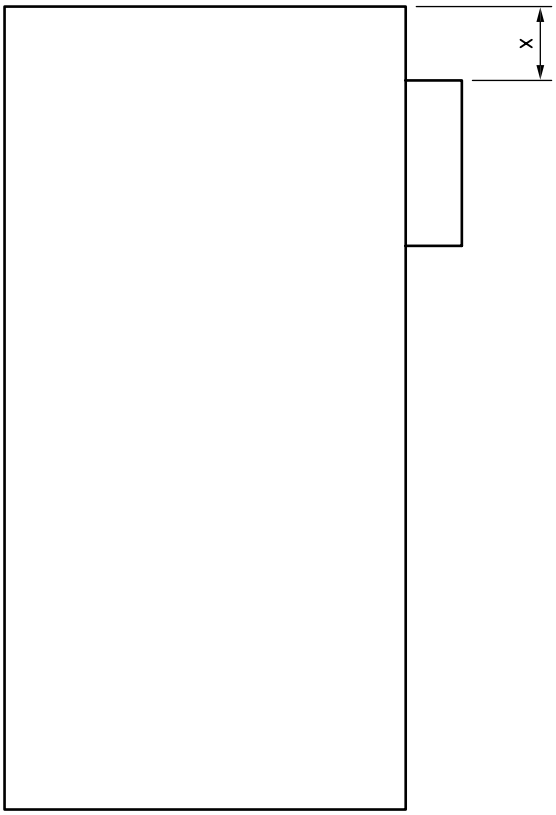


Figure A.57 — Distance from top of upper hinge to top of door (x) — Increase/Decrease

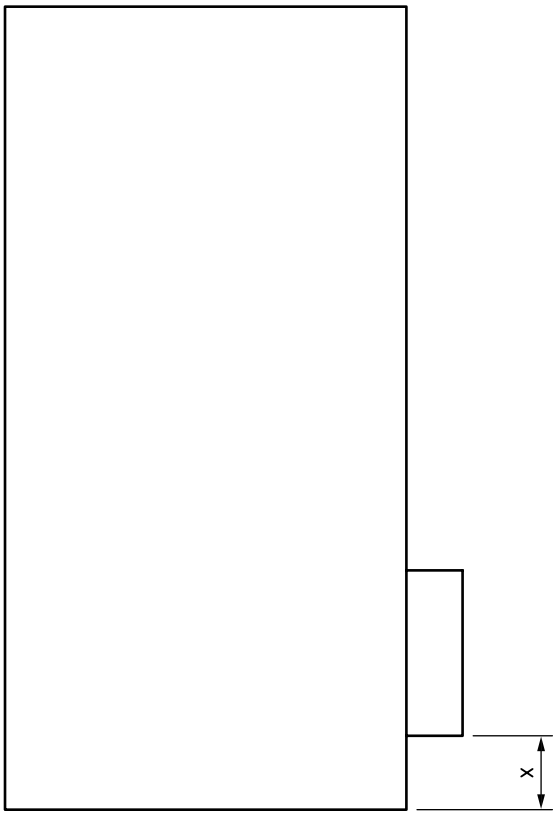
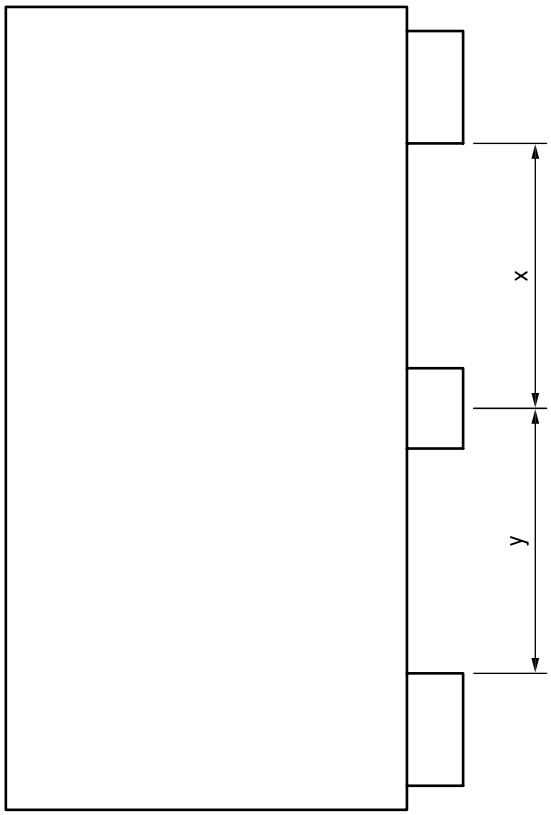


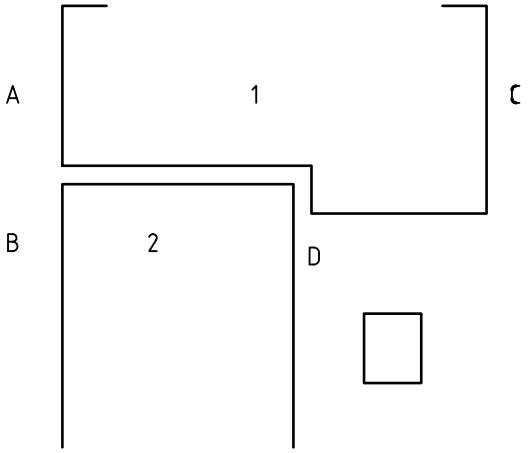
Figure A.58 — Distance from bottom of lower hinge to bottom of door (x) — Increase/Decrease



Key

x and y distance between movement restrictors

Figure A.59 — Distances between top and bottom hinges and intermediate movement restrictors — Increase/Decrease



Key

1	frame header
2	door leaf
A, B, C, D	alternative locations for face fixed door closer

Figure A.60 — Face fixed door closer — Alternative fitting positions

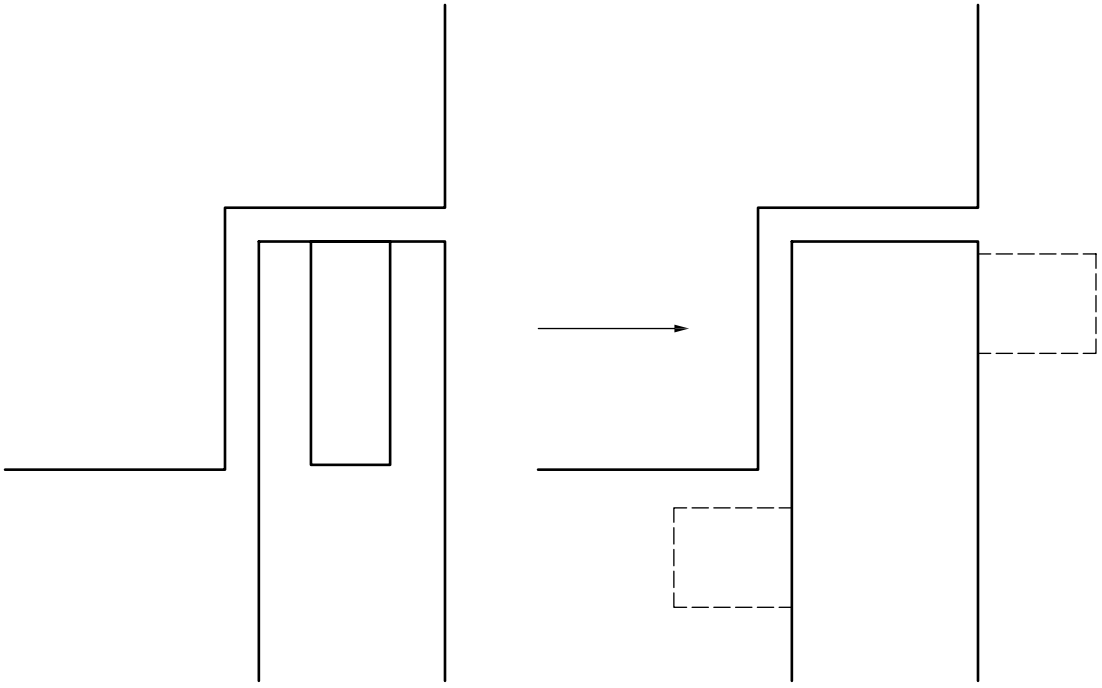


Figure A.61 — Door closer — Change of location (concealed for face mounted)

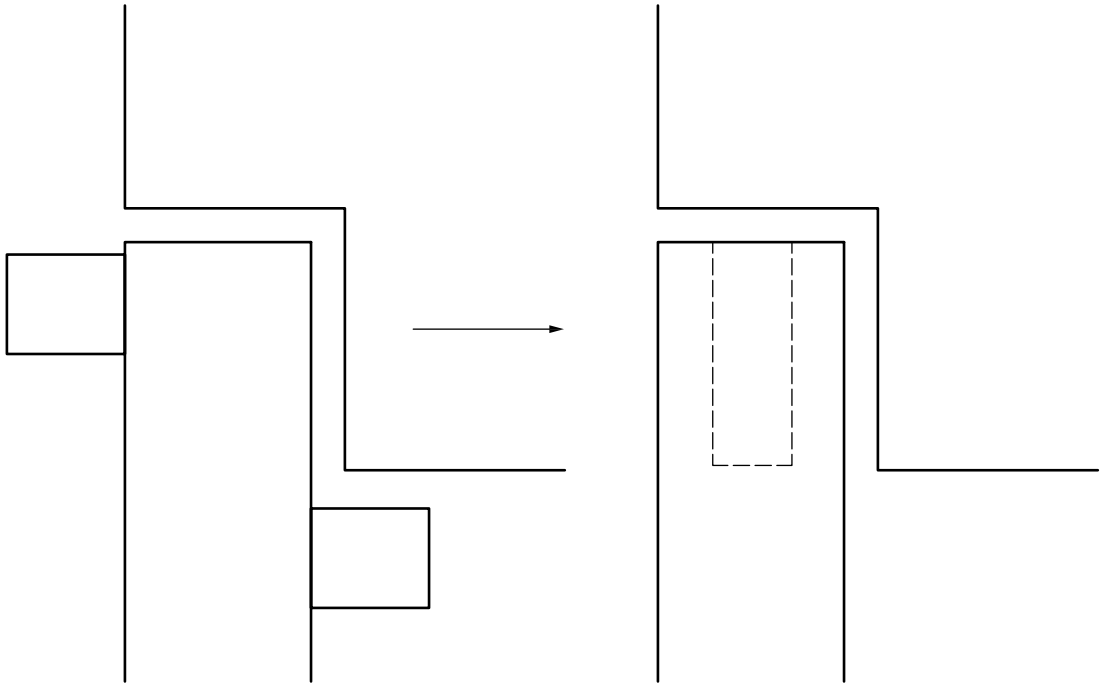
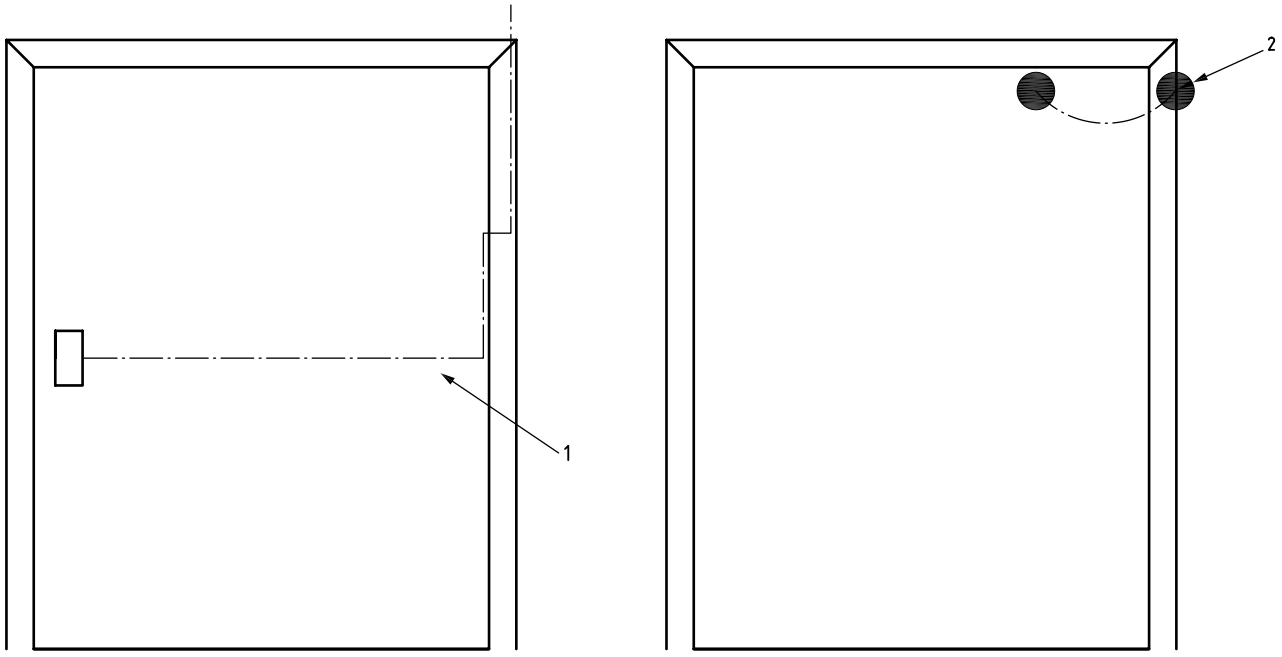


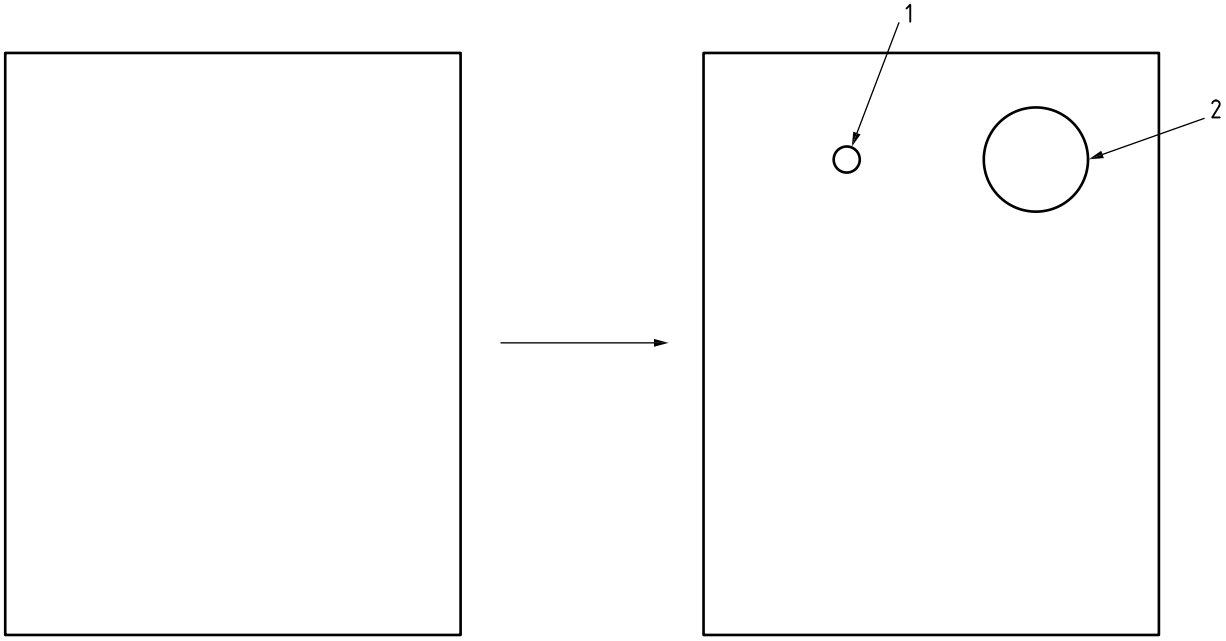
Figure A.62 — Door closer — Change of location (face mounted for concealed)



Key

1 internal
2 external

Figure A.63 — Power cable and protective conduits for electric locks (fitted in the door leaf or frame) — Add (two examples shown)

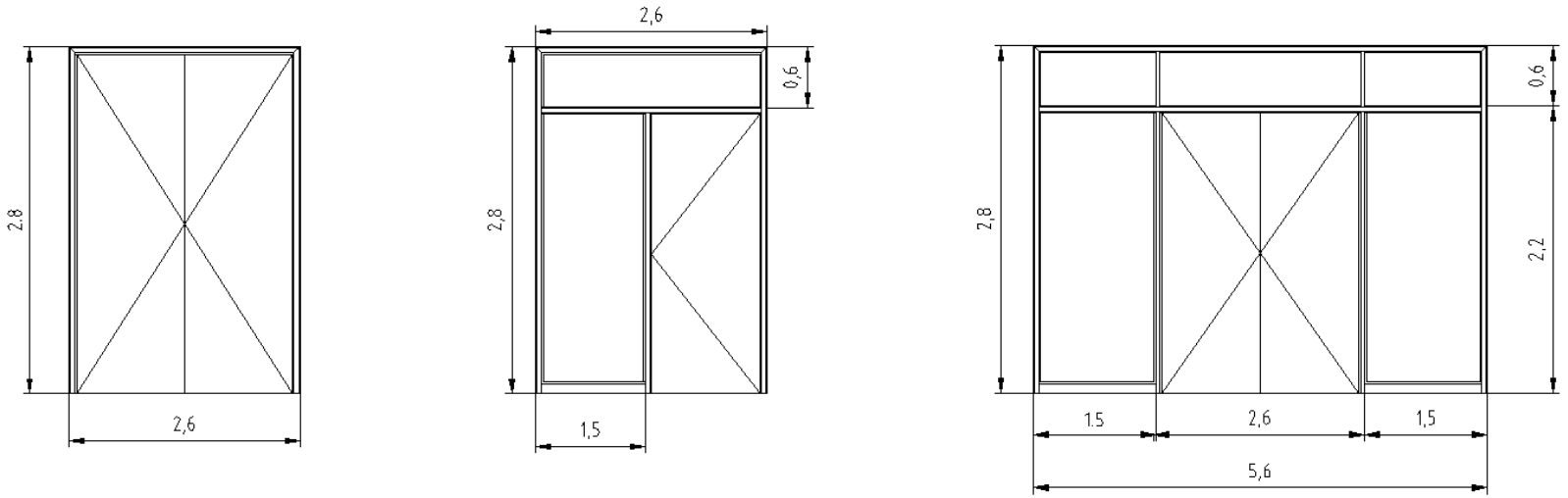


Key

1 spy hole
2 key tube

Figure A.64 — Spy holes/key tubes — Add

Dimensions in metres



1 2 3

Key

1 tested specimen
2 tested specimen
3 maximum permitted doorset arrangement following testing of specimens 1 and 2

Figure A.65 — Size (area, width, height) — all distortions — Increase

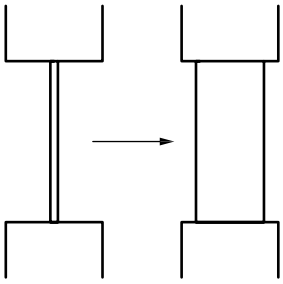


Figure A.66 a) — Thickness of glass — Increase

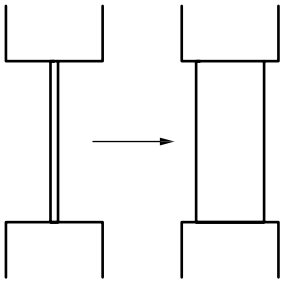


Figure A.66 b) — Thickness of glass — Decrease

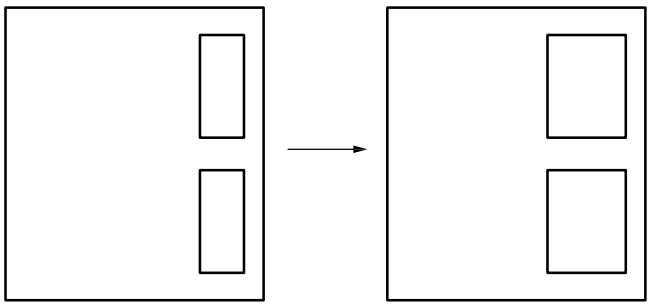


Figure A.67 — Dimensions of each glazed aperture — Increase

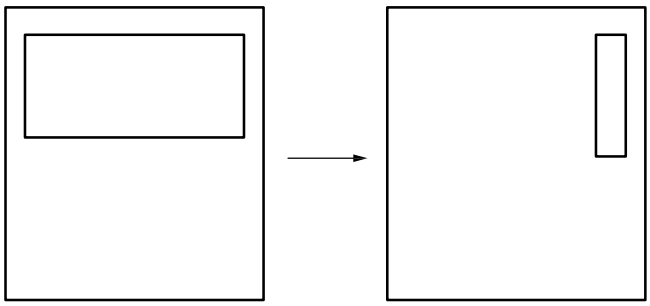


Figure A.68 — Dimensions in each glazed aperture — Decrease

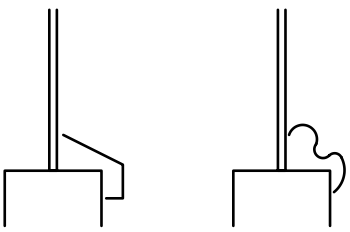
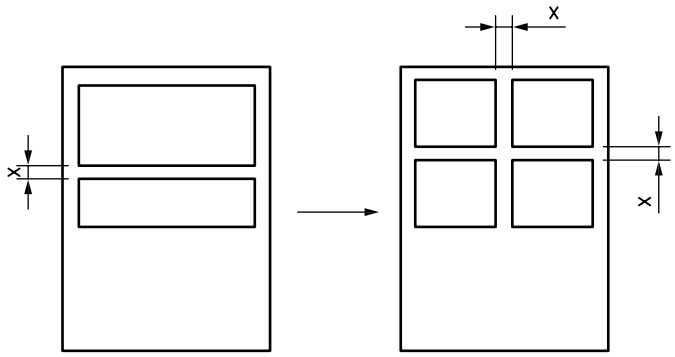


Figure A.69 — Decorative capping — Add or exchange



Key

x distance between glazed apertures

Figure A.70 — Number of glazed apertures — Increase

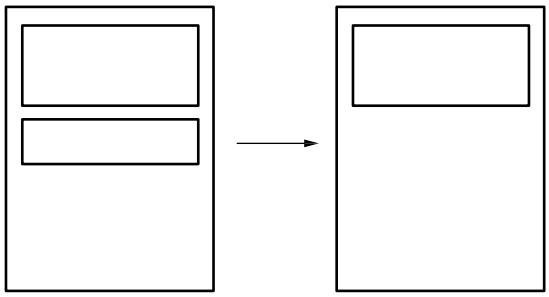


Figure A.71 — Number of glazed apertures — Decrease

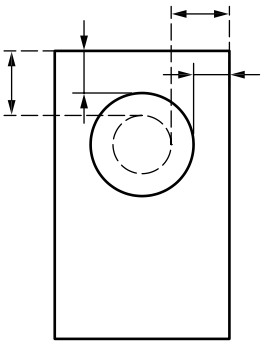


Figure A.72 — Smallest tested distance between the edge of glazing and the perimeter of the door leaf/panel — Increase

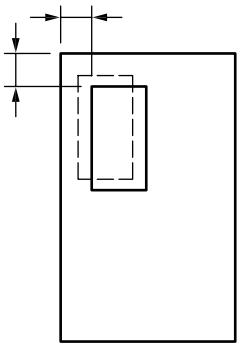


Figure A.73 — Smallest tested distance between the edge of glazing and the perimeter of the door leaf/panel — Decrease

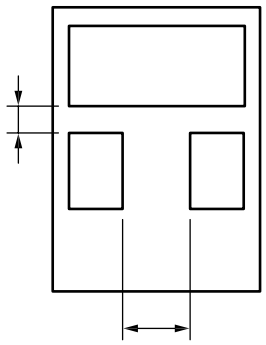
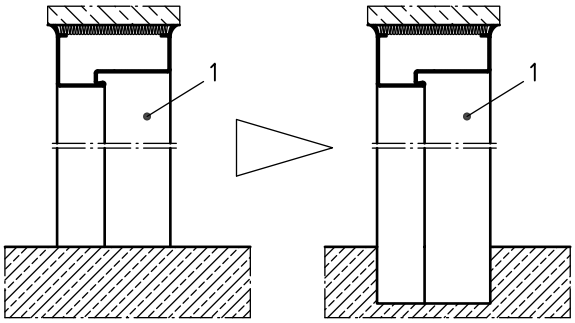


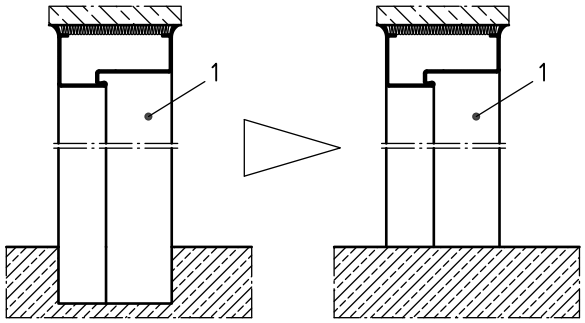
Figure A.74— Distance between glazed apertures — Decrease



Key

1 frame

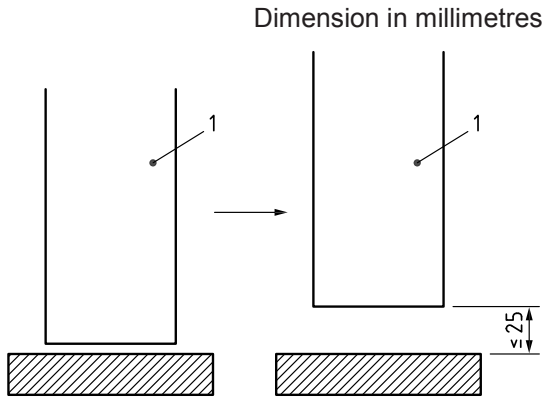
Figure A.75 a) — Fixing to floor — Cleated to sunk



Key

1 frame

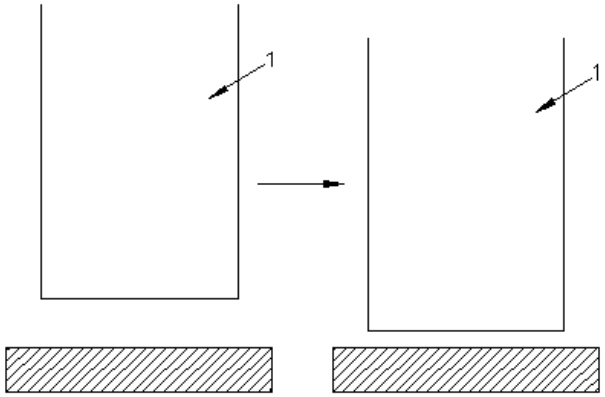
Figure A.75 b) — Fixing to floor — Sunk to cleated



Key

1 door leaf

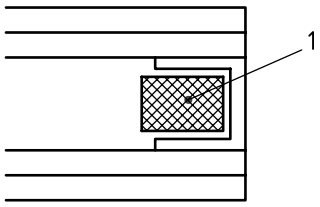
Figure A.76 — Gap between door leaf and floor — Increase



Key

1 door leaf

Figure A.77 — Gap between door leaf and floor — Decrease



Key

1 strengthening component

Figure A.78 — Standard flexible supporting construction — Strengthening

Annex B
(normative)

Arrangements for doorsets incorporating side and/or over panels

Table B.1 — Permissible Variations for Panel Arrangements with Transom Panels

Tested arrangement	Allows																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	x	x	x	x	x	x	x	x	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	-	x	x	x	x	x
3	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
4	-	x	-	x	x	x	-	x	x	x	x	x	-	x	x	x	-	x	-	x	x	x	x	x
5	-	x	-	x	x	x	-	x	x	x	x	x	-	x	x	x	-	x	-	x	x	x	x	x
6	-	-	-	-	-	x	-	x	x	x	x	x	-	-	-	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
9	-	-	-	-	-	-	-	-	x	-	-	-	-	-	-	-	-	-	-	-	x	-	-	-
10	-	-	-	-	-	-	-	-	-	x	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	x	x	x	x	x	x	x	x
14	-	-	-	-	-	-	-	x	x	-	-	x	-	x	x	x	-	x	-	x	x	x	x	x
15	-	-	-	-	-	-	-	x	x	-	-	x	-	x	x	x	-	x	-	x	x	x	x	x
16	-	-	-	-	-	-	-	x	x	-	-	x	-	-	-	x	-	-	-	-	x	x	x	x
17	-	-	-	-	-	-	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
19	-	-	-	-	-	-	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
21	-	-	-	-	-	-	-	-	x	-	-	-	-	-	-	-	-	-	-	-	x	-	-	-
22	-	-	-	-	-	-	-	-	-	-	-	x	-	-	-	-	-	-	-	-	-	x	x	x
23	-	-	-	-	-	-	-	-	-	-	-	x	-	-	-	-	-	-	-	-	-	x	x	x
24	-	-	-	-	-	-	-	-	-	-	-	x	-	-	-	-	-	-	-	-	-	x	x	x

Table B.2 — Permissible Variations for Panel Arrangements with Flush Over Panels

Tested arrangement	Allows														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14
1		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	x
3		-	-	x	x	x	x	x	x	-	-	x	x	x	x
4		-	-	-	x	-	-	-	x	-	-	-	-	-	-
5		-	-	x	x	x	x	x	x	-	-	x	x	x	x
6		-	-	x	x	x	x	x	x	-	-	x	x	x	x
7		-	-	x	x	x	x	x	x	-	-	x	x	x	x
8		-	-	-	x	-	-	-	x	-	-	-	-	-	-
9		-	-	-	-	-	-	-	-	x	x	x	x	x	x
10		-	-	-	-	-	-	-	-	x	x	x	x	x	x
11		-	-	-	-	-	-	-	-	-	-	x	x	x	x
12		-	-	-	-	-	-	-	-	-	-	x	x	x	x
13		-	-	-	-	-	-	-	-	-	-	x	x	x	x
14		-	-	-	-	-	-	-	-	-	-	x	x	x	x

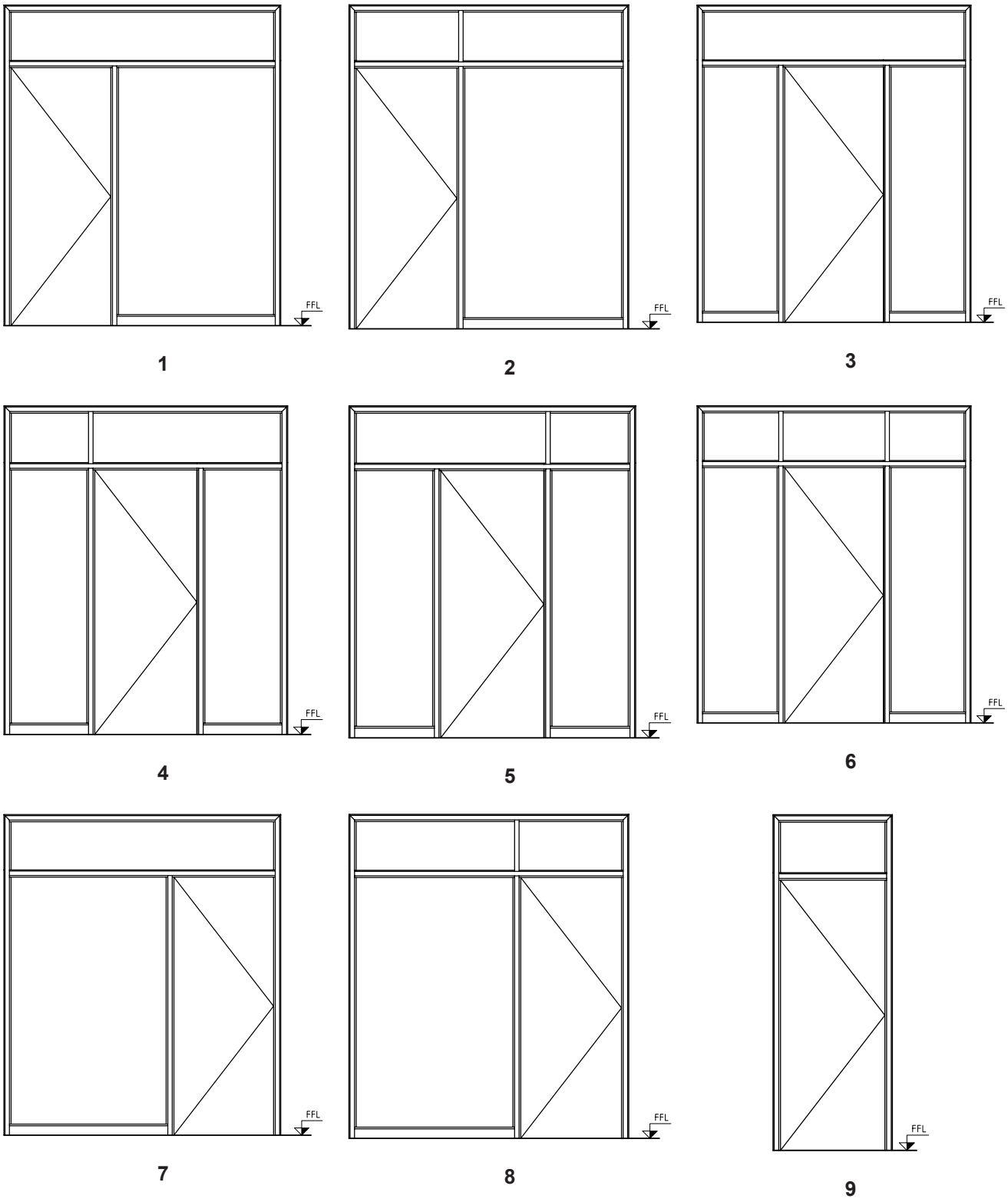


Figure B.1 — Side/transom panel arrangement (Additional or variations of alternative arrangements)

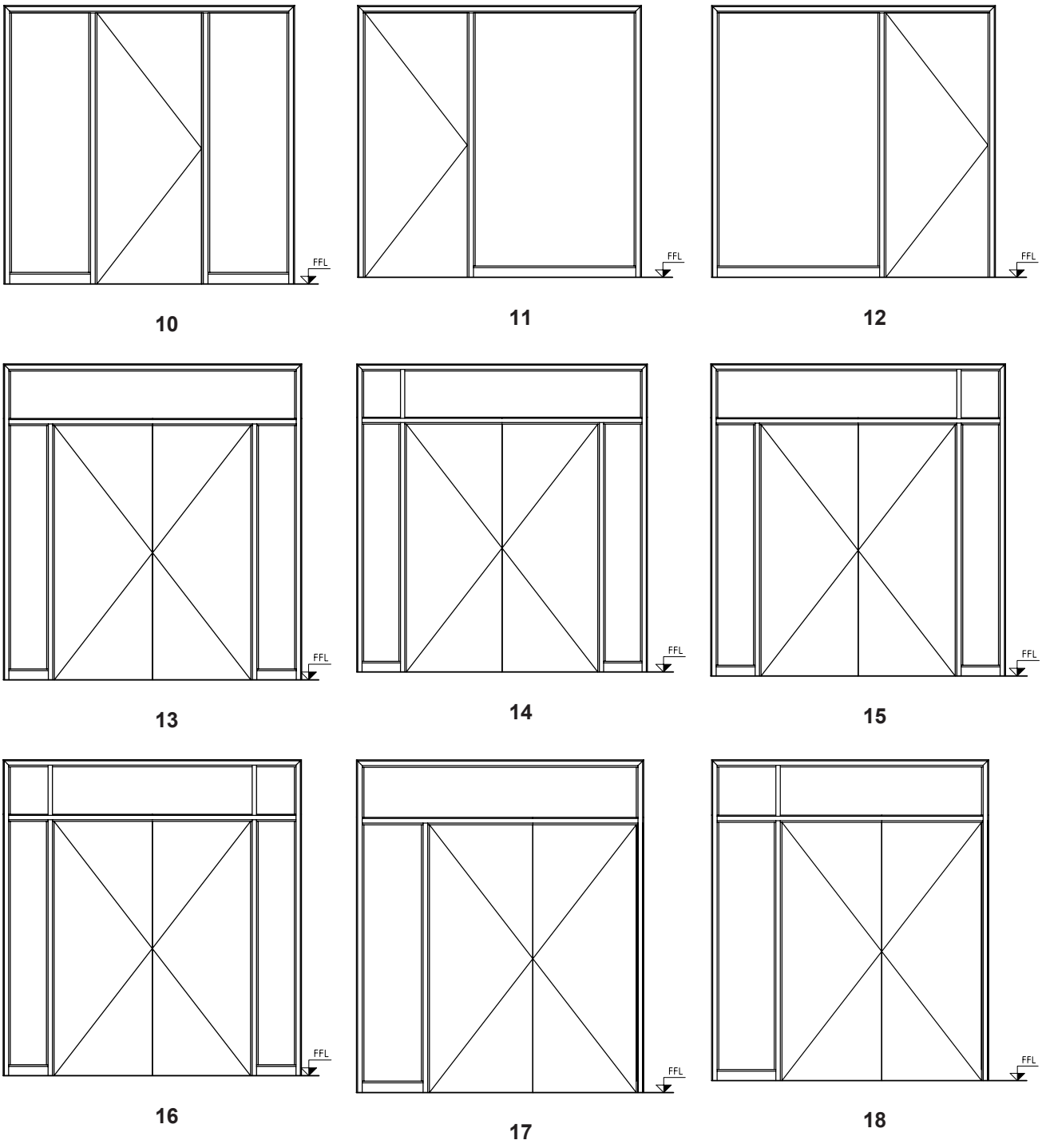
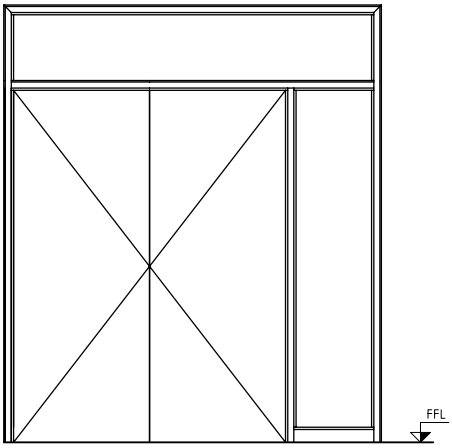


Figure B.1 — Side/transom panel arrangement (Additional or variations of alternative arrangements) — continued



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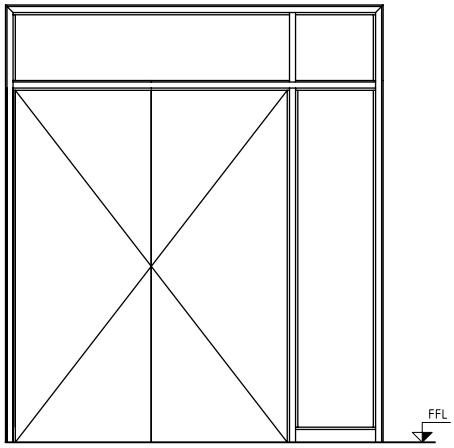

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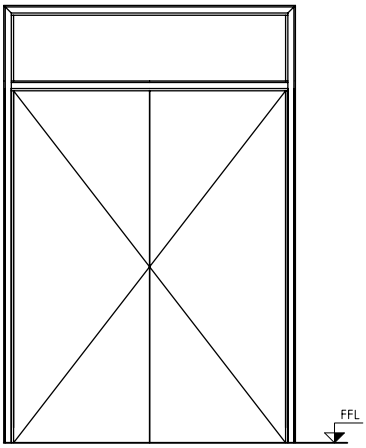

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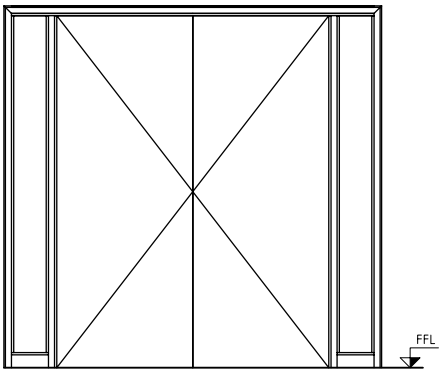

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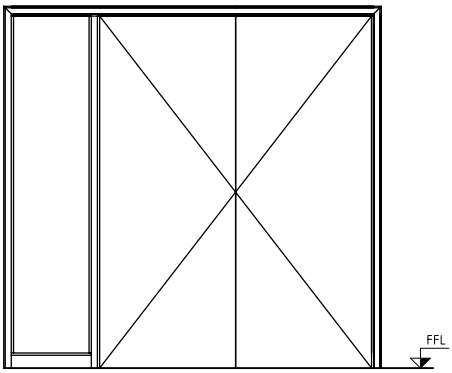

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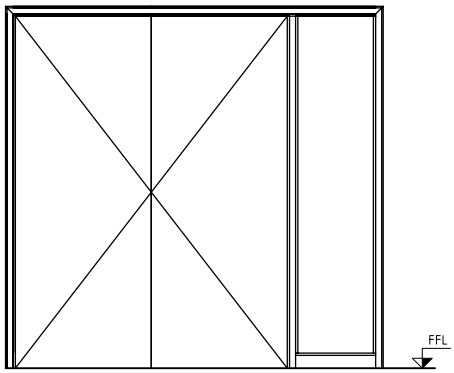

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Figure B.1 — Side/transom panel arrangement (Additional or variations of alternative arrangements) — concluded

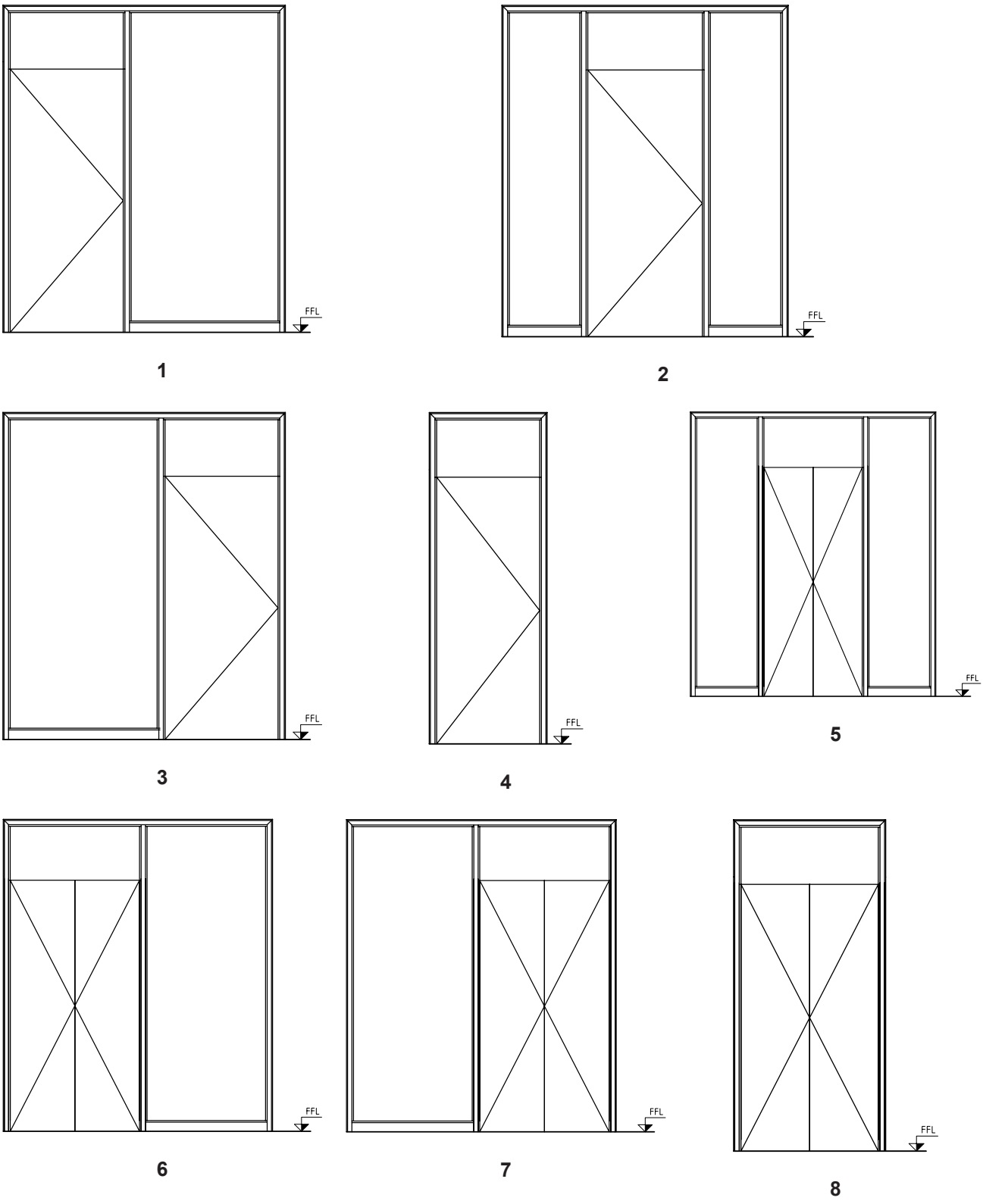
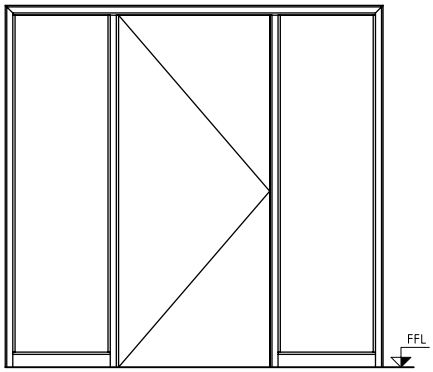


Figure B.2 — Side/transom panel arrangement (Additional or variations of alternative arrangements)



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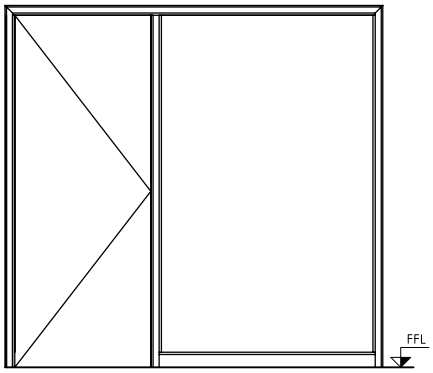

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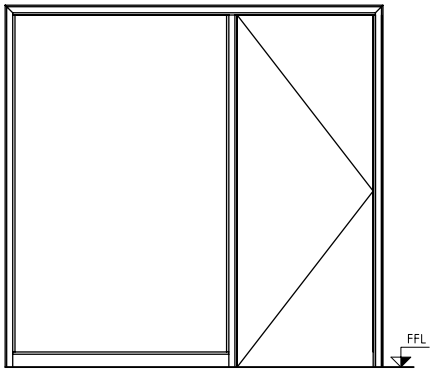

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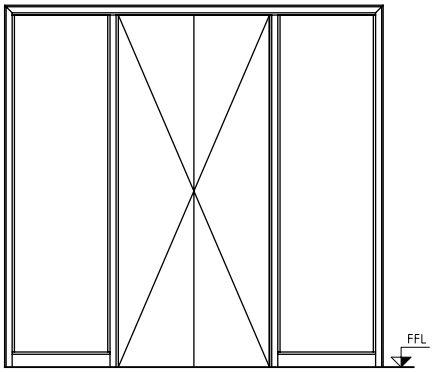

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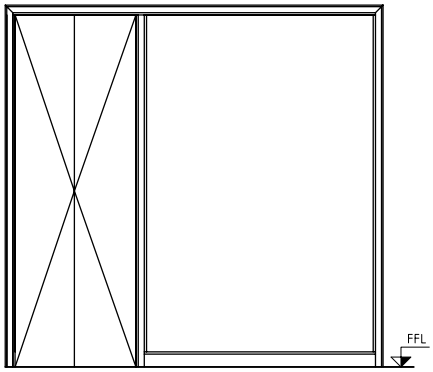

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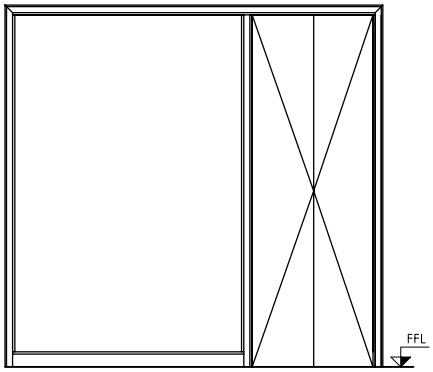


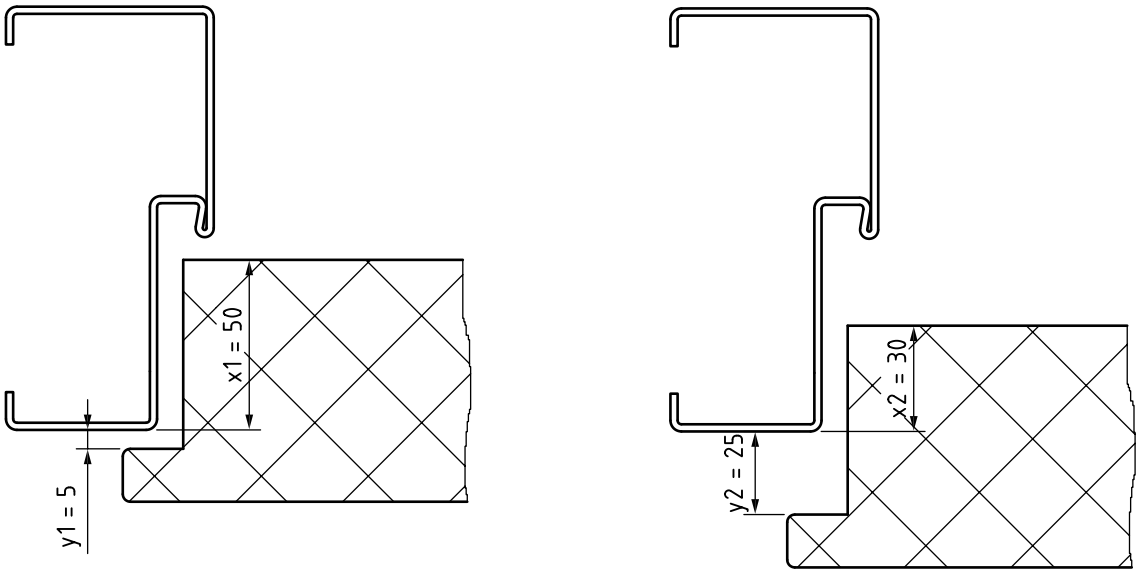
14

Figure B.2 — Side/transom panel arrangement (Additional or variations of alternative arrangements) — concluded

Annex C
(informative)

Figures

Calculation – distortion in %



Key

*X*1 50 mm effective rebate depth before the test

*X*2 30 mm effective rebate depth after the test

This means that there was an absolute movement of 20 mm; according to the formula below this movement (distortion) is equivalent to 40 %:

20/50 x 100 = 40 % (60 % of the initial value is left)

Level of distortion according to prEN 15269-2 - medium

Figure C.1 — Example effective rebate depth

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