Evidence of Performance

fire resistance, smoke leakage and self-closing characteristic of building components

Classification Report

No. 18-002403-PR02

(KB-C04-UZ05-en-07)

ROSENHEIM

Client	SCHÜCO International KG Karolinenstr. 1-15 33609 Bielefeld (Germany)
Prepared by the notified body	**ift** Rosenheim GmbH Theodor-Gietl-Straße 7-9 83026 Rosenheim (Germany)
Number of notified body	0757
Designation	"Schüco ADS 80 FR 60"
Classification	Classification of fire resistance, smoke leakage and self-closing characteristic acc. to EN 13501-2:2007+A1:2009 / EN 13501-2:2016
Issue No.	7

Fire and smoke control door assembly

Classification

EI_1 30/EI_2 60-S_a/S_{200}C5

ift Rosenheim
24.08.2022
Translation dated 26.05.2023

ift Rosenheim * Notifizierte Prüf-, Überwachungs- und Zertifizierungsstelle * PÜZ EG-Referenz-Nr. 0757

signed
Dr. Gerhard Wackerbauer, Dipl. Phys.
Head of Technical Assessment
Certification & Surveillance Body

signed
Cornelia Ohr, M.Eng.
Project Engineer
Certification & Surveillance Body

This document is valid without a signature. The original document n° 18-002403-PR02 (KB-C04-UZ05-de-07) dated 24.08.2022 remains legally binding.

Basis

EN 13501-2:2007+A1:2009
EN 13501-2:2016
EN 1363-1:2020
EN 1634-1:2014+A1:2018
EN 1634-3:2004/AC:2006
EN 1191:2012
EN 16034:2014

Instructions for use

This classification report defines the classification, which is assigned to the named element in accordance with the procedure of EN 13501-2. This document does not represent type approval or certification of the product.

Validity

The data and results given relate solely to the tested and described specimen. This test does not allow any statement to be made on any further characteristics regarding performance and quality of the product presented.

Notes on publication

The **ift** Guidance Sheet "Conditions and Guidance for the Use of **ift** test reports" applies.

Contents

This report contains a total of 15 pages. No part of this classification report may be used or reproduced as an extract.

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1 Introduction

This classification report defines the resistance to fire classification assigned to element "Schüco ADS 80 FR 60" in accordance with the procedures given in EN 13501-2.

The original issue in German 18-002403-PR02 (KB-C04-01-de-01) dated 23.07.2019 is the first issue of the classification report.

This is a translation of the German report 18-002403-PR02 (KB-C04-UZ05-de-07) dated 24.08.2022.

2 Details of classified product

2.1 General

The component "Schüco ADS 80 FR 60" belongs to the product type fire and smoke control shutters according to EN 16034.

Its function is to resist a fire exposure on one face according to the characteristic reaction to fire according to Section 5 of EN 13501-2 on opening or closing face and/or to reduce the passage of gas or smoke from one side of the component to the other.

The assembly is able to achieve the fully closed position from the open position.

An exposed face is not determined.

2.2 Description

The element "Schüco ADS 80 FR 60" is fully described in the test reports and the extended application report and in the monitoring documentation dated 21.11.2019 and amendment dated 17.12.2020, annex of AGC glazing dated 26.02.2020 and 24.08.2022 and annex 3 of the Nordic hardware dated 17.12.2020, in support of classification listed in 3.1.

Locking	The door assembly is designed with a lock with a latch bolt.

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3 Test reports/extended application reports and test results in support of the classification

3.1 Test reports/extended application reports

The following test reports, test results and evaluations have been provided to justify this classification. If the owner of a test report is not the client of this classification report, the owner of the test report has granted written permission to use the results.

Name of laboratory / Notified Body	Name of client	Report ref. No	Test standard and date/field of extended application standards and dates
MPA Braunschweig / 0761	SCHÜCO International KG 33609 Bielefeld (Germany)	3519/298/08	EN 1634-1:2000
MPA Braunschweig / 0761	SCHÜCO International KG 33609 Bielefeld (Germany)	3035/100/09	EN 1634-1:2009
MPA NRW / 0432	SCHÜCO International KG 33609 Bielefeld (Germany)	120002944-01	EN1634-3:2004/ AC:2006
MPA NRW / 0432	SCHÜCO International KG 33609 Bielefeld (Germany)	120002944-02	EN1634-3:2004/ AC:2006
DMT / 2509	SCHÜCO International KG 33609 Bielefeld (Germany)	DMT-DO-52-73	EN1634-3:2004/ AC:2006
MPA Braunschweig / 0761	SCHÜCO International KG 33609 Bielefeld (Germany)	3217/322/13	EN 1191:2012
MPA NRW / 0432	SCHÜCO International KG 33609 Bielefeld (Germany)	120003268-15	EN 1191:2012
ift Rosenheim / 0757	SCHÜCO International KG 33609 Bielefeld (Germany)	18-002403-PR01 (EXAP-C04-UZ05-de-07)	EN 15269-5:2016 EN 15269-20:2020

3.2 Results

Test report number	Testing laboratory	Client	Test standard
3519/298/08 20.06 Date: 19.02.2009	**Supporting construction**	Associated supporting construction	
	Exposed face	Opening face	
	Latchbolt	The assembly was equipped with a latch, with a latch bolt engagement sufficient for fire resistance.	
	Criteria		**Results**
	E - integrity		70 minutes
	W - radiation max. 15 kW/m²		npd
	I_1 - insulation, supplementary method		43 minutes
	I_2 - insulation, maximum temperature rise		70 minutes

Test report number	Testing laboratory	Client	Test standard
3035/100/09 20.11 Date: 08.04.2009	**Supporting construction**	Associated supporting construction	
	Exposed face	Closing face	
	Latch bolt	The assembly was equipped with a latch, with a latch bolt engagement sufficient for fire resistance.	
	Criteria		**Results**
	E - integrity		62 minutes
	W - radiation max. 15 kW/m²		npd
	I_1 - insulation, supplementary method		36 minutes
	I_2 - insulation, maximum temperature rise		62 minutes

Test report number	Testing laboratory	Client	Test standard
120002944-01 15.43 Date: 17.01.2008	**Supporting construction**	Surround panel	
	Exposed face	opening face	
	Criteria		**Results**
	S_a - Smoke leakage at ambient temperature		0.77 m³/h/m
	S_{200} - Smoke leakage at temperature 200°C		9.77 m³/h
	The assembly could be opened manually after the test at 200°C		yes

Test report number	Testing laboratory	Client	Test standard
120002944-01 15.43 Date: 17.01.2008	**Supporting construction**	Surround panel	
	Exposed face	Closing face	
	Criteria		**Results**
	S_a - Smoke leakage at ambient temperature		0.99 $m^3/h/m$
	S_{200} - Smoke leakage at temperature 200°C		19.40 m^3/h
	The assembly could be opened manually after the test at 200°C		yes

Test report number	Testing laboratory	Client	Test standard
DMT-DO-52-73 15.125 Date: 03.07.2014	**Supporting construction**	Surround panel	
	Exposed face	Opening face and closing face	
	Criteria		**Results**
	S_a - Smoke leakage at ambient temperature		1.54 $m^3/h/m$
	S_{200} - Smoke leakage at temperature 200°C		28.46 m^3/h
	The assembly could be opened manually after the test at 200°C		yes

Test report number	Testing laboratory	Client	Test standard
3217/322/13 15.128 10.06.2015	**Supporting construction**	Surround panel	
	Criteria		**Results**
	C - self-closing characteristic		200,000 cycles

Test report number	Testing laboratory	Client	Test standard
120003268-15 20.14 Date: 13.05.2009	**Supporting construction**	Surround panel	
	Criteria		**Results**
	C - self-closing characteristic		200,000 cycles

Extended application report	Parameters
18-002403-PR01 (EXAP-C04-UZ05-de-07) Date: 24.08.2022	Based on the analysis of the construction parameters presented in the extended application report, the field of application of the fire and smoke control door assemblies "Schüco ADS 80 FR 60" was determined with regard to the following fire performance parameters: E - Integrity: ≥ 60 minutes I_1 - Insulation: ≥ 30 minutes I_2 - Insulation: ≥ 60 minutes S_a - Smoke leakage: ≤ 3 m³/h/m S_{200} - Smoke leakage: ≤ 20 / 30 m³/h C - Self-closing characteristics: ≥ 200,000 cycles

3.3 Validation

Test reports according to older editions of the relevant test standards have been validated within the above mentioned report on the extended scope of application with regard to the currently applicable test standards. The results mentioned in 3.2 can be used.

4 Classification and field of application

4.1 Reference for classification

This classification is based on EN 13501-2:2016, Clause 7, and EN 16034:2014, Clause 4.4.

4.2 Classification

The element "Schüco ADS 80 FR 60" is classified according to the example of the following combinations of performance parameters and classes as appropriate.

R	E	I	W		t	t	-	M	S	C	IncSlow	sn	ef	r	G	K

Classification of fire resistance: EI_1 30/EI_2 60-S_a/S_{200}C5

4.3 Additional performance characteristics according to EN 16034 (informative)

4.3.1 Ability to release according to EN 16034, Clause 5.3

The ability to release test shall be undertaken on one sample. This is to realize either in a fire resistance test according to EN 1634-1 or a smoke control test acc. to EN 1634-3. The ability to release is tested by simulation a fire signal (e.g. with a power failure), whereby this test being carried out three times in succession.

The performance characteristic was tested positively.

The test results of the ability to release are indicated as "released".

4.3.2 Durability of ability to release according to EN 16034, Clause 5.4.1

The durability of the ability to release is given if the electrically operated locking device complies with EN 1155 or EN 14637.

The durability of the ability to release is indicated as "released maintained".

4.3.3 Durability of self-closing against ageing (corrosion) according to EN 16034, Clause 4.5.2.2

The durability of self-closing is considered to be proven if the hardware used on the door or window corresponds to the relevant sections of the product standards for building hardware listed in Table 2 (see EN 16034), except in cases where the building hardware is classified as non-corrosive resistant according to these standards. For building fittings not covered by the standards listed in Table 2 (see EN 16034), it must be proven that they comply with EN 1670.

The durability of self-closing against ageing (corrosion) is indicated as "achieved".

4.4 Scope

4.4.1 General

This classification is valid for the following end use applications:

EN 16034:2016	Pedestrian doorsets, industrial, commercial, garage doors and openable windows - Product standard, performance characteristics - Fire resistance and/or smoke control characteristics

4.4.2 Direct field of application according to EN 1634-1

Following configurations of the product are in accordance with the direct application of the test results for the classification under 4.2.

The direct field of applications are based on the aforementioned basic tests. Further versions as well as details of the end application are contained in the above-mentioned extended application report. The construction details contained therein are not restricted by the following field of application.

Reference to standard EN 1634-1	Permitted changes to the tested specimen
13.1	**General** The field of direct application defines the allowable changes to the test specimen following a successful fire resistance test. These variations can be applied automatically without the need for the sponsor to seek additional evaluation, calculation or approval. NOTE When extended product size requirements are envisaged, the dimensions of certain components within the test specimen can be less than those intended to be used at full size in order to maximize the extrapolation of the test results by modelling the interaction between components at the same scale.
13.2	**Materials and construction**
13.2.1	**General** Unless otherwise stated in the following text, the materials and construction of the doorset or openable window shall be the same as that tested. The number of leaves and the mode of operation (e.g. sliding, single action or double action) shall not be changed.
13.2.2	**Specific restrictions on materials and construction**
13.2.2.3	**Glazed constructions** The type of glass and the edge fixing technique, including type and number of fixings per metre of perimeter, shall not be changed from those tested. The number of glazed apertures and each of the dimensions (width and height) of glass in each pane included within a test specimen may be decreased in proportion with size reductions. The number of glazed apertures and each of the dimensions of glass in each pane included within a test specimen shall not be increased. The distance between the edge of glazing and the perimeter of the door leaf, or the distance between glazed apertures shall not be reduced from those incorporated in test specimens. Other positioning within the door can only be modified if this does not involve the removal or re-positioning of structural members relative to the glazing.
13.2.3	**Decorative finishes**
13.2.3.1	**Paint** Where the paint finish is not expected to contribute to the fire resistance of the door, alternative paints are acceptable and may be added to door leaves or frames for which unfinished test specimens were tested. Where the paint finish contributes to the fire resistance of the door (e.g. intumescent paints) then no change shall be permitted.

Reference to standard EN 1634-1	Permitted changes to the tested specimen
13.2.3.2	**Decorative finishes** Decorative laminates and timber veneers up to 1.5 mm thickness may be added to the faces (but not the edges) of doors that satisfy the insulation criteria (normal or supplementary procedure). Decorative laminates and timber veneers applied to door leaves that do not satisfy the insulation criteria (normal or supplementary procedure) and/or those in excess of 1.5 mm thickness shall be tested as part of the test specimen. For all doorsets tested with decorative laminate faces, the only variations possible shall be within similar types and thicknesses of material (e.g. for colour, pattern, supplier).
13.2.4	**Fixings** The number of fixings per unit length used to attach doorsets to supporting constructions may be increased, but shall not be decreased and the distance between fixings may be reduced but shall not be increased.
13.2.5	**Building hardware** The number of hinges and dog bolts may be increased but shall not be decreased. NOTE 1 The number of movement restrictors such as locks and latches is not covered by direct application. Where a doorset has been tested with a door closing device fitted, but with the retention force released in accordance with 10.1.4, the doorset may be provided either with or without that closing device, i.e. where self-closing characteristics are not required. NOTE 2 Interchange of building hardware is not covered by the field of direct application.
13.3	**Permissible size variations**
13.3.1	**General** Doorsets of sizes different from those of tested specimens are permitted within certain limitations, but the variations are dependent on product type and the length of time that the performance criteria are fulfilled. The increase and decrease of dimensions permitted by the field of direct application are applicable to the overall size and to each door leaf, each side panel and each over panel independently. In accordance with 13.2.2.3, the dimensions (width and height) of any glass pane cannot be increased.

<table>
<tr><th>Reference to standard EN 1634-1</th><th>Permitted changes to the tested specimen</th></tr>
<tr><td>13.3.2</td><td>Test periods
The amount of variation of size permitted is dependent on whether the classification time was just reached (Category "A") or whether an extended time (Category "B") in accordance with the values shown in Table 1 were fulfilled before the test was concluded. For category "B":
Table 1 - Category "B" overrun requirements
<table>
<tr><th>Classification period
min.</th><th>All performance criteria fulfilled for at least minutes
min.</th></tr>
<tr><td>15</td><td>18</td></tr>
<tr><td>20</td><td>24</td></tr>
<tr><td>30</td><td>36</td></tr>
<tr><td>45</td><td>52</td></tr>
<tr><td>60</td><td>68</td></tr>
<tr><td>90</td><td>100</td></tr>
<tr><td>120</td><td>132</td></tr>
<tr><td>180</td><td>196</td></tr>
<tr><td>240</td><td>260</td></tr>
</table>
For classes $EI_1 30$ / $EI_2 30$, category A has been achieved.</td></tr>
<tr><td>13.3.3</td><td>Size variation related to product type</td></tr>
<tr><td>13.3.3.1</td><td>General
The rules to cover increase or decrease of size without additional considerations are applicable only to six main product groups:
a) hinged and pivoted doorsets and openable windows;
b) horizontally sliding and vertically sliding doorsets including sectional doorsets;
c) steel single skin folding shutters doorsets (uninsulated);
d) other sliding and folding doorsets (insulated);
e) rolling shutter doorsets;
f) openable fabric curtains.
No increases in size are permitted for doorsets which are required to satisfy radiation control levels unless the insulation criteria are also satisfied. This is because any increase in size will increase the radiation received at a fixed distance away from the door. There are calculation methods which can be used to determine acceptable size increases for such doors; however, these are beyond the scope of direct application. Doors that satisfy both the radiation control levels and insulation criteria may have their sizes increased as outlined in Annex B. This is accepted because the increase in radiation resulting from a size increase allowed under this section, for an insulated door, will be such that it will still satisfy the required radiation control levels. Size decreases are permitted for both doors which satisfy radiation control levels and those which satisfy insulation criteria and radiation control levels.
Permissible variations for each product group are detailed in Annex B which also contains some examples relating to hinged/pivoted doorsets.</td></tr>
</table>

Reference to standard EN 1634-1	Permitted changes to the tested specimen
	Size increases for doorsets which do not fall into one of the six groups given above are the subject of extended application.
13.3.3.2	**Hinged and pivoted doorsets and openable windows**
13.3.3.2.1	**For size variations, see Annex B.** For Category "A" tests with no overrun of classification period, no increase is allowed. Unlimited reductions from the tested specimen are permitted with the exception of insulated metal doors where the size reduction is limited. For Category "B" tests (with specified overrun of classification period) all smaller sizes are permitted and increases in height and width are permitted as stated in Annex B.
13.3.3.2.2	**Other changes** For smaller doorset sizes the relative positioning of movement restrictors (e.g. hinges and latches) shall remain the same as tested or any change to the distances between them will be limited to the same percentage reduction as the decrease of test specimen size. For larger doorset sizes the following shall also apply: a) the height of the latch above floor level shall be equal to or greater than the tested height, and such increase in height shall be at least proportional to the increase in door height; b) the distance of the top hinge from the top of door leaf shall be equal to or less than that tested; c) the distance of the bottom hinge from bottom of door leaf shall be equal to or less than that tested; d) where three hinges or distortion preventers are used, the distance between the bottom of the door leaf and centre restraint shall be equal to or greater than that tested.
13.3.3.2.5	**Gaps** The maximum size of the primary gaps identified in 7.3 is restricted to the following sizes in practice: $x = (a + b)/2 + 2\ mm$ where x is the maximum permitted gap size; a is the maximum measured gap size; b is the mean measured gap size. The minimum size of the primary gaps may be reduced. The permitted gap size may be different for different parts of the door or window. on three sides continuous: 8 mm floor gap: 10.5 mm

Reference to standard EN 1634-1	Permitted changes to the tested specimen
13.4	**Asymmetrical assemblies**
13.4.1	**General** EN 1363-1 states that for separating elements required to be fire resisting from both sides, two test specimens shall be tested (one from each direction) unless the element is fully symmetrical, i.e. the construction of the doorset is identical on both sides of the centre line when viewed in plan (from above). However, in some cases it is possible to develop rules whereby the fire resistance of an asymmetrical door assembly tested in one direction can apply when the fire exposure is from the other direction. The possibility to develop such rules increases if the consideration is limited to certain types of door assembly and on the criteria being applicable (e.g. integrity only doors). The following rules represent the minimum level of common agreement which shall be followed. The rationale behind the rules is given in Annex C.
13.5	**Supporting constructions**
13.5.1	**General** The fire resistance of a door assembly tested in one form of standard supporting construction may or may not apply when it is mounted in other types of construction. Generally, the rigid and flexible types are not interchangeable and rules governing the direct application within each group are given in 13.5.2 to 13.5.4. However, in some cases it is possible for the result of a test on a particular type of door assembly tested in one form of standard supporting construction to be applicable to that door assembly when mounted in a different type of standard supporting construction. Specific rules governing the situation for hinged and pivoted door assemblies are given in 13.5.4. The rationale behind the rules is given in Annex C.
13.6	**Associated supporting constructions** The fire resistance of a door tested in an associated supporting construction has no field of direct application. The applicability of the result to other supporting constructions shall be the subject of extended application.

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4.4.3 Direct field of application according to EN 1634-3

Following configurations of the product are in accordance with the direct application of the test results for the classification under 4.2.

The direct field of applications are based on the aforementioned basic tests. Further versions as well as details of the end application are contained in the above-mentioned extended application report. The construction details contained therein are not restricted by the following field of application.

Reference to standard EN 1634-3	Permitted changes to the tested specimen
13.1	**General** The field of direct application of test results is restricted to the allowable changes which a sponsor may make to the tested specimen following a successful smoke leakage test. These variations may be introduced automatically without the need for the sponsor to seek additional evaluation, calculation or approval. The results of the leakage test continue to apply to assemblies of a different construction subject to the following: a) The assembly is of a similar generic construction, e.g. a solid timber leaf in a timber frame or a folded sheet metal leaf in a steel frame. b) The mode of operation is identical, e.g. single action, double action, roller shutter or a folding leaf. c) In the case of assemblies that only require a restriction in the leakage rate from one direction only then the direction does not vary from that tested. d) The stiffness of the supporting construction and the method of fixing and sealing the frame to the supporting or associated construction shall not be less than that of the tested construction (this may be the specimen frame in some furnaces). Doors tested in a flexible construction may be installed into rigid constructions but not vice-versa. Doors tested in a flexible construction to achieve ambient temperature classification Sa may be installed in alternative flexible constructions. The use of alternative flexible constructions for doors with S_m classification will be the subject of extended application considerations.
13.2	**Construction of assembly**
13.2.1	**General** a) decorative finishes such as paints may be varied. b) The clearance gaps between components may be varied but shall not be greater than those in the tested assembly and where gaps are smaller they shall not impair the ability of the leaf/leaves/curtain to close, especially in cases where both leaves of hinged or pivoted door assemblies are opened or closed simultaneously. This applies in particular to door leaves of hinged doors which are opened or closed simultaneously; c) Threshold gaps protected by active drop seals may be varied within the movement range specified by the seal manufacturer.

Reference to standard EN 1634-3	Permitted changes to the tested specimen
13.3	**Size and aspect ratio**
13.3.1	**Hinged or pivoted leaf assemblies**
13.3.1.1	The leaf size shall not be increased but may be reduced providing that the number of any movement restrictors such as locks, latches and hinges is not decreased (but may be increased).
13.3.1.2	The aspect ratio of the leaf may be changed, subject to the restrictions in 13.2.2.1 and/or 13.2.2.2 and subject to the length of the leakage path not being extended.
13.5	**Hardware and fittings** Elements of hardware or ironmongery and/or their fixing technique may not be changed without extended application evaluation. The positioning of elements of hardware or ironmongery may be modified for ambient temperature smoke application but shall not be changed for medium temperature applications.
13.6	**Sealants** As the sealing system is a critical part of the test, no modification may be made to the system tested.

4.4.4 Field of direct application as per EN 1191 and EN 1191, Annex H

Following configurations of the product are in accordance with the direct application of the test results for the classification under 4.2.

The direct field of applications are based on the aforementioned basic tests. Further versions as well as details of the end application are contained in the above-mentioned extended application report. The construction details contained therein are not restricted by the following field of application.

Reference to standard EN 1191	Permitted changes to the tested specimen
6	**Preparation for testing** The results of the test are valid to fillings which are installed in the same way as the tested fillings. The total weight must not exceed the tested weight, if applicable taking into account an increase in load.
H.1	**Scope** The test procedures described in Annex H of EN 1191 apply to manually operated side-hung single and double action pedestrian doorsets being either single leaf or double leaf pedestrian doorsets. Included in this Annex are also pedestrian doorsets in escape routes or fire resisting and/or smoke control pedestrian doorsets or combinations of such pedestrian doorsets, e.g. a fire resisting door being intended for use in an escape route.
H.3.3	**Range of direct application of pedestrian doorsets with self-closing devices** Test results of controlled door closing devices with folding arm can be transferred to products with slide rail, if the door closer power size is equal or less and the closer body is in the same position.

Reference to standard EN 1191	Permitted changes to the tested specimen
H.4.2	**Range of direct application of pedestrian doorsets with fire resistance and/or smoke control characteristics** The direct range of application as described in EN 1634-1:2008, 13.1 and 13.2, can be applied to the products. EN 14600:2006, 4.10, applies with regard to permissible modifications in the design of tested doorsets and openable windows.
H.4.3	**Direct applications also applicable to product variations with different sizes or masses** The durability of self-closing and/or repeated opening and closing shall be performed with the largest and heaviest variation of the particular product type. Therefore the product's performance is also applicable to smaller and lighter variations of the product.

5 Limitations

This classification document does not represent type approval or certification of the product.

ift Rosenheim
24.08.2022

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PROCES-VERBAL

Laboratoire agréé Efectis par le Ministère de l'Intérieur

PROCES-VERBAL DE CLASSEMENT N° EFR-22-002638 – Revision 1

Résistance au feu des éléments de construction selon l'arrêté du 14 mars 2011 modifiant l'arrêté du 22 mars 2004 du ministère de l'Intérieur

Durée de validité	Ce procès-verbal de classement et ses éventuelles extensions sont valables jusqu'au : **17 octobre 2027**.
Rapport de référence	EFR-22-002638
Concernant	Une cloison vitrée à ossature aluminium. Ossature : ADS 90 FR 120 (SCHÜCO). Vitrages : CONTRAFLAM 120-5 (V.S.G.I.).
Co-demandeurs	VETROTECH SAINT-GOBAIN INTERNATIONAL AG BERNSTRASSE 43 3175 FLAMATT SWITZERLAND SCHÜCO INTERNATIONAL SCS 4/6 ROUTE DE SAINT-HUBERT 78612 LE PERRAY EN YVELINES FRANCE

Ce procès-verbal annule et remplace le procès-verbal EFR-22-002638.

ANNEXE : SUIVI DES REVISIONS

Ind. de Rév.	*Modification*	*Commentaire*	*Date*		
0	Création du document	--	22/06/2023	Rédacteur	A. VIARD
				Vérificateur	R. KORYLUK
				Approbateur	R. KORYLUK
1	Amendement au rapport, n°1 : Suppression des caractères barrés	-	26/06/2023	Rédacteur	A. VIARD
				Vérificateur	R. KORYLUK
				Approbateur	R. KORYLUK

1. OBJET DU PROCES-VERBAL

Le procès-verbal de classement de résistance au feu définit le classement affecté à une cloison vitrée à ossature aluminium conformément aux modes opératoires donnés dans la norme EN 13501-2 : 2016 « Classement au feu des produits de construction et éléments de bâtiment - Partie 2 : Classement à partir des données d'essais de résistance au feu à l'exclusion des produits utilisés dans les systèmes de ventilation ».

2. LIEU DE REALISATION DE L'ESSAI

EFECTIS FRANCE
Voie Romaine
57280 MAIZIERES-LES-METZ
France

3. REFERENCE ET PROVENANCE DE L'ELEMENT ETUDIE

Ossature :	ADS 90 FR 120 (SCHÜCO) ;
Provenance :	SCHÜCO INTERNATIONAL SCS - 78612 LE PERRAY EN YVELINES CEDEX (FR)
Vitrages :	CONTRAFLAM 120-5 MONOLITHIQUE (V.S.G.I.) ;
Provenance :	VETROTECH SAINT-GOBAIN INTERNATIONAL AG - USINE DE ROMONT (CH) VETROTECH SAINT-GOBAIN KINON GMBH, USINE DE WÜRSELEN (DE) VETROTECH SAINT-GOBAIN, USINE DE NAMYSLOW (PL)

4. PRINCIPE DE L'ENSEMBLE

4.1. TYPE DE FONCTION

La cloison vitrée est définie comme un « élément non porteur ». Sa fonction est de résister au feu en ce qui concerne les caractéristiques de performances de résistance au feu données au paragraphe 5 de la norme EN 13501-2.

4.2. GENERALITES

L'élément consiste en une cloison vitrée, réalisée au moyen de profilés en aluminium thermiquement isolés de la série ADS 90 FR 120 (SCHÜCO) munie de vitrages de référence CONTRAFLAM 120-5 (V.S.G.I.).

4.3. DESCRIPTION DETAILLEE DE L'ELEMENT

Le descriptif ci-dessous est un descriptif allégé de la cloison vitrée. Le détail est rédigé dans le rapport d'essai de référence.

4.3.1. Ossature

L'ossature est composée de montants et traverses réalisés au moyen de profilés en aluminium thermiquement isolés de la série ADS 90 FR 120 (SCHÜCO). Ces profilés sont constitués de deux coques aluminium reliées entre elles par un raidisseur polyamide.

Les profilés périphériques sont réalisés au moyen de profilés aluminium de référence 491660 (SCHÜCO) avec une section hors tout de 57 x 90 mm et un profilé statique de section 40 x 60 mm.

L'ossature intermédiaire est composée de profilés aluminium de référence 491500 (SCHÜCO) avec une section hors tout de 82 x 90 mm et un profilé statique de section 40 x 60 mm. Voir planche n°6.

Les profilés peuvent être assemblés entre eux par l'intermédiaire :

- d'équerre d'assemblage de référence 235213 (SCHÜCO) placées dans les profilés et maintenues en place par deux goupilles 5 x 13,5 mm de référence 218157 (SCHÜCO). L'espace entre les équerres et le profilé reçoit des bandes isolantes de référence 220408 (SCHÜCO) de dimensions 8 x 18 x 60 mm et 220413 (SCHÜCO) de dimensions 20 x 35 x 130 mm. Voir planche n°7.
- de raccords en T en aluminium de référence 235265 (SCHÜCO) placés dans les profilés et maintenus en place par une goupille 5 x 10 mm de référence 218156 (SCHÜCO), et par colle de référence 298388 (SCHÜCO). L'espace entre les raccords en T et le profilé reçoit des bandes isolantes de référence 220410 (SCHÜCO) de dimensions 8 x 18 x 50 mm et 220413 (SCHÜCO) de dimensions 20 x 35 x 130 mm. Voir planche n°8.

Les profilés reçoivent un remplissage composé de :

- une bande isolante de référence 220519 (SCHÜCO) de section 20 x 13 mm pour chaque demi-coquille ;
- une bande isolante de référence 220403 (SCHÜCO) de section 35 x 20 mm pour le noyau central ;
- une bande isolante de référence 220406 (SCHÜCO) de section 34 x 37 mm pour les profilés statiques.

Les bandes isolantes de référence 220519 (SCHÜCO) sont associées à un ressort en acier de référence 220363 (SCHÜCO). Voir planche n°10.

4.3.2. Vitrages

L'ossature définit des baies obturées par des vitrages de référence CONTRAFLAM 120-5 (V.S.G.I.) et d'épaisseur minimale 54 mm dont la composition est en possession du laboratoire.

Un film adhésif d'épaisseur maximale 150 µm et de classement de réaction au feu M0, M1, A1, A2 ou B peut être mis en œuvre sur l'une des faces des vitrages.

Variante : vitrage monolithique :
Les vitrages CONTRAFLAM 120-5 (V.S.G.I.) peuvent être fabriqués avec une des faces listées en planche n°13.

4.3.3. Maintien et étanchéité des vitrages

Les vitrages sont maintenus par :

- Des clips en aluminium de référence 220372 (SCHÜCO) fixés sur l'ossature au moyen de deux vis Ø 3.9 x 13 mm de référence 205080 (SCHÜCO) placées avec un pas horizontal maximal de 450 mm et un pas vertical maximal de 350 mm (voir répartition des clips en planche n° 3 de l'annexe PLANS). Après insertion des vitrages, le clip est replié vers ce dernier.
- Une parclose en aluminium, de hauteur 24,5 mm et de largeur adaptée à l'épaisseur du vitrage, clipsée sur l'ossature. Les parcloses sont remplies de bandes isolantes adaptées à leur largeur et celle du vitrage. Voir planches n°9 et 10.

La section des joints EPDM associés aux parcloses et aux ailettes des profilés est à adapter en fonction de l'épaisseur du vitrage. Voir planche n°9.

Une bande intumescente de référence 265109 (SCHÜCO) est positionnée dans la feuillure du vitrage sous les clips. Au-dessus des clips :

- 220441 (SCHÜCO) en traverse basse et périphérie verticale des vitrages ;
- 220440 (SCHÜCO) (largeur 60 mm) en traverse haute et 200 mm en périphérie verticale haute des vitrages.

Dans chaque coin inférieur de chaque vitrage, deux renforts de référence 220366 (SCHÜCO) sont placés l'un à côté de l'autre avec une distance de 2 mm. Ils ont pour dimensions 27 x 40 x 40 x 3 mm. Ils sont vissés sur les profilés verticaux et horizontaux par des vis Ø 3.9 x 13 mm. Les renforts reçoivent des cales de vitrages réalisées en FLAMMI 12 (KUHN) avec des dimensions de 100 x épaisseur du vitrage x 2 à 6 mm. Une distance de 1 à 2 mm est réalisée vis-à-vis du vitrage. Le joint intumescent de référence 265109 (SCHÜCO) est interrompu au niveau de la partie horizontale des renforts.

Jeu en fond de feuillure : 7 mm ± 2 mm ;
Prise en feuillure : 18 mm ± 2 mm.

4.3.4. Fixation

La cloison vitrée peut être fixée sur du béton armé de masse volumique supérieure à 2200 kg/m3 et d'épaisseur supérieure à 200 mm. L'ossature est fixée à la construction support au moyen de chevilles d'ancrage Ø 10 x 112 mm de référence 288140 (SCHÜCO), au travers de platines. Les platines de référence 381517 (SCHUCO), de dimensions 26 x 86 mm et d'épaisseur 2 mm, sont placées sur les profilés sur le chant extérieur des quatre côtés et fixées par une vis ST 3,9 x 19 mm de référence 205496 (SCHÜCO) sur les profilés. Les chevilles d'ancrage sont placées à 100 mm des extrémités et avec un pas maximal de 420 mm.
La position des points de fixation est indiquée en planche n° 3 de l'annexe plans.

Le profilé externe bas de l'ossature est mis en place sur les cales en PROMATECT -H (PROMAT) d'épaisseur 10 mm.

L'étanchéité du jeu périphérique maximal de 30 mm entre la cloison vitrée et la paroi support est assurée par bourrage de laine de roche de type SUPERWOOL PLUS (MORGAN) ou (ROCKWOOL) de masse volumique théorique minimale 60 kg/m3, recouverte :

- soit par silicone neutre ;
- soit par tôle d'habillage en acier ou aluminium d'épaisseur 20/10 mm vissée ou collée à l'élément.

5. REPRESENTATIVITE DE L'ELEMENT

L'élément mis en œuvre dans les conditions décrites par le laboratoire peut être considéré comme représentatif de la réalisation courante actuelle.

6. CLASSEMENT DE RESISTANCE AU FEU

6.1. REFERENCE DES CLASSEMENTS

Le présent classement a été réalisé conformément au paragraphe 7.5.5 de la norme EN 13501-2 : 2016.

6.2. CLASSEMENTS

L'élément est classé selon les combinaisons suivantes de paramètres de performances et de classes.

R	E	I	W	t	-	M	C	S	G	K
	E			**120**						
	E		**W**	**120**						
	E	**I**		**120**						

Aucun autre classement n'est autorisé.

7. CONDITIONS DE VALIDITE DES CLASSEMENTS DE RESISTANCE AU FEU

Note : Ce classement est établi par rapport aux conditions de classements énoncées dans le paragraphe 11. du rapport d'essai de référence.

7.1. A LA FABRICATION ET A LA MISE NE ŒUVRE

L'élément et son montage doivent être conformes à la description détaillée figurant dans le rapport d'essai de référence.

En cas de contestation sur les éléments faisant l'objet du présent procès-verbal, le rapport d'essai de référence pourra être demandée à son propriétaire, sans obligation de cession du document.

7.2. SENS DE FEU

Sens de feu : **indifférent** (le feu côté parcloses étant considéré comme le plus critique par le laboratoire).

7.3. DIMENSIONS HORS TOUT DE LA CLOISON VITREE

7.3.1. Pour un classement EI 120

Hauteur maximale de la cloison vitrée : 3267 mm ;
Largeur maximale de la cloison vitrée : illimitée.

7.4. DIMENSIONS ET SURFACE DES VITRAGES RECTANGULAIRES INDIVIDUELS

7.4.1. Pour un classement EI120

	Largeur (mm)	Hauteur (mm)
Minimum	sans limite	sans limite
Maximum	1591	1440
	Avec une surface maximale inférieure à 1,93 m²	

7.5. DOMAINE DE VALIDITE

Aucune modification dimensionnelle ne pourra être appliquée sur les cotes ou configurations exprimées dans le paragraphe suivant et aucune modification de constitution des éléments ne pourra être faite sans la délivrance préalable d'une extension de classement ou d'un avis de chantier par EFECTIS France.

8. DOMAINE D'APPLICATION DIRECTE DES RESULTATS

8.1. GENERALITES

Les résultats d'essai sont applicables directement aux constructions similaires lorsqu'une ou plusieurs des modifications mentionnées dans ce paragraphe 8 ont été apportées et que la construction continue à être conforme aux règles de conception correspondantes du point de vue de sa rigidité et de sa stabilité. Les autres modifications ne sont pas autorisées.

Le résultat d'un essai sur un élément comportant des mélanges de différents types de construction (par exemple différents types de verres ou différents types d'encadrements, etc.) n'est applicable qu'à l'élément soumis à l'essai.

8.2. REGLES RELATIVES AU DOMAINE D'APPLICATION DIRECTE NE NECESSITANT PAS DE DEPASSEMENT DE TEMPS

8.2.1. Élément vitré

8.2.1.1. Hauteur de l'élément vitré

Les résultats d'essai couvrent les éléments vitrés rectangulaires avec une augmentation de hauteur de 10 % par rapport à la hauteur soumise à l'essai, dans la limite de 0,3 m, et à condition que :
a) la déformation maximale de l'élément d'essai ne dépasse pas 100 mm ;
b) les jeux de dilatation de la construction soient augmentés proportionnellement.

8.2.1.2. Largeur de l'élément vitré

Les résultats d'essai couvrent les éléments vitrés rectangulaires de plus grande largeur ou les répétitions de l'élément vitré soumis à l'essai ou de parties de celui-ci, à condition que :
a) le système d'encadrement soit identique à celui soumis à l'essai ;
b) la largeur de l'élément d'essai utilisé lors de l'essai soit de 2,8 m ou plus avec un bord vertical non assujetti ;
c) les meneaux et/ou les joints entre les éléments vitrés aient été soumis à l'essai.

8.2.2. Système de vitrage

8.2.2.1. Dimensions linéaires

Les dimensions linéaires des vitrages peuvent être réduites par rapport aux dimensions soumises à l'essai. La hauteur et la largeur peuvent être prises en compte indépendamment.

8.2.2.2. Parcloses

Les résultats d'essai sur les parcloses clipsées couvrent les parcloses vissées, avec le même entraxe ou un entraxe inférieur.

8.2.2.3. Système d'encadrement

La distance entre les meneaux et/ou les traverses peut être réduite par rapport à celle soumise à l'essai. Les entraxes des fixations peuvent être diminués par rapport à ceux soumis à l'essai.

La section des châssis peut être augmentée par rapport à celle soumise à l'essai, avec les restrictions suivantes :

- Pour les systèmes d'encadrement prévus pour la classification EI, aucune augmentation de la largeur n'est autorisée si aucun mesurage de la température sur la face non exposée des châssis n'a été effectué pendant l'essai.

8.2.3. Constructions supports

8.2.3.1. Généralités

Pour les éléments d'essai soumis à l'essai dans le cadre d'essai, sans aucune construction support, le résultat est applicable à des constructions support rigides haute densité ayant au moins la même résistance au feu que l'élément d'essai.

8.3. REGLES RELATIVES AU DOMAINE D'APPLICATION DIRECTE NECESSITANT UN DEPASSEMENT DE TEMPS

8.3.1. Généralités

Pour que certaines règles soient applicables, il est nécessaire d'obtenir un dépassement de temps lors de l'essai au feu par rapport au temps de classement recherché. Le dépassement de temps requis est indiqué dans le Tableau A.1.

Tableau A.1 - Dépassement de temps

Classement	*Catégorie A*	*Catégorie B*
E 20	non applicable	≥ 23 min.
E 30	≥ 33 min. < 36 min.	≥ 36 min.
E 60	≥ 63 min. < 66 min.	≥ 66 min.
E 90	≥ 95 min. < 99 min.	≥ 99 min.
E 120	≥ 126 min. < 132 min.	≥ 132 min.
EI 15	non applicable	≥ 18 min.
EI 20	non applicable	≥ 23 min.
EI 30	≥ 33 min. < 36 min.	≥ 36 min.
EI 45	≥ 48 min. < 51 min.	≥ 51 min.
EI 60	≥ 63 min. < 66 min.	≥ 66 min.
EI 90	≥ 95 min. < 99 min.	≥ 99 min.
EI 120	≥ 126 min. < 132 min.	≥ 132 min.

Note : Les règles mentionnées en 8.3 peuvent être appliquées en plus des règles fournies en 8.2.

8.3.2. Dimensions de l'élément vitré

8.3.2.1. Hauteur

Le résultat d'essai de l'élément vitré couvre la hauteur jusqu'à au maximum la hauteur soumise à l'essai multipliée par un facteur de 1,1, à condition que le dépassement de temps A soit atteint. Ceci est valable quelles que soient les déformations mesurées.

Le résultat d'essai de l'élément vitré couvre la hauteur jusqu'à au maximum la hauteur soumise à l'essai multipliée par un facteur de 1,2, à condition que le dépassement de temps B soit atteint. Ceci est valable quelles que soient les déformations mesurées.

8.3.2.2. Largeur

La répétition de l'élément vitré est couverte en fonction des règles décrites en 8.2.1.3.

8.3.3. Dimensions et surface des vitrages rectangulaires individuels

Le résultat d'essai du vitrage couvre les dimensions jusqu'à au maximum les dimensions soumises à l'essai multipliées par un facteur de 1,1 en largeur et/ou en hauteur, à condition que le dépassement de temps A soit atteint et que la surface soumise à l'essai maximale multipliée par un facteur de 1,1 ne soit pas dépassée.

Le résultat d'essai du vitrage couvre les dimensions jusqu'à au maximum les dimensions soumises à l'essai multipliées par un facteur de 1,2 en largeur et/ou en hauteur, à condition que le dépassement de temps B soit atteint et que la surface soumise à l'essai maximale multipliée par un facteur de 1,21 ne soit pas dépassée.

Pour tenir compte de l'augmentation des dimensions du verre, il est permis d'augmenter la distance entre les meneaux et/ou les traverses.

9. DUREE DE VALIDITE DES CLASSEMENTS DE RESISTANCE AU FEU

Ce procès-verbal de classement est valable **CINQ ANS** à dater de la délivrance du rapport d'essai, soit jusqu'au :

DIX SEPT OCTOBRE DEUX MILLE VINGT SEPT

Passé cette date, ce procès-verbal n'est plus valable, sauf s'il est accompagné d'une reconduction délivrée par Efectis France.

Ce procès-verbal atteste uniquement des caractéristiques de l'échantillon soumis aux essais et ne préjuge pas des caractéristiques de produits similaires. Il ne constitue donc pas une certification de produit au sens de l'article L 115-27 du code de la consommation et de la loi du 3 juin 1994.

Ce procès-verbal de classement ne représente pas l'approbation de type ou la certification de l'élément.

Ces conclusions ne portent que sur les performances de résistance au feu des éléments objets du présent procès-verbal. Elles ne préjugent, en aucun cas, des autres performances liées à son incorporation à un ouvrage.

Maizières-lès-Metz, le 26 juin 2023

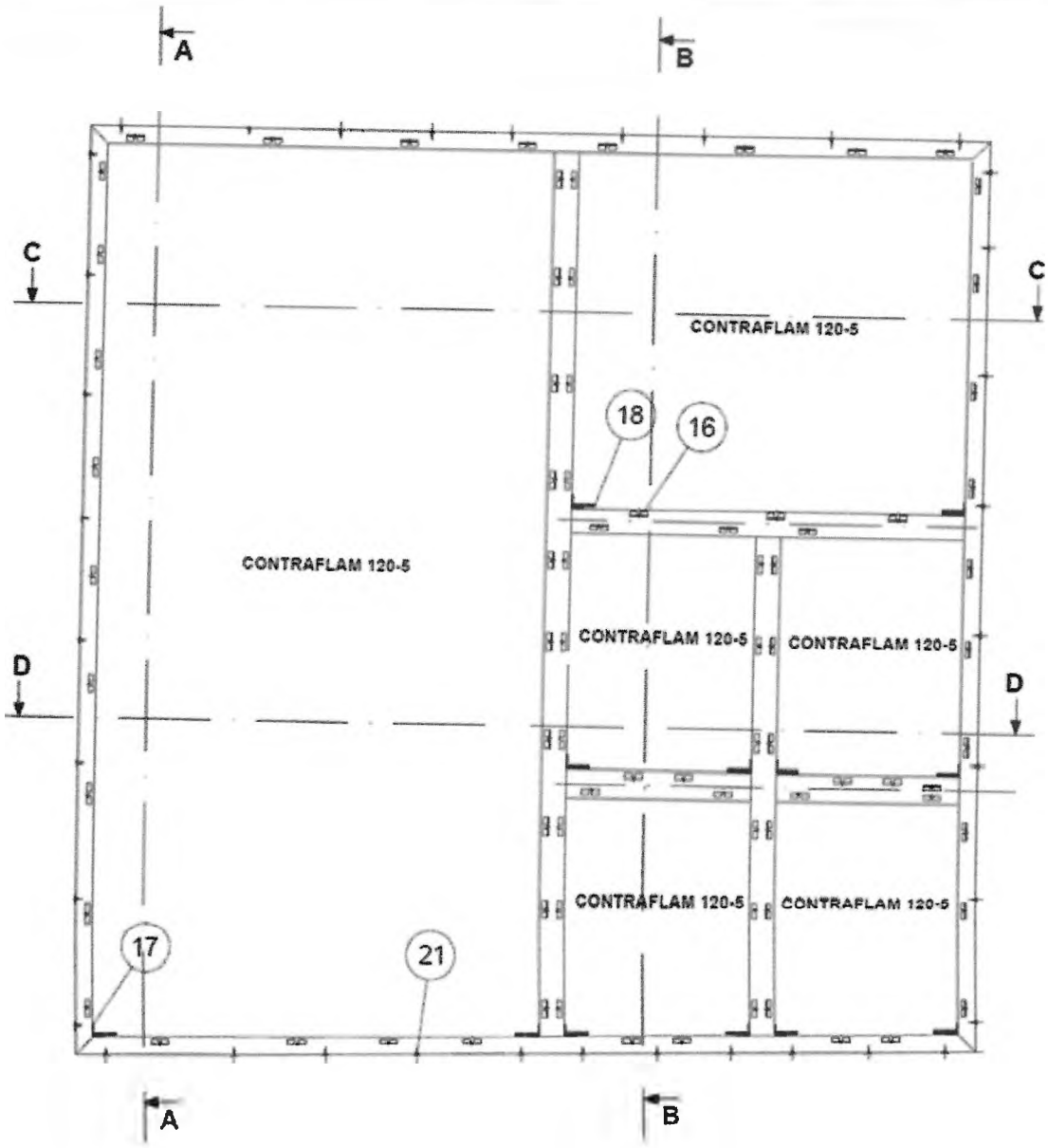
X Andréa VIARD

Chargé d'Affaires
Signé par : Andréa VIARD

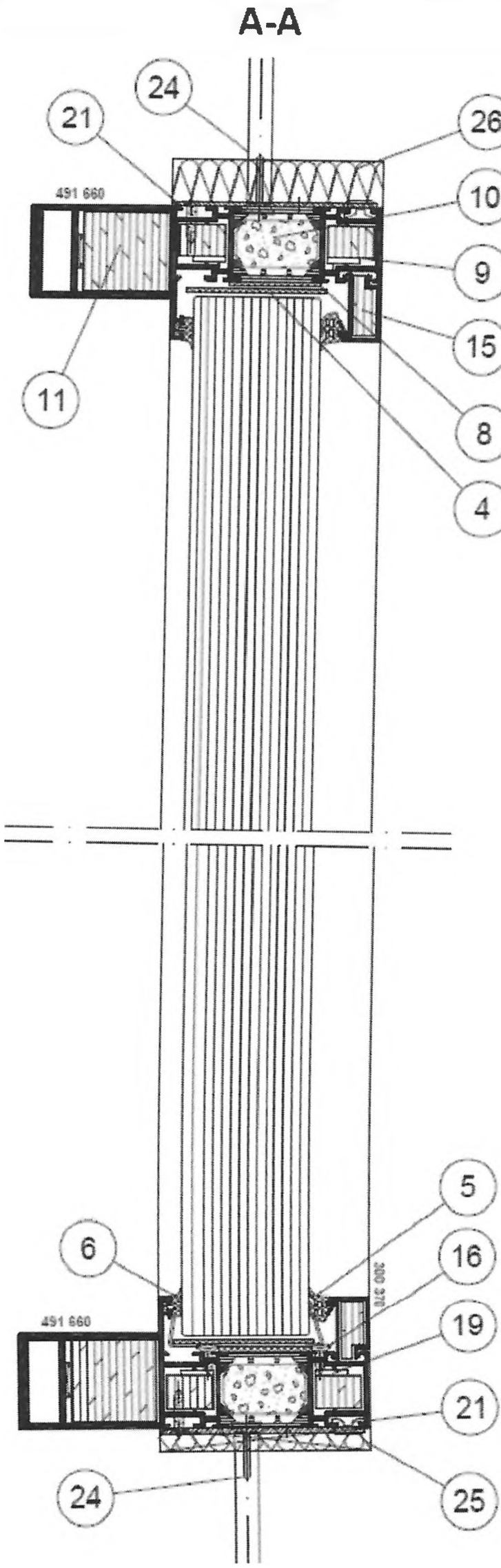
X Régis KORYLUK

Superviseur
Signé par : Régis KORYLUK

ANNEXE PLANS : PLANCHE N° 1



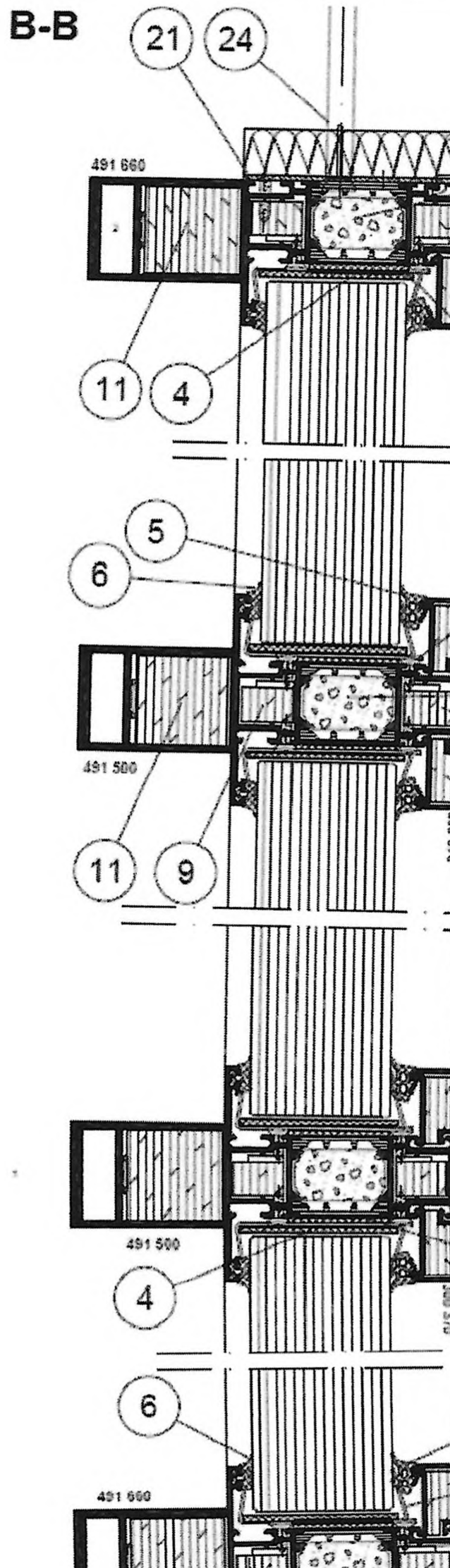
ANNEXE PLANS : PLANCHE N° 2



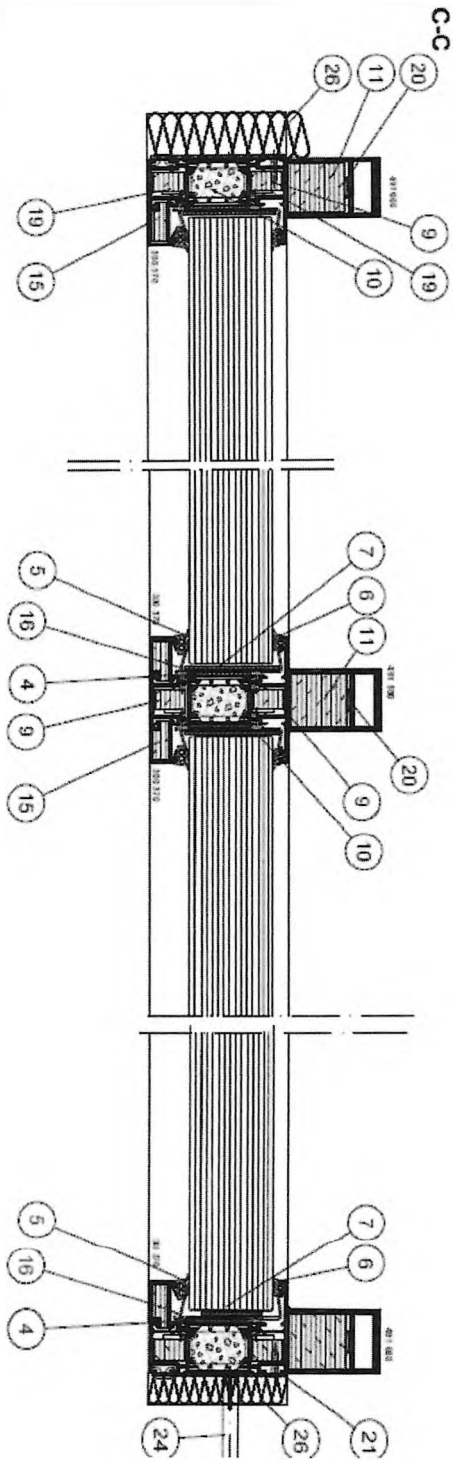
Efectis

EFR-22-002638 – Révis

ANNEXE PLANS : PLANCHE N° 3



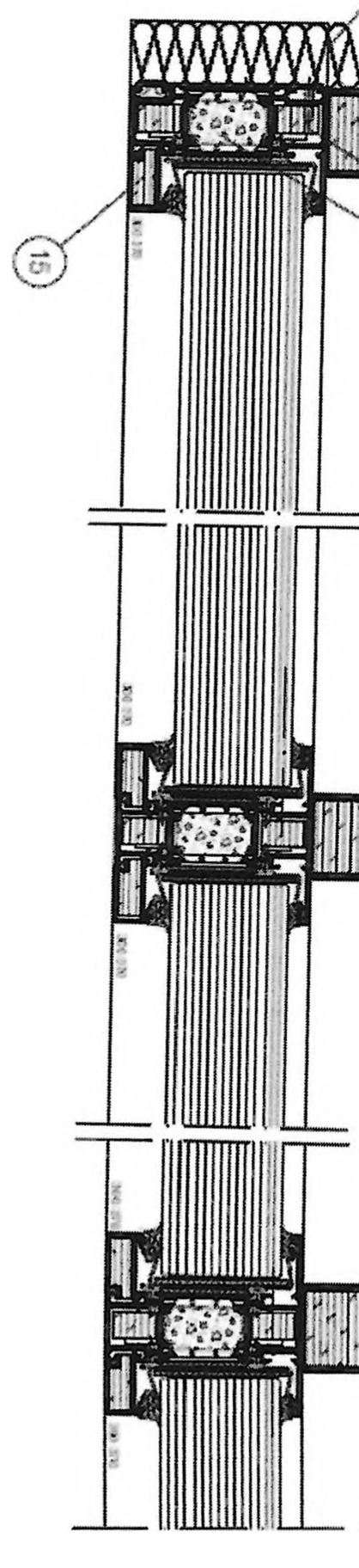
ANNEXE PLANS : PLANCHE N° 4



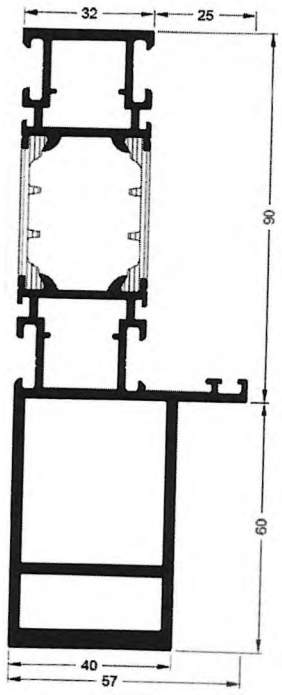
Efectis

EFR-22-002638 – Révis

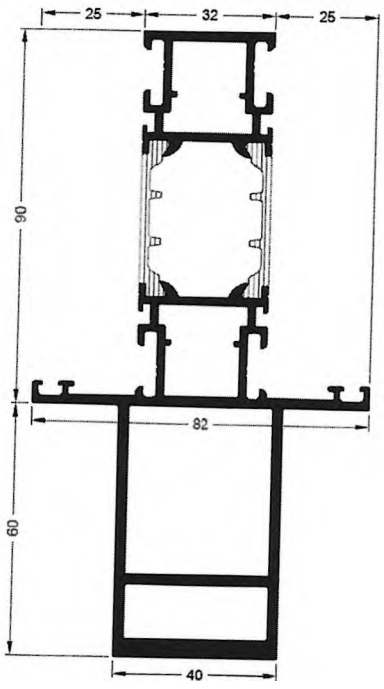
ANNEXE PLANS : PLANCHE N° 5



ANNEXE PLANS : PLANCHE N° 6



491 660
Profilé structure 32/57



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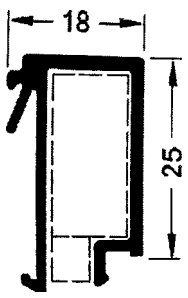
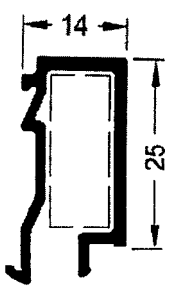
Profilé structure 32/82



300 370
Parclose 18



463 600
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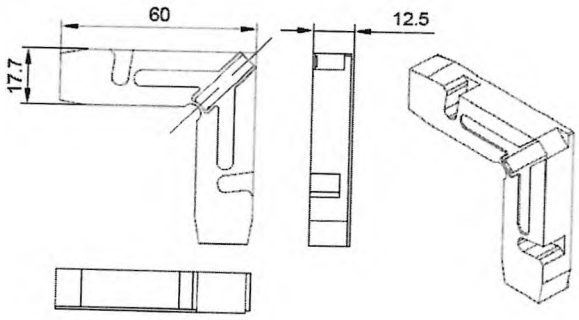
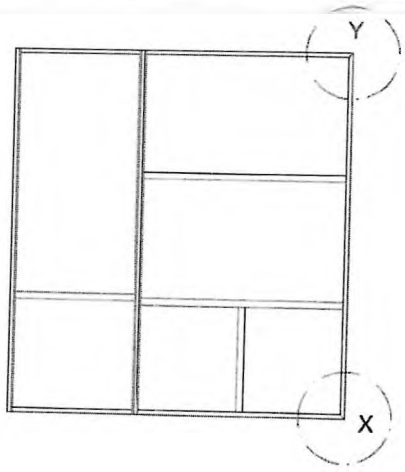
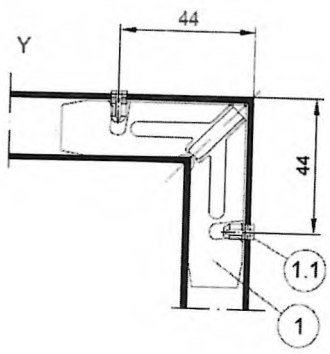
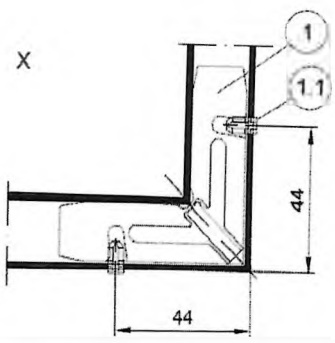
ANNEXE PLANS : PLANCHE N° 7

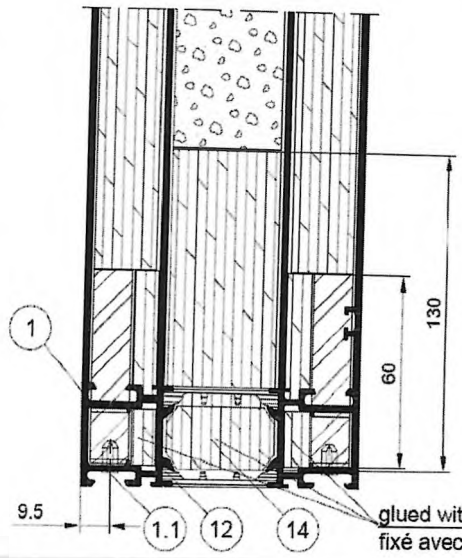






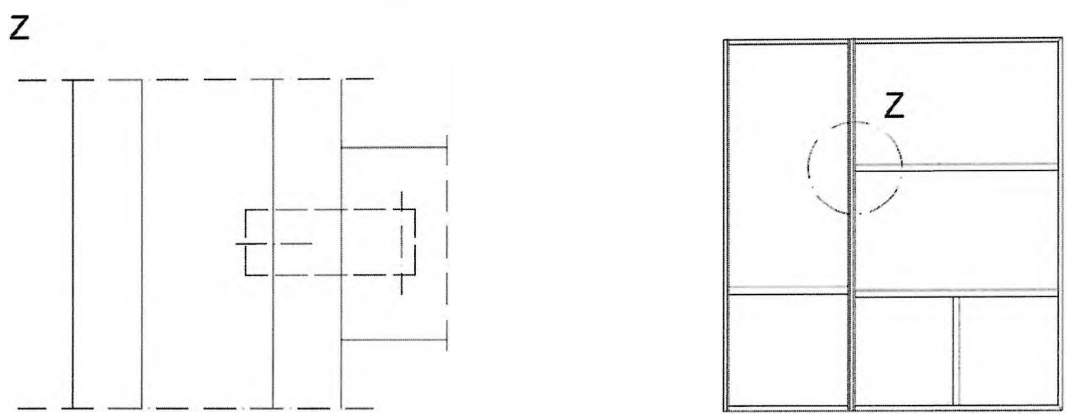


Corner cleats are stuck together with 2-component PU-adhesive 298388
Les équerres sont collés à l'aide d'une colle PU à 2 composants 298388



Pos.	Nom	Name	Art. No.
1	Equerre	Corner cleat	235213
1.1	Goupille Ø 5 x 13.5	Nail Ø 5 x 13.5	218157
12	Isolateur feu 8x18x60 mm	Fireboard 8x18x60 mm	220408
14	Isolateur feu 20x35x130 mm	Fireboard 20x35x130 mm	220413

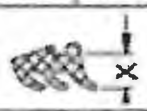
ANNEXE PLANS : PLANCHE N° 8



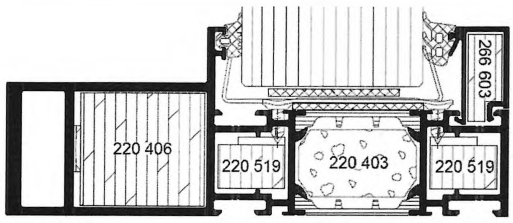
T-cleats are stuck together with Al-Profiles
2-component PU-adhesive 298388
Les raccords T sont collés à l'aide d'une colle PU 2 composants 298388

Pos.	Nom	Name	Art. No.
2	Raccord - T	T-cleat	235265
2.1	Goupille Ø 5 x 10	Nail Ø 5 x 10	218156
13	Isolateur feu 8x18x50 mm	Fireboard 8x18x50 mm	220410
14	Isolateur feu 20x35x130 mm	Fireboard 20x35x130 mm	220413
20	Ressort blocage (Acier)	Clamping spring (steel)	218781

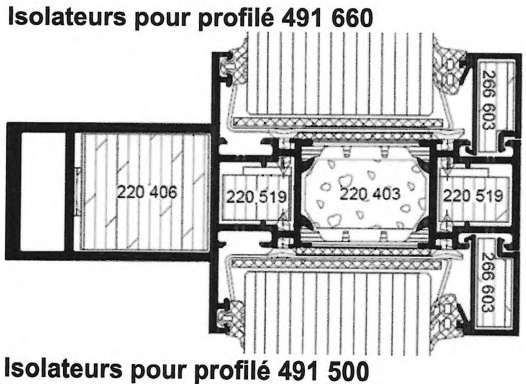
ANNEXE PLANS : PLANCHE N° 9

Joint vitrage *Glazing gasket*									
Extérieur *Outside*		Intérieur *Inside*							
			Rouge *Red*		Blanc *White*	Marron *Brown*	Noir *Black*	Bleu *Blue*	
									
			X = 9 - 10 mm		X = 8 mm	X = 7 mm	X = 6 mm	X = 5 mm	
		Noir *Black*	224 067		224 265	224 066	224 264	224 065	
		Gris *Grey*	-	-	244 067	244 066	244 065	278 854	
X = (mm)		Profondeur *Basic depth*	Epaisseur de vitrage (mm) *Glass thickness in mm*						
224 267	5		-	-	-	54[1]	55[1]	56[1]	
224 259	3	90	57[1]	58[1]	59[1]	60[1]	-	-	

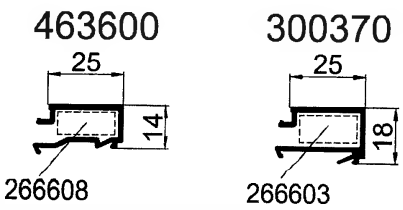
ANNEXE LISTE DES COMPOSANTS : PLANCHE N° 10



Isolateurs pour profilé 491 660



Isolateurs pour profilé 491 500

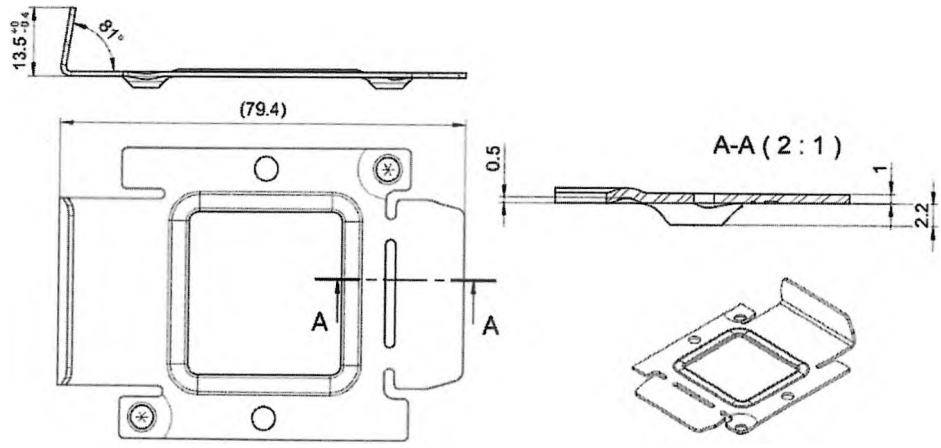


Isolateurs pour parcloses

ANNEXE LISTE DES COMPOSANTS : PLANCHE N° 11

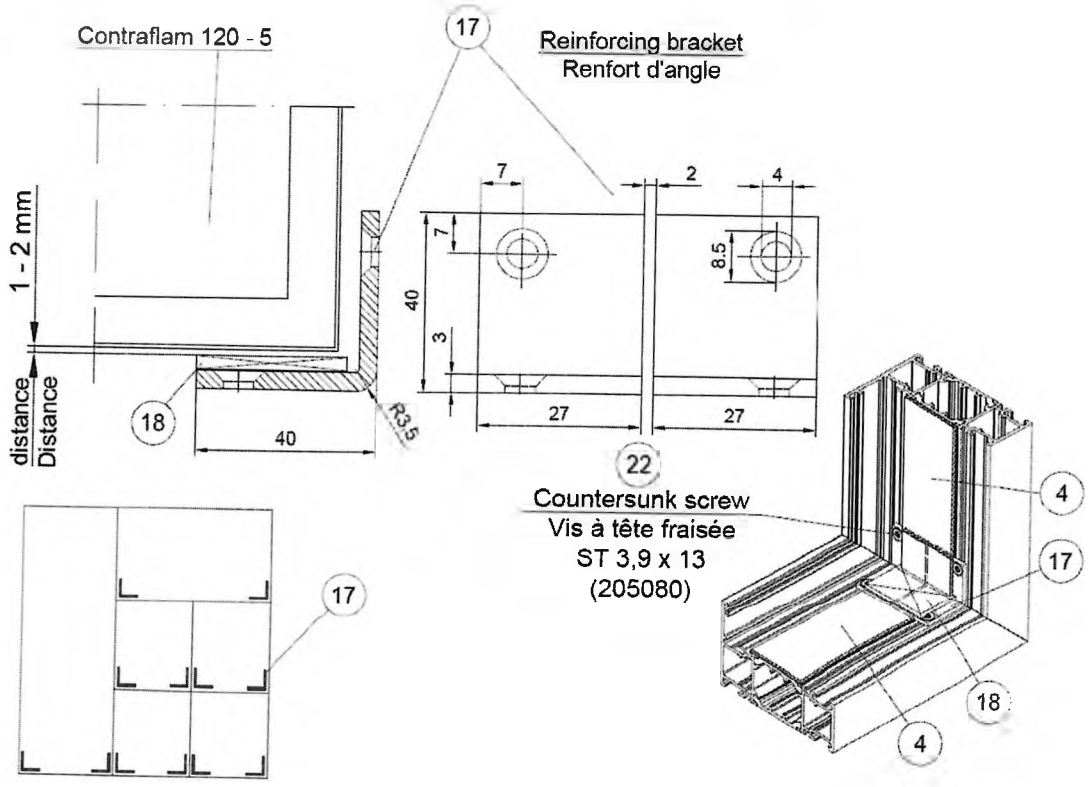
16

Glazing clip
Clip maintien vitrage



17

Reinforcing bracket
Renfort d'angle



ANNEXE LISTE DES COMPOSANTS : PLANCHE N° 12

Pos.	Nom	Name	Art. No.
1	Equerre	Corner cleat	235213
1.1	Goupille ø5 x 13.5	Nail ø5 x 13.5	218157
2	Raccord T	T-cleat	235265
2.1	Goupille ø5 x 10	Nail ø5 x 10	218156
4	Joint intumescent 39 x 2.2 mm	Intumescent strip 39 x 2.2 mm	265109
5	Joint de vitrage intérieur EPDM	EPDM glazing gasket inside	*
6	Joint d'appui de vitrage EPDM	EPDM galzing rebate gasket	*
7	Joint intumescent 60 x 2.2 mm	Intumescent strip 60 x 2.2 mm	220441
8	Joint intumescent 39 x 2.2 mm	Intumescent strip 39 x 2.2 mm	220440
9	Isolateur feu 20 x 13 x 1000 mm	Fire Board 20 x 13 x 1000 mm	220519
10	Isolateur feu 35 x 20 x 1000 mm	Fire Board 35 x 20 x 1000 mm	220403
11	Isolateur feu 34 x 37 x 1000 mm	Fire Board 34 x 37 x 1000 mm	220406
12	Isolateur feu 18 x 8 x 60 mm	Fire Board 18 x 8 x 60 mm	220408
13	Isolateur feu 18 x 8 x 50 mm	Fire Board 18 x 8 x 50 mm	220410
14	Isolateur feu 35 x 20 x 130 mm	Fire Board 35 x 20 x 130 mm	220413
15	Isolateur feu parclose	Fire Board parclose	**
16	Clip maintien vitrage	Glazing clip	220372
17	Renfort d'angle	Reinforcing bracket	220366
18	Cale de vitrage Flammi 12	Flammi 12	
19	Ressort de blocage acier	Steel clamping spring	220363
20	Ressort de blocage acier	Steel clamping spring	218781
21	Plaque de fixation	Steel anchor plate	281517
22	Vis	Screw	205080
23	Vis	Screw	205865
24	Cheville Schüco (Steel) Ø 10 x 112 / 92 mm	Schüco frame anchor (Steel) Ø 10 x 112 / 92 mm	288140
25	Promatect-H + Laine Minérale	Promatect-H + Mineral wool	
26	Laine Rockwool	Rockwool wool	

** : Epaisseur à déterminer en fonction de l'épaisseur du vitrage*
*** : Isolateur à déterminer en fonction du type de parclose*

ANNEXE LISTE DES COMPOSANTS : PLANCHE N° 13

DIFFERENTES COMPOSITIONS POSSIBLES DU VITRAGE
CONTRAFLAM 120-5® MONOLITHIQUE

Pour tout remplacement, prendre en compte :
- L'épaisseur maximale possible dans le profilé : 60 mm

Remplacement d'une face SGG SECURIT® 4, 5, 6 ou 8 mm par
Une face SGG SECURIT® (6, 8, 10, 12 mm) - *application intérieure uniquement*
Une face SGG SECURIT LOW-E® (6, 8, 10, 12 mm) - *application intérieure uniquement*
Une face SGG DIAMANT® (6, 8, 10, 12 mm) - *application intérieure uniquement*
Une face SGG PARSOL® (6, 8, 10, 12 mm) - *application intérieure uniquement*
Une face SGG ANTELIO® (6, 8, 10, 12 mm) - *application intérieure uniquement*
Une face SGG DECORGLASS® (6 mm) - *application intérieure uniquement*
Une face SGG MIRASTAR® (5, 6, 8, 10 mm) - *application intérieure uniquement*
Une face SGG MASTERGLASS® (6, 8 mm) - *application intérieure uniquement*
Une face SGG EMALIT® EVOLUTION (6, 8, 10, 12 mm) - *application intérieure uniquement*
Une face SGG SERALIT® EVOLUTION (6, 8, 10, 12 mm) - *application intérieure uniquement*
Une face SGG STADIP PROTECT® 44.2 (9 mm) - *application intérieure uniquement*
Une face SGG STADIP PROTECT® 55.2 (11 mm) - *application intérieure uniquement*
Une face SGG STADIP PROTECT® SP 510 (10 mm) - *application intérieure uniquement*
Une face SGG STADIP SILENCE® 44.1 (8 mm) - *application intérieure uniquement*
Une face SGG STADIP SILENCE® 44.2 (9 mm) - *application intérieure uniquement*
Une face SGG STADIP SILENCE® 55.1 (10 mm) - *application intérieure uniquement*
Une face SGG STADIP SILENCE® 55.2 (11 mm) - *application intérieure uniquement*
Une face SGG STADIP SILENCE® 66.1 (12 mm) - *application intérieure uniquement*
Une face SGG STADIP SILENCE® 66.2 (13 mm) - *application intérieure uniquement*
Une face SGG STADIP ANTELIO® 46.2 (11 mm) - *application intérieure uniquement*
Une face SGG STADIP® COLOR 44.2 (9 mm) - *application intérieure uniquement*
Une face SGG STADIP® COLOR 55.2 (11 mm) - *application intérieure uniquement*
Une face SGG STADIP® COLOR 66.2 (13 mm) - *application intérieure uniquement*
Une face SGG SPYGLASS® 46.2 (11 mm) - *application intérieure uniquement*
Une face SGG MIRASTAR® 55.2 (11 mm) - *application intérieure uniquement*

Liste non exhaustive et évolutive sous réserve de disponibilités des produits dans le réseau Saint-Gobain, merci de nous consulter pour toutes demandes afin de confirmer la faisabilité

Test Report

Number	21-004208-PR20 (PB-A05-03-en-01)
Owner (Client)	SCHÜCO International KG Karolinenstr. 1-15 33609 Bielefeld Germany
Product Designation	**Single roof window, all sides inserted in a frame construction of the facade system Schüco FWS 50** System: **Schüco AW RO 50**
Details Special features	Manufacturer SCHÜCO International KG, - Bielefeld; Material Aluminium system with thermal break; Type of opening Tilt; Opening direction Outwards; Overall dimensions (W x H) 1352 mm x 2152 mm Motor drive by 1 chain drive
Order	Testing of mechanical durability
Contents	The test report contains a total of 5 pages and annexes (16 pages).
Note	This test report is based onTest Report no. 21-004208-PR20 PB-A05-03-de-01 dated 16.12.2022. The test report shall only be published in its unabbreviated form. The "Guidance Sheet for the Use of ift Test Documents" applies.

ift Rosenheim GmbH
Theodor-Gietl-Str. 7-9
D-83026 Rosenheim

Contact
Phone +49 8031 261-0
Fax +49 8031 261-290
www.ift-rosenheim.de

1 Execution

1.1 Sampling and product description

The following details have been presented to ift:

Sampler:	SCHÜCO International KG, 33609 Bielefeld (Germany)
Sampling date:	29.03.2022
Evidence:	A sampling report has been presented to ift.
Date of delivery:	18.03.2022
Description:	For product identification the specimen tested is described/represented in the Annex. Material specifications, item numbers and other company-specific descriptions are details provided by the client and will be checked for plausibility by ift.
Test specimen no.:	21-004208-PK14 / WE: 55748-001

1.2 Basic documents *) of the procedures

EN 1191:2012 - 12
Windows and doors - Resistance to repeated opening and closing - Test method
EN 12046-1:2020 - 08
Operating forces - Test method - Part 1: Windows

*) and the relevant national versions, e.g. DIN EN

1.3 Short description of the procedures

The tests were performed according to the following sequence:

- Mechanical durability

Mechanical durability - EN 1191:2012-12

The repeated opening and closing test is conducted in accordance with EN 1191. Mechanical durability of the test specimen and its moving components is determined by repeated opening and closing after a specified number of operating cycles.

2 Detailed results

Resistance to repeated opening and closing according to EN 1191:2012-12

Project-No.	21-004208-PR20
Basis	EN 1191:2012-12 Windows and doors - Resistance to repeated opening and closing - Test me
Test equipment	Schüco control unit 1.104.3592
Test specimen	Single roof window, all sides inserted in a frame construction of the facade s Schüco FWS 50
Test specimen No.	55748-001
Date of test	20.05.2022 - 30.11.2022
Test engineer in charge	Joachim Berkensträter
Test engineer	Joachim Berkensträter
Implementation of tests Deviations	There have been no deviations from the test method as specified in the standard/basis.
Ambient conditions	Temperature 23 °C Air humidity 49 % Air pressure 10 The ambient conditions are in accordance with the standard/basis requireme

Measurement data/Results

The test specimen was subjected to a durability test with 20000 operations.

The test specimen shall not exhibit any malfunctions, damage, remaining deformation, unfastening of harc and loosening of joint and sealing systems.

After testing the intended use shall be maintained.

Malfunctions of test specimen
The test specimen did not exhibit any malfunctions.

Percentage change of performance V = 100 x (P_e / P_i - 1)

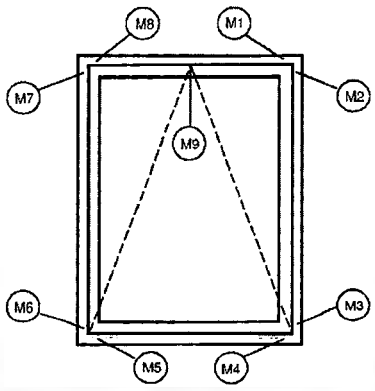
Table: Percentage change of performance V

	before loading (P_i)	after loading (Pe)	V
Mean value of operating forces for release / locking [Nm]	*)	*)	
Average of force for the opening movement [N]	*)	*)	
Average of force for the complete closing operation [N]	*)	*)	

*) Power operated, percentage change not calcu

Testing of mechanical durability

Measured value of the reference points



	Reference points in mm							
Specified number of total cycles	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
prior to start	58,80	61,82	60,80	61,16	59,36	60,40	60,12	62,14
after 12,5 % (2500 cycles)	58,72	61,88	60,42	60,96	59,26	60.44	60,07	62,28
after 25 % (5000 cycles)	58,71	61,87	60,40	61.10	59,32	60.54	59,99	61,97
after 37,5 % (7500 cycles)	58,80	61,77	60,45	61,38	58,90	60.50	60,00	62,21
after 50 % (10000 cycles)	58,75	61,73	60,48	61.15	58.21	60,47	60,04	61,38
after 75 % (15000 cycles)	58,42	61,80	60,43	61,51	59,27	60.47	60,07	62,27
after 100 % (20000 cycles)	58,47	61,84	60,41	60,97	59,31	60,48	60,08	61,56

	Opening width in mm
Specified number of total cycles	Bezugspunkt 9
prior to start	625.0
after 12,5 % (2500 cycles)	624.0
after 25 % (5000 cycles)	625.0
after 37,5 % (7450 cycles)	624.0
after 50 % (10000 cycles)	622.0
after 75 % (15000 cycles)	622.0
after 100 % (20000 cycles)	623.0

Opening angle	17°
Roof pitch	51°

Casement weight in kg

upon delivery	**ca. 120**
after loading	**without**

Movement path
Regarding the types of opening the movement path of the casement was at least 60% of the opening path.

Frequency of lubrication and extent of adjustments

Number of cycles										
2500 Opening/closing	Lubricated	yes		no	✓	Adjusted	yes		no	✓
5000 Opening/closing	Lubricated	yes		no	✓	Lubricated	yes		no	✓
7500 Opening/closing	Lubricated	yes		no	✓	Lubricated	yes		no	✓
10000 Opening/closing	Lubricated	yes		no	✓	Adjusted	yes		no	✓
15000 Opening/closing	Lubricated	yes		no	✓	Adjusted	yes		no	✓
20000 Opening/closing	Lubricated	yes		no	✓	Adjusted	yes		no	✓

3 Summary

3.1 Result

The test results are shown in the measuring data sheet, see item "Detailed results".

3.2 Instructions for use

This test/evaluation does not allow any statement to be made on further characteristics of the present structure regarding performance and quality, in particular the effects of weathering and ageing.

The test was performed according to standard and the details for identification of the test specimen are complete; on the basis of this Test Report an "ift-Nachweis" (Evidence) can be issued.

ift Rosenheim
16.12.2022
Translation dated 20.12.2022

Prüf-, Kalibrier-, Zertifizierungsstelle
ift Rosenheim GmbH
Theodor-Gietl-Str. 7-9
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signed
Thomas Stefan, Dipl.-Ing. (FH)
Head of Testing Department
Building Component Testing

signed
Joachim Berkensträter
Operating Testing Officer
Building Component Testing

This document is valid without a signature. The original document n° 21-004208-PR20 (PB-A05-03-de-01) dated 16.12.2022 remains legally binding.

ROSENHEIM

Die Beschreibung des geprüften Probekörpers dient der normkonformen Identifizierung des Produkttyps, für den die festgestellten Werte gelten.
Die *Mindest-Angaben sind Voraussetzung für die Erstellung eines ift-Nachweises. Nur bei Angabe aller in diesem Dokument angeforderten Daten ist ggf. eine nachträgliche Gutachtliche Stellungnahme möglich. Alle *Mindest-Angaben des Auftraggebers werden vom ift auf Plausibilität geprüft; ggf. festgestellte Abweichungen und/oder ergänzende Feststellungen werden dokumentiert.

The description of the specimen to be tested serves to identify, in conformity with the standards, the product type, for which the values determined will apply
The *minimum details are the precondition for issuing the "ift-Nachweis". Only upon provision of all requested data subsequently requested Expert Statements may be issued. All *minimum details provided by the client will be checked for plausibility by ift; any deviations observed and/or additional findings will be documented.

* Mindestangaben
* minimum details

Alle Maßangaben in mm
All dimensions in mm

Wareneingang-Nr.: 55748-001
ID of goods received :

ift Mitarbeiter: bej
ift staff member :

Eigenschaft Characteristic	**Angaben des Auftraggebers** Information provided by client
Produkt Product	*single roof window
Hersteller Manufacturer	*SCHÜCO International KG
Bezeichnung Designation	*
Profilsystem Profile system	*SCHÜCO AW RO 50
Öffnungsart, Öffnungs-richtung Type of opening, opening direction	*tilt-only, opening outwards
Rahmenmaterial Frame material	*aluminium profiles with thermal barrier
Blendrahmenaußenmaß (B x H) Overall frame dimensions (W x H)	*1,352 mm X 2,152 mm (see drawing D00443.9105_VA_0001)
Flügelaußenmaß (b x h) Overall casement dimensions (W x H)	*1,300 mm X 2,100 mm (see drawing D00443.9105_VA_0001)
Blendrahmen Frame member	
Bezeichnung / Typ / Art.-Nr. Designation / type / item no.	*insert outer frame item no.: 543700, further details are given in drawings D00443.9105_VA_0002; D00443.9105_VA_0003; D00443.9105_VA_0004, circumferentially clamped in a supporting structure of facade construction SCHÜCO FWS 50
Rahmenverbindung Frame joint	*mitred / bonded / screw-fastened, nailed or punched
Bezeichnung Designation	*frame member flat. clamping thickness 26.5 mm
Rahmenverbindung Frame joint	*nailed, sealed with resilient sealant, mechanical corner connection with corner connector no. 235720

Eigenschaft Characteristic	Angaben des Auftraggebers Information provided by client
Flügelrahmen Casement member	
Bezeichnung / Typ / Art.-Nr. Designation / type / item no.	*casement member item no.: 543850, further details are given in drawings D00443.9105_VA_0002; D00443.9105_VA_0003; D00443.9105_VA_0004
Flügelgewicht (in kg) Casement weight (in kg)	*approx. 120
Rahmenverbindung Frame joint	*mitred / bonded / screw-fastened, nailed or punched
Zusatzprofile (falls vorhanden) Supplementary profiles (if appropriate)	-
Bezeichnung Designation	*casement member for frame member with a clamping thickness of 26.5 mm
Rahmenverbindung Frame joint	*mechanical corner connection with corner connector no. 235722 nailed, sealed with resilient sealant
Falzausbildung Rebate design	
Falzentwässerung Rebate drainage	*frame member: inside rebate: 3x drillings Ø 8 mm through insulation bar at bottom outward: 3x drillings Ø 8 mm at bottom and 2 drillings Ø 8 mm on sides, without end caps (K1027804)
Druckausgleich Pressure equalisation	*casement member: 3 drillings Ø 8 mm at bottom and 2 drillings Ø 8 mm on sides through insulating bar 2 drillings Ø 8 mm through outer profile, without end caps (K1027808)
Adapterdichtung außen External adapter seal	
Hersteller / Lieferant Manufacturer / supplier	SCHÜCO International KG
Artikelnummer Item no.	224933
Material Material	EPDM
Eckausbildung Corner design	mitred and bonded
Falzdichtung außen External rebate seal	
Hersteller / Lieferant Manufacturer / supplier	SCHÜCO International KG
Artikelnummer Item no.	*246381
Material Material	*EPDM
Eckausbildung Corner design	*bonded with shaped corner pieces item no. 246383
Falzdichtung Mitte Centre rebate seal	
Hersteller / Lieferant Manufacturer / supplier	SCHÜCO International KG

Eigenschaft Characteristic	**Angaben des Auftraggebers** Information provided by client
Artikelnummer Item no.	*246384
Material Material	*EPDM
Eckausbildung Corner design	*bonded with shaped corner pieces item no. 246385
Falzdichtung innen Internal rebate seal	
Hersteller / Lieferant Manufacturer / supplier	SCHÜCO International KG
Artikelnummer Item no.	*245264
Material Material	*EPDM
Eckausbildung Corner design	*bonded with shaped corner pieces item no. 245728
Füllung Infill panel	IGU
Glasaufbau Glass configuration	*see drawing D00443.9105_VA_0005 (8 TSG/ 16 cavity / 8 LSG)
Gesamtdicke Total thickness	* 32
Einbau der Füllungen Installation of infill panels	-
Verglasungsdichtung außen External glazing gasket	
Hersteller / Lieferant Manufacturer / supplier	SCHÜCO International KG
Artikelnummer Item no.	*246380
Material Material	*EPDM
Eckausbildung Corner design	*mitred and bonded
Verglasungsdichtung innen Internal glazing gasket	
Hersteller / Lieferant Manufacturer / supplier	SCHÜCO International KG
Artikelnummer Item no.	*224662
Material Material	*EPDM
Eckausbildung Corner design	*mitred and bonded or butt-jointed and bonded
Glasklebung (falls vorhanden) Glass bonding (if appropriate)	none
Hersteller Klebstoff Adhesive manufacturer	*-

Eigenschaft Characteristic		**Angaben des Auftraggebers** Information provided by client
Typ, Position Type, position	*	-
Material Material	*	-
Besonderheiten Special features		-
Glashalteleiste Glazing bead		
Typ Type	*	Aluminium item no.:369850
Eckausbildung Corner design	*	at top mitred, at bottom continuous on supplementary aluminium profile item no.: 369890
Befestigung Fixing method/fasteners	*	screw-fastened with countersunk screw 205875
Dampfdruckausgleich Vapour pressure equalisation	*	see K-drawing: K1027811 in pressure profiles: 2 slots 5 mm x 30 mm
Beschlag Hardware	*	turn-only hardware item no.: 266732
Typ Type	*	Aluminium with steel pin
Hersteller Manufacturer	*	SCHÜCO International KG
Lager Bearings	*	pivot bearing
Anzahl Verriegelungen (wo vorhanden): Number of locking devices (where appropriate):		1 x chain drive D6 600 (291716) => K1027814;K1027816 3 x turn hinges see drawing D00443.9105_VA_0001
Unten At bottom	*	3 x turn hinges
Oben At top	*	chain drive D6 600 (291716)
Bandseitig On hinge side	*	-
Schließseitig On lock side	*	-
Max. Verriegelungs-abstand Max. locking distance	*	-
Stellung der Verriegelung Position of locking device	*	-
Befestigung des Probekörpers am Montagerahmen / an die Tragkonstruktion Fixing of test specimen to sub-frame / supporting construction		see drawings - roof window mounted in system FWS 50 - D00443.9105_VA_0003 - D00443.9105_VA_0004 surface-mounted on steel frame - D00443.9105_VA_0006
Material Montagerahmen Material of subframe	*	-steel frame with welded corners

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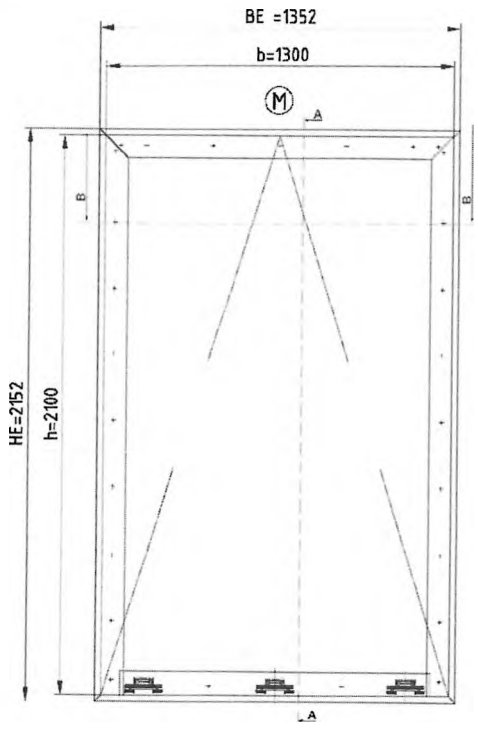
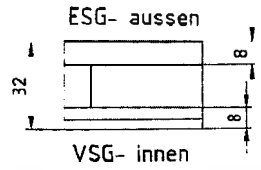
Eigenschaft Characteristic	**Angaben des Auftraggebers** Information provided by client
Befestigungsmittel Fasteners *	
Schraubentyp Screw type *	self-tapping screws / stud screws
Schraubenanzahl Number of screws *	
Schraubendimension Screw dimensions *	
Befestigungsmit-telabstände Fasteners spaced *	250 mm
Aus der Ecke From corner *	
Dazwischen In-between *	
Ausführung Details *	-
Füllung der Anschlussfuge Filling of wall connecting joint *	-



Probekörper 1
Kippfenster
Blendrahmen = flach
Abschluß mit Blende
Wärmedämmstufe = 1
Sichtbare Verschraubung
Kettenantrieb (Einbau Bandgegenseite)
Fläche= 2.73m²
Dachneigung 2°<75°
Glasmaß: 1158 x 1958
Glasaussen: ESG min. Glasdicke nach Statik =8mm
SZR =16mm
Glasinnen: VSG min. Glasdicke nach Statik =8,76mm

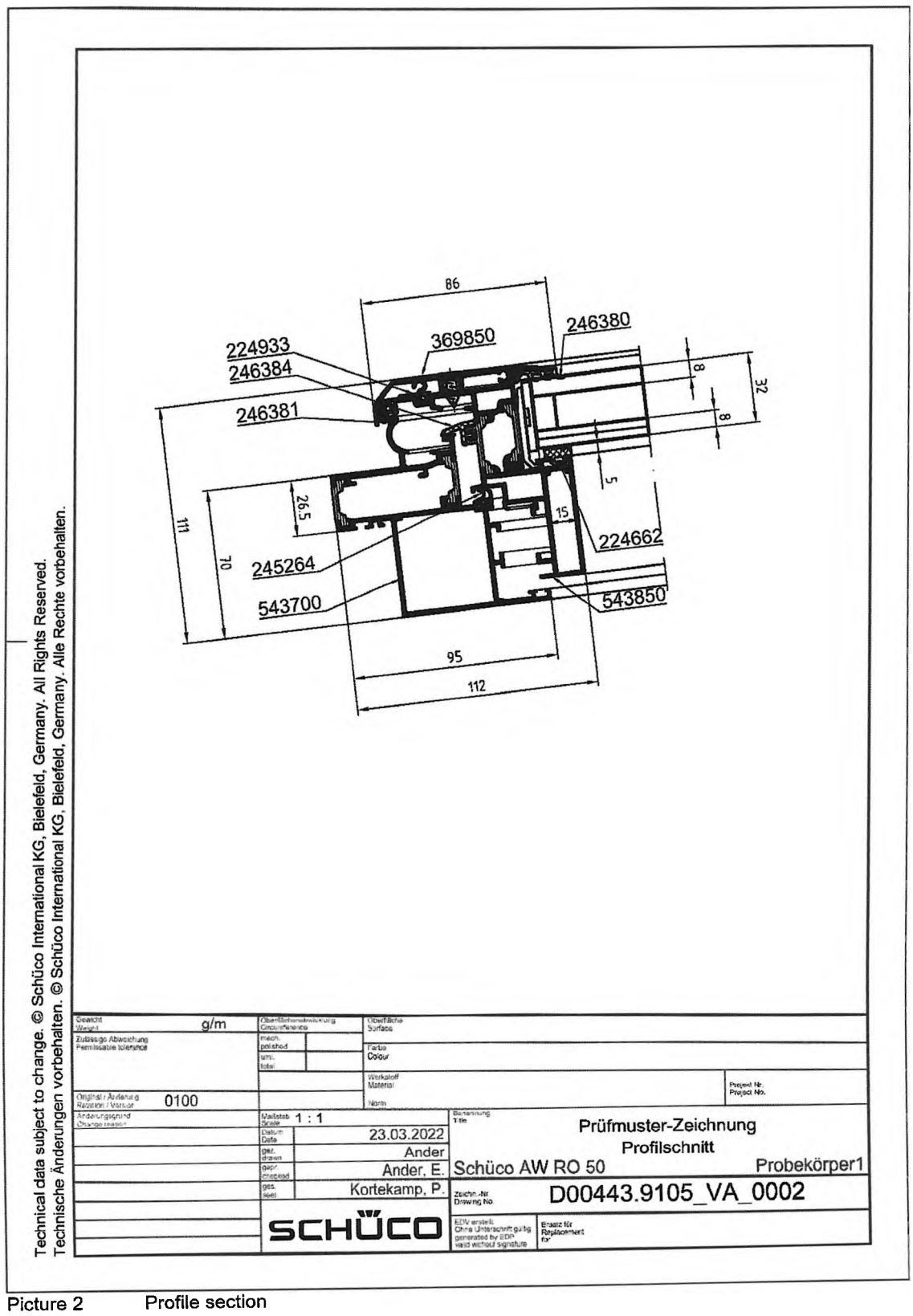
Glasgewicht = 90.7kg



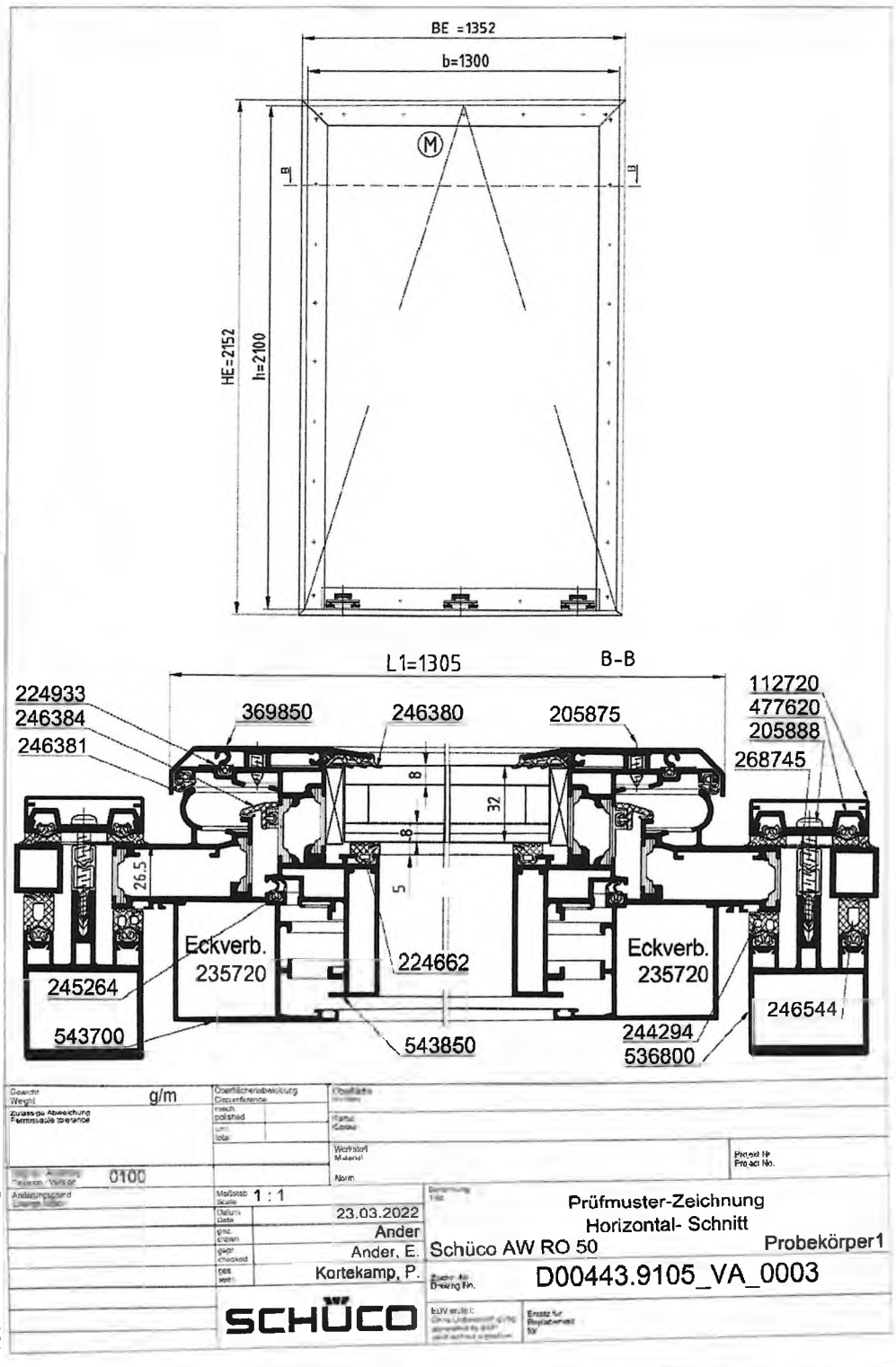
Gewicht / Weight	g/m	Oberfläche / Surface	
Zulässige Abweichung / Permissable tolerance		Farbe / Colour	
Original / Änderung / Revision / Version	0100	Werkstoff / Material	Norm
Änderungsgrund / Change / Reason		Maßstab / Scale	1 : 1
		Datum / Date	04.04.2022
		gez. / drawn	Ander
		gepr. / checked	Ander, E.
		ges. / appr.	Kortekamp, P.

Benennung / Title: Prüfmuster- Zeichnung
Schüco AW RO 50 — Probekörper 1
Zeichn.-Nr. / Drawing No: D00443.9105_VA_0001
SCHÜCO
Ersatz für / Replacement for

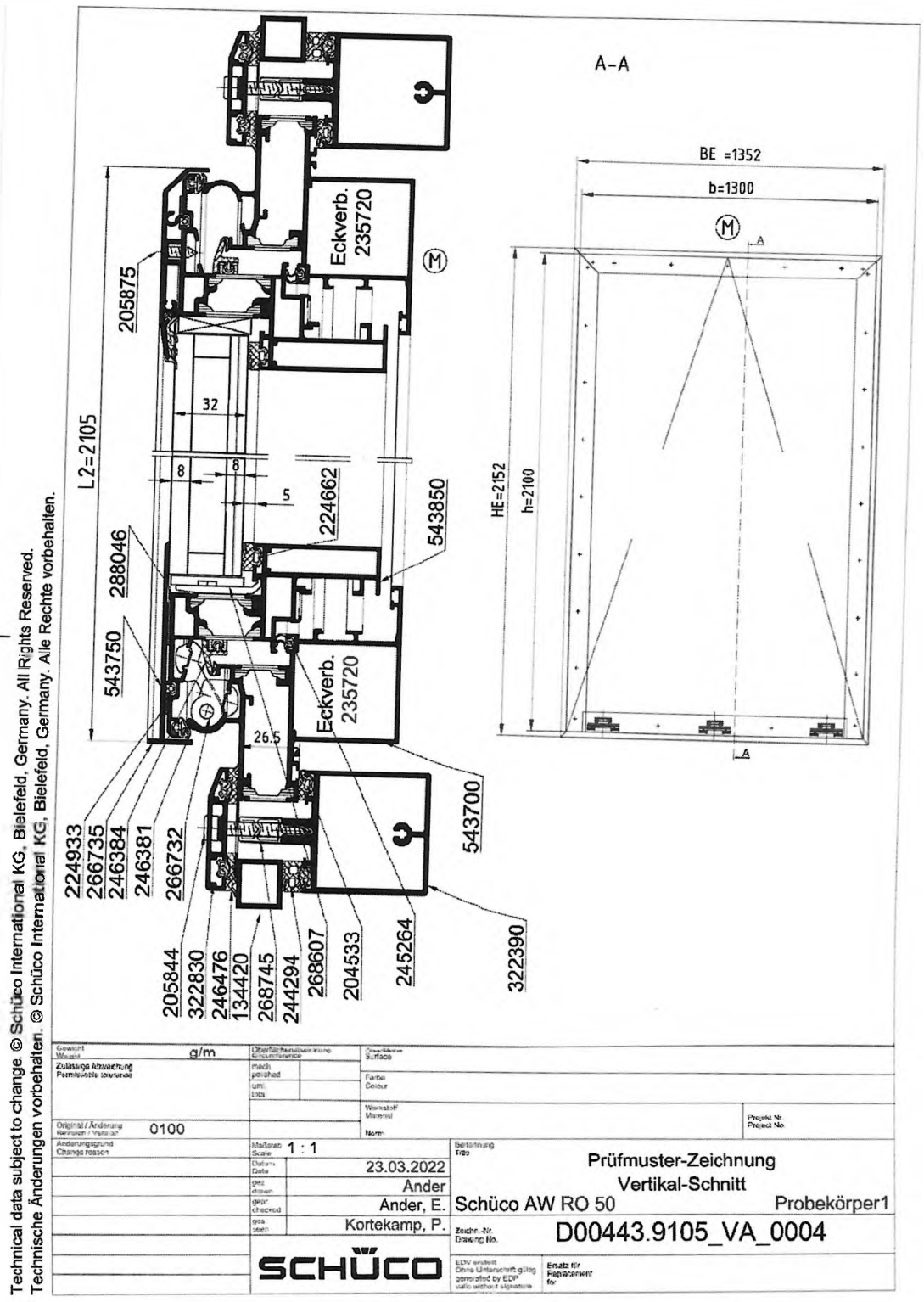
Picture 1 View



Picture 2 Profile section

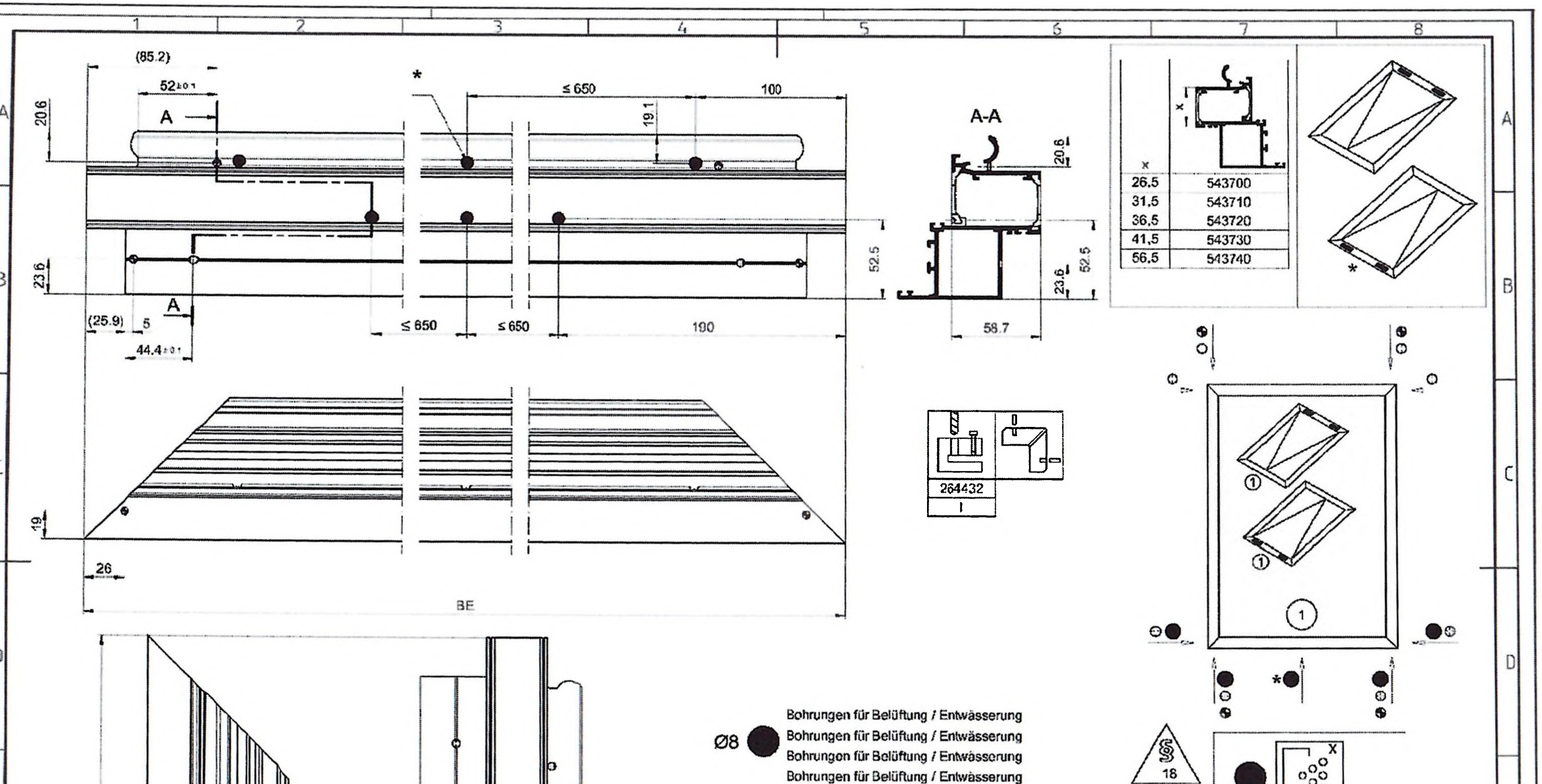


Picture 3 Horizontal section



Picture 4 Vertical section

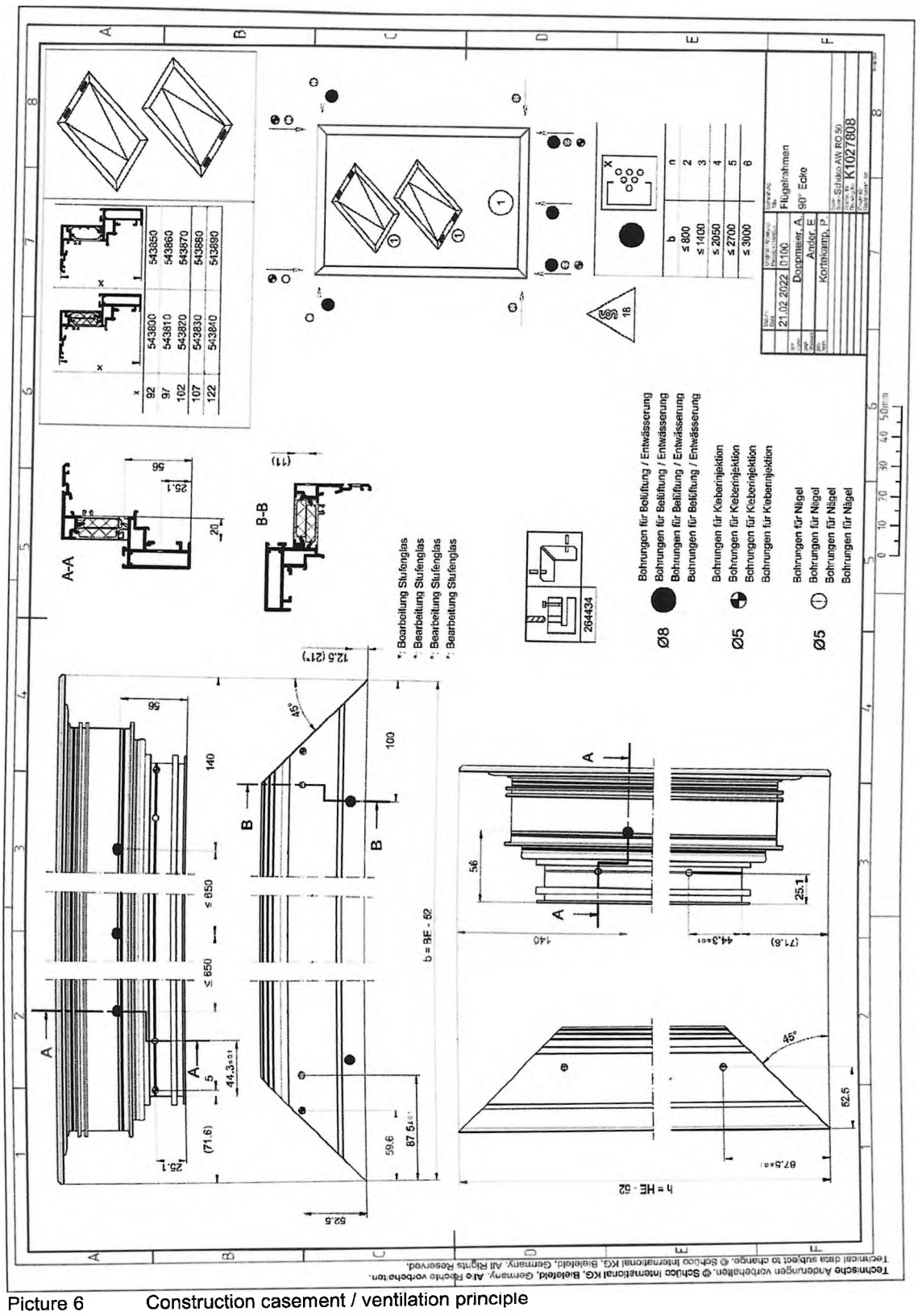
2.2017)



Attachment 2: Representation of product/test specimen

Test Report no. 21-004208-PR20 (PB-A05-03-en-01) dated 16.12.2022

owner (client) SCHÜCO International KG 33609 Bielefeld (Germany)



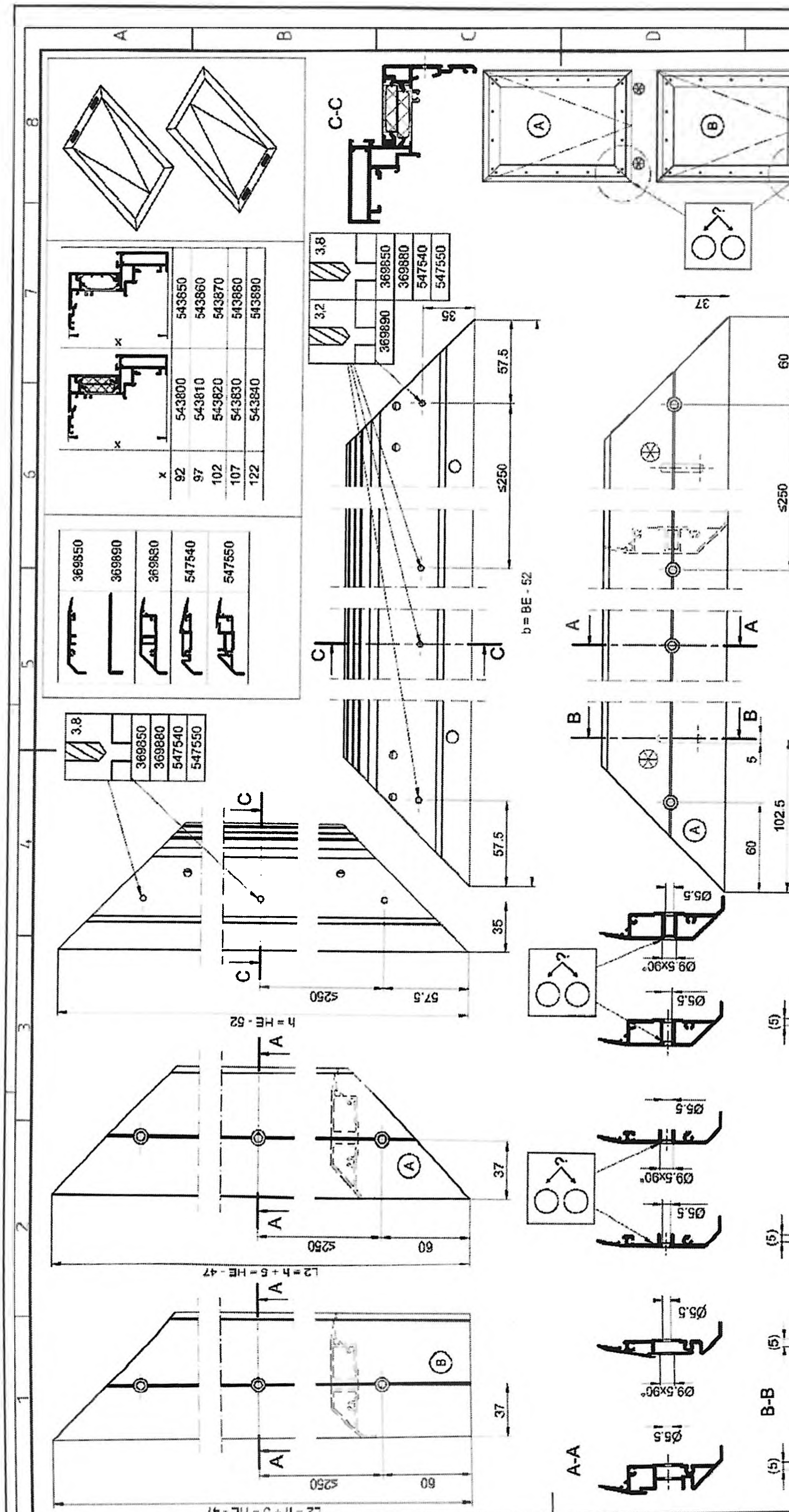
Picture 6 Construction casement / ventilation principle

Attachment 2: Representation of product/test specimen

Test Report

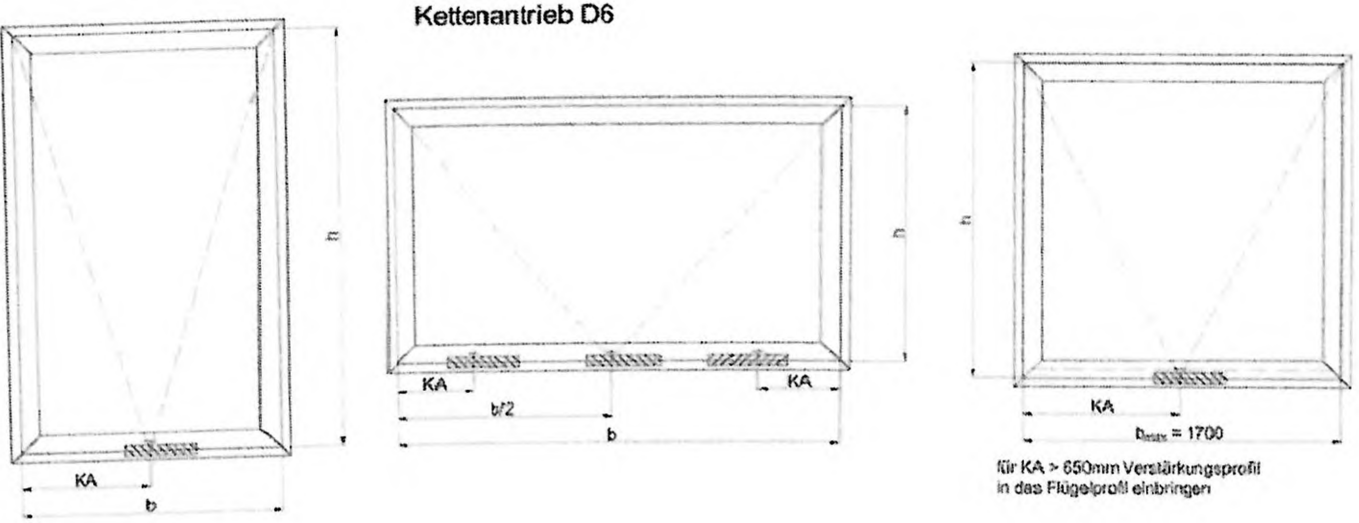
no. 21-004208-PR20 (PB-A05-03-en-01) dated 16.12.2022

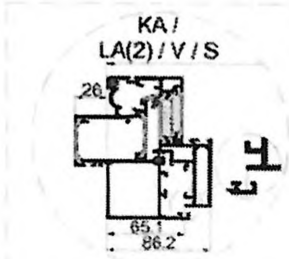
owner (client) SCHÜCO International KG 33609 Bielefeld (Germany)



7)

Kettenantrieb D6

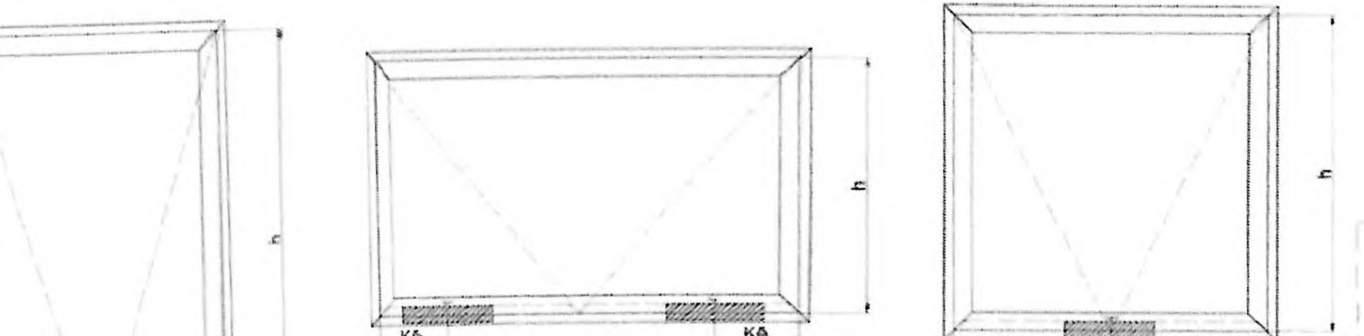




Art.-Nr.	Hub	Antrieb	b	KA
291715	400	Solo	785-870	345
			870-1700	b/2
		Tandem	1500-3000	345
		Tridem	2215-3000	345
291716	600	Solo	695-1100	345
			1100-1700	b/2
		Tandem	1700-3000	345
		Tridem	2620-3000	345

291715 291716	
291731 291732	

Kettenantrieb D15



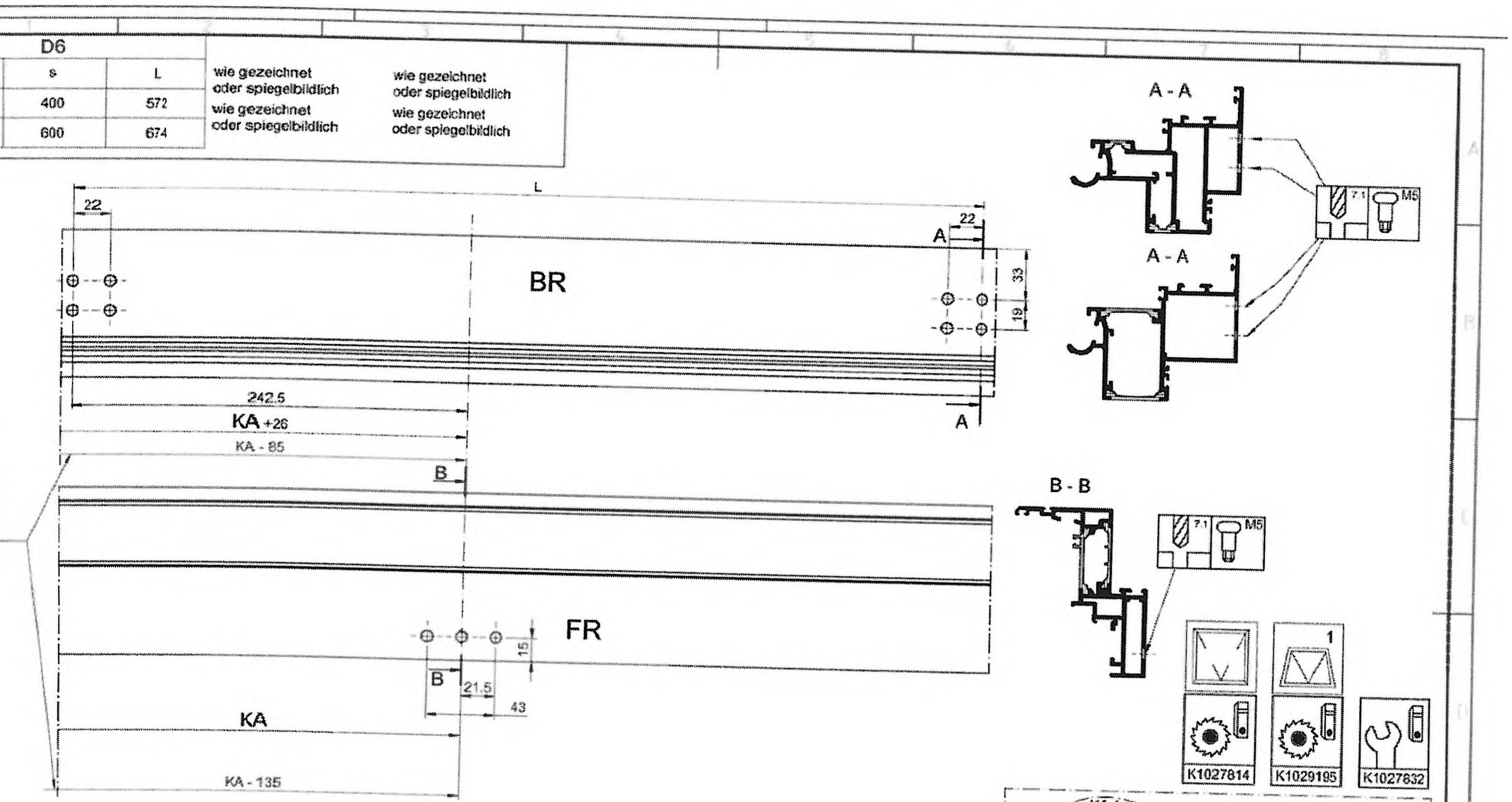
Art.-Nr.	Hub	Antrieb	b	KA
291731	800	Solo	1000-2160	b/2
		Tandem	1920-3000	500
291732	1000	Solo	1100-2160	b/2
		Tandem	2160-3000	550

Detailplanung mit Berücksichtigung der Einflussfaktoren zwingend für die Auswahl und Anzahl der Antriebe notwendig!

Attachment 2: Representation of product/test specimen

Test Report no. 21-004208-PR20 (PB-A05-03-en-01) dated 16.12.2022
owner (client) SCHÜCO International KG 33609 Bielefeld (Germany)

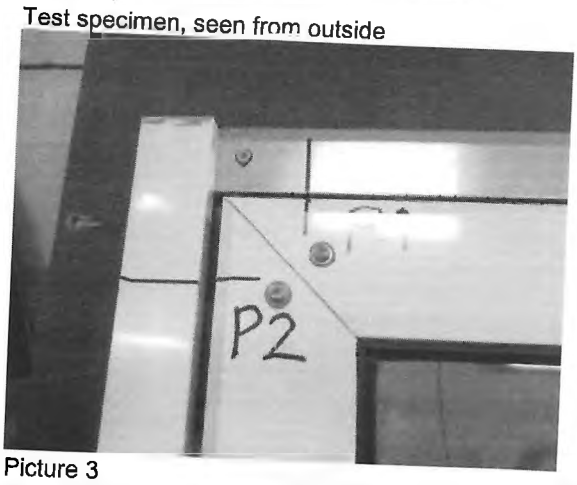
D6			
s	L	wie gezeichnet oder spiegelbildlich	wie gezeichnet oder spiegelbildlich
400	572	wie gezeichnet oder spiegelbildlich	wie gezeichnet oder spiegelbildlich
600	674		



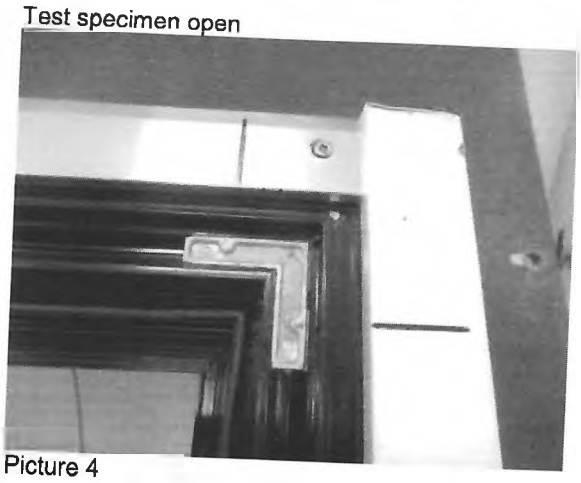
ift ROSENHEIM

Picture 1
Test specimen, seen from outside

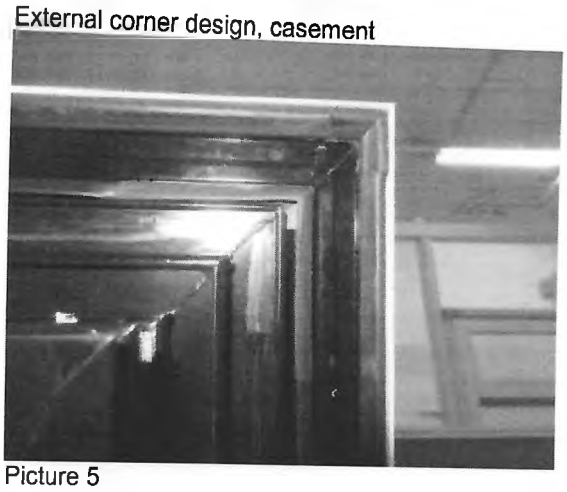
Picture 2
Test specimen open



Picture 3
External corner design, casement



Picture 4
Corner design frame with internal rebate seal



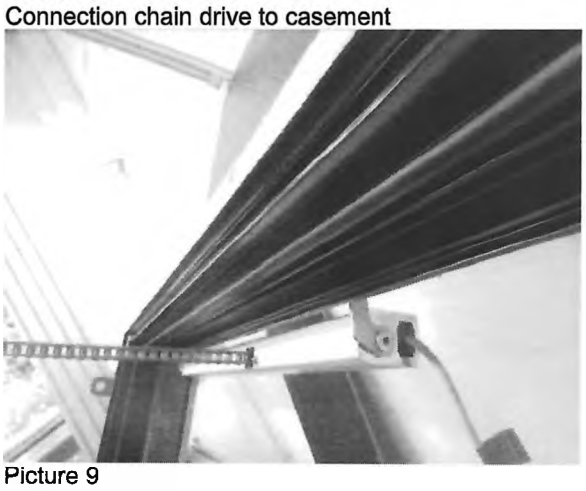
Picture 5
External and centre seal, casement member, corner design

Picture 6
Chain drive

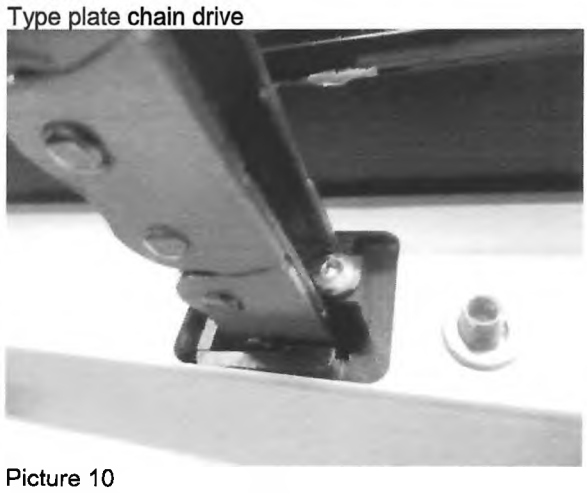
ROSENHEIM

Picture 7
Connection chain drive to casement

Picture 8
Type plate chain drive



Picture 9
Connection chain drive to frame



Picture 10
Chain outlet on drive housing after 20,000 cycles

ift-Nachweis

Classification Report

Number	21-004208-PR16 (NW-A05-02-en-01)
Owner	SCHÜCO International KG Karolinenstr. 1-15 33609 Bielefeld Germany
Product	Single roof window, all sides inserted in a frame construction oft he facade system Schüco FWS 50
Designation	System Schüco AW RO 50
Details	Manufacturer SCHÜCO International KG, Bielefeld; Material Aluminium system with thermal break; Type of opening Top-hung casement; Opening direction Outwards; Overall dimensions (W x H) 1552 mm x 3052 mm
Special features	The test was carried out with an inclination of 2° and 75°

Result

Air permeability according to EN 12207:2016-12

Class: 4

Resistance to wind load according to EN 12210:2016-03

Class: C5/B5

Watertightness according to EN 12208:1999-11

Class: E1500

**) Decision rule: For the evaluation of conformity, the measurement uncertainty was not taken into account.

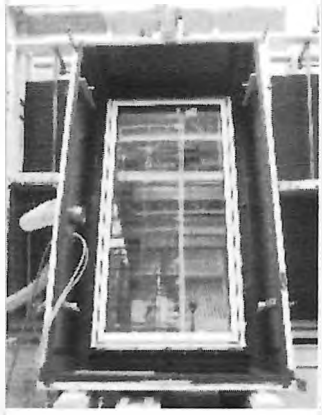
Basis *)

EN 14351-1:2006+A2:2016-09

*) and corresponding national versions (e.g. DIN EN)

Test report: 21-004208-PR16 PB-A05-02-de-01

Representation



Instructions for use

The Evidence ("Nachweis") can be used for preparing the Declaration of Performance in accordance with the Construction Products Regulation 305/2011/EU. The results obtained apply to the direct field of application determined in Annex E of EN 14351-1.

Validity

There is no time limit.
When using this document the up-to-dateness of above basis and the conformity of the product have to be observed.

Notes on publication

The ift-Guidance Sheet "Conditions and Guidance for the Use of ift Test Documents" applies.

ift Rosenheim
13.10.2022

Thomas Krichbaumer
Deputy Head of Testing Department
Building Component Testing

Joachim Berkensträter
Operating Testing Officer
Building Component Testing

Identity-Check

www.ift-rosenheim.de/ift-geprueft
ID: CD3-CD257

Ve-PB 1-4902-en/ (01.12.2019)

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Testing and Calibration – EN ISO/IEC 17025
Inspection – EN ISO/IEC 17020
Product Certification – EN ISO/IEC 17065
Certification of Management Systems – EN ISO/IEC 17021

Notified Body 0757
PCZ Stelle BAY 12

ilac-MRA DAkkS Deutsche Akkreditierungsstelle D-P-11349-01-00

Zertifikat / *Certificate*

Zertifikatsnr. / *Certificate No.:* 181SG-7612120-8-

Fenster / *Windows*

System
system

Schüco AWS 65, AWS 65 BS, AWS 65 WF, AWS 65 AWS 65 SL, AWS 65 VV

Produktfamilie
product family

Dreh, Drehkipp und Kipp mit Festverglasung, Dreh, Drehkipp mit öffenbarem Mittelstück, Dreh nach außen öffnend, Senkklapp, Parallelabstellschiebekipp (PASK), Oberlicht
side-hung, tilt&turn and bottom-hung with fixed light side-hung, tilt&turn with openable centre part, turn outward opening, sliding projecting top-hung, parallel action sliding tilt (PASK), hinged top-light

Rahmenmaterial
frame material

Aluminium-Kunststoff-Verbund *Aluminium-plastic co*

Systemgeber
system supplier

SCHÜCO International KG
Karolinenstr. 1-15, DE 33609 Bielefeld

SCHÜ

Mit diesem Zertifikat wird bescheinigt, dass der benannte Systemgeber mit den benannten Bauprodukten den Anforderungen des zugrundeliegenden ift-Zertifizierungsprogramms in der aktuellen Fassung entspricht.

- Durchführung von Systemprüfungen (type test) durch eine akkreditierte Prüfstelle nach EN 14351-1 : 2006 + A2 : 2016 und Weitergabe der Prüfergebnisse über Cascaded-Verfahren an den Hersteller entsprechend Art.36 BauPVO
- Erstellung einer technischen Dokumentation mittels Systembeschreibung, ift-Systempass, Prüfnachweise, Verarbeitungsvorgaben
- Einführung und Aufrechterhaltung von Vorgaben einer werkseigenen Produktionskontrolle für den Hersteller durch den Systemgeber
- Kontinuierliche Fremdüberwachung des Systemgebers durch ift-Zert

Dieses Zertifikat wurde erstmals am 09.03.2021 ausgestellt. Die aktuelle Version gilt bis zum 06.02.2027, wenn sich zwischenzeitlich die Inhalte der technischen Dokumentation in Verbindung mit dem ift-Systempass oder in der werkseigenen Produktionskontrolle selbst nicht wesentlich verändert haben.

Das Zertifikat darf nur unverändert vervielfältigt werden. Alle Änderungen der Voraussetzungen für die Zertifizierung sind dem ift-Zert mit den erforderlichen Nachweisen unverzüglich schriftlich anzuzeigen.

This certificate attests that the system licens with the building products mentioned requirements of the underlying ift-certification current version.

- Performance of system tests (type test) by testing laboratory according to EN 14351- : 2016 and transfer of the test results to the via cascaded procedures according to Art.
- Preparation of technical documentation system description, ift system passport, te processing specifications
- Implementation and maintenance of facto control requirements for the manufacturer b licenser
- Continuous third-party control of the produ the factory production control by ift-Zert

This certificate was first issued on 09.03.2021 version is valid until 06.02.2027, as long as conditions laid down in the technical spe conjunction with ift-system pass listed above factory production control itself are modified sig The reproduction of the certificate without any the original is permitted. Any changes to the applicable to certification shall be immediately co in writing to ift-Zert accompanied by the necessa

Rosenheim
07.02.2024

Christian Kehrer
Leiter der ift-Zertifizierungs- und Überwachungsstelle
Head of ift Certification and Surveillance Body

ift Rosenheim
akkreditierte Produkt-Zertifizierungs-Stelle
PZ
EN 17065

Gültig bis / *Valid until:* **06.02.2027**

ift-Produktpass / *ift-product passport* **12-001465-PR03**

Vertragsnr. / *Contract No.:* **181SG 7612120**

Ve-Zer-5855-de / 01.06.2022

Efectis

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Brandpuntlaan Zuid 16
The Netherlands
+31 88 3473 723
nederland@efectis.com

Classification of the fire resistance of Schüco FW50/60+ BF Curtain Wall sys according to EN 13501-2:2007+A1:20

Classification n°	2013-Efectis
Sponsor	Schüco Inter Karolinenstr D-33609 Bie GERMANY
Product name	FW50/60+ B
Prepared by	Efectis Nede Brandpuntla NL 2665 NZ The Netherl
Notified body n°	1234
Author(s)	Dr. Ir. G. va P.A. Ram
Project number	2013103 / 1
Date of issue	May 2018
Number of pages	24

1. SUBJECT

This classification report defines the resistance to fire classification assigned to the Schüco FW50/60+ BF Curtain Wall system in accordance with the procedures given in EN 13501-2:2007+A1:2009.

2. DETAILS OF CLASSIFIED PRODUCT

1.1 GENERAL

A series of fire test was carried out on various versions of the Schüco FW50/60+ BF Curtain Wall system, see Figure 1 for a general lay-out of the system.

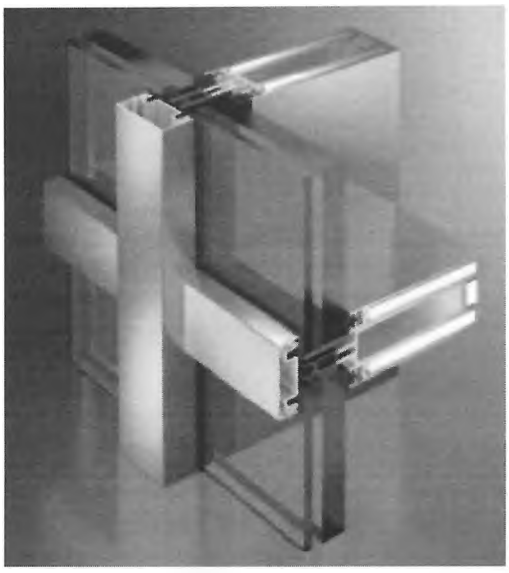


Figure 1

A total of 6 fire tests have been performed on Full Configurations according to EN 1364-3. The results are reported in the following test reports:

- GRYFITlab test report LBO-269/11E, dated 12-02-2012
- GRYFITlab test report LBO-257/11E, dated 06-12-2011
- GRYFITlab test report LBO-235/11E, dated 17-08-2011
- GRYFITlab test report LBO-277/11E, dated 17-08-2011
- GRYFITlab test report LBO-263/11E, dated 10-11-2011
- IFT Rosenheim test report 271 31572, dated 13-07-2006

In addition, 2 fire tests have been performed on Partition Walls according to EN 1364-1. The results are reported in the following test reports:

- IBS Linz test report 03062305-1, dated 28-12-2003
- IBS Linz test report 03111809-1, dated 10-02-2004

For the dimensions and specifications of the materials and significant details of the

construction examined, see the next paragraphs 2.2 - 2.9.

Based on these fire tests, the field of application for the Schüco Curtain Wall system has been defined. The field of application is determined on the basis of the test results obtained and the rules given in:

- the Direct Field of Application in EN 1364-3:2014 and
- the Extended Application in EN 15254-6:2014.

This is reported in:

- Efectis NL report 2013-Efectis-R0103.164a[Rev.2] dated May 2018.

A summary is given in paragraph 2.10.

1.2 GRYFITLAB TEST REPORT LBO-269/11E, DATED 12-01-2012

The test specimen was a Schüco FW50+ BF curtain wall with external dimensions 4505 x 4855 mm (w x h). The construction was glazed with SchücoFlam 30 ISO-3 C LT. At some locations, panels of type ISO-GKB were installed (based on 2 x 12,5 mm plasterboard and 12 mm mineral wool).

The fire test was performed on 14th November 2011, according to EN 1364-3:2007 with heat exposure according to the standard fire curve for the situation "fire from inside to outside".

1.3 GRYFITLAB TEST REPORT LBO-257/11E, DATED 06-12-2011

The test specimen was a Schüco FW50+ BF curtain wall with external dimensions approx.. 3780 x 3905 mm (w x h). The construction was glazed with SchücoFlam 30 ISO-3C. At some locations, panels of type GKB were installed (based on 2 x 9,5 + 1 x 12,5 mm plasterboard).

The fire test was performed on 30th September 2011, according to EN 1364-3:2007 with heat exposure according to the standard fire curve for the situation "fire from outside to inside".

1.4 GRYFITLAB TEST REPORT LBO-235/11E, DATED 17-08-2011

The test specimen was a Schüco FW50+ BF curtain wall with external dimensions 4505 x 4855 mm (w x h). The construction was glazed with SchücoFlam 30 ISO-3 C. At some locations, panels of type GKB were installed (based on 2 x 9,5 + 1 x 12,5 mm plasterboard).

The fire test was performed on 13th July 2011, according to EN 1364-3:2007 with heat exposure according to the standard fire curve for the situation "fire from inside to outside".

1.5 GRYFITLAB TEST REPORT LBO-277/11E, DATED 17-08-2011

The test specimen was a Schüco FW50+ BF curtain wall, including double doors of type Schüco ADS 80 FR 30. The external dimensions of the test specimen were approx. 4000 x 4000 mm (w x h). The construction was fully glazed with SchücoFlam 30 ISO-3 C in the façade and SchücoFlam 30 ISO C in the door leaves.

The fire test was performed on 9th December 2011, according to EN 1634-1:2009 with heat exposure according to the standard fire curve for the situation "fire from inside to outside" for the façade and with the door leaves pivoting away from the fire.

1.6 GRYFITLAB TEST REPORT LBO-263/11E, DATED 10-11-2011

The test specimen was a Schüco FW50+ BF curtain wall with external dimensions approx. 3780 x 4950 mm (w x h). The construction was glazed with SchücoFlam 30 ISO-3 C LT. At some locations, panels of type ISO-GKB were installed (based on 2 x 12,5 mm plasterboard and 12 mm mineral wool).

The fire test was performed on 14th October 2011, according to EN 1364-3:2007 with heat exposure according to the standard fire curve for the situation "fire from outside to inside".

1.7 IFT ROSENHEIM TEST REPORT 271 31572, DATED 13-07-2006

The test specimen was a Schüco FW50+ BF curtain wall, with external dimensions 3680 x 3700 mm (w x h). The construction was glazed with Pilkington Pyrostop 30-25 ISO. At some locations, panels (based on 28 mm Aestuver) were installed.

The fire test was performed on 29th March 2006, according to prEN 1364-3:2005 with heat exposure according to the standard fire curve for the situation "fire from inside to outside".

1.8 IBS LINZ TEST REPORT 03062305-1, DATED 28-12-2003

The test specimen was a Schüco FW50+ BF partition wall, with external dimensions approx. 4000 x 3040 mm (w x h). The construction was glazed with Pilkington Pyrostop F30-10 (15 mm) as well as SchücoFlam Iso (32 mm).

The fire test was performed on 15th July 2003, according to EN 1364-1:1999 with heat exposure according to the standard fire curve for the situation "fire from inside to outside".

1.9 IBS LINZ TEST REPORT 03111809-1, DATED 10-02-2004

The test specimen was a Schüco FW50+ BF partition wall, with external dimensions approx. 3650 x 3040 mm (w x h). The construction was glazed with Pilkington Pyrodur G30-26 (DGU based on Pyrodur G30-201, 10 mm, total thickness 32 mm).

The fire test was performed on 26th November 2003, according to EN 1364-1:1999 with heat exposure according to the standard fire curve for the situation "fire from inside to outside".

1.10 EFECTIS NL REPORT 2013-EFECTIS-R0103.164A[REV.2] DATED MAY 2018

Based on these fire tests, the field of application for the Schüco Curtain Wall system has been defined. The field of application is determined on the basis of the test results obtained and the rules given in:

- the Direct Field of Application in EN 1364-3:2014 and
- the Extended Application in EN 15254-6:2014.

3. TEST REPORTS & DEFINITION OF FIELD OF APPLICATION IN SUPPORT OF CLASSIFICATION

3.1 TEST REPORTS

Name of laboratory	Name of sponsor	Test report no.	Test method
GRYFITlab (Poland)	Schüco International	LBO-269/11E	EN 1364-3:2007
GRYFITlab (Poland)	Schüco International	LBO-257/11E	EN 1364-3:2007
GRYFITlab (Poland)	Schüco International	LBO-235/11E	EN 1364-3:2007
GRYFITlab (Poland)	Schüco International	LBO-277/11E	EN 1634-1:2009
GRYFITlab (Poland)	Schüco International	LBO-263/11E	EN 1364-3:2007
IFT Rosenheim (Germany)	Schüco International	271 31572	prEN 1364-3:2005
IBS Linz (Austria)	Schüco International	03062305-1	EN 1364-1:1999
IBS Linz (Austria)	Schüco International	03111809-1	EN 1364-1:1999

3.2 TEST RESULTS

Table 3.2.1 - Summary of results GRYFITlab test report LBO-269/11E	
Fire test performed according to EN 1364-3:2007 with heat exposure according to the standard fire curve for the situation "fire from inside to outside"	
Integrity (E)	32 minutes (no failure before end of heating)
Thermal insulation (I)	32 minutes (no failure before end of heating)
Heating was terminated after 32 minutes.	

Table 3.2.2 - Summary of results GRYFITlab test report LBO-257/11E	
Fire test performed according to EN 1364-3:2007 with heat exposure according to the standard fire curve for the situation "fire from outside to inside"	
Integrity (E)	31 minutes (no failure before end of heating)
Thermal insulation (I)	31 minutes (no failure before end of heating)
Heating was terminated after 31 minutes.	

Table 3.2.3 - Summary of results GRYFITlab test report LBO-235/11E	
Fire test performed according to EN 1364-3:2007 with heat exposure according to the standard fire curve for the situation "fire from inside to outside"	
Integrity (E)	44 minutes (sustained flaming)
Thermal insulation (I)	44 minutes (as a consequence of failure on E)
Heating was terminated after 44 minutes.	

Table 3.2.4 - Summary of results GRYFITlab test report LBO-277/11E	
Fire test performed according to EN 1634-1:2009 with heat exposure according to the standard fire curve for the situation "fire from inside to outside" for the façade and with the door leaves pivoting away from the fire	
Integrity (E)	37 minutes (no failure before end of heating)
Thermal insulation I_1 I_2	 28 minutes (measured on a door leaf) 37 minutes (measured on a door leaf)
Heating was terminated after 37 minutes.	

Table 3.2.5 - Summary of results GRYFITlab test report LBO-263/11E	
Fire test performed according to EN 1364-3:2007 with heat exposure according to the standard fire curve for the situation "fire from outside to inside"	
Integrity (E)	36 minutes (no failure before end of heating)
Thermal insulation (I)	25 minutes (maximum temperature rise on S1)
Heating was terminated after 36 minutes.	

Table 3.2.6 - Summary of results IFT Rosenheim test report 271 31572	
Fire test performed according to prEN 1364-3:2005 with heat exposure according to the standard fire curve for the situation "fire from inside to outside"	
Integrity (E)	41 minutes (sustained flaming)
Thermal insulation (I)	41 minutes (as a consequence of failure on E)
Heating was terminated after 43 minutes.	

Table 3.2.7 - Summary of results IBS Linz test report 03062305-1	
Fire test performed according to EN 1364-1:1999 with heat exposure according to the standard fire curve for the situation "fire from inside to outside"	
Integrity (E)	45 minutes (sustained flaming)
Thermal insulation (I)	41 minutes (maximum temperature rise)
Heating was terminated after 45 minutes.	

Table 3.2.8 - Summary of results IBS Linz test report 03111809-1	
Fire test performed according to EN 1364-1:1999 with heat exposure according to the standard fire curve for the situation "fire from inside to outside"	
Integrity (E)	31 minutes (sustained flaming)
Thermal insulation (I)	28 minutes (mean temperature rise)
Heat radiation (W)	32 minutes (no failure)
Heating was terminated after 32 minutes.	

3.3 DEFINITION OF FIELD OF APPLICATION

Based on the fire tests referred to above, the field of application for the Schüco Curtain Wall FW50+ BF system has been defined. The field of application is determined on the basis of the test results obtained and the rules given in:

- the Direct Field of Application in EN 1364-3:2014 and
- the Extended Application in EN 15254-6:2014.

4. CLASSIFICATION AND FIELD OF APPLICATION

4.1 REFERENCE OF CLASSIFICATION

This classification has been carried out in accordance with clause 7.5.3 of EN 13501-2:2007+A1:2009.

4.2 CLASSIFICATION

The fire resistance of curtain wall constructions in the Schüco FW50/60+ BF Curtain Wall system.

Fire resistance classification of:

E 15 (i ←→ o), E 30 (i ←→ o)
EW 20 (i ←→ o), EW 30 (i ←→ o)
EI 15 (i ←→ o), EI 30 (i ←→ o)

5. FIELD OF APPLICATION

5.1 GENERAL

This classification is valid for the end use applications which are covered in the next sections. The approved constructions and variations thereof are based on the results obtained in the fire tests and the associated Field of Direct Application as given in EN 1364-3:2014. In addition, the rules as specified in the Extended Field of Application standard EN 15254-6:2014 have been used.

5.2 APPROVED CONFIGURATIONS

The approved configurations are shown in Figure A.1 in Annex A. The information includes:

- storey height
- faceted facade
- tested door and window size
- angle for transoms/ mullions
- sloped angle

5.3 BASIC AND SUPPLEMENTARY PROFILES

The approved basic and supplementary profiles are shown in the Figures A.2 - A.4 in Annex A. The information includes:

- mullions
- transoms
- cover caps FW 50+ BF
- cover caps FW60+ BF

5.4 INFILL PANELS

The approved infill panels are shown in the Figures A.5 and A.6 in Annex A. The information includes:

- glazing options
- panel options

5.5 ACCESSORIES

The approved accessories are shown in the Figures A.7 and A.8 in Annex A. The information includes:

- insulation types and intumescent strips
- Gaskets, glazing supports, T-connections

5.6 INSERT UNITS

The approved door and window constructions which are to be integrated in the curtain wall system are shown in the Figures A.9 and A.10 in Annex A. The information includes:

- Integration of fire resistant door ADS 80 FR 30
- Integration of fire resistant window AWS 60 FR 30 / AWS 70 FR 30

Only the door and window configurations as tested are included. A further assessment of alternative door and window configurations is to be based on the rules in EN 1634-1 and the applicable part in the EN 15269-series. This is not part of the present classification.

5.7 SUPPORTING STRUCTURE / ANCHORING

The supporting constructions into which the curtain wall system is to be installed are shown in the Figures A.11 - A.14 in Annex A. The information includes:

- sill attachment
- head attachment
- side attachments

6. LIMITATIONS

This classification document does not represent type approval or certification of the product.

SIGNED

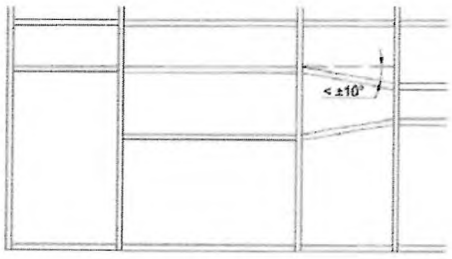
Dr. Ir. G. van den Berg
Senior project leader fire resistance

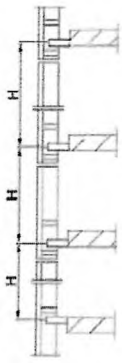
APPROVED

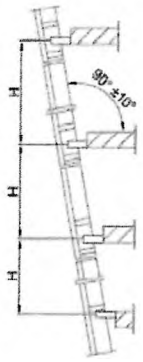
P.A. Ram
Project leader fire resistance

ANNEX A - DRAWINGS FOR THE CURTAIN WALL SYSTEM FW 50+ BF AND FW 60+ BF

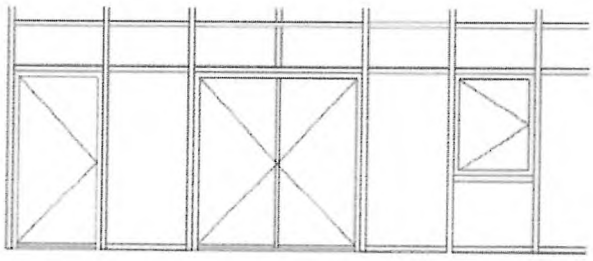
Possible configurations / dimensions

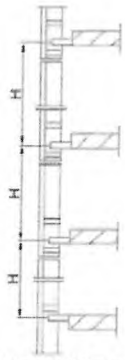






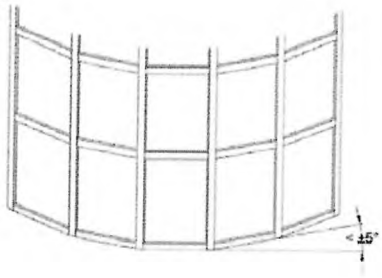
Insert units





H ≤ 4000 mm

Faceted façade



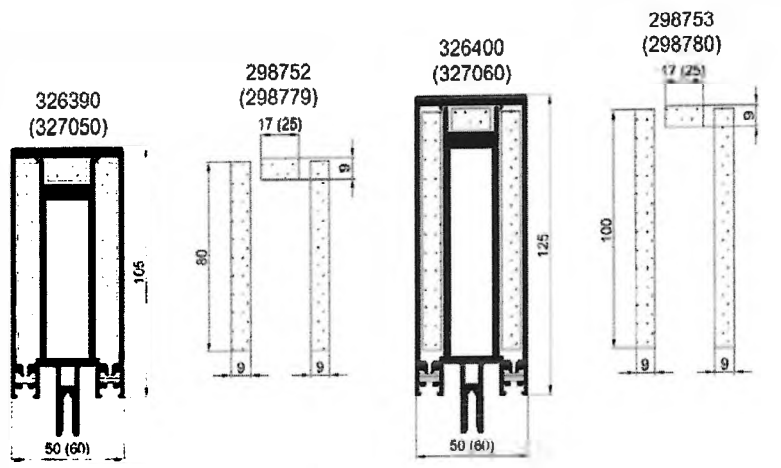
TR1008604 TN 0001

Schüco FW 50+ BF / FW 60+ BF

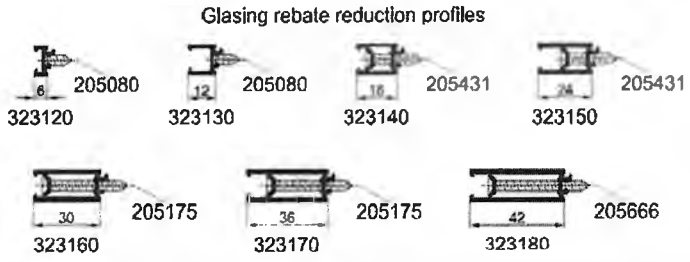
Range of application

Figure A.1

Mullions



Glasing rebate reduction profiles



TR1008604_TN_0002

Schüco FW 50+ BF / FW 60+ BF	
Basic and supplementary profiles	

Figure A.2

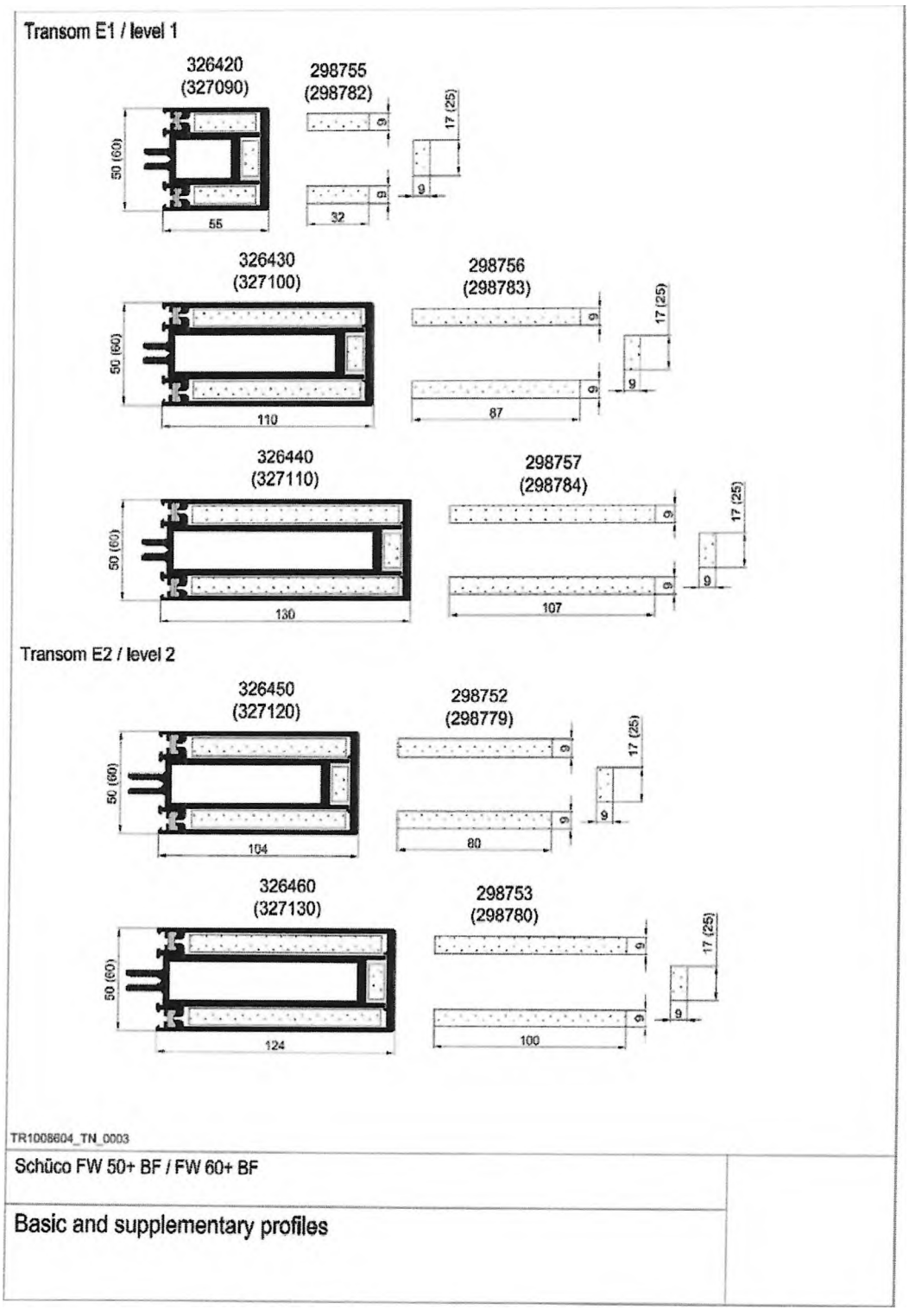
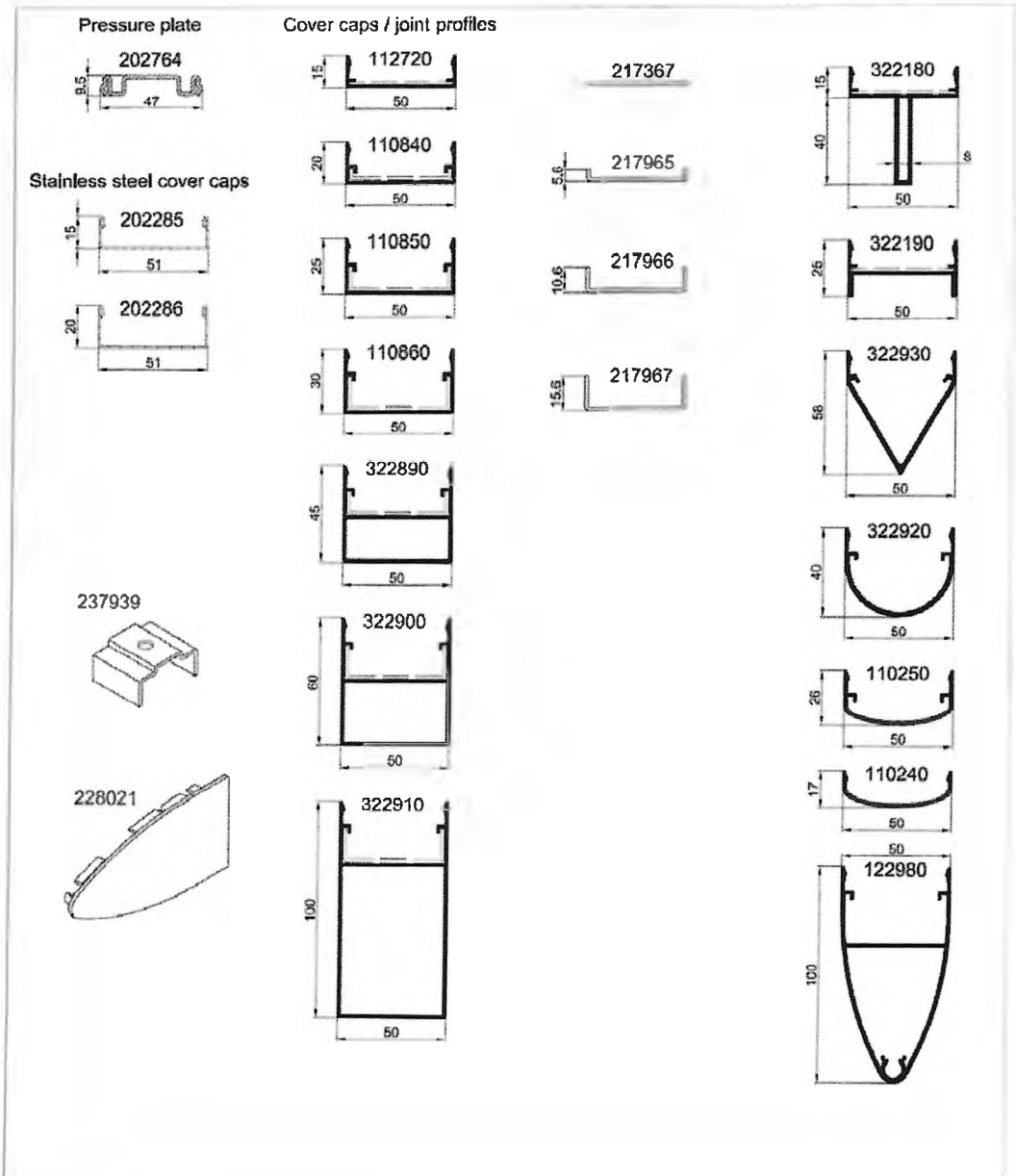

Transom E1 / level 1
326420
(327090)
298755
(298782)
50 (60)
55
9
9
9
32
17 (25)
326430
(327100)
298756
(298783)
110
87
326440
(327110)
298757
(298784)
130
107
Transom E2 / level 2
326450
(327120)
298752
(298779)
104
80
326460
(327130)
298753
(298780)
124
100
TR1008604_TN_0003
Schüco FW 50+ BF / FW 60+ BF
Basic and supplementary profiles

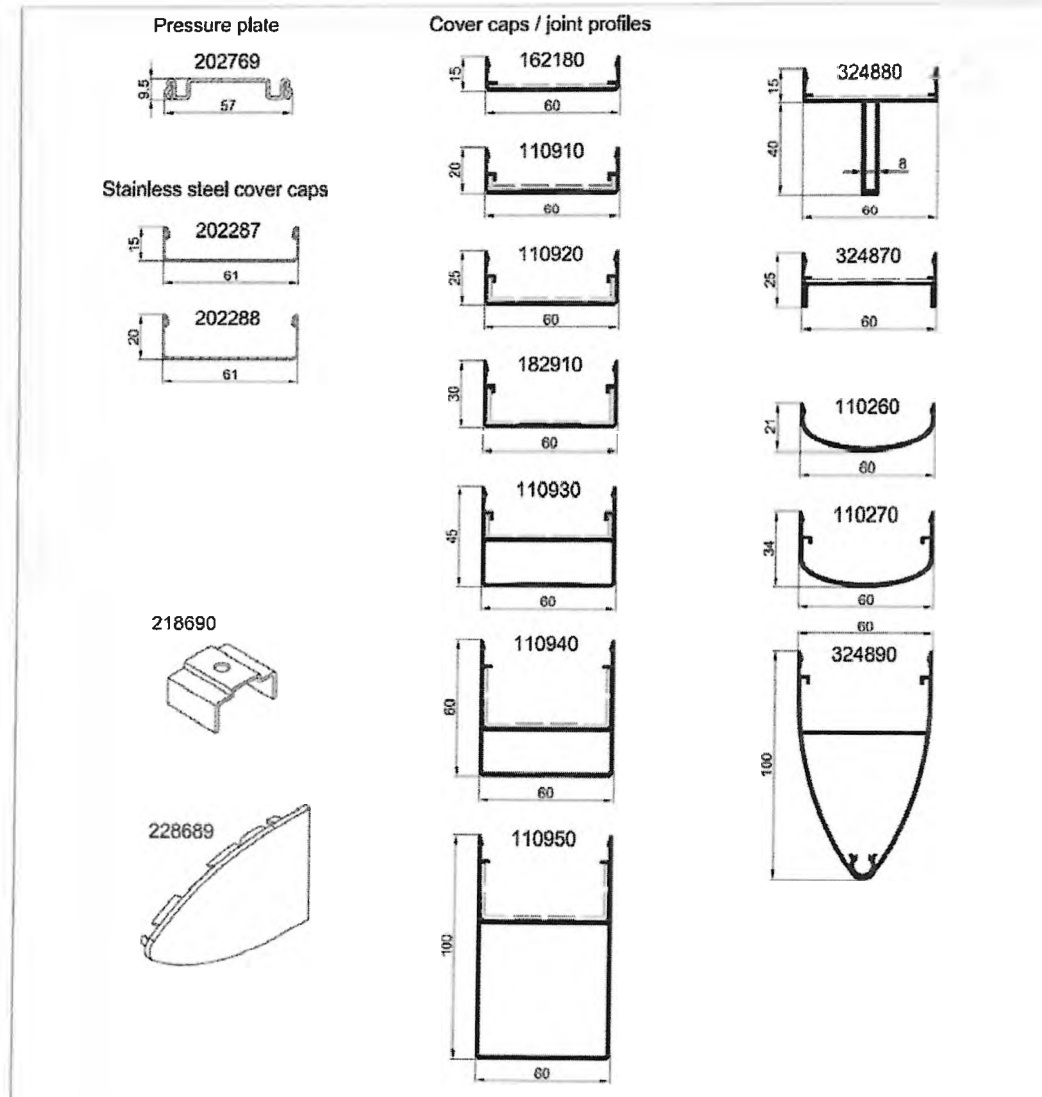
Figure A.3



TR1008804_TN_0004

Schüco FW 50+ BF	
Basic and supplementary profiles	

Figure A.4



TR1008604_TN_0011

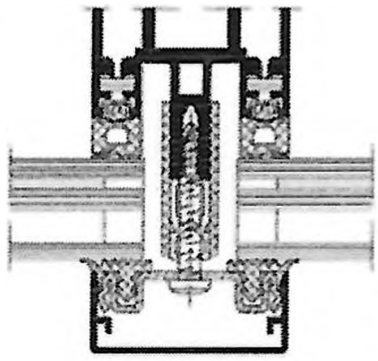
Schüco FW 60+ BF	
Basic and supplementary profiles	

Figure A.5

Efectis

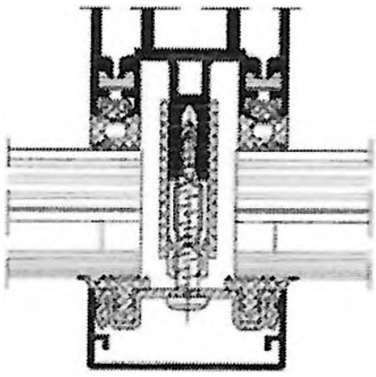
Efectis Nederland R
2013-Efectis-R0103
May 2018
Schüco Internationa

SchücoFlam / Contraflam fire-resistant glass



	Double glazing	Trip
EI 30 i ⟷ o	SchücoFlam 30 ISO C Contraflam 30 IGU 1500mm x 3000mm 2200mm x 1500mm	SchücoF Contrafla 1500m 2200m
EW 30 i ⟷ o	SchücoFlam 30 ISO C LT Contraflam Lite 30 IGU 1500mm x 3000mm 2200mm x 1500mm	SchücoFla Contraflam 1500m 2200m

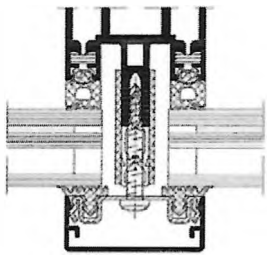
Pilkington fire-resistant glass

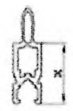


	Double glazing
EI 30 i → o	Pilkington Pyrostop 30-...(ISO) 1400mm x 3000mm 3000mm x 1400mm
EW 30 i → o	Pilkington Pyrodur 30-... (ISO) 1300mm x 2600mm 2200mm x 1400mm

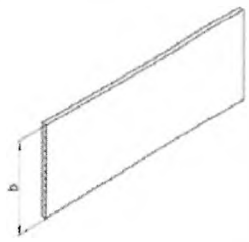
Insulation types and intumescent strips

FW 50+ /60+ BF



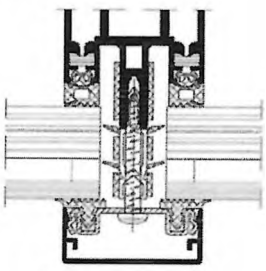


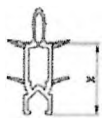
x = 13 - 55



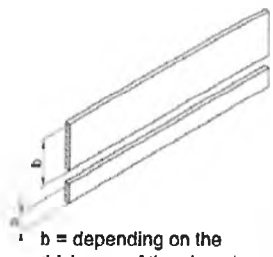
b = depending on the thickness of the glass / panel

FW 50+ /60+ BF.1



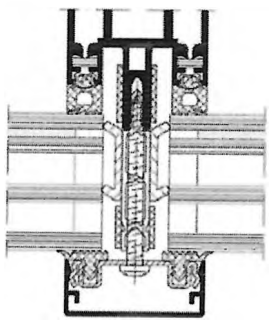


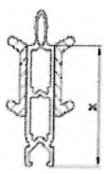
x = 21 - 43



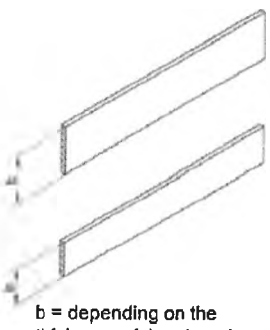
b = depending on the thickness of the glass / panel

FW 50+ /60+ BF.HI





x = 21 - 49



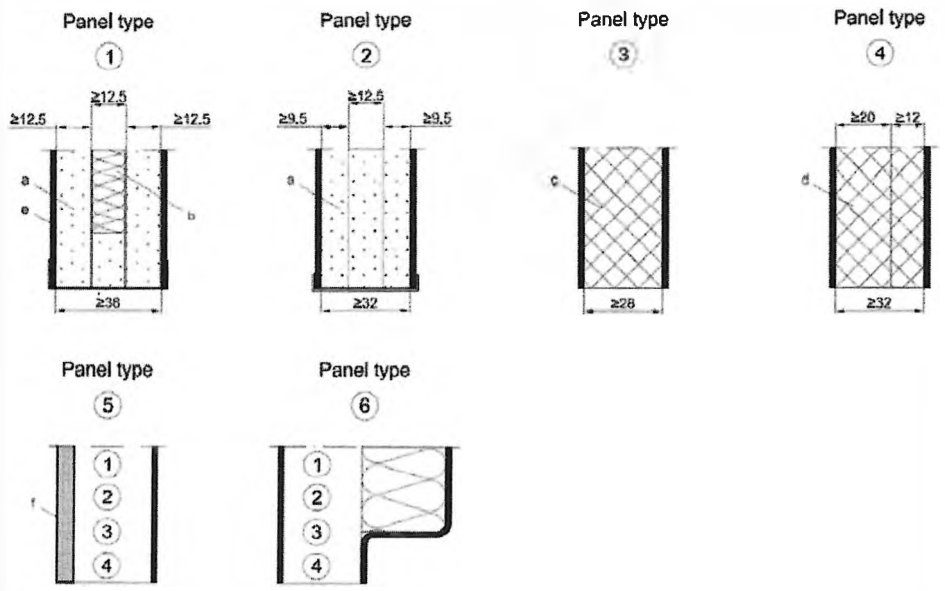
b = depending on the thickness of the glass / panel

TR1008604_TN_0006

Schüco FW 50+ BF / FW 60+ BF	
Accessories - Insulation types	

Figure A.7

Panel types EI /EW 30 (i ↔ o)



Panel type	max. dimensions
1; 2	1370mm x 1476mm 1141mm x 1770mm
3	965mm x 1288mm 800mm x 1545mm
4	3000mm x 292mm 350mm x 2600mm
5; 6	Depending on the used basic panel configuration 1; 2; 3; 4

Fire protection core:

a) Plasterboard
b) Mineral wool - class A1 as per EN 13501-1
c) Aestuver
d) PROMATECT - H

Optical layer:

e) Aluminium / steel sheet ≥ 2mm
f) Toughened glass pane ≥ 6mm

Note:
External layers for optical reasons / metal, glass etc. may be added or changed without restriction to the material

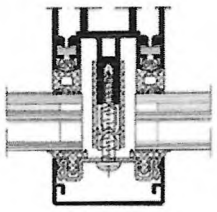
TR1008604_TN_0007

Schüco FW 50+ BF / FW 60+ BF

Panel options

Figure A.8

Gaskets



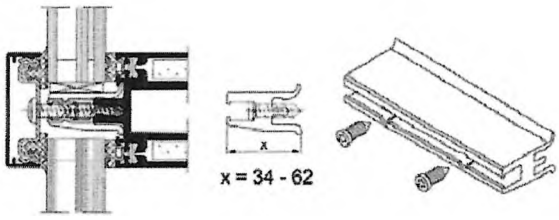
Outer glazing gaskets

(Faceted façade)

Inside glazing gaskets

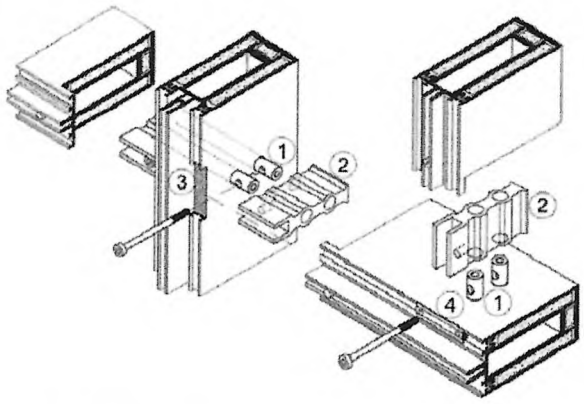
x = 3 - 17 x = 3 - 11 x = 9 - 17
(Faceted façade)

Glazing supports



x = 34 - 62

Standard T-Connection

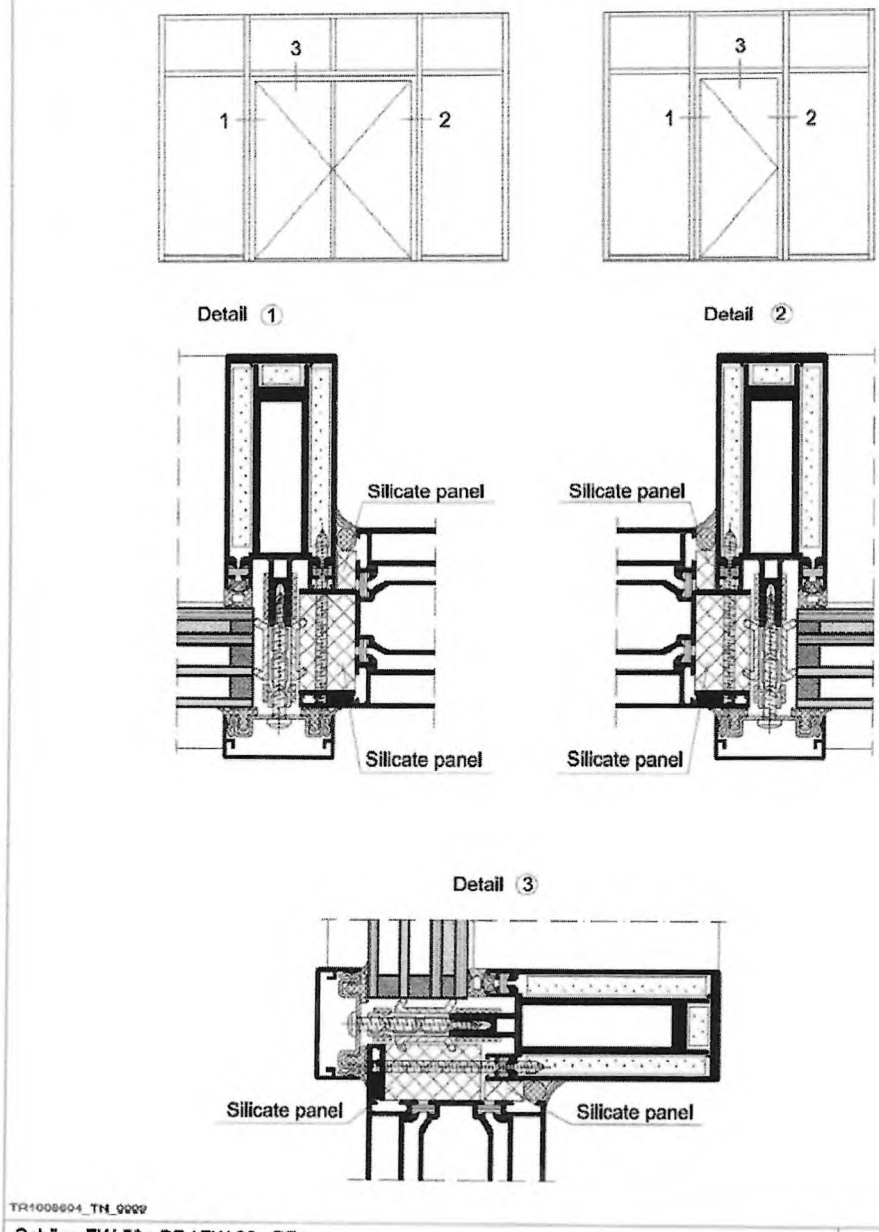


1	Fixing assembly with pins
2	T-cleats, including screws
3	Butyl tape
4	Transom seal

TR1008604_TN_0006

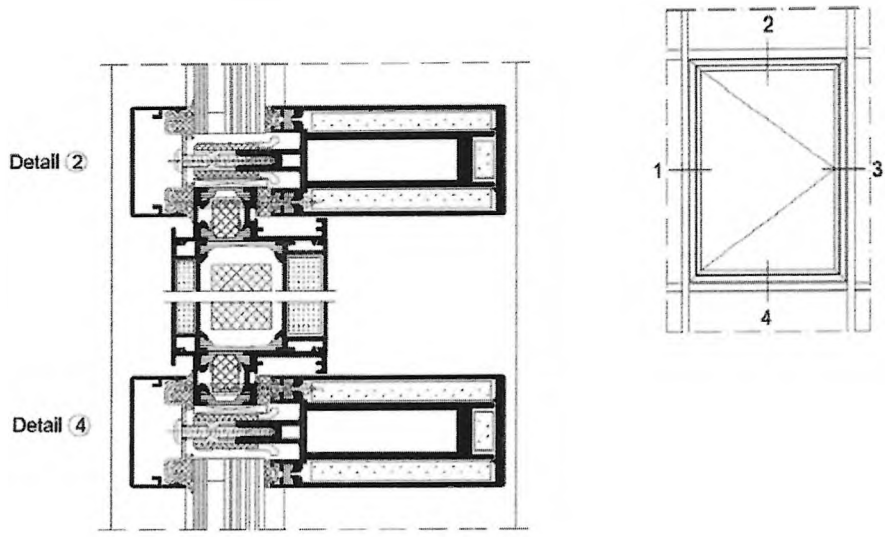
Schüco FW 50+ BF / FW 60+ BF	
Accessories - Gaskets, glazing supports, T-Connections	

Figure A.9



Schüco FW 50+ BF / FW 60+ BF	
Integration of fire resistant door ADS 80 FR 30	

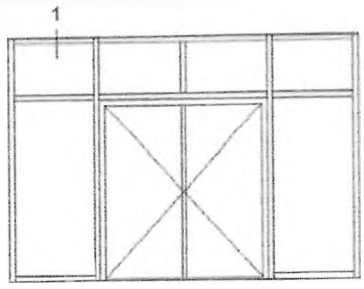
Figure A.10



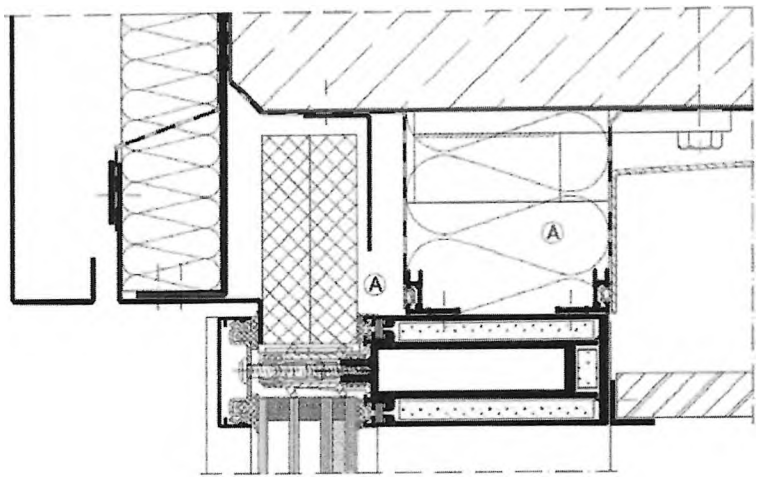
TR1008604_TN_0010

Schüco FW 50+ BF / FW 60+ BF	
Integration of fire resistant windows AWS 60 FR 30 / AWS 70 FR 30	

Figure A.11



Detail 1

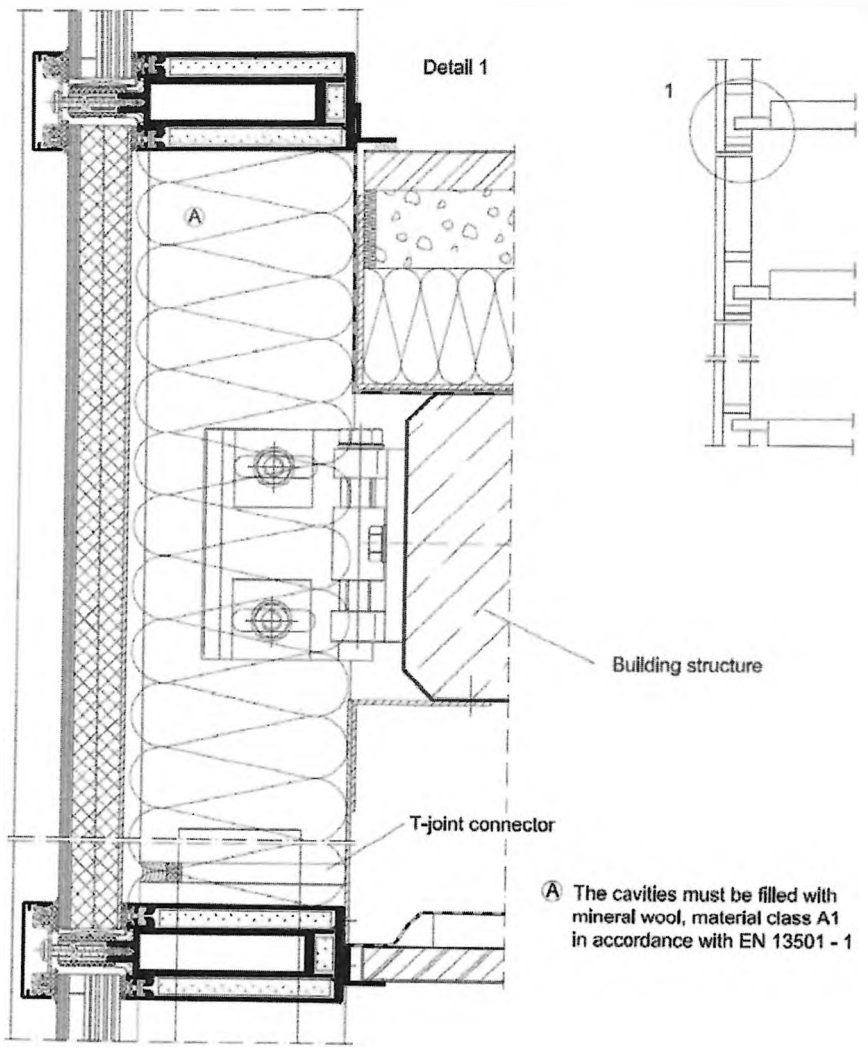


A The cavities must be filled with mineral wool, material class A1 in accordance with EN 13501 - 1

TR1008604_TN_0012

Schüco FW 50+ BF / FW 60+ BF	
Head attachment	

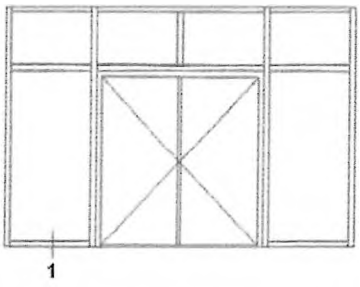
Figure A.12



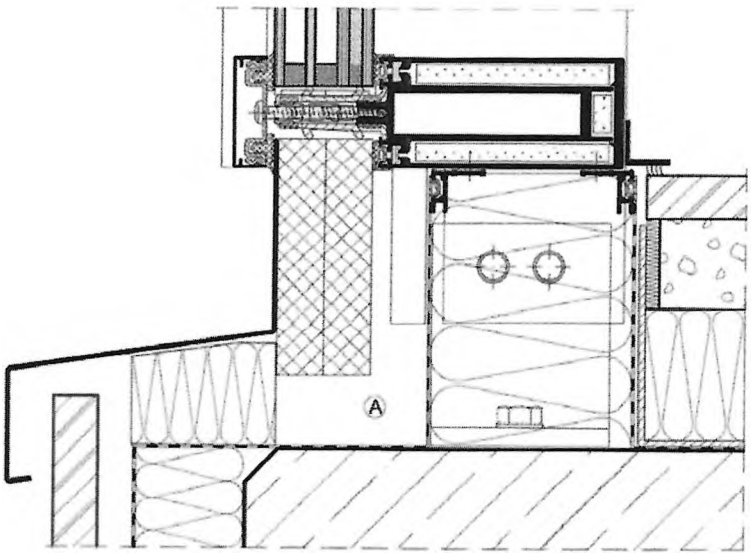
TR1008604_TN_0013

Schüco FW 50+ BF / FW 60+ BF	
Head attachment	

Figure A.13



Detail (1)



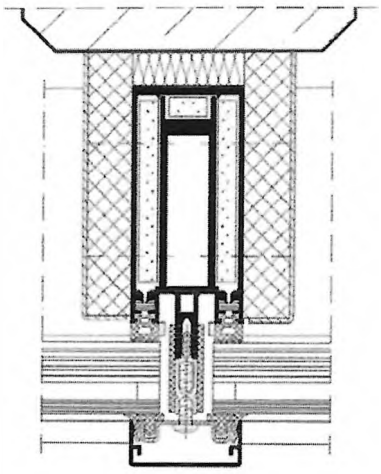
A The cavities must be filled with mineral wool, material class A1 in accordance with EN 13501 - 1

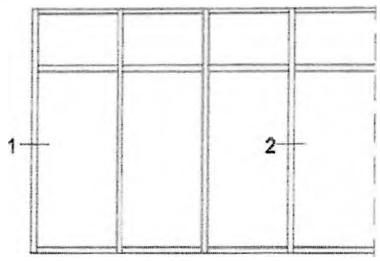
TR1008804_TN_0015

Schüco FW 50+ BF / FW 60+ BF	
Sill attachment	

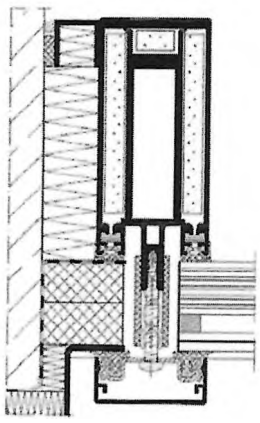
Figure A.14

Detail (2)

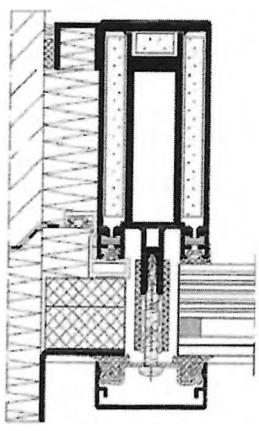




Detail (1)



Detail (1)



TR1008604_TN_0014

Schüco FW 50+ BF / FW 60+ BF	
Side attachments	

Figure A.15

Evidence of Performance

Air permeability. Watertightness static. Resistance to wind load. Impact resis

Expert Statement
No. 11-002877-PR01

(GAS-B01-02-en-01)

(13-002783-PR02)

Client	SCHÜCO International KG Karolinenstraße 1-15 33609 Bielefeld Germany
Product	Stick construction
Desingation	FW 50+ BF, FW 60+ BF, FW 50+ FR 60
Overall dimensions (W x H)	6,610 mm x 6,150 mm
Frame material	Aluminium

Testing		Classification Facade consturction
 EN 12152	Air permeability	AE
 EN 12154	Watertight-ness static	RE_{1200}
 EN 13116	Resistance to wind load	Design load 1.2 kN/m² Safety load 1.8 kN/m²
 EN 14019	Impact resistance	I5 / E5

npd = no performance determined

ift Rosenheim
27.02.2014

Jörn Peter Lass, Dipl.-Ing. (FH)
Head of Testing Department

Dirk Köberle, Dipl.-Ing. (FH)
Operating Testing Officer

1 Order

The company SCHÜCO International KG, 33609 Bielefeld, commissioned the **ift** Rosenheim to prepare an expert statement o the following:

Extrapolation of the results contained in test reports 108 27203 and 108 31958 under consideration of the deviations listen in table 1 to 3 given below.

2 Basis

The evaluation was based on:
- Test report 108 27203 dated 3 December 2003
- Test report 108 31958 R1 dated 31 January 2007
- Summary of the system description by the company SCHÜCO International KG
- National technical approval No. Z-14.4-509 dated 26 October 2007

3 Evaluation

Table 1 Deviation: System FW 50+ BF

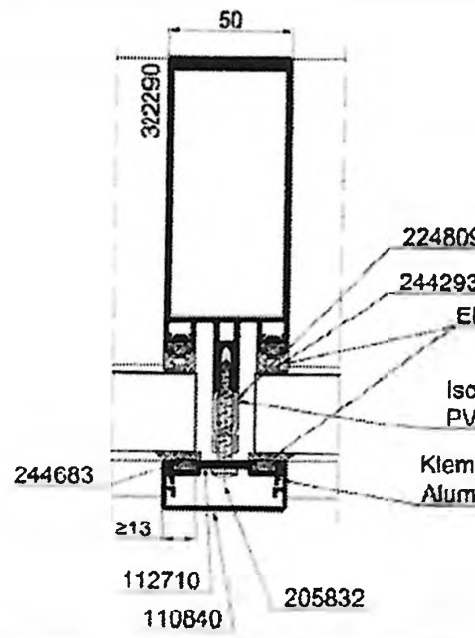
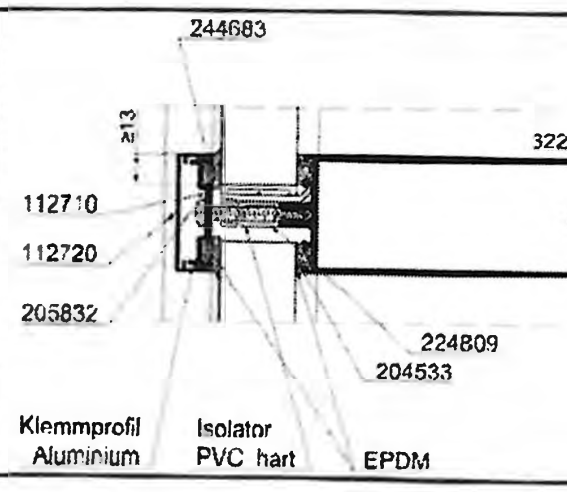
Comparison of tested type/ characteristics/detail	Tested type FW 50+
	
	
Deviation	Clamping profile Item No.. 2 Glazing gasket external Iten Mullion Profile No. 326400 Transom Profile No. 32644(

Table 2 Deviation: System FW 60+ BF

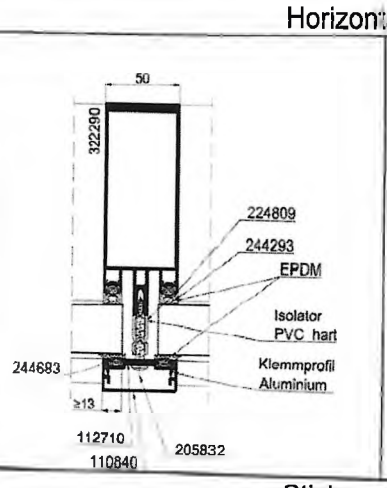
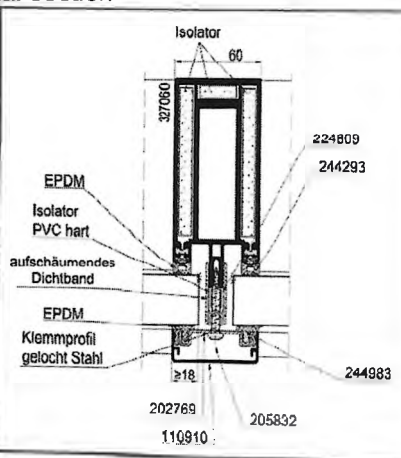
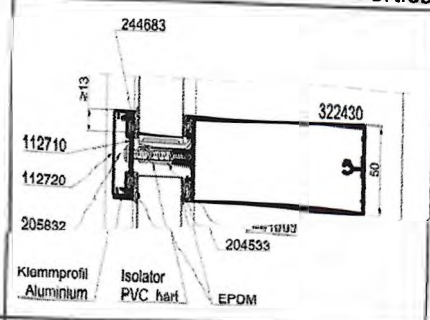
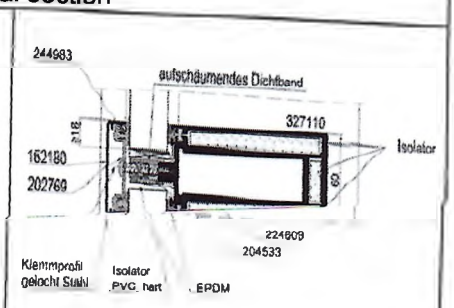
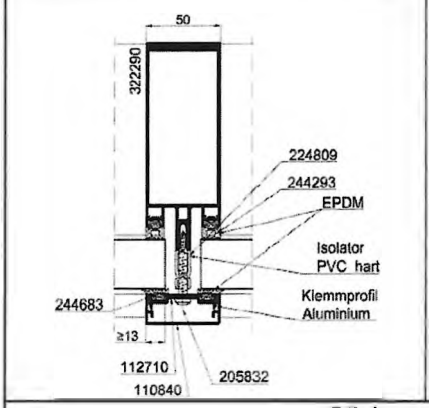
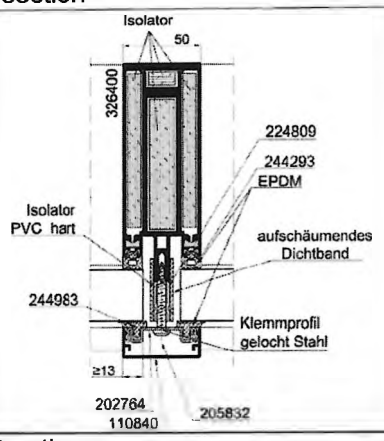
Comparison of tested type/ characteristics/detail	Tested type FW 50+	Extrapolated type FW 60+ BF
	Stick construction Horizontal section	
		
	Stick construction Vertical section	
		
Deviation	Clamping profile Item No. 202769 made of steel Glazing gasket external Item No. 244983 with modified geometry Mullion Profile No. 327060 Transom Profile No. 327110 Stick construction No. 226905 Cover plate Item No. 110910, 162180	
Evaluation	The important design features are identical; in particular these are the design of internal sealing level, type of glazing and drainage. The main difference lies in the geometry of the mullion and transom profile and the face width of 60 mm. The load-bearing structure must be dimensioned according the static requirements.	

Table 3 Deviation: System FW 50+ FR 60

Comparison of tested type/ char-acteristics/detail	Tested type FW 50+	Extrapolated type FW 50+ FR 60
	Stick construction Horizontal section	
		
	Stick construction Vertical section	
Deviation	Clamping profile Item No. 202764 made of steel Glazing gasket external Item No. 244983 with modified geometry Mullion Profile No. 326400 Transom Profile No. 326440 Stick construction No. 226884	
Evaluation	The important design features are identical; in particular these are the design of internal sealing level, type of glazing and drainage. The main difference lies in the geometry of the mullion and transom profile. The load-bearing structure must be dimensioned according the static requirements.	

4 Result and statement

Based on expert inspection and the test results given in test reports No. 108 27203 dated 3 December 2003 and 108 31958 dated 31 January 2007 the modifications described in Clause 3 do not cause any deterioration of the characteristics of the test specimen attested by the test reports.

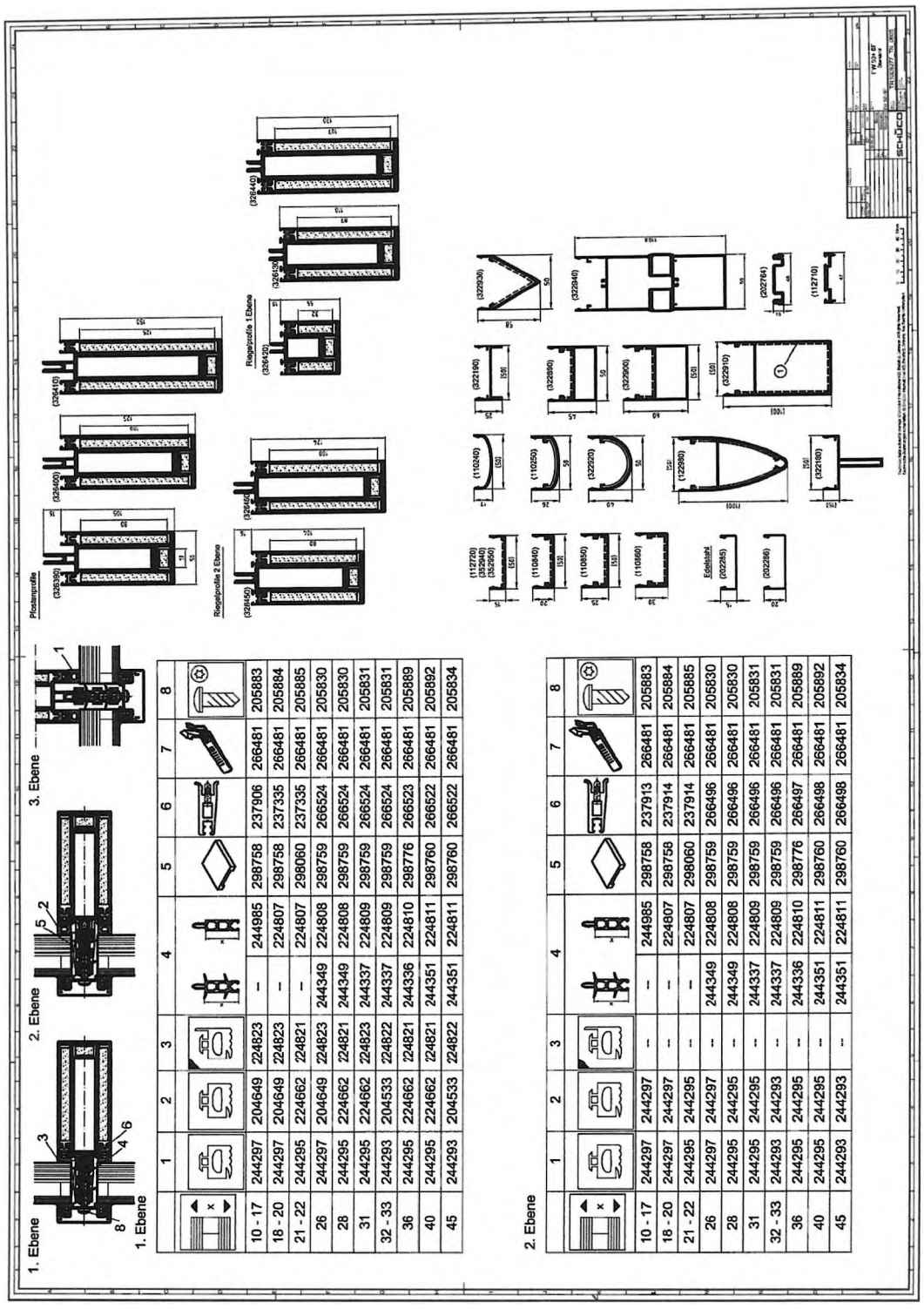
Annex 1.

Evidence of Performance

Air permeability. Watertightness static Resistance to wind load. Impact resistance

Expert Statement 11-002877-PR01 (GAS-B01-02-en-01) dated 27.02.2014

Client: SCHÜCO International KG, 33609 Bielefeld, (Germany)



	1	2	3	4	5	6	7	8
10 - 17	244297	204649	224823	--	298758	237906	266481	205883
18 - 20	244297	204649	224823	--	298758	237335	266481	205884
21 - 22	244295	224662	224821	--	298060	237335	266481	205885
26	244297	204649	224823	244349	298759	266524	266481	205830
28	244295	224662	224821	244349	298759	266524	266481	205830
31	244295	224662	224823	244337	298759	266524	266481	205831
32 - 33	244293	204533	224822	244337	298759	266524	266481	205831
36	244295	224662	224821	244336	298776	266523	266481	205889
40	244295	224662	224821	244351	298760	266522	266481	205892
45	244293	204533	224822	244351	298760	266522	266481	205834

2. Ebene

	1	2	3	4	5	6	7	8
10 - 17	244297	244297	--	--	298758	237913	266481	205883
18 - 20	244297	244297	--	--	298758	237914	266481	205884
21 - 22	244295	244295	--	--	298060	237914	266481	205885
26	244297	244297	--	244349	298759	266496	266481	205830
28	244295	244295	--	244349	298759	266496	266481	205830
31	244295	244295	--	244337	298759	266496	266481	205831
32 - 33	244293	244293	--	244337	298759	266496	266481	205831
36	244295	244295	--	244336	298776	266497	266481	205889
40	244295	244295	--	244351	298760	266498	266481	205892
45	244293	244293	--	244351	298760	266498	266481	205834

Drawing 1 Scheme System FW 50+ BF

Annex 1

Evidence of Performance

Air permeability. Watertightness static Resistance to wind load Impact resistance

Expert Statement 11-002877-PR01 (GAS-B01-02-en-01) dated 27.02.2014

Client SCHÜCO International KG, 33609 Bielefeld, (Germany)

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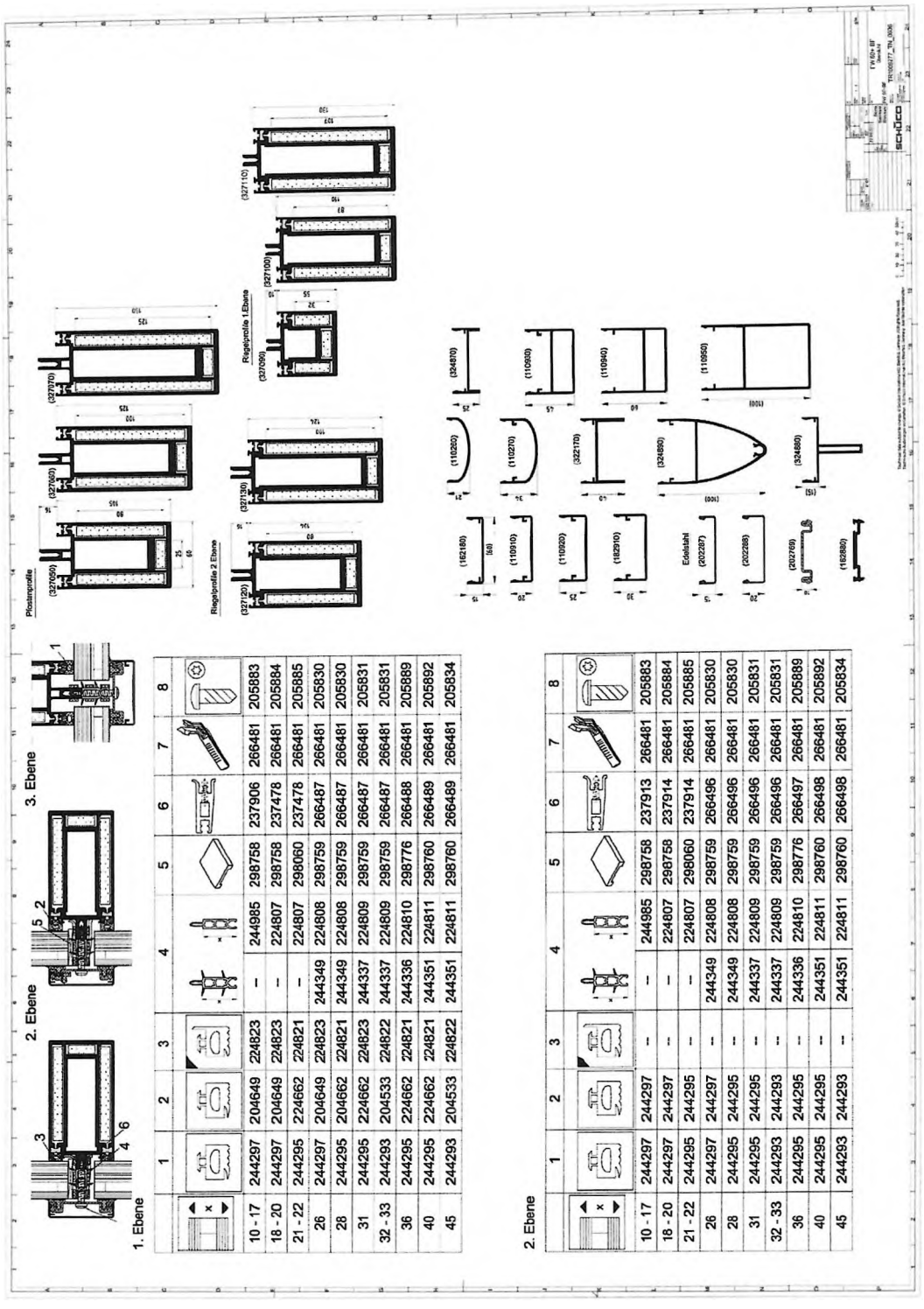

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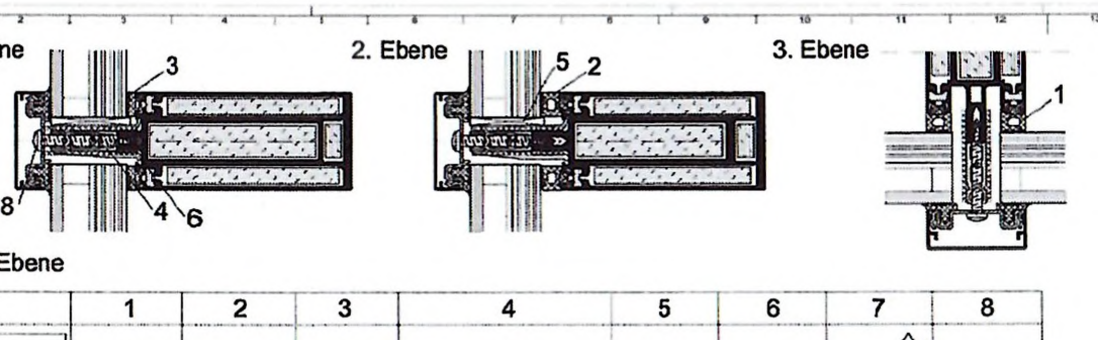
18 - 20	244297	204649	224823	–	224807	298758	237478	266481	205884
21 - 22	244295	224662	224821	–	224807	298060	237478	266481	205885
26	244297	204649	224823	244349	224808	298759	266487	266481	205830
28	244295	204662	224821	244349	224808	298759	266487	266481	205830
31	244295	224662	224823	244337	224809	298759	266487	266481	205831
32 - 33	244293	204533	224822	244337	224809	298759	266487	266481	205831
36	244295	224662	224821	244336	224810	298776	266488	266481	205889
40	244295	224662	224821	244351	224811	298760	266489	266481	205892
45	244293	204533	224822	244351	224811	298760	266489	266481	205834

1	2	3	4	5	6	7	8
10 - 17	244297	–	–	–	244985	298758	237913	266481	205883
18 - 20	244297	–	–	–	224807	298758	237914	266481	205884
21 - 22	244295	–	–	–	224807	298060	237914	266481	205885
26	244297	–	–	244349	224808	298759	266496	266481	205830
28	244295	–	–	244349	224808	298759	266496	266481	205830
31	244295	–	–	244337	224809	298759	266496	266481	205831
32 - 33	244293	–	–	244337	224809	298759	266496	266481	205831
36	244295	–	–	244336	224810	298776	266497	266481	205889
40	244295	–	–	244351	224811	298760	266498	266481	205892
45	244293	–	–	244351	224811	298760	266498	266481	205834

Drawing 2 Scheme System FW 60+ BF

06-05 / 670



	1	2	3	4		5	6	7	8
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36	244295	224662	224821	--	224810	298776	266523	266481	205889
40	244295	224662	224821	--	224811	298760	266522	266481	205892
45	244293	204533	224822	--	224811	298760	266522	266481	205834

Ebene

	1	2	3	4		5	6	7	8
33	244293	244293	--	--	224809	298759	266496	266481	205831
36	244295	244295	--	--	224810	298776	266497	266481	205889
40	244295	244295	--	--	224811	298760	266498	266481	205892
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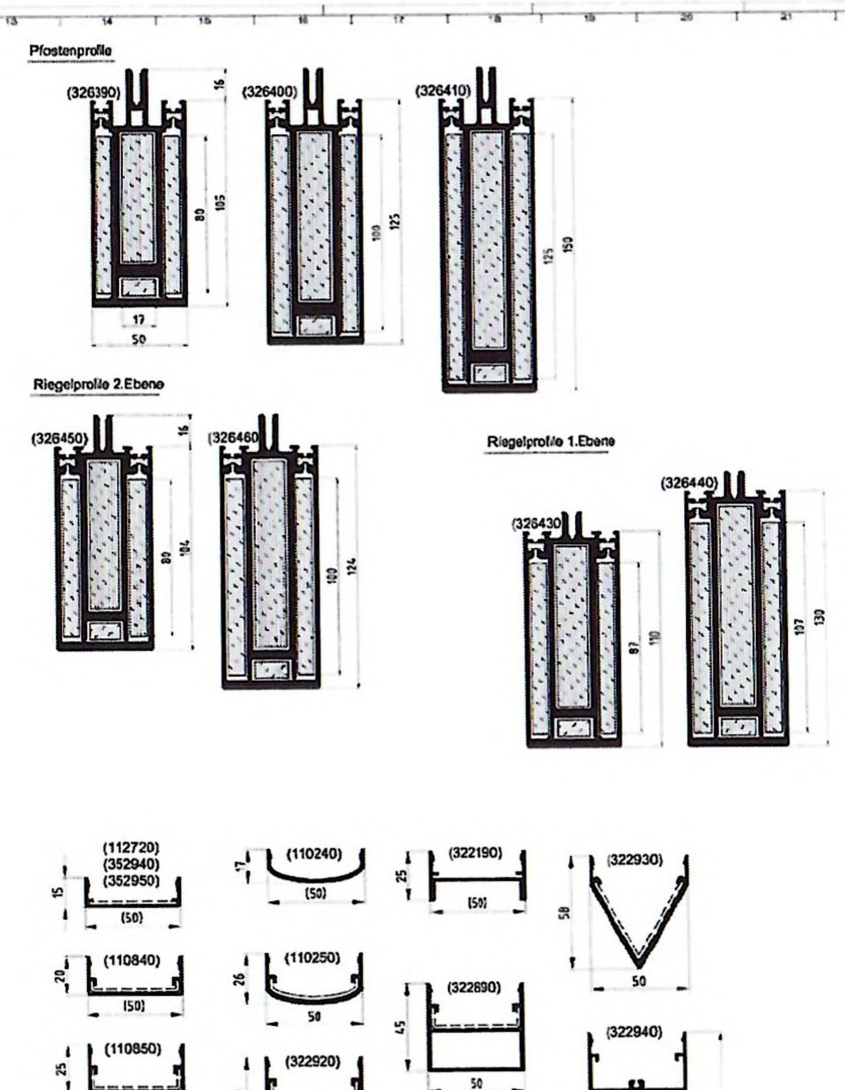

Evidence of Performance

Air permeability Watertightness static, Resistance to wind load Impact resistance

Test Report
No. 13-002783-PR03
(PB-B01-0203-en-01)

Client	SCHÜCO International KG Karolinenstraße 1-15 33609 Bielefeld Germany
Product	Stick construction
System	Fire resistance facade FW 50$^+$ BF
Overall dimensions (W x H)	2,898 mm x 2,674 mm
Frame material	Aluminium

Test		Classification Facade construction
EN 12152	Air permeability	AE
EN 12154	Watertightness static	RE_{1200}
EN 13116	Resistance to wind load	Design load ± 1.2 kN/m² Safety load ± 1.8 kN/m²
EN 14019	Impact resistance	I5 / E5

npd = no performance determined

ift Rosenheim
27.02.2014

Jörn Peter Lass, Dipl.-Ing. (FH)
Head of Testing Department
Building Components

Dirk Köberle, Dipl.-Ing. (FH)
Operating Product Officer
Building Components

Basis

Test sequence according to EN 13830 : 2003-09, Curtain walling – Product standard

Test standards
EN 12153
EN 12155
EN 12179
EN 14019

Test report 108 31958 R1 dated 31.01.2007

Representation

Instruction for use

This test report serves to demonstrate the above characteristics for curtain walling.

This test report does not cover all the performance characteristics listed in the product standard.

Validity

The data and results refer solely to the tested and described test specimen.

The test does not allow any statement to be made on further characteristics regarding performance and quality, in particular the effects of weathering and ageing.

Notes on publication

The **ift**-Guidance Sheet "Conditions and Guidance for the use of **ift** test documents" applies.

The cover sheet can be used as an abstract

Contents

The report contains a total of

25 pages

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PÜZ Stelle: BAY 18

DAkkS D-PL-11349-01-00 D-K- 11349-01-00
DAkkS D-ZE-11349-01-00 D-ZM-11349-01-00 D-IS-11349-01-00

1 Object

1.1 Description of test specimen

Test specimen	Stick construction
Manufacturer	SCHÜCO International KG
System	Fire resistance facade FW 50⁺ BF, face width 50 mm
Frame material	Aluminium
Overall dimensions	2,898 mm x 2,674 mm
Field grid dimensions	1,424 mm x 1,312 mm or 1,424 mm x 2,624 mm Subdivision see drawing 1 on page 4
Mullion / transom profiles	
Profile material	Al Mg Si 0,5 F 22 EQ (as specified by manufacturer)
Mullion	Profile No. 326390
Transom	Profile No. 326430
Pressure plates	Mullion / transom: Profile No. 202764
Cover plate	Mullion: Profile No.110840 Transom: Profile No. 112720
Connection	via stick construction Item No. 226881
Glazing / Infill panel	
Infill panel A	
Type	Fire protection glass
Product	Pyrostop 30-25 ISO (as specified by manufacturer)
Manufacturer	Pilkington
Dimensions	1,400 mm x 2,600 mm
Thickness	32 mm
Configuration	6 / 8 / 18
Infill panel B	
Type	Fire protection glass
Product	Pyrostop 30-25 ISO (as specified by manufacturer)
Manufacturer	Pilkington
Dimensions	1,400 mm x 1,288 mm
Thickness	32 mm
Configuration	6 / 8 / 18
Infill panel C	
Type	Fire protection panel
Manufacturer	Company Ebener

Dimensions	1,400 mm x 1,288 mm
Thickness	32 mm
Configuration	2 mm steel sheet / 28 mm Aestuver / 2 mm steel sheet
	Edge cover: with adhesive tape sealed
Glazing gasket	with prefabricated sealing profiles, EPDM black
External	vertical and horizontal glazing gasket Item No. 244983, vertical pressure plates of mullion traversed; horizontal sealing with pressure plates of transom between butt-jointed; in cross or T-joint area a seal cross is inserted Item No. 224836, the seals pass through above the seal cross.
Internal	vertical Item No. 204534, horizontal Item No. 204533 butt-jointed and bonded
Isolators	Item No. 224809
Intumescent material	in glass rebate at mullion isolator hinge Item No. 298489 and at transom isolator hinge Item No. 298400, product Kerafix Flex-pan 200, company Gluske; bonded on isolator
Distance of pressure plate screw	25 cm
Pressure plates ends	without additional procedure

Vapour pressure equalization / Drainage	**Total drainage / ventilation**
Total	via transom rebate into mullion rebate, at bottom and top opened

1.2 Representation of test specimen

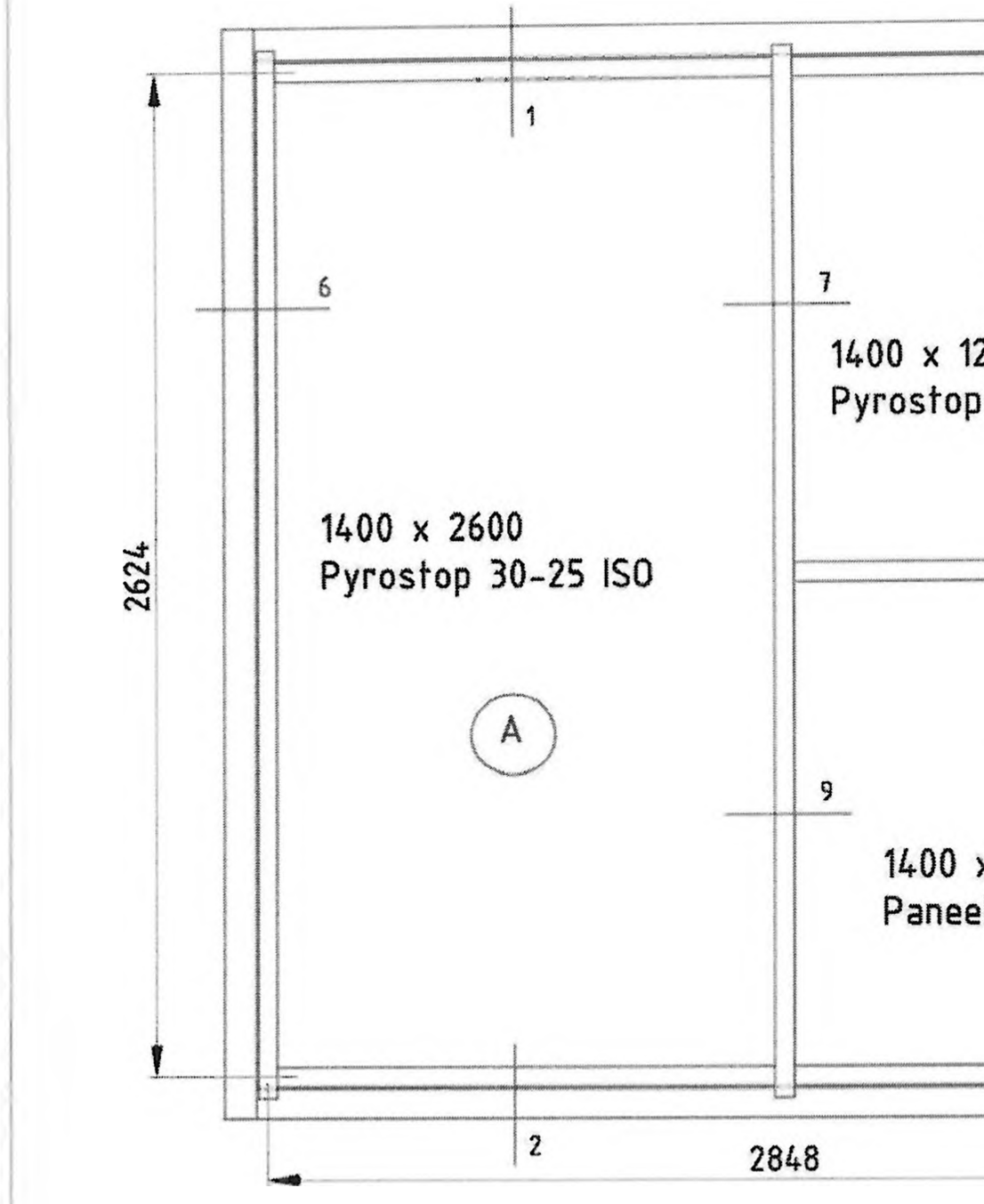
The drawings are based on unchanged documentation provided by the client and have not been checked fully an in detail for technical correctness.

Evidence of Performance

Air permeability. Watertightness static. Resistance to wind load, Impact resistance

Test report 13-002783-PR03 (PB-B01-0203-en-01) dated 27.02.2014

Client SCHÜCO International KG, 33609 Bielefeld, (Germany)



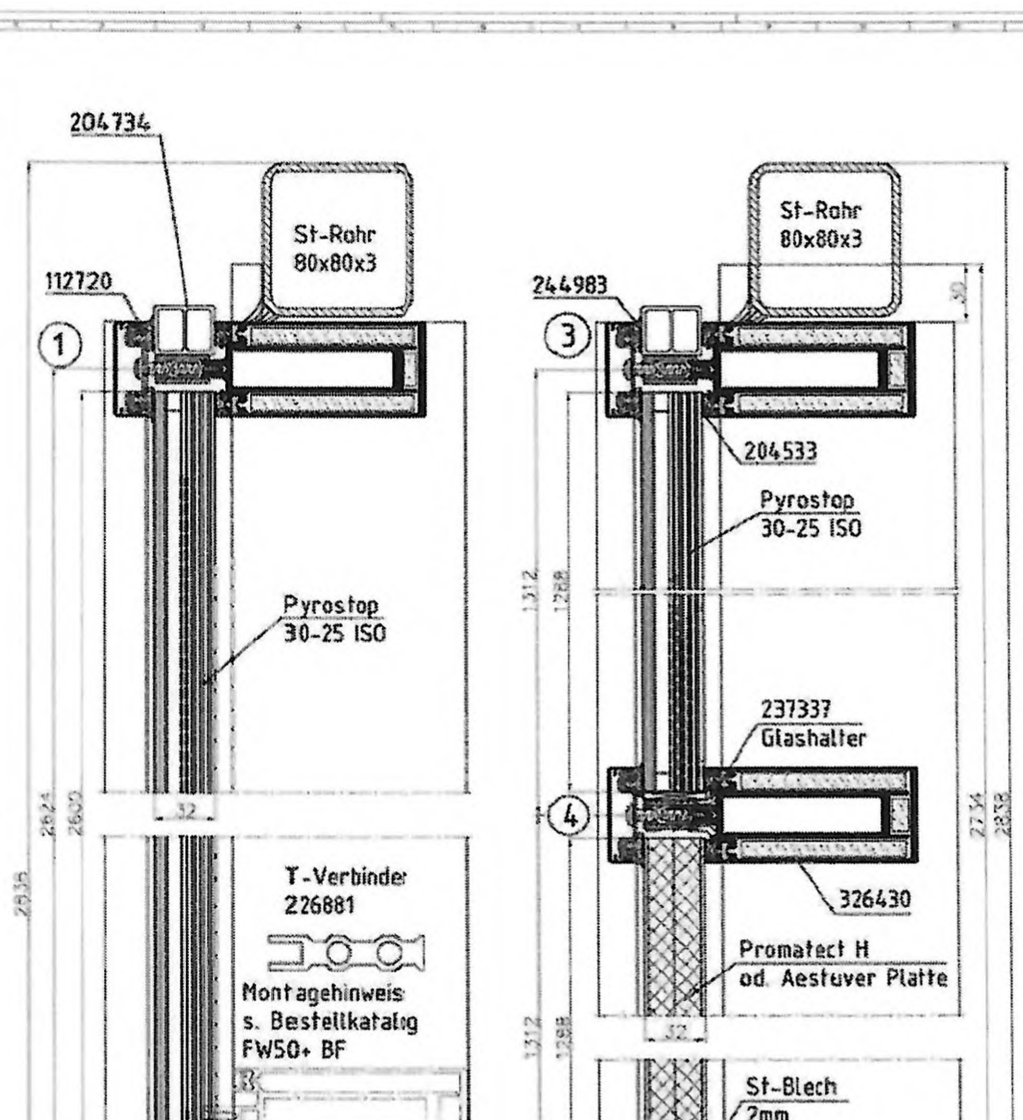
( ) = Schüco Art.-Nr.'n

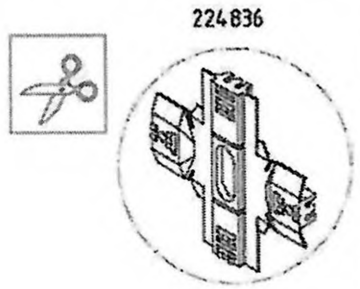
Maße in mm.

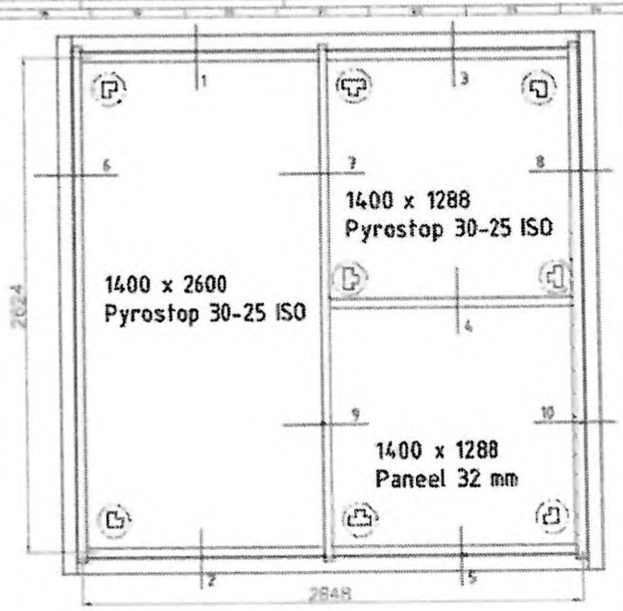
Ausg.:

Stand.:

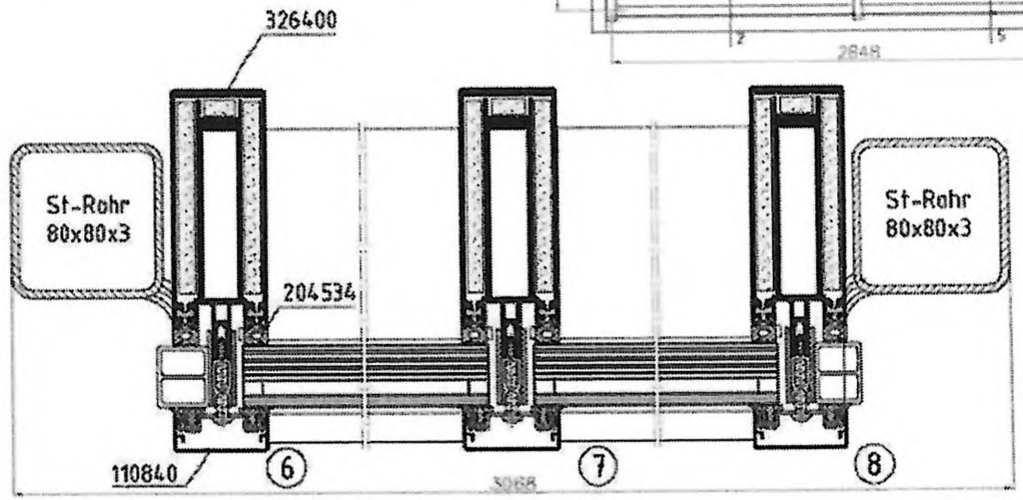
Fassadenkonstruktion "FW 50+ BF"

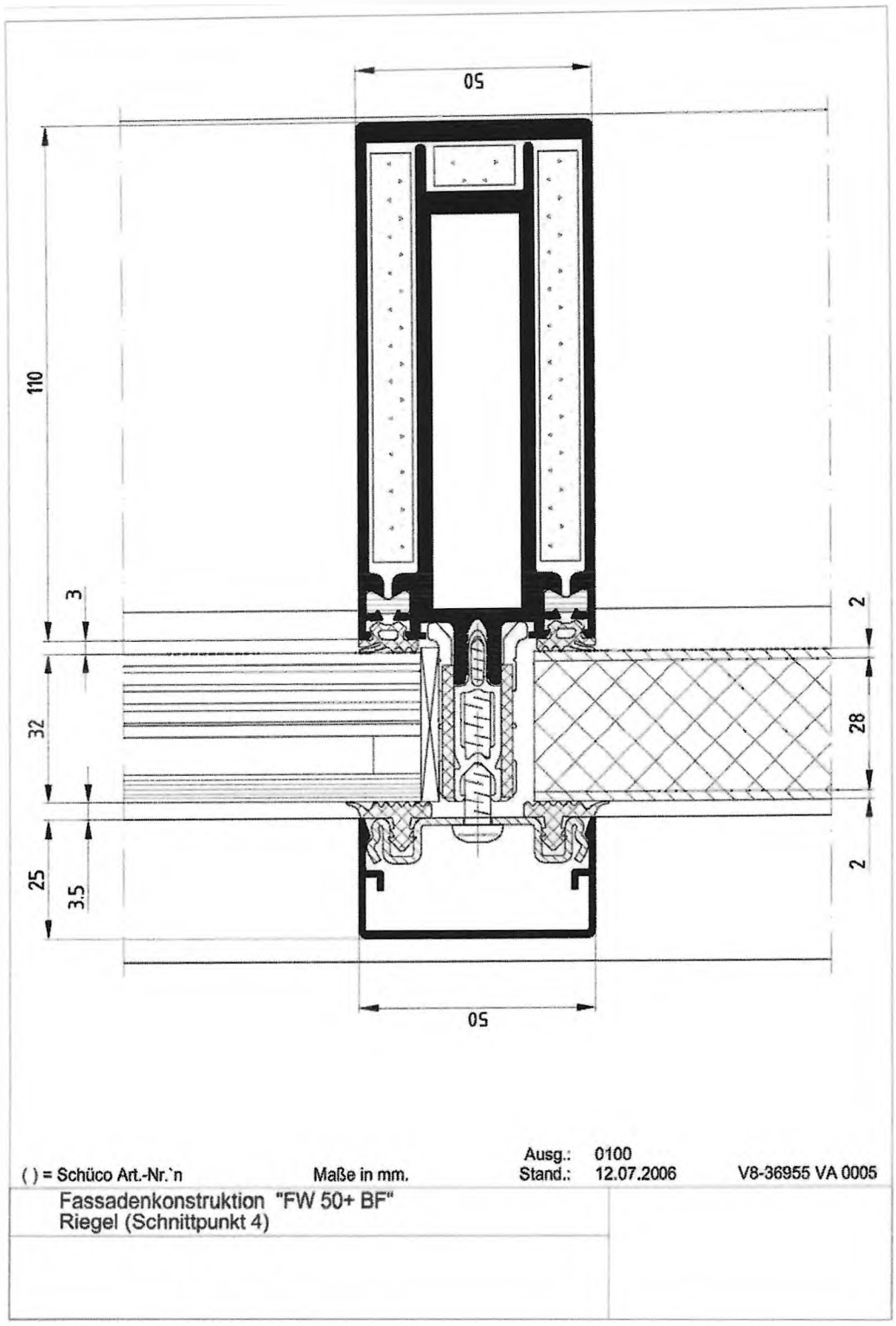




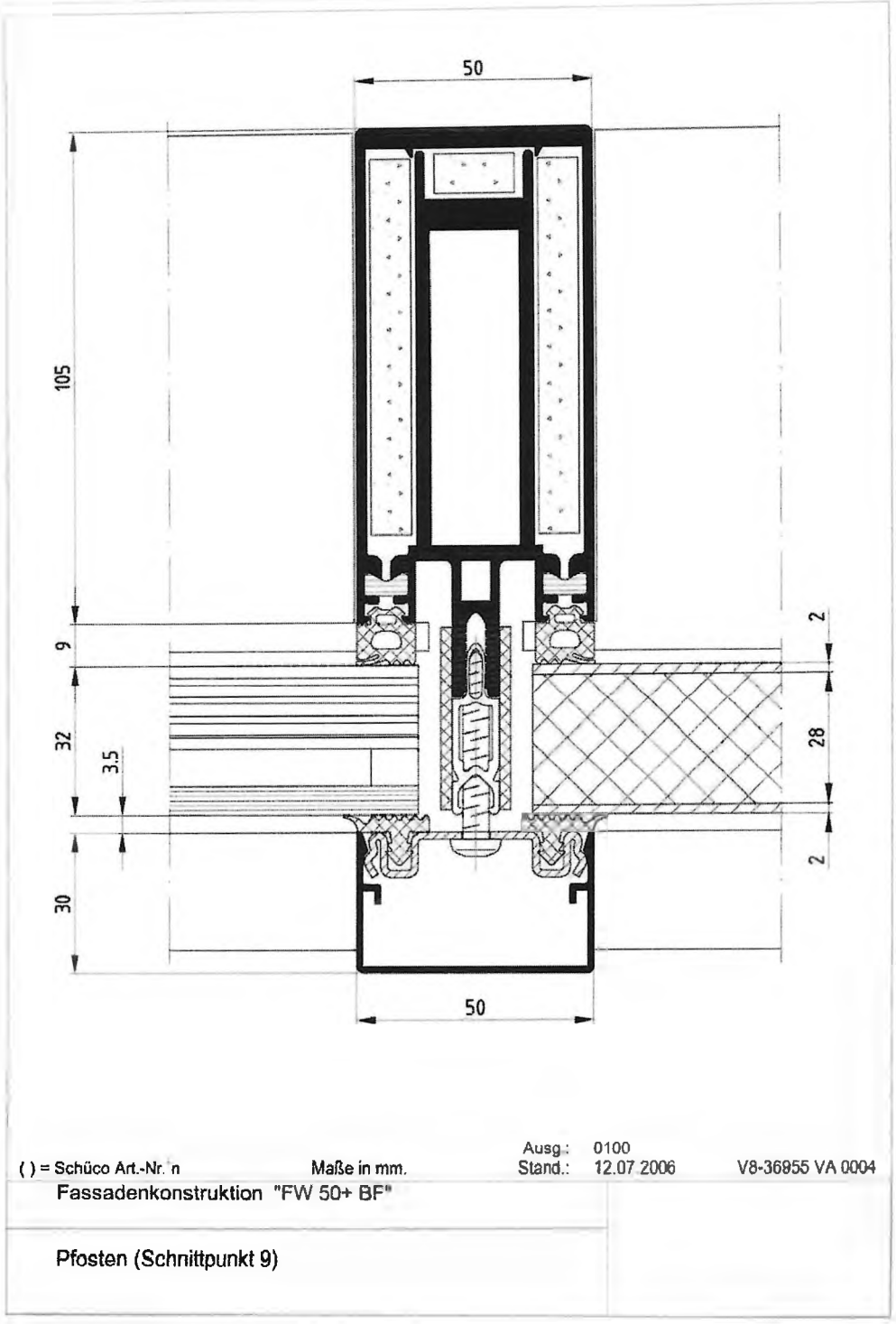


Die Fassade ist nach Schüco Richtlinien abzudichten





Drawing 3 Transom (intersection point 4)

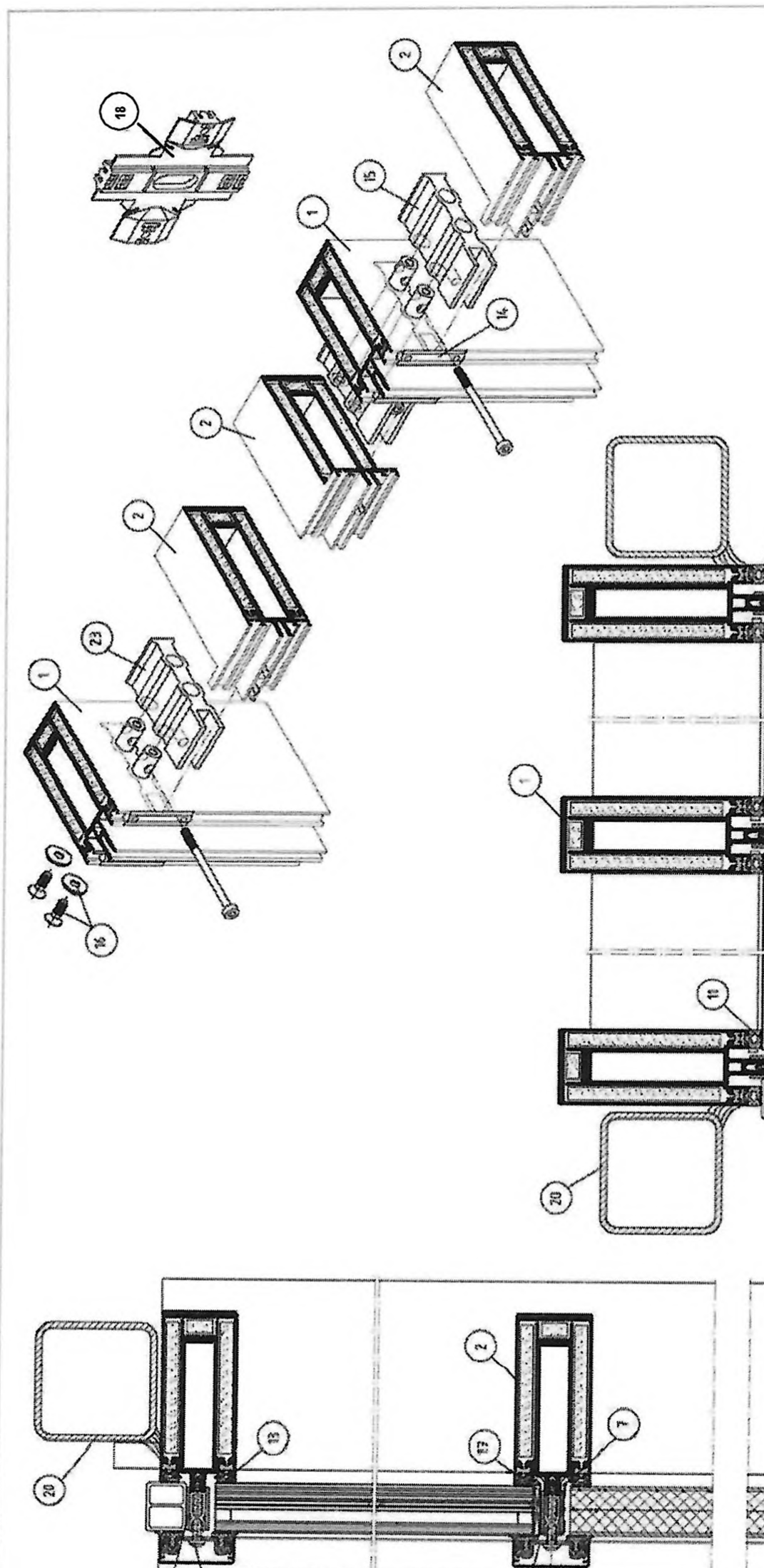


Drawing 4 Mullion (intersection point 9)

Air permeability, Watertightness static, Resistance to wind load, Impact resistanc

Test report 13-002783-PR03 (PB-B01-0203-en-01) dated 27.02.2014

Client SCHÜCO International KG, 33609 Bielefeld, (Germany)



Positionsliste V8-36955 VA 0008

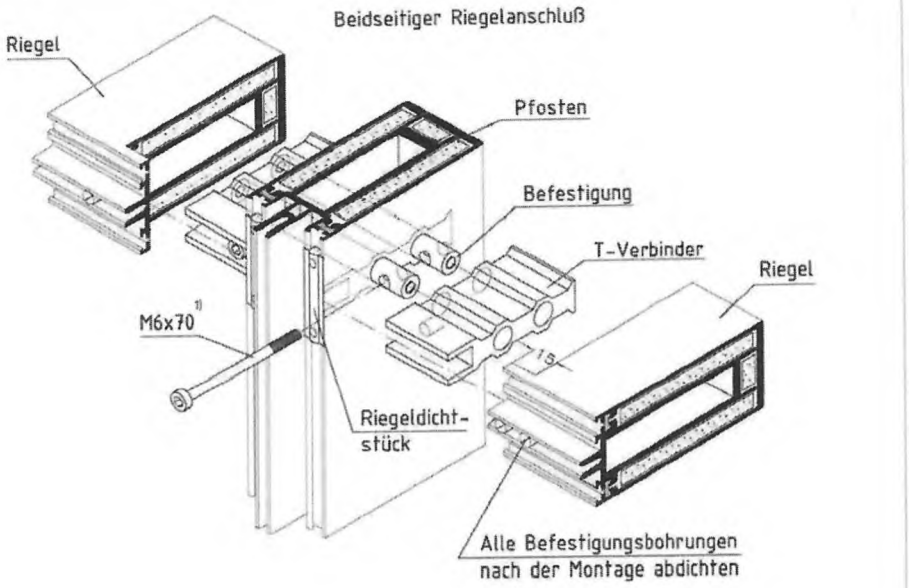
Lfd.Nr.	Bennenung	Artikel-Nr.
1	Pfosten	326390
2	Riegel	326430
3	Deckschale	110840
4	Deckschale	112720
5	St-Andrückprofil	202764
6	Isolatorprofil	224809
7	Glasträger	237337
8	Linsenblechschraube	205831
9	Dichtband	298489
10	Dichtband	298400
11	Glasanlage-Dichtung	204534
12	Glasdichtung	244983
13	Glasanlag-Dichtung	204533
14	Riegeldichtstück	217585
15	T-Verbinder	226881
16	Schraube M6 und Schnoorscheibe	205977
17	Verglasungsklotz	298759
18	Dichtungskreuz	224836
19	KS-Distanzprofil	204734
20	St-Rohr	80 x 80 x 3

( ) = Schüco Art.-Nr.'n Maße in mm. Ausg.: 0100 Stand.: 13.07.2006 V8-36955 VA 0008

Fassadenkonstruktion "FW 50+ BF"

Positionsliste

Drawing 6 Position list



Drawing 7 Stick construction

2 Procedure

The tests were conducted on the window test rig in Technology centre of the company SCHÜCO International KG, Bielefeld by the test personnel of the **ift** Rosenheim. The **ift** checked conformity with the requirements of EN ISO/IEC 17025: 2000-04, "General requirements for the competence of testing and calibration laboratories", Clause 5.4. The instruments of the test rig and additional devices were calibrated by the **ift** on 03 February 2006.

2.1 Methods

Basis of test sequence	
EN 13830 : 2003 – 09	Curtain walling – Product standard
Prüfnormen	
EN 12153 : 2000-06	Curtain walling – Air permeability – Test method
EN 12155 : 2000-06	Curtain walling – Watertightness – Laboratory test under static pressure
EN 12179 : 2000-06	Curtain walling – Resistance to wind load – Test method
EN 14019 : 2004-06	Curtain walling – Impact resistance – Requirements
Classificaiton standards	
EN 12152 : 2002-02	Curtain walling – Air permeability – Requirements and classification
EN 12154 : 1999-12	Curtain walling – Watertightness – Requirements and classification
EN 13116 : 2001-07	Curtain walling – Resistance to wind load – Requirements
Boundary conditions	As specified by the standard requirements.

Test sequence according product standard EN 13830 – Clause 5.3.2

1) Air permeability at up to 750 Pa
2) Watertightness under static pressure at up to 600 Pa
3) Deflection under wind load (design load as per EN 1991-1-4 ± 1200 Pa ≙ ± 1.2 kN/m²)
4) Repeat test of air permeability at up to 750 Pa
5) Repeat test of watertightness under static pressure at up to 1200 Pa [1])
6) Safety test at up to ± 1800 Pa ≙ ± 1.8 kN/m²)
7) Impact resistance test
8) Disassembly and inspection

[1]) The repeat test was used for classification.

2.2 Testing

Sampling	by the client
Manufacturer	SCHÜCO International KG
Delivery of test specimen	Manufacturer and assembly of the facade by the client in CW 25 / 2006
Test date	11 to 13 July 2006

The test was witnessed by:

Mr Redien	SCHÜCO International KG
Mr Neshatavar	SCHÜCO International KG

Test engineer: Mr Köberle **ift** Rosenheim

2.3 Test equipment

Test rig	Window and facade test rig of the company SCHÜCO International KG in Technology centre Bielefeld, device No. P 3421-001. The test rig was calibrated by the **ift** Rosenheim at 3 February 2006 (see test report 836 31202 dated 1 March 2006)

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3 Detailed results

3.1 Summary of results

Table 1 Summary of results

Test	Type of test	Classification standard	Classification
1.	Air permeability facade element	EN 12152	AE
2.	Watertightness under static pressure façade element	EN 12154	R7
3.	Deflection under wind load	EN 13116	< l / 200 or 15 mm at ± 1.2 kN/m²
4.	Repeat test of air permeability	EN 12152	AE
5.	Repeat test of watertightness under static pressure: facade element	EN 12154	RE_{1200}
6.	Safety test	EN 13116	± 1.8 kN/m²
7.	Impact resistance	EN 14019	I5 / E5
8.	Disassembly and inspection		The test specimen corresponds to the drawings. No unallowed water penetration into the construction

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3.2 Comments on test

2.3.1 Air permeability

Prior to testing, the mounted facade element was covered with a film to eliminate all leakages on the facade. The leakages of the test rig system were determined by zero measurement.

Thereafter the film was removed; three pressure pulses were applied to the facade and released as set out by the standard, followed by air permeability measurements.

Air permeability was tested at up to a test pressure differential of 600 Pa. Measured values are listed in test record, Annex 2, page 2. The values were obtained by the difference method, where the measured air permeability obtained from zero measurement is deducted from the air permeability of the facade.

The values obtained were below the limit curve for class A4 at a test pressure differential of 750 Pa below the maximum permissible air permeability of 1.5 m/(h m²) related to the total area and 0.5 m³/(h m) related to fixed joint length, respectively. For this measurement of the façade the casement was at first covered with an adhesive tape.

3.2.1 Watertightness under static pressure

Watertightness under static pressure was tested at up to a test pressure differential of 600 Pa. No water penetration into the facade construction was detected.

3.2.2 Deflection under wind load

Deflections were measured positive wind pressure at up to + 1200 Pa and negative wind pressure at up to – 1200 Pa. As per EN 13116, the frontal deflection of the profiles between the structural support points must be determined. Layout and description of the measurement points are given in Illustration 1.

Page 6 in Annex 2 contains the deformations obtained. Furthermore, the effective deflection is presented. The effective deflections were below L/200 and 15 mm, respectively, when exposed to the specified design load ± 1.2 kN/m² set out b EN 1991-1-4.

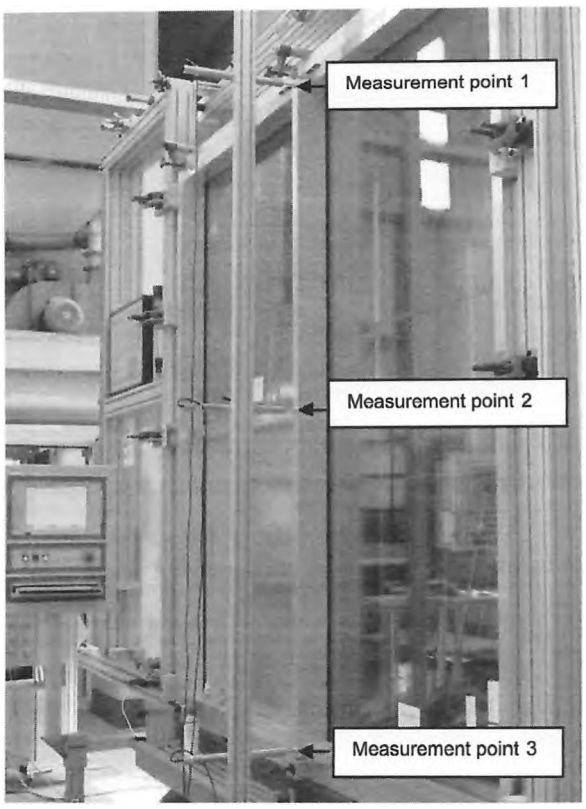


Illustration 1 Layout of measurement points

Measurement point 1: mullion at top
Measurement point 2: mullion centre
Measurement point 3: mullion at bottom

3.2.3 Repeat test of air permeability

The result of the first test was confirmed. The values obtained at a test pressure differential 750 Pa were below the maximum permitted air permeability of 1.5 m³/(h m²) and 0.5 m³/(h m) related to the overall area and related to joint length, respectively. The facade construction is rated class AE.

3.2.4 Repeat test of watertightness

Watertightness under static pressure was tested at up to a test pressure differential of 1200 Pa.
No water penetration through the facade construction was detected.

3.2.5 Safety test

The test element was exposed to positive and negative wind loads applying 150% of the design wind loads of ± 1.8 kN/m² as set out by EN 1991-1-4.

No breakages or any other visible changes were detected.

3.2.6 Impact resistance

Impact resistance was tested in accordance with EN 14019 using an impact body as set out by DIN EN 12600 : 2003 – 04, composed of a twin tyre of a pressure of 0.35 ± 0.02 MPa and a total weight of 50 kg. The impact load positions are illustrated in 2 (P1 to P4). Drop height was 950 mm and had been agreed with the client before the test.

No damage of the curtain walling construction was detected. Thus the facade construction is rated Class I5 and E5, respectively, as set out by EN 14019.

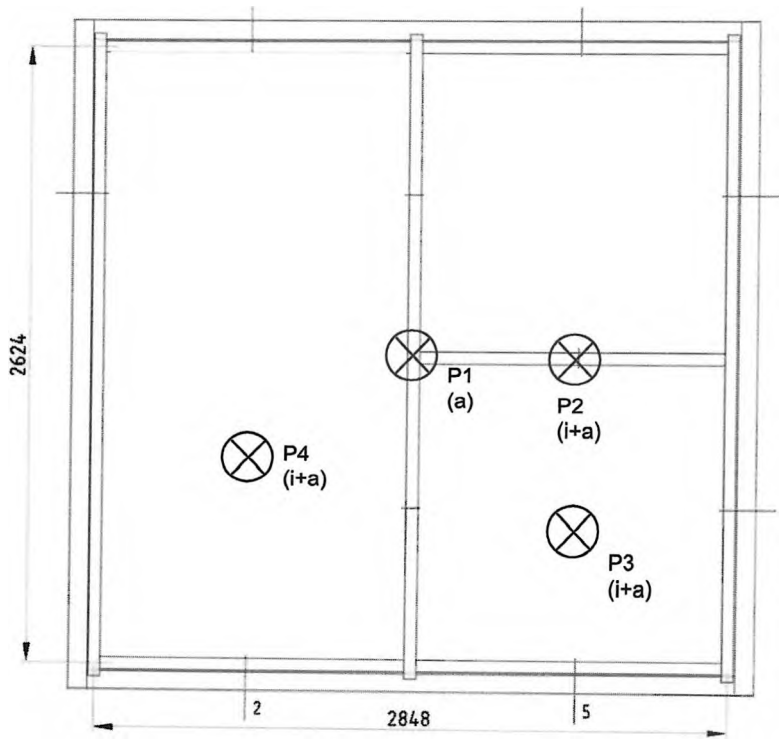


Illustration 2 Impact loads

3.2.7 Disassembly and inspection

After completion of the tests different glass fields were deglazed.

No unallowed traces of water were detected in the rebate platform.

Completion and workmanship of the construction were in conformity with the requirements of the system description and the drawings submitted (Annex 3).

Evidence of Performance

Air permeability. Watertightness static. Resistance to wind load. Impact resistance

Test report 13-002783-PR03 (PB-B01-0203-en-01) dated 27.02.2014

Client SCHÜCO International KG. 33609 Bielefeld, (Germany)

ift ROSENHEIM

Photo 1 Facade mounted in test rig

Photo 2 Impact resistance test

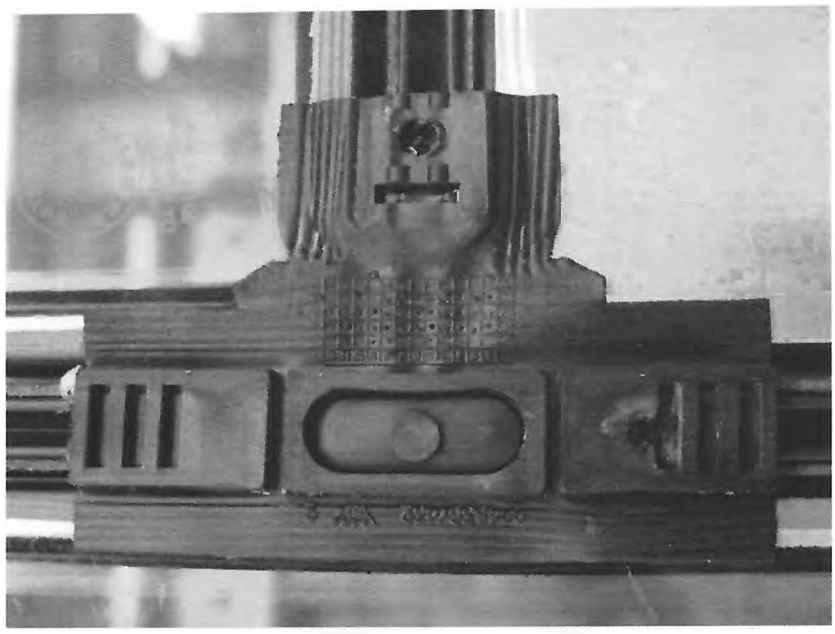


Photo 3 Seal cross at removed pressure plates

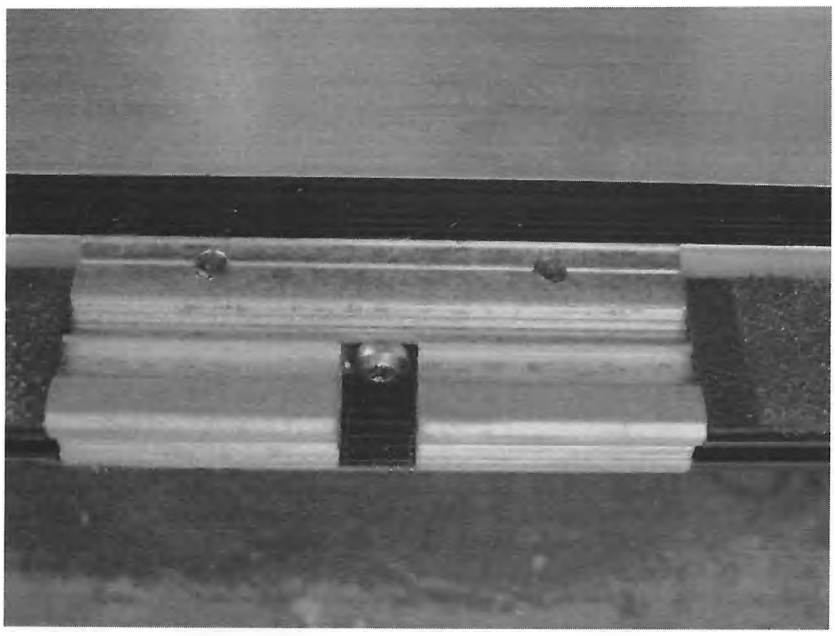


Photo 4 Glass support

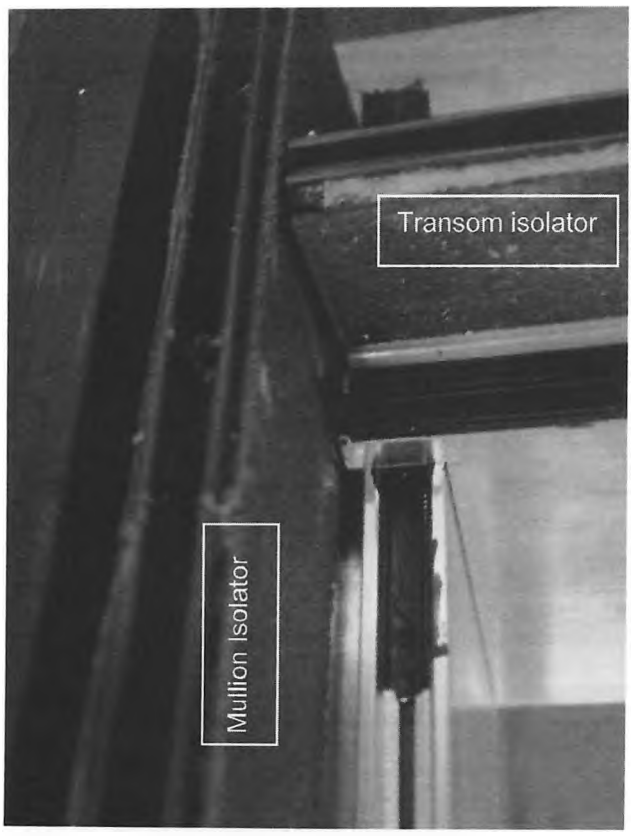


Photo 5 Rebate at removed pane, internal glazing gasket in mullion also removed

Evidence of Performance

Air permeability Watertightness static, Resistance to wind load, Impact resistance

Test report 13-002783-PR03 (PB-B01-0203-en-01) dated 27.02.2014

Client SCHÜCO International KG, 33609 Bielefeld, (Germany)

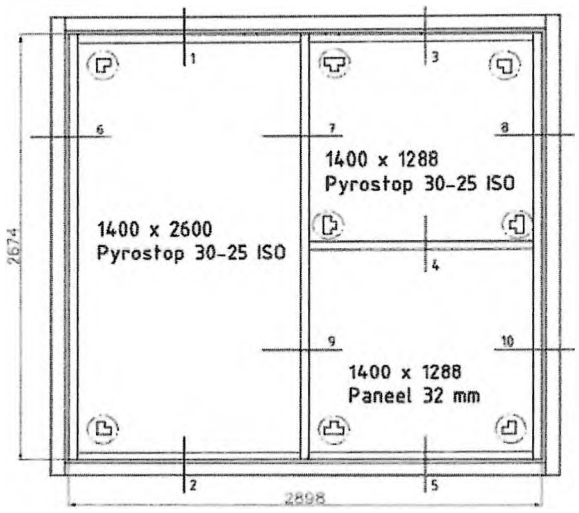
ROSENHEIM

Test record

Test speciment	Facade element (mullion - transom)
Order No.	108 31958
Place of test	Technologiezentrum Bielefeld
Client	SCHÜCO International KG
Test date	11.07.2006 / 12.07.2006
Test engineer	D.Köberle
System	FW 50+ BF
Frame material	Aluminium
Date of manufacture	CW 26 / 2006
Insert unit	none
Attended by	Mr Redien
	Mr Neshatavar

	K	R	
Temperature	37,2	24,1	°C
Air humidity	55	53,3	%
Air pressure	1016	1016	hPa

K = Test chamber
R = Test room
A = External



Calculation of fixed jionts
Dimensions in mm

Width	Height	Numbe	Length/mm
1374	1262	2	10544
1374	2704	1	8156
			0
			0
			0
			0
			0
			0
			0
			0
			0
			0
			0
			0
			0
			0
			0
			0
			0
			0
			0
			0
			0
		Sum	18700

Calculation of overall area
Dimensions in mm

Width	Height		Area/m²
2898	2675		7,75

1 Air permeabilty

Test method: EN 12153 : 2000 - 06
Klassification EN 12152 : 2002 - 02

overall area of test specimen 7,75 m² Joint length of fixed joints:

Table 1 Zero measurement at negtive wind pressure	**Pressure difference in Pa**		50	100	150	200	25
	Flow rate (volume)						
	absolute	**m³/h**	2,2	3,6	4,7	5,6	6,4
	joint length-related	**m³/hm**	0,12	0,19	0,25	0,30	0,3
	overall area-related	**m³/hm²**	0,28	0,46	0,61	0,72	0,8

Table 2 Measured values at positive wind pressure b	**Pressure difference in Pa**		50	100	150	200	25
	Flow rate (volume)						
	absolute	**m³/h**	2,6	4,1	5,4	6,5	7,4
	joint length-related	**m³/hm**	0,14	0,22	0,29	0,35	0,4
	overall area-related	**m³/hm²**	0,33	0,53	0,70	0,84	0,9

Table 3 Difference measurement - Zero measurement	**Pressure difference in Pa**		50	100	150	200	25
	Flow rate (volume)						
	absolute	**m³/h**	0,4	0,5	0,7	0,9	1,0
	joint length-related	**m³/hm**	0,02	0,03	0,04	0,05	0,0
	overall area-related	**m³/hm²**	0,05	0,06	0,09	0,11	0,1

Table 4 Measured values at negative wind pressrue	**Pressure difference in Pa**		50	100	150	200	25
	Flow rate (volume)						
	absolute	**m³/h**	2,6	4,2	5,4	6,5	7,4
	joint length-related	**m³/hm**	0,14	0,22	0,29	0,35	0,4
	overall area-related	**m³/hm²**	0,33	0,54	0,70	0,83	0,9

Table 5 Difference measurement - Zero measurement	**Pressure difference in Pa**		50	100	150	200	25
	Flow rate (volume)						
	absolute	**m³/h**	0,4	0,6	0,7	0,9	1,0
	joint length-related	**m³/hm**	0,02	0,03	0,04	0,05	0,0
	overall area-related	**m³/hm²**	0,05	0,07	0,09	0,11	0,1

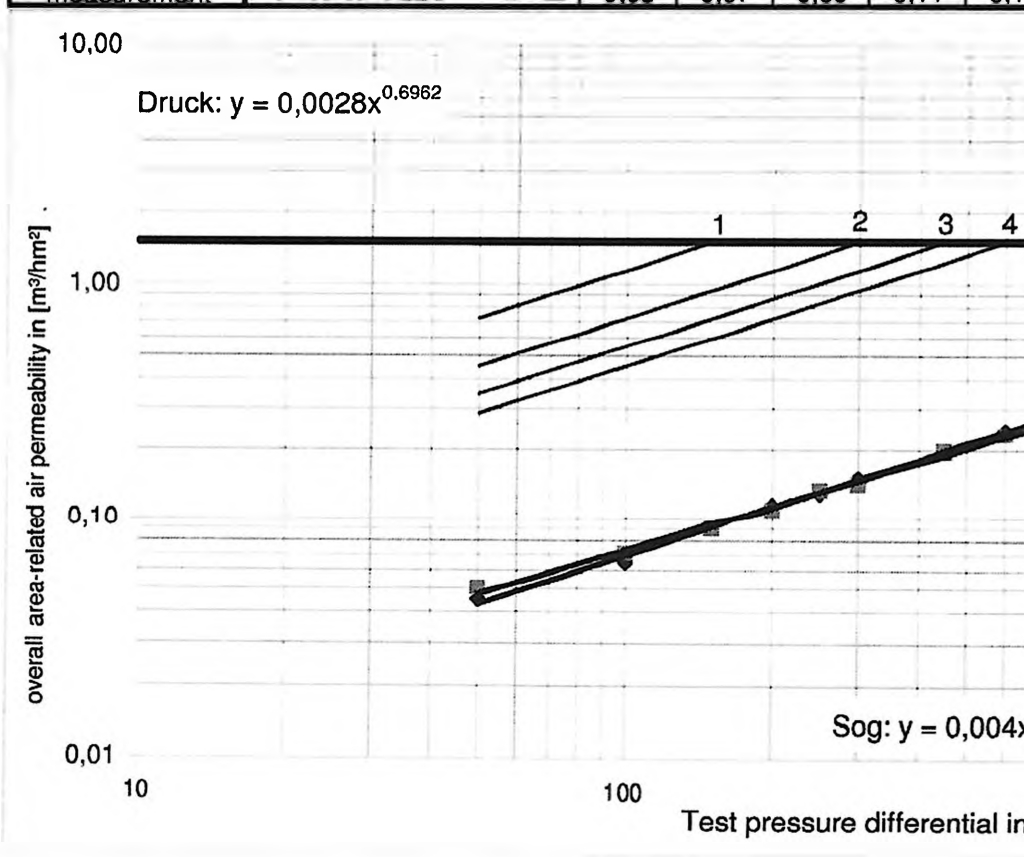


Diagram 1 overall area-related air permeability

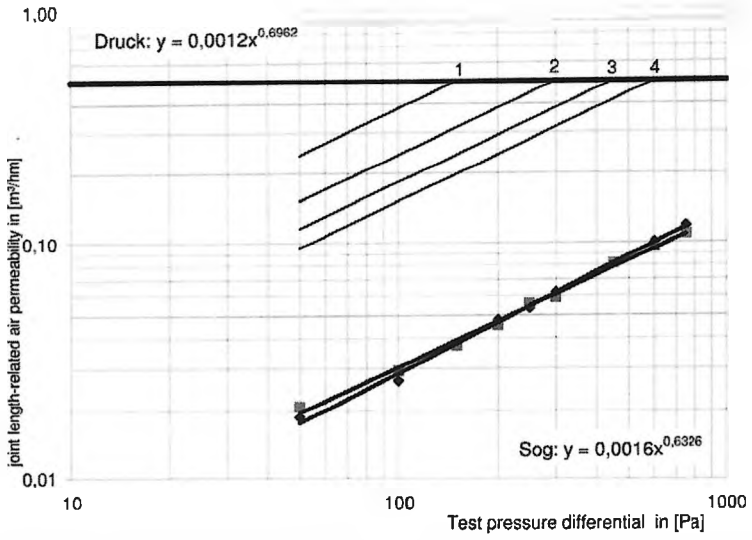


Diagram 2 joint length-related air permeability

Reference air permeability related to overall area positive pressure	Q100 <	0,10	m³/hm²
Reference air permeability related to overall area negative pressure	Q100 <	0,10	m³/hm
Reference air permeability related to joint length positive pressure	Q100 =	0,10	m³/hm²
Reference air permeability related to joint length negative pressure	Q100 =	0,10	m³/hm
Total classification of air permeability	**Class**	**AE**	

2 Watertightness

Test method: EN 12155 : 2000 - 06
Classification: EN 12154 : 1999 - 12

No water penetration at up to 600 Pa

Classification according to EN 12154

3 Resistance to wind load

Maximum wind load p_{max}	**1200 Pa**	**positive wind pressu**
(design load)	**-1200 Pa**	**negative wind pressu**

Illustration 1 of the test report shows the layout of the measurement points

Table 6 Maximum permitted deflection for classification

Profile	**Mullion**
Displacement transducer	**M1 to M3**
Effective span	**2630 mm**
Permitted deflection l/200 or 15 mm	**13,2 mm**

Positive wind pressure

Table 7 Measured results of frontal deflection in mm

% of p_{max}	25	50
p_1 in Pa	300	600
M1 in mm	0,10	0,20
M2 in mm	0,70	1,60
M3 in mm	0,10	0,30
f in mm	0,60	1,35
1/	4383	1948

Negative wind pressure

Table 9 Measured results of frontal deflection in mm

% of p_{max}	25	50
p_1 in Pa	-300	-600
M1 in mm	-0,80	-1,70
M2 in mm	-1,60	-3,40
M3 in mm	-0,70	-4,80
f in mm	-0,85	-0,15
1/	-3094	-17533

Key

p_1	Test pressure
M1, M2, M3, ...	frontal dislodgement of measurement points M1, M2, M3, ...
f	frontal deflection

Classification of resistance to wind load

4 Repeat test of air permeability

As set out by EN 13116 the positive difference between the values obtained during the first and second tests for air permeability at the highest pressure must not exceed 0.3 m^3/hm^2 and 0.1 m^3 /hm, respectively
The requirment was fulfilled.

Total classification of air permeability	**Class AE**

5 Repeat test of watertightness

Test method: EN 12155 : 2000 - 06
Classification: EN 12154 : 1999 - 12

Not water penetration at up to 1200 Pa

Classification according to EN 12154	**Class RE_{1200}**

6 Resistance to wind load - Safety test

Test method: EN 12179 : 2000 - 06
Classification: EN 13116 : 2001 - 07

No remaining damage could be detected on the frame members, infillings, brackets or anchorages.

Safety test at 1800 Pa / -1800 Pa	
Total classification*) Resistance to wind load	**Requirement fulfilled**

*) Total classification results from 3 and 6

7 Impact resistance

Test method: EN 14019 : 2004 - 06
Classification: EN 14019 : 2004 - 06

All impact load positions wihtout damage. Internal and external drop height: 950 mm
Layout of impact load positions see illustration 2 of test report

Classification according to EN 14019	**Class I5 / E5**

ift Rosenheim
11.07.2006 / 12.07.2006

Zertifikat / *Certificate*

Zertifikatsnr. / *Certificate No.:* 181SG-7612120-

Vorhangfassaden / *curtain wal*

System *system*	**FWS 50 / FWS 50.HI / FWS 50.SI / FWS 50.S** **FWS 50S / FWS 50 S.HI / FWS 50 S.SI**
Produktfamilie *product family*	**Pfosten-Riegel-Fassade**
Rahmenmaterial *frame material*	**Aluminium**
Systemgeber *system supplier*	**SCHÜCO International KG** Karolinenstr. 1-15, DE 33609 Bielefeld

Mit diesem Zertifikat wird bescheinigt, dass der benannte Systemgeber mit den benannten Bauprodukten den Anforderungen des zugrundeliegenden ift-Zertifizierungsprogramms in der aktuellen Fassung entspricht.

- Durchführung von Systemprüfungen (type test) durch eine akkreditierte Prüfstelle nach EN 13830 : 2003 und Weitergabe der Prüfergebnisse über Cascaded-Verfahren an den Hersteller entsprechend Art.36 BauPVO
- Erstellung einer technischen Dokumentation mittels Systembeschreibung, ift-Systempass, Prüfnachweise, Verarbeitungsvorgaben
- Einführung und Aufrechterhaltung von Vorgaben einer werkseigenen Produktionskontrolle für den Hersteller durch den Systemgeber
- Kontinuierliche Fremdüberwachung des Systemgebers durch ift-Zert

Dieses Zertifikat wurde erstmals am 01.10.2019 ausgestellt. Die aktuelle Version gilt bis zum 30.09.2025, wenn sich zwischenzeitlich die Inhalte der technischen Dokumentation in Verbindung mit dem ift-Systempass oder in der werkseigenen Produktionskontrolle selbst nicht wesentlich verändert haben.

Das Zertifikat darf nur unverändert vervielfältigt werden. Alle Änderungen der Voraussetzungen für die Zertifizierung sind dem ift-Zert mit den erforderlichen Nachweisen unverzüglich schriftlich anzuzeigen.

This certificate attests that the system li with the building products mentio requirements of the underlying ift-certifica current version.

- Performance of system tests (type tes testing laboratory according to EN 1 transfer of the test results to the cascaded procedures according to Ar
- Preparation of technical documenta system description, ift system passpo processing specifications
- Implementation and maintenance of control requirements for the manufact licenser
- Continuous third-party control of the p the factory production control by ift-Ze

This certificate was first issued on 01.10. version is valid until 30.09.2025, as lo conditions laid down in the technica conjunction with ift-system pass listed a factory production control itself are modifie

The reproduction of the certificate without the original is permitted. Any changes to applicable to certification shall be immediat in writing to ift-Zert accompanied by the ne

Rosenheim
01.10.2022

Christian Kehrer
Leiter der ift-Zertifizierungs- und Überwachungsstelle
Head of ift Certification and Surveillance Body

ift Rosenheim
akkreditierte Produktzertifizierungsstelle
PZ
EN 17065

Gültig bis / *Valid until:* **30.09.2025**

ift-Produktpass / *ift-product passport:* **15-001311-PR0**

Vertragsnr. / *Contract No.:* **181SG 7612120**

ift-Nachweis

Classification Report

Number	21-004208-PR17 (NW-A05-02-en-01)
Owner	SCHÜCO International KG Karolinenstr. 1-15 33609 Bielefeld Germany
Product	Single roof window, all sides inserted in a fra tion of the facade system Schüco FWS 50
Designation	System: Schüco AW RO 50
Details	Manufacturer SCHÜCO International KG, - Biel Material Aluminium system with thermal break Type of opening Top-hung casement; Opening direc Overall dimensions (W x H) 2152 mm x 1352 mm
Special features	The specimen was tested with 2° roof pitch.

Result **)

Air permeability according to EN 12207:2016-12

Class: 4

Resistance to wind load according to EN 12210:2016-03

Class: C5/B5

Watertightness according to EN 12208:1999-11

Class: E1500

**) Decision rule: For the evaluation of conformity, the measurement uncertainty was not ta

ift Rosenheim
20.10.2022

Thomas Krichbaumer
Deputy Head of Testing Department
Personal Protective Equipment (PPE)

Joachim Berkensträter
Operating Testing Officer
Building Component Testing

(01.01.2022)

ift System Passpo

Curtain walling according to EN 1383

Number	**15-001311-PR01** (SP-B01-UZ02-en-03)
Validity	The validity of this ift System Passport is linked to the validity of the ift Certificate of Conformity No. 181SG 7612120-1.
Client (System supplier)	SCHÜCO International KG Karolinenstr. 1-15 33609 Bielefeld Germany
System / System versions	FWS 50 / FWS 50.HI / FWS 50.SI / FWS 50.SI Gr FWS 50 S / FWS 50 S.HI / FWS 50 S.SI
Product families	Stick construction
Framing material	Aluminium

Performance characteristics (as per EN 13830:20

Characteristics	Reaction to fire	Resistance to fire	Fire propagation	Watertightness	Resistance to own dead load
Class / value	npd*)	npd*)	npd*)	up to RE_{1200}	npd*)
Characteristics	**Thermal shock resistance**	**Resistance to horizontal load**	**Air permeability**	**Water vapour permeability**	**Conductivity**
Class / value	npd*)	npd*)	up to AE	npd*)	$U_{cw} \leq$ 0.80 W/(m²K

Further characteristics / Evidence

Characteristics	Dynamic watertightness test as per EN 13050	Transom-mullion-connections	Clamping connections	Burglar resistance	Lightning protection
Class / value	no water penetration ****)	abZ ETA	abZ	up to RC3	up to N

*) *evidence for purpose-designed systems – as necessary*

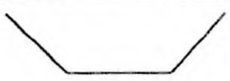
**) *design load (in kN/m²) positive pressure +2.0; negative pressure -2.0; safety load (in kN/m²) positive pressure +3.0; negative pressure -3.0*

***) *maintenance instructions as per EN 13830:2003-09, Annex B*

****) *no water penetration at pmin 250 Pa/ pmax 750 Pa*

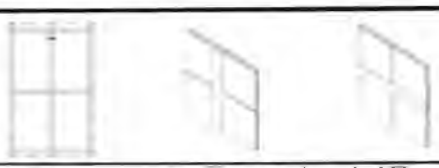
1 Summary of performance characteristics

1.1 Summary of performance characteristics as per E

Section	Symbol	Characteristics as per EN 13830	Pro
			
			Stick constructio
			 **segmented**
			✓
		**System boundaries**	
		max. field grid dimension	3,000 mm x 3,550 mm
4.1		**Resistance to wind load**	Design load **± 2.0 kN/m² /** Safety load **± 3.0 kN**
4.2		**Dead load (self-weight)**	
4.3		**Impact resistance internal**	**u**
		Impact resistance external	**u**
4.4		**Air permeability**	**u**
4.5		**Watertightness**	**up to RE 1200**
4.6		**Airborne sound insulation**	**$R_w(C;C_{tr})$ u**
4.7		**Conductivity**	**$U_{cw} \leq 0$**
4.8		**Fire resistance Integrity (E)**	**up to E 120 (i→o)** (part configu
		Fire resistance Integrity and insulation (EI)	**up to EI 120 (i←o)** (part configu
4.9		**Reaction to fire**	
4.10		**Fire propagation**	
4.11		**Mechanical durability**	Maintenance instruction
4.12		**Water vapour permeability**	
4.15		**Thermal shock resistance**	
		Resistance to	

1.2 Performance characteristics according to further standards / regulations

Further evidence of additional performance characteristics was provided for this product family and is listed in the following:

Section	Symbol	Characteristics	Product family	
				
			Stick construction 50 mm projected width	
			 segmented	 a
			✓	✓
-		Dynamic watertightness test as per EN 13050	**P_{min} 250 Pa / P_{max} 750 Pa**	
-		Air permeability as per CWCT, Section 5	**PASS** maximum test pressure: 600 Pa	
-		Watertightness - static, as per CWCT, Section 6	**PASS** maximum test pressure: 600 Pa	
-		Watertightness - dynamic, with aircraft engine as per CWCT, Section 7	**PASS** maximum test pressure: 600 Pa	
-		Watertightness - Hose test as per CWCT, Section 9	**PASS**	
-		Resistance to wind load as per CWCT, Section 11 and 12	**PASS** Maximum test pressure (Usability): ± 2,400 Pa Maximum test pressure (Safety): ± 3,600 Pa	
-		Impact resistance as per CWCT, Section 15	External Impact - Safety Soft Body **PASS** Weight: 50 kg Drop height: 950 mm	Internal Impact - Safety Soft Body- **PASS** Weight: 50 kg Drop height: 950 mm
-		Transom-mullion-connections (T-connection) for facade constructions	**National technical approval is available** **ETA is available** (for T-joints in combination with glass supports and intersection glass supports)	
-		Clamping connections for facade systems with aluminium mullion and transom profiles	**National technical approval is available**	
-		Burglar resistance as per EN 1627	**up to RC3**	
-		Lightning protection	**up to N**	
-		Bullet resistance as per EN 1522	**up to FB4 NS**	
-		Pendulum tests	**up to category A**	

ift System Passport

Curtain walling according to EN 13830

N°	15-001311-PR01 (SP-B01-UZ02-en-03) dated 14.09.2022
Client	SCHÜCO International KG, 33609 Bielefeld, (Germany)

Note: The listed performance characteristics represent the product characteristics of the performance characteristics shall be verified in each individual case.

2 Overview of the performance of individual product families

The tables below show the essential evidences.

Table 1 Evidences Air permeability, Watertightness, Resistance to wind load, Impact resistance

Product	Evidence of Performance	Date	Air permeability	Watertightness	Resistance to wind load	Impact resistance
Stick construction FWS 50, FWS 50.HI, FWS 50.SI	Test report 14-001595-PR02 **ift** Rosenheim Overall dimension Test sample (W x H): 6,050 mm x 7,260 mm max. field grid dimension: 3,000 mm x 3,550 mm	24.08.2015	**AE**	static: **RE 1200**	Design load **± 2.0 kN/m²**	**I5 / E5**
				dynamic: **P_{min} 250 Pa P_{max} 750 Pa**	Safety load **± 3.0 kN/m²**	
Stick construction FWS 50.HI	Test report 14-001595-PR03 **ift** Rosenheim Overall dimension Test sample (W x H): 3,050 mm x 3,170 mm max. field grid dimension: 500 mm x 500 mm	24.08.2015	**AE**	static: **RE 1200**	Design load **± 2.0 kN/m²**	**I5 / E5**
					Safety load **± 3.0 kN/m²**	
Stick construction FWS 50, FWS 50.HI, FWS 50.SI	Expert statement 14-001595-PR01 **ift** Rosenheim maximum field dimensions 3,240 mm x 6,000 mm 6,000 mm x 3,240 mm	14.12.2015	**AE**	static: **RE 750**	Design load **± 0.8 kN/m²**	**I5 / E5**
				dynamic: **P_{min} 250 Pa P_{max} 750 Pa**	Safety load **± 1.2 kN/m²**	
Stick construction FWS 50 S, FWS 50 S.HI, FWS 50 S.SI, FWS 50.SI Green	Expert statement 15-002814-PR01 **ift** Rosenheim	16.01.2018	**AE**	static: **RE 1200**	Design load **± 2.0 kN/m²**	**I5 / E5**
				dynamic: **P_{min} 250 Pa P_{max} 750 Pa**	Safety load **± 3.0 kN/m²**	

Scope: All facades of the same design (e.g. screw fixing of pressure plates, connectors, cleats, etc.) and same material with slightly smaller or same grid dimensions are subject to compliance with deflection limit of framing (structural evidence) or according to the requirements or restrictions set out in the reference standards and documents.

Table 2 Evidences as per CWCT
Air permeability (CWCT, Section 5)
Watertightness - static (CWCT, Section 6)
Watertightness - dynamic watertightness test with aircraft engine (CW
Watertightness – hose test (CWCT, Section 9)
Resistance to wind load (CWCT, Section 11 and Section 12)
Impact resistance (CWCT, Section 15)

Product	**Evidence of Performance**	**Date**	 Air permeability	 Watertightnes
FWS 50	Test Report DPP/R16398 WINTECH Overall dimension reference sample, test sample (W x H): 7,200 mm x 8,000 mm	23.11.2016	**PASS** maximum test pressure: 600 Pa	static: **PASS** maximum te pressure: 600 Pa
				dynamic, with aircraft engin **PASS** maximum te pressure: 600 Pa
				Hose test: **PASS**

Table 3 Evidences Direct airborne sound insulation

Product	Evidence of Performance	Date	additional information	Direct airborne sound insulation
Fixed facade element, one-piece FWS 50	Test report 15-000241-PR02 **ift** Rosenheim Overall dimension Test sample (W x H): 1,230 mm x 1,480 mm	02.11.2015	Cover plate 110840 Glazing 32 dB 4/12/4/12/4	R_w (C; C_{tr}) = 32 (-1;-4) dB
			Cover plate 110840 Glazing 35 dB 6/16/4	R_w (C; C_{tr}) = 35 (-2;-5) dB
			Cover plate 110840 Glazing 36 dB 6/12/4/12/4	R_w (C; C_{tr}) = 37 (-2;-5) dB
			Cover plate 110840 Glazing 39 dB 10/20/4	R_w (C; C_{tr}) = 37 (-1;-5) dB
			Cover plate 110840 Glazing 39 dB 8/12/4/12/6	R_w (C; C_{tr}) = 38 (-1;-4) dB
			Cover plate 110840 Glazing 42 dB 8LSG/12/4/12/6	R_w (C; C_{tr}) = 40 (-1;-4) dB
			Cover plate 110840 Glazing 46 dB 10/12/6/12/8 LSG inactive leaf	R_w (C; C_{tr}) = 45 (-2;-4) dB
			Cover plate 110840 Glazing 50 dB 12 LSG inactive leaf/12/6/12/ 8 LSG inactive leaf	R_w (C; C_{tr}) = 47 (-1;-4) dB
			Cover plate 110840 Glazing 51 dB 15 LSG inactive leaf/24/8 LSG inactive leaf	R_w (C; C_{tr}) = 48 (-2;-4) dB
			Cover plate 110840 Glazing 54dB 18 LSG inactive leaf/27/ 12 LSG inactive leaf	R_w (C; C_{tr}) = 48 (-1;-3) dB
			Cover plate 307790 Glazing 54 dB 18 LSG inactive leaf/27/ 12 LSG inactive leaf	R_w (C; C_{tr}) = 47 (-1;-3) dB

Product	Evidence of Performance	Date	additional information		Direct airborne sound insulation
Stick construction FWS 50, FWS 50.HI, FWS 50.SI, FWS 50.SI Green	Expert statement 15-000241-PR03 **ift** Rosenheim Overall dimension Test sample (W x H): 1,230 mm x 1,480 mm	23.11.2015	see Expert statement Extrapolation for - alternative insulation variants - alternative supporting structure profiles - alternative pressure plates / cover profiles (group 1 or 2)		
			Group	Group of cover profiles (1 or 2) see Expert statements	
			1 and 2	Glazing 32 dB 4/12/4/12/4	R_w (C; C_{tr}) = **32 (-1;-4) dB**
				Glazing 35 dB 6/16/4	R_w (C; C_{tr}) = **35 (-2;-5) dB**
				Glazing 36 dB 6/12/4/12/4	R_w (C; C_{tr}) = **37 (-2;-5) dB**
			1	Glazing 39 dB 10/20/4	R_w (C; C_{tr}) = **37 (-1;-5) dB**
			2		R_w (C; C_{tr}) = **37 (-2;-5) dB**
			1	Glazing 39 dB 8/12/4/12/6	R_w (C; C_{tr}) = **38 (-1;-4) dB**
			2		R_w (C; C_{tr}) = **38 (-2;-4) dB**
			1	Glazing 42 dB 8LSG/ 12/4/12/6	R_w (C; C_{tr}) = **40 (-1;-4) dB**
			2		R_w (C; C_{tr}) = **40 (-2;-4) dB**
			1	Glazing 46 dB 10/12/6/12/8 LSG inactive leaf	R_w (C; C_{tr}) = **45 (-2;-4) dB**
			2		R_w (C; C_{tr}) = **41 (-1;-4) dB**

Product	Evidence of Performance	Date	additional information		Direct airborne sound insulation
Stick construction FWS 50, FWS 50.HI, FWS 50.SI, FWS 50.SI Green	Expert statement 15-000241-PR03 **ift** Rosenheim Overall dimension Test sample (W x H): 1,230 mm x 1,480 mm	23.11.2015	1	Glazing 50 dB 12 LSG inactive leaf/12/6/12/8 LSG inactive leaf	R_w (C; C_{tr}) = 47 (-1;-4) dB
			2		R_w (C; C_{tr}) = 46 (-1;-4) dB
			1	Glazing 51 dB 15 LSG inactive leaf/24/8 LSG inactive leaf	R_w (C; C_{tr}) = 48 (-2;-4) dB
			2		R_w (C; C_{tr}) = 46 (-1;-3) dB
			1	Glazing 54 dB 18 LSG inactive leaf/27/12 LSG inactive leaf	R_w (C; C_{tr}) = 48 (-1;-3) dB
			2		R_w (C; C_{tr}) = 47 (-1;-3) dB

Scope: According to the requirements or restrictions set out in the reference standards and documents.

Table 4 Evidences Thermal transmittance

Product	Evidence of Performance	Date	additional information	Thermal transmittance
Aluminium facade profile Mullion FWS 50.HI	Test report 15-000244-PR01 **ift** Rosenheim	06.10.2015	Frame facade profile FWS 50.HI with stainless steel screw	U_f = **1.9 W/(m²K)**
			Frame facade profile FWS 50.HI with plastic screw	U_f = **1.8 W/(m²K)**
			Additional thermal transmittance due to the influence of screw connection according to EN 12631:2012-01	ΔU = **0.17 W/(m²K)**
Stick construction FWS 50.SI	Certificate 0793 Passivhaus Institut Dr. Wolfgang Feist Darmstadt	-/-	Aluminium stick construction with rebate insulation made of PE and PET foam with Al pressure profile. Reduction of radiant heat exchange due to low emitting adhesive foil, Glass thickness 46 mm, Glazing depth 13 mm (Details see certificate)	U_{cw}= **≤ 0.80 W/(m²K)** $U_{cw, built-in}$ **≤ 0.80 W/(m²K)**

Scope: According to the requirements or restrictions set out in the reference standards and documents.

Table 5 Evidences Resistance to fire(part configuration, according to EN 1364-4:2007)

Product	Evidence of Performance	Date	additional information	Resistance to fire
Stick construction FWS 50	Expert statement (2100/522/15) – TP MPA Braunschweig	30.07.2015	Curtain walling (part configuration as parapet in combination with flashings)	**E 120 (i→o) EI 120 (i←o)-ef**
Curtain walling (parapet) „FW 50 Brüstung/ Schürze“	Test report 3059/309/10 – TP[1)] MPA Braunschweig	12.10.2010	Testing of a curtain wall as an elevated parapet in combination with flashings without fire-resistant glazing to determine the fire resistance duration	-
	Classification report K-3729/989/10-MPA BS[1)] MPA Braunschweig	04.03.2011	Fire exposure from inside	**E 120 (i→o)**
			Fire exposure from outside	**EI 120 (i←o)-ef**
			Horizontal linear gap seal	**EI 120**
Curtain walling (flashings) „FW 50 Brüstung/ Schürze“	Test report 3609/060/10 – TP[1)] MPA Braunschweig	01.10.2010	Testing of a curtain wall as an elevated parapet in combination with flashings without fire-resistant glazing to determine the fire resistance duration	-
	Classification report K-3728/988/10-MPA BS[1)] MPA Braunschweig	04.03.2011	Fire exposure from inside	**E 120 (i→o)**
			Fire exposure from outside	**EI 120 (i←o)-ef**
			Horizontal linear gap seal	**EI 120**

Scope: According to the requirements or restrictions set out in the reference standards and documents.
[1)] forms the basis for the expert statement FWS 50

Table 6 Evidences Transom-mullion-connections in combination with glass supports and intersection glass supports

Product	Evidence of Performance	Date	additional information	 Transom-mullion-connections
Transom-mullion-connections with and without intersection glass support FWS 50	National technical approval Z-14.4-464	31.07.2017	-/-	The permissible values / loads in combination of the connections and profiles can be found in the national technical approval.
Transom-mullion-connections in combination with glass supports FWS 50	National technical approval Z-14.4-754	07.12.2010	-/-	The permissible values / loads in combination of the connections and profiles can be found in the national technical approval.
Transom-mullion-connections with intersection glass supports FWS 50, FWS 50 S	European Technical Assessment ETA-18/0240	25.05.2018	-/-	The permissible values / loads in combination of the connections and profiles can be found in the ETA.

Scope: According to the requirements or restrictions set out in the reference standards and documents.

Table 7 Evidences Clamping connections

Product family	Evidence of Performance	Date	additional information	 Clamping connections
Clamping connection FWS 50	National technical approval Z-14.4-452	27.07.2017	-/-	The permissible values / loads in combination of the connections and profiles can be found in the national technical approval.

Scope: According to the requirements or restrictions set out in the reference standards and documents.

Table 8 Evidences Burglar resistance

Product	Evidence of Performance	Date	additional information	Burglar resistance
Stick construction FWS 50	Test report 15-000806-PR01 **ift** Rosenheim Overall dimension Test sample (W x H): 2,264 mm x 7,260 mm max. field grid dimension: 3,000 mm x 2,260 mm	15.09.2015	Securing the fixing of glazing with adhesive, Screw connection of pressure profiles secured against loosening	**RC 2 / RC 2 N**
Stick construction FWS 50, FWS 50.HI, FWS 50.SI, FWS 50 S, FWS 50 S.HI, FWS 50 S.SI Integral-master in FWS 50/60	Expert statement 15-000806-PR02 **ift** Rosenheim max. field grid dimension (W x H): 3,240 mm x 6,000 mm	12.03.2021	see expert statement Extrapolation for - alternative insulation variants - alternative supporting structure profiles - max. grid dimensions / axial dimensions - max. applicable glass thickness - Execution of an all-glass corner	**RC 2 / RC 2 N**
Stick construction FWS 50, FWS 50.HI, FWS 50.SI	Expert statement 15-000806-PR03 **ift** Rosenheim max. field grid dimension (W x H): 3,240 mm x 6,000 mm	02.08.2022	see expert statement Extrapolation for - alternative insulation variants - alternative supporting structure profiles - max. grid dimensions / axial dimensions - max. applicable glass thickness - combinatorial element	**RC 3**

Scope: All facades with the same or larger dimensions in compliance with the specifications, e.g. for pressure plate screw connection or securing the fixing of glazing or according to the requirements or restrictions set out in the reference standards and documents.

Table 9 Evidence Lightning protection

Product family	Evidence of Performance	Date	additional information	Lightning protection
Lightning protection braid	Test report 30635/02-03-07 ELEMKO S.A. 32200, Thiva, Greece	09.01.2015	Transmission only upon consultation between manufacturer and testing body. The information on the scope contained in the test report must be observed.	**N**

Table 10 Evidences Bullet resistance

Product family	Evidence of Performance	Date	additional information	Bullet resistance
FW 50⁺, FW 60⁺ façade element	Evidence of performance DSM 00 038, Beschussamt Ulm	06.03.2000	Transmission only upon consultation between manufacturer and testing body (Beschussamt Ulm)	**FB4 NS**
FW 50⁺ Facade element with connection to window and door system	Test report S 12 0030 07 / B Beschussamt Ulm	28.06.2012	Transmission only upon consultation between manufacturer and testing body (Beschussamt Ulm)	**FB4 NS**
FW 50⁺ Facade element door ADS 90 BR	Test report S 12 0030 08 / B Beschussamt Ulm	28.06.2012	Transmission only upon consultation between manufacturer and testing body (Beschussamt Ulm)	**FB4 S**

The tests were carried out on facades from the systems FW 50⁺ / FW 60⁺, the transmission to FWS 50 has to be agreed separately with the testing body, was recorded here for information purposes.
(The essential construction details are identical for the systems FW50⁺ / FW60⁺ and FWS50 / FWS60)

Table 11 Evidences Pendulum tests

Product family	Evidence of Performance	Date	additional information	Pendulum tests
Facade systems of profile series FWS 50	National technical test certificate (AbP) VT 15-038.1P Verrotec GmbH	20.10.2015	The information on the scope contained in the national technical test certificate must be observed.	**Category A**
Clamping connection for safety barrier glazing of facade system FW 50+,(*)	National technical test certificate (AbP) 01/2015 Technische Universität Braunschweig	01.03.2015	The information on the scope contained in the national technical test certificate must be observed.	**Category A**
Facade systems of profile series FWS 50	National technical test certificate (AbP) VT 17-072.1P Verrotec GmbH	25.04.2019	The information on the scope contained in the national technical test certificate must be observed.	**Category A**

(*) The tests were carried out on facades from the systems FW 50+ / FW 60+, the transmission to FWS 50 has to be agreed separately with the testing body, was recorded here for information purposes.

Table 12 Evidences for drainage and ventilation

Vendor part / Component	Type / Manufacturer	Evidence / Certificate	Comments
Drainage system and ventilation system	- total ventilation - field ventilation / Schüco International KG	Test report P17-245/2015 dated 08.08.2016 Fraunhofer-Institiut für Bauphysik IBP	Functionality of drainage and ventilation of a facade construction in thermally insulated rebate areas

Table 13 Evidences for vendor parts

Vendor part / Component	Type / Manufacturer	Evidence / Certificate	Comments
Seals/Gaskets	EPDM / Schüco International KG	see test evidence / reports from Table 1	-/-
Profiles	FWS 50 / Schüco International KG	-/-	without thermally insulated composite profiles

Scope: According to the requirements or restrictions set out in the reference standards and documents.

3 System description

The list of evidences according to section 2 was basis for the ift system passport in accordance with certification scheme QM320SG. This list may not completely cover all possible variants specified in the system description. The ift System Passport is defined by the listed verifications and the field of direct application according to the product standard. The licenser is responsible for updating the system description.

3.1 Profiles

Table 14 Approved main profiles

Type	Item n°/ version	Material	Additional information	Evidence of Performance
Mullion profiles	Mullion variants (E3), FWS 50	Aluminium, extruded precision profiles from the alloy EN AW 6060 – T66 (as specified by the manufacturer)	see Schüco drawing K1013901	Expert statement 15-002814-PR01 **ift** Rosenheim
	Mullion variants (E3), FWS 50 S		see Schüco drawing K1014443	
	Mullion variants FWS 50		see Schüco drawing K1013892	
	Mullion variants FWS 50 S		see Schüco drawing K1014442	
Mounting mullion	Mounting mullion variants FWS 50, FWS 50 S	Aluminium, extruded precision profiles from the alloy EN AW 6060 – T66 (as specified by the manufacturer)	see Schüco drawings K1013901 K1014443 K1013892 K1014442	Expert statement 15-002814-PR01 **ift** Rosenheim
Transom profiles	Transom variants (E1 + E2) FWS 50 S	Aluminium, extruded precision profiles from the alloy EN AW 6060 – T66 (as specified by the manufacturer)	see Schüco drawing K1014443	Expert statement 15-002814-PR01 **ift** Rosenheim
	Transom variants and supplementary profiles FWS 50		see Schüco drawing K1013893	
Pressure plates	Cover profile variants and end caps FWS 50	Aluminium, extruded precision profiles from the alloy EN AW 6060 – T66 (as specified by the manufacturer)	see Schüco drawing K1013894	Expert statement 15-002814-PR01 **ift** Rosenheim

Type	Item n°/ version	Material	Additional information	Evidence of Performance
Cover plates	Cover profile variants and end caps FWS 50	Aluminium, extruded precision profiles from the alloy EN AW 6060 – T66 (as specified by the manufacturer)	see Schüco drawing K1013894	Expert statement 15-002814-PR01 **ift** Rosenheim
T-connector	T-connector variants	-	see processing instructions	Expert statement 15-002814-PR01 **ift** Rosenheim

Table 15 Tested main profiles

Type	Item n°/ version	Material	Additional information	Evidence of Performance
Mullion profiles	326250, Installation depth 175 mm	Aluminium, extruded precision profiles from the alloy EN AW 6060 – T66 (as specified by the manufacturer)	-/-	Test report 14-001595-PR02 **ift** Rosenheim
	322310, Installation depth 175 mm			
	323470, Installation depth 105 mm		-/-	Test report 14-001595-PR03 **ift** Rosenheim
	336240, Installation depth 250 mm		-/-	Expert statement 14-001595-PR01 **ift** Rosenheim
Mounting mullion	369520 + 369530 (mounting mullion 2-part); Installation depth 200 mm	Aluminium, extruded precision profiles from the alloy EN AW 6060 – T66 (as specified by the manufacturer)	-/-	Test report 14-001595-PR02 **ift** Rosenheim

Type	Item n°/ version	Material	Additional information	Evidence of Performance
Transom profiles	322440 (E1), Installation depth 155 mm	Aluminium, extruded precision profiles from the alloy EN AW 6060 – T66 (as specified by the manufacturer)	-/-	Test report 14-001595-PR02 **ift** Rosenheim
	322360 (E2), Installation depth 149 mm			
	322430 (E1), Installation depth 130 mm			
	322420 (E1), installation depth 110 mm		-/-	Test report 14-001595-PR03 **ift** Rosenheim
Pressure plates	477620 FWS 50	Aluminium, extruded precision profiles from the alloy EN AW 6060 – T66 (as specified by the manufacturer)	-/-	Test report 14-001595-PR02 **ift** Rosenheim
	477630 FWS 50.HI			
	477640 FWS 50.SI			
	477630 FWS 50.HI		-/-	Test report 14-001595-PR03
Cover plates	110840	Aluminium, extruded precision profiles from the alloy EN AW 6060 – T66 (as specified by the manufacturer)	-/-	Test Reports 14-001595-PR02 14-001595-PR03 **ift** Rosenheim
	112720			
T-connector	226081 (Knob-T-connector)	-	additionally for all T-joints item n° 205827, 2 special screws, see processing drawing	Test report 14-001595-PR02 **ift** Rosenheim
	175780 (U-T-connector)			
	242292 (T-connector heavy loads)			
	226083 (Spring bolt T-connector)			
	176040 (T-connector profile slanted connection)			
	226081		2 screws item n° 205827	Test report 14-001595-PR03 **ift** Rosenheim

3.2 Seals/Gaskets

Table 16 Approved seals/gaskets

Function	Item number	Material	Corner design	Evidence of Performance
Glazing gasket variants FWS 50	see Schüco drawing K1017166 K1013896	EPDM	Variant 1: Vertical seal notched, horizontal seal butt-jointed and sealed with elastic sealant Schüco Flex 2 item n°298900	Expert statement 15-002814-PR01 **ift** Rosenheim
			Variant 2: Vertical seal interrupted with transom seal item n°217585. horizontal seal butt-jointed and sealed with elastic sealant Schüco Flex 2 item n°298900	
			Variant 3: Same as variant 2 with insert transom seal item n°217585, inserted horizontal and vertical seal with sealing corners; joints between seals and sealing corners sealed with elastic sealant Schüco Flex 2 item n°298900	
			Variant 4: Vertical seal interrupted with sealing cord item n°224636, horizontal seal butt-jointed and sealed with elastic sealant Schüco Flex 2 item n°298900	

Table 17 Tested seals/gaskets

Function	Item number	Material	Corner design	Evidence of Performance
Seal/gasket cross FWS 50, FWS 50.HI, FWS 50.SI,	224837	EPDM	Cross joint vertically continuous, horizontally butt-jointed	Test report 14-001595-PR02 **ift** Rosenheim
	268717	EPDM		Test report 14-001595-PR03 **ift** Rosenheim
External glazing gasket (at pressure profile)	246476	EPDM	vertically continuous, horizontally butt-jointed, sealed in corner area sealing cross item n°268717 or 224837, EPDM, see processing drawing	Test report 14-001595-PR02 **ift** Rosenheim
			vertically continuous, horizontally butt-jointed, sealed in corner area with sealing plate item n°281295, see processing drawing	Test report 14-001595-PR02 **ift** Rosenheim
			vertically continuous, horizontally butt-jointed, sealed in crossing area of pressure plates with sealing cross item n°224837	Test report 14-001595-PR03 **ift** Rosenheim
Internal glazing gasket (in structural support)	horizontal: 204533 244293 278189 246930 224662 vertical: 244293 244295 246930	EPDM	Variant 1: Vertical seal notched, horizontal seal butt-jointed and sealed with elastic sealant Schüco Flex 2 item n°298900	Test report 14-001595-PR02 **ift** Rosenheim
				Test report 14-001595-PR03 **ift** Rosenheim
			Variant 2: Vertical seal interrupted with transom seal item n°217585, horizontal seal butt-jointed and sealed with elastic sealant Schüco Flex 2 item n°298900	Test report 14-001595-PR02 **ift** Rosenheim
				Test report 14-001595-PR03 **ift** Rosenheim
			Variant 3: Same as variant 2 with application transom seal item n°217585, inserted horizontal and vertical seal with sealing corners item n° 246694 or 246696; joints between seals and sealing corners sealed with elastic sealant Schüco Flex 2 item n°298900	Test report 14-001595-PR02 **ift** Rosenheim
			Variant 4: Vertical seal interrupted with sealing cord item n°224636, horizontal seal butt-jointed and sealed with elastic sealant Schüco Flex 2 item n°298900	Test report 14-001595-PR02 **ift** Rosenheim

Function	Item number	Material	Corner design	Evidence of Performance
Internal glazing gasket (in structural support)	horizontal: 204506 vertical: 244295	EPDM	made as circumferential sealing frame Item n° 224008	Test report 14-001595-PR02 **ift** Rosenheim
Sealing of mounting mullion	204029 (internal/centre)	EPDM	without, vertically continuous	Test report 14-001595-PR02 **ift** Rosenheim
	246648 (external)	EPDM	without, vertically continuous	

3.3 T-connectors

Table 18 Approved T-connectors

Connector type	Item No.	Material	Comments:	Evidence of Performance
Knob T-connector	see Schüco drawing K1013927, K1013923	-	additionally for all T-joints item n° 205827, 2 special screws, see processing drawing	Expert statement 15-002814-PR01 **ift** Rosenheim National technical approval Z-14.4-754 European Technical Assessment ETA-18/0240
U-TV profile	see Schüco drawing K1013936, K1013923	-		
Spring bolt T-connector	see Schüco drawing K1013931, K1013923	-		
T-connector profile, slanted connection	see Schüco drawing K1013923	-		

Table 19 Tested T-connectors

Connector type	Item No.	Material	Comments:	Evidence of Performance
Knob T-connector	226081	-	additionally for all T-joints item n° 205827, 2 special screws, see processing drawing	Test report 14-001595-PR02 **ift** Rosenheim
U-TV profile	175780	-		
Spring bolt T-connector	226083	-		
T-connector profile, slanted connection	176040	-		
Knob-T-connector	226081	-	additional 2 screws Item n°205827	Test report 14-001595-PR03 **ift** Rosenheim

3.4 Glass support

Table 20 Approved glass supports

Function	Item number	Material	Comments:	Evidence of Performance
Standard (bolted in transom)	see Schüco drawing K1014194	Aluminium	Glass thickness up to 68 mm	Expert statement 15-002814-PR01 **ift** Rosenheim
Increased glass loads (bolted and screw-fastened in transom)	see Schüco drawing K1014194	Aluminium	Glass thickness up to 68 mm	Expert statement 15-002814-PR01 **ift** Rosenheim
Intersection glass support (screw-fastened in mullion and transom)	see Schüco drawing K1014194	Aluminium	Glass thickness up to 86 mm	Expert statement 15-002814-PR01 **ift** Rosenheim

Table 21 Tested glass supports

Function	Item number	Material	Comments:	Evidence of Performance
Standard (bolted in transom)	268608	Aluminium	Glass thickness 34-38 mm	Test report 14-001595-PR02 **ift** Rosenheim
	268609	Aluminium	Glass thickness 40-44 mm	
	268608	Aluminium	Glass thickness 34-38 mm	Test Reports 14-001595-PR03 **ift** Rosenheim
Increased glass loads (bolted and screw-fastened in transom)	with screwed-on glass support 268617 (E1)	Aluminium	Glass thickness 34-38 mm	Test report 14-001595-PR02 **ift** Rosenheim
	with screwed-on glass support 268633 (E2)	Aluminium	Glass thickness 34-38 mm	Test report 14-001595-PR02 **Ift** Rosenheim
Intersection glass support (screw-fastened in mullion and transom)	with screwed-on intersection glass support item n° 267934	Aluminium	Glass thickness 34-38 mm	Test report 14-001595-PR02 **ift** Rosenheim

3.5 Insulators

Table 22 Approved insulators

Type	Item No.	Material	Comments:	Evidence of Performance
Insulators	FWS 50 see Schüco drawing K1014194	uPVC	for glass thickness 22-62 mm	Expert statement 15-002814-PR01 **ift** Rosenheim
	FWS 50.HI see Schüco drawing K1014194	uPVC	for glass thickness 22-62 mm	
	FWS 50.SI see Schüco drawing K1014194	uPVC	for glass thickness 28-86 mm	

Table 23 Tested insulators

Type	Item No.	Material	Comments:	Evidence of Performance
Insulators	268751 (SI)	uPVC	for glass thickness 34-38 mm	Test report 14-001595-PR02 **ift** Rosenheim
	224810 (Standard)	uPVC	for glass thickness 34-38 mm	
	268762 (HI)	uPVC	for glass thickness 34-38 mm	
	268762 (HI)	uPVC	for glass thickness 34-38 mm	Test report 14-001595-PR03 **ift** Rosenheim

3.6 Specifications for screw connection of pressure profiles

Table 24 Screw connection of pressure profiles

Assignment of profiles according to Section 3.1	Frame material	Screw type	Torque rate	Comments	Screw connection distance	
					among each other	Edge distance
Mullion / transom	Aluminium	as 205891 (oval head)	4.5 Nm	-	300 mm	20 mm

(Further variants (e.g. for burglar resistance, flat cover plate) can be found in the corresponding test reports or processing drawings)

3.7 Vapour pressure equalisation / Drainage

Table 25 Vapour pressure equalisation / drainage (tested designs)

Type	Description	Remark / Evidence, reports
System: Total ventilation	ventilation system see Schüco drawing K1014007 Further details can be found in the processing drawing.	Test Reports 14-001595-PR02 14-001595-PR03
System: Per panel ventilation	ventilation system see Schüco drawing K1014007 Further details can be found in the processing drawing.	Test report 14-001595-PR02
Ventilation variants	Functionality of drainage and ventilation of a facade construction in thermally insulated rebate areas	Test report P17-245/2015 Fraunhofer-Institiut für Bauphysik IBP

3.8 System accessories

System accessories, e.g. fixings of the facade, wall connection profiles, mullion joint seals, etc., can be found in the relevant evidences or processing drawings.

3.9 Insert elements / filling elements

- Insulating glass units
- Warm panels in sheet glass and sheet metal design
- Cold parapet
- Clamping frame from AWS/ADS systems

4 General Information on ift-System Passport

4.1 Specified performance characteristics according to the product standard

All listed performance characteristics as per Section 1.1 were tested and evaluated to the test and classification standards contained in the product standard EN 13830. They are based on the evidence of performance/reports presented by the client. At the request of the client, reduced classes/values were displayed if necessary. For more detailed information refer to the respective individual evidence of performance/test reports referring to the performance characteristics listed in Section 2.

4.2 Minimum requirements to curtain walling

Table 26 Minimum requirements for curtain walling according to ift-certification scheme QM320SG

Performance characteristic according to EN 13830:2003	**Classification standard / Verification method**	**Minimum requirement**
Watertightness	EN 12154	R4
Air permeability	EN 12152	A1

4.3 Requirements for vendor parts

Table 27 Requirements for vendor parts according to ift-certification scheme QM320SG

Vendor part / Component	**Requirement** (the current version always applies)	
Seals/Gaskets	Certification scheme QM338* / Alternatively, verification by test report or by testing of air permeability and watertightness as well as operating forces	
Profiles	Wood:	ift-Guideline HO-10/1
	Plastic	RAL-GZ 716* Part 1
	Aluminium	RAL-GZ 695*, Annex 1

* If there are no evidences with regard to the required certification schemes, it shall be checked in the individual case whether a comparable certification system or a comparable system to ensure the constant properties of the components exists.

4.4 Usability of results (optional extras)

The test results determined within the ift licenser certification meet the minimum requirements for rank "ift Quality".

4.5 Basis of the ift-system passport

- Existing surveillance contract n° 181SG 7612120 be tween ift Rosenheim and the client
- Evidences according to section 2
- System description section 3
- annual surveillance of client (licenser)

5 Special instructions for use

The special instructions for use listed in the following are rules for implementation of the different performance characteristics specified by the standard. They are based on the normative provisions and the experience of the **ift** Rosenheim.

This product standard applies to curtain walling kit ranging from a vertical position to ± 15° from th e vertical.

According to the product standard and the Construction Products Regulation, the manufacturer is responsible for ensuring the declared properties.

The overview given in this System Passport is based on the evidence provided. No legal claim can be derived from this.

Notes:

- Insert units (windows and doors) require classification of performance according to EN 14351-1.
- The structural properties of thermal-break profiles shall be taken into account.
- Mullion and transom connectors shall be classified separately.
- Maximum frontal deflection of the curtain walling's framing members shall not exceed l/200 and/or 15 mm.
- Infill panels shall be dimensioned according to the relevant regulations; in Germany the following standards and regulations apply in particular
  - DIN EN 1991-1-4, Actions on structures – General actions – Wind actions
  - DIN 18008-2, Glass in Building - Design and construction rules - Part 2: Linearly supported glazing
  - DIN 18008-4, Glass in Building - Design and construction rules - Part 4: Additional requirements for anti-drop device
- Durability of the performance characteristics of the curtain walling was not verified. It shall be ensured for the specified service life of the product by using appropriate state of the art materials and finishes.
- Connection of the curtain wall to the building structure shall ensure durable load transmission. Design of the connection to the building structure shall be airtight. Absence of condensation shall be ensured based on the national provisions.
- The updating of other applicable, temporary documents is the responsibility of the client (licenser).

ift Rosenheim
14.09.2022