Deutsches Institut für Bautechnik
Zulassungsstelle für Bauprodukte und Bauarten
Bautechnisches Prüfamt
Eine vom Bund und den Ländern gemeinsam getragene Anstalt des öffentlichen Rechts

Kolonnenstraße 30 B
D-10829 Berlin
Tel.: +49 30 78730-0
Fax: +49 30 78730-320
E-Mail: dibt@dibt.de
www.dibt.de

Authorised and notified according to Article 10 of the Council Directive of 21 December 1988 on the approximation of laws, regulations and administrative provisions of Member States relating to construction products (89/106/EEC)

Deutsches Institut für Bautechnik DIBt

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Handelsbezeichnung *Trade name*		SCHÜCO International KG FW 50+ SG und FW 60+ SG *SCHÜCO International KG FW 50+ SG and FW 60+ SG*
Zulassungsinhaber *Holder of approval*		SCHÜCO International KG Karolinenstraße 1-15 33609 Bielefeld
Zulassungsgegenstand und Verwendungszweck *Generic type and use of construction product*		Geklebte lastabtragende Glas-Fassadenkonstruktion, "SCHÜCO International KG FW 50+ SG und FW 60+ SG" und Verklebeprofile für Einfachverglasung *Structural Sealant Glazing Kit for facade constructions; "SCHÜCO International KG FW 50+ SG and FW 60+ SG" and bonding profiles for monolithic glazing*
Geltungsdauer: *Validity:*	vom *from* bis *to*	22 February 2006 21 February 2011
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Herstellwerke *Manufacturing plants*		Siehe Anlage D *see annex D*

Diese Zulassung umfasst *This Approval contains*	50 Seiten einschließlich 31 Anhänge *50 pages including 31 annexes*

I LEGAL BASES AND GENERAL CONDITIONS

1 This European technical approval is issued by Deutsches Institut für Bautechnik in accordance with:

- Council Directive 89/106/EEC of 21 December 1988 on the approximation of laws, regulations and administrative provisions of Member States relating to construction products[1], modified by Council Directive 93/68/EEC[2] and Regulation (EC) N° 1882/2003 of the European Parliament and of the Council[3];
- Gesetz über das In-Verkehr-Bringen von und den freien Warenverkehr mit Bauprodukten zur Umsetzung der Richtlinie 89/106/EWG des Rates vom 21. Dezember 1988 zur Angleichung der Rechts- und Verwaltungsvorschriften der Mitgliedstaaten über Bauprodukte und anderer Rechtsakte der Europäischen Gemeinschaften (Bauproduktengesetz - BauPG) vom 28. April 1998[4], as amended by law of 31 October 2006[5];
- Common Procedural Rules for Requesting, Preparing and the Granting of European technical approvals set out in the Annex to Commission Decision 94/23/EC[6].

2 Deutsches Institut für Bautechnik is authorized to check whether the provisions of this European technical approval are met. Checking may take place in the manufacturing plants. Nevertheless, the responsibility for the conformity of the products to the European technical approval and for their fitness for the intended use remains with the holder of the European technical approval.

3 This European technical approval is not to be transferred to manufacturers or agents of manufacturers other than those indicated on page 1, or manufacturing plants other than those laid down in the annex (number) to this European technical approval.

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1 Official Journal of the European Communities L 40, 11 February 1989, p. 12
2 Official Journal of the European Communities L 220, 30 August 1993, p. 1
3 Official Journal of the European Union L 284, 31 October 2003, p. 25
4 *Bundesgesetzblatt Teil I 1998*, p. 812
5 *Bundesgesetzblatt Teil I 2006*, p. 2407, 2416
6 Official Journal of the European Communities L 17, 20 January 1994, p. 34

II SPECIFIC CONDITIONS OF THE EUROPEAN TECHNICAL APPROVAL

1 Definition of product/ products and intended use

1.1 Definition of the construction product

This European technical approval applies to the infill elements for glass façades with the trade name "SCHÜCO International KG FW 50+ SG and FW 60+ SG", including the structural sealant between the glass panes and the U-profile spacers, the mechanical fixing of the elements to a transom-mullion system (Annex 1) and the retaining devices for the case of structural sealant failure (emergency retainers).
It also applies to the sealant between monolithic glazing and bonding profiles.
The designation "infill elements" includes insulating glass units and monolithic glazing for ventilated façades.

Insulating glass units consist of two panes of glass that are continuously joined along all edges to the infill elements via a U-profile spacer in the factory. These infill elements are punctually anchored to the structure at the construction site using retaining devices inserted into the U-profile with the self-weight of the insulating glass units being always supported by glazing supports. In accordance with the regulations of the Member States, monolithic glazing can also be used without glazing supports. The monolithic glazing is sealed to a U-profile, as it is done with insulating glass units, or to another bonding profile.

The insulated glass units shall not be larger than 2.60 m x 4.20 m (width x height and height x width). The pane thickness and formats are to be adjusted under consideration of the field of application and the required actions. The monolithic glazing for ventilated façades shall not be larger than 1.50 m x 2.00 m (width x height and height x width) with a thickness of the glass panes ≤12 mm.

1.2 Intended use

The infill elements may be used in overhead and vertical areas.

The vertical glazing may be installed vertically or with a slight inclination. The inclination angle with respect to the vertical shall not exceed 10° for inward inclinations, an inclination with a slope to the outside (tensil-stress of the structural sealant by means of the self-weight) is not allowed.

Overhead glazing may be installed at inclinations with respect to the horizontal ranging from 5° to 80°. The structural sealant is to be positioned in such a way that it is not constantly subjected to tensile forces. The lower pane of the insulating glass units is to be of laminated safety glass consisting of two panes of float glass separated by a PVB film or consisting of panes according to the regulations of the respective Member State.

The area of application for the construction is limited to the maximum permissible load (serviceability) of 1.33 kN/m^2 (γ = 1.7) perpendicular to the infill elements.

The infill elements may only be installed at construction heights approved for these types of construction according to the stipulations of the respective Member State. The stipulations of the respective Member State relating to the use of emergency retainers are to be observed.

The infill elements shall not be used for stiffening other components or as safety barrier.

The essential requirements applying to the "SCHÜCO International KG FW 50+ SG and FW 60+ SG" sealed infill elements refer to safety in case of fire (Essential Requirement 2, abbreviated: ER 2), hygiene, health and the environment (ER 3), safety in use (ER 4), protection against noise (ER 5) and energy economy and heat retention (ER 6).

Type I and Type II (as defined in ETAG 002-1, Section 2.1) have been examined within the scope of the approval procedure. Type I: mechanical transfer of the self-weight of the façade element to the support frame and/or structure and then to the substructure. The structural sealant transfers wind suction loads, and devices (emergency retainers) are used to reduce danger in the case of structural sealant failure. Type II: mechanical transfer of the self-weight of the façade element to the support frame and/or structure and then to the substructure. The structural sealant transfers wind suction loads, and no emergency retainers are used.

No examinations of Type III and IV for monolithic glazing were performed within the scope of this approval procedure. The existing European technical approvals for the relevant adhesives are therefore to be consulted.

Regulatory restrictions of the Member States relating to the use of the infill elements are to be taken into consideration.

The stipulations relating to the use of emergency retainers as per Sections 2.1.6 and 2.2.4.3 are to be observed.

1.3 Intended working life of the construction product

The provisions made in this European technical approval are based on an assumed working life of "SCHÜCO International KG FW 50+ SG und FW 60+ SG" of 25 years, provided that the conditions laid down in sections 4.2/5.1/5.2 for packaging / transport / storage / installation / use / maintenance / repair are met. The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the construction.

2 Characteristics of the products and methods of verification

2.1 Product characteristics

2.1.1 Glass panes

2.1.1.1 Float glass (soda lime silicate glass)

The basic glass to be used is float glass made of soda lime silicate glass as per Annex B Section 1, subsequently called float glass.

2.1.1.2 Thermally toughened soda lime silicate safety glass

Float glass as per Section 2.1.1.1 is to be used for manufacturing thermally toughened soda lime silicate safety glass, whereby the stipulations of the Member States as per Annex B, Section 2 are to be observed.

2.1.1.3 Coated glass

The use of coated glass as per Annex A1 and Annex A2 is permitted. If coated glass not listed in Annex A1 or A2 is used then all pane edges that are to be sealed are to be uncoated or the coating is first to be mechanically removed from the edges to be sealed. The glass shall not be damaged by this. The area of glass to be sealed shall always be cleaned and dried before application of the structural sealant.

2.1.1.4 Heat soaked thermally toughened soda lime silicate safety glass

Thermally toughened soda lime silicate safety glass as per Section 2.1.1.2 is to be used for manufacturing heat soaked thermally toughened soda lime silicate safety glass, whereby the stipulations of the Member States as per Annex B, Section 3 are to be observed.

2.1.1.5 Heat strengthened soda lime silicate glass

Float glass as per Section 2.1.1.1 is to be used for manufacturing heat strengthened soda lime silicate glass, whereby the stipulations of the Member States as per Annex B, Section 4 are to be observed.

2.1.1.6 Laminated safety glass

Float glass as per Section 2.1.1.1 or heat strengthened soda lime silicate glass as per Section 2.1.1.5 are to be used for manufacturing laminated safety glass, whereby the stipulations of the Member States as per Annex B, Section 5 are to be observed.

2.1.1.7 Insulating glass units

According to this European technical approval, only glass units made of two panes may be used. The requirements as per Annex B, Section 6 apply.

Heat soaked thermally toughened safety glass as per Section 2.1.1.4 is to be used for the outer pane of the insulating glass units. Glass as per Sections 2.1.1.1 to 2.1.1.6 is to be used for the inner pane (interior pane).

With insulating glass units at inclinations of more than 10° with respect to the vertical, the lower glass pane is to be of laminated safety glass.

The insulating glass units are conform to the regulations for insulating glass units as per EN 1279-5[7].

2.1.2 U-profile spacer, bonding profile for monolithic glazing

The following products are to be used as U-profile spacers into which the glass brackets are inserted and as bonding profile for monolithic glazing:

Product	Art. No.	Surface condition	Adhesives that may be used
EN AW 6060 aluminium one-piece spacers as per EN 573-3[8], state T66 as per EN 755-2[9], profile as per Annex 1	326320	Anodised aluminium: colours E6-C0 to E6-C35, Königsdorf company, Wolfhagen*; colours E6-C0 to E6-C35, HD Wahl company, Jettingen - Scheppach*; colour E6-C05 (1003 bronce), ALCAN company, 89600 Saint Florentin, France*	DC 993 (2.1.8.1) Sikasil SG 500 (2.1.8.2) KÖDIGLAZE S (2.1.8.3)
Two-piece and one-piece stainless steel spacers, material number 1.4301 as per EN 10088-2[10] as per Annex 2 Butyl Isocoll 6773 from Isocoll GmbH, Nördlingen is used for joining the individual parts.	202669, 202670, 202671	2R surface as per DIN EN 10088-2, Table 6	DC 993 (2.1.8.1) Sikasil SG 500 (2.1.8.2) KÖDIGLAZE S (2.1.8.3)

7 EN 1279-5:2005-08 Glass in building - Insulating glass units – Part 5: Evaluation of conformity

8 EN 573-3:2007-11 Aluminium and aluminium alloys - Chemical composition and form of wrought products – Part 3: Chemical composition and form of products

9 EN 755-2:2006-12 Aluminium and aluminium alloys - Extruded rod/bar, tube and profiles – Part 2: Mechanical properties

10 EN 10088-2:2005-09 Stainless steels – Part 2: Technical delivery conditions for sheet/plate and strip of corrosion resisting steels for general purposes

Product	Art. No.	Surface condition	Adhesives that may be used
Bonding profile for monolithic glazing	433460, 440040, 440050, 440060, 352550, 354540	Anodised aluminium: colours E6-C0 to E6-C35, Königsdorf company, Wolfhagen*; colours E6-C0 to E6-C35, HD Wahl company, Jettingen - Scheppach*; colour E6-C05 (1003 bronce), ALCAN company, 89600 Saint Florentin, France*	DC 993 (2.1.8.1) Sikasil SG 500 (2.1.8.2) KÖDIGLAZE S (2.1.8.3)
Bonding profile for monolithic glazing	440040, 440060, 352550, 354540	Anodised aluminium: colours E6-C0 to E6-C35, Königsdorf company, Wolfhagen*; colours E6-C0 to E6-C35, HD Wahl company, Jettingen - Scheppach*	3M VHB G/B23F (2.1.8.3)
* The anodising process is to conform to the specifications of Deutsches Institut für Bautechnik.			

2.1.3 Monolithic glazing

Monolithic glazing as per Annexes 1c, 3, 3a, 3b and 5 is to be of heat soaked soda lime silicate safety glass, whereby the stipulations of the Member States as per Annex B, Section 3 are to be observed. The sealed profiles (Art.-No. 352550, 354540 and 433460, 440040, 440050, 440060) of the monolithic glazing as per Annexes 3 and 5 are profiles as per EN 15088[11] and are to be of EN AW 6060 aluminium as per EN 573-3, state T66 as per EN 755-2. The adhesives specified in the table in Section 2.1.2 may be used for sealing the profiles, when the surface structure and anodising process correspond to the specifications in this table. The stainless steel sealed profiles as per Annex 5 correspond to Art. Nos. 202669 and 202670 as per Section 2.1.2 and may also be used with the adhesives specified in this section.

2.1.4 Glazing supports

Glazing supports 100 mm wide as per Annexes 5a and 5b are used to support the self-weight. The following articles may be used in the systems regulated by this ETA:

[11] EN 15088:2006-03 Aluminium and aluminium alloys - Structural products for construction works - Technical conditions for inspection and delivery

Support for	Art. No.	Type of fixing	Glass support material	Setting block material
System FW50^{+}SG				
Both panes, "standard load"	266674, 266675, 266677, 266676	hung in the post/beam profile	aluminium EN AW 6005A*	silicone (see below)
Inner pane, "standard load"	266673			
Both panes, "increased load"	242297, 242299, 242358, 242359, 242379	two ST5.5 x 23.5 screws (Art.-No. 205963) in the screw channel of the post/beam profile	EN AW 6005A aluminium as per EN 573-3, strength "F27" as per manufacturer designation**	polypropylene – moulding compound (see below)
Inner pane, "increased load"	242298, 242300			
Outer pane	242301	two ST5.5 x 38 screws in the screw channel of the post/beam profile	EN AW 6005A aluminium as per EN 573-3	outer pane lies on the seal, may only be used with dry seal joint
	237525		aluminium EN AW 6060*	
System FW60^{+}SG				
Both panes, "standard load"	266679, 266680, 266682, 266681	hung in the post/beam profile	EN AW 6005A* aluminium	silicone (see below)
Inner pane, "standard load"	266678			
Both panes, "increased load"	242188, 242302, 242360, 242361, 242380	two ST5.5 x 23.5 screws (Art.-No. 205963) in the screw channel of the post/beam profile	EN AW 6005A aluminium as per EN 573-3, strength "F27" as per manufacturer designation**	polypropylene – moulding compound (see below)
Inner pane, "increased load"	242189, 242303			

Outer pane	242301	two ST5.5 x 38 screws in the screw channel of the post/beam profile	EN AW 6005A aluminium as per EN 573-3	outer pane lies on the seal, may only be used with dry glazing
	237525		aluminium EN AW 6060*	

Monolithic glazing				
Glass panes ≤ 1.50 m x 2.00 m d ≤ 12 mm	433600	two ST3.9 x 16 screws in the bonding profile	EN AW 6005A aluminium as per EN 573-3	silicone (see below)
Glass panes ≤ 1.50 m x 2.00 m d ≤ 12 mm	433610, 433620	ST3.9 x 16 screws in the bonding profile, a ≤ 250 mm	EN AW 6005A aluminium as per EN 573-3	silicone (see below)
* Extruded profiles as per EN 15088 of EN AW 6060 aluminium as per EN 573-3, state T66 as per EN 755-2 ** The material properties are deposited with Deutsches Institut für Bautechnik.				

The support surfaces of the glazing supports are of plastic with a Shore A hardness of approx. 70 ± 5 as per DIN 53505[12]. Detailed information on the plastics to be used is deposited with Deutsches Institut für Bautechnik.

2.1.5 Die-cast zinc or extruded aluminium retaining devices

Horizontal loads are transferred by die-cast zinc or extruded aluminium retaining devices. These are inserted into the spacers of the insulating glass units or into the emergency retainer profile or the sealed profiles of monolithic glazing. The stipulations in Section 2.2.4 are to be observed when selecting the retaining devices to be used.

Articles 237855 and 242363 as per Annex 6 and 266003, 266537, 266539 and 266005 as per Annex 7 are to be used as two-sided retaining devices and Articles 237854 and 242362 as per Annex 6a and 266002, 266536, 266538 and 266004 as per Annex 7 are to be used as single-sided retaining devices. These retaining devices are to be of die-cast zinc G-ZnAl 4 Cu 3 (ZP 0430) as per EN 12844[13]. They are to be fixed to the screw channel of the load-bearing structure using self-tapping screws of type ST 5.5 x 23.5 (Art. No. 205963) or ST 5.5 x 27.5 (Art. No. 225082) as per EN ISO 1478[14].

Articles with Art. Nos. 237856, 237857, 242425, 242426, 242429 and 242430 are to be used as extruded retaining devices (Annexes 6b and 6c) for System FW50$^+$SG. Instead of Articles 242425 and 242426, articles 242427 or 242428 are to be used for System FW60$^+$SG, see Annex 1a.

The extruded retaining devices are profiles as per EN 15088 and are of EN AW 6060 aluminium as per EN 573-3, state T66 as per EN 755-2. They are 60 mm long and are to be fixed in the screw channel of the transom-mullion profiles using two self-tapping screws for each support as per EN ISO 1478 (Annexes 6b and 6c).

The U-profile spacer and the inner glass pane are mechanically fastened by the retaining devices. The outer pane is supported against wind suction loads by the sealant.

2.1.6 Emergency retainers

For the loading case where the sealant fails, the horizontal wind forces are absorbed and passed on by emergency retainers. The necessity to use such emergency retainers is regulated by the respective Member States. In Germany, these are required for all sealed infill elements installed at heights of 8 m or more.

12 DIN 53505:2000-08 Testing of rubber - Shore A and Shore D hardness test
13 EN 12844:1999-01 Zinc and zinc alloys – Castings - Specifications
14 EN ISO 1478:1999-12 Tapping screw thread

2.1.6.1 Aluminium emergency retainers

The emergency retainers Art. Nos. 266166, 266167 and 266168 are used for securing infill elements. They are positioned at specific points depending on the loading and have a base area of approx. 52 mm x 60 mm (Annex 5c). The emergency retainers are extruded precision profiles as per EN 15088 and are made of EN AW 6060 aluminium as per EN 573-3, state T66 as per EN 755-2 with silicone setting blocks having a Shore A hardness of approx. 50 as per DIN 53505. They are fixed to the transom-mullion profiles using two screws.

2.1.6.2 Aluminium emergency retainers for monolithic glazing

The emergency retainers Art. Nos. 433610 and 433620 are used for securing monolithing glazing for ventilated façades. Their application is limited to glass panes ≤ 1.50 m x 2.00 m and a thickness of the panes ≤ 12 mm (Annexes 3 and 3a). The emergency retainers are extruded precision profiles as per EN 15088 and are made of EN AW 6060 aluminium as per EN 573-3, state T66 as per EN 755-2 with silicone setting blocks having a Shore A hardness of approx. 50 as per DIN 53505. They are fixed to the bonding profiles with screws at a clearance of 250 mm.

2.1.6.3 Stainless steel emergency retainers inserted into the U-profile

The emergency retainer system Art. Nos. 266002 to 266005 or 266536 to 266539 (Annex 7) is used for securing fixed glazing. In addition to the actual emergency retainers, the system also includes retaining devices of tailored thickness. The emergency retainers are made of stainless steel, material No 1.4301 as per EN 10151[15] and are used together with the stainless steel two-piece spacers as per Section 2.1.2. The emergency retainers are inserted into the U-profile of the spacer and are fixed during the sealing process by being pressed into the two adhesive layers adjacent to the profile, and encompass the outer pane (Annex 7). The stainless steel emergency retainer system is designed for a maximum outer pane thickness of 12 mm.

2.1.7 Inner sealing of insulating glass units

For the inner sealing of infill elements designed as insulating glass units, a polyisobutylene layer is to be applied between the glass panes and spacers (see Section 2.1.8). Details on the butylene to be used are deposited with Deutsches Institut für Bautechnik.

2.1.8 Adhesives

Two-component silicone adhesive as per Sections 2.1.8.1 to 2.1.8.3 is to be used for the structural sealing of the glass panes to the structural frames or spacers.

In addition to the adhesives listed in 2.1.8.1 to 2.1.8.3, 3M VHB Structural Glazing Tape B23F as per Section 2.1.8.4 may be used for the structural sealing of the monolithic glazing (Annex 3a and 3b).

Only compatible materials may be installed adjacent to the structural sealant, and this compatibility is to be proven in an approval procedure. Neighbouring materials may be used in the combinations specified in the following table:

[15] EN 10151:2003-02 Stainless steel strip for springs - Technical delivery conditions

Permissible combinations of structural sealants and adjacent materials														
		Inner seal / butyl					Spacer tape Cover profile Sealing profile					Glazing support/ setting block		
Manufacturer	Structural sealant	BU-S, Kömmerling	Climafill standard, NMC sa	GD 115, Kömmerling		Sika Glaze IG-5, SIKA SERVICES	Norton V 2100	Norton V 3100	Vito Glazing mount 400	Silicone DIN 7863 Type B, BIW Isolierstoffe	EPDM DIN 7863, Type C	Silicone, Sico	GLSV, Gluske	polypropylene, Repsol
Dow Corning	DC 993	X	X	X			X	X			X	X	X	X
Sika AG	Sikasil SG 500	X				X	X		X		X	X		X
Kömmerling	KÖDIGLAZE S			X			X		X					
3M Europe	VHB G/B23F									X				

2.1.8.1 DC 993 from Dow Corning

The stipulations of ETA-01/0005 are to be observed when using the DC 993 two-component adhesive from the Dow Corning company. The base material and catalyst are to be mixed in a weight ratio of 10:1.

Adequate adhesion to the following adjacent products has been proven within the scope of the approval procedure.

- Coated glass as per Annex A1
- All anodised aluminium surfaces as per Section 2.1.2
- Stainless steel surfaces as per Section 2.1.2

2.1.8.2 Sikasil SG 500 from SIKA SERVICES AG

The stipulations of ETA-03/0038 are to be observed when using the Sikasil SG 500 two-component silicone adhesive from SIKA SERVICES AG. The base material and catalyst are to be mixed in a weight ratio of 13:1.

Adequate adhesion to the following adjacent products has been proven within the scope of the approval procedure.

- Coated glass as per Annex A2
- All anodised aluminium surfaces as per Section 2.1.2
- Stainless steel surfaces as per Section 2.1.2

2.1.8.3 KÖDIGLAZE S from Kömmerling

The stipulations of ETA-08/0286 are to be observed when using the KÖDIGLAZE S two-component silicone adhesive from Kömmerling. The base material and catalyst are to be mixed in a weight ratio of 10:1.

Adequate adhesion to the following adjacent products has been proven within the scope of the approval procedure.

- All anodised aluminium surfaces as per Section 2.1.2
- Stainless steel surfaces as per Section 2.1.2

2.1.8.4 3M VHB Structural Glazing Tape B23F from 3M Europe

The stipulations of ETA-09/0024 are to be observed when using the 3M VHB Structural Glazing Tape B23F. For the wind suction loads, the design strength of 0.085 N/mm² is to be maintained in the sealant seams. The self-weight of the glass panes is to be mechanically supported. The adhesive tape may be used for sealing monolithic glazing to bonding profiles for ventilated façades. This is to be permanently protected from environmental conditions via constructional measures (cover sealant).

Adequate adhesion to the following adjacent products has been proven within the scope of the approval procedure:

- Bonding profile surfaces as per Section 2.1.3
- Enamelled glass: ESG Delodur, Flachglas Wernberg company, Ferro collection, black
  ESG Delodur, Flachglas Wernberg company, Ferro collection, dark grey
  ESG Delodur, Flachglas Wernberg company, Ferro collection, white

Adequate adhesion to clear glass (float glass, thermally toughened soda lime silicate safety glass and heat strengthened soda lime silicate glass) has been proven within the scope of ETA-09/0024 certification.

2.1.9 Sealing of the FW50^{+}SG and FW60^{+}SG façade systems

The seams between the infill elements are closed by

- silicone sealant (wet sealing),
- a U-shaped silicone seal or silicone-compatible EPDM gasket as per DIN 7863[16], shore hardness type C (70 IRHD), and
- a seal across the outer pane, of silicone or silicone-compatible EPDM gasket as per DIN 7863, type B.

For design details see Annex 1.

2.2 Verification methods

2.2.1 General

The assessment of the fitness for the intended use of the infill elements with regard to the essential requirements for safety in case of fire (ER 2), hygiene, health and the environment (ER 3), safety in use (ER 4) and energy economy and heat retention (ER 6) is performed in accordance with the common procedural rules for European technical approval and the Guideline for European Technical Approval of “Structural Sealant Glazing Systems” (ETAG 002).

2.2.2 Safety in case of fire (ER 2)

According to EC Decision 96/603/EG, glass is assigned to class A1, the butyl sealing tape as per Section 2.1.7, the adhesives as per Section 2.1.8 and the seam sealing as per Section 2.1.9 are assigned to class F.

The fire resistance can only be assessed for the entire façade construction and has to be specially verified.

Note: A European reference fire scenario for façades has not been laid down. In some Member States, the classification of the "SCHÜCO International KG FW 50+ SG and FW 60+ SG" as per EN 13501-1:2002 might not be sufficient for the use in façades. To satisfy the regulations of these states, an additional assessment of the "SCHÜCO International KG FW 50+ SG and FW 60+ SG" glass façade according to the national stipulations may be required (e.g. based on a large-scale test), until the European classification system has been enhanced.

[16] DIN 7863:1983-04 Non cellular elastomer glazing and panel gaskets; technical delivery conditions

2.2.3 Hygiene, health and the environment (ER 3)

With regard to "Dangerous substances", the manufacturer of the infill elements has made a declaration of compliance with the Council Directive 76/769/EEC from 27 July 1976, which has been published with amendments in "Official Journal of the European Union".

Note: In addition to the specific clauses relating to dangerous substances contained in this European technical approval, there may be other requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the Construction Products Directive, these requirements need also to be complied with, when and where they apply.

2.2.4 Safety in use (ER 4)

2.2.4.1 General

The stability of the infill elements, including their anchorage to the structure, is to be verified. Especially the following are to be taken into account:

- Self-weight
- Wind (pressure and suction)
- Temperature
- Exposure to climatic conditions

Verification of the impact resistance of the construction is not included in the issuing of this ETA.

The rules of the respective Member State where the structural sealant glazing kit is used shall be observed. For details see Annex C.

2.2.4.2 Verification of the structural bond

Verification is to be provided showing that when subjected to the actions listed in Section 2.2.4.1, and under consideration of any eventual punctual fixing, the structural bond is not subjected to greater tensile and thrust forces than those permitted for the respective adhesive approval (see Section 2.1.8). Due to the punctual nature of the load transfer, compared to continuous loading, the internal forces of the structural bond is to be increased by a factor of γ_{sys} = 3.0.

The monolithic glazing for ventilated façades is, except of the ones bonded to the profiles Art. Nos. 352550 and 354540, circumferentially sealed to the bonding profiles which distribute the load evenly, i.e. there is no punctual fixing.

The structural bond is to be dimensioned according to the stipulations of the Member State where the infill elements are to be used.

2.2.4.3 Verification of the glass panes and the emergency retainers

Verification of the stability of the glass panes is to be provided in accordance with the rules of the respective Member State, under the actions listed in Section 2.2.4.1.

For the load case relating to the failure of the structural bond, verification is to be provided that the outer glass panes are held by the emergency retainers. A permissible principal tensile stress for the heat soaked soda lime silicate safety glass of σ_{zul} = 105 N/mm² may be assumed for this case.

The emergency retainers are also to be dimensioned for the above mentioned load case. When designing the emergency retainers, the permissible loads listed in the following sections may be assumed (γ_{glob} = 1.1).

2.2.4.3.1 Aluminium emergency retainers Art. Nos. 266166, 266167, 266168

The permissible centric load is: Fzul = 3.86 kN

If the load only occurs through an adjacent pane (eccentric load) then the load is to be doubled and then treated as a centric load.

Within the scope of static loading calculations, verification is to be provided that deformation of the glass pane under the existing loads cannot lead to the pane slipping out of the emergency retainers. The penetration depth of the glass should not be less than 5 mm. The chord reduction is to be limited to a maximum of 9.5 mm. This may be determined in simplified form using the equation of a circle:

$$s = \sqrt{l^2 - \frac{16}{3} f^2}$$

f Rise of an arch

l Initial length of the glass in a non-deformed state

2.2.4.3.2 Aluminium emergency retainers Art. Nos. 433610, 433620

The emergency retainers are only for monolithic glass panes ≤ 1.5 m x 2.0 m and a thickness of the panes ≤ 12 mm.

The permissible wind suction load is: F_{zul} = 1.5 kN/m^2

2.2.4.3.3 Stainless steel emergency retainers Art. Nos. 266002 to 266005 or 266536 to 266539

The permissible load of a stainless steel emergency retainer is: F_{zul} = 0.36 kN

The clearance between the stainless steel emergency retainers inserted into the U-profile of the spacer may not exceed 400 mm.

Within the scope of static loading calculations, in a similar manner to Section 2.2.4.3.1, verification is to be provided that deformation of the glass pane under the existing loads cannot lead to the pane slipping out of the emergency retainers. The chord reduction is to be limited to a maximum of 9.5 mm.

2.2.4.4 Verification of the glazing supports

In order to support the self-weight, the glazing supports are to be arranged in such a manner that the outer pane is supported over at least two thirds of the pane thickness. The support depth of the glazing in overhead areas is to be 18 mm on all sides.

The glazing supports as per Section 2.1.4 may be used for the following permissible self-weight load of the infill elements:

Art. No.	Permissible loads (5%-fractile / 75% confidence level; $\gamma_{glob} = \gamma_M \cdot \gamma_F = 1.7$)
266674, 266675, 266677, 266676, 266673, 266679, 266680, 266682, 266681, 266678	1.53 kN
242188, 242189, 242297, 242298, 242299, 242300, 242302, 242303, 242358, 242359, 242360, 242361, 242379, 242380	2.71 kN
242301, 237525	0.53 kN
242566 to 242569, 242721 to 242730	0.24 kN

Assembled supports		
Front	Rear	
237525, 242301	238470, 242185, 242189	1.95 kN
	242298, 242300, 242303	1.53 kN
Monolithic glazing		
266674, 266675, 266677, 266676, 266679, 266680, 266682, 266681		1.53 kN
433600 only for glass panes ≤ 1.50 m x 2.00 m and a thickness of the panes ≤ 12 mm		0,45 kN
433610, 433620 only for glass panes ≤ 1.5 m x 2.0 m and a thickness of the panes ≤ 12 mm		0.6 N/m

2.2.4.5 Deflection of the structural frames and the glass panes

The deflection of the structural frames supporting the pane edges shall not exceed 1/200 of the respective edge length in the pane edge area, and shall not exceed 15 mm at the pane edges of insulating glass units. The deflection of the glass panes in the middle of the panes under normal conditions of use shall not be larger than 1/100 of the smaller panel span.

2.2.4.6 Verification of die-cast zinc or extruded aluminium retaining devices

The die-cast zinc or extruded aluminium retaining devices as per Section 2.1.5 may be verified for the following permissible wind suction loads:

Art. No.	Permissible loads (5%-fractile / 75% confidence level; γ_{glob} = 3.0)	Note
242363, 237855	1.18 kN	centrically loaded
242362, 237854	0.47 kN	eccentrically loaded (screw channel in bend)
237856, 242429	0.50 kN	
237857, 242425, 242426, 242427, 242428, 242430	0.44 kN	eccentrically loaded

The retaining devices of an infill element may have a maximum clearance of 150 mm to the element corners and 400 mm between each other. The single-sided retainers of adjacent infill elements are to be arranged alternately at a maximum spacing of 200 mm.

The contact depth of the retaining devices in the U-profile of the spacer is to be at least 7.5 mm (including tolerances).

2.2.4.7 Air permeability, watertightness (FW 50+ SG and FW 60+ SG)

Class AE 1200 as per EN 12152[17] has been determined for the air permeability of closed façades.

Class RE 1050 as per EN 12154[18] has been determined for the watertightness.

2.2.5 Protection against noise (ER 5)

In the context of issuing this ETA the verification of performance capacities of the protection against noise was not performed. For the verification of the construction regarding the protection against noise, the regulations of the Member States apply.

2.2.6 Energy economy and heat retention (ER 6)

The total thermal transmittance U_{CW} of the façade construction is to be determined as per EN 13947[19]. The following values determined for infill elements using insulating glass units can be used for dimensioning:

System FW 50+ SG and FW 60+ SG mullion (with U_g = 1.5)

Sealing profile	Stainless steel spacer	Aluminium spacer
U-shaped seal	Uf = 0.0011 lf + 2.54; ψ = 0.13	Uf = 0.0011 lf + 2.54; ψ = 0.15
Flat seal	Uf = 1.8 ; ψ = 0.11 W/mK for 50 mm construction depth	Uf = 0.0011 lf + 2.19
Wet sealing	Uf = 0.0005 lf + 1.74; ψ = 0.13	Uf = 0.0005 lf + 1.74; ψ = 0.16

System FW 50+ SG and FW 60+ SG transom (with U_g = 1.5)

Sealing profile	Stainless steel spacer	Aluminium spacer
U-shaped seal	Uf = 0.0015 lf + 2.17; ψ = 0.13	Uf = 0.0015 lf + 2.17; ψ = 0.15
Flat seal	Uf = 1.8 ; ψ = 0.11 W/mK for 50 mm construction depth	Uf = 0.0015 lf + 1.82
Wet sealing	Uf = 0.0007 lf + 1.61; ψ = 0.13	Uf = 0.0007 lf + 1.61; ψ = 0.16

For the verification of the energy economy and heat retention characteristic of the construction the provisions of the respective Member States apply.

3 Evaluation and attestation of conformity and CE marking

3.1 System of attestation of conformity

According to the European Commission decision of 24.06.1996, published in the Official Journal of the EC No. L 254 of 08.10.1996, type I structural sealant glazing kits as per ETAG 002-1 are to be certified using attestation of conformity system 2+ and ETAG 002-1 type II constructions are to be certified using attestation of conformity system 1. These systems are described below:

System 1: Certification of the conformity of the product by an approved certification body on the basis of:

[17] EN 12152:2002 Curtain walling - Air permeability - Performance requirements and classification
[18] EN 12154:1999 Curtain walling - Watertightness - Performance requirements and classification
[19] DIN EN 13947:2007-07 Thermal performance of curtain walling - Calculation of thermal transmittance

(a) Tasks for the manufacturer
  (1) Factory production control
  (2) Further testing of samples taken at the factory by the manufacturer in accordance with a prescribed test plan

(b) Tasks for the approved body
  (3) Initial type-testing of the product
  (4) Initial inspection of the factory and of factory production control
  (5) Continuous surveillance, assessment and approval of the factory production control

System 2+: Declaration of conformity of the product by the manufacturer on the basis of:

(a) Tasks for the manufacturer
  (1) Initial type-testing of the product
  (2) Factory production control
  (3) Testing of samples taken at the factory in accordance with a prescribed test plan

(b) Tasks for the notified body
  (4) Certification of factory production control on the basis of:
    – Initial inspection of the factory and of factory production control
    – Continuous surveillance, assessment and approval of factory production control

3.2 Responsibilities

To ensure that the product conforms to this European technical approval, the following checks are to be performed. Detailed specifications are to be taken from the control plan.

The manufacturer may only use the initial / raw / constituent materials stated in the technical documentation of this European technical approval.

Tasks for attestation of conformity for system 1

	Tasks	Contents
Manufacturer	factory production control	The manufacturer shall exercise permanent internal control of production in conformity with tasks laid down in the control plan[7]. The manufacturer shall, on the basis of a contract, involve a body which is approved for the tasks in the field of structural sealant glazing systems in order to undertake the actions laid down in the control plan.
	testing of samples taken at the factory	The manufacturer shall test samples taken at the factory in accordance with the control plan

Notified body	initial type-testing of the product	The notified body shall perform the tasks laid down in the control plan and state the results in a written report.
	initial inspection of the factory and of factory production control	The notified body shall make sure that the production plant and in particular the personnel and the equipment as well as the factory production control are suited to ensure the continuous and proper manufacture of the product by applying the provisions given in clause 2.1 and in the Annexes of the European technical approval.
	continuous surveillance, assessment and approval of factory production control	The notified body has to carry out the surveillance in the factory at least twice a year. Verification is to be provided that the factory production counted takes place in accordance with the control plan.
	EC certificate of conformity	The notified body shall issue the EC certificate of conformity for the product.

Tasks for attestation of conformity for system 2+

	Tasks	Contents
Manufacturer	initial type-testing of the product	The manufacturer shall perform the tasks laid down in the control plan and state the results in a written report.
	factory production control	The manufacturer shall exercise permanent internal control of production in conformity with tasks laid down in the control plan[7]. The manufacturer shall, on the basis of a contract, involve a body which is approved for the tasks in the field of structural sealant glazing systems in order to undertake the actions laid down in the control plan.
	testing of samples taken at the factory	The manufacturer shall test samples taken at the factory in accordance with the control plan
Notified body	initial inspection of the factory and of factory production control	The notified body shall make sure that the production plant and in particular the personnel and the equipment as well as the factory production control are suited to ensure the continuous and proper manufacture of the product by applying the provisions given in clause 2.1 and in the Annexes of the European technical approval.
	continuous surveillance, assessment and approval of factory production control	The notified body has to carry out the surveillance in the factory at least twice a year. Verification is to be provided that the factory-internal production monitoring takes place in accordance with the control plan.
	EC certificate of conformity	The notified body shall issue the EC certificate of conformity for the factory production control.

The EC certificates and the results of continuous surveillance are to be provided to Deutsches Institut für Bautechnik by the notified body or the manufacturer when requested.

If the stipulations of the European technical approval and the associated control plan are no longer satisfied then the certificate of conformity is to be rendered invalid and Deutsches Institut für Bautechnik is to be informed.

3.3 CE marking

The CE marking shall be affixed on the product. The letters "CE" shall be followed by the identification number of the approved certification body and be accompanied by the following additional information:

- Name and address of the manufacturer and the factory (legal entity responsible for the manufacture)
- Last two digits of the year in which the CE marking was affixed
- Number of the EC certificate of conformity for the kit (System 1)
- Number of the EC certificate for the factory production control (System 2+)
- Number of the European Technical Approval
- Identification of the product (SCHÜCO International KG FW 50+ SG or SCHÜCO International KG FW 60+ SG, monolithic glazing)

4 Assumptions under which the fitness of the kit for the intended use was favourably assessed

4.1 Production

The European technical approval is issued for the kit on the basis of agreed data/information deposited with Deutsches Institut für Bautechnik, which identifies the kit that has been assessed and judged. Changes to the kit or production process, which could result in the deposited data/information being incorrect, shall be notified to Deutsches Institut für Bautechnik before the changes are introduced. Deutsches Institut für Bautechnik will decide whether or not such changes affect the approval and consequently the validity of the CE marking on the basis of the approval, and if so whether further assessment or alterations to the approval shall be necessary.

The infill elements may only be manufactured and sealed in factories as per Annex D. The sealing companies are to be adequately trained by the adhesive manufacturers as per Section 2.1.8. SCHÜCO International KG maintains a list of authorised sealing companies, which has to be updated continually. This list is to be provided to Deutsches Institut für Bautechnik on request.

The preparation of the surfaces to be sealed may only be performed according to the work instructions deposited with Deutsches Institut für Bautechnik. The entire circumference of the sealant seam in the intermediate space between the glazing and adjacent profile (spacer, sealed profile, adjacent frame) has to be filled completely.

The thickness of the 3M VHB Structural Glazing Tape B23F has a constant value of 2.3 mm; the width may vary according to the specifications of ETA-09/0024.

Bubbles, voids or inclusions in the structural sealant are not permissible.

The stipulations of Annex B, Section 3 are to be maintained when performing the heat soak test.

4.2 Installation

The infill elements are to be joined to the supporting structure in such a manner that no restraints in the elements can occur. Installation has to be performed by professional personnel who have been verifiably trained for this work by SCHÜCO International KG.

The applicant is to maintain a complete list of all installation locations and dates of the certified objects. This list is to be provided to Deutsches Institut für Bautechnik when requested.

5 Indications to the manufacturer

5.1 General

The manufacturer is to ensure that all participants are instructed in the special stipulations of this European technical approval.

5.2 Packaging, transport and storage

For packaging, transport and storage, the manufacturer has to take suitable precautionary measures to ensure that structural glass frames are protected against damage, e.g. breakage, scratching, splitting or soiling.

Suitable measures have to be taken to prevent the application of unacceptable loads on the structural seal, for example by using appropriate framing, and suitable covers are also to be provided for protection against water, solar irradiation or major temperature fluctuations.

5.3 Use, maintenance, repair

The façade may only be cleaned using water containing a maximum of 1 % tenside, without using any other chemical additives or high-force cleaning methods (e.g. steam cleaning).

Georg Feistel
Head of Department

beglaubigt:
Herr

Beschichtete Glasprodukte, die mit dem Klebstoff DC 993 verklebt werden dürfen / Coated glass products, suitable for structural sealant Dow Corning DC 993

Hersteller / Manufacturer	Bezeichnung / Name
Cerdec AG Ceramic Colours, Frankfurt/Main	Emaillierung 14710*, Emaillierung 144001* (*Verklebung auf Emaille-Seite)
Glasfabriek SAS van Gent, Gent (NL)	Cool-Lite-Typen: SS 108, SS 114, SS 120, SS 132, SS 208, SS 214, SS 220, SS 232, SS 308, SS 314, SS 320, SS 332, SS 408, SS 414, SS 420, SS 432, SS 508, SS 514, SS 520, SS 532, SS 608, SS 614, SS 620, SS 632
Glas Trösch AG, Bützberg (CH)	Sunstop Silber 20
Glasverarbeitungsgesellschaft Bietigheim, Bietigheim	Emailt 7016 (anthrazit), Coollite TB 125, RAL 9005 GV-Nr. 93/160
Glaverbel, Belgien	Stopsol Supersilver klar
Luxguard I.S.A., Bescharge (L)	Luxguard CR 20*, Luxguard CS 35* (*ohne Thermopac)
Pilkington Deutschland AG, Gelsenkirchen	Infrastop S 010, Infrastop S 020, Infraclad E 010, Infraclad E 020, K-Glas
SAS-Glas Saint Roch (St. Gobain – Gruppe), Niederlande	Coollite TS 120, Coollite TB 140, Coollite SS 108, Coollite SN 150, Antelio-Silber
Schott Glaswerke, Mainz	Calorex AO SG 30*, Calorex BO SG 30*, Calorex A1, Calorex B1 (*Verklebung auf Emaille-Seite)
Semco, Neubrandenburg	Glasemail Farbe RAL 7031 (grau), Glasemail Farbe F 79

Beschichtete Glasprodukte, die mit dem Klebstoff Sikasil SG 500 verklebt werden dürfen / Coated glass products, suitable for structural sealant Sikasil SG 500

Hersteller / Manufacturer	Bezeichnung / Name
Bischoff Glastechnik, Bretten	ESG Bi-Color B1661.91, Glasemail schwarz D 14202 (Cerdec / dmc²)
Cerdec AG Ceramic Colours, Frankfurt/Main	ESG Emalit Planilux mit Emaillierung 14710*, ESG Emalit Planilux mit Emaillierung 144001* (*Verklebung auf Emaille-Seite)
Glas Trösch AG	Sunstop Silber 20 Sunstop Silber 12 Sunstop ESG neutral 50
Glasverarbeitungsgesellschaft Bietigheim, Bietigheim	Emalit 7016 (anthrazit), Coollite TB 125, RAL 9005 GV-Nr. 93/160
Glaverbel, Belgien	Stopsol Supersilver klar
Luxguard I.S.A., Bescharge (L)	Sunguard+ Clear 20/30 Sunguard+ Clear 20/50 Sunguard Solar Silver grey 32 Sunguard Solar Light Blue 52
Pilkington Deutschland AG, Gelsenkirchen	Infraclad E 010 (Delodur Design) mit Keramikbeschichtung RAL 5008 (blaugrau), Infraclad E 020 (Delodur Design) mit Keramikbeschichtung RAL 9005 (tiefschwarz), K-Glas
SAS-Glas Saint Roch (St. Gobain – Gruppe), Niederlande	Coollite TS 120, Coollite TB 140, Coollite SS 108, Coollite SN 150, Coollite SC 114
St. Gobain Deutschland, Aachen	Coollite SC, Emaillierung 14710 (Cerdec / dmc²), Emaillierung 144001 (Cerdec / dmc²)

National provisions for glass products ETA-05/0114 (22/02/2011)

1. Provisions for the production of float glass (soda lime silicate glass)*

Class	Member States	Technical rule	Additional provisions
A	Germany	EN 572-9 and *Bauregelliste* ('Construction Products List') A Part I, serial No 11.10	Indication of the bending tensile strength

2. Provisions for the production of thermally toughened soda lime silicate safety glass (ESG)*

Class	Member States	Technical rule	Additional provisions
A	Germany	EN 12150-2 and *Bauregelliste* ('Construction Products List') A Part 1 serial No 11.12	Indication of the bending tensile strength

3. Provisions for the production of heat-soaked soda lime silicate safety glass (ESG-H)*

Class	Member States	Technical rule
A	Germany	Provisions for the production of heat-soaked thermally toughened soda lime silicate safety glass (ESG-H), see *Bauregelliste* ('Construction Products List') A Part 1, serial No 1.13

4. Provisions for the production of heat strengthened soda lime silicate glass (TVG)*

Class	Member States	Technical rule	Additional provisions
A	Germany	EN 1863-2 and *allgemeine bauaufsichtliche Zulassung* ('National technical approval') for heat strengthened soda lime silicate glass/TVG	Indication of the bending tensile strength

5. Provisions for the production of laminated safety glass with PVB foil (VSG)*

Class	Member States	Technical rule
A	Germany	Provisions for the production of laminated safety glass with PVB foil, see *Bauregelliste* ('Construction Products List') A Part 1, serial No 11.14

6. Provisions for the production of insulating glass units*

Class	Member States	Technical rule	Additional provisions
A	Germany	EN 1279-5 and *Bauregelliste* ('Construction Products List') A Part I, serial No 11.16	Indication of the bending tensile strength

* The national provisions of the Member States, not listed in this column, shall be taken into account.

National provisions for design calculation ETA-05/0114 (22/02/2011)

1. Design calculation for the loading case of bond failure*

Class	Member States	Additional provisions	Allowable values
A	Germany	Safety factor of 1.1 is to be considered for the glass panes (ESG-H) and for the emergency retaining devices	ESG-H: 109 N/mm² Emergency retainers: See 2.2.4.3 Art. Nos. 266166, 266167, 266168: the permissible centric load is: F_{zul} = 3.86 kN Art. Nos. 433610, 433620: The permissible wind suction load is: F_{zul} = 1,5 kN/m2 Art. Nos. 266002 to 266005 or 266536 to 266539: the permissible load of a stainless steel emergency retainer is: F_{zul} = 0.36 kN

2. Design calculation for the structural sealant*

Class	Member States	Additional provisions	Allowable values
A	Germany	Global safety factor γ_{tot}	γ_{tot} = 6

The national provisions of the Member States, not listed in this column, shall be taken into account.

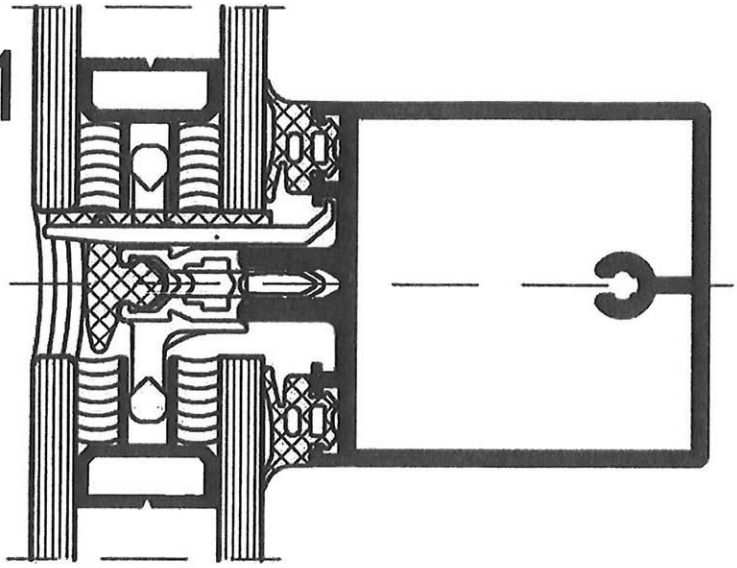
Von Schüco autorisierte Verklebebetriebe **Anlage /Annex D**
Manufacturing plants for bonding authorised by Schüco

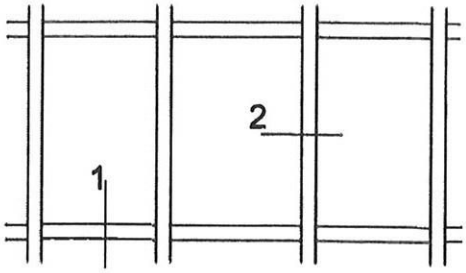
FW 50+SG / FW 60+ SG ETA-05/0114 (22/02/2011)

Firmenname/Name of the plant	PLZ	Ort/Town	Land / Country
Silikon /Silicone			
Semcoglas GmbH	26655	Westerstede	Deutschland / Germany
Hunsrücker Glasveredelung Wagner GmbH & Co KG	55481	Kirchberg	Deutschland / Germany
Glaswerke Arnold GmbH	91732	Merkendorf	Deutschland / Germany
FKN Fassaden	74632	Neuenstein	Deutschland / Germany
Glasbau Kraft GmbH	86424	Dinkelscherben	Deutschland / Germany
Linther Glas Kölling Glas GmbH & Co KG	14822	Linthe	Deutschland / Germany
Optitherm Glas Sander GmbH	33178	Borchen	Deutschland / Germany
Radeburger Fensterbau	01471	Radeburg	Deutschland / Germany
Roschmann Glas GmbH & Co KG	86368	Gersthofen	Deutschland / Germany
Schmitfranz Metallbau GmbH	59302	Oelde-Lette	Deutschland / Germany
Glaszentrum G.F. Schweikert GmbH	74076	Heilbronn	Deutschland / Germany
HVF Silicone Specialist	73235	Weilheim	Deutschland / Germany
Interpane	37697	Lauenförde	Deutschland / Germany
Schneider Bauelemente	74597	Stimpfbach	Deutschland / Germany
Schneider Fertigbau	74597	Stimpfbach	Deutschland / Germany
Glas Dreibusch	63773	Goldbach	Deutschland / Germany
Polypane Glasindustrie NV	B-9140	Temse	Belgien / Belgium
Patsis Glass S.A.	GR-15344	Athen	Griechenland / Greece
Avieli Aluminium	IL-49510	Petach Tiqva	Israel / Israel
Narva Project	UK-39356	Kalmar	Großbritannien / United Kingdom
Gunn Lennon Fabrication Ltd.	IE	Dublin 9	Irland / Ireland
Williaam Cox Ireland Ltd.	IE	Clondlkin Dublin 12	Irland / Ireland
Pilkington UK Ltd.	GB-Wa 10 3TT	St. Helens	Großbritannien / United Kingdom
Euroview Manufacturing Ltd.	GB-CM8 3YQ	Witham, Essex	Großbritannien / United Kingdom
Technical Glass	GB-B70 7LB	West Bromwich	Großbritannien / United Kingdom
Narva project AB	SE-39129	Kalmar	Schweden / Sweden
Friva AS	NO-1820	Sydeberg	Norwegen / Norway
Scheuten Glas Hoom BV	NL-1689	Zwaag	Niederlande / Netherlands
Pilkinton Benelux B.V.	NL-7547	SB Enschede	Niederlande / Netherlands
Alu König Stahl GmbH	AT-1150	Wien	Österreich / Austria
Typotech Aluminium Sdn Bhd	MAL-43300	Balakong Jaya	Malysaia / Malaysia
Metalco Ltd.	CY-1506	Nicosia	Zypern / Cyprus
North Phikha Trading Service Ltd	VN	Ha Noi	Vietnam / Vietnam
Muros, Aluminio, Cristal	31592	Cintrúeñigo (Navarra)	Spanien / Spain
Cristalería Berca, S.L.	46230	Alginet (Valencia)	Spanien / Spain
Cerviglas, S.L.	46389	Turís (Valencia)	Spanien / Spain
Astiglass, S.L.	41400	Écija (Sevilla)	Spanien / Spain
Unión Vidriera Aragonesa, S.L.	44195	Teruel	Spanien / Spain
José Viola Riba, S.L.	25617	La Sentiu de Sió (Lérida)	Spanien / Spain
Comayco Vidrio La Plana, S.L.	12005	Castellón	Spanien / Spain
Cristec Vipla, S.L.	25600	Balaguer (Lérida)	Spanien / Spain
Control Glass Acústico y Solar S.L.U.	44195	Teruel	Spanien / Spain
Cristalería Soler Hermanos, S.A.	3400	Villena (Alicante)	Spanien / Spain
Cristalería Ramos, S.A.	28014	Leganés (Madrid)	Spanien / Spain

Firmenname/Name of the plant	PLZ	Ort/Town	Land / Country
Silikon /Silicone			
Vidraira Central de Ermesinde, Lda.	4446 908	Alfena (Portugal)	Portugal / Portugal
Vidrogal, S.A.	36560	Forcarey (Pontevedra)	Spanien / Spain
Vidrios Júcar, S.L.	39792	Heras (Cantabria)	Spanien / Spain
Vidresif, S.A.	17846	Mata - Porqueres (Gerona)	Spanien / Spain
Tvitec, S.L.	24492	Cubillos del Sil (León)	Spanien / Spain
La Veneciana Iberiaglass	36500	Lalín (Pontevedra)	Spanien / Spain
Vitro Cristalglass	28947	Fuenlabrada (Madrid)	Spanien / Spain
Ourividro - Vidreira Ouriense	2495 326	Fátima (Portugal)	Portugal / Portugal
Cristaleria Ibérica, S.A.	28052	Madrid	Spanien / Spain
Saint Gobain - La Veneciana	28906	Getafe (Madrid)	Spanien / Spain
La Veneciana- Crisa Norte	50800	Zuera (Zaragoza)	Spanien / Spain
La Veneciana - Covipor	4780	Santo Tirso (Portugal)	Portugal / Portugal
3 M Tape			
IGM GmbH	67744	Medard / Glan	Deutschland / Germany
HVF Silicone Specialist	73235	Weilheim	Deutschland / Germany
Bartholomeus Metallbau GmbH	83346	Bergen	Deutschland / Germany

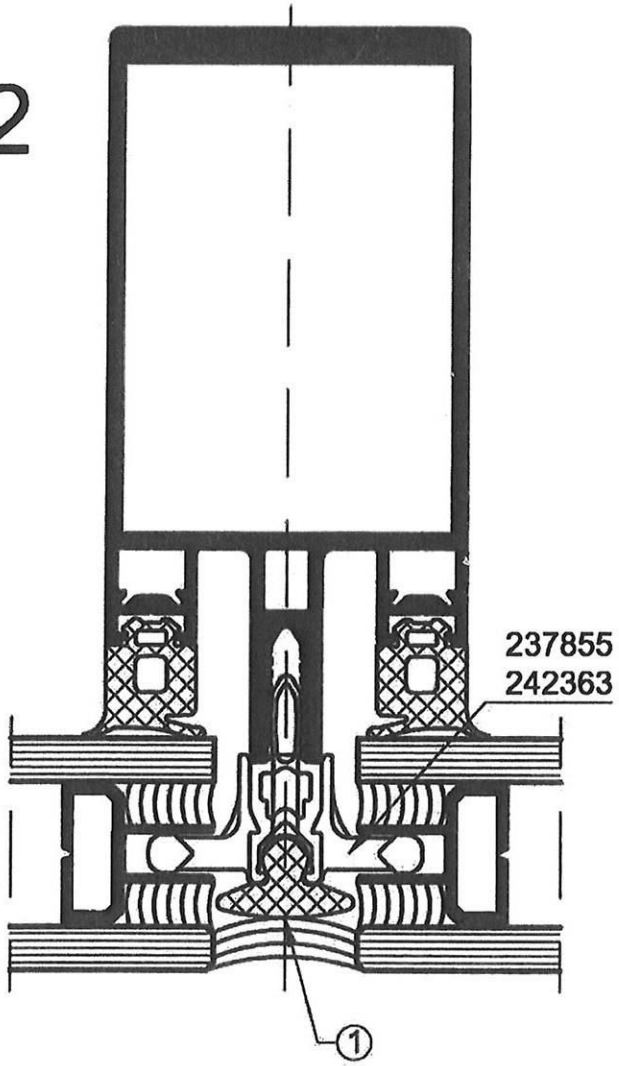
1



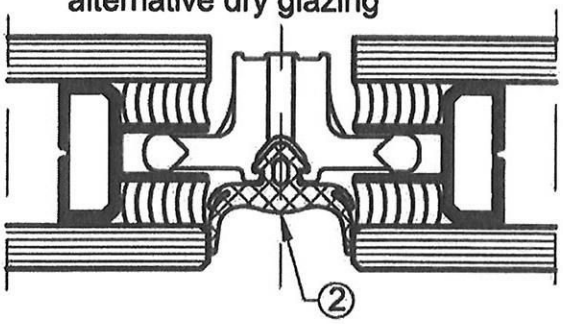


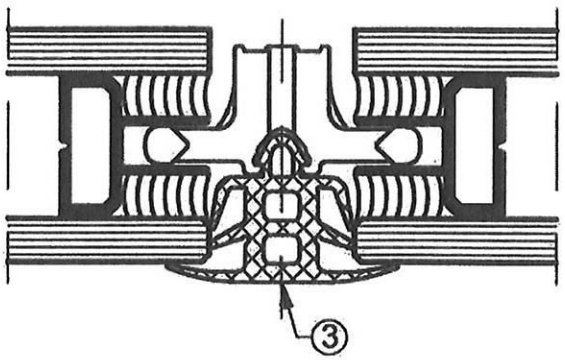
FW50⁺/FW60⁺		
①	②	③
242524	244586	246527
242525		246513
242526		246514
		246515
		246516

2



Alternative Trockenverglasung
alternative dry glazing





Aluminium Abstandhalter
aluminium spacer

SCHÜCO

SCHÜCO International KG
Karolinenstr. 1 - 15
D-33609 Bielefeld
Telefon (0521) 783-0
Telefax (0521) 783-695

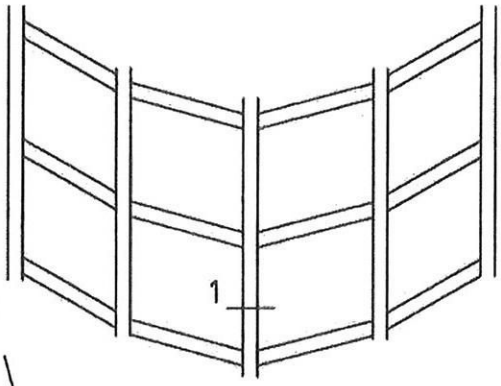
FW 50+SG/FW 60+SG
Schnittpunkte
section details

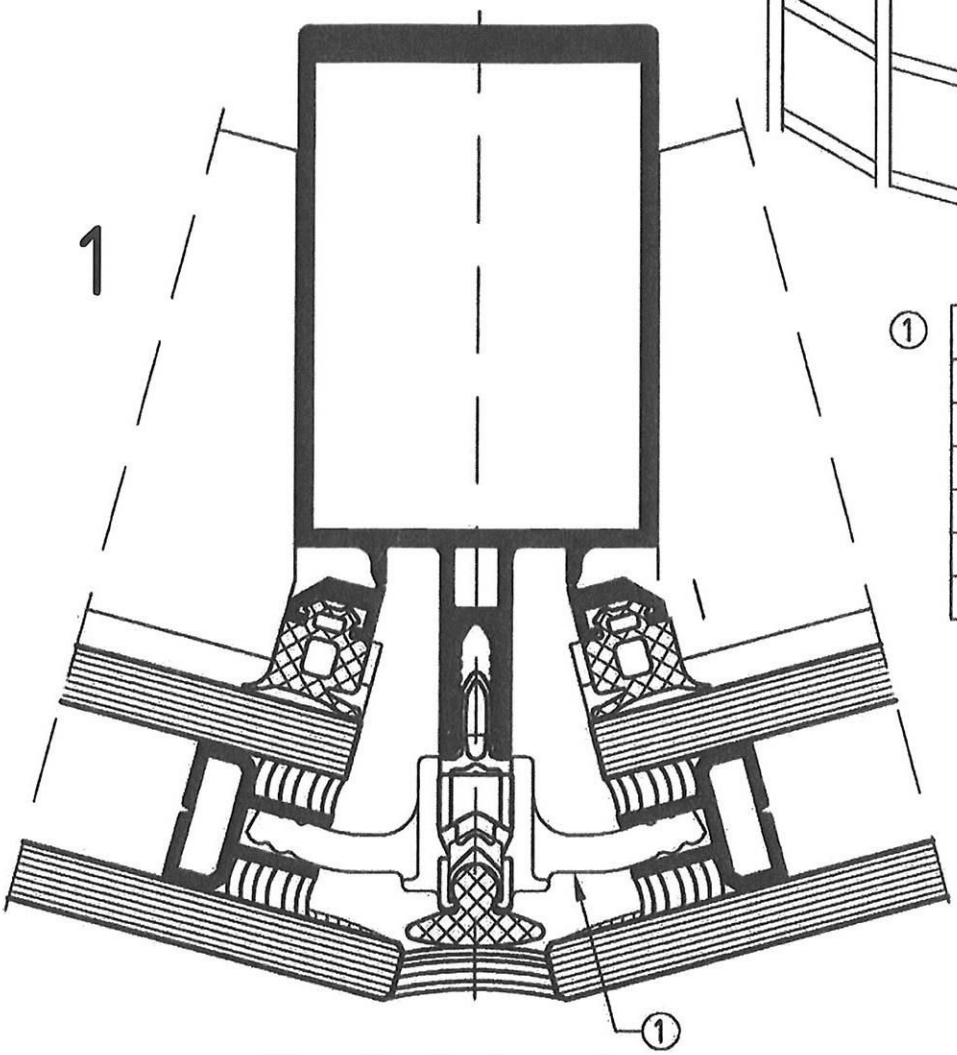
Anlage / Annex 1

ETA-05/0114

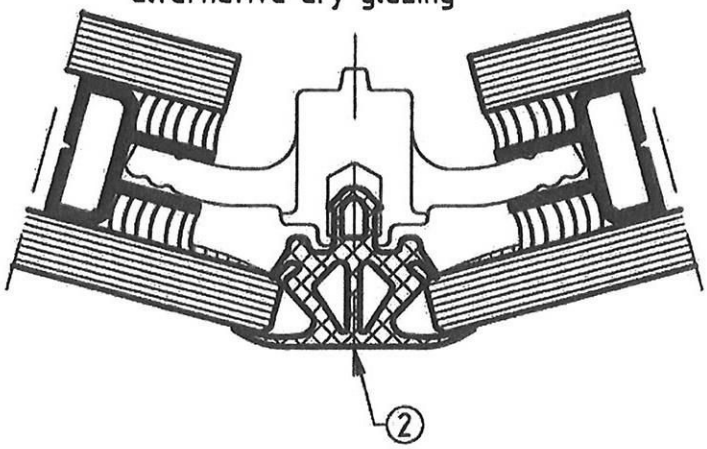
vom / from

22 / 02 / 2011





Alternative Trockenverglasung
alternative dry glazing



①

FW50+	FW60+
237856	237856
242429	242429
237857	237857
242425	242427
242430	242430
242426	242428

②

FW50+/FW60+
246126
246127
246128
246129
246130

Aluminium Abstandhalter
aluminium spacer

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FW 50+SG/FW 60+SG
Segmentierung
segmentation

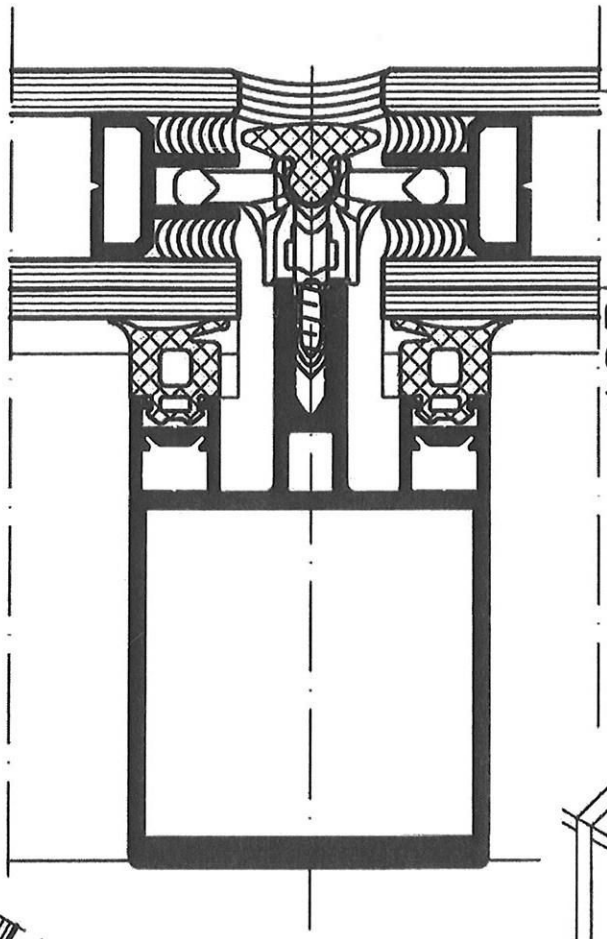
Anlage / Annex 1a

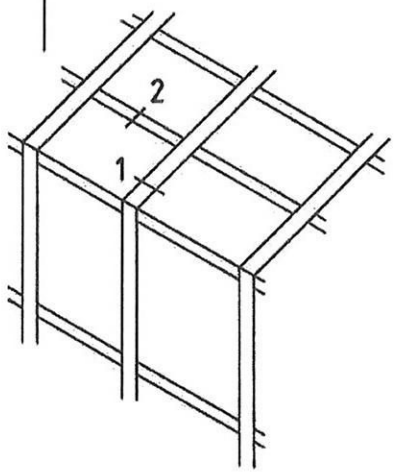
ETA-05/0114

vom / from

22/ 02 / 2011

1





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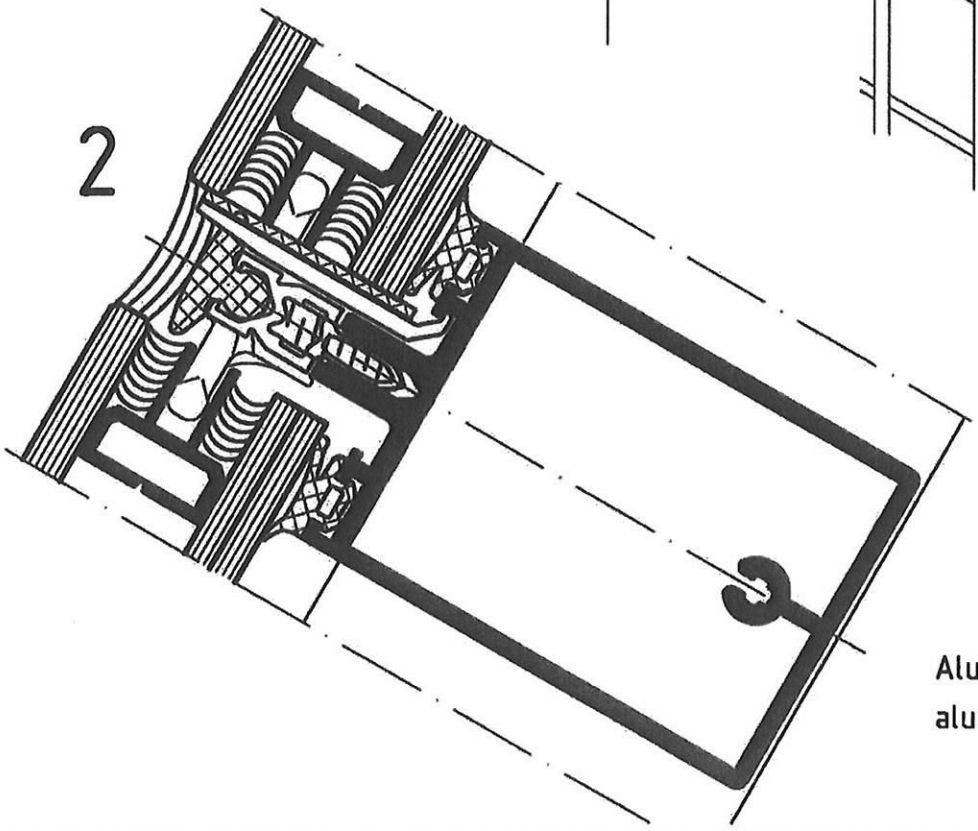

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FW 50+SG/FW 60+SG
Dachelement
roof-unit

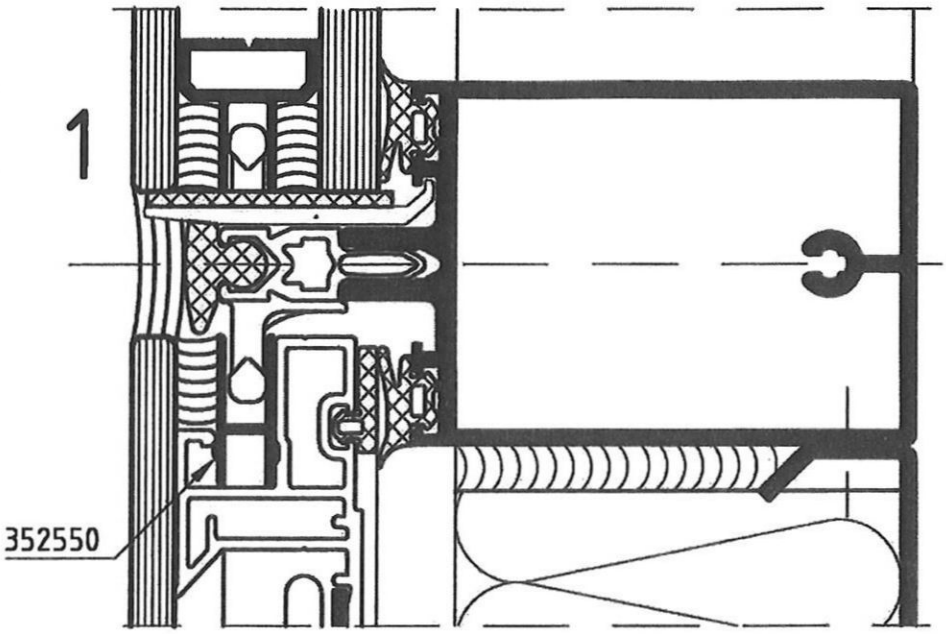
Anlage / Annex 1b

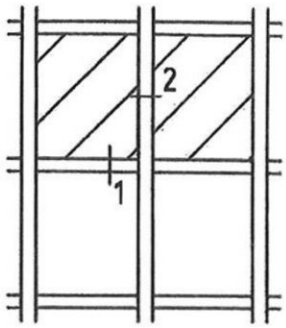
ETA-05/0114

vom / from

22 / 02 / 2011

1

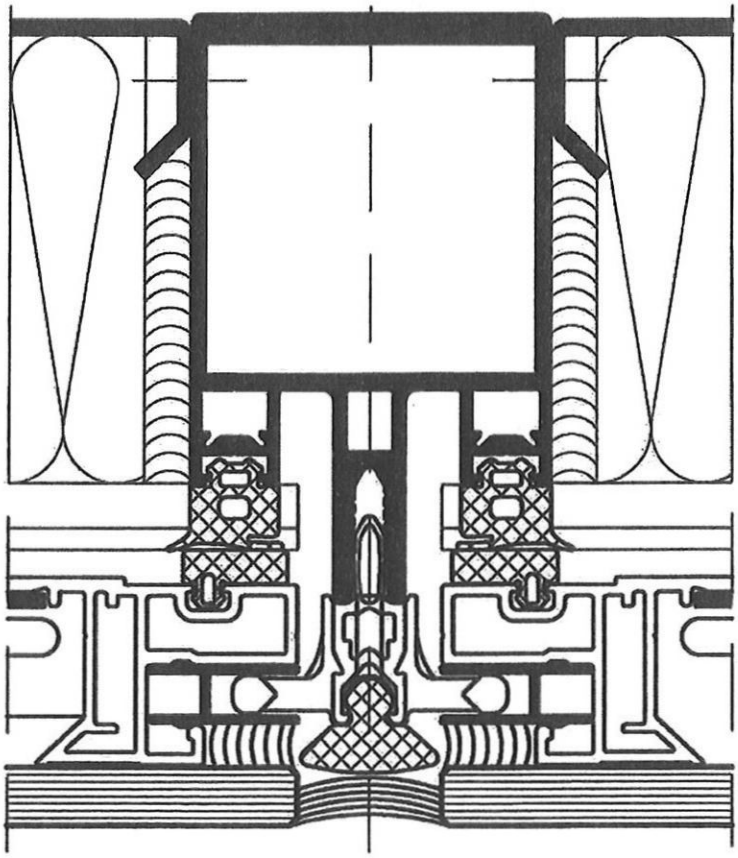




Aluminium Abstandhalter

aluminium spacer

2



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FW 50+SG/FW 60+SG
Brüstungsverglasung
spandrel glazing

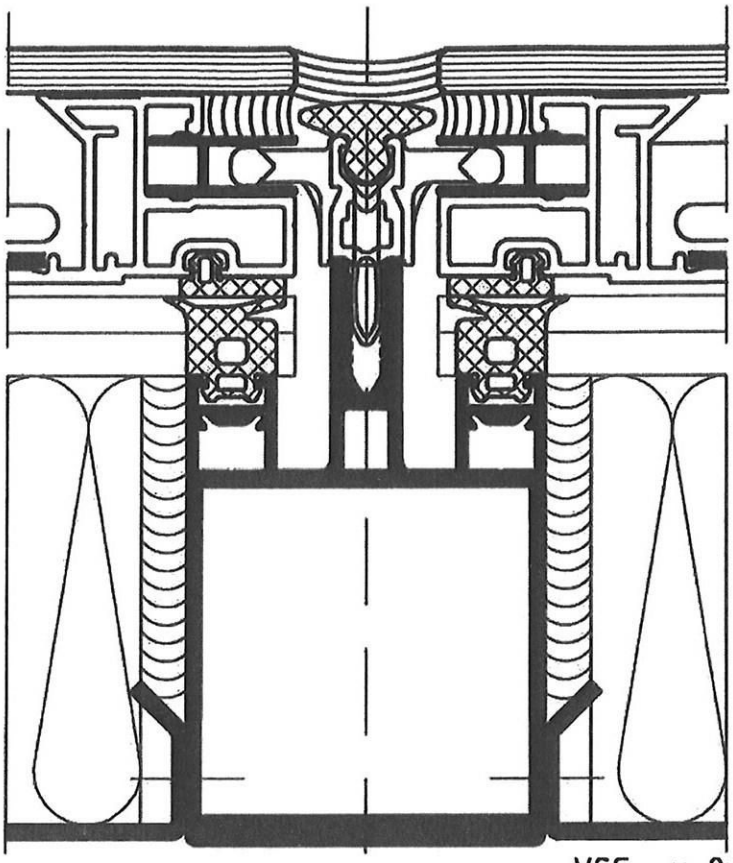
Anlage / Annex 1c

ETA-05/0114

vom / from

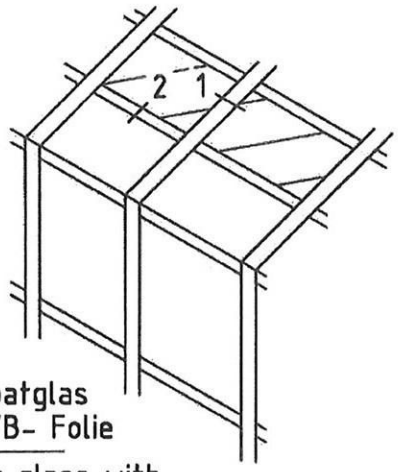
22 / 02 / 2011

1

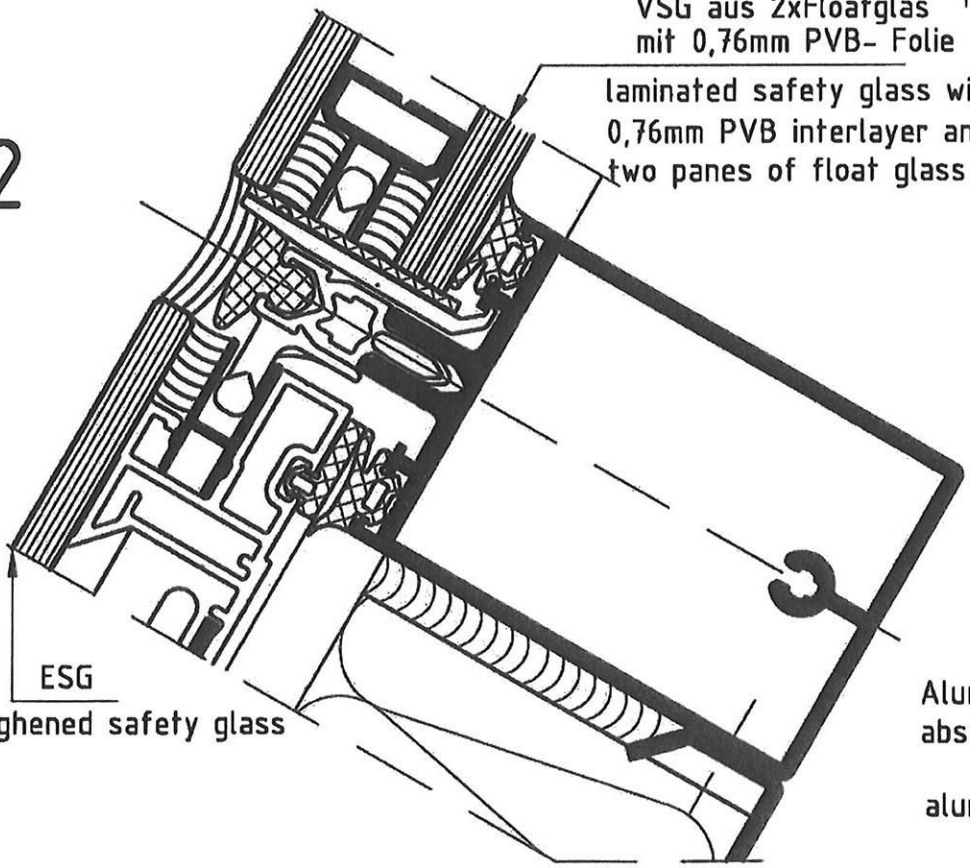


Aluminium - Profil

aluminium-profile



2



VSG aus 2xFloatglas
mit 0,76mm PVB- Folie

laminated safety glass with
0,76mm PVB interlayer and
two panes of float glass

ESG
toughened safety glass

Aluminium-
abstandhalter

aluminium spacer

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FW 50+SG/FW 60+SG
Dachschnittpunkte
roof section

Anlage / Annex 1d

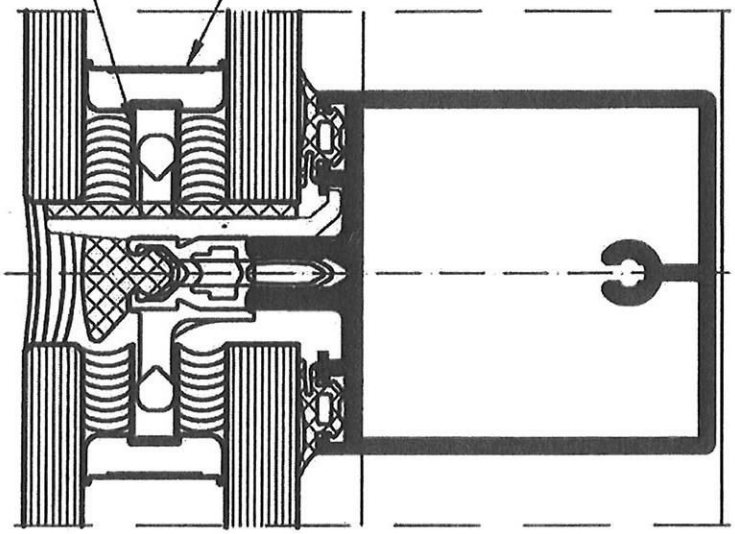
ETA-05/0114

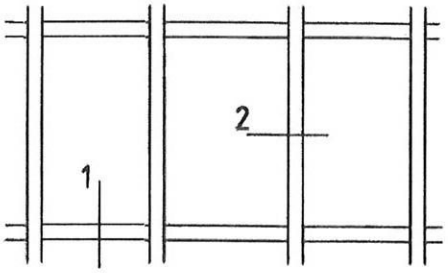
vom / from

22 / 02/ 2011

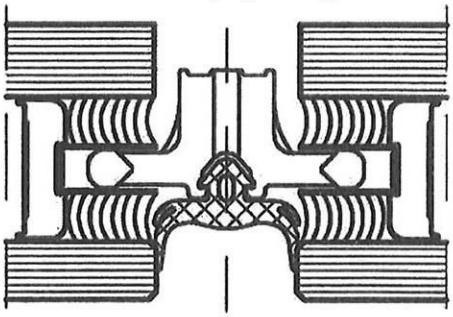
202669
202670

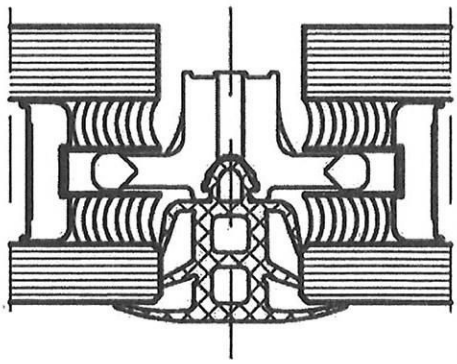
202671

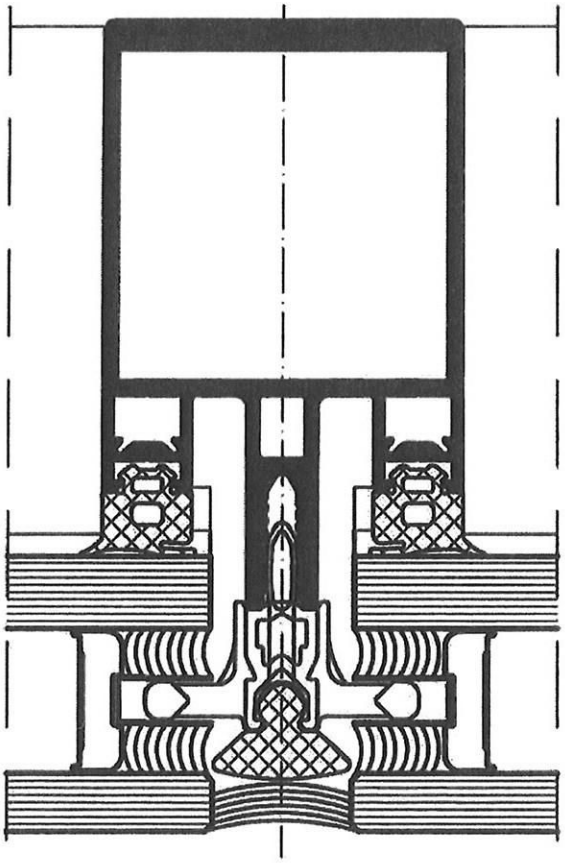




Alternative Trockenverglasung
alternative dry glazing







Edelstahlabstandhalter
stainless steel spacer

SCHÜCO

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Karolinenstr. 1 - 15
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Telefon (0521) 783-0
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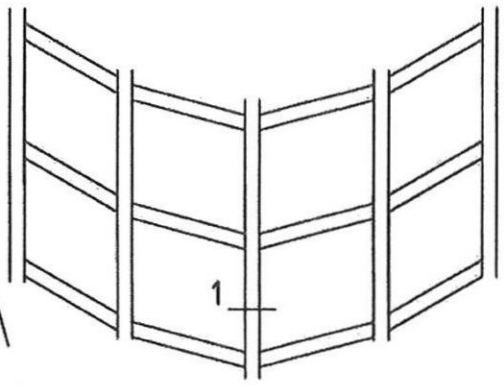
FW 50+SG/FW 60+SG
Schnittpunkte
section details

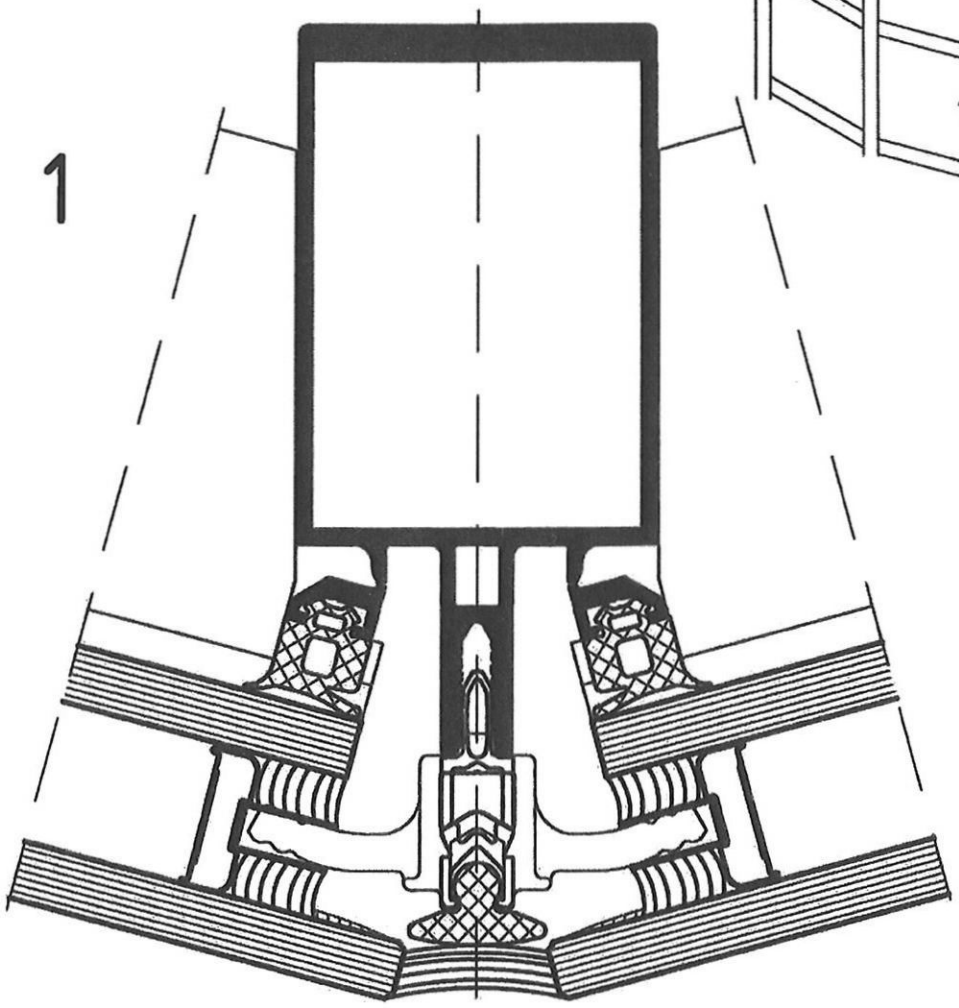
Anlage / Annex 2

ETA-05/0114

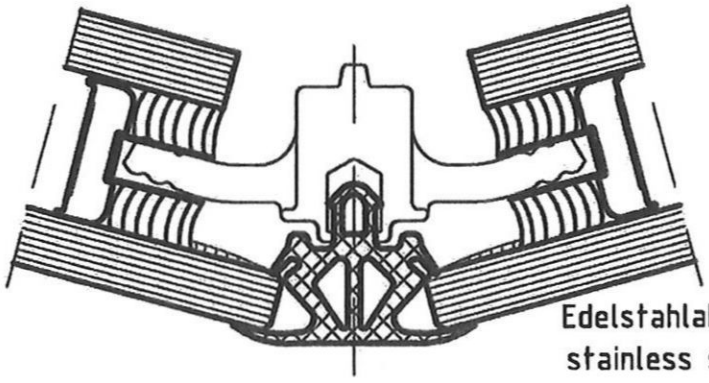
vom / from

22 / 02 / 2011





Alternative Trockenverglasung
alternative dry glazing



Edelstahlabstandhalter
stainless steel spacer

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FW 50+SG/FW 60+SG
Segmentierung
segmentation

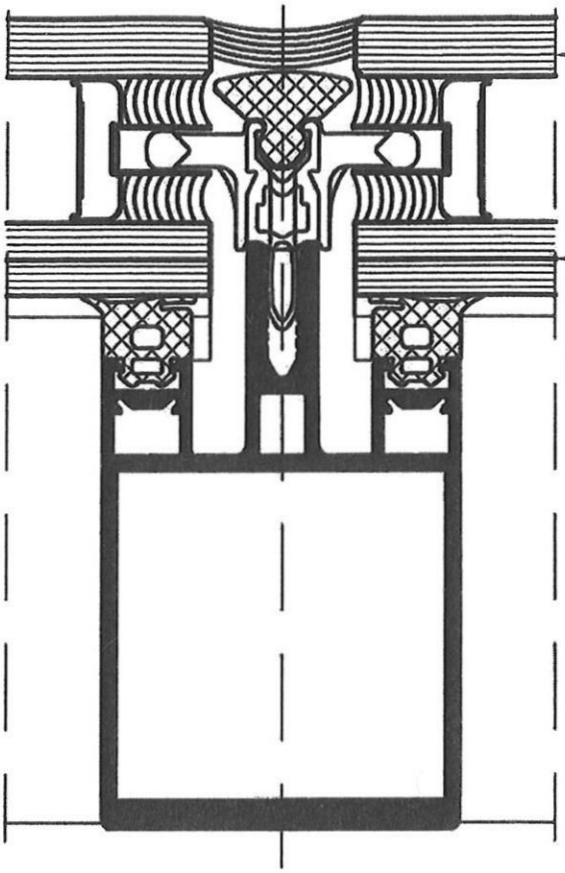
Anlage / Annex 2a

ETA-05/0114

vom / from

22 / 02 / 2011

1



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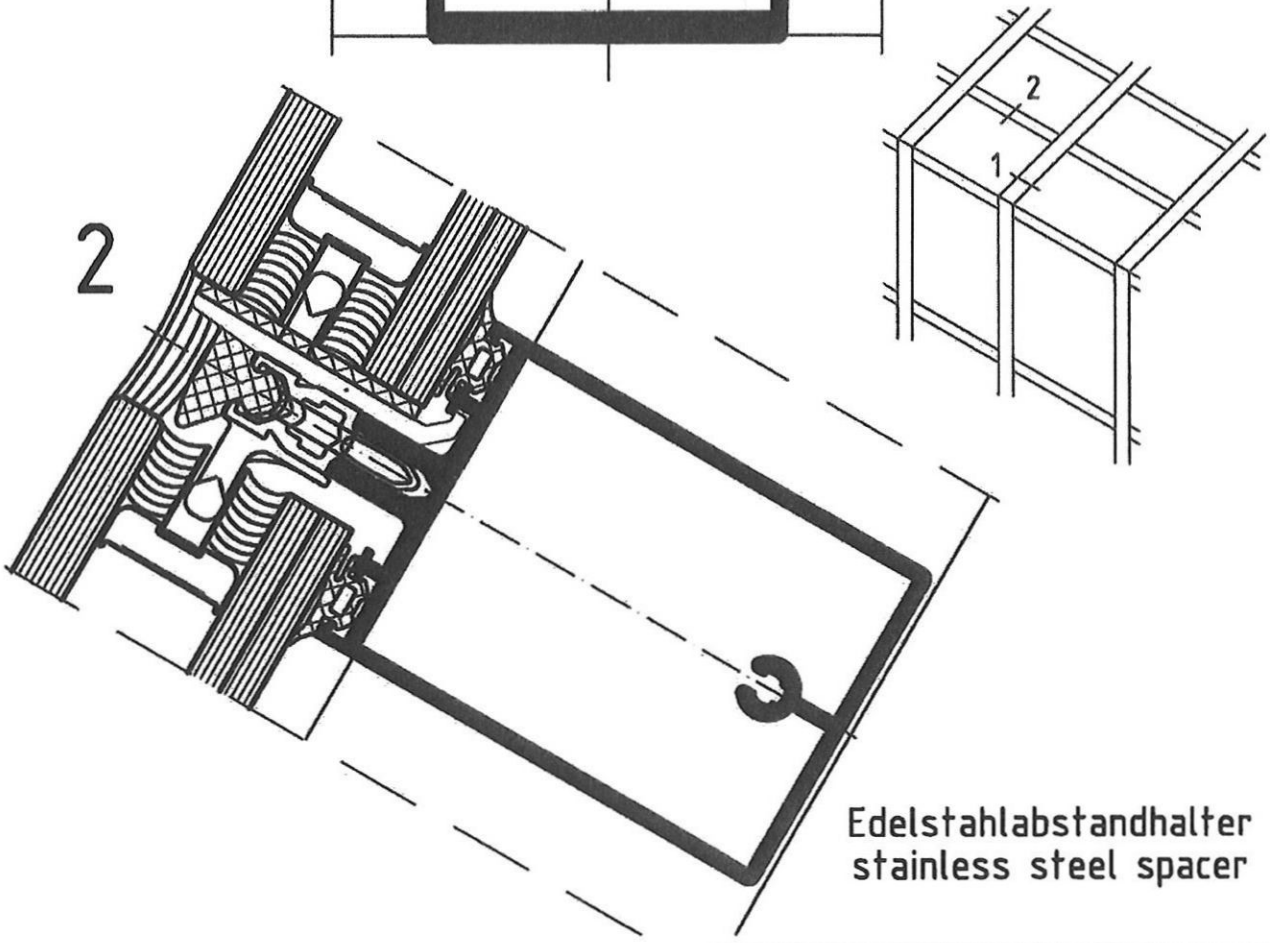

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FW 50+SG/FW 60+SG
Dachelement
roof unit

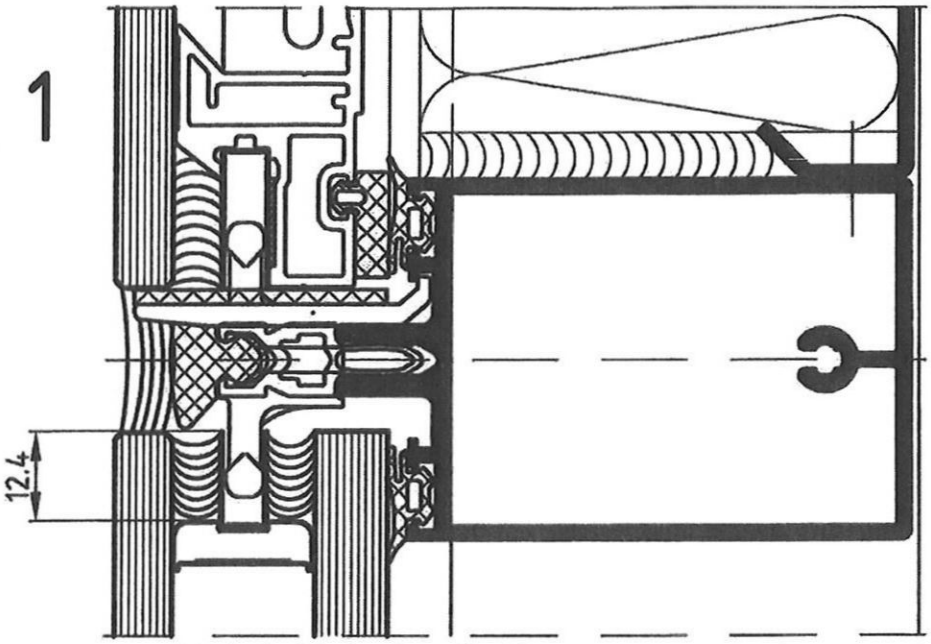
Anlage / Annex 2b

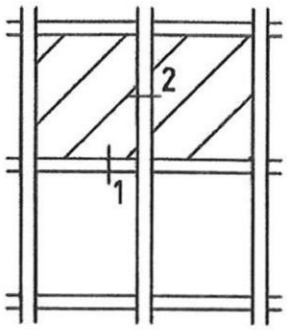
ETA-05/0114

vom / from

22 / 02 / 2011

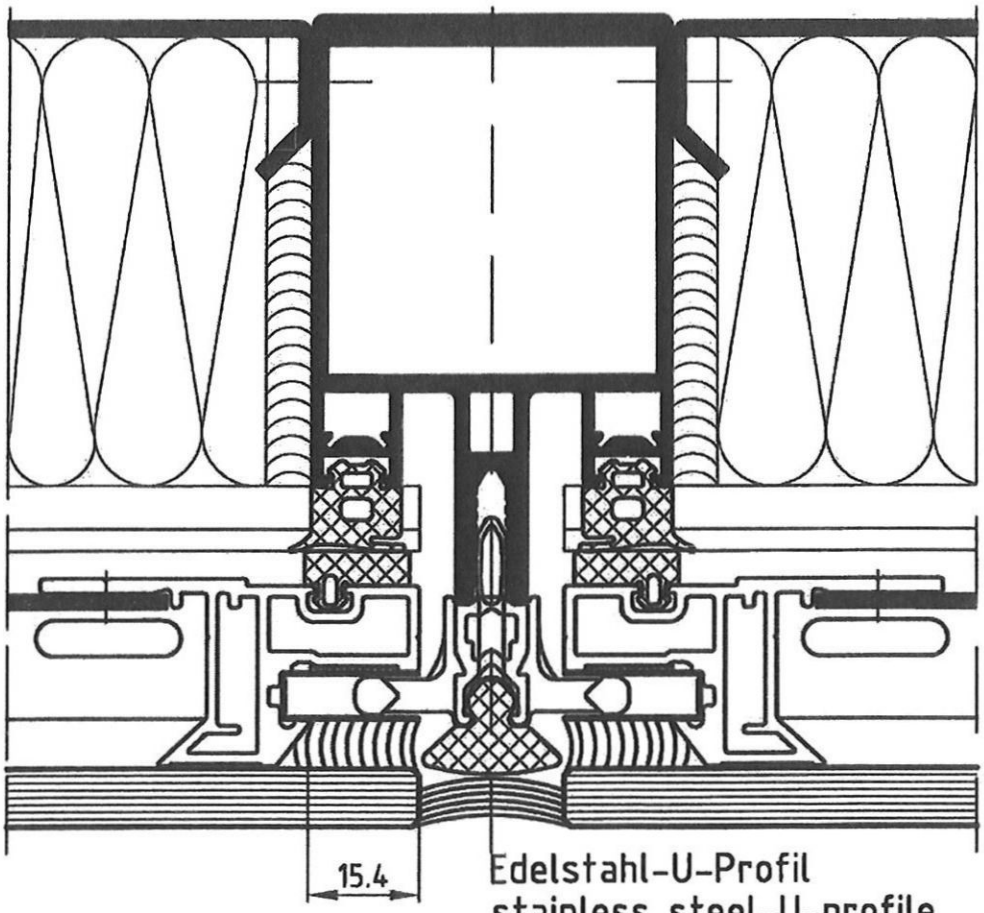
1





Edelstahlabstandhalter
stainless steel spacer

2



Edelstahl-U-Profil
stainless steel-U-profile

SCHÜCO

SCHÜCO International KG
Karolinenstr. 1 - 15
D-33609 Bielefeld
Telefon (0521) 783-0
Telefax (0521) 783-695

FW 50+SG/FW 60+SG
Brüstungsverglasung
spandrel glazing

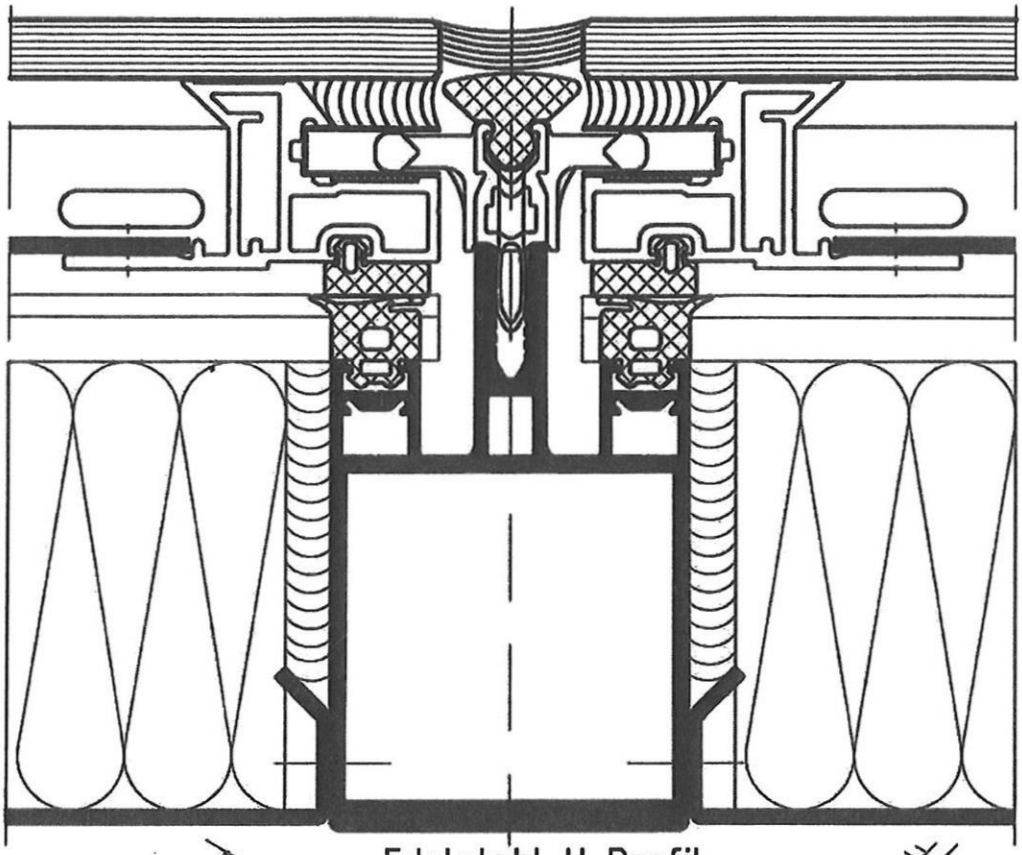
Anlage / Annex 2c

ETA-05/0114

vom / from

22 / 02 / 2011

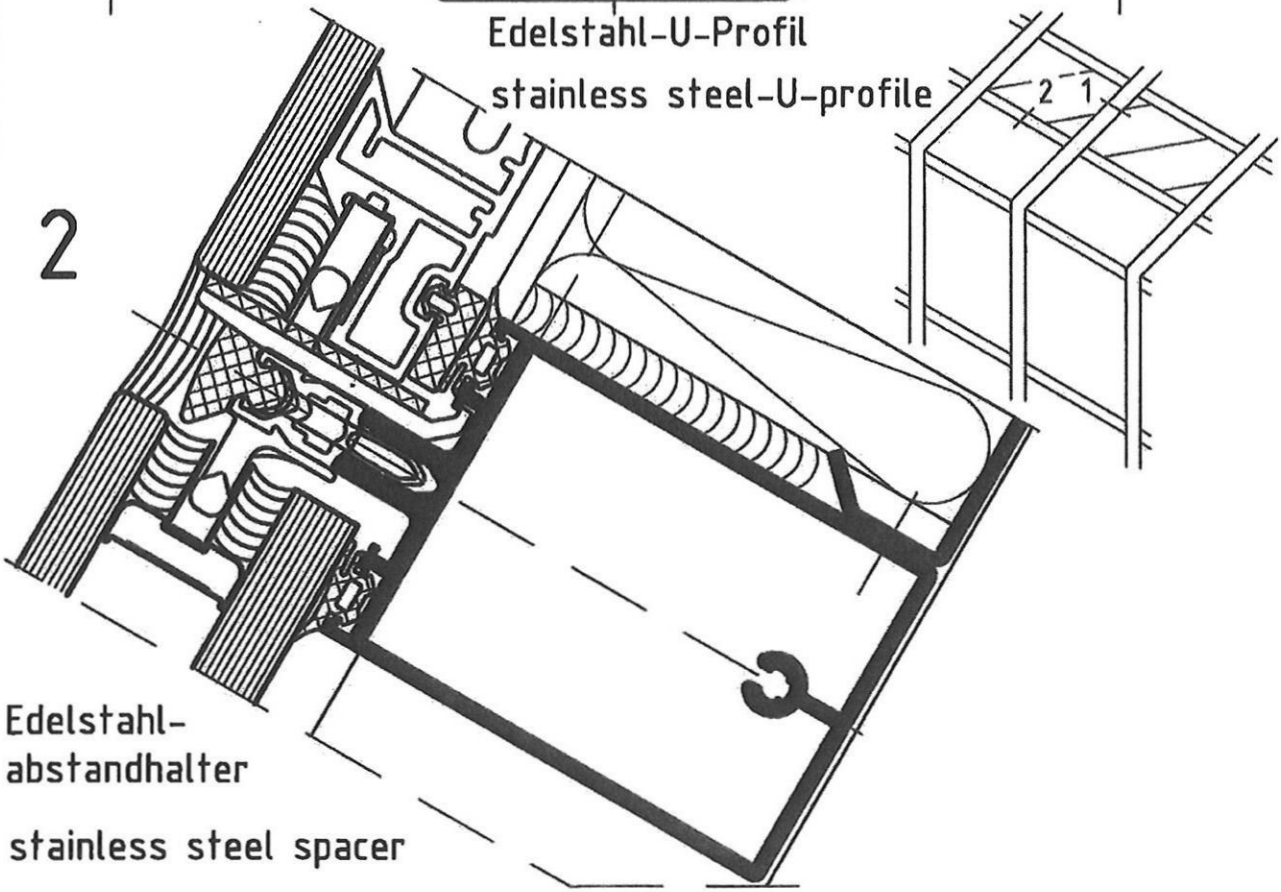
1



Edelstahl-U-Profil

stainless steel-U-profile

2



Edelstahl-
abstandhalter

stainless steel spacer

SCHÜCO

SCHÜCO International KG
Karolinenstr. 1 - 15
D-33609 Bielefeld
Telefon (0521) 783-0
Telefax (0521) 783-695

FW 50+SG/FW 60+SG
Dachschnittpunkte
roof section

Anlage / Annex 2d

ETA-05/0114

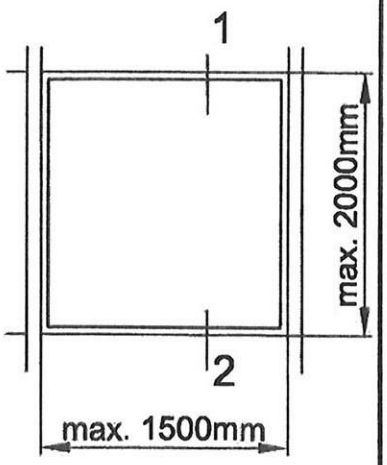
vom / from

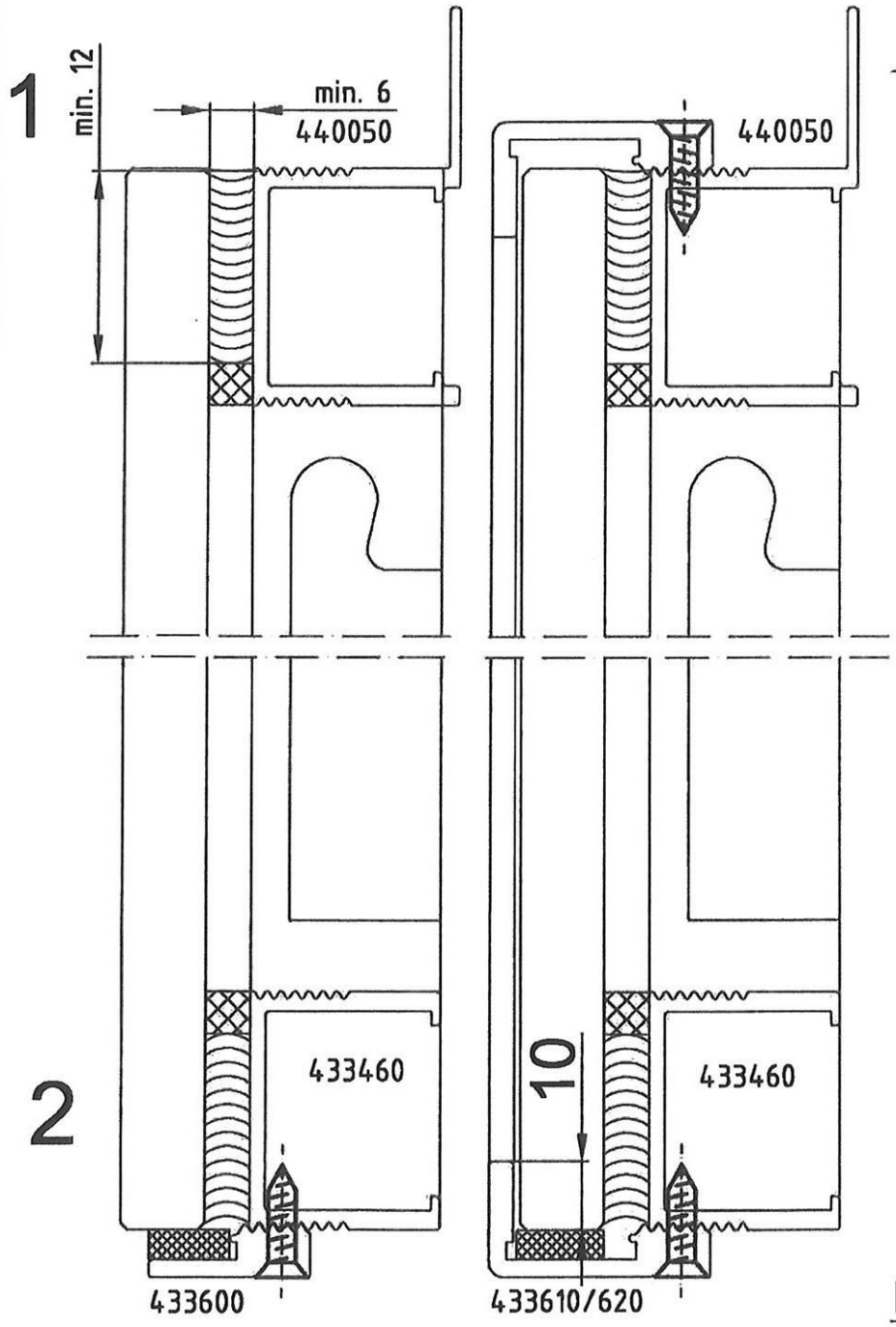
22 / 02 / 2011

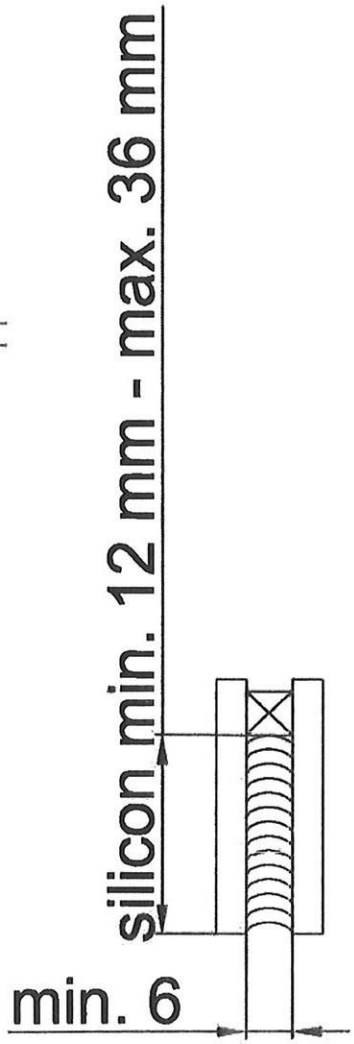
max. Glasabmessungen : 1500 mm x 2000 mm
max. Glasdicke 12mm

max. glass dimension : 1500 mm x 2000 mm
max. glass thickness 12mm

Silikon verklebt / silicon bonding







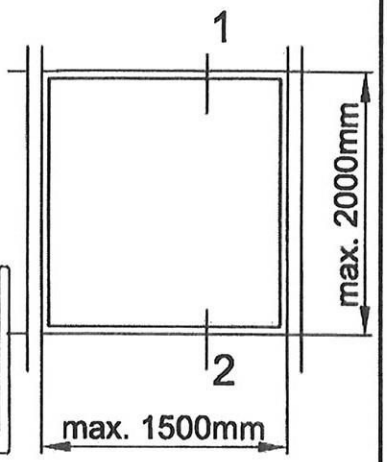
Glasträger / glazing support

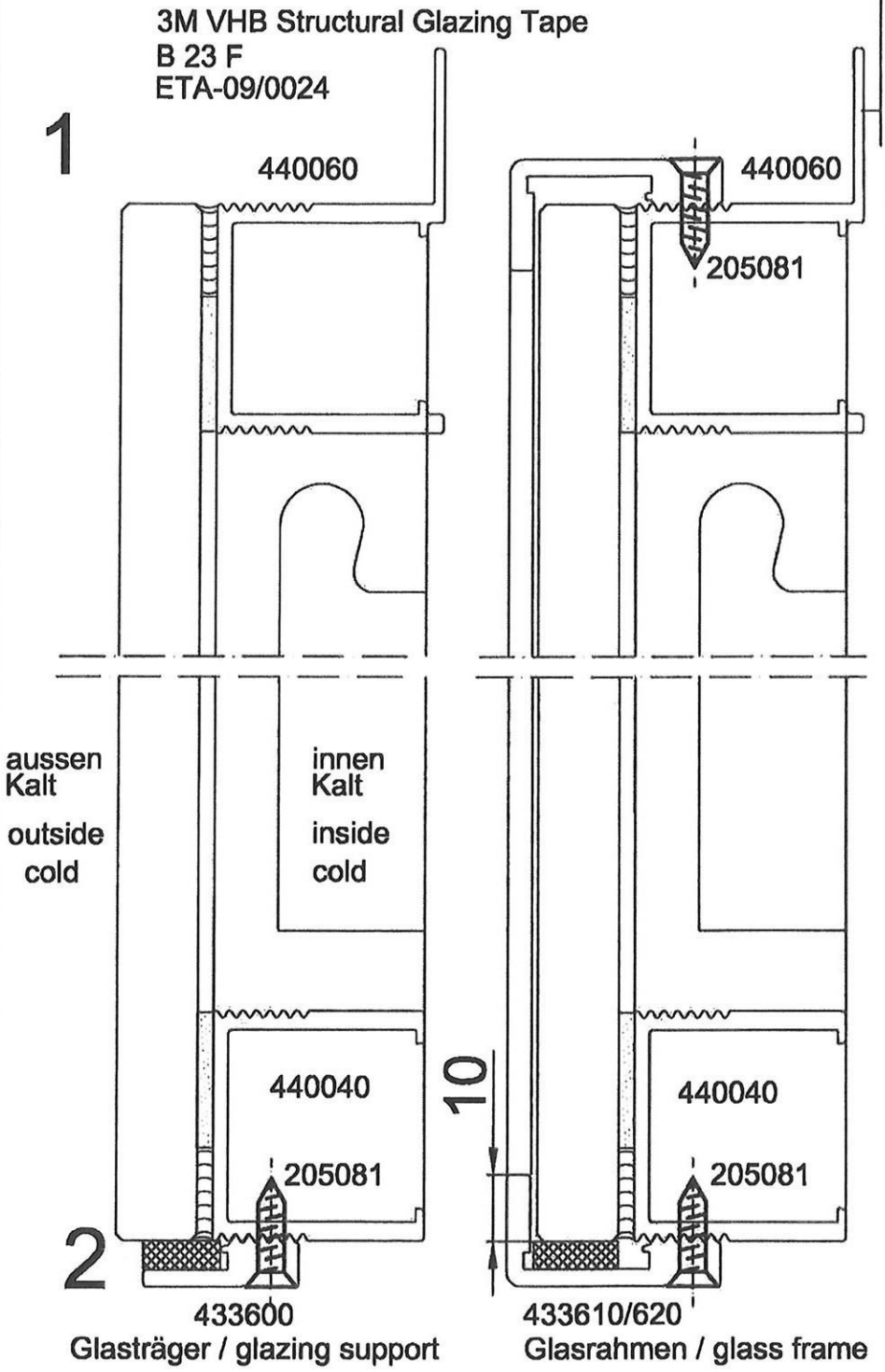
Glasrahmen / glazing frame

SCHÜCO SCHÜCO International KG Karolinenstr. 1 - 15 D-33609 Bielefeld Telefon (0521) 783-0 Telefax (0521) 783-695	FW 50+SG/FW 60+SG Kalt-Fassade ventilated facade	Anlage / Annex 3 ETA-05/0114 vom / from 22 / 02 /2011

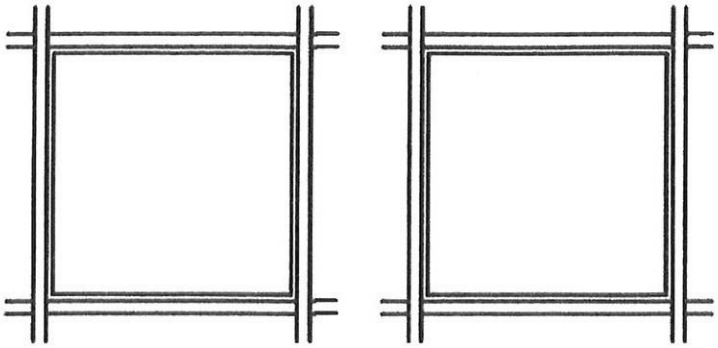
max. Glasabmessungen : 1500 mm x 2000 mm
max. Glasdicke 12mm

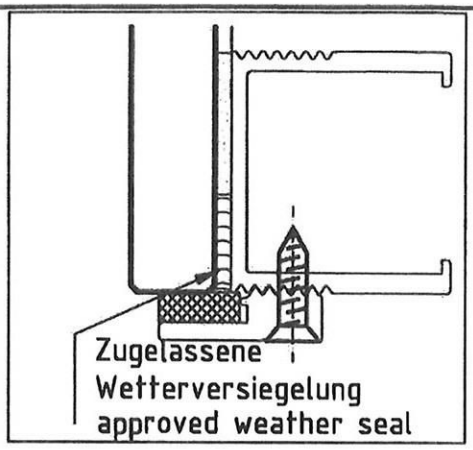
max. glass dimension : 1500 mm x 2000 mm
max. glass thickness 12mm

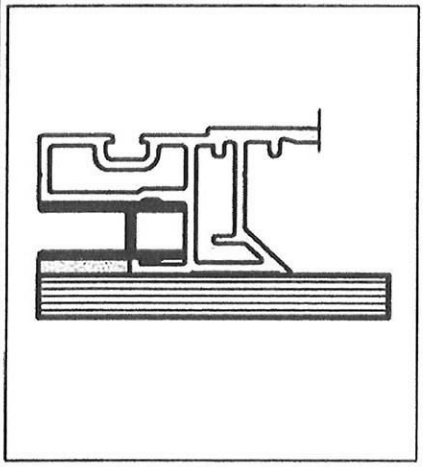


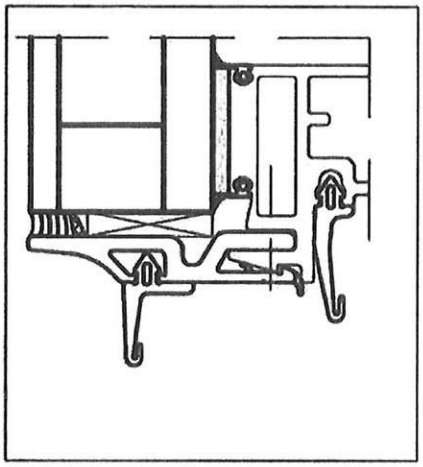


SCHÜCO SCHÜCO International KG Karolinenstr. 1 - 15 D-33609 Bielefeld Telefon (0521) 783-0 Telefax (0521) 783-695	FW 50+SG/FW 60+SG Kalt-Fassade/ ventiladed facade 3M VHB Tape 10-50mm	Anlage / Annex 3a ETA-05/0114 vom / from 22 / 02 / 2011

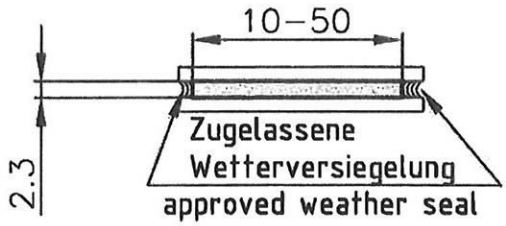




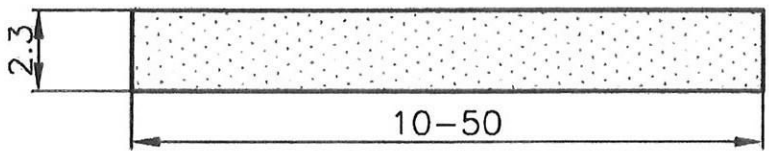




Dichtung (gasket) für / for
3M VHB Structural Glazing Tape
Silicon DIN 7863 Typ B



5:1



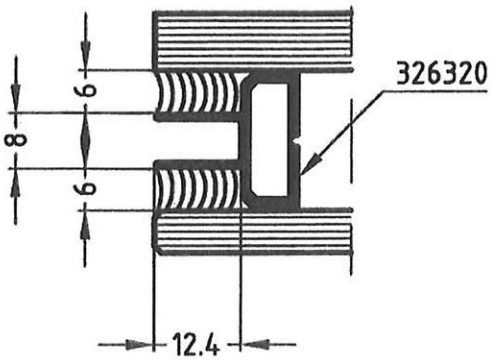
3M Structural Glazing Tape G/B 23 F (grey/grau,black/schwarz)

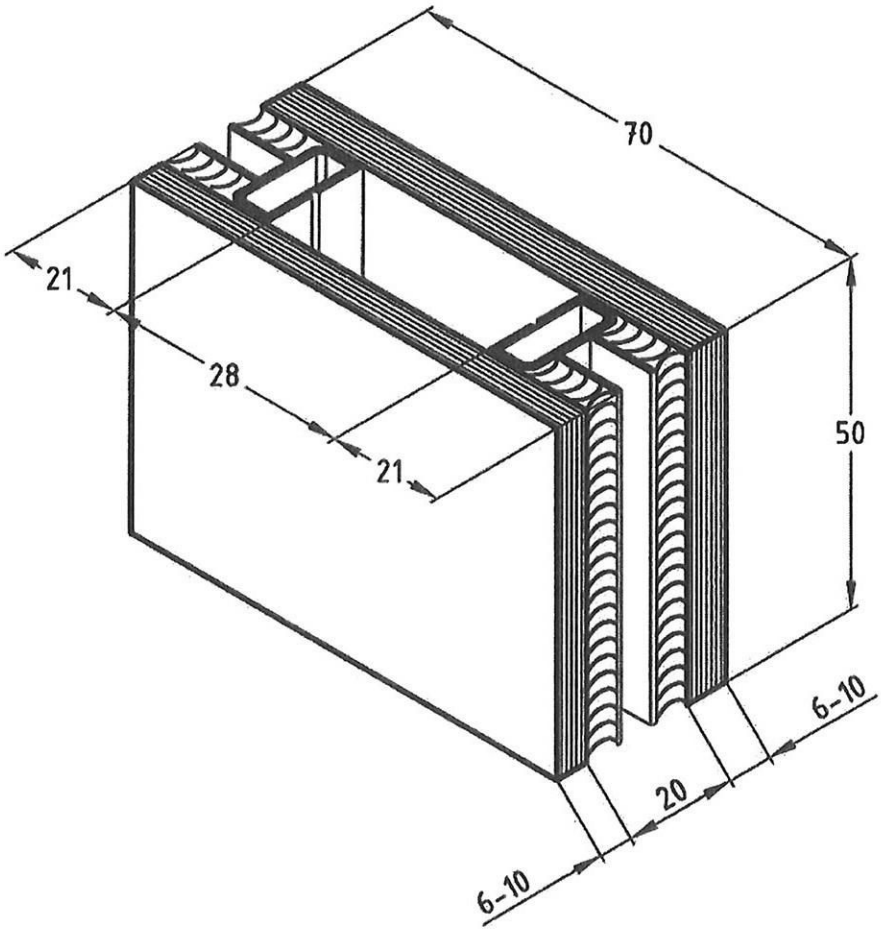
ETA-09/0024

SCHÜCO SCHÜCO International KG Karolinenstr. 1 - 15 D-33609 Bielefeld Telefon (0521) 783-0 Telefax (0521) 783-695	FW 50+SG/FW 60+SG 3M VHB Strucural glazing Tape G/B 23 F 10-50mm	Anlage / Annex 3b ETA-05/0114 vom / from 22 / 02 / 2011

Einteiliger Abstandhalter aus Aluminium EN AW-6060
Profiloberfläche E6/C0 bis E6/C35

one-piece spacer aluminium EN AW-6060
profile surface area E6/C0 bis E6/C35

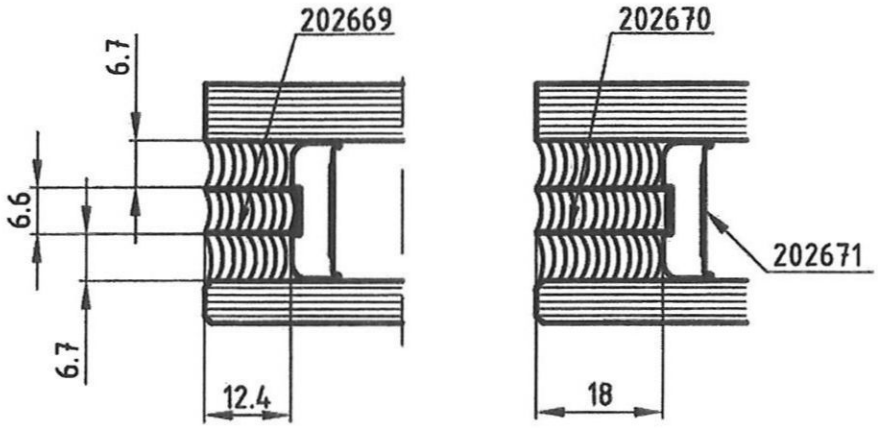


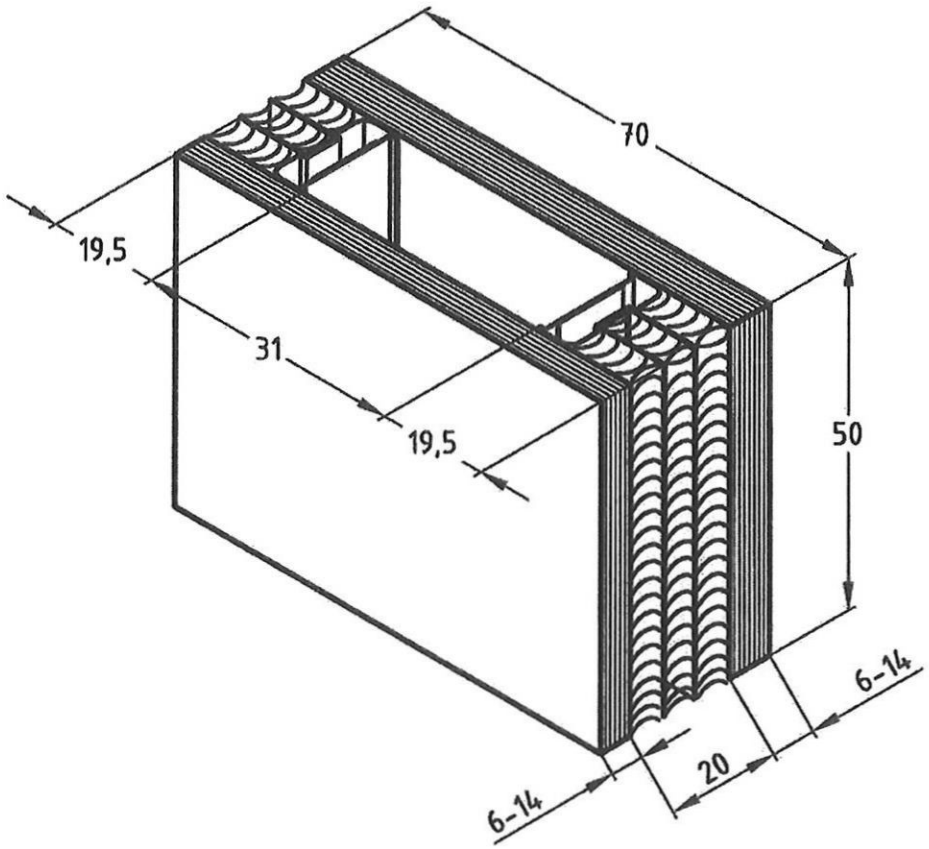


SCHÜCO SCHÜCO International KG Karolinenstr. 1 - 15 D-33609 Bielefeld Telefon (0521) 783-0 Telefax (0521) 783-695	FW 50+SG/FW 60+SG Probekörper Überwachung sample for supervision	Anlage / Annex 4 ETA-05/0114 vom / from 22 / 02 / 2011

zweiteiliger Abstandhalter aus Edelstahl 1.4301 EN 10088-2

two-piece stainless steel spacer 1.4301 EN 10088-2

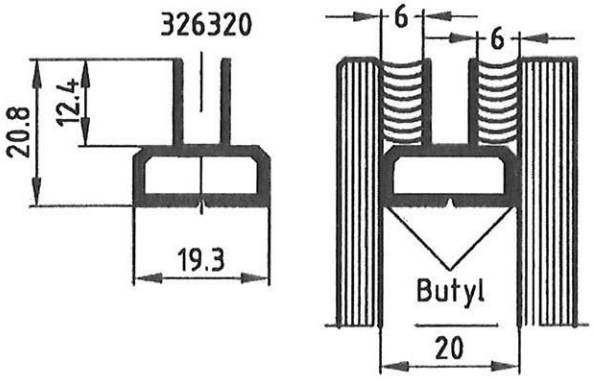


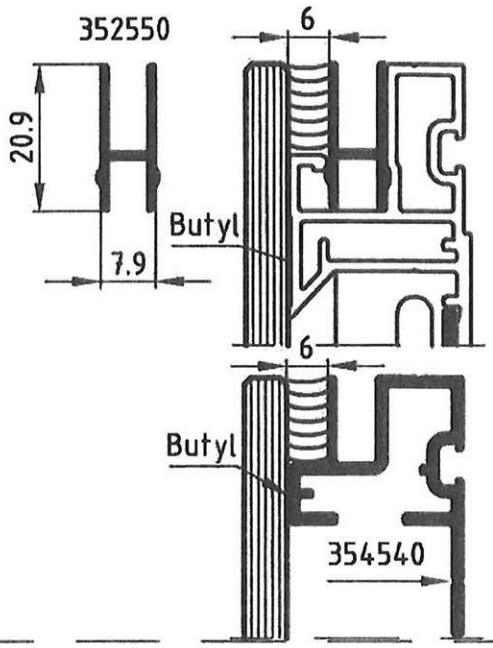


SCHÜCO SCHÜCO International KG Karolinenstr. 1 - 15 D-33609 Bielefeld Telefon (0521) 783-0 Telefax (0521) 783-695	FW50 + SG / FW60+ SG Probekörper Überwachung sample for supervision	Anlage / Annex 4a ETA-05/0114 vom / from 22 / 02 /2011

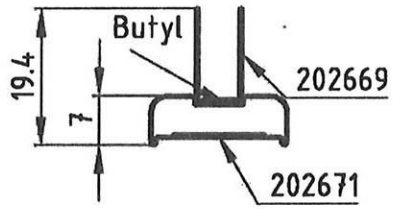
1-teiliger Abstandhalter aus
Aluminium EN AW-6060
Profiloberfläche E6/C0 bis E6/C35

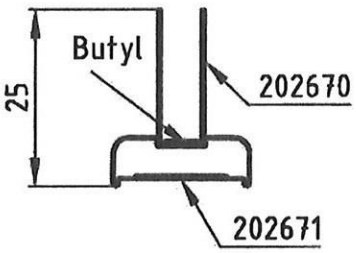
one-piece spacer
aluminium EN AW-6060
profile surface area E6/C0 bis E6/C35

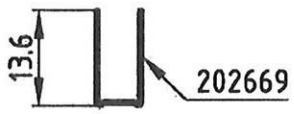


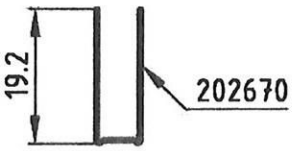


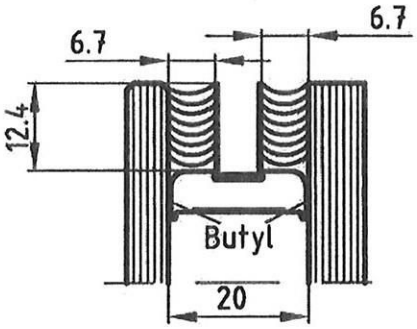
2-teiliger Abstandhalter aus Edelstahl
1.4301 nach DIN EN 10088-2
two-piece stainless steel spacer

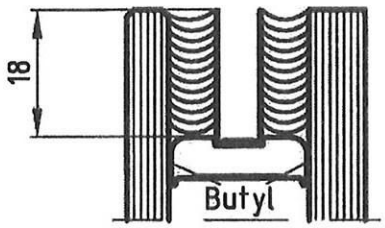


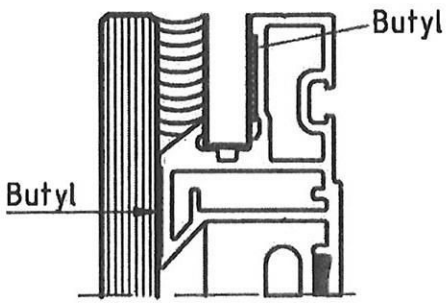












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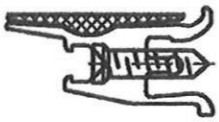
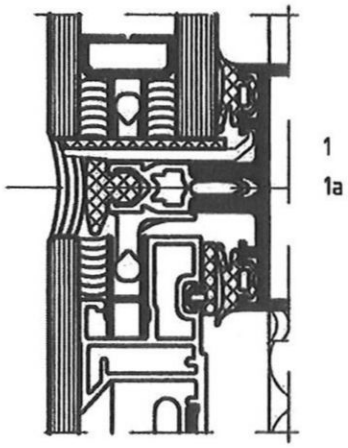
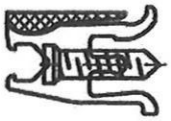
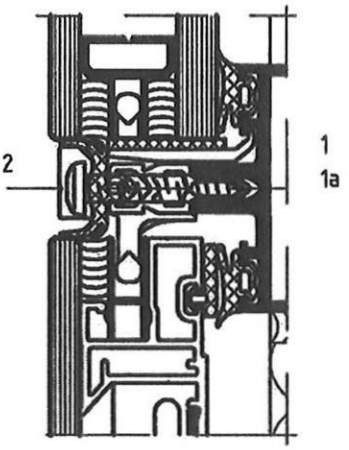
FW 50+SG/FW 60+SG
Abstandhalter
spacer

Anlage / Annex 5
ETA-05/0114
vom / from
22 / 02 / 2011

Standard Glasträger standard glazing support		
1 	FW50+ SG	FW60+ SG
	266674 266675 266677 266676	266679 266680 266682 266681
Glasträger große Glaslasten glazing support for high glass loads		
1a 	242297 242299 242358 242359 242379	242188 242302 242360 242361 242380



zweiteiliger Glasträger two-piece glazing support		
Standard Glasträger 1 standard glazing support 	FW50+ SG	FW60+ SG
	266673	266678
1a Glasträger große Glaslasten glazing support for high glass loads 	242298 242300	242189 242303
2 	237525 242301	237525 242301



1) Glasträger (glazing support) aus Aluminiumknetlegierung / aluminium alloy EN AW-6005A
mit / with Silikonauflage /silicon tape

2) Glasträger (glazing support) aus Aluminiumknetlegierung / aluminium alloy EN AW-6005A
mit / with KS-Auflage (plastic tape) aus / made of Formmasse / moulding substance DIN EN ISO 1873 PP-H.M.c. 28

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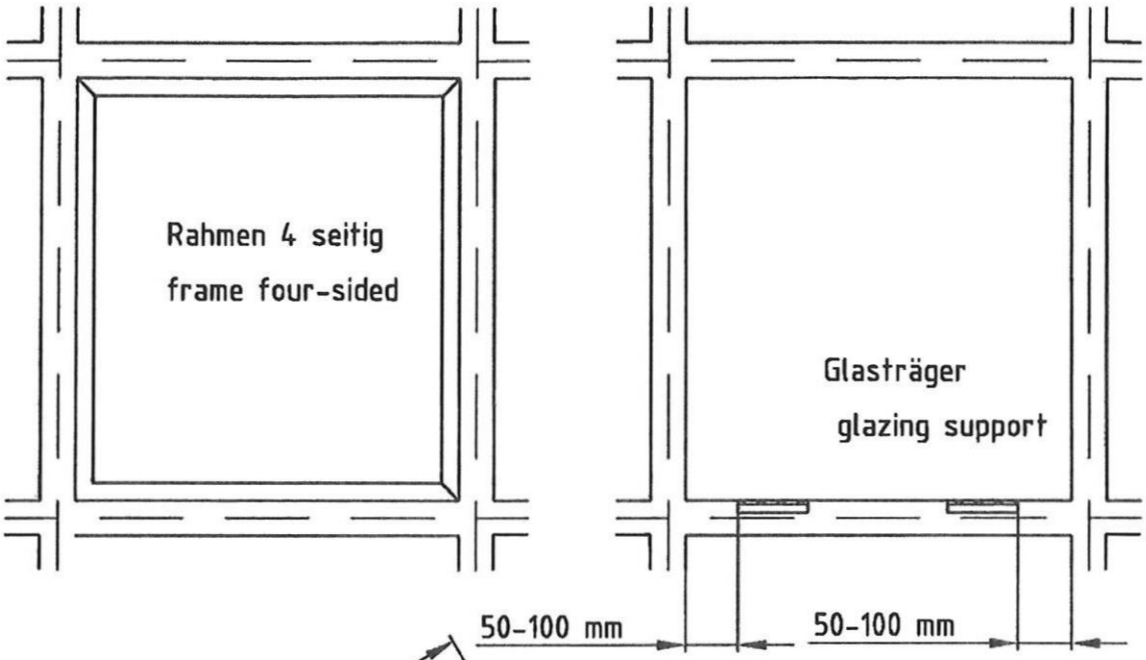
FW 50+SG/FW 60+SG
Glasträger
glazing support

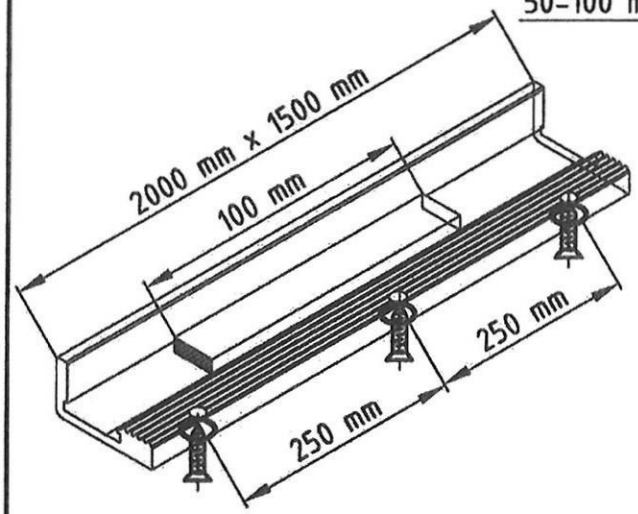
Anlage / Annex 5a

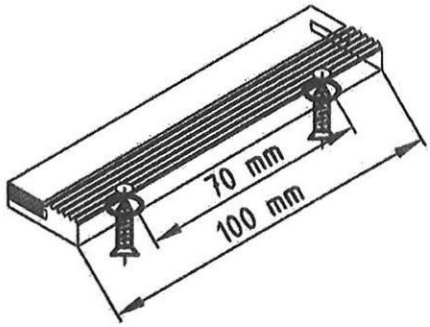
ETA-05/0114

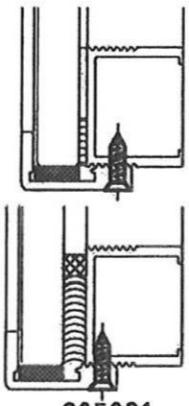
vom / from

22 / 02 / 2011

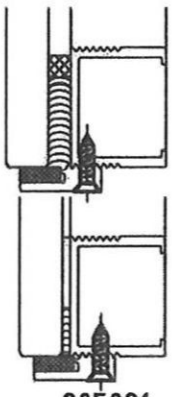








Structural glazing
3M VHB-Tape verklebt
3M VHB-Tape bonding



Structural glazing
Silikon verklebt
silicon bonding

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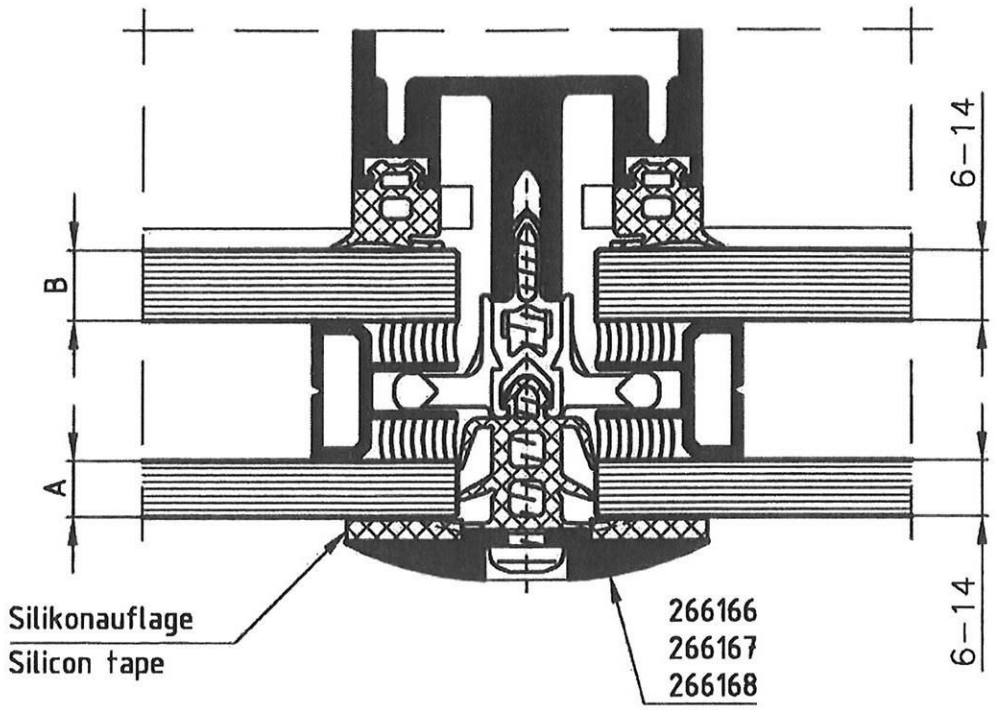
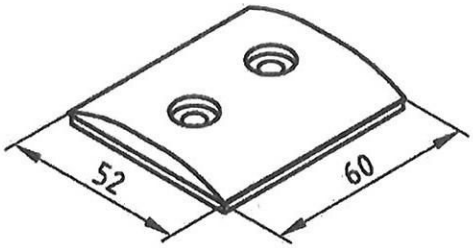
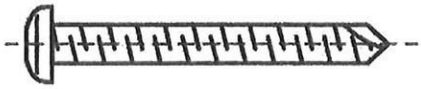
FW 50+SG/FW 60+SG
SG-Rahmen / SG frame
Glasträger
glazing support

Anlage / Annex 5b
ETA-05/0114
vom / from
22 / 02 / 2011



A [mm]	B [mm]		
6	6,8,10	266167	225119
8		266166	
10		266168	225120
12		266167	
14		266166	
6	10,12,14	266168	225120
8		266167	
10		266168	225121
12		266167	
14		266166	

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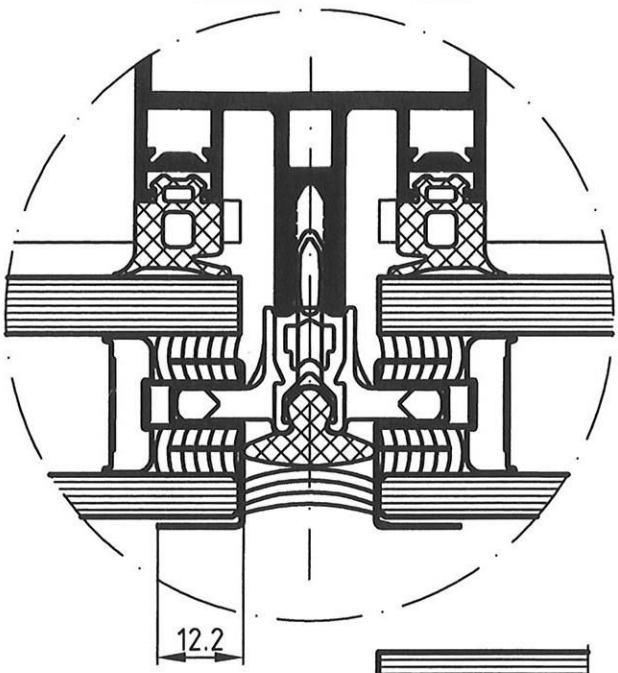
FW 50+SG/FW 60+SG
Aluminium Nothalter
aluminium
ermergency retainer

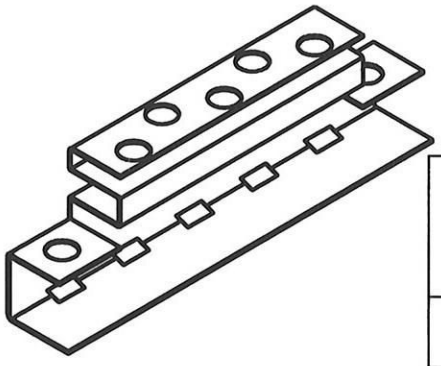
Anlage / Annex 5c

ETA-05/0114

vom / from

22 / 02 / 2011





Art. Nr.	x
266002/003	6mm
266536/537	10mm
266004/005	12mm
266538/539	14mm

Edelstahl-Nothalter
1.4310 EN 10088-2

stainless steel emergency retainer
1.4310 EN 10088-2

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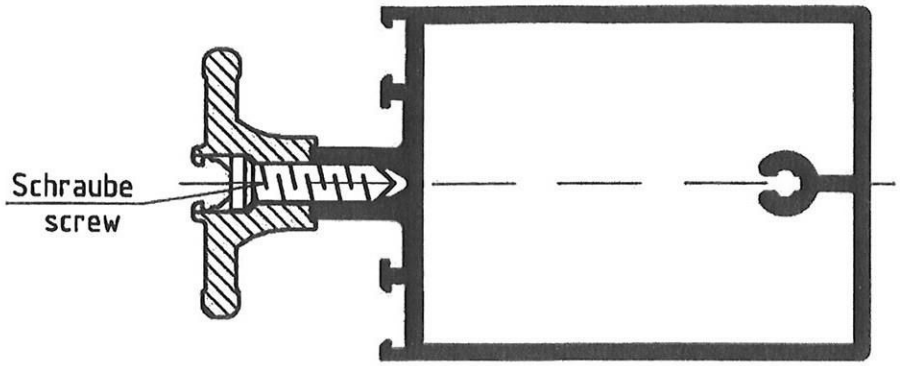
FW 50+SG/FW 60+SG
Edelstahl-Nothalter
stainless steel
emergency retainer

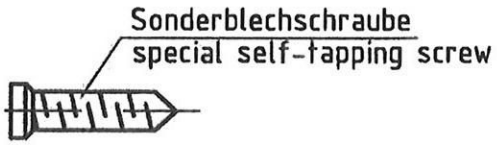
Anlage / Annex 5d

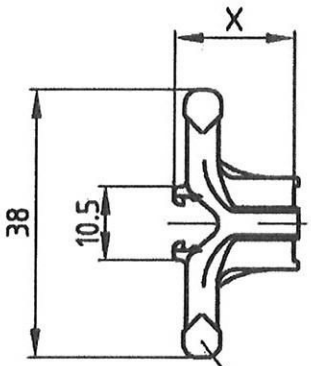
ETA-05/0114

vom / from

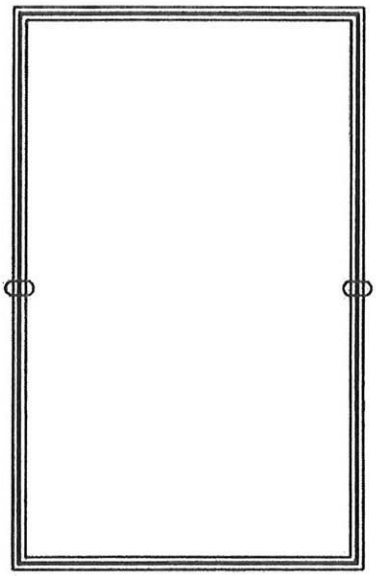
22 / 02 / 2011





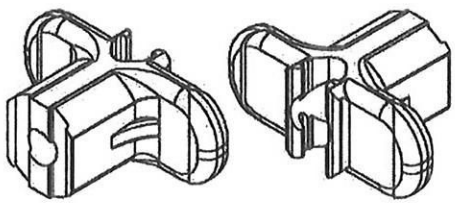


Glashalter / glazing clip
EN 12844
G-Zn Al4 Cu3 (Z430)



Glashalter / glazing clip

X	Art. Nr. - Glashalter/retaining clip	Schraube/screw
17mm	237855	205963 (ST 5.5 x 23.5)
21mm	242363	225082 (ST 5.5 x 27.5)



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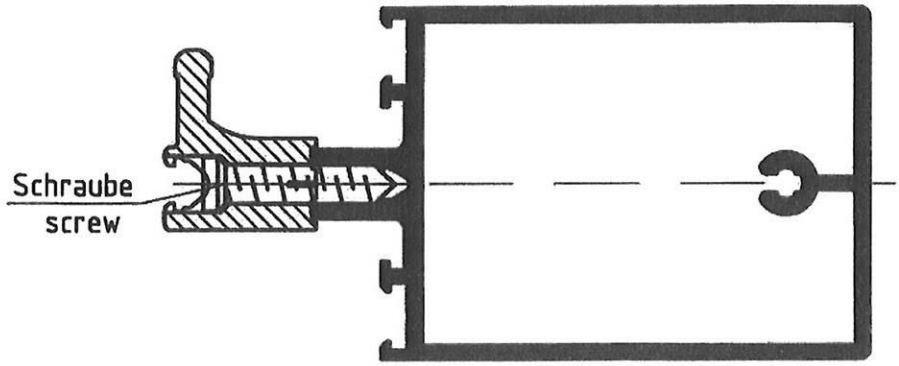
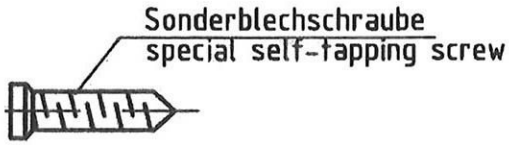
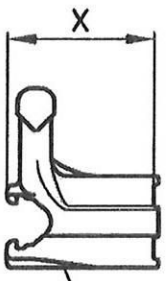
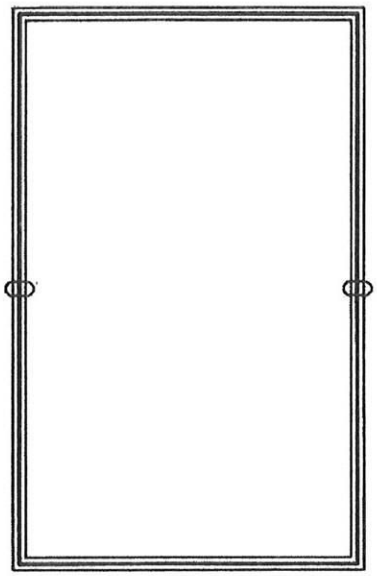


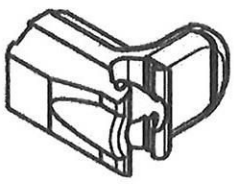


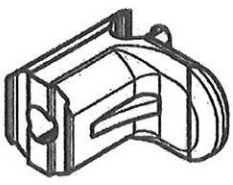


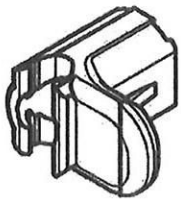


X	Art. Nr. - Glashalter	Schraube/screw
17mm	237854	205963 (ST 5.5 x 23.5)
21mm	242362	225082 (ST 5.5 x 27.5)

⬭ Glashalter / retaining clip







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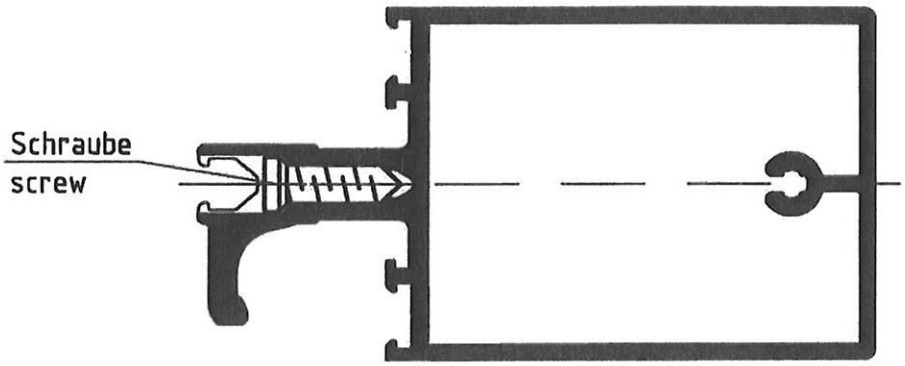
FW 50+SG/FW 60+SG
Glashalter 1seitig
retaining clip one sided

Anlage / Annex 6a

ETA-05/0114

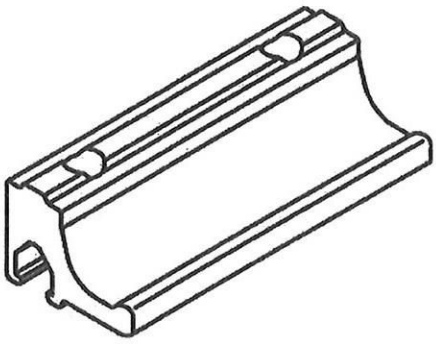
vom / from

22 / 02 / 2011



	X	Schraube screw
237856	6mm	205963 (ST5.5 x 23.5)
	8mm	
	10mm	
242429	10mm	205981 (ST5.5 x 16)
	14mm	

Glashalter / retaining clip



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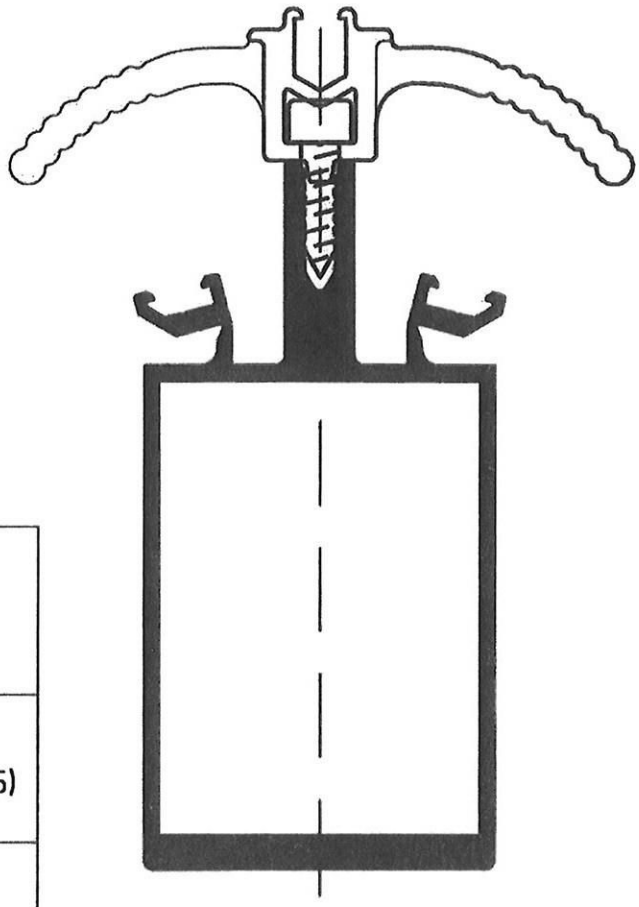
FW 50+SG/FW 60+SG
Glashalter 1 seitig
retaining clip one sided

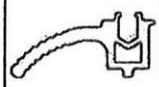
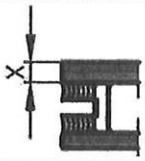
Anlage / Annex 6b

ETA-05/0114

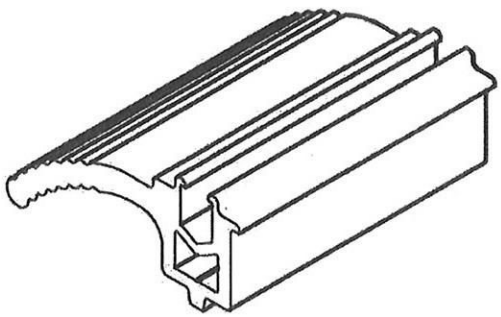
vom / from

22 / 02 / 2011



		Schraube screw
237857	6mm	205963 (ST5.5 x 23.5)
	8mm	
	10mm	
242430	10mm	205981 (ST5.5 x 16)
	14mm	
242425	6mm	
	8mm	
	10mm	
242426	10mm	
	14mm	
242427	6mm	
	8mm	
	10mm	
242428	10mm	
	14mm	

Glashalter / retaining clip



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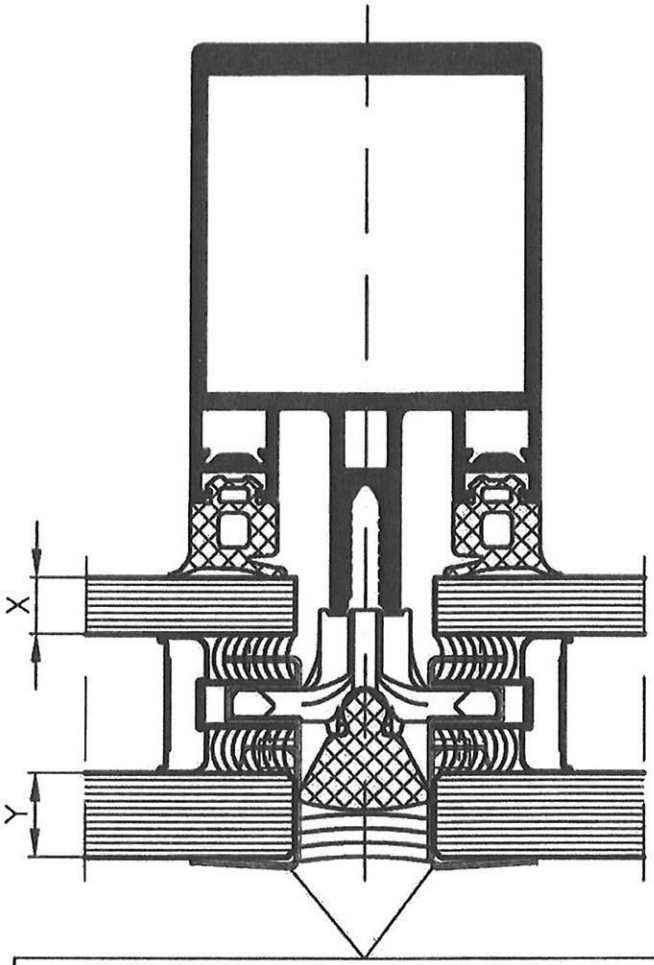
FW 50+SG/FW 60+SG
Glashalter 1 seitig
retaining clip one sided
segmentiert,segmented

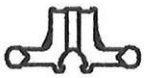
Anlage / Annex 6c

ETA-05/0114

vom / from

22 / 02 / 2011



Edelstahl-Nothalter stainless steel emergency retainer			
			
Art.-Nr.	X (mm)	Y (mm)	Art.-Nr.
266002	6 - 10	6 - 8	266003
266536	6 - 10	10 - 12	266537
266538	10 - 14	6 - 8	266539
266004	10 - 14	10 - 12	266005

SCHÜCO

SCHÜCO International KG
Karolinenstr. 1 - 15
D-33609 Bielefeld
Telefon (0521) 783-0
Telefax (0521) 783-695

FW 50+SG/FW 60+SG
Edelstahl-Nothalter
stainless steel
emergency retainer

Anlage / Annex 7

ETA-05/0114

vom / from

22 / 02 / 2011