



European Technical Approval ETA-11/0330

English translation prepared by DIBt - Original version in German language

Handelsbezeichnung
Trade name

SCHÜCO AWS 102 Typ A und Typ B und SCHÜCO ADS
SCHÜCO AWS 102 Type A and Type B and SCHÜCO ADS

Zulassungsinhaber
Holder of approval

SCHÜCO International KG
Karolinenstraße 1 -15
33609 Bielefeld
DEUTSCHLAND

Zulassungsgegenstand
und Verwendungszweck
*Generic type and use
of construction product*

Geklebte Öffnungselemente für Fassadenkonstruktionen
Structural Sealant Glazing Opening Units for Facade Constructions

Geltungsdauer:
Validity: vom
from
bis
to

4 October 2011
4 October 2016

Herstellwerke
Manufacturing plants

Siehe Anlage D
see annex D

Diese Zulassung umfasst
This Approval contains

41 Seiten einschließlich 26 Anhänge
41 pages including 26 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 products¹, modified by Council Directive 93/68/EEC² and Regulation (EC) N° 1882/2003 of the European Parliament and of the Council³;
 - 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 1998⁴, as amended by law of 31 October 2006⁵;
 - Common Procedural Rules for Requesting, Preparing and the Granting of European technical approvals set out in the Annex to Commission Decision 94/23/EC⁶;
 - Guideline for European technical approval of "Structural Sealant Glazing Kits (SSGK) - Part 1: Supported and Unsupported Systems", ETAG 002-01.
- 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.
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- 6 The European technical approval is issued by the approval body in its official language. This version corresponds fully to the version circulated within EOTA. Translations into other languages have to be designated as such.

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 products and intended use

1.1 Definition of the construction product

The subjects of this European technical approval are the Type A and Type B opening units of the "Schüco AWS 102" profile system and the bonding of the door element "Schüco ADS". Type A is stepped insulating glass with an outer pane bonded around the circumference to a supporting profile (Annex 1). Type B is insulating glass with a structural insulating glass edge seal, with the inner pane bonded around the circumference to a supporting profile. Both types are available as projected top hung or parallel opening windows.

This European technical approval regulates the structural sealing of the insulating glass to the frames or supporting profiles of the opening units, the support of self-weight via the glazing supports and the emergency retainer systems for the case of sealant failure.

The permissible size of the opening units depends on the static loading calculations according national provisions.

The self-weight of the opening elements is always mechanically supported by glazing supports.

1.2 Intended use

The opening units of the system "AWS 102" may be installed vertically or with a slight inclination. The inclination angle with respect to the vertical direction shall not exceed 10° for inward inclinations (pressure stress on the sealant due to self-weight); outward inclinations (tensile stress on the sealant due to self-weight) are not permitted.

The use of opening units for stiffening other components or as barrier against falling down is not covered by this ETA.

The existing construction can be of Type I or Type II as defined in ETAG 002-1⁷. For Type I, mechanical self-weight support is required and also additional retaining devices to reduce danger in case of bond failure. For Type II, only mechanical self-weight support and no retaining devices are required. The special requirements of the Member States for using the construction are to be observed.

The essential requirements applying to the sealed opening units "Schüco AWS 102, Typ A and Typ B" 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).

⁷ ETAG-002-1: Guideline for European Technical Approval of "Structural Sealant Glazing System"; Part 1: Supported and unsupported systems

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 the "Schüco AWS 102, Type A und Type B" opening units 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 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, subsequently called float glass, whereby the stipulations of the Member States as per Annex B, Section 1 are to be observed.

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, both two-layer and three-layer insulating glass units may be used. The requirements as per Annex B, Section 6 apply.

For the insulating glass units glass as per Sections 2.1.1.1 to 2.1.1.6 is to be used. The specific requirements of the Member States are to be observed.

The insulating glass units are to conform to the regulations for insulating glass units as per EN 1279-5⁸.

2.1.2 Structural frames

The bonding profiles of the opening units (Annex 1 to 15, 19 and 20) are profiles with CE-marking according to EN 15088⁹ and are of EN AW 6060 aluminium, state T66 as per EN 755-2¹⁰. The adhesives specified in table 1 may be used for sealing the structural frames when the surface structure and anodising process correspond to the specifications in table 1.

Table 1: Substrates and adhesives

Bonding profiles	Nature of surfaces	Adhesives that may be used
EN AW 6060 aluminium, state T66 as per EN 755-2 ¹⁰ ; profiles as per Annexes 1, 4, 9, 13 and 19	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 bronze), ALCAN company, 89600 Saint Florentin, France*	DC 993 (2.1.6.2) Sikasil SG 500 (2.1.6.3) KÖDIGLAZE S (2.1.6.4)
EN AW 6060 aluminium, state T66 as per EN 755-2; profiles as per Annexes 2, 7, 11 and 20	colours E6-C0 to E6-C35, Königsdorf company, Wolfhagen*; colours E6-C0 to E6-C35, HD Wahl company, Jettingen - Scheppach*	3M VHB G / B 23 F (2.1.6.5)
* The anodising process is to conform to the specifications deposited with Deutsches Institut für Bautechnik.		

2.1.3 Glazing supports

Glazing supports as per Annexes 1 to 16 are used to support the self-weight of opening units. The articles according to table 2 may be used in the systems regulated by this European technical approval.

⁸ EN 1279-5:2005 Glass in building - Insulating glass units - Part 5: Evaluation of conformity; German version DIN EN 1279-5:2005

⁹ EN 15088:2005 Aluminium and aluminium alloys - Structural products for construction works - Technical conditions for inspection and delivery

¹⁰ EN 755-2:2008 Aluminium and aluminium alloys - Extruded rod/bar, tube and profiles - Part 2: Mechanical properties

Table 2: Glazing supports

Support for	Art. No.	Type of fixing	Glass support material*	Setting block material**
Opening units				
Type A inner pane(s)	266226	see Annexes 1, 4, 5 and 6	EN AW 6060-T66	silicone (see below)
Type A outer pane	242566, 242567, 242568, 242569	two screws ST3.9 x 9.5, see Annexes 2, 4, 7, 9, 10 and 16	EN AW 6060-T66	silicone (see below)
Type A outer pane Glazing support / emergency retainer	369680, 326310, 369650, 369660,	two screws ST3.9 x 9.5, see Annexes 5, 6 and 8	EN AW 6060-T66	silicone (see below)
Type B	266227, 266228, 266229	screws ST3.9 x 9.5 or retaining pins, see Annex 11	EN AW 6060-T66	silicone (see below)
Type B corner glass support	266195, 266196, 266197	screws ST3.9 x 9.5 or retaining pins, see Annexes 12, 13, 14 and 15	EN AW 6060-T66	silicone (see below)
<p>* Extruded profiles as per EN 15088 of EN AW 6060, state T66 or EN AW 6005A aluminium, state T6, as per DIN EN 755-2</p> <p>** The material properties are deposited with Deutsches Institut für Bautechnik.</p>				

Art. Nos. 242566 to 242569 and 369680, 326310, 369650 and 369660 are to be used as profiles with CE-marking according to EN 15088 made of EN AW 6060-T66 or EN AW 6005A-T6 as per EN 755-2 to act as glazing supports for the outer panes of stepped insulating glass in Type A opening units as per the Annexes 2, 4 to 10 and 16. The glazing supports are fixed to the casement using two ST3.9 x 9.5 screws. The setting block material of the glazing supports consist of silicone with Shore A hardness of approx. 70 ± 5 as per DIN 53505¹¹. Detailed information on the plastics to be used is deposited with Deutsches Institut für Bautechnik.

For Type B opening units, Art. nos. 266227, 266228 and 266229 or corner glass supports Art. nos. 266195, 266196 and 266197 are to be used, as per Annexes 11 to 15. The glazing supports are secured using ST3.9 x 9.5 screws or retaining pins.

2.1.4 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.

¹¹

DIN 53505:2000-08

Testing of rubber - Shore A and Shore D hardness test

For Type A, this is done using a circumferential retaining frame (Annex 5, 6 and 8), Art. Nos. 369680, 326310, 369650 and 369660 and for Type B using corner brackets, Art. Nos. 266195, 266196 und 266197, and additional emergency retainers at specific points, Art. Nos. 266210, 266211 and 266212, (Annexes 12, 13, 14, 15, 17 and 18).

2.1.5 Inner sealing of insulating glass units

For the inner sealing of the insulating glass units, a polyisobutylene layer is to be applied between the glass panes and spacers (see Section 2.1.6). Details on the butylene to be used are deposited with Deutsches Institut für Bautechnik.

2.1.6 Adhesives

2.1.6.1 General

Two-component silicone adhesive as per Sections 2.1.6.2 to 2.1.6.4 or 3M VHB Structural Glazing Tape G / B 23 F as per Section 2.1.6.8 may be used for the structural sealing of the glass panes to the structural frames of the opening units.

Silicone adhesive as per Sections 2.1.6.5 to 2.1.6.7 may also be used for the structural insulating glass edge sealing of the opening units.

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 table 3.

Table 3: Compatibility

Permissible combinations of structural sealants and adjacent materials													
Manufacturer	Structural sealant	Inner seal / butyl					Spacer tape Cover profile Sealing profile					Glazing foot/ setting block	
		BU-S, Kömmerling	Climafill standard, NMC sa	GD 115, Kömmerling	Terostat 969, H.B. Fuller	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
	DC 3362	X	X		X							X	X
Sika AG	Sikasil SG 500	X				X	X		X		X	X	X
	Sikasil IG25	X										X	
Kömmerling	KÖDIGLAZE S			X			X		X				
	GD 920			X									
3M Europe	VHB G/B 23F									X			

2.1.6.2 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
- Anodised aluminium surfaces as per Section 2.1.2

When manufacturing stepped insulating glass as per Annexes 1, 4, 5, 6, 9 and 10 according to the process defined by Deutsches Institut für Bautechnik, the adhesion surface may be coated with (1.5 ± 0.5) mm adhesive layer before the actual structural sealing is performed. The following combinations are permitted only (glass side - aluminium side):

- DC 993 - DC 993
- DC 3793 - DC 993
- DC 3362 - DC 993

2.1.6.3 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
- Anodised aluminium surfaces as per Section 2.1.2

When manufacturing stepped insulating glass as per Annexes 1, 4, 5, 6, 9 and 10 according to the process defined by Deutsches Institut für Bautechnik, the adhesion surface may be coated with (1.5 ± 0.5) mm adhesive layer before the actual structural sealing is performed. The following combinations are permitted only (glass side - aluminium side):

- SIKASIL SG 500 - SIKASIL SG 500
- SIKASIL IG 25 - SIKASIL SG 500

2.1.6.4 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 anodised aluminium surfaces as per Section 2.1.2 has been proven within the scope of the approval procedure.

2.1.6.5 DC 3362 and DC 3362 HD from Dow Corning

The stipulations of ETA-03/0003 are to be observed when using the DC 3362 and DC 3362 HD two-component silicone adhesives from Dow Corning. The adhesives are used as a structural insulating glass edge sealant for sealing the glass panes.

2.1.6.6 Sikasil IG 25 from SIKA SERVICES AG

The stipulations of ETA-05/0068 are to be observed when using the two-component silicone adhesive from SIKA SERVICES AG. The adhesive is used as a structural insulating glass edge sealant for sealing the glass panes.

2.1.6.7 GD 920 from Kömmerling

The stipulations of ETA-08/0004 are to be observed when using the two-component silicone adhesive from Kömmerling. The adhesive is used as a structural insulating glass edge sealant for sealing the glass panes.

2.1.6.8 3M VHB Structural Glazing Tape G/B 23F from 3M Europe

The stipulations of ETA-09/0024 are to be observed when using the 3M VHB Structural Glazing Tape G/B 23F. For the wind suction loads, a permissible tension 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 glass panes to supporting profiles. 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:

- Structural frame surfaces of opening units 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, safety glass, and heat strengthened glass) has been proven within the scope of ETA-09/0024 certification.

2.1.7 Procedure for preparation of the adhesion surfaces

The processing specifications of the system supplier Schüco International KG and the specifications of the adhesive manufacturer relating to the pre-treatment of the contact surfaces and the processing of the adhesive as per Section 2.1.6, which are deposited with Deutsches Institut für Bautechnik, are to be observed.

2.2 Verification method

2.2.1 General

The assessment of the fitness for the intended use of the opening 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 Guideline for European Technical Approval of "Structural Sealant Glazing System" (ETAG 002-1).

In cases where the guideline allows classification or decision possibilities, the following performances have been determined.

2.2.2 Safety in case of fire (ER 2)

According to EC Decision 96/603/EC, glass is assigned to class A1, the inner sealing as per Section 2.1.5 and the adhesives as per Section 2.1.6 are assigned to class F.

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

2.2.3 Hygiene, health and the environment (ER 3)

With regard to "Dangerous substances", the manufacturer of the infill elements has a declaration of conformity to 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 opening units, 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, the structural bond is not subjected to greater tensile and thrust forces than those permitted for the respective adhesive approval (see Section 2.1.6).

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.

In Germany a permissible principal tensile stress of the heat soaked soda lime silicate safety glass of $\sigma_{zul} = 105 \text{ N/mm}^2$ 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 following permissible loads may be assumed ($\gamma_{glob} = 1.1$).

Type A: Art. No. 326310, 369650, 369660 and 369680:

The permissible load is: $F_{zul} = 11.4 \text{ kN/m}$

Type B: corner emergency retainer Art. No. 266195, 266196 and 266197; glazing supports Art. No. 266210, 266211 and 266212 (Annexes 17 and 18).

For pane edge lengths of 1500 mm or more, an extra glazing support is to be used in addition to the corner emergency retainers. The clearance between the emergency retainers may not be more than 900 mm.

Pane sizes $\leq 1500 \text{ mm} \times 1500 \text{ mm}$ with 4 glass corner emergency retainers: $F_{zul} = 2.3 \text{ kN/m}^2$

$1500 \text{ mm} \times 1500 \text{ mm} < \text{pane sizes} \leq 1800 \text{ mm} \times 1800 \text{ mm}$ with 4 glass corner emergency retainers and one additional emergency retainer on each side: $F_{zul} = 2.3 \text{ kN/m}^2$

$1800 \text{ mm} \times 1800 \text{ mm} < \text{pane sizes} \leq 2600 \text{ mm} \times 2600 \text{ mm}$ with 4 glass corner emergency retainers and 2 additional emergency retainers on each side: $F_{zul} = 2.4 \text{ kN/m}^2$

2.2.4.4 Verification of the glazing supports

The self-weight is to be mechanically supported for all opening elements. 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 glazing supports as per Section 2.1.3 may be used for the permissible self-weight load of the opening units according to table 4.

Table 4: Permissible self-weight load

Support for	Art. No.	Permissible loads (5%-fractile / 75% confidence level; $\gamma_{glob} = \gamma_M \cdot \gamma_F = 1.7$)
Type A	266226	1.0 kN
outer pane Type A	242566, 242567, 242568, 242569	0.24 kN
outer pane Type A Glazing support / emergency retainer	369680, 326310, 369650, 369660	4.1 kN/m
Type B	266227, 266228, 266229	0.75 kN
corner glazing support Type B	266195, 266196, 266197	3.09 kN

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 Air permeability, watertightness

Class E 1200 for top hung window and class 9A for parallel opening window as per EN 12208¹² have been determined for the watertightness.

Class 4 as per EN 12207¹³ has been determined for the air permeability.

Detailed data are available via internet

www.schueco.com/web/de/partner/services/download/pruefzeugnisse

2.2.5 Protection against noise (ER 5)

In the context of issuing of 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 provisions of the respective Member States apply to the verification of the energy economy and heat retention characteristic of the construction.

3 Evaluation and attestation of conformity and CE marking

3.1 Attestation of conformity system

According to the 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.

¹² EN 12208:1999 Windows and doors - Watertightness - Classification
¹³ EN 12207:1999 Windows and doors - Air permeability - Classification

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

- (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 notified 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 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.

Table 5: 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. 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 construction 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 is to monitor production 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 product.

Table 6: Tasks for attestation of conformity for system 2+

	Tasks	Contents
Manufacturer	initial type-testing of the construction 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. 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 is to monitor production 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-internal production monitoring.

The EC certificate of conformity 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 EC 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 itself, on a label attached to it, on its packaging, or on the accompanying documents. The following additional information is to be provided after the "CE" letters:

- 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 product (System 1)
- Number of the EC certificate for the factory-internal production control (System 2+)
- Number of the European technical approval
- Identification of the product "Schüco AWS 102", Type A or Type B; "Schüco ADS"

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

4.1 Production

The European technical approval is issued for the product on the basis of agreed data/information, deposited with Deutsches Institut für Bautechnik, which identifies the product that has been assessed and judged. Changes to the product or production process, which could result in this 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 opening units may only be manufactured in factories and these factories are to be verified by the applicant to possess the necessary technical knowledge and experience of structural sealing processes. The sealing companies are to be adequately trained by the adhesive manufacturers as per Section 2.1.6. SCHÜCO International KG maintains a list of authorised sealing companies, which is to be continually updated. 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 (sealed profile, adjacent frame) is to be completely filled. The silicone sealant seam between the glass panel and the profile is to be at least 6 mm thick and 12 mm wide. The exact dimensions are to be appropriately calculated.

For the 3M VHB Structural Glazing Tape G/B 23F the stipulations of ETA-09/0024 are to be observed. For the bonding process section 4.3.2 to 4.3.7 and 4.4 of ETA-09/0024 and in addition the processing specifications of 3M have to be respected.

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

The stipulations of Annex B, Section 2 are to be maintained when performing the heat soak test.

4.2 Installation

The opening units are to be joined to the supporting structure in compliance with the workshop manual of SCHÜCO International KG in such a manner that no restraints in the elements can occur. Installation is to be performed by professional personnel who have been trained for this work by SCHÜCO International KG.

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 the glass elements 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. 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:
M. Herr

Annex A1

Coated glass products that are designed to be sealed using the DC 993 adhesive from Dow Corning without removal of the coating at the edges

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 Trüsch AG, Bützberg (CH)	Sunstop Silber 20
Glasverarbeitungsgesellschaft Bietighelm, Bietighelm	Emailit 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

Annex A2

Coated glass products that are designed to be sealed using the Sikasil SG 500 adhesive from Sika AG without removal of the coating at the edges

Hersteller / Manufacturer	Bezeichnung / Name
Bischoff Glastechnik, Bretten	ESG BI-Color B1661.91, Glasemail schwarz D 14202 (Cerdec / dmc ²)
Cerdec AG Ceramic Colours, Frankfurt/Main	ESG Emailt Planilux mit Emaillierung 14710*, ESG Emailt Planilux mit Emaillierung 144001* (*Verklebung auf Emaille-Seite)
Glas Trösch AG	Sunstop Silber 20 Sunstop Silber 12 Sunstop ESG neutral 50
Glasverarbeitungsgesellschaft Bietigheim, Bietigheim	Emailt 7016 (anthrazit), Coolite 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	Coolite TS 120, Coolite TB 140, Coolite SS 108, Coolite SN 150, Coolite SC 114
St. Gobain Deutschland, Aachen	Coolite SC, Emaillierung 14710 (Cerdec / dmc ²), Emaillierung 144001 (Cerdec / dmc ²)

Annex B

National provisions on the glass products

1. Provisions on the manufacture of float glass (soda lime silicate glass)*

Class	Member States	Technical provision	Supplementary provisions
A	Germany	DIN EN 572-9 and "Bauregelliste" A Part 1 No. 11.10	Specification of the flexural tensile strength

2. Provisions on the manufacture of thermally toughened soda lime silicate safety glass*

Class	Member States	Technical provision	Supplementary provisions
A	Germany	DIN EN 12150-2 and "Bauregelliste" A Part 1 No. 11.12	Specification of the flexural tensile strength

3. Provisions on the manufacture of heat soaked soda lime silicate safety glass*

Class	Member States	Technical provision	Supplementary provisions
A	Germany	DIN EN 12150-2 and "Bauregelliste" A Part 1 No. 11.12	Specification of the flexural tensile strength

4. Provisions on the manufacture of heat strengthened soda lime silicate glass*

Class	Member States	Technical provision	Supplementary provisions
A	Germany	DIN EN 1863-2 and national technical approval for heat strengthened soda lime silicate glass	Specification of the flexural tensile strength

5. Provisions on the manufacture of laminated safety glass with PVB film*

Class	Member States	Technical provision
A	Germany	Provisions on the manufacture of laminated safety glass with PVB film, see "Bauregelliste" A Part 1 No. 11.14

6. Provisions on the manufacture of insulating glass units*

Class	Member States	Technical provision	Supplementary provisions
A	Germany	DIN EN 1279-5 and "Bauregelliste" A Part 1 No. 11.16 and 8.5.1, 8.5.2 and 8.5.3	Specification of the flexural tensile strength Heat retention Safety in case of fire

* Required national provisions of Member States not listed in this column are to be obtained from the respective Member State.

Annex C

National provisions on dimensioning

1. Dimensioning under the load case of failure of the sealant*

Class	Member States	Supplementary provisions	Permissible values
A	Germany	Safety factor of 1.1 for both the glass and the emergency retainers	Heat soaked soda lime silicate safety glass: 109 N/mm ² Emergency retainers: See 2.2.4.3

2. Dimensions of the bonding*

Class	Member States	Supplementary provisions	Permissible values
A	Germany	Global safety factor γ_{tot}	$\gamma_{tot} = 6$

* Required national provisions of Member States not listed in this column are to be obtained from the respective Member State.

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Annex D

Manufacturing plants for bonding authorised by Schüco

Firmenname/Name of the plant	PLZ	Ort/Town	Land / Country
Silikon /Silicone			
Semcoglas GmbH	26655	Westerstede	Deutschland / Germany
Hunsrück Glasveredelung	55481	Kirchberg	Deutschland / Germany
Wagner GmbH & Co KG			
Glaswerke Arnold GmbH	91732	Merkendorf	Deutschland / Germany
FKN Fassaden	74632	Neuenstein	Deutschland / Germany
Glasbau Kraft GmbH	86424	Dinkelscherben	Deutschland / Germany
Linther Glas	14822	Linthe	Deutschland / Germany
Kölling Glas GmbH & Co KG			
Optitherm	33178	Borchen	Deutschland / Germany
Glas Sander GmbH			
Radeburger Fensterbau	01471	Radeburg	Deutschland / Germany
Roschmann	86368	Gersthofen	Deutschland / Germany
Glas GmbH & Co KG			
Schmitz Franz	59302	Oelde-Lette	Deutschland / Germany
Metallbau GmbH			
Glaszentrum G.F.	74076	Heilbronn	Deutschland / Germany
Schweikert GmbH			
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
William Cox Ireland Ltd.	IE	Clondalkin 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	Malaysia / Malaysia
Metalco Ltd.	CY-1506	Nicosia	Zypern / Cyprus
North Phikha Trading Service Ltd	VN	Ha Noi	Vietnam / Vietnam
Muros, Aluminio, Cristal	31592	Cintruñigo (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

Annex D

Manufacturing plants for bonding authorised by Schüco

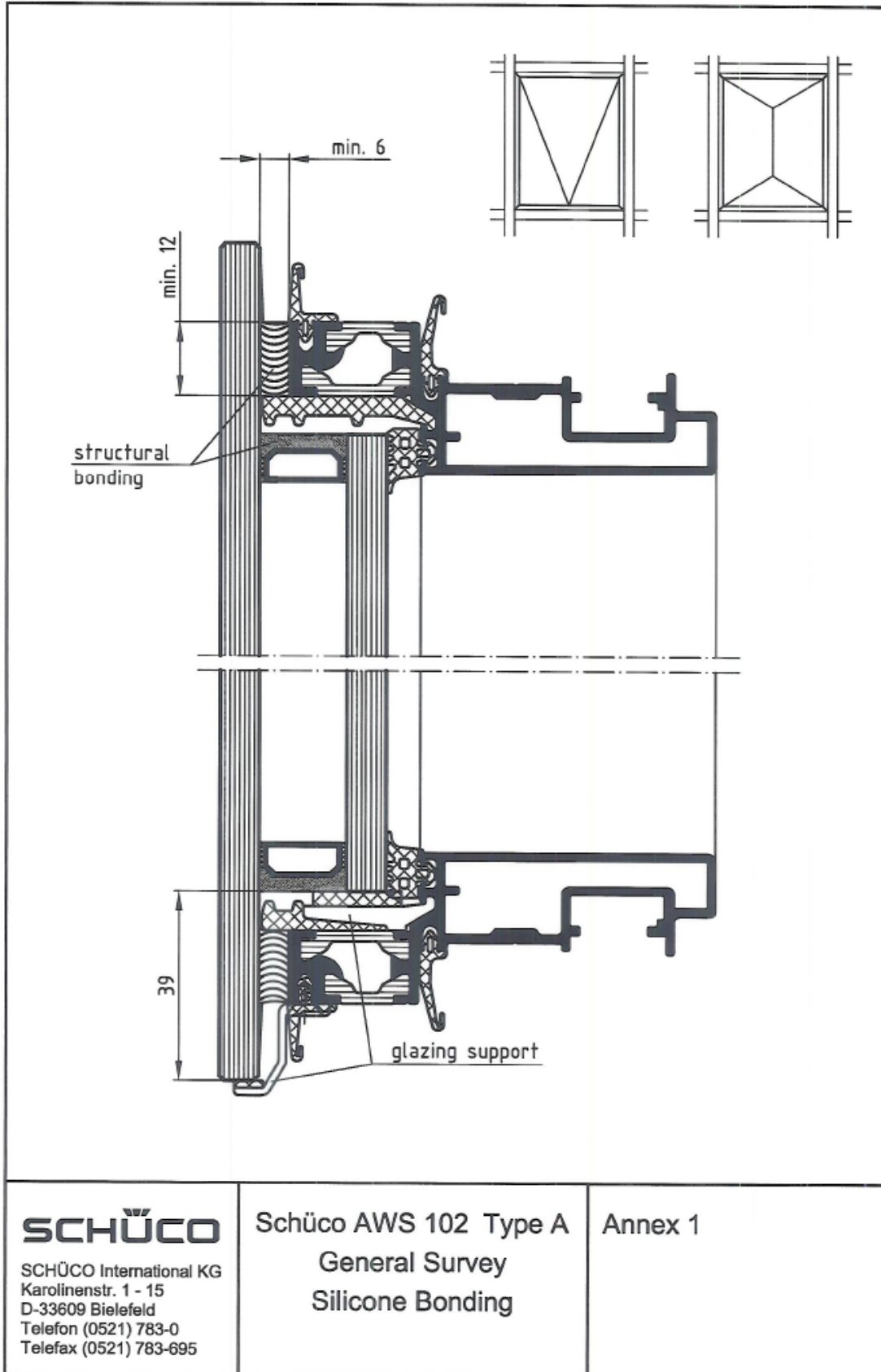
Firmenname/Name of the plant	PLZ	Ort/Town	Land / Country
Silikon /Silicone			
Vidraira Central de Ermesinde, Lda.	4446 908	Alfena (Portugal)	Portugal / Portugal
Vidrogal, S.A.	36560	Forcarey (Pontevedra)	Spanien / Spain
Vidrios Júcar, S.L.	39792	Heras (Cantabria)	Spanien / Spain
Vidresif, S.A.	17846	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
Ouvividro - Vidreira Ouriense	2495 326	Fátima (Portugal)	Portugal / Portugal
Cristalería 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

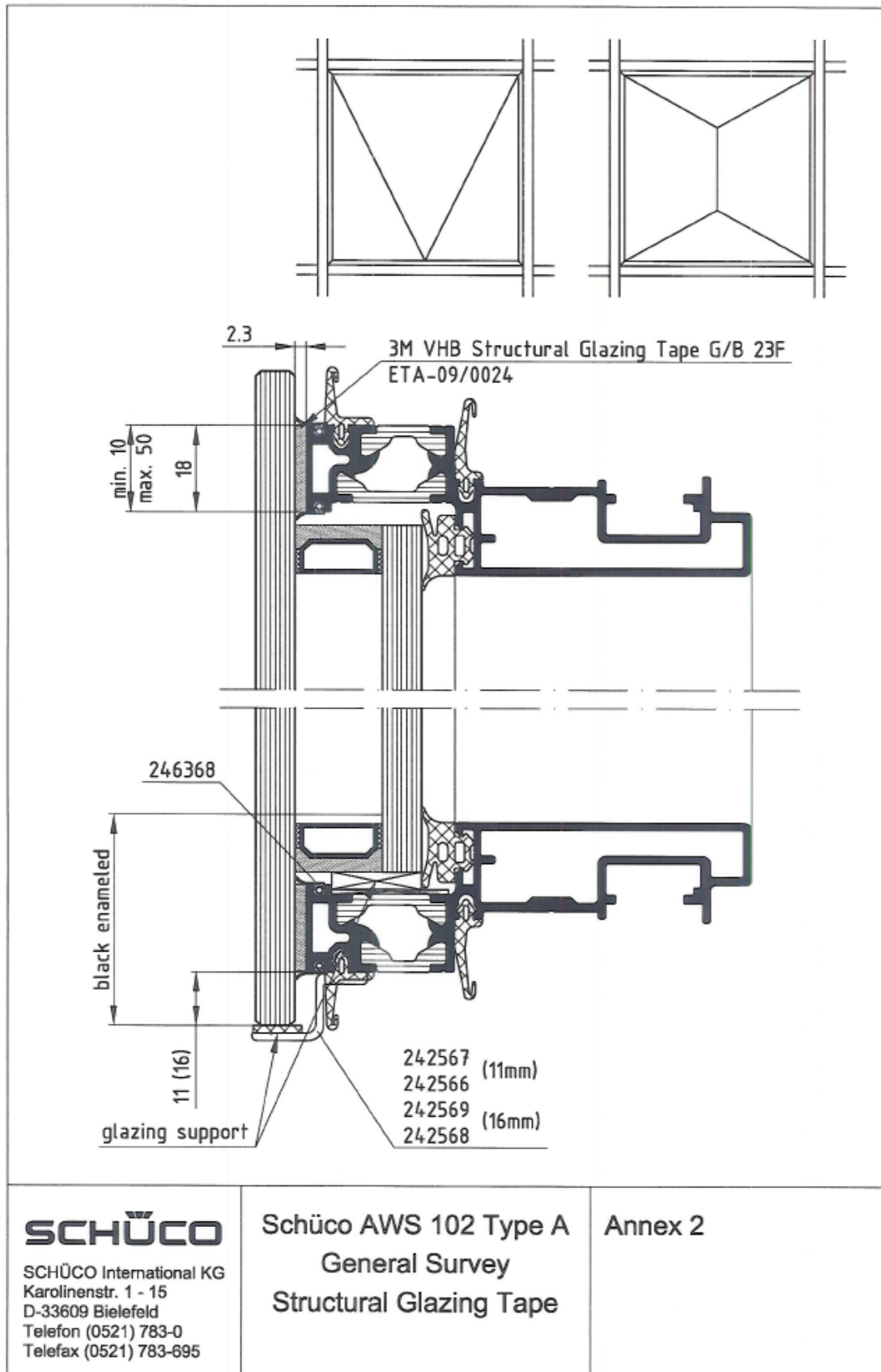
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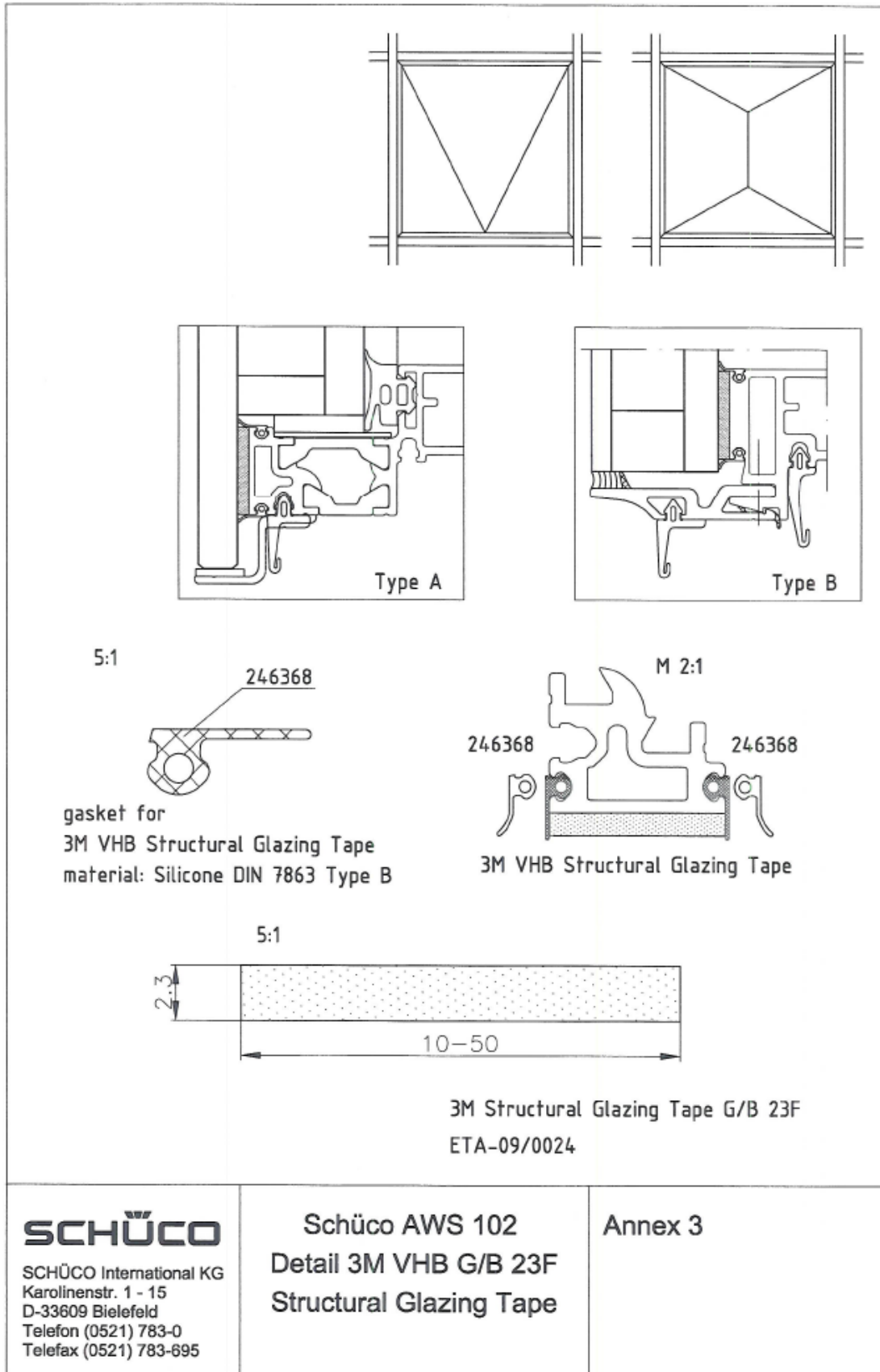
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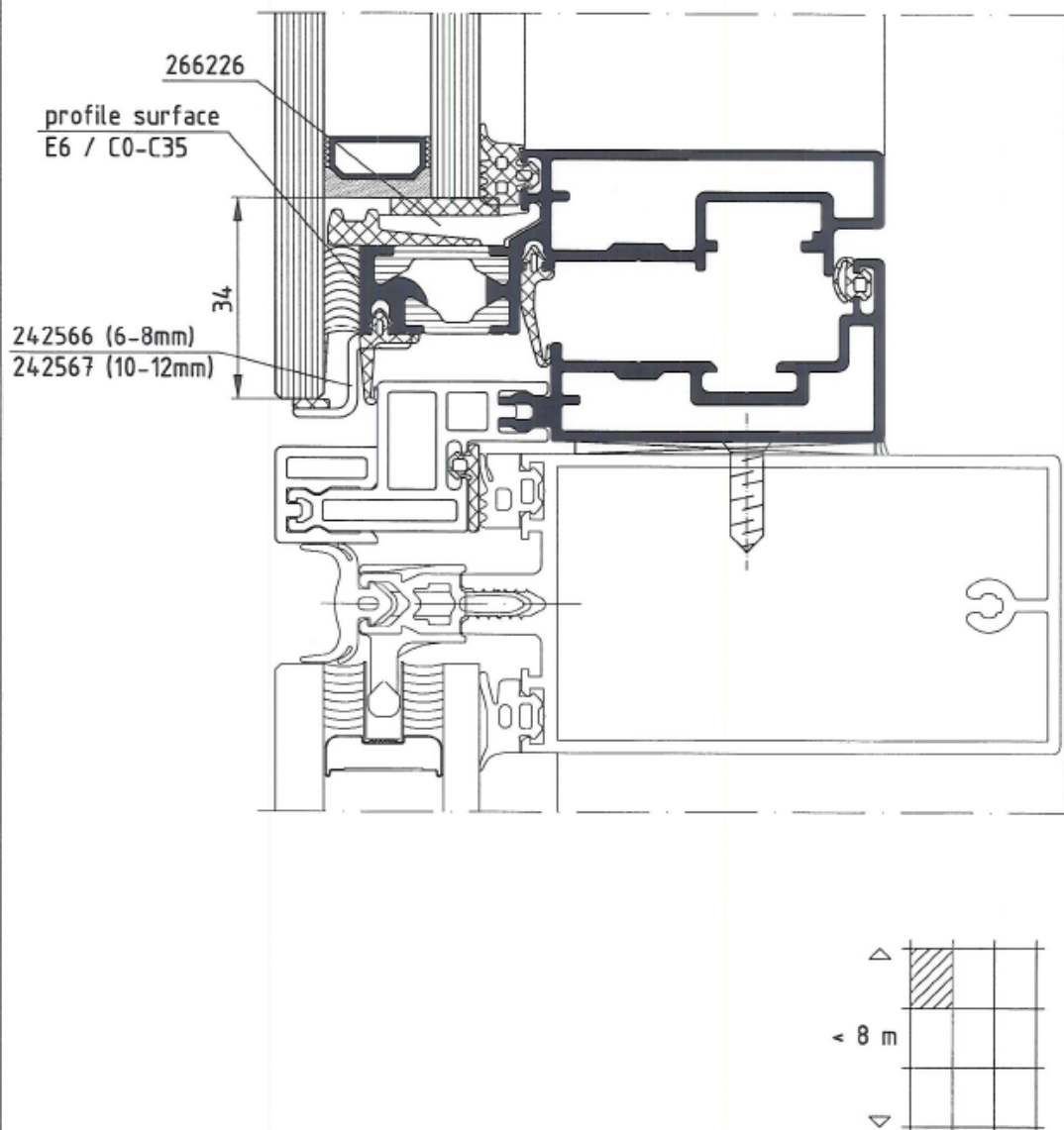


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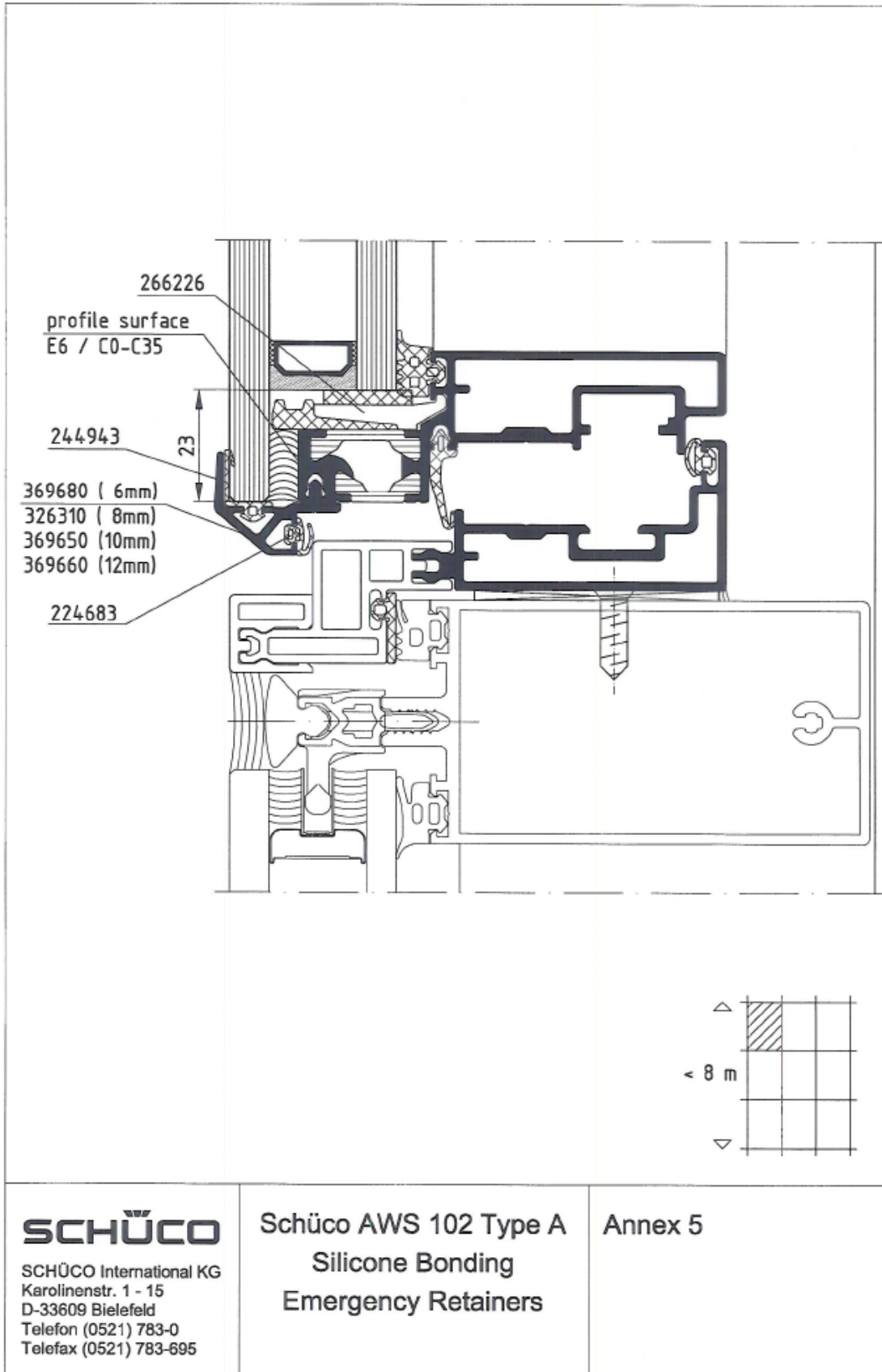


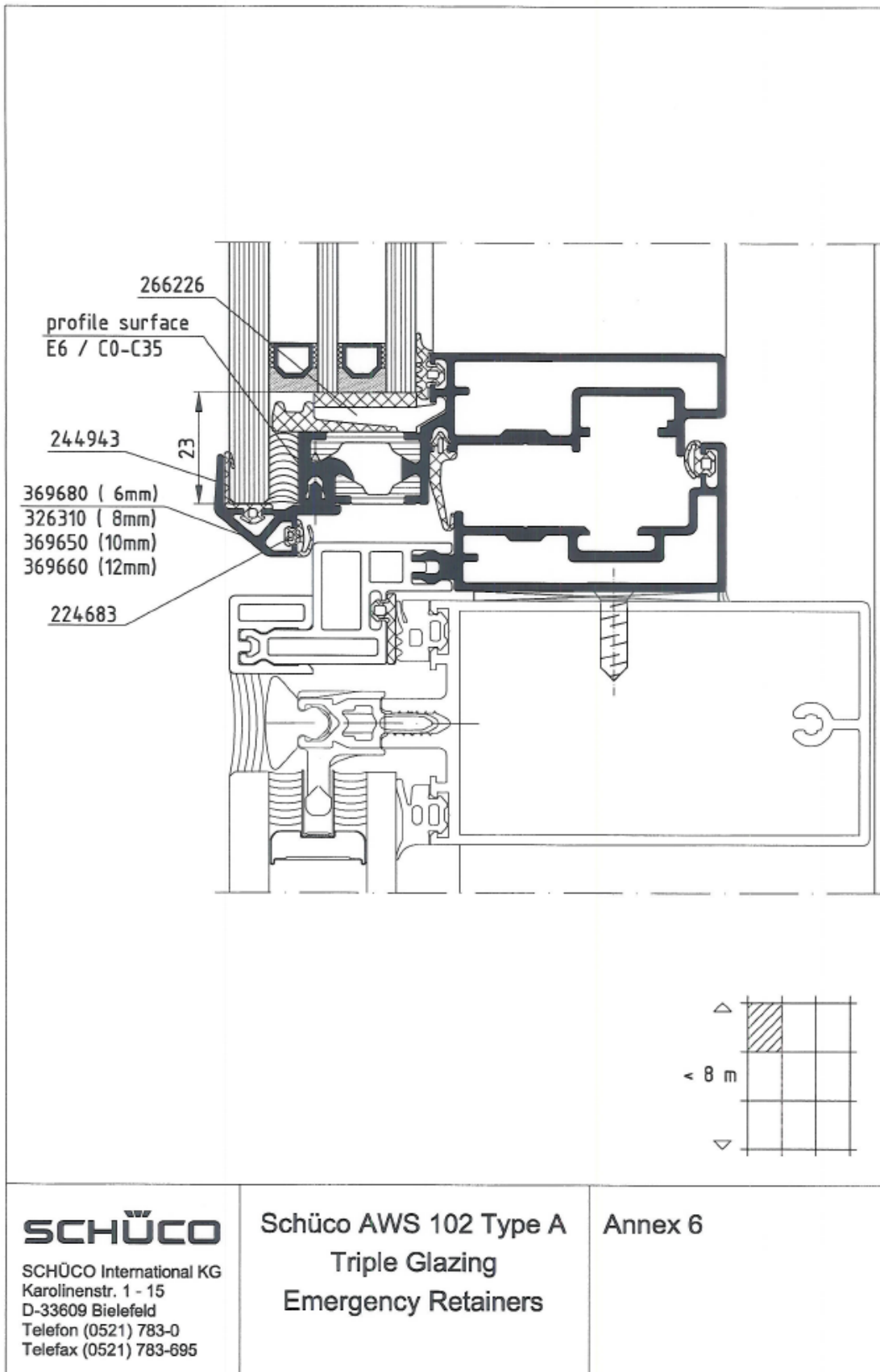
SCHÜCO

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Telefax (0521) 783-695

Schüco AWS 102 Type A
Silicone Bonding
Glazing Support

Annex 4



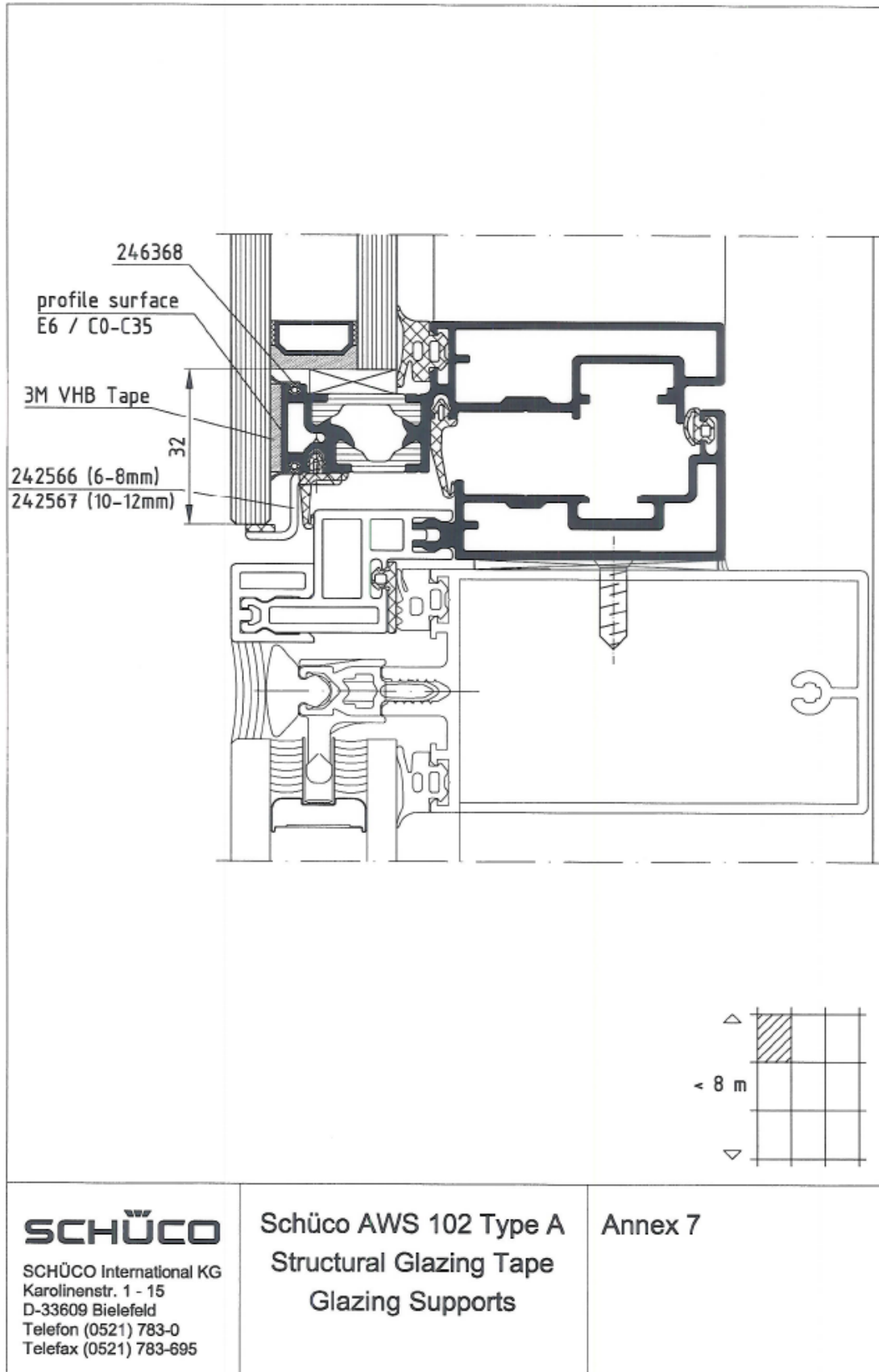


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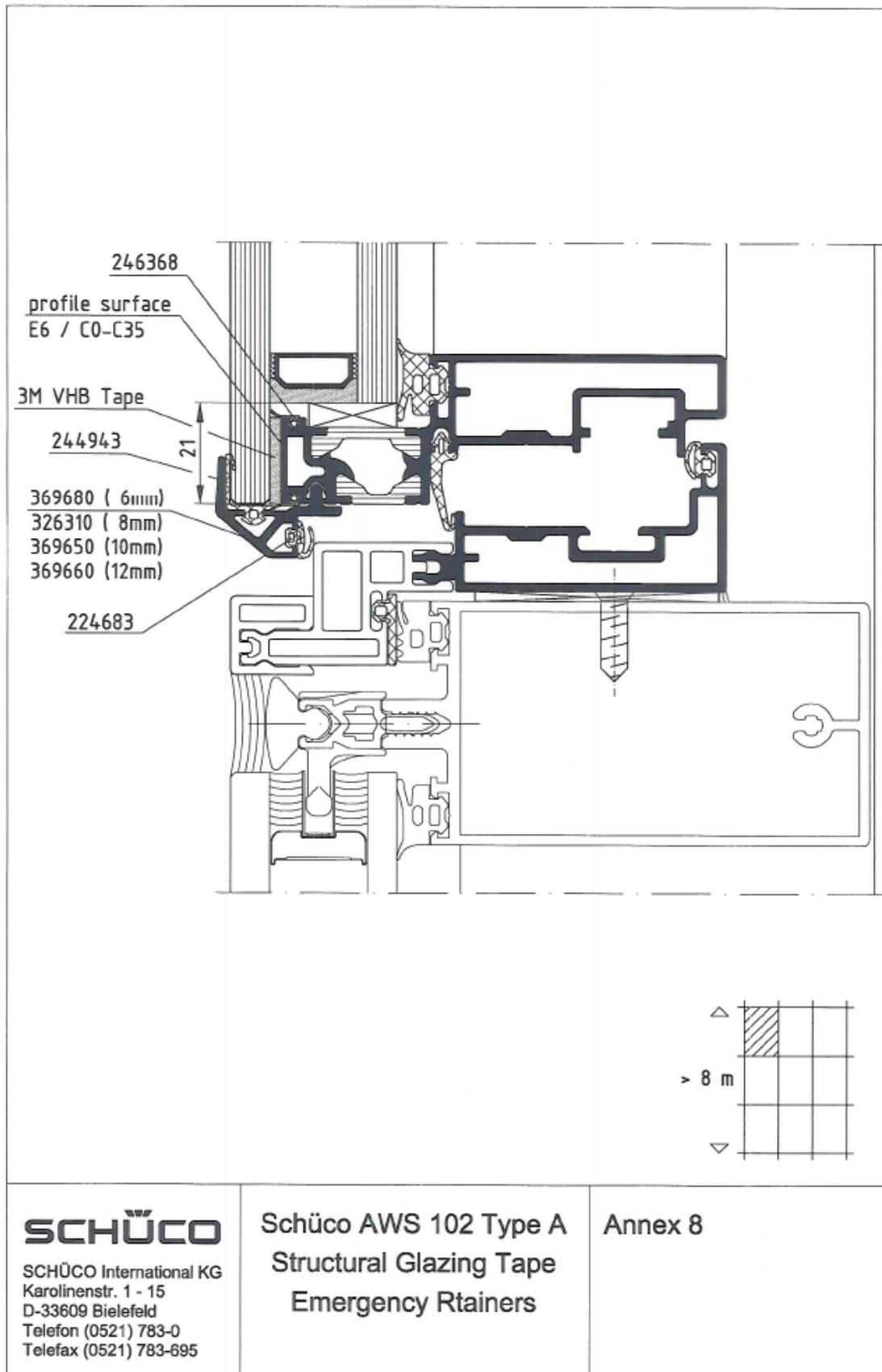


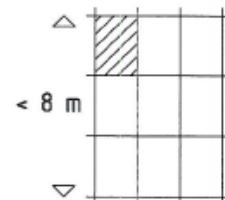
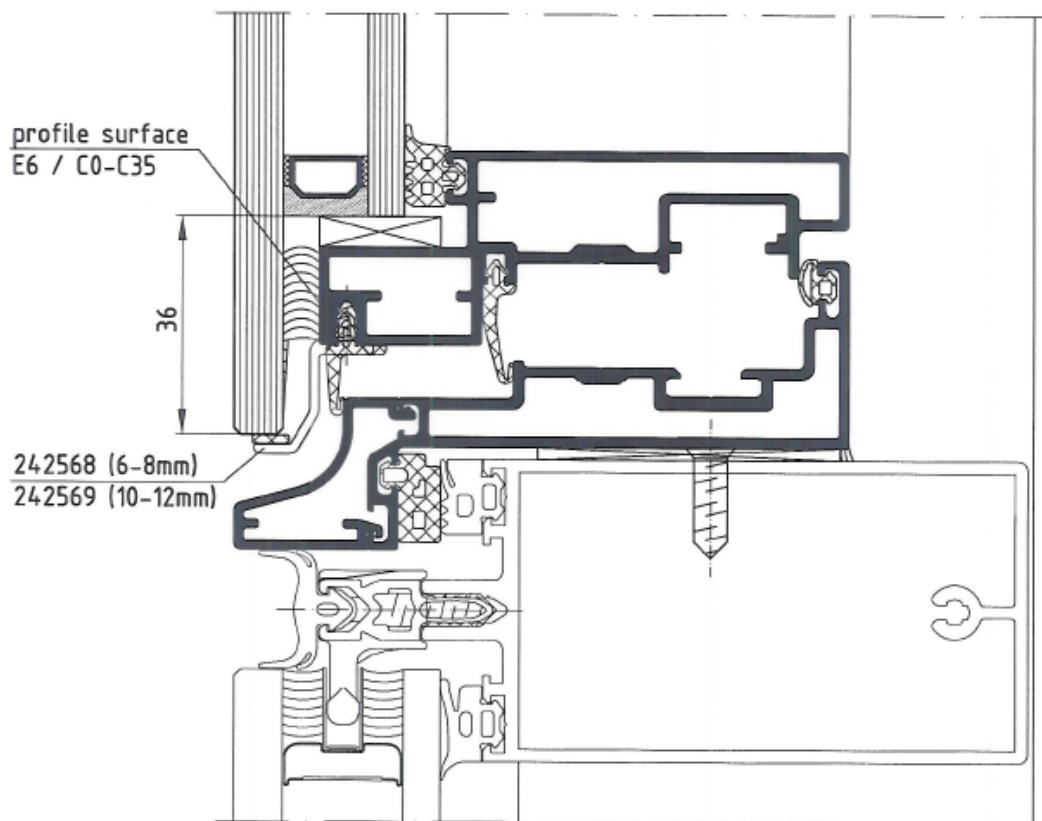
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Schüco AWS 102 Type A
non-insulated
Silicone Bonding
Glazing Supports

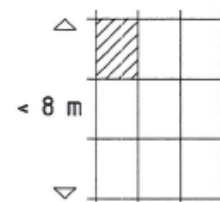
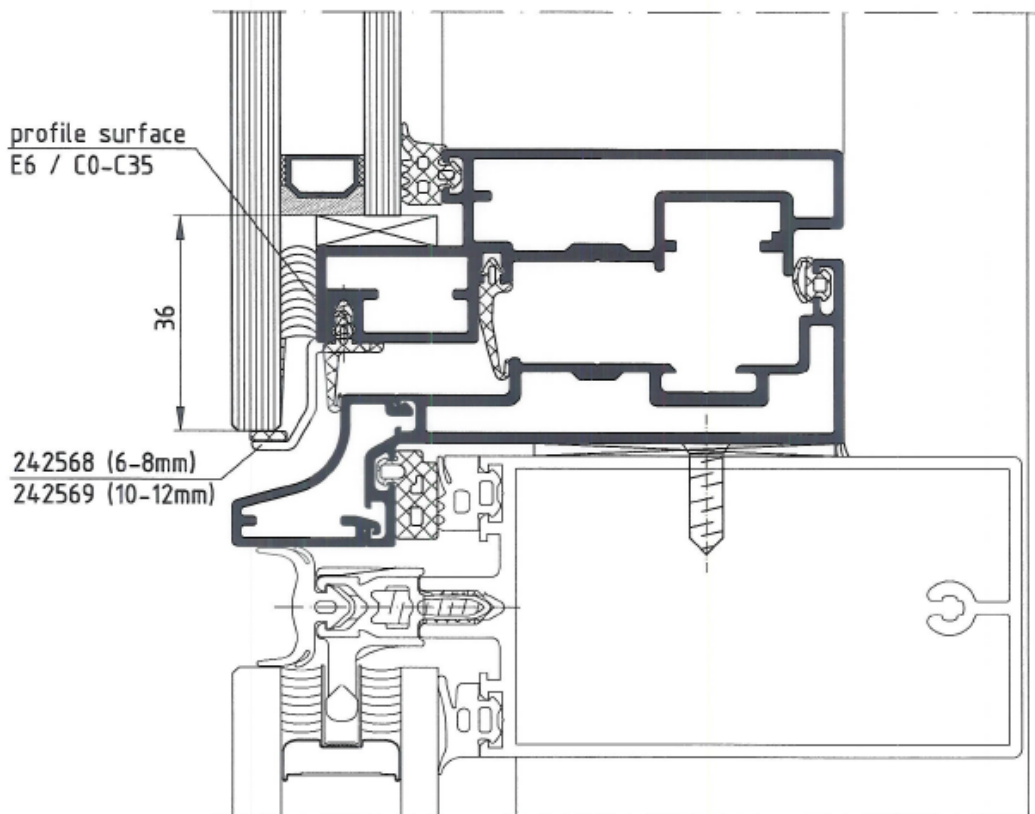
Annex 9

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Schüco AWS 102 Type A
non-insulated
Structural Glazing Tape
Glazing Supports

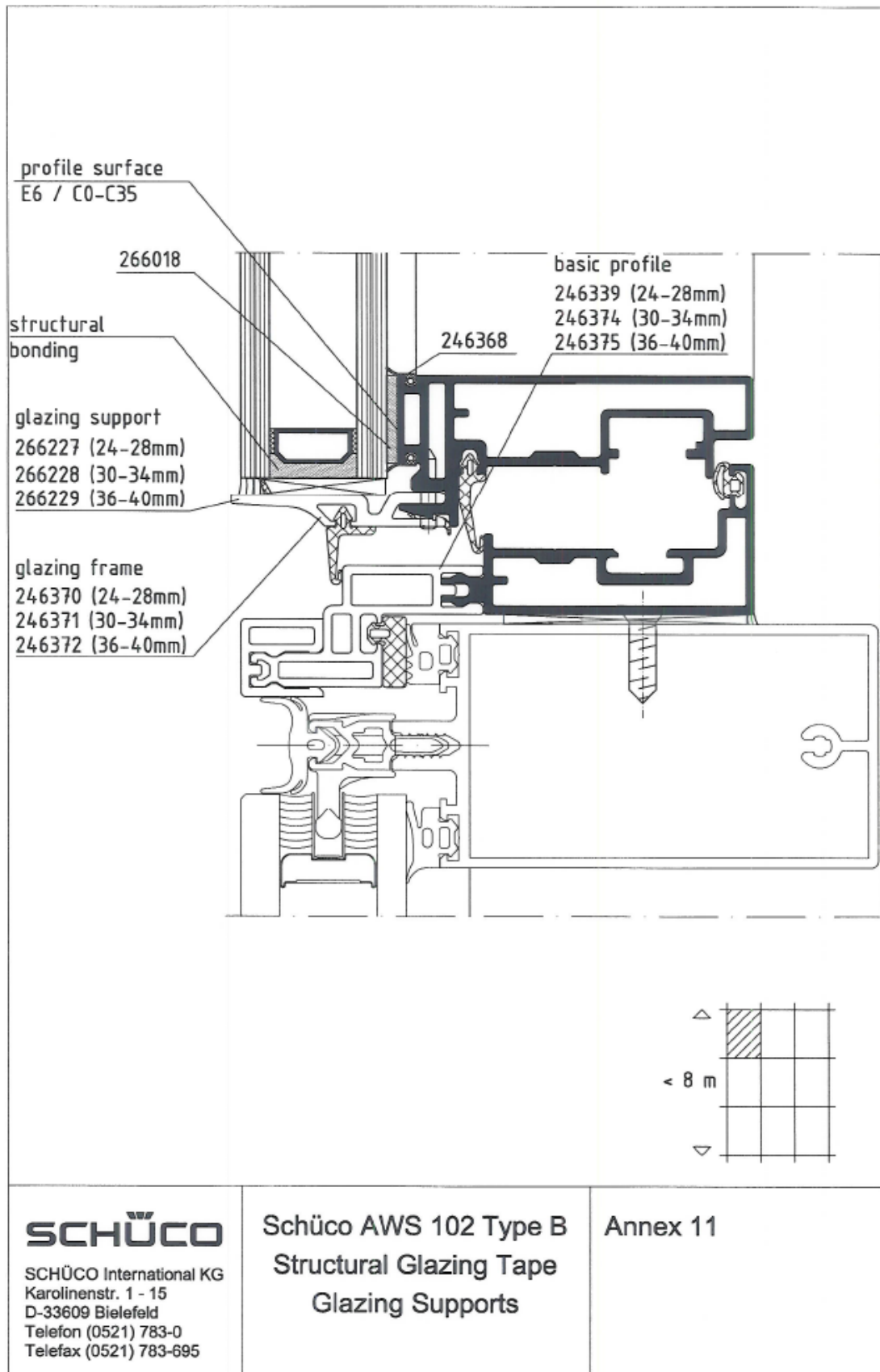
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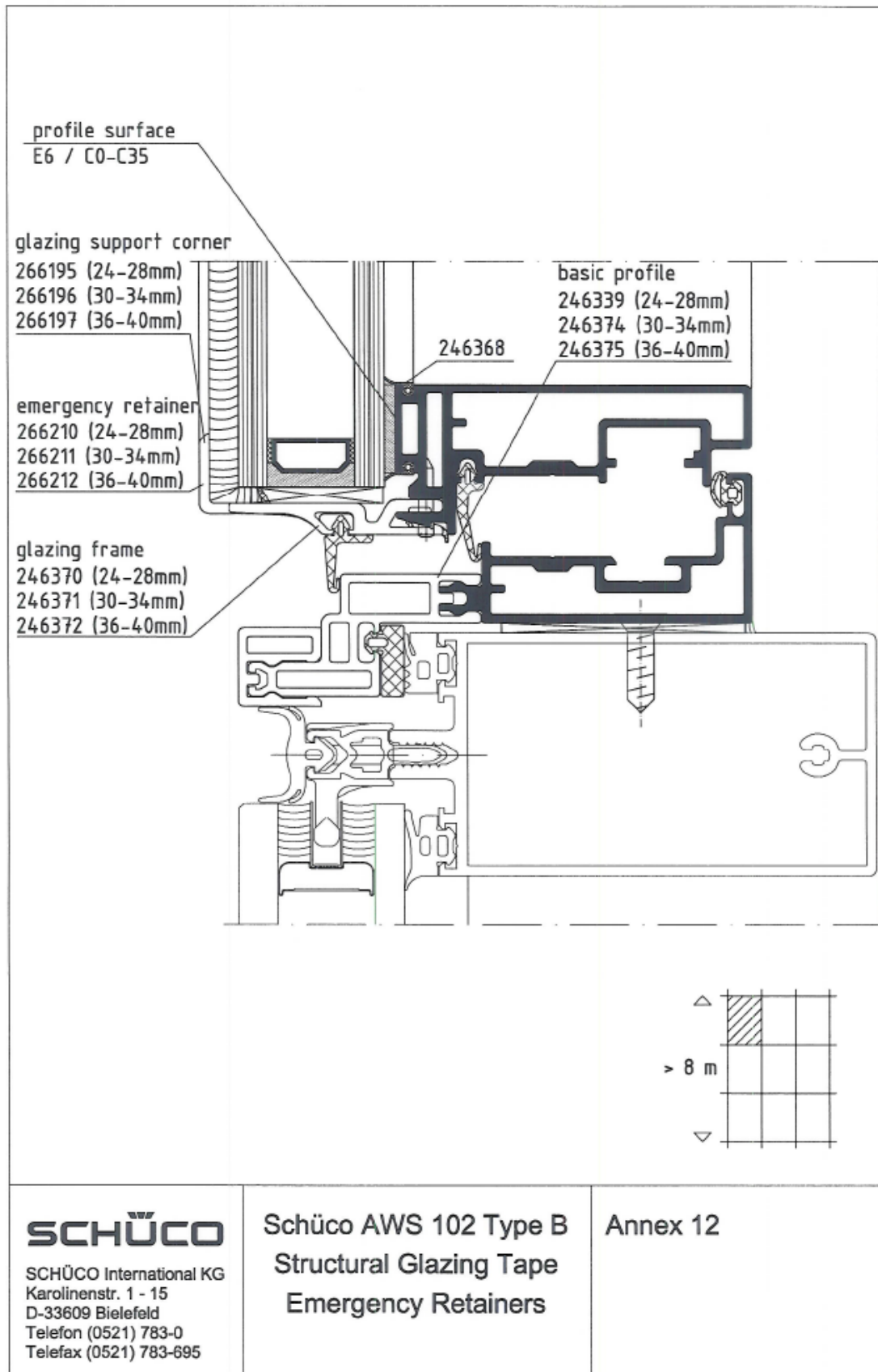


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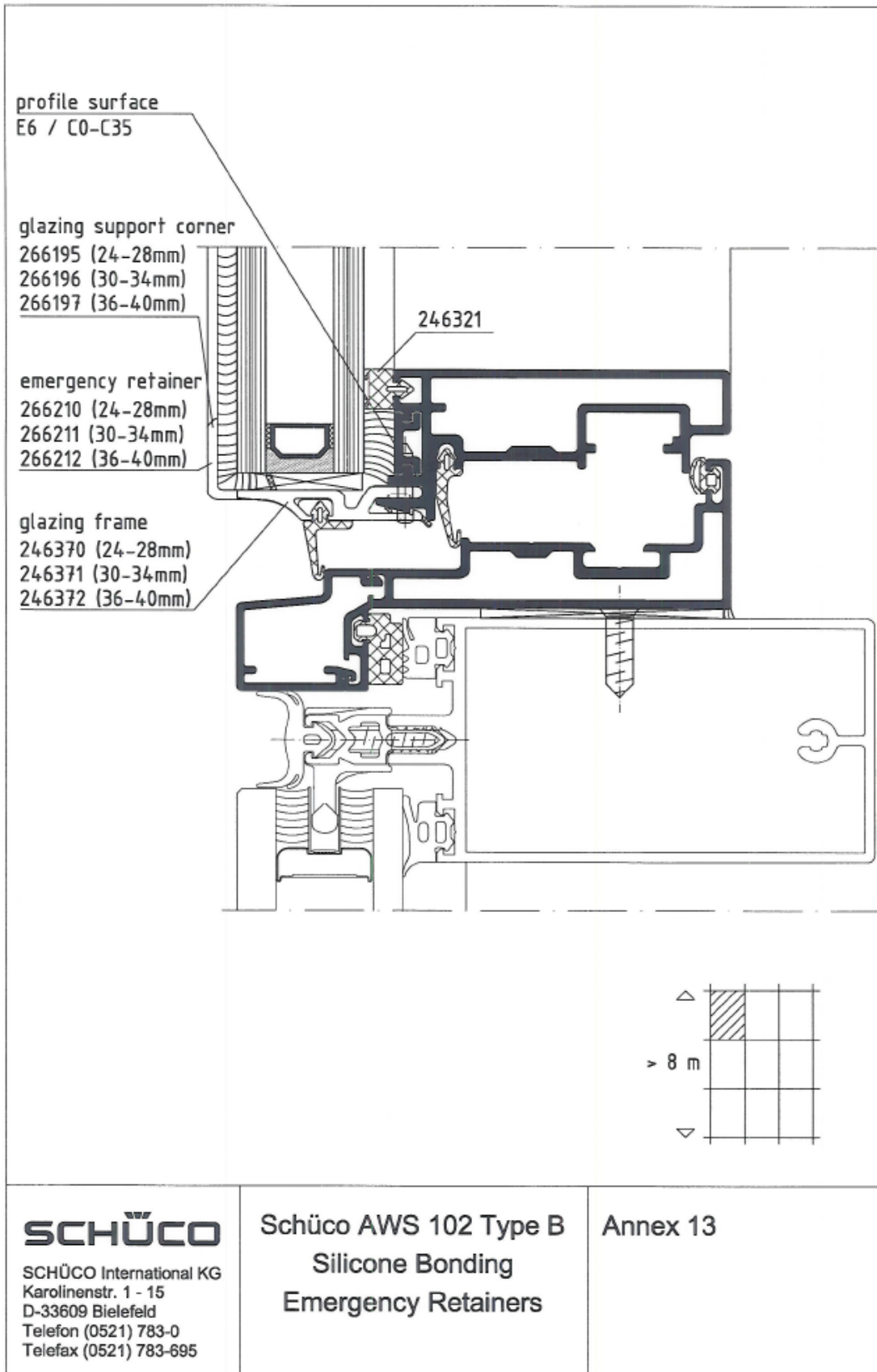


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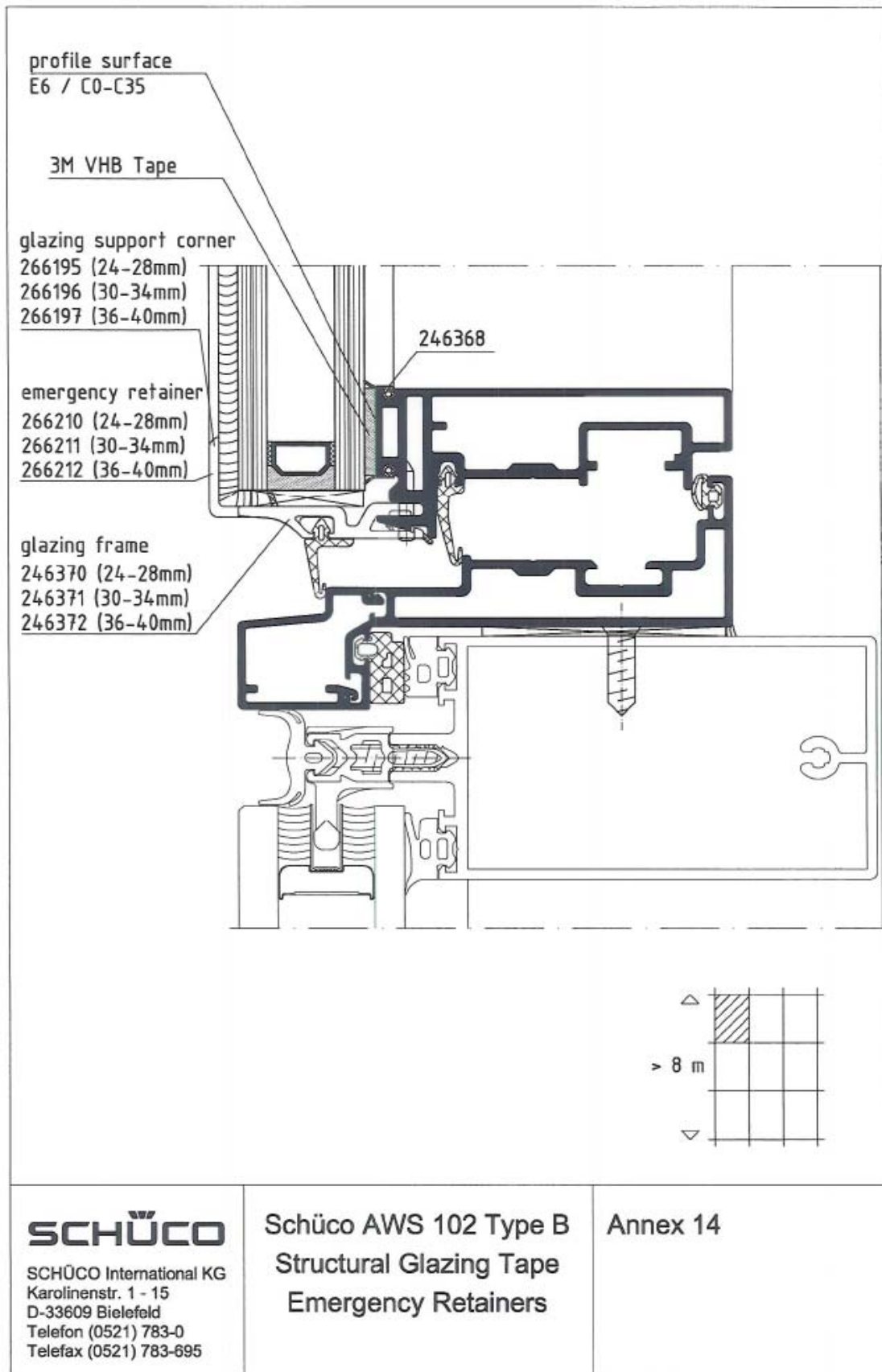


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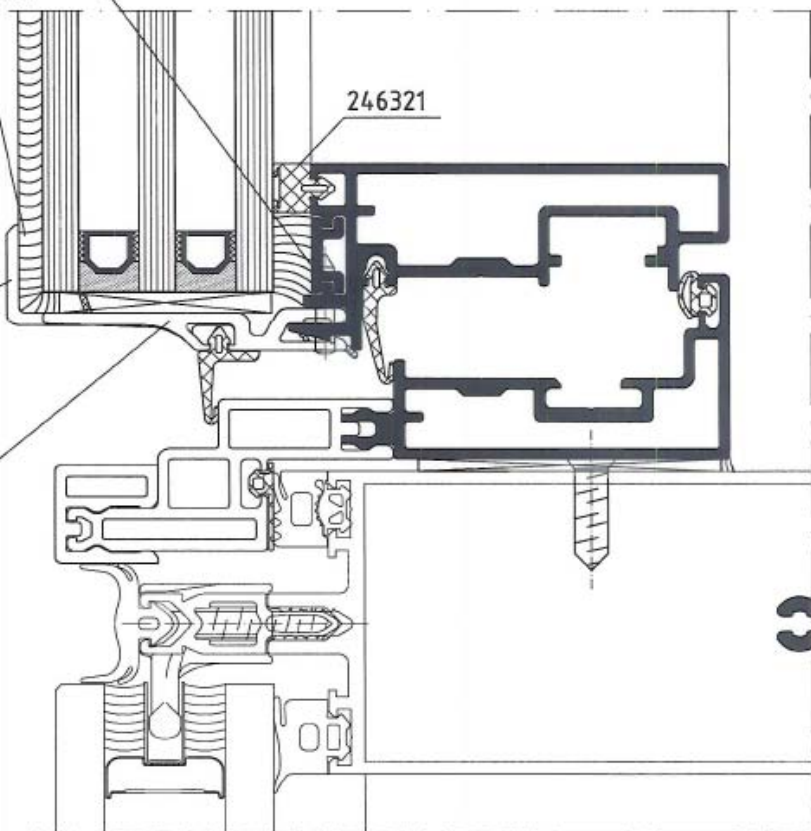


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<p>profile surface E6 / C0-C35</p> <p>glazing support corner 266195 (24-28mm) 266196 (30-34mm) 266197 (36-40mm)</p> <p>emergency retainer 266210 (24-28mm) 266211 (30-34mm) 266212 (36-40mm)</p> <p>glazing frame 246370 (24-28mm) 246371 (30-34mm) 246372 (36-40mm)</p> <p>246321</p>  <p>> 8 m</p>	<p>SCHÜCO</p> <p>SCHÜCO International KG Karolinenstr. 1 - 15 D-33609 Bielefeld Telefon (0521) 783-0 Telefax (0521) 783-695</p>	<p>Schüco AWS 102 Type B Triple Glazing Emergency Retainers</p> <p>Annex 15</p>
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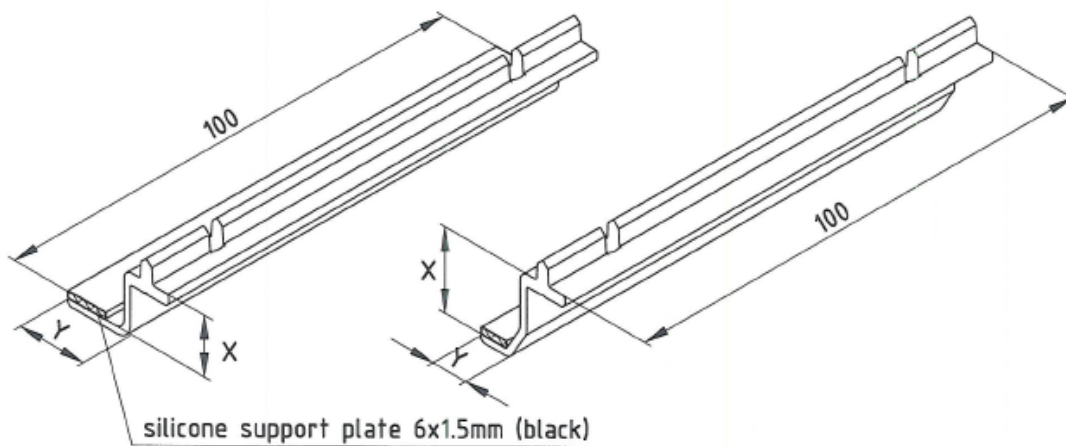
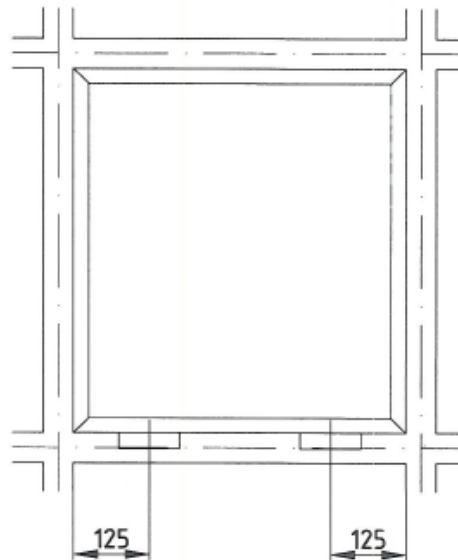
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Art.-Nr.	Mass "X"	Mass "Y"
—	—	—
—	—	—
—	—	—
—	—	—
242566	14mm	10.7mm
242567	14mm	14.7mm
—	—	—
—	—	—
242568	19mm	10.7mm
242569	19mm	14.7mm
—	—	—
—	—	—
—	—	—
—	—	—

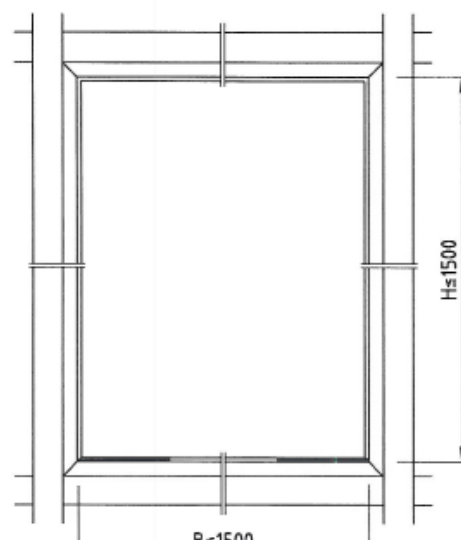

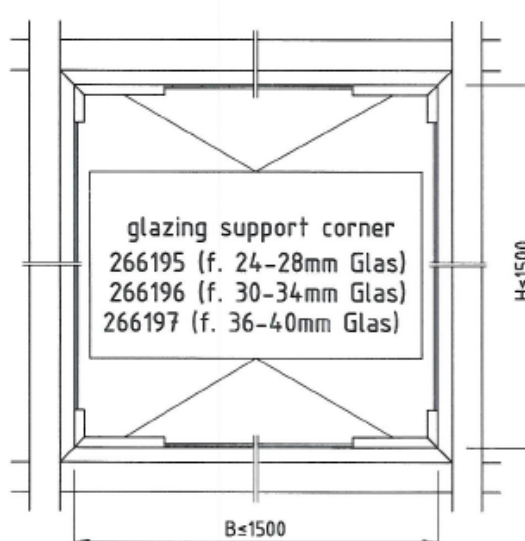



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Schüco AWS 102 Type A
Glazing Supports

Annex 16

<p>maximum dimension</p>  <p>$B \leq 1500$</p> <p>$H \leq 1500$</p>	<p>maximum face: 1.5m^2</p> <p>maximum length of the edge: 1500mm</p> <p>maximum weight: 60kg</p> <p>Installation height in Germany <8m</p> <p> glazing support see Annex 11</p>	
 <p>glazing support corner 266195 (f. 24-28mm Glas) 266196 (f. 30-34mm Glas) 266197 (f. 36-40mm Glas)</p> <p>$B \leq 1500$</p> <p>$H \leq 1500$</p> <p></p>	<p>maximum face: 2.25m^2</p> <p>maximum length of the edge: 1500mm</p> <p>maximum weight: 100kg</p> <p>glazing support corner see Annex 12 and 14</p>	
<p>SCHÜCO</p> <p>SCHÜCO International KG Karolinenstr. 1 - 15 D-33609 Bielefeld Telefon (0521) 783-0 Telefax (0521) 783-695</p>	<p>Schüco AWS 102 Type B Dimensioning Glazing Supports Emergency Retainers</p>	<p>Annex 17</p>

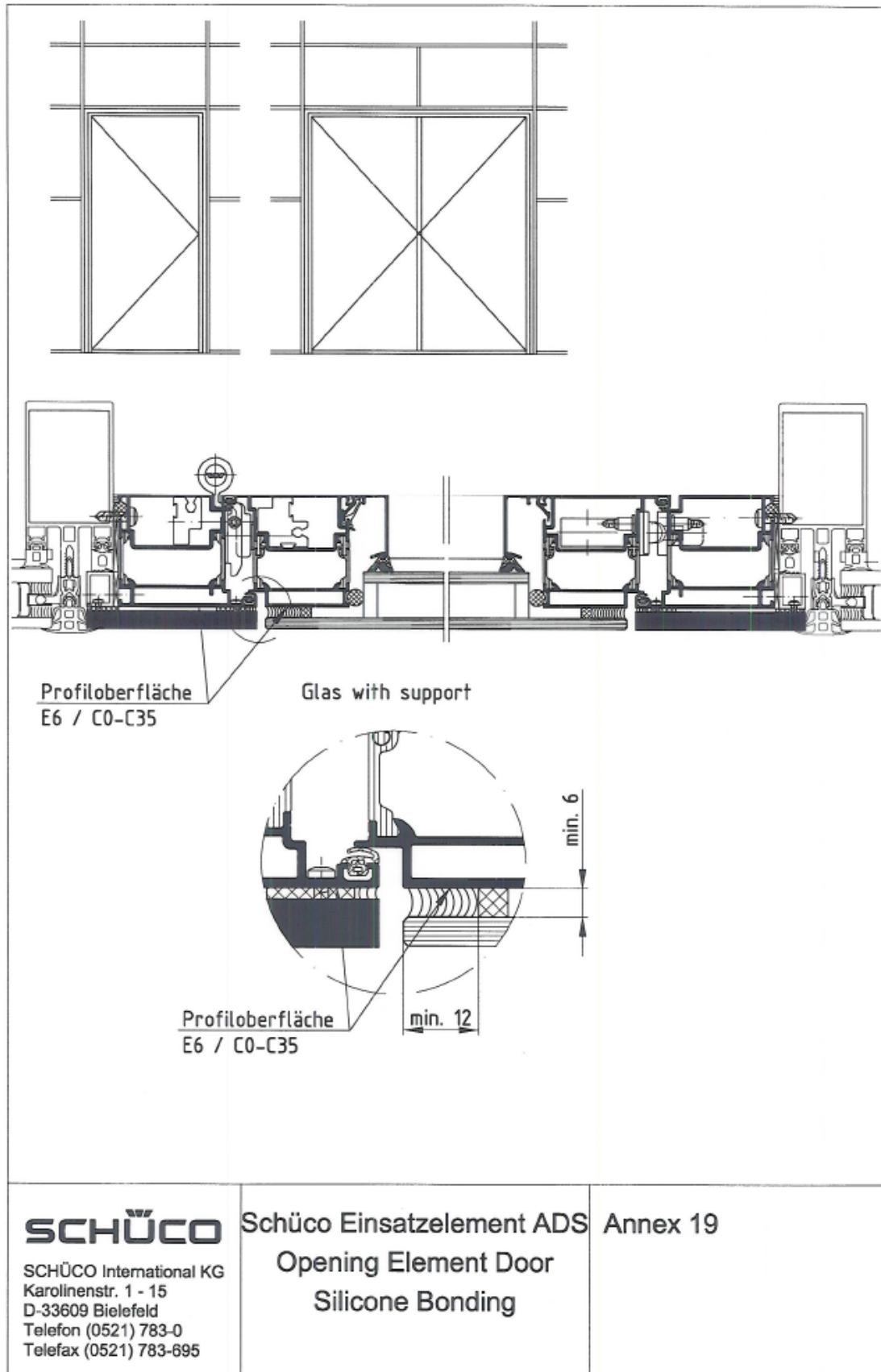
European technical approval

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<p>maximum dimension</p> <p>glazing support corner 266195 (f. 24-28mm Glas) 266196 (f. 30-34mm Glas) 266197 (f. 36-40mm Glas)</p> <p>1500 ≤ B ≤ 1800</p> <p>1500 ≤ H ≤ 1800</p>	<p>maximum face: 3.25m²</p> <p>maximum length of the edge: 1800mm</p> <p>maximum weight: 150kg</p>	
<p>emergency retainer 266210 (f. 24-28mm Glas) 266211 (f. 30-34mm Glas) 266212 (f. 36-40mm Glas)</p> <p>900</p> <p>1800 ≤ B ≤ 2600</p> <p>1800 ≤ H ≤ 2600</p>	<p>maximum face: 6.75m²</p> <p>maximum length of the edge: 2600mm</p> <p>maximum weight: 250kg</p>	
<p> glazing support see Annex 11</p> <p> glazing support corner see Annex 12 and 14</p>		
<p>SCHÜCO</p> <p>SCHÜCO International KG Karolinenstr. 1 - 15 D-33609 Bielefeld Telefon (0521) 783-0 Telefax (0521) 783-695</p>	<p>Schüco AWS 102 Type B</p> <p>Dimensioning</p> <p>Glazing Supports</p> <p>Emergency Retainers</p>	<p>Annex 18</p>



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