

Classification of the fire resistance of the Schüco FW50+ FR60 Curtain Wall system according to EN 13501-2:2007+A1:2009

Classification n°	2013-Efectis-R0103.164c
Sponsor	Schüco International KG Karolinenstrasse 1 D-33609 Bielefeld GERMANY
Product name	FW50+ FR60 Curtain Wall system
Prepared by	Efectis Nederland BV Brandpuntlaan Zuid 16 NL 2665 NZ BLEISWIJK The Netherlands
Notified body n°	1234
Author(s)	Dr.Ir. G. van den Berg P.A. Ram
Project number	2013103 / 164
Date of issue	June 2013
Number of pages	20

1. SUBJECT

This classification report defines the resistance to fire classification assigned to the Schüco FW50+ FR60 Curtain Wall system in accordance with the procedures given in EN 13501-2:2007+A1:2009.

2. DETAILS OF CLASSIFIED PRODUCT

2.1 GENERAL

A series of fire test was carried out on various versions of the Schüco FW50+ FR60 Curtain Wall system, see Figure 1 for a general lay-out of the system.

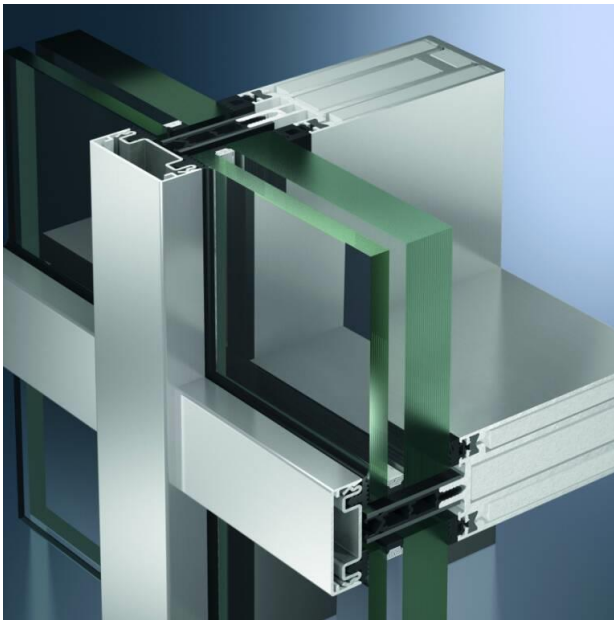


Figure 1

A total of 5 fire tests have been performed on Full Configurations according to EN 1364-3. The results are reported in the following test reports:

- GRYFITlab test report LBO-129/10E, dated 17-01-2011
- GRYFITlab test report LBO-151/10E, dated 18-01-2011
- GRYFITlab test report LBO-143/10E, dated 17-01-2011
- GRYFITlab test report LBO-253/11E, dated 13-10-2011
- GRYFITlab test report LBO-168/11E, dated 30-06-2011

In addition, a fire test has been performed on a Partition Wall according to EN 1364-1. The results are reported in the following test report:

- IBS Linz test report 11070808, dated 02-11-2011

For the dimensions and specifications of the materials and significant details of the construction examined, see the next paragraphs 2.2 - 2.7.

Based on these fire tests, the field of application for the Schüco Curtain Wall system has been

defined. The field of application is determined on the basis of the test results obtained and the rules given in:

- the Direct Field of Application in prEN 1364-3:2012 and
- the Extended Application in prEN 15269-6:2012.

This is reported in:

- Efectis NL report 2013-Efectis-R0103.164a, dated June 2013.

A summary is given in paragraph 2.8.

2.2 GRYFITLAB TEST REPORT LBO-129/10E, DATED 17-01-2011

The test specimen was a Schüco FW50+ FR60 curtain wall with external dimensions 4630 x 4855 mm (w x h). The construction was glazed with Pilkington Pyrostop 60-181. At some locations, panels (based on 36 mm Promatect-H) were installed.

The fire test was performed on 22nd September 2010, according to EN 1364-3:2007 with heat exposure according to the standard fire curve for the situation “fire from inside to outside”.

2.3 GRYFITLAB TEST REPORT LBO-151/10E, DATED 18-01-2011

The test specimen was a Schüco FW50+ FR60 curtain wall with external dimensions 4630 x 4855 mm (w x h). The construction was glazed with Pilkington Pyrodur 60-252. At some locations, panels (based on 29 mm Promatect-H) were installed.

The fire test was performed on 19th November 2010, according to EN 1364-3:2007 with heat exposure according to the standard fire curve for the situation “fire from inside to outside”.

2.4 GRYFITLAB TEST REPORT LBO-143/10E, DATED 17-01-2011

The test specimen was a Schüco FW50+ FR60 curtain wall with external dimensions 4630 x 4955 mm (w x h). The construction was glazed with Pilkington Pyrostop 60-181. At some locations, panels (based on 36 mm Promatect-H) were installed.

The fire test was performed on 22nd October 2010, according to EN 1364-3:2007 with heat exposure according to the standard fire curve for the situation “fire from outside to inside”.

2.5 GRYFITLAB TEST REPORT LBO-253/11E, DATED 13-10-2011

The test specimen was a Schüco FW50+ FR60 curtain wall with external dimensions 3780 x 4955 mm (w x h). The construction was glazed with Pilkington Pyrodur 60-252. At some locations, panels (based on 29 mm Promatect-H) were installed.

The fire test was performed on 16th September 2011, according to EN 1364-3:2007 with heat exposure according to the standard fire curve for the situation “fire from outside to inside”.

2.6 GRYFITLAB TEST REPORT LBO-168/11E, DATED 30-06-2011

The test specimen was a Schüco FW50+ FR60 curtain wall, including double doors of type Schüco ADS 80 FR 60. The external dimensions of the test specimen were approx. 3800 x 3800 mm (w x h). The construction was fully glazed with Pilkington Pyrostop 60-181 in both the

façade and the door leaves.

The fire test was performed on 25th January 2011, according to EN 1634-1:2009 with heat exposure according to the standard fire curve for the situation “fire from inside to outside” for the façade and with the door leaves pivoting away from the fire.

2.7 IBS LINZ TEST REPORT 11070808, DATED 02-11-2011

The test specimen was a Schüco FW50+ FR60 partition wall, with external dimensions approx. 2800 x 2800 mm (w x h). The construction was glazed with SGG Vetrotech Contraflam 60 (25 mm).

The fire test was performed on 29th March 2011, according to EN 1364-1:1999 with heat exposure according to the standard fire curve for the situation “fire from inside to outside”.

2.8 EFECTIS NL REPORT 2013-EFECTIS-R0103.164A, DATED JUNE 2013

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

- the Direct Field of Application in prEN 1364-3:2012 and
- the Extended Application in prEN 15269-6:2012.

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

3.1 TEST REPORTS

Name of laboratory	Name of sponsor	Test report no.	Test method
GRYFITlab (Poland)	Schüco International	LBO-129/10E	EN 1364-3:2007
GRYFITlab (Poland)	Schüco International	LBO-151/10E	EN 1364-3:2007
GRYFITlab (Poland)	Schüco International	LBO-143/10E	EN 1364-3:2007
GRYFITlab (Poland)	Schüco International	LBO-253/11E	EN 1364-3:2007
GRYFITlab (Poland)	Schüco International	LBO-168/11E	EN 1634-1:2009
IBS Linz (Austria)	Schüco International	11070808	EN 1364-1:1999

3.2 TEST RESULTS

Table 3.2.1 - Summary of results GRYFITlab test report LBO-129/10E	
Fire test performed according to EN 1364-3:2007 with heat exposure according to the standard fire curve for the situation "fire from inside to outside"	
Integrity (E)	66 minutes (sustained flaming)
Thermal insulation (I)	66 minutes (sustained flaming)
Heating was terminated after 66 minutes.	

Table 3.2.2 - Summary of results GRYFITlab test report LBO-151/10E	
Fire test performed according to EN 1364-3:2007 with heat exposure according to the standard fire curve for the situation "fire from inside to outside"	
Integrity (E)	61 minutes (no failure before end of heating)
Thermal insulation (I)	61 minutes (no failure before end of heating)
Heating was terminated after 61 minutes.	

Table 3.2.3 - Summary of results GRYFITlab test report LBO-143/10E	
Fire test performed according to EN 1364-3:2007 with heat exposure according to the standard fire curve for the situation "fire from outside to inside"	
Integrity (E)	70 minutes (no failure before end of heating)
Thermal insulation (I)	70 minutes (no failure before end of heating)
Heating was terminated after 70 minutes.	

Table 3.2.4 - Summary of results GRYFITlab test report LBO-253/11E	
Fire test performed according to EN 1364-3:2007 with heat exposure according to the standard fire curve for the situation "fire from outside to inside"	
Integrity (E)	66 minutes (no failure before end of heating)
Thermal insulation (I)	66 minutes (maximum temperature rise on S1)
Heating was terminated after 66 minutes.	

Table 3.2.5 - Summary of results GRYFITlab test report LBO-168/11E	
Fire test performed according to EN 1634-1:2009 with heat exposure according to the standard fire curve for the situation “fire from inside to outside” for the façade and with the door leaves pivoting away from the fire	
Integrity (E)	66 minutes (no failure before end of heating)
Thermal insulation I ₁	51 minutes (measured on a door leaf)
I ₂	66 minutes (measured on a door leaf)
Heating was terminated after 66 minutes.	

Table 3.2.6 - Summary of results IBS Linz test report 11070808	
Fire test performed according to EN 1364-1:1999 with heat exposure according to the standard fire curve for the situation “fire from inside to outside”	
Integrity (E)	77 minutes (sustained flaming)
Thermal insulation (I)	77 minutes (sustained flaming)
Heating was terminated after 77 minutes.	

3.3 DEFINITION OF FIELD OF APPLICATION

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

- the Direct Field of Application in prEN 1364-3:2012 and
- the Extended Application in prEN 15269-6:2012.

4. CLASSIFICATION AND FIELD OF APPLICATION

4.1 REFERENCE OF CLASSIFICATION

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

4.2 CLASSIFICATION

The fire resistance of curtain wall constructions in the Schüco FW50+ FR60 Curtain Wall system.

Fire resistance classification of:

E 15 (i ↔ o), E 30 (i ↔ o), E 60 (i ↔ o)
EW 20 (i ↔ o), EW 30 (i ↔ o), EW 60 (i ↔ o)
EI 15 (i ↔ o), EI 30 (i ↔ o), EI 60 (i ↔ o)

5. FIELD OF APPLICATION

5.1 GENERAL

This classification is valid for the end use applications which are covered in the next sections. The approved constructions and variations thereof are based on the results obtained in the fire tests and the associated Field of Direct Application as given in prEN 1364-3:2012. In addition, the rules as specified in the Extended Field of Application standard prEN 15269-6:2012 have been used.

5.2 APPROVED CONFIGURATIONS

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

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

5.3 BASIC AND SUPPLEMENTARY PROFILES

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

- mullions
- transoms
- cover caps FW 50+ FR 60

5.4 INFILL PANELS

The approved infill panels are shown in Figure A.5 in Annex A. The information includes:

- glazing options

5.5 ACCESSORIES

The approved accessories are shown in the Figures A.6 and A.7 in Annex A. The information includes:

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

5.6 INSERT UNITS

The approved door and window constructions which are to be integrated in the curtain wall system are shown in Figure A.8 in Annex A. The information includes:

- Integration of fire resistant door ADS 80 FR 60

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

5.7 SUPPORTING STRUCTURE / ANCHORING

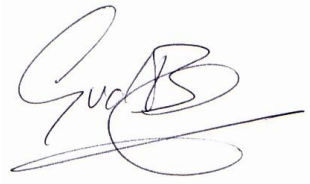
The supporting constructions into which the curtain wall system is to be installed are shown in the Figures A.9 - A.12 in Annex A. The information includes:

- sill attachment
- head attachment
- side attachments

6. LIMITATIONS

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

SIGNED



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

APPROVED



P.A. Ram
Project leader fire resistance

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

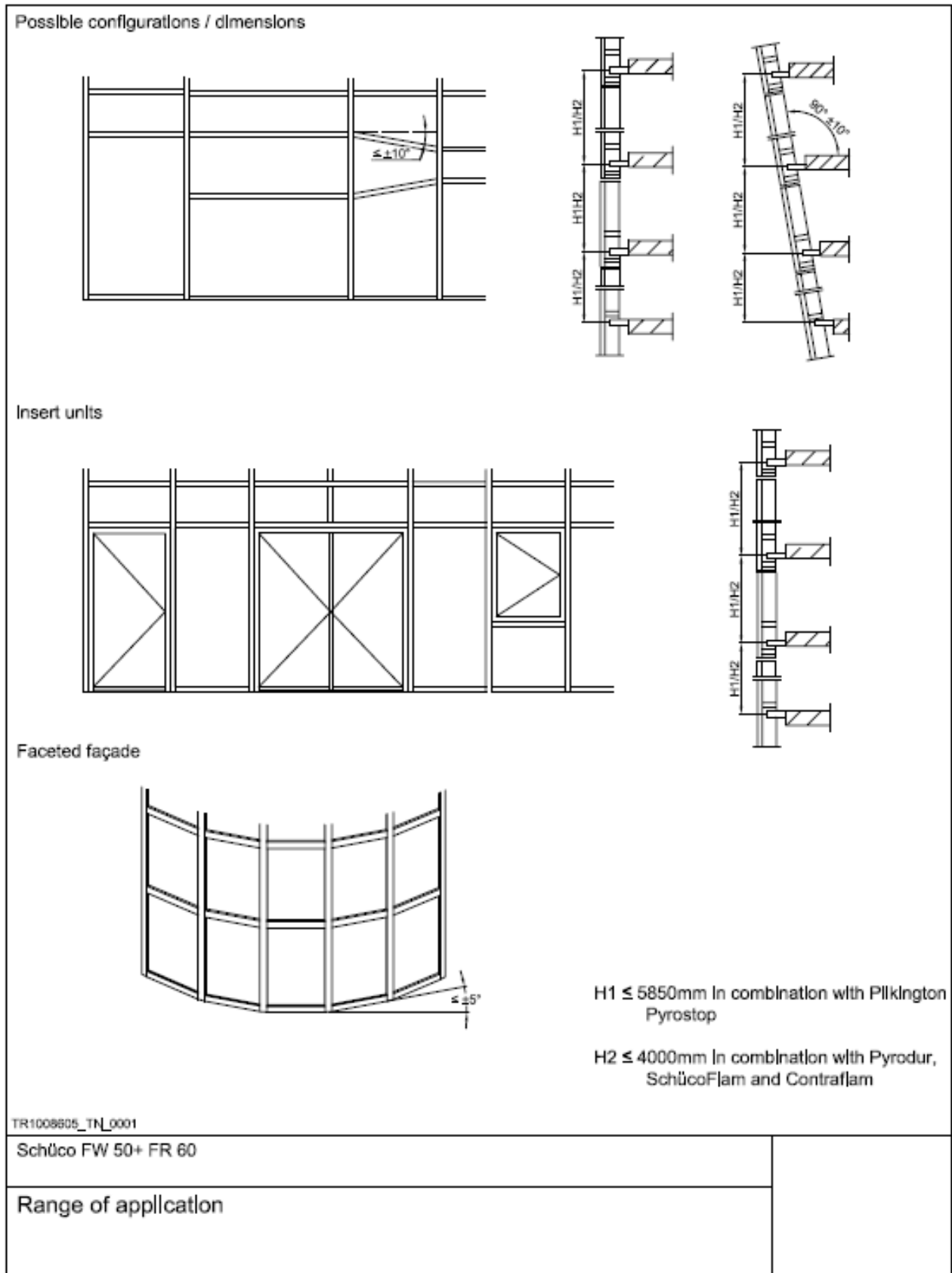


Figure A.1

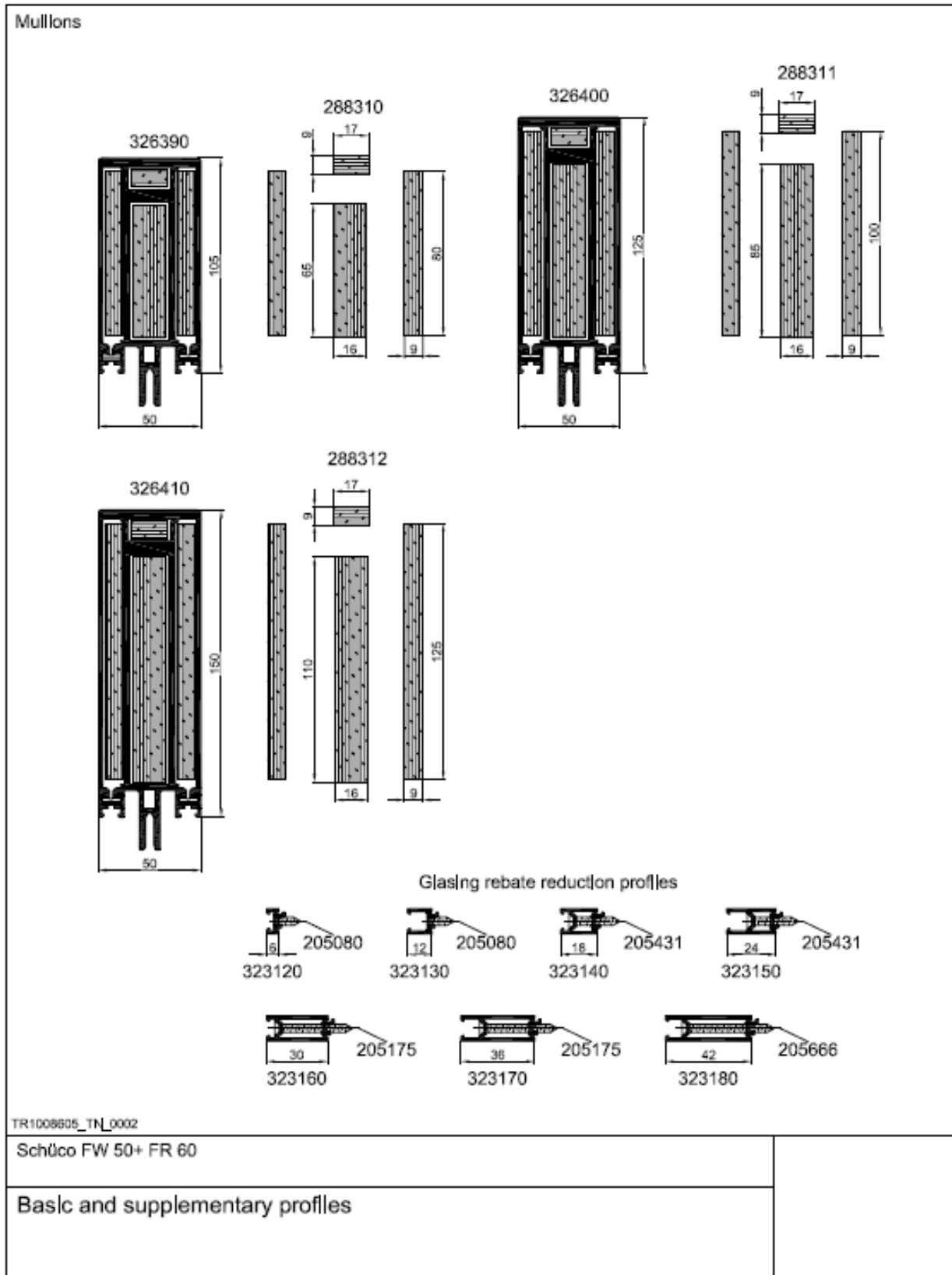


Figure A.2

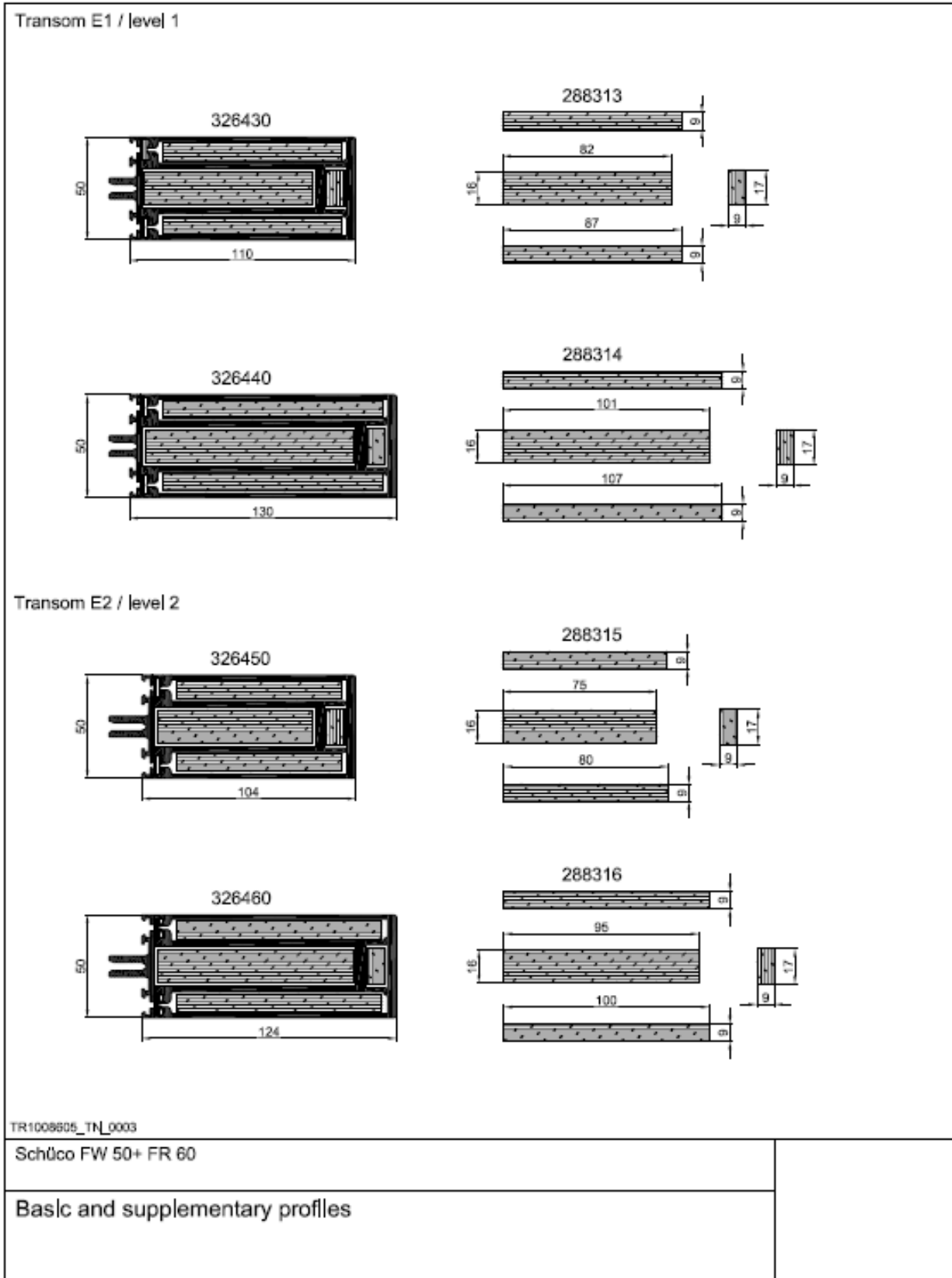


Figure A.3

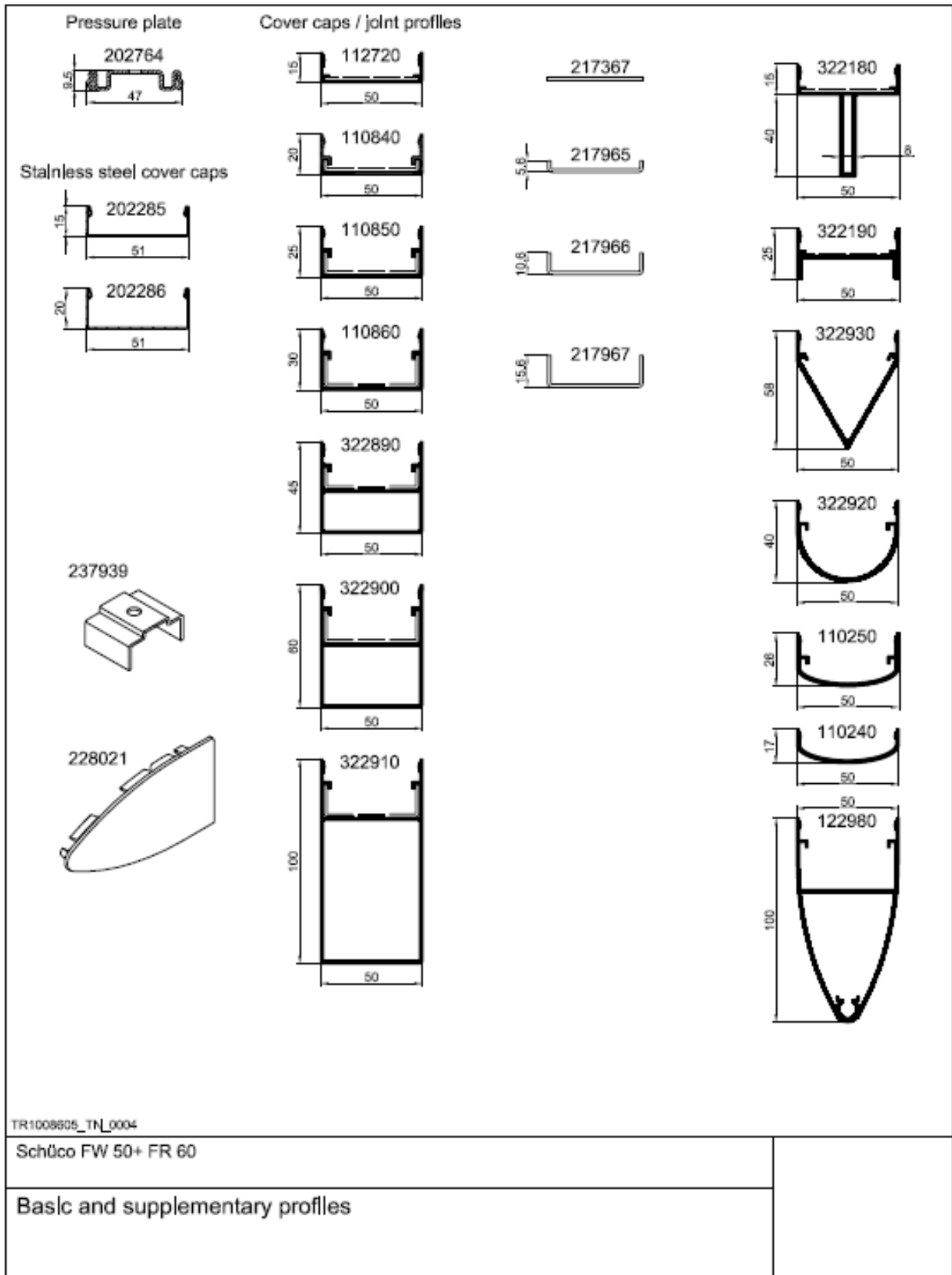


Figure A.4

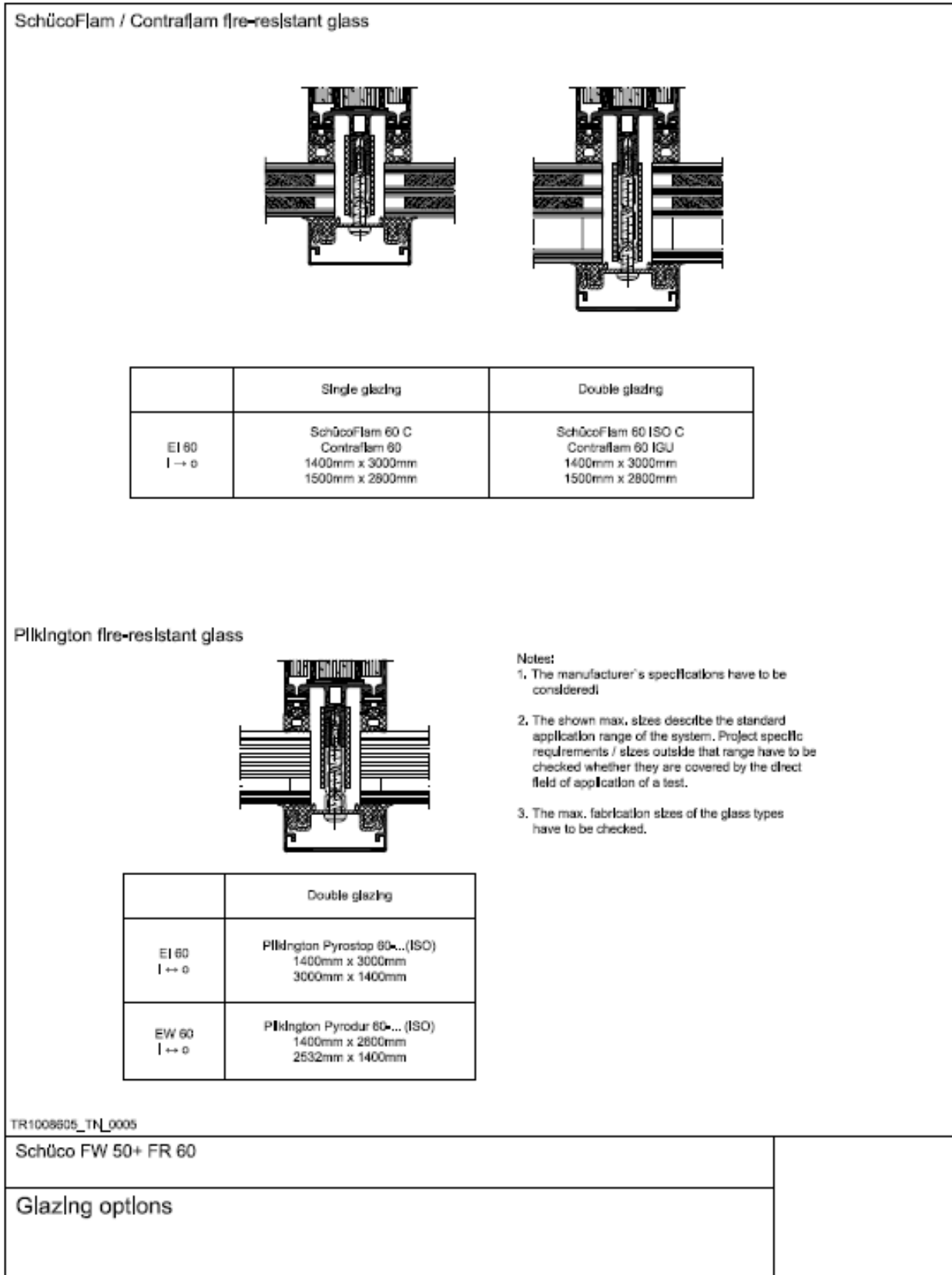


Figure A.5

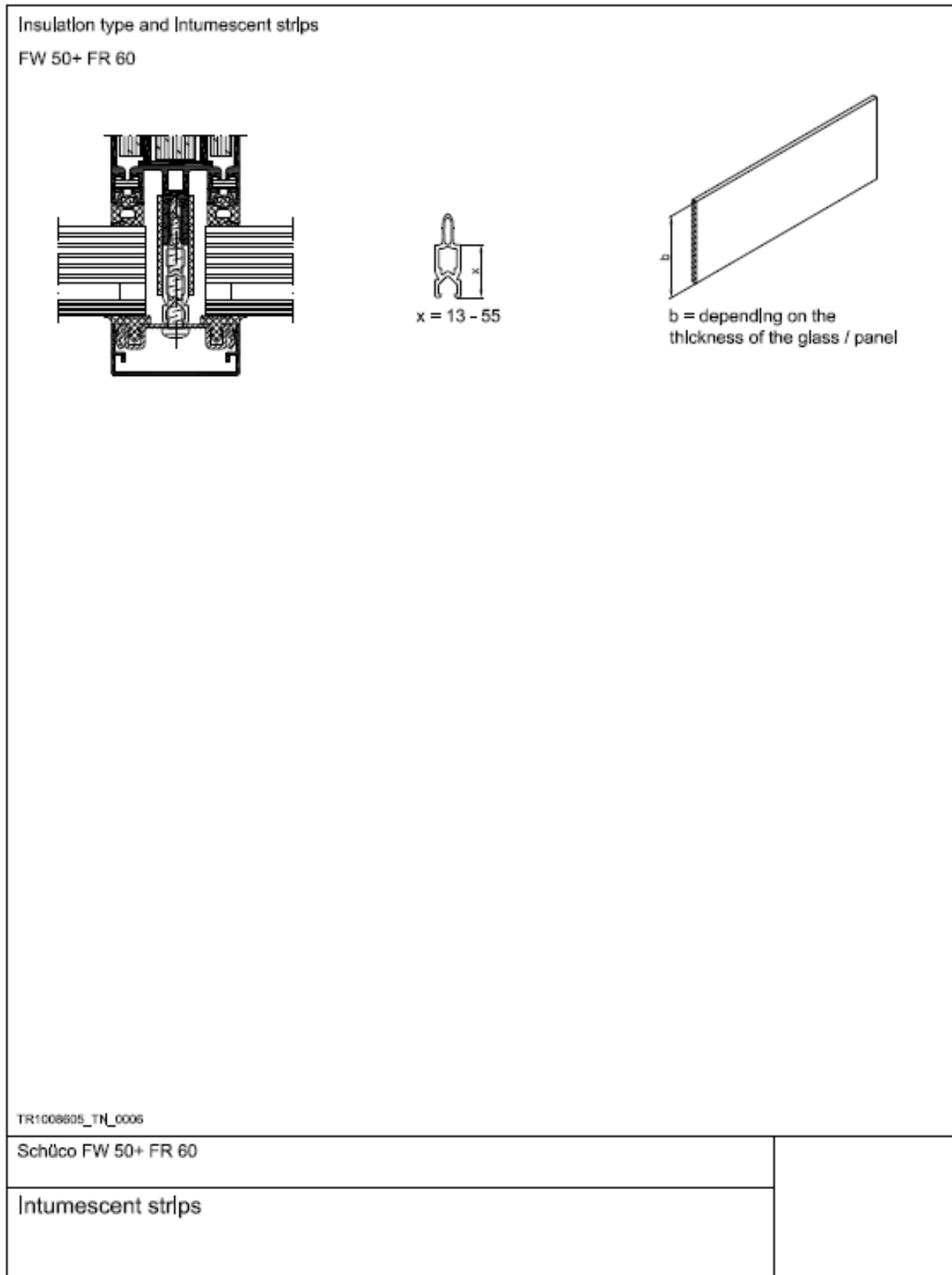


Figure A.6

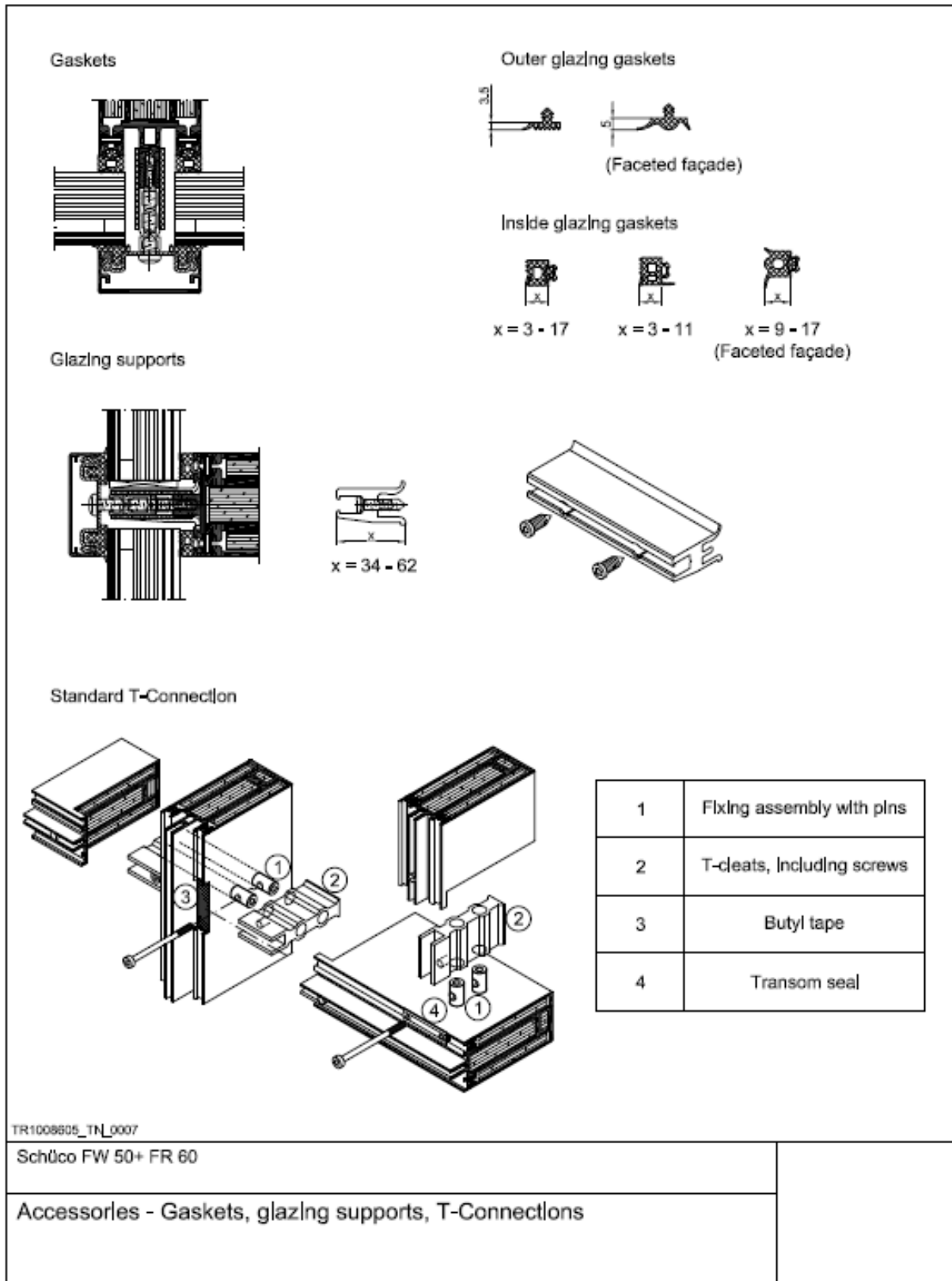


Figure A.7

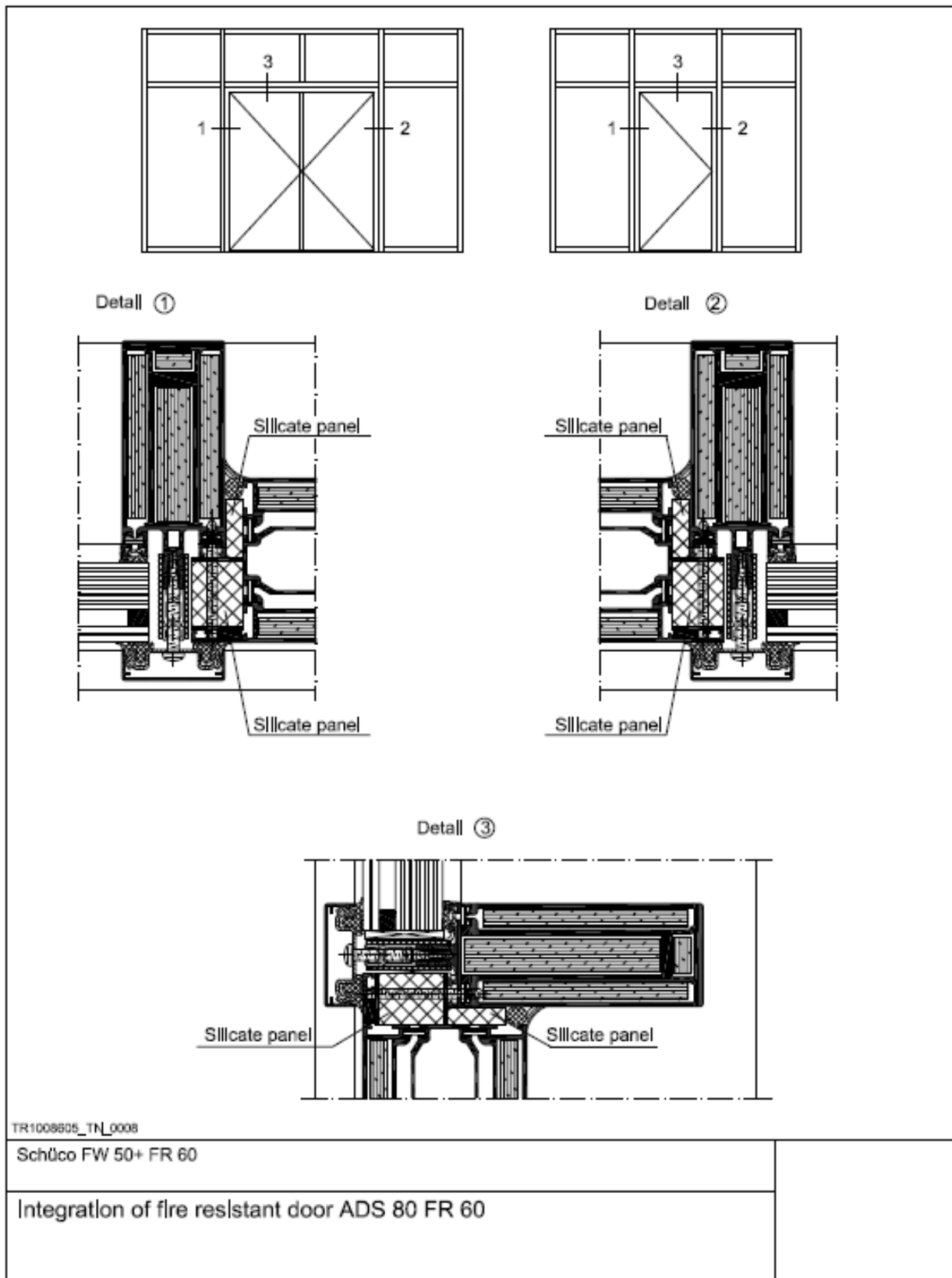


Figure A.8

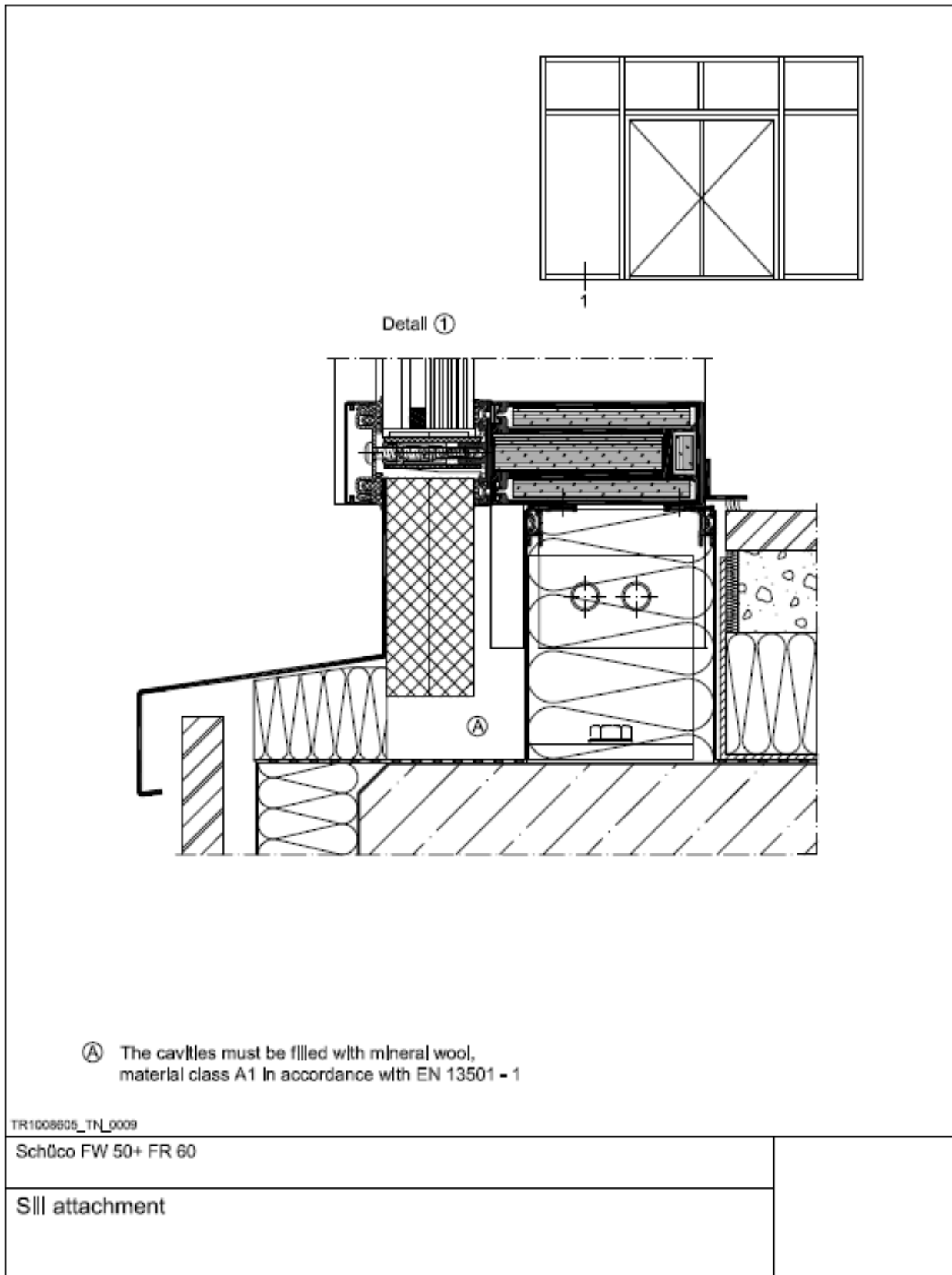


Figure A.9

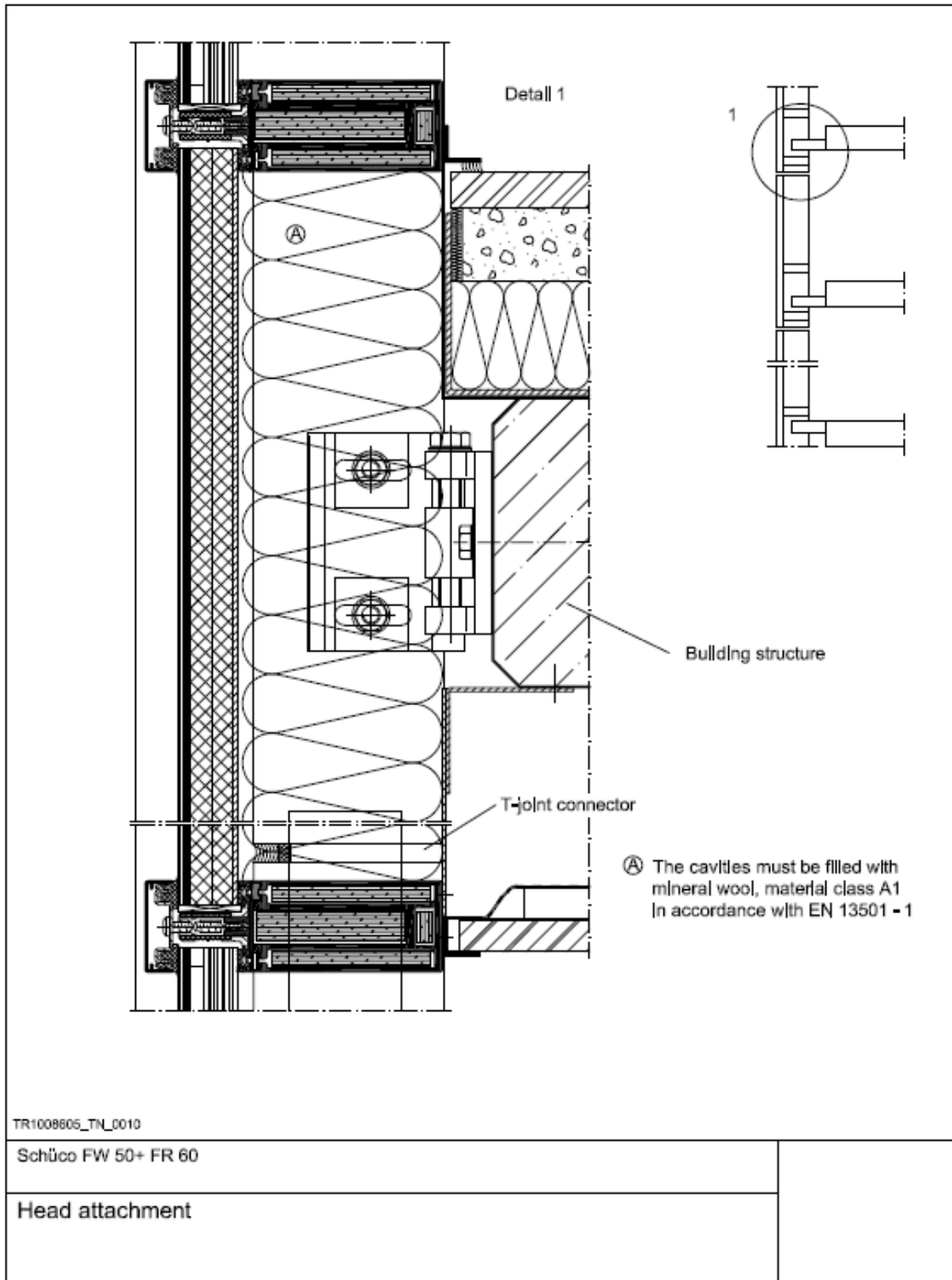


Figure A.10

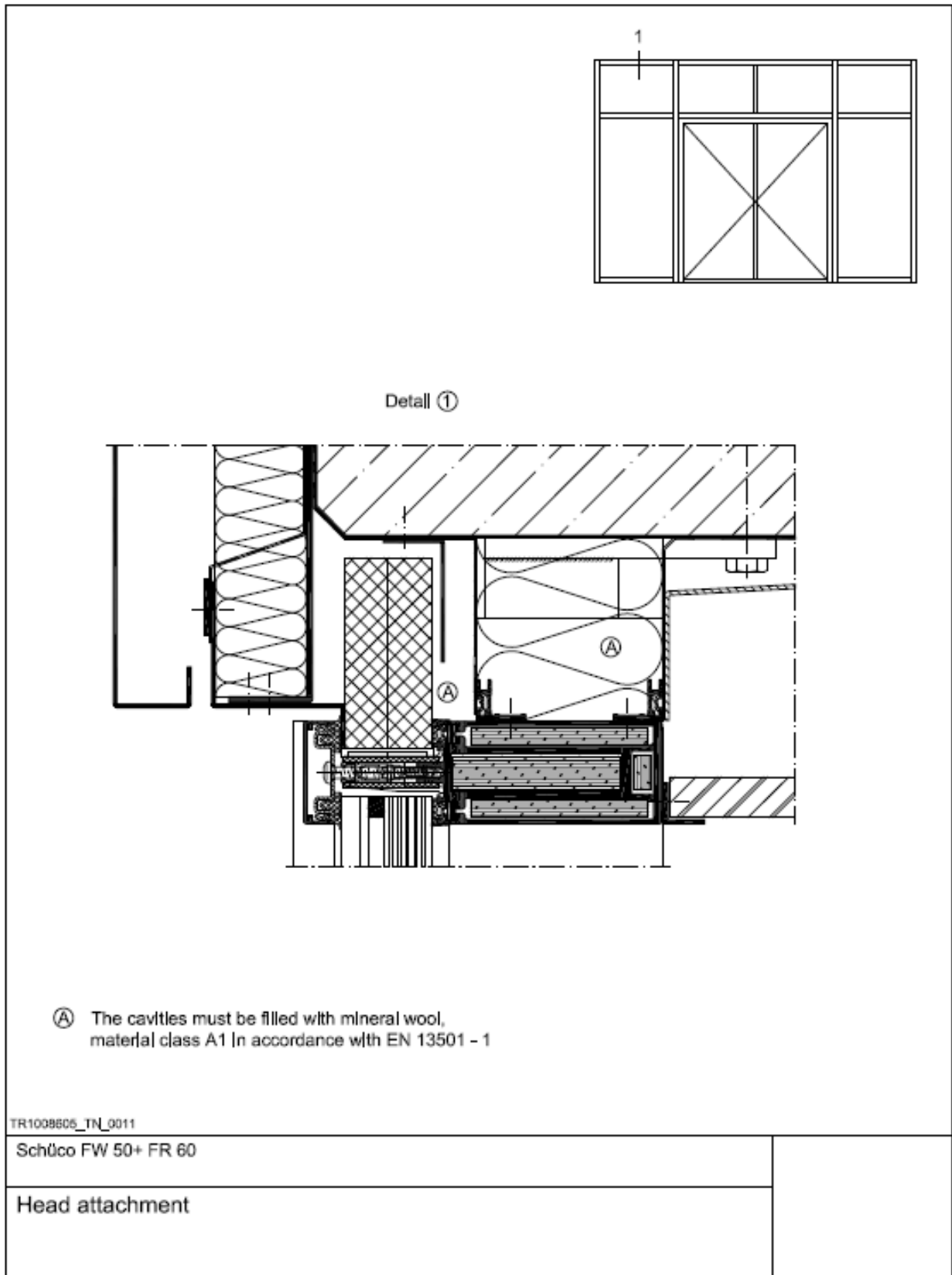


Figure A.11

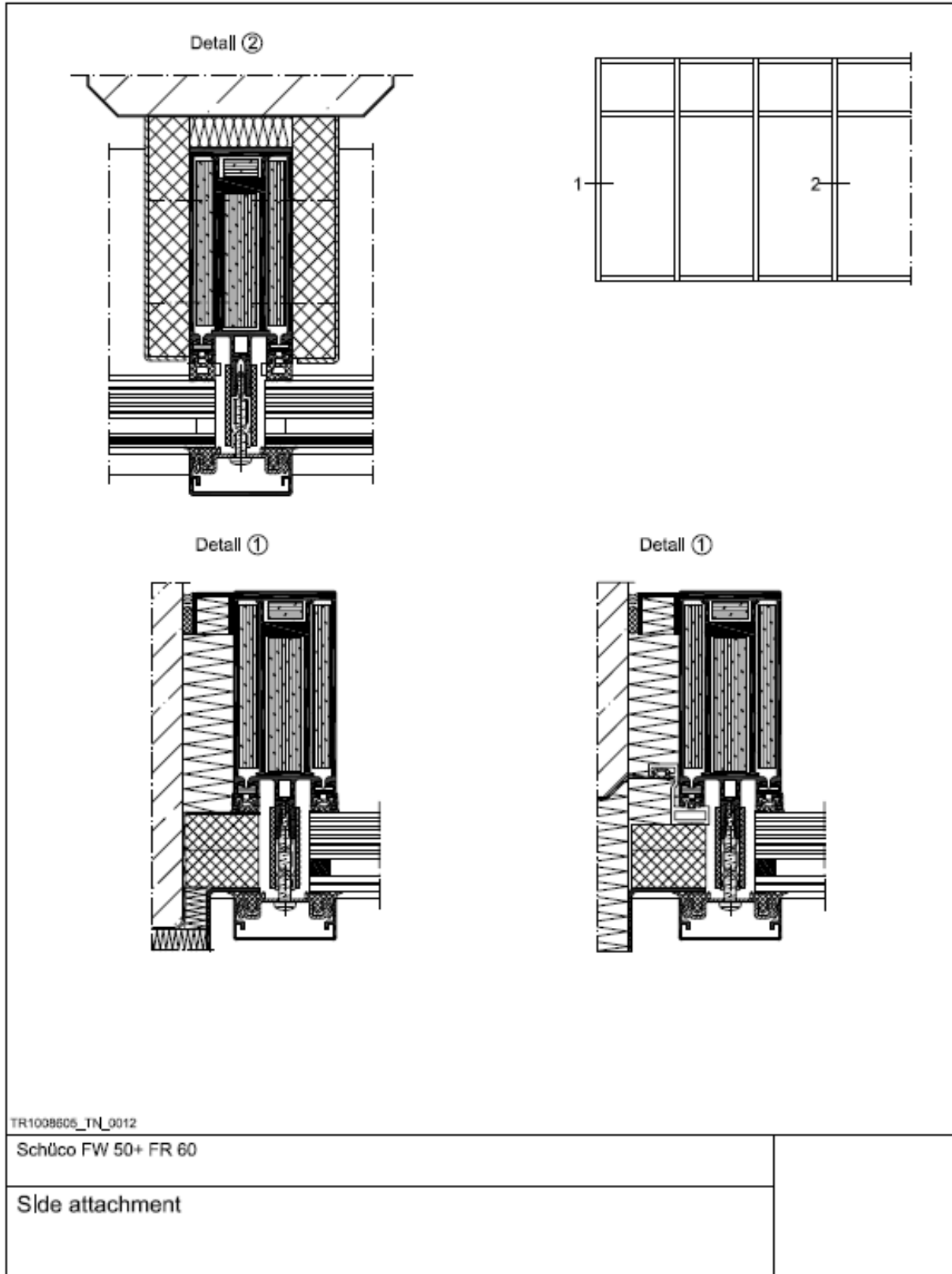


Figure A.12