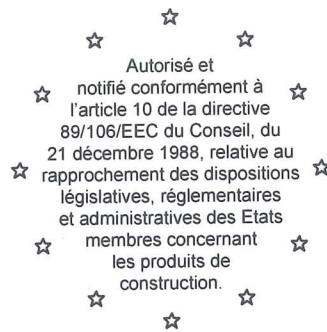


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CSTB
le futur en construction

MEMBRE DE L'EOTA

European Technical Approval **ETA-06/0264**

(English language translation, the original version is in French language)

Trade name:
Nom commercial :

GEODE

Holder of approval:
Titulaire :

TECHNAL – Groupe Hydro Building Systems
270 rue Léon Joulin
F-31037 Toulouse Cedex

Generic type and use of construction product:
Type générique et utilisation prévue du produit de construction :

Structural sealant glazing kits
Kits de vitrages extérieurs collés

Validity from / to:
Validité du :
au :

10/03/2013
09/03/2018

Manufacturing plant:
Usine de fabrication :

TECHNAL
270 rue Léon Joulin
F-31037 Toulouse Cedex

This European Technical Approval contains:
Le présent Agrément Technique Européen contient :

27 pages including 12 pages of figures which form an integral part of the document
27 pages incluant 12 pages de figures faisant partie intégrante du document.

This European Technical Approval replaces ETA-06/0264 with validity from 09/03/2013 to 08/03/2018
Cet Agrément Technique Européen remplace l'Agrément ETA-06/0264 valide du 09/03/2013 to 08/03/2018



Organisation pour l'Agrément Technique Européen
European Organisation for Technical Approvals

I. LEGAL BASES AND GENERAL CONDITIONS

- 1 This European Technical Approval is issued by the Centre Scientifique et Technique du Bâtiment (CSTB) 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 the Council Directive 93/68/EEC of 22 July 1993²;
 - Décret n° 92-647 du 8 juillet 1992³ concernant l'aptitude à l'usage des produits de construction;
 - Common Procedural Rules for Requesting, Preparing and the Granting of European Technical Approvals set out in the Annex of Commission Decision 94/23/EC⁴;
 - Guideline for European Technical Approval of "Structural Sealant Glazing Systems" ETAG no. 002, edition 1999, Part 1.
- 2 The Centre Scientifique et Technique du Bâtiment is authorised to check whether the provisions of this European Technical Approval are met. Checking may take place in the manufacturing plant (for example concerning the fulfilment of assumptions made in this European Technical Approval with regard to manufacturing). Nevertheless, the responsibility for the conformity of the products with 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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- 5 The European Technical Approval is issued by the approval body in its official language. This version fully corresponds to the version circulated within EOTA. Translations into other languages have to be designated as such.

¹ Official Journal of the European Communities no. L 40, 11.2.1989, p. 12

² Official Journal of the European Communities no. L 220, 30.7.1993, p. 1

³ Journal Officiel de la République française du 14 juillet 1992

⁴ Official Journal of the European Communities no. L 17, 20.1.1994, p. 34

 II SPECIFIC CONDITIONS OF THE EUROPEAN TECHNICAL APPROVAL

 1. Definition of product and intended use

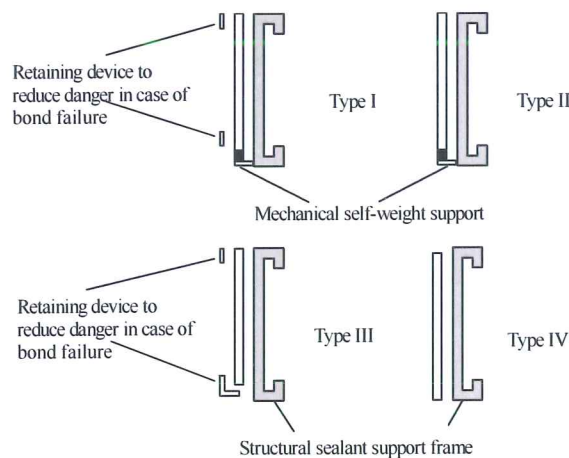
1.1 Definition of the products

Structural sealant glazing frame on which the glazing units are bonded all along the perimeter with a structural sealant and which constitutes infills for facade or glazing roof. The frames are presented in two configurations with or without an aluminium edge.

1.2 Intended use

Structural sealant glazing kit (SSGK) for use as infill for facade or glazing roof. The structural sealant support frame is anchored to the facade structure in order to form a curtain walling or glazing roof respectively. The facade structure is not a part of the present ETA.

The GEODE structural glazing kit is type I or II as per ETAG 002 SSGK (see below).



The system is intended to be used in curtain walling or glazing roof for which requirements ER2 Safety in case of fire, ER3 Hygiene, health and environment, ER4 Safety in use, ER5 Protection against noise, ER6 Energy economy and heat retention shall be fulfilled, and failure of the structural bond would cause risk to human life and/or considerable economic consequences.

The provisions made in this European Technical Approval are based on the assumed working life of the SSGK of 25 years. The assumed working life of a system cannot be taken as a guarantee given by the producer, but are to be used as a mean for selecting the appropriate product in relation to the expected economically reasonable working life of the works.

2. Characteristics of product and methods of verification

2.1 Characteristics of the product

2.1.1 Components of the kit

2.1.1.1 Structural sealants

Table 1 – Properties and characteristics of the sealants (with reference to there specific ETA)

ETA N°		Structural sealant type				Outer edge seal	
		DC 993	DC 895	VEC 99	VEC 90	DC 3362	IG 25 HM
		01/0005		05/0005		03/0003	05/0201
Design stress in tension	σ_{des} (MPa)	0,14	0,14	0,12	0,14	0,14	0,14
Design stress in dynamic shear	τ_{des} (MPa)	0,11	0,14	0,08	0,075	0,11	0,083
Design stress in static shear	τ_x (MPa)	0,011	—	—	0,007	—	0,008
Elastic modulus in tension or compression tangential to the origin	E_0 (MPa)	1,4	0,9	0,81	1,51	2,4	2,58
Elastic modulus in shear tangential to the original	G_0 (MPa)	0,47	0,3	0,27	0,50	0,80	0,86
Working time (at 25 °C, 50 % RH)	(Minutes)	10 to 30	15	2 (*)	6 (*)	10	50
Skin over time (at 25 °C 50 % RH)	(Minutes)	—	15	2 (*)	6 (*)	—	6 (*)
Tack-free time (at 25 °C, 50 % RH)	(Minutes)	80 to 100	30 to 50	3 (*)	20 (*)	30 to 45	180 to 240
Time before transport : The minimum time before transport is normally	(Days)	10	21	1 to 2	10	—	3
Water vapour permeability (g/m ²)						30 g/m ² .d for 1,5 mm thickness	18,6 g/m ²
Gas leakage rate (EN 1279-3)						$9,9 \times 10^{-3} \cdot a^{-1}$ (**)	0,38 – 0,54 %·a ⁻¹
* at 23 °C and 50 % R.H.							
** This value can only be determined on actual edge seal design and variable from edge seal design to edge seal design							

- Suitable substrates for structural sealant bonding

The types of suitable substrates for adhesion of the structural sealants are :

- The float glass conform to EN 572 Glass in Building – Basic Products – Part 1, 2, 4, 5 and the thermally treated glass made from, conform to :
 - EN 1863 Glass in building – Heat strengthened glass.
 - EN 12150 Glass in building – Thermally toughened safety glass.

- The coated glass if evidence is available that the coating complies with the requirements of the ETAG 002 § 5.233. If not, it must be totally removed from the structural adhesion surface.

The suitable coated glass substrates are identified in the relevant ETA for structural glazing sealants, further coatings may be added when they have been shown to be suitable in SSG kits, following the rules mentioned in the ETAG 002, § 5.2.3.3 (coated glass).

Note : Opacified glass with resin must not be considered as suitable structural seal adhesion surface.

2.1.1.2 Structural sealant support frame (fig. 1 to fig. 5)

Framing profile : Glazing profiles
Fixed frame
Fixed outer frame
Opening light profile

The structural sealant support frame is made aluminium alloy conform to TABLE 2.

Table 2 – Aluminium alloy - Characteristics

Alloy	Metallurgic state	Mechanical characteristics
Designation		
EN 573-3	EN 515	EN 755-2
EN AW-6060	T5	

Table 3 – Anodising characteristics of the structural sealant adhesion surface

Characteristics	Method	Criteria EOTA	Nominal value
Thickness	EOTA § 5.2.2.2.1	Mean minimum thickness : 15 μm	15 < th < 19
Sealing : Sealing degree Weight lost	EOTA § 5.2.2.2.2	EN 12373-6 : < 30 mg/dm ²	< 30 mg
Admittance at 1.000 Hz for a given thickness of 20 μm	EOTA § 5.2.2.2.2	EN 12373-5 : < 20 μS	—
Stain test	EOTA § 5.2.2.2.2	EN 12373-4 < 2 on Qualanod scale	< 2

The anodising of the structural adhesion surface profile FM220 is performed by the firm TECHNICAL INDUSTRIE (270 rue Léon Joulin – 31037 TOULOUSE Cedex) (fig. 6). The aluminium profiles have the Label QUALANOD.

The anodised aluminium profile has been assessed as suitable adhesion substitute for the bonding.

2.1.1.3 Insulating glass unit

The kits GEODE are designed in such way that the IGU outer edge seal is a structural edge seal.

The IGU is manufactured in accordance to EN 1279.

The structural outer edge seal is a silicone sealant conform to ETAG 002 identified in table 1.

For each project, the IGU's manufacturer shall deliver a technical dossier to his client as described in ETAG 002 § 8.3.2.4.2 – VI (Checks on incoming material, insulating glass units).

Dimensional tolerances on the IGU : ± 2 mm on the glass pane.

2.1.1.4 Cleaning product

The cleaning product that has to be used to clean the facade is the product EXTRAN 02 – MERCK dilution 2 % in volume (chemically compatible with the structural sealants).

Other products may be used provided they are assessed for conformity to ETAG § 5.1.4.2.4 (Facade cleaning products).

2.1.1.5 Retaining devices (fig. 9 to fig. 12)

The retaining devices WO112 (fig. 9 and 10) is made of aluminium as per table 2.

The retaining devices CM021 and CM024 (fig. 11 and 12) are made out of aluminium sheet EN AW 6060 T5, thickness 1,5 mm.

Retaining devices are means of retaining the glass to reduce danger in the event of bonding failure. The necessity of these accessories is to evaluate in function of the security specifications, the situation of the building and may be calculated in accordance to its working condition and the national regulation. Those devices may be calculated according to conventional calculations based upon the strength of material.

2.1.1.6 Mechanical self-weight support

Support of the glass relies on the use of setting blocks, which transfer the glass dead load to the mechanical self-weight support.

The mechanical self-weight support device ref. WO111, WO109 (fig. 9, 10 and 13) is made of aluminium alloy as per Table 2.

Those devices are designed to fulfilled the maximum deflection requirement of 0,5 mm.

Table 4 – Length of the mechanical self-weight devices – maximum bearing capacity

Mechanical self-weight devices	Length	Maximum bearing capacity N/90 mm
WO111	90	600
WO109	90	600

2.1.2 Accessories

2.1.2.1 Internal finishing sealant (fig. 1 to fig. 5)

The internal finishing sealant of the internal finishing seal is made out of weather proofing silicone. This internal finishing sealant is set up along the low transom and 10 cm at the low of the mullion.

2.1.2.2 Gasket (fig. 1 to fig. 3)

The gaskets are used to ensure the air and water tightness between edge of glass and frame.

Material : EPDM conform to EN 12365.

2.1.2.3 Adhesive spacer

Adhesive foam bead (or specific gasket) is used as backer rod to the structural sealant. It sets the limits of the structural seal and holds the glazing in place on the structural sealant support frame while injection and polymerisation of the structural sealant takes place.

Table 5

Spacers
Norton V2100 from TREMCO PROSYTEC
Norton V2200 from TREMCO PROSYTEC
SST 800 from TREMCO PROSYTEC
GLASING MOUNT 400 from VITO

The spacers are chemically compatible with the structural sealants identified in table 1.

2.1.2.4 Setting and location blocks (fig. 7 and fig. 8)

The glazing dead load is transferred by setting blocks CM028 from STEFANI and CM187 from MPM.

Characteristics of the setting block :

- Material : Thermoplastic rubber hardness : 73 A,, length to be adapted as a function of load.
- Thickness : 2 or 5 mm.

The setting blocks are chemically compatible with the structural sealants and the outer edge seals identified in table 1.

2.1.2.5 Method of verification

The assessment of the fitness for use of the structural sealant glazing frame for the intended use in relation to the requirements for safety in case of fire, hygiene, health and environment safety in use, protection against noise ; energy economy and heat retention, in the sense of Essential Requirements 2 to 6 has been made in accordance with the "Guideline for European Technical Approval for Structural Sealant Glazing Kits", the ETAG 002.

Except the characteristics of the bonding itself, most of the performances can not be determined as they are not applicable to the only glazing frame. However the performance of the assembled facade shall be determined according to EN 13830 or EN 14351 for the opening parts.

Table 6

Essential Requirement	
ER2 Safety in case of fire	<ul style="list-style-type: none"> ▪ Reaction to fire : Class F (No performance determined). ▪ Resistance to fire : no resistance to fire claimed ▪ Behaviour in fire : no behaviour in fire performance claimed.
ER3 Hygiene, health and environment	<ul style="list-style-type: none"> ▪ Air permeability : Not applicable to the only glazing frame ▪ Water tightness : Not applicable to the only glazing frame. ▪ Dangerous substances the components manufacturers declare to be conform to the Council Directive 76/769/EEC) published in "Official Journal of the European Communities" of 27/07/1976 and its amendments. 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 EU Construction Products Directive, these requirements need also to be complied with, when and where they apply.
ER4 Safety in use	<ul style="list-style-type: none"> ▪ Impact test : No performance determined. ▪ Sill height : The sill height can be adapted to any required height. ▪ Wind resistance : Not applicable to the only glazing frame. For example sample of frame H = 1,600 m x L = 1,200 m can resist a wind of increased pressure of 2400 Pa according to EN 13830.
ER5 Protection against noise	<ul style="list-style-type: none"> ▪ No performance determined.
ER6 Energy economy and heat retention	<ul style="list-style-type: none"> ▪ Determination of thermal insulation and susceptibility of condensation. The calculation can be performed according to EN ISO 10077. The commonly used values of the thermal conductivity (λ-value) of the materials used in the present SSGS kit are given in table 7 below.

Table 7 – Thermal conductivity (λ -value) of the components

Materials	λ -value (W/m.K)	Materials	λ -value (W/m.K)
Stainless steel	17	Silicone	0,35
Glass	1	Adhesif spacer	0,078
EPDM	0,25	Aluminium	160

3. Evaluation of conformity and CE marking

3.1 Attestation of conformity system

The systems of attestation of conformity specified by the European Commission detailed in the Commission decision of 24/06/96, published in the EC Official Journal L254 of 08/10/96 :

System 1 (without audit testing of samples) for SSG kits Type II.

System 2+ (first possibility, including certification of the factory production control (FPC) by an approved body on the basis of its continuous surveillance, assessment and approval) for SSG kits Type I.

(The systems being as described in Council Directive 89/106 EEC Annex 111.2 (i) and (ii) respectively).

Systems 1

(a) tasks for the manufacturer :

- factory production control,
- testing of samples taken at the factory by the manufacturer in accordance with a prescribed test plan.

(b) tasks for the approved body :

- initial type testing of the product,
- initial inspection of the factory and of factory production control,
- continuous surveillance, assessment and approval of the factory production control.

Systems 2+

(a) tasks for the manufacturer :

- initial type testing of the product,
- factory production control.

(b) tasks for the approved body :

- initial inspection of the factory and of factory production control,
- continuous surveillance, assessment and approval of the factory production control.

3.2 Responsibilities

3.2.1 Route to CE Marking

In the framework of this ETA for the structural sealant glazing frame, the facade makers are identified as being facade makers type B or type C (see below). Two or three manufacturing actors are involved :

- The kit designer : responsible for the design of the kit and its components . He is the ETA-holder.
- Facade makers : Several manufacturers who are responsible for assembling the kit components, produced by one or more suppliers (generally the kit designer, but possibly others (glass, sealant, etc), in accordance with the specifications of the kit designer. The facade makers put products on the market and have to obtain an EC certificate of conformity. The facade makers produce the metal frames, using the profiles supplied by the kit designer.

The facade makers type B have bonding equipment to perform the bonding work between the glazing product and the structural sealant support frame.

The façade maker type C has no bonding facilities. A third actor is involved in the manufacturing process : the bonding workshop.

- The bonding workshops (structural sealant appliers) : subcontractors of the facade makers performing the bonding works. The bonding workshop's FPC system is an important part of the FPC system that is under the responsibility of the EC Certificate holder (the facade makers). The bonding workshop cannot be EC certificate holder by itself. To make easier the obtention of the EC certificate by the facade maker, the bonding workshops can obtain a specific certificate of the conformity of their FPC systems with ETAG 002 § 8.3.2.4. (Test plan as part of FPC) from a notified body.

3.2.2 Tasks of the manufacturer

The ETA holder of the kit is responsible for setting up suitable rules and instructions for facade makers and the bonding workshops (quality manual for kit assembling and bonding). The different actors are bound via contractual links* with the ETA holder to respect the kit holder rules and instructions which are an integral part of the FPC system.

The manufacturers (ETA holder, facade maker and bonding workshop) have a factory production control system in their plant and exercise permanent internal control of production. All the elements and provisions adopted by the manufacturer are documented in a systematic manner in the form of written policies and procedures. The production control systems ensure that the product is in conformity with the ETA.

* Note : Those contractual links and their contents are described in the document GNB-CPD SG05 "Route to CE marking" August 2003.

3.2.2.1 Task for the ETA holder

The controls performed by the ETA holder include at least :

- Check on incoming materials :
 - Control of the profiles and accessories with the specifications.
 - Control of the suitability of each batch of anodised support profile with all the structural sealants claimed in the ETA.

3.2.2.2 Task for the façade maker

The controls performed by the facade maker include at least :

- Check on incoming materials (framing profiles, glass products with control file from IGU supplier, sealants, gaskets, hardware),
- Control of the production in accordance to the ETA specification and the kit designer instructions.

The facade maker gives all the necessary informations to the bonding workshop.

3.2.2.3 Task for the bonding workshop

The factory production control includes at least the controls defined in Table 10 – ETAG 002.

3.2.3 Tasks for the ETA holder or the approved body : Initial Type Testing

For initial type testing, the results of the tests performed as part of the assessment for the European Technical Approval shall be used unless there are changes in the production line or plant. In such cases, the necessary initial type testing has to be agreed between the Centre Scientifique et Technique du Bâtiment and the notified body involved.

For System 1, this work is validated by the approved body for Certificate of Conformity purposes.

For System 2+, the work should be taken over by the ETA holder for Declaration of Conformity purposes.

3.2.4 Tasks for the approved body

3.2.4.1 Identifying the manufacturing routes and the manufacturing plans

The notified body shall verify and assess that :

- All the manufacturing actors in question are identified for each manufacturing steps.
- Their respective responsibilities are determined in the required contractual links.
- The identification allows the traceability of all productions covered by the present ETA.

The Certificate holder is responsible for enabling the notified body to keep its information up

3.2.4.2 Assessment of the factory production control system-initial inspection only or initial inspection and continuous surveillance

Assessment of the FPC is the responsibility of an approved body.

An assessment must be carried out on the required manufacturing steps of each manufacturing plant to demonstrate that the factory production control is in conformity with the ETA and any subsidiary information. This assessment is based on an initial inspection and/or on analysis of the relevant document of the different manufacturing actors' plants (Kit designer ; facadier (-s) and bonding workshops).

Subsequently continuous surveillance of factory production control is necessary to ensure continuing conformity with the ETA. This continuous surveillance is to be in conformity with to ETAG 002 SSGK chapter 8.3 Documentation at each identified manufacturing plant.

3.2.4.3. Certification

The approved body will issue Certificate(s) of Conformity of the product (for System 1) and Certificate (-s) of the Factory Production Control System (for System 2+).


3.3 CE marking

3.3.1 General

The CE marking shall be affixed on each structural seal support frame or on accompanying document. The symbol "CE" shall be accompanied by the following information :

- Identification number of the certification body.
- Name of identifying mark of the facadier and manufacturing plant.
- The last two digits of the year in which the CE marking was affixed.
- "ETAG 002 Structural sealant glazing kit".
- Number of European Technical Approval.
- Number of the EC certificate of conformity.
- Indication of the type

3.3.2 Example

 XXX	"CE" – Symbol Number of Notified Body
Any company, Any address XX XXXX-CPD-XXXX	Name and address of the manufacturer or his representative established in the EEA and of the plant where the product was manufactured. Two last digits of year of affixing CE Marking. Number of EC certificate of conformity (where relevant)
ETA N° 05/XXXX ETAG 002 Structural Sealant Glazing Kit Types I & II	ETA Number ETAG Reference Relevant performance characteristics and/or designation code

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

4.1 Manufacturing

4.1.1 Structural sealant support frames (fig. 1 to fig. 5)

The structural sealant support frame are manufactured by the façade makers according to the ETA designer rules and instructions.

The profiles are assembled by corners to screw and/or to crimp to form the structural sealant support frame :

- The dimensional tolerances on the structural sealant support frame are ± 1 mm.
- Principal operations :
 - Assembling of the structural sealant support frame profile
 - Drilling and punching of the holes for drainage and ventilation

The fixed part or the opening lights are realised with the frame profiles FM230, FM231, FM234, FM240, (fig. 15 to fig. 18).

4.1.2 Bonding of the glazing

This work is performed in a workshop heated and maintained free from dust.

The maximum storage duration of the sealants are :

- | | | |
|------------|---|----------------------------------------------------------------------------------------------------|
| - DC 3362 | } | - 12 months after the fabrication date in its original unopened packaging, when stored below 30 °C |
| - DC 993 | | |
| - DC 895 | | |
| - VEC 90 | } | - 18 months |
| - VEC 99 | } | - Base : 18 months ; Catalisor : 12 months |
| - IG 25 HM | } | - No information. |

Principal stage of assembling :

- Cleaning of the structural sealant adhesion surfaces with the relevant cleaning agent and eventual application of primer as determined within the structural sealant ETA.
- Setting in place of the spacers.
- Setting in place of the glazing.
- Setting in place of the setting blocks.

- Extrusion of the structural sealant.
- Smoothing the sealants beads.
- Setting of the mechanical self-weight support.
-

The frame is immediately set on a rack. The sealant curing is then allowed without any movement between the glass and the structural support frame during the time prescribed § 2.1.1.1 (Table 1).

Nevertheless earlier transportation on work site is possible if the following two conditions are respected (see ETAG Table 10 checks during the production) : The tested H – samples give the following result : Rupture 100 % cohesive and breaking stress $\geq 0,7$ MPa.

4.2 Installation and design rules

4.2.1 Structural seals design

The structural seal is to be calculated as per annex 2 of the ETAG 002 and according to national design rules with the design value given in the chapter 2.1.1 respecting the following conditions the minimum dimensions of the structural seal are $e \geq 6$ mm, $h_c \geq 6$ mm, $r \geq 6$ mm.

For the definition of e, h_c , r, see ETAG 002 SSGK annex 2.

4.2.2 Design rules for the frames

The frames are designed following the specifications of EN 13830 or EN 14351 and national provisions.

4.2.2.1 Drainage and ventilation (fig. 1 and fig. 2)

Case of an edged frame :

The drainage of the rabbet is performed by 2 holes $\varnothing 8$ mm in the low horizontal part of the structural sealant support frame (at least every 0,5 m).

4.2.2.2 Weather sealing (fig. 1)

The weather sealing is achieved with gasket or sealant, case by case.

In the case of frame without bordered, the gasket ref. CM164 is placed around the frame. This gasket is glued by the structural sealant when it is bicomponent. When the structural sealant is monocomponent, the gasket is glued by a second beat of sealant after polymerisation of the structural sealant.

4.2.2.3 Maximum dimensions

Maximum dimensions are determined as following :

- The bearing capacity of each hook for the fixed frames,

- The air and water tightness and wind performances of the structural glazing system, determined case by case following relevant standards.
- The results of tests following regulations of the opened structural sealant support frames according relevant standard.

4.2.3 Installation – Specifications on the façade structure

The facade structure shall comply with the specifications of EN 13830 and national set up rules.

4.2.4 Maintenance and repair

4.2.4.1 Repair

All damages noticed on a structural sealant must be repaired as follow :

- Dismantling of the structural sealant support frame,
- Replacement by a new unit in reserve or,
- Repair of the damaged unit in workshop following the procedure described in § 4.1.2 after removing of the structural sealant.

4.2.4.2 Maintenance

Current maintenance : cleaning up the glazing with clear water.

When necessary, the cleaning product EXTRAN 02 MERCK diluted to 2 % in water can be used.

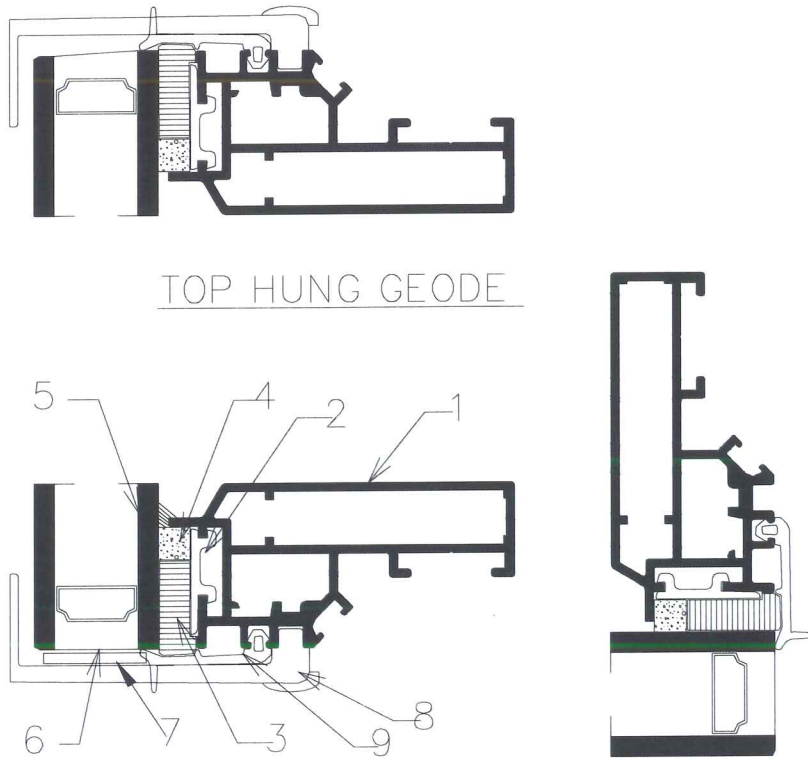
For any other cleaning product, the compatibility with the kit shall be assessed as required by the ETAG 002.

4.3 Responsibilities

It is the responsibility of the facade maker to conform to the here above-mentioned requirements and to affix the CE marking on their production.

**The original French version is signed by
the Technical Director
C. BALOCHE**

Figure 1 – Top hung GEODE - Grid



REFERENCE	N-	DESIGNATION	DRAWING
	1	TILT AND TURN SECTION	
FM220	2	BONDING SECTION	
	3	BONDING SEALANT	
	4	SPACER	
	5	GLAZING	
	6	GLAZING SEALANT	
CM028	7	GLAZING WEDGE	
CM020	8	SECURITY PARTS	
CM164	9	SASH FRAME PROTECTING GASKET	

Figure 2 – Top hung GEODE – Vertical Grid

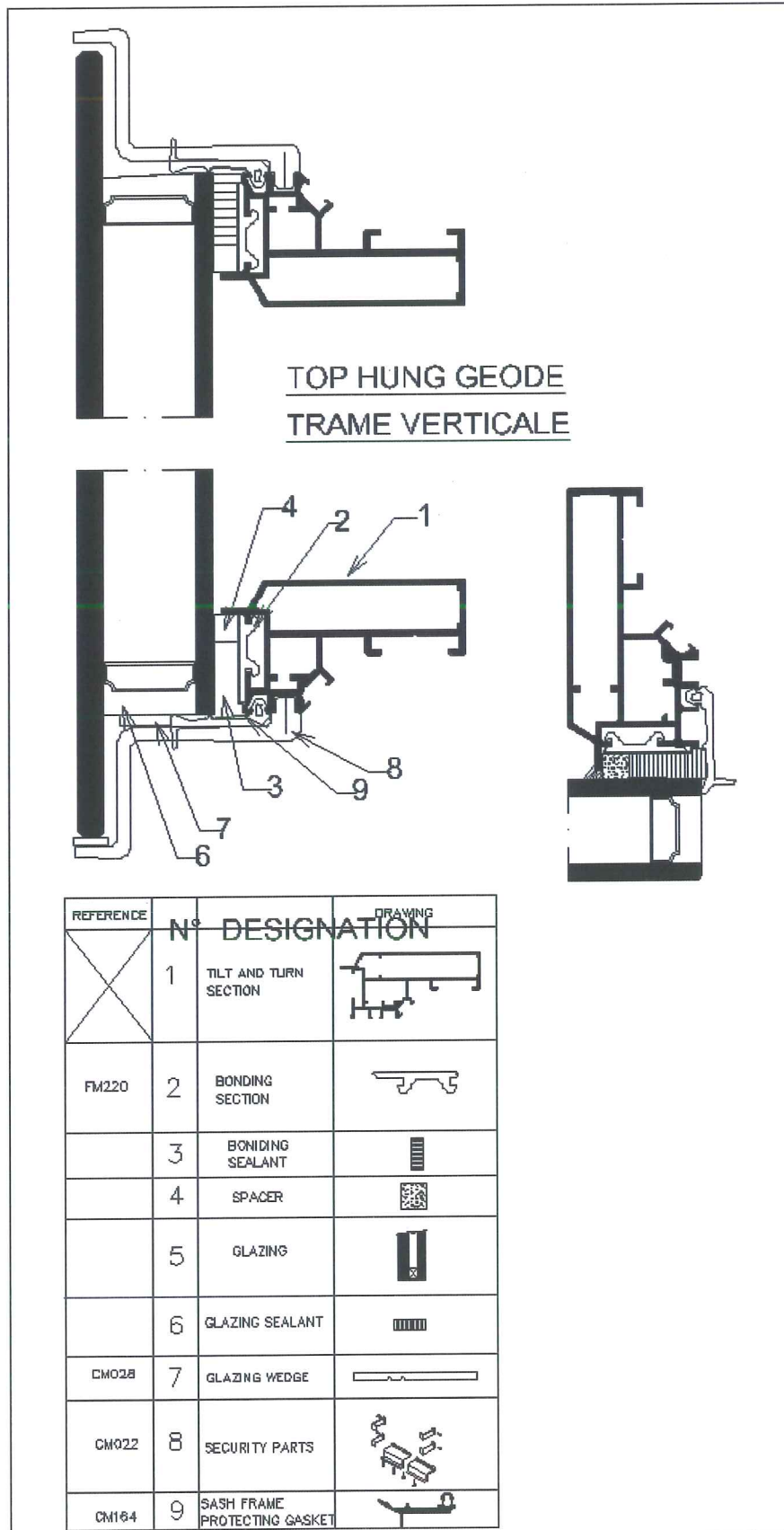
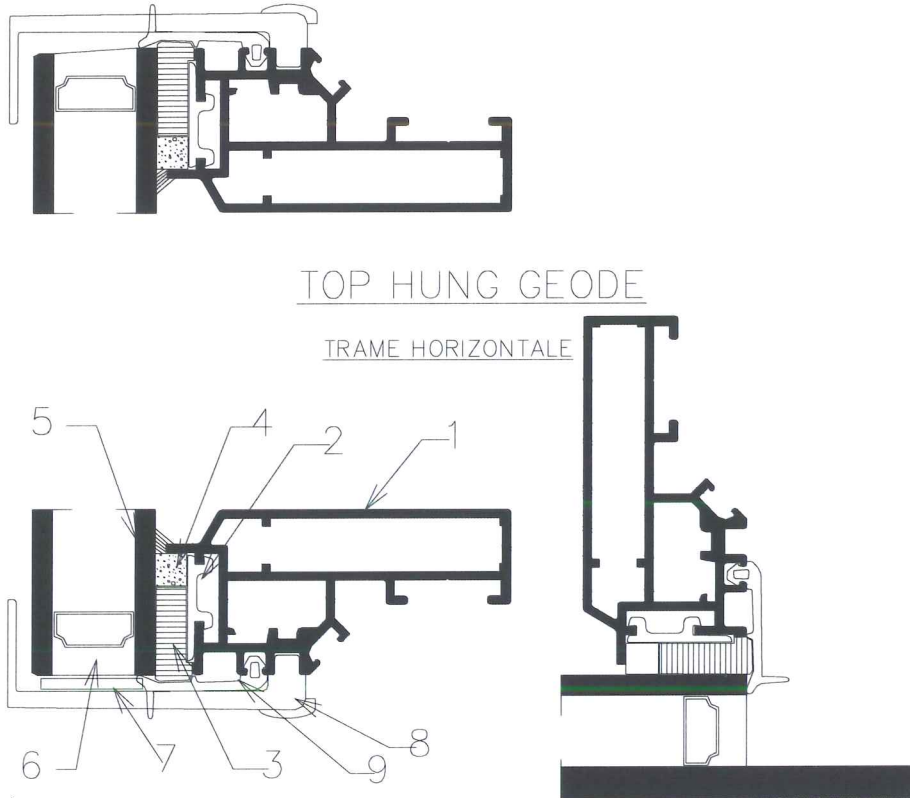
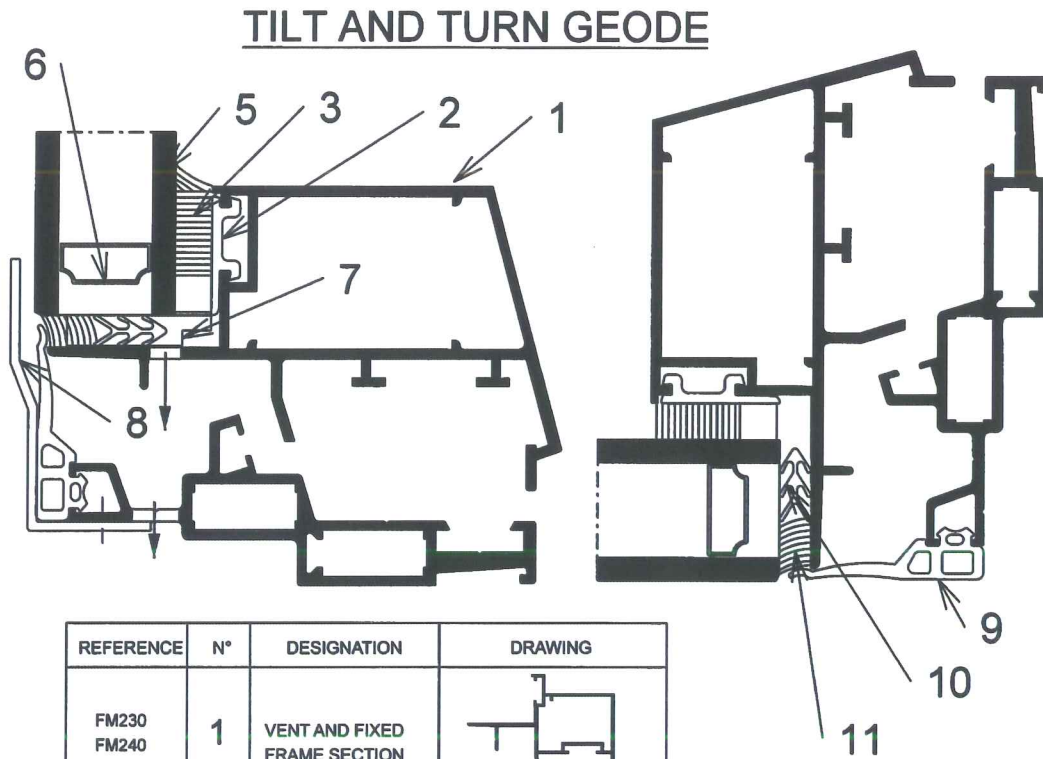


Figure 3 – Top hung GEODE – Horizontal grid



REFERENCE	N°	DESIGNATION	DRAWING
	1	TILT AND TURN SECTION	
FM220	2	BONDING SECTION	
	3	BONDING SEALANT	
	4	SPACER	
	5	GLAZING	
	6	GLAZING SEALANT	
CM028	7	GLAZING WEDGE	
CM020	8	SECURITY PARTS	
CM164	9	SASH FRAME PROTECTING GASKET	

Figure 4 – Tilt and Turn GEODE



REFERENCE	N°	DESIGNATION	DRAWING
FM230 FM240 FM267	1	VENT AND FIXED FRAME SECTION	
FM220	2	BONDING SECTION	
	3	BONDING SEALANT	
	4	SPACER	
	5	GLAZING	
	6	GLAZING SEALANT	
CM187	7	GLAZING WEDGE	
CM021	8	SECURITY PARTS	
JM162	9	VENT GASKET	
JM044	10	BAK ROD	
	11	WEATHERPROOFING SEALANT	

Figure 5 – Fireman access GEODE

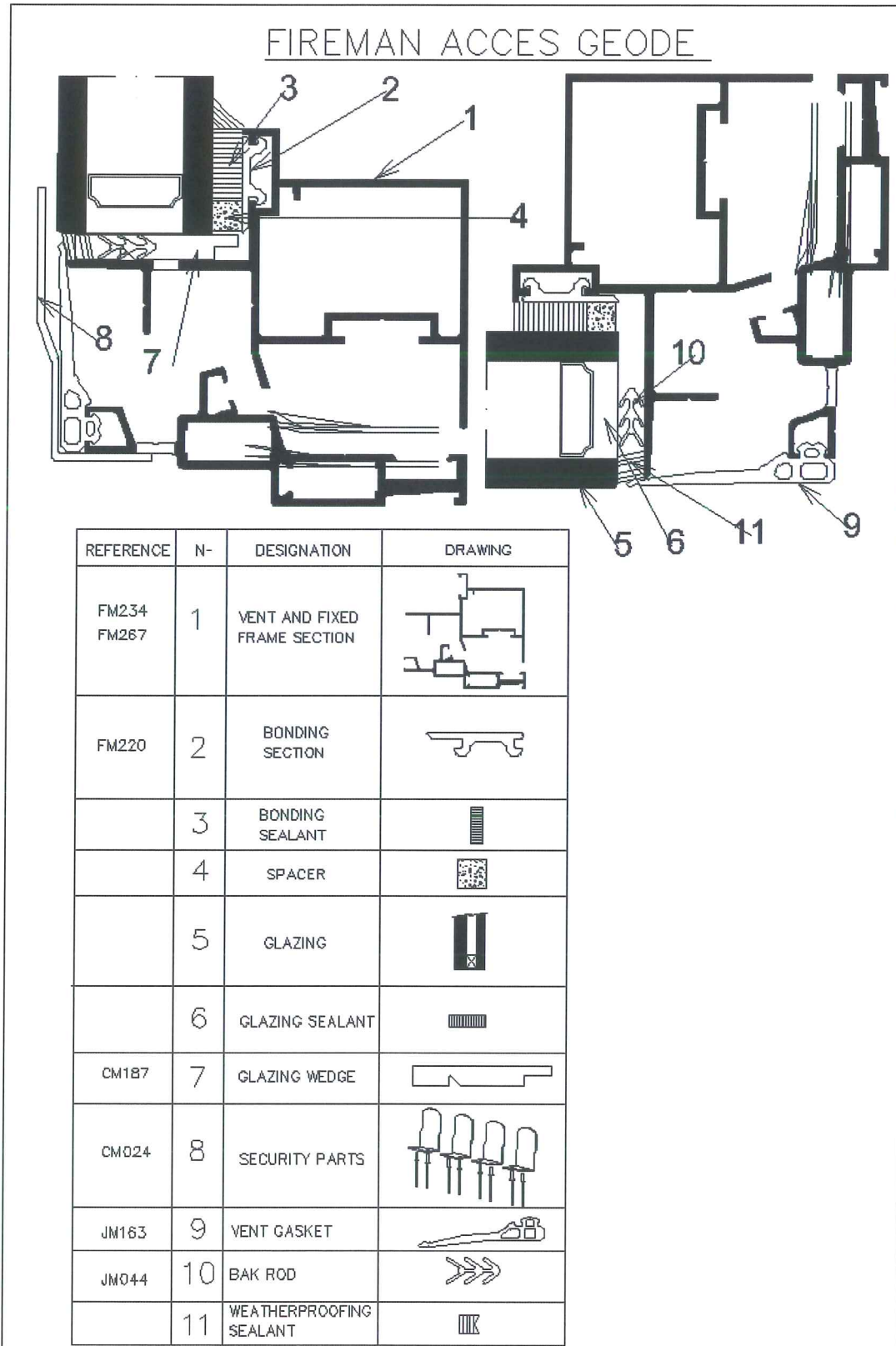


Figure 6 – Bonding profile – FM 220

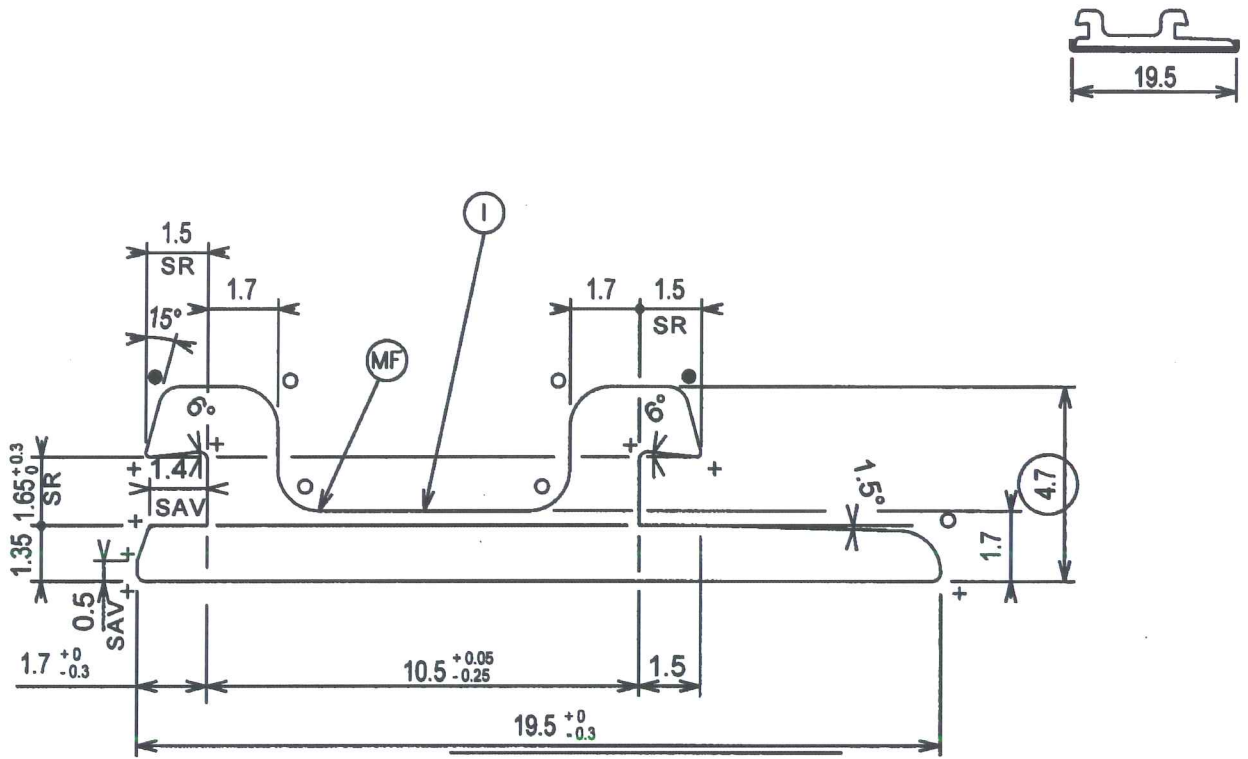


Figure 7 – Setting block - CM028

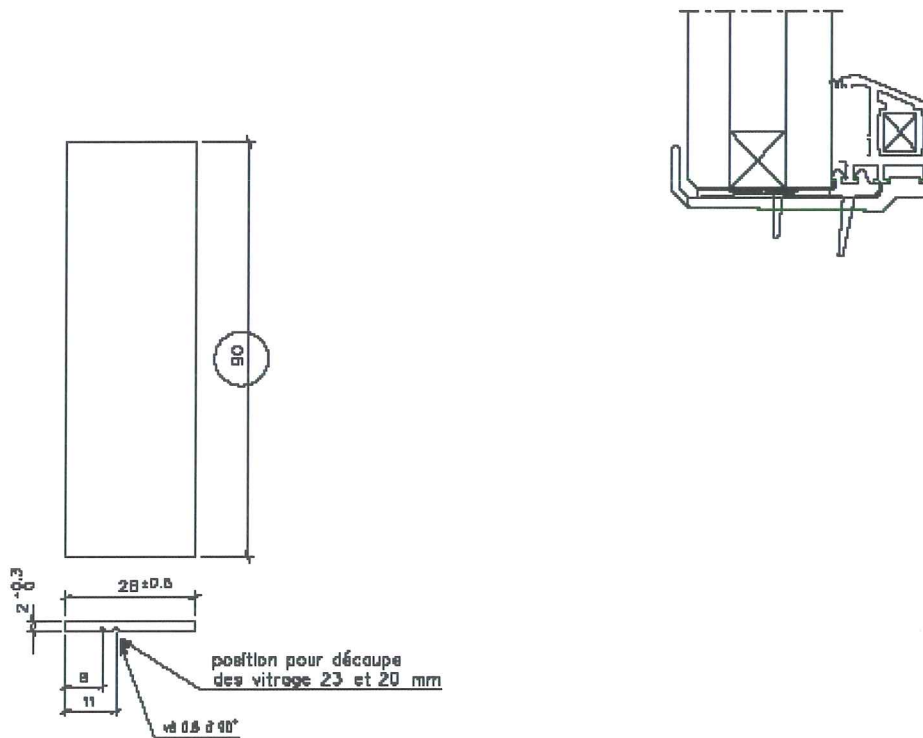


Figure 8 – Setting block – CM 187

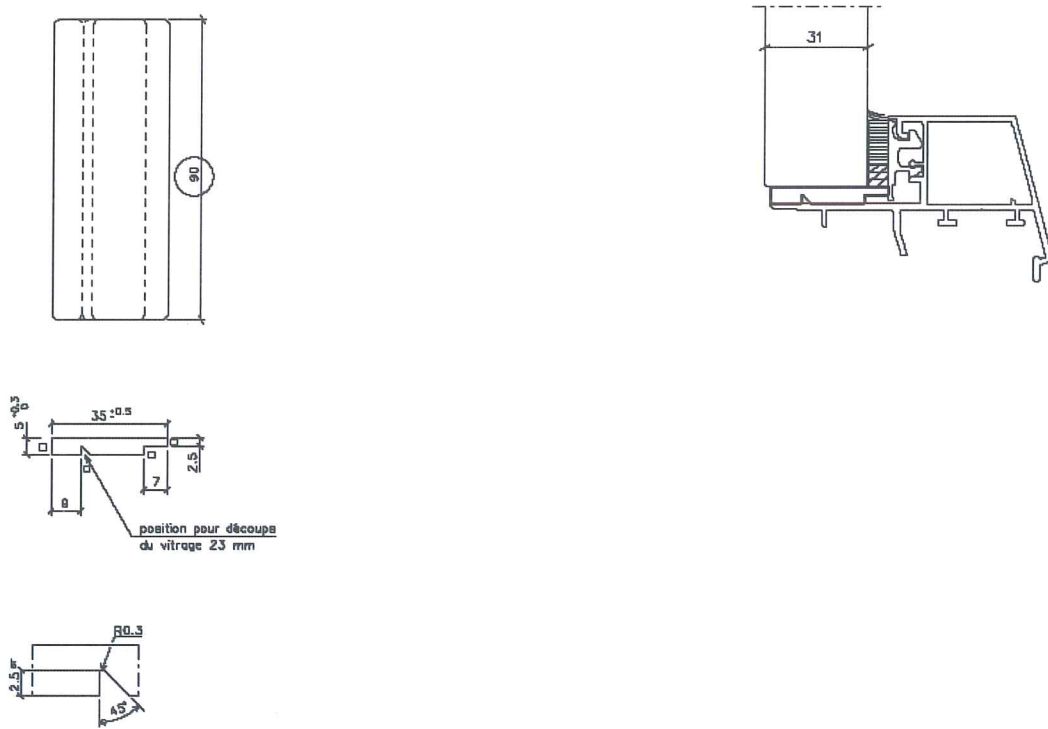


Figure 9 – Retaining devices and mechanical self – weight support

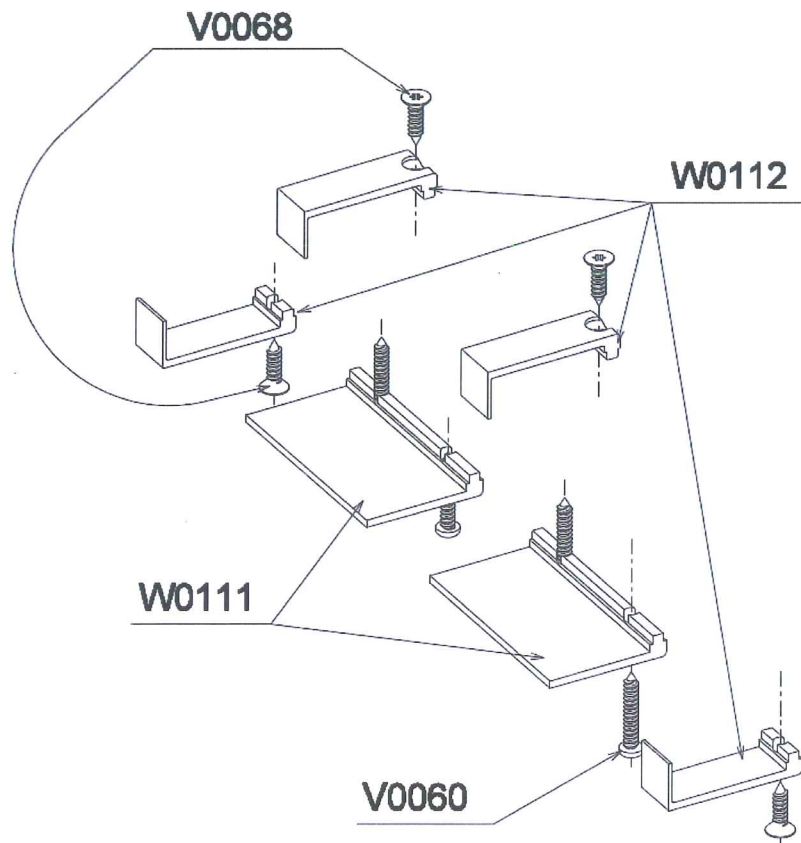


Figure 10 – Retaining devices and mechanical self – weight support

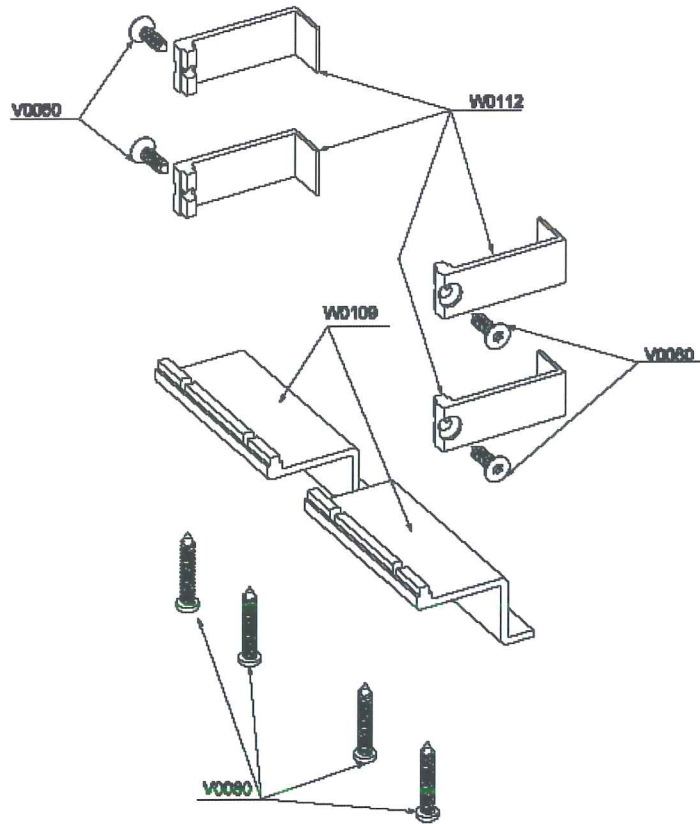
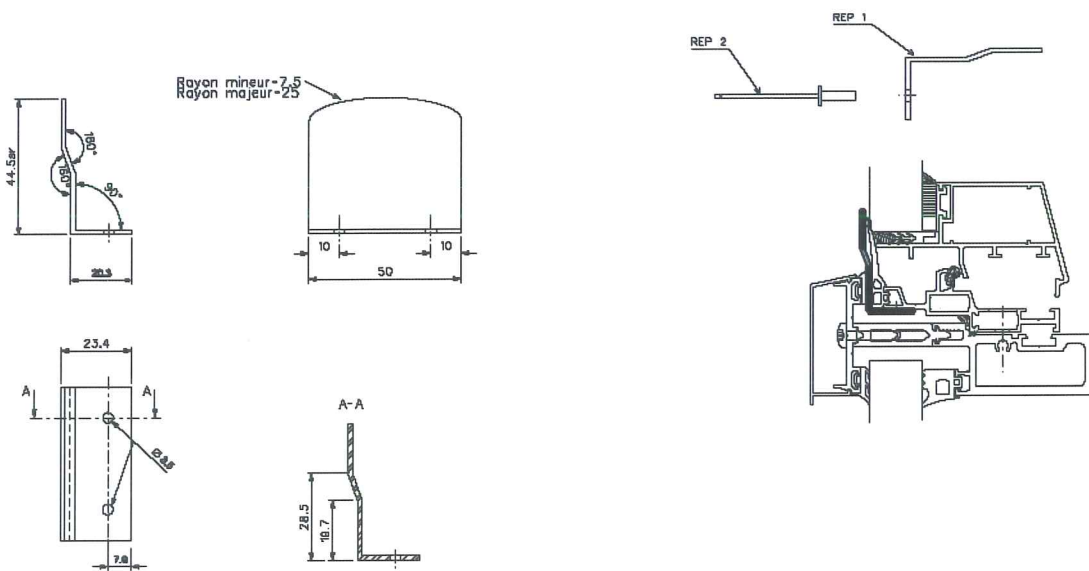


Figure 11 – Retaining device – CM021



Tous épaisseurs 15/104mm

Figure 12 – Retaining device – CM024

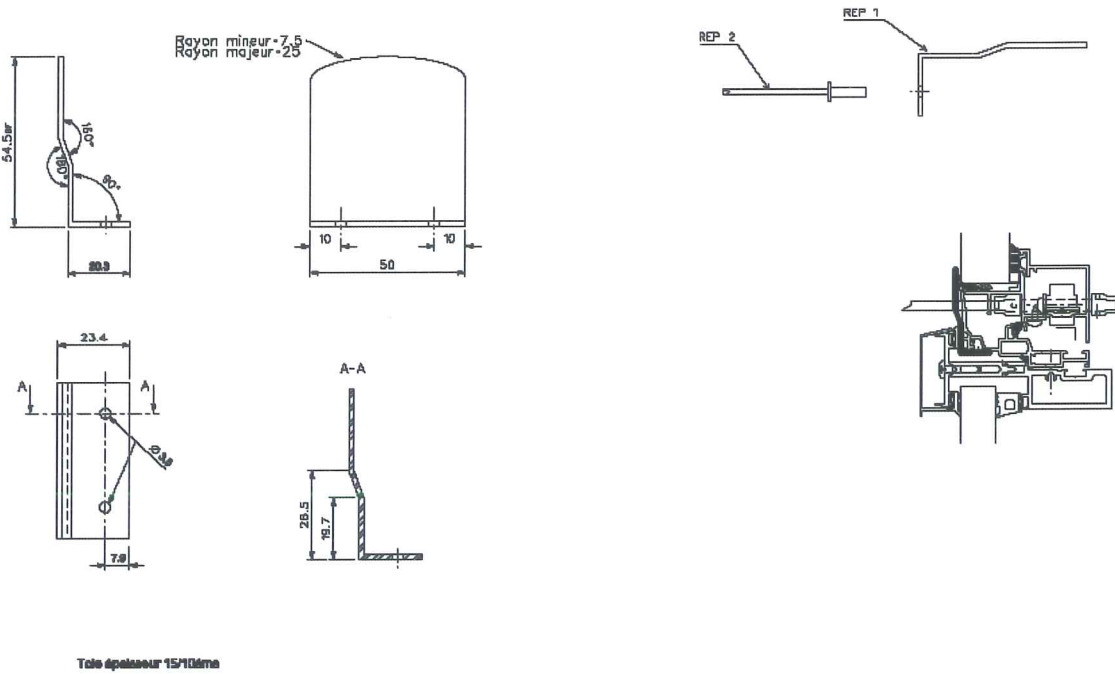


Figure 13 – Mechanical self-weight support – W0111

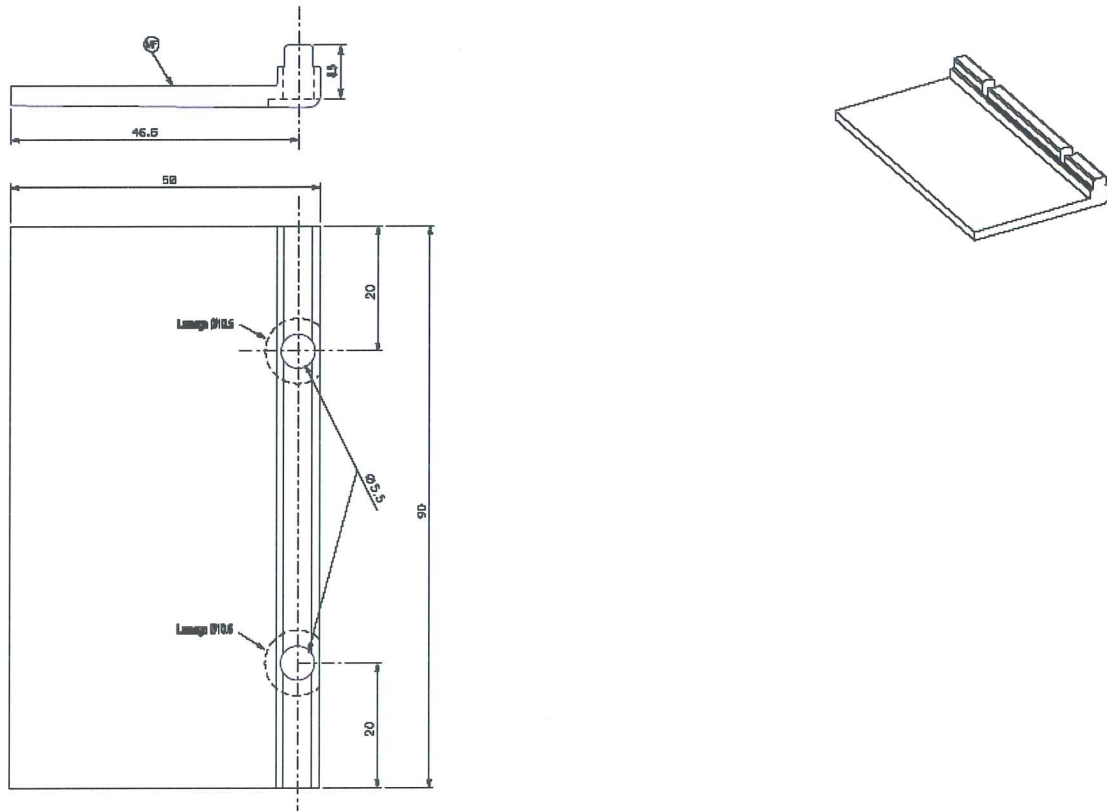


Figure 14 – Retaining device

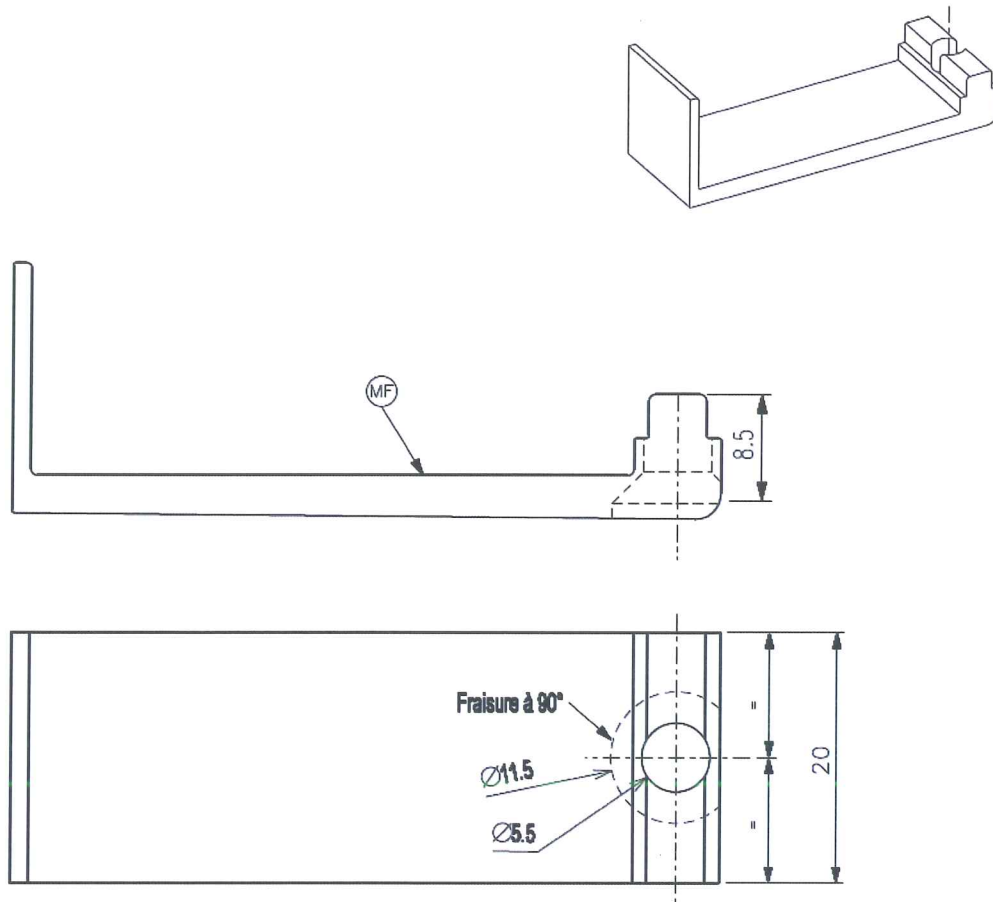


Figure 15 – Profile FM 230

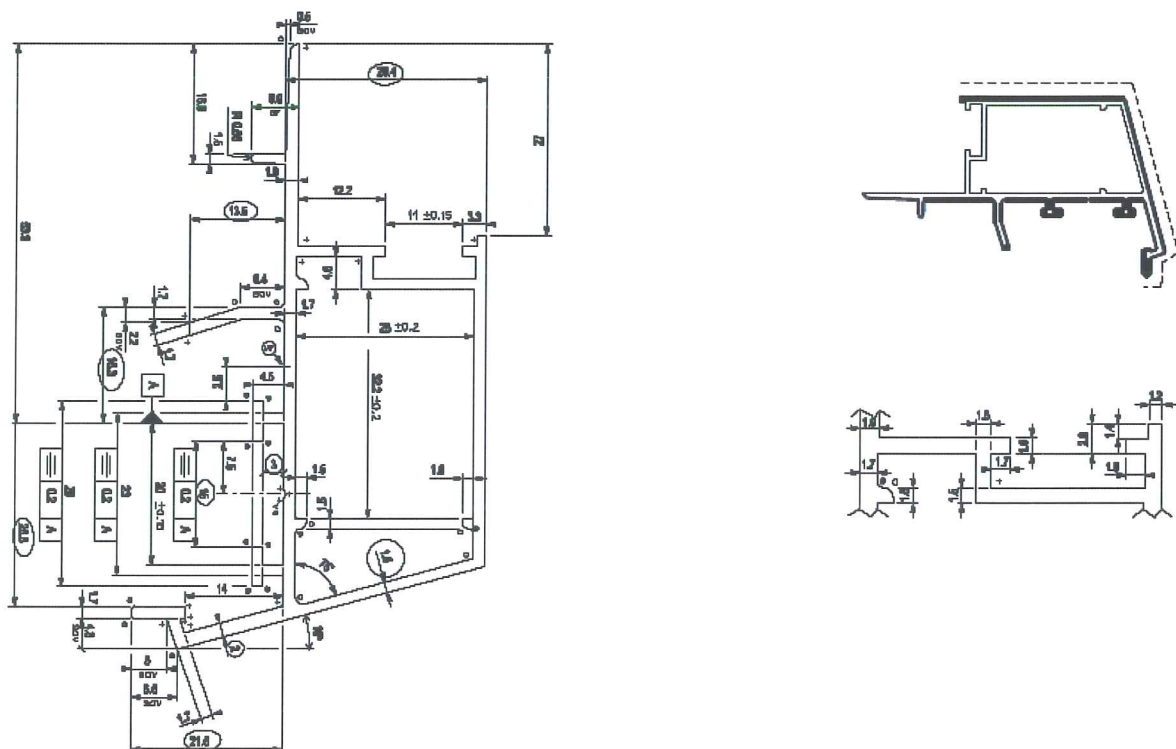


Figure 16 – Profile FM 231

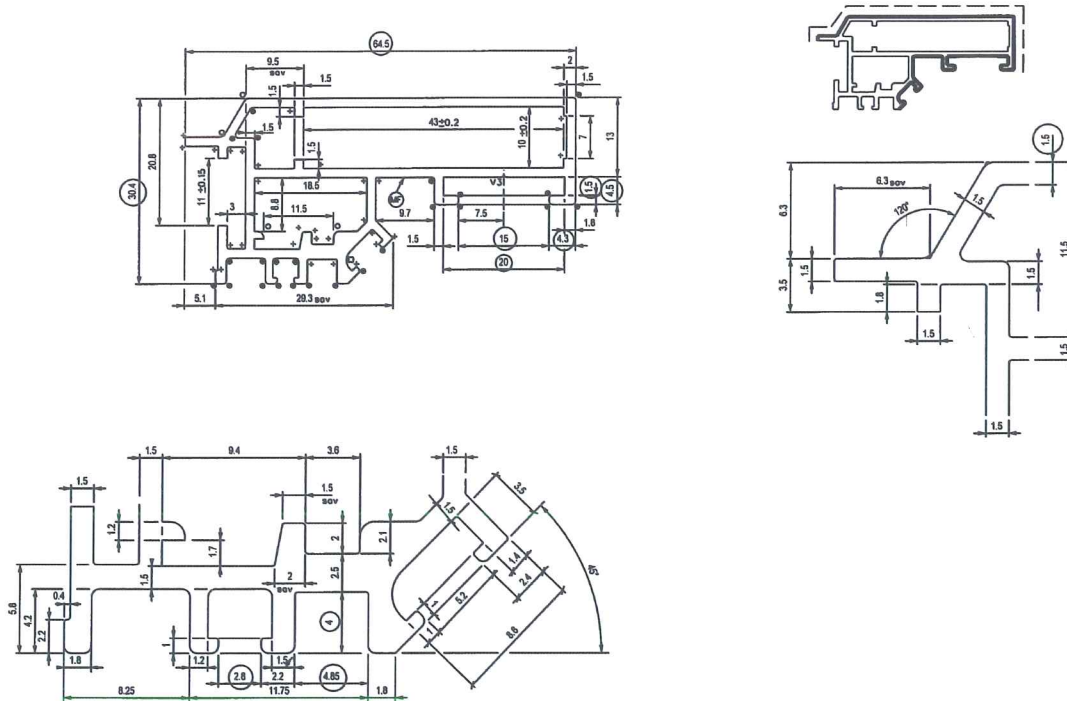


Figure 17 – Profile FM 234

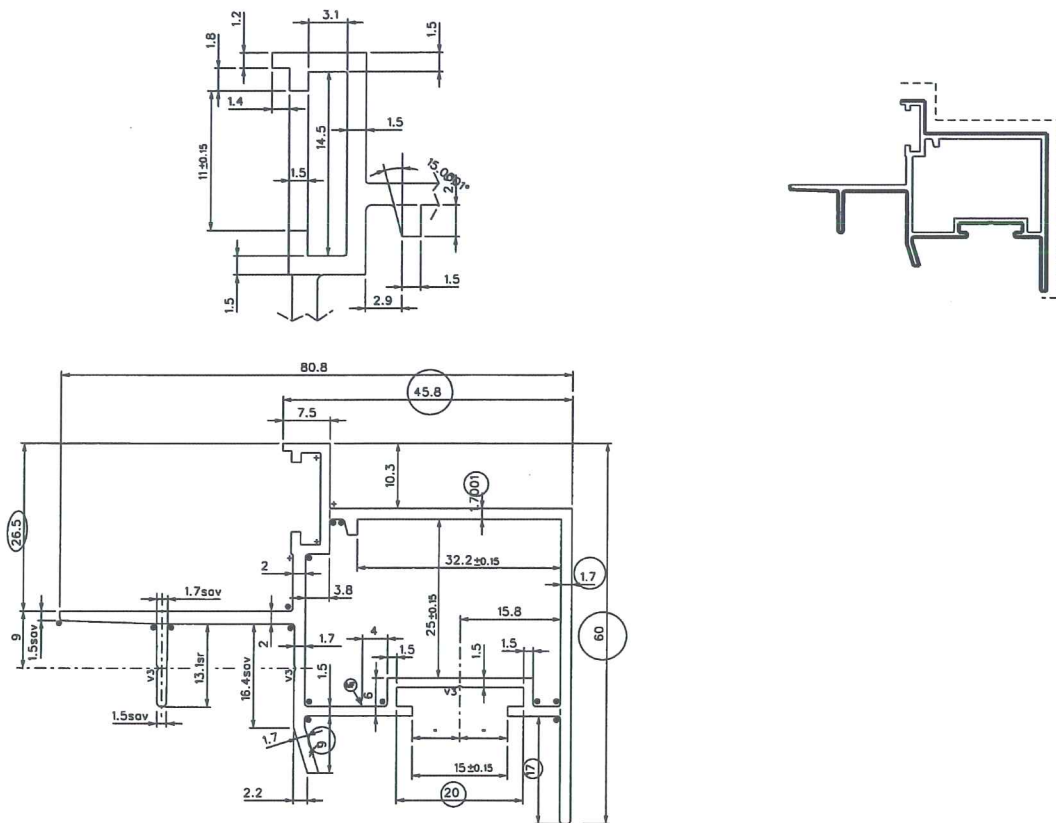


Figure 18 – Profile FM 240

