



Self-Supporting Flat Roof Installation Guide for Conservatories

NOVATOIT ranges

Foam X164R16

Foam Silence X168SR16

Flat Tech3 XEG211FT3 R16

Flat Tech3 XEG215FT3S R16

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ITEM	Product	PANEL INSTALLATION GUIDE FOR FLAT ROOF OF CONSERVATORIES	
	DESIGNATION	Conservatories roof panels	
	CRF / DEF :	GDP 2020-09	

INSTALLATION GUIDE OF SANDWICH PANELS FOR FLAT ROOF CONSERVATORIES

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9.3 Flashing installation

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General rules for the handling of panels

- Open pallets (without a protective cover) should not be stored outdoors ;
- Filmed pallets stored outdoors must be placed on an inclined plane to avoid water retention on top ;
- When stacking one pallet on the other, ensure the proper alignment of the pallets for a good distribution of the load ;
- Do not stack more than 2 pallets on top of each other ;
- Do not walk on signs ;
- Always handle the panels with 2 people, with care avoiding shocks ;
- Never slide the panels over each other, but lift them by lifting the ends directly ;
- Never carry panels directly onto the forks of a forklift ;
- When preparing an order, make sure to:
 - Position a protection on the pallet, cardboard and a foam film ;
 - Wreck any cutting features of the saw ;
 - Check for particles between panels ;
 - Circle, without tightening too hard the lot of panels with plastic links resting on angles, so as not to crush the panels ;

General rules for the use of panels

- Always handle the panels with 2 people, with care avoiding shocks ;
- Do not leave the panels with the protective films outside for more than 45 days ;
- Do not use blunt objects or indelible felt for tracing operations ;
- Use suitable cutting tools such as a circular saw with alternating teeth for aluminum, but no jigsaw or disc machine ;
- Do not slide the panels on top of each other, nor on the structures to avoid scratches, but lift them by taking them by the ends ;
- Do not circulate directly on the panels, without having put a polystyrene plate type protection ;
- Do not jump on the panels ;
- Do not clean panels with solvents ;
- Limit the tightening torque of the fasteners so as not to deform the panels.

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General rules for design and bi-metallic effect

- Toujours poser les panneaux dans le sens de la pente ;
- Design the roof taking into account the expansion and the bilame effect, appropriate configuration and sizing of the panels;
- Comply with snow and wind regulations for the sizing of the structure and the span of the panels;
- All materials or products located in contact with or in the environment of the panels must be compatible with each other so as not to risk causing (with or without external agents) a particular corrosion or aging reaction (see professional rules of the conservatory 2011 page 44 §4).

The bi-metallic Effect :

- Expansion is applied to all materials, it results from an increase in temperature that generates an elongation of the material.

On sandwich panels, the siding is made of aluminum but separated by different thicknesses of insulating materials, which causes a significant temperature difference between the face located at the climatic hazards on the outside side and that located on the inside side. This temperature delta will result in a deformation of the panel. This arrow will sometimes be positive, depending on whether the temperature will be higher on the outside of the roof compared to the inside (hot period), or conversely negative, when the temperature will be higher inside the conservatory compared to outside (cold period).

This phenomenon is not fixed, the posture of the panel will evolve according to temperature variations.

This can generate cracking noises, in the phases of temperature change.

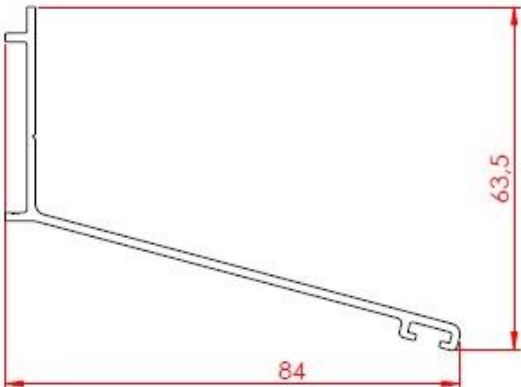
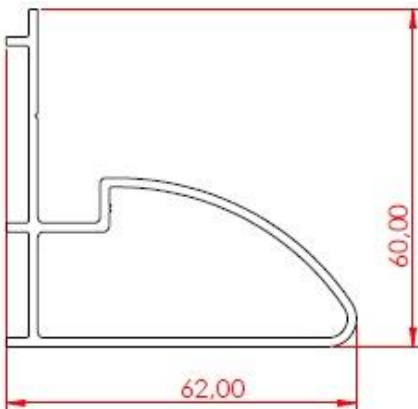
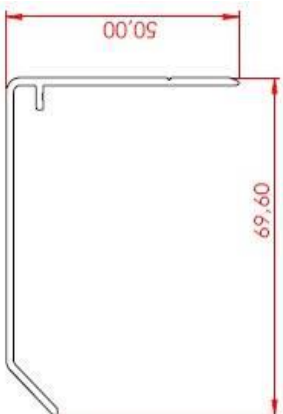
It is important to anticipate and integrate this phenomenon into the design and implementation of panels, by integrating expansion sets (see implementation part).

- Load-bearing profiles with joints or fixing batten, must not restrict the panels and must allow a slight displacement of the panel ;
- Profiles must have seals to avoid metal-to-metal friction ;
- For self-supporting panels, fixing of the panels only in the upper and lower part ;
- No structural element should limit or hinder the natural travel of the panels, especially in the current part (sprockets).

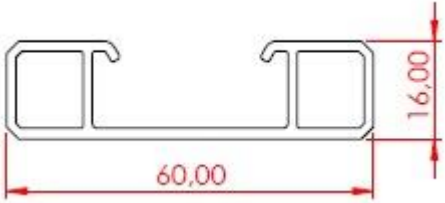
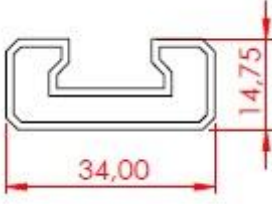

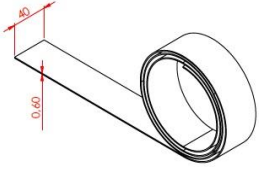
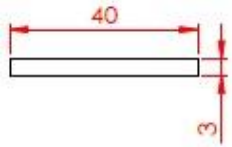
If the panel is fixed in the middle, in case of positive boom socket, it can lift the structure, conversely, in case of negative boom socket, if there is no play between the inner face of the panel and the structural elements, it is the ends of the panel that will rise, which may cause the attachment points to be torn off or the panel to be punched by the screw heads.

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ACCESSORIES :

	<p>Réf. 004 - White Ral 9010 Flashing Profile. Length 7000 mm. Réf. 825 - Brown Ral 8004. Length 7000 mm. Réf. 006 - Flashing Profile Roussillon. Length 7000 mm. Réf. 826 - Flashing Profile Grey Ral 7024. Length 7000 mm.</p>
	<p>Réf. 003 - Bottom Wall Bracket White Ral 9010. Length 7000 mm.</p>
	<p>Réf. 093 - Edge 60 mm White Ral 9010. Length 7000 mm. Réf. 099 - Edge 60 mm Roussillon. Length 7000 mm. Rf. 828 - Edge 60 mm Brown Ral 8004. Length 7000 mm. Réf. 827 - Edge 60 mm Grey Ral 7024. Length 7000 mm.</p>

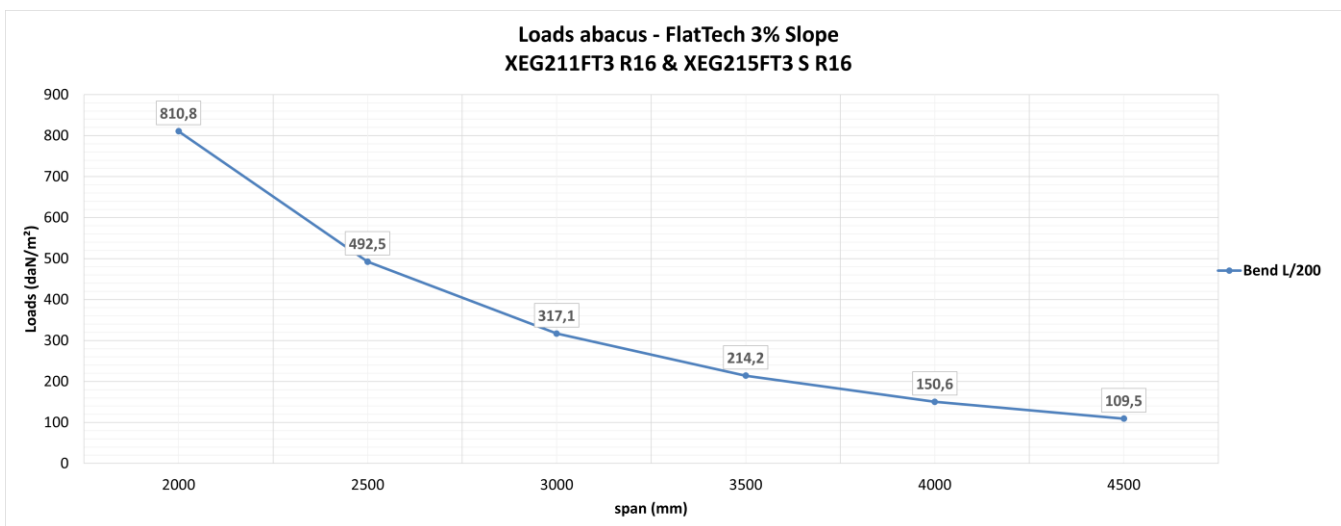
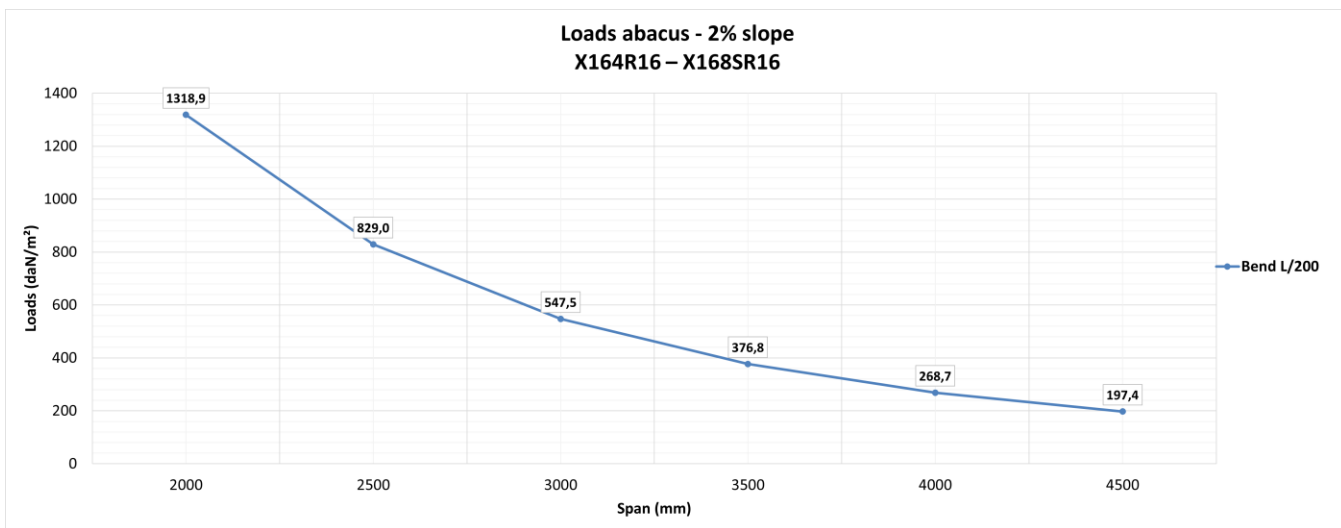
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	<p>Réf. 136 - Aluminum Connector 16x60. Length 7500mm.</p> <p>- Aluminum Connector 16x60. Length 4550 mm.</p>
	<p>Réf. 035 - PVC connector. Length 7500 mm.</p>
	<p>Réf. 095 - Rubber Gasket for Flashing Profile. Length 150 ml.</p>
	<p>Réf. 1180 - Double sided adhesive band 40 x 0.6mm. Length 33 ml.</p>
	<p>Réf. 0369 - Flat Aluminum Profile 40 x 3mm. RAL White 9016. Length 7 ml.</p> <p>Réf. 0370 - Flat Aluminum Profile 40 x 3mm. RAL Brown 8004. Length 7 ml.</p> <p>Réf. 0855 - Flat Aluminum Profile 40 x 3mm. RAL Grey 7024. Length 7 ml.</p>

1. Load Charts :

Maximum use of self-supporting panels on a span of 4.5 meters, for an altitude of less than 900 meters and according to the snow and wind rules in force.

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2. Layout of the conservatory roof :

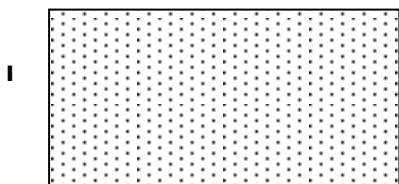
2.1 Size of the conservatory :

For the realization of a construction site, please determine the width of the conservatory (l) and the length of the conservatory (L) desired.

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Note: Self-supporting panels for flat roofs are intended for the realization of conservatory roofs of simple, square or rectangular shapes.

L



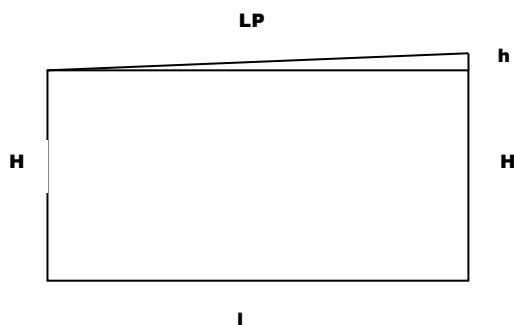
This will determine the projected surface of the roof : $S = I \times L$

2.2 Panel length :

2.2.1 Determination of the slope of the roof (Minimum slope of installation 2 % Classic Flat Roof range / 0% Flat Tech range) :

For this it will be necessary to determine the overall dimensions:

- the height **H** of the roof projected on the lower part (at the level of the sand pit)
- the height **h** possible on the upper part of the projected conservatory taking into account the existing parts of the house (parapet, windows, etc ...).



The total height of the roof at the highest point will be $H+h$.

The slope will be : h/I (in %).

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2.2.2. Panel length :

The calculation of the length of the panels is carried out in several ways:

Pythagoras:

$$LP = \sqrt{l \times w + h \times h}$$

Tangent :

Calculation of the angle in radians: $a = \arctang(h / l)$

$$LP = l / (\cosine a)$$

Or measure on the spot !

2.3 Number of self-supporting panels :

The number of panels N will be :

$$N = L \text{ (in m)} / 1.2 \text{ (round up)}$$

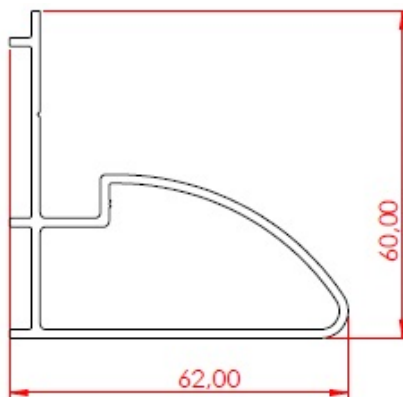
Note : To have a more pleasant aesthetic it is possible to cut the last non-whole panel into 2 in order to position the 2 pieces on the 2 ribs in order to have a better symmetry.

3. Cutting of insulation panels, aluminum profiles and accessories :

3.1 Bottom Wall Bracket:

The lower aluminum wall hanging will be cut to the width of the conservatory L minus the thickness of the aluminum poles against the facade :

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3.2 Conservatory roof insulation panels :

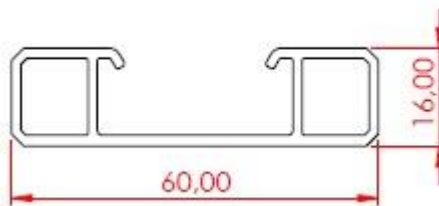
The conservatory insulation panels will be cut to the **length LP + 10 cm mini**, integrating an over-length of about 10 cm mini to ensure an overflow of the panels in the gutter.

Note :

In order to have a pleasant aesthetic, it is suggested, for conservatory widths that are not multiples of 1200 mm, to have the 2 self-supporting end panels cut to the same width. In this case, the assembly will start on the middle part of the conservatory so that in the end the 2 panels of the sides of the conservatory are laid last (the cut can be done at that time to ensure the right rib of the cut in width).

3.3 Aluminum Connector :

Cut the Aluminum Connectors to the length of the LP panels plus 10 mm, to ensure an overflow in the lower part.



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4. Installation of the Bottom Wall Bracket profile and the elevation on the top plate :
4.1 Bottom Wall Bracket Installation :

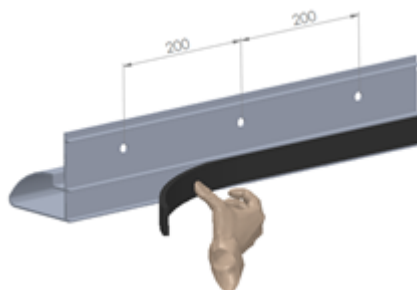
The different operations to be carried out:

- Mark the height of the roof of the conservatory (H + h) on its 2 ends;
- Draw with the cord the position of the Bottom Wall Bracket taking into account an **over-height** in relation to the frame of the gable or gutter (see table bilame effect below)."

Span	Panel thickness 164-168 mm	Flat Tech 211-215 mm
5 meters	14.1	
4.5 meters	11.3	13.3
3.5 meters	6.79	7.07
2.5 meters	3.58	3.48

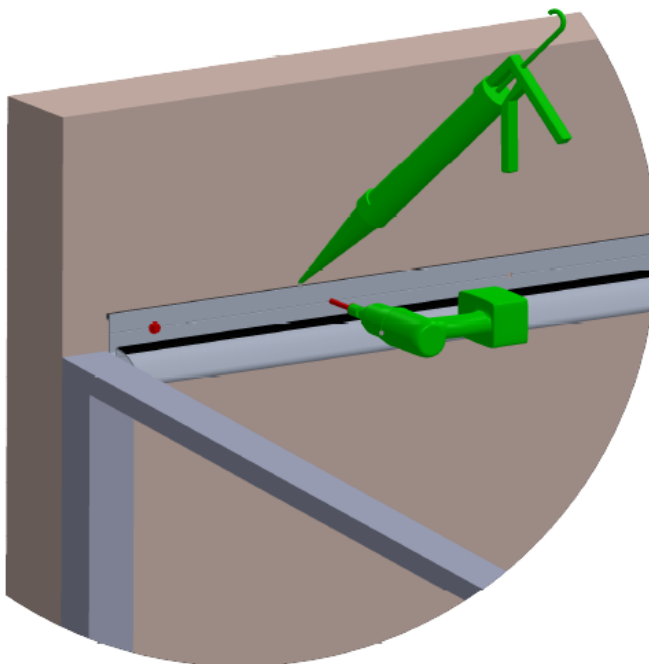
Note : In the context of the implementation of pergola, carport, gazebo type panels, it will not be necessary to take into account the above table.

- Make sure that the support wall does not have too many irregularities. In this case, it will be necessary to make a mortar straightening in order to have a flat part for fixing the Bottom Wall Bracket;
- Drill the Bottom Wall Bracket with a spacing of 200 mm between each hole ;
- Put in place, on the back of the Bottom Wall Bracket profile, a 15x20 mm self-adhesive "compriband" seal to ensure a good seal ;

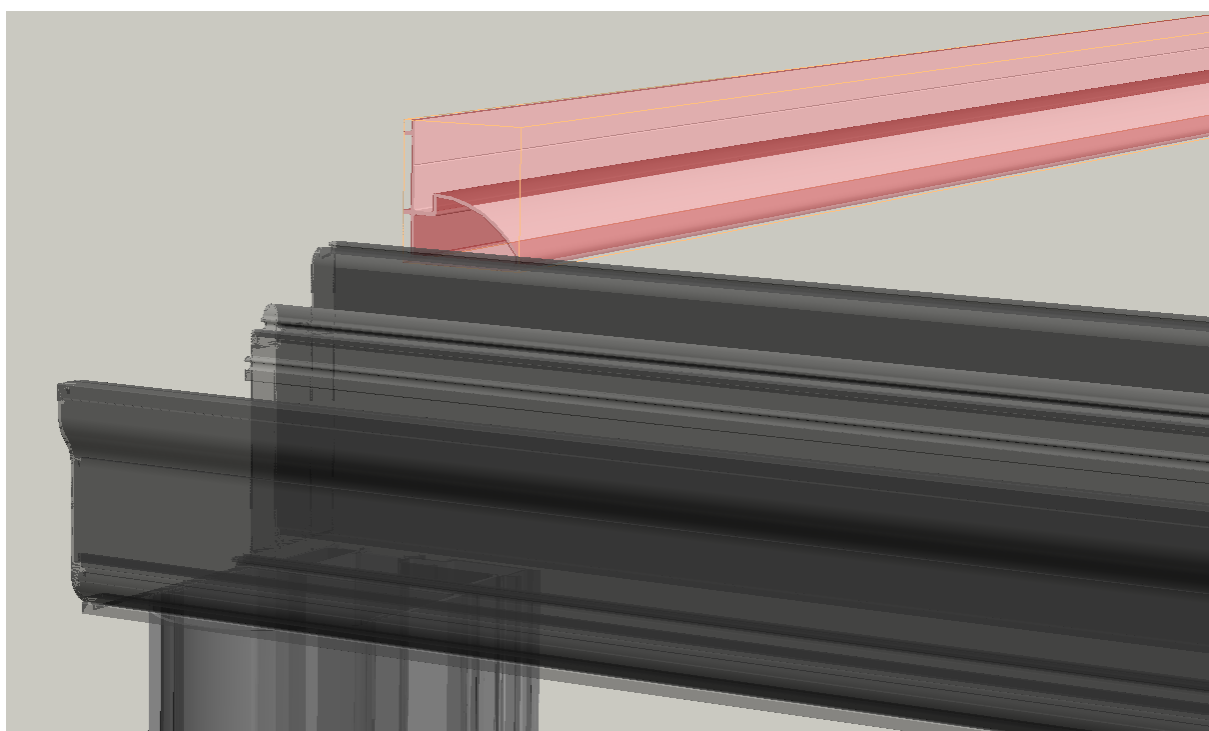


- Draw the fixing holes on the wall and drill using the lower wall hanger ;
- Fix the lower wall hanger on the support wall using dowels and stainless steel screws, or make epoxy chemical seals ;

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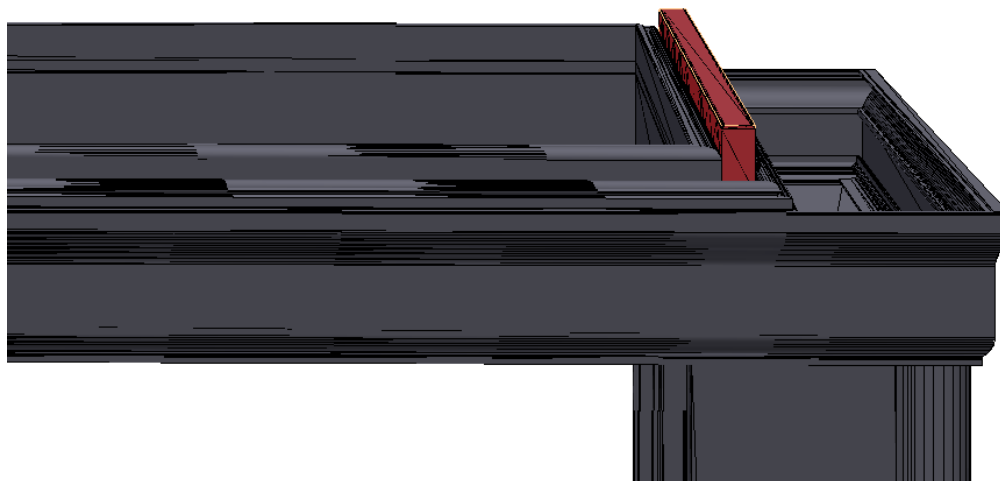


- Make a silicone sealant cord between the lower wall hanger and the upper wall.



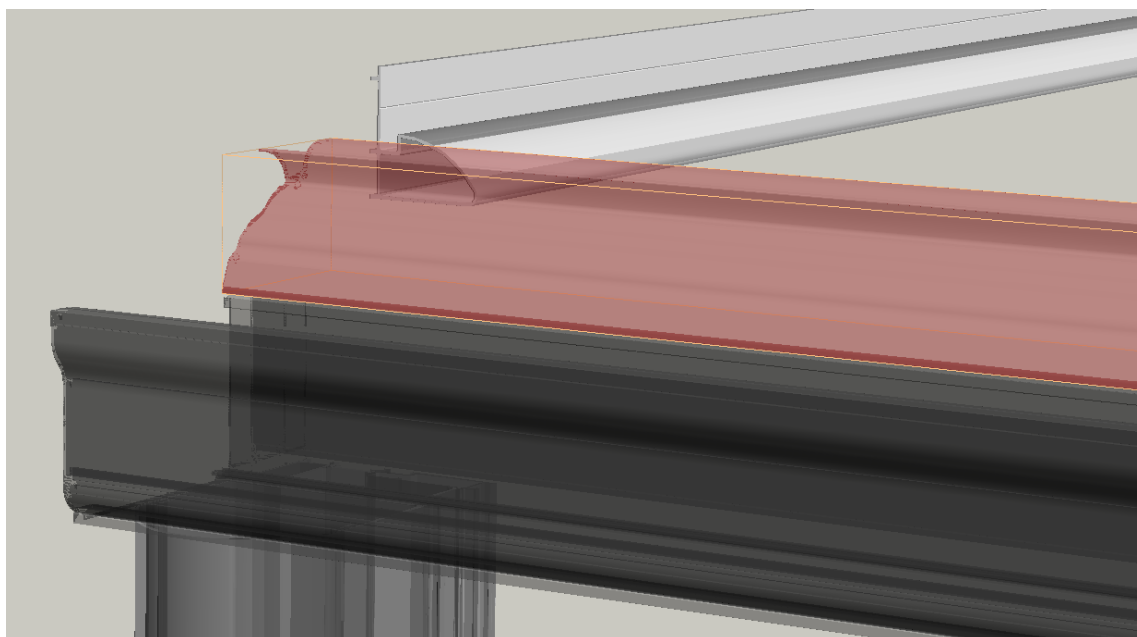
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4. Installation of the riser on the top plate (setting) :



Placement of the setting on the top plate, so as to ensure the height of the fixing points identical to those at the level of the lower wall hanging.

5. Installation of the gasket and expansion on the gables :



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6. Installation of self-supporting panels :

When starting the roof, it will be necessary to remove the protective film about 5 cm, on the entire periphery of the panels (on the 4 sides) and on both faces, in order to be able to remove the protective film when the entire roof is mounted.

In addition, on the inner side of the panels, side in support of the top plate (at the level of the seal), proceed to the cutting of the inner aluminum cladding, using a circular saw, over the entire width of the panel. The realization of this saw line with a width of 3 mm, will ensure the break of thermal bridge.

6.1 Installation of the first self-supporting panel :

- **Width of the multiple conservatory of 1200 mm:**

The installation of the first panel can start indifferently from one of the sprockets. The choice will be made according to the ease of installation and possibly according to the external environment (wall, tree,...).

- **Width of the conservatory not multiple of 1200 mm:**

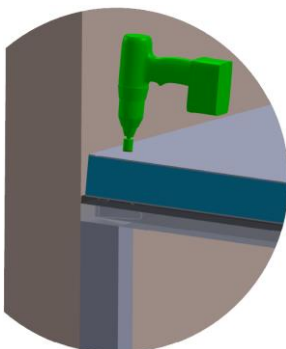
The installation of the first panel will start on the middle part of the conservatory (middle).

The first panel is placed on the Bottom Wall Bracket and on the top plate of the conservatory, while respecting a good perpendicularity of the panel in relation to the lower wall profile and / or the top plate.

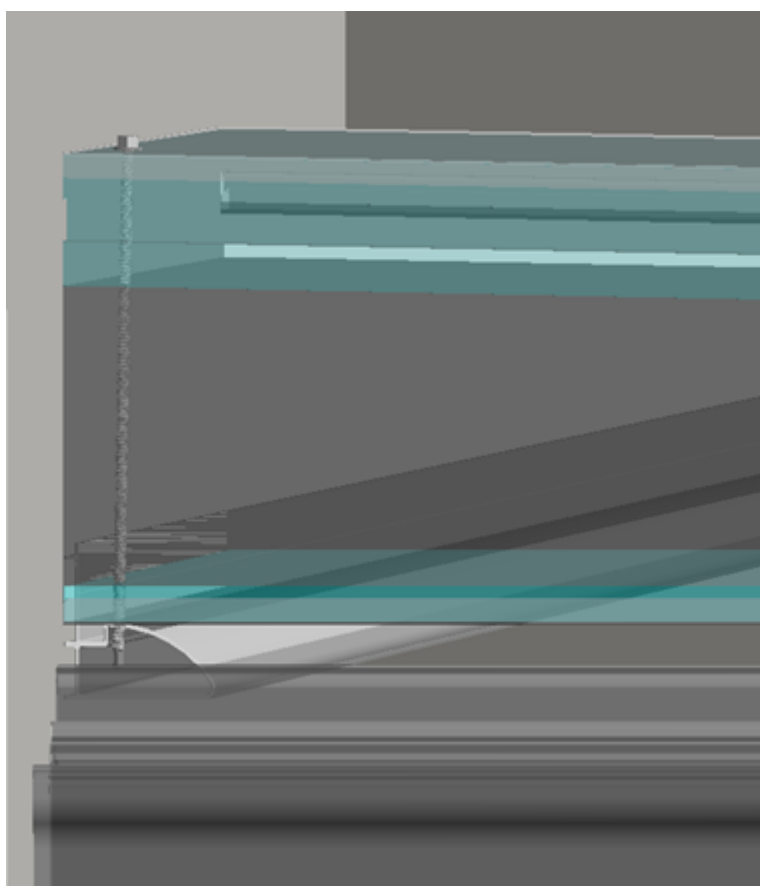
6.2 Attachment of the first self-supporting panel :

When the first panel is positioned correctly on the lower wall hanger, it will be necessary to fix it in order to be able to install the other collateral panels in the best conditions. The panel will be fixed with four stainless steel self-drilling screws (Ref.: SXC5-S19-5.5 length to be defined according to the thickness of the panel) on the lower wall hanger.

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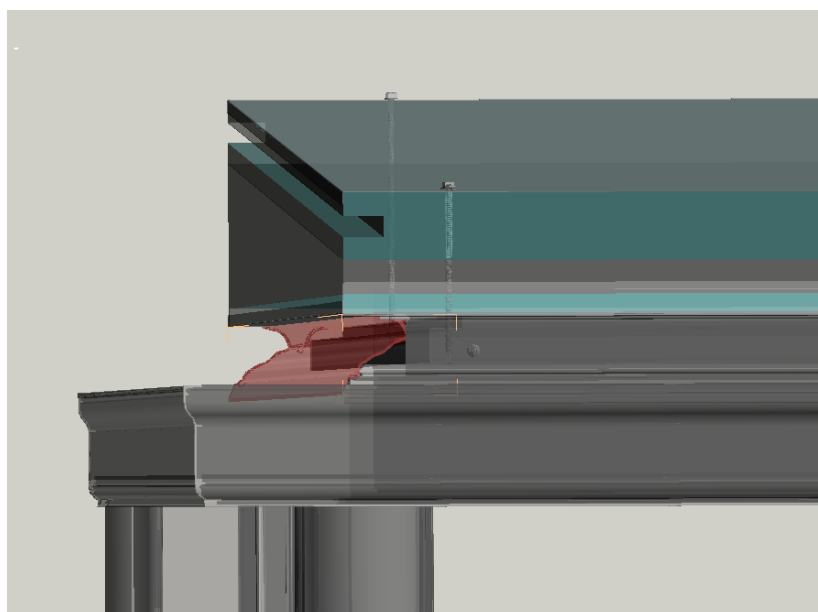
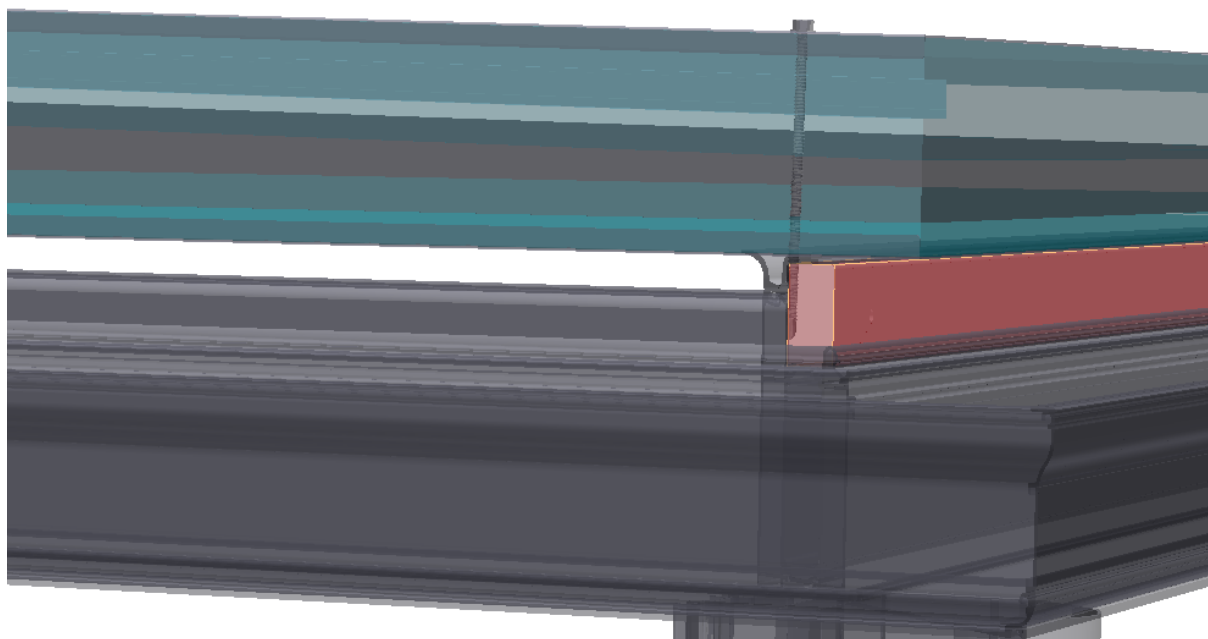
>> At the upper part of the roof on the Bottom Wall Bracket profile :



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>> At the level of the lower part of the roof on the top plate:

The panel will be fixed with a single stainless steel self-drilling screw (Ref.: SXC5-S19 5.5 length to be defined according to panel thickness) on the end of the top plate.



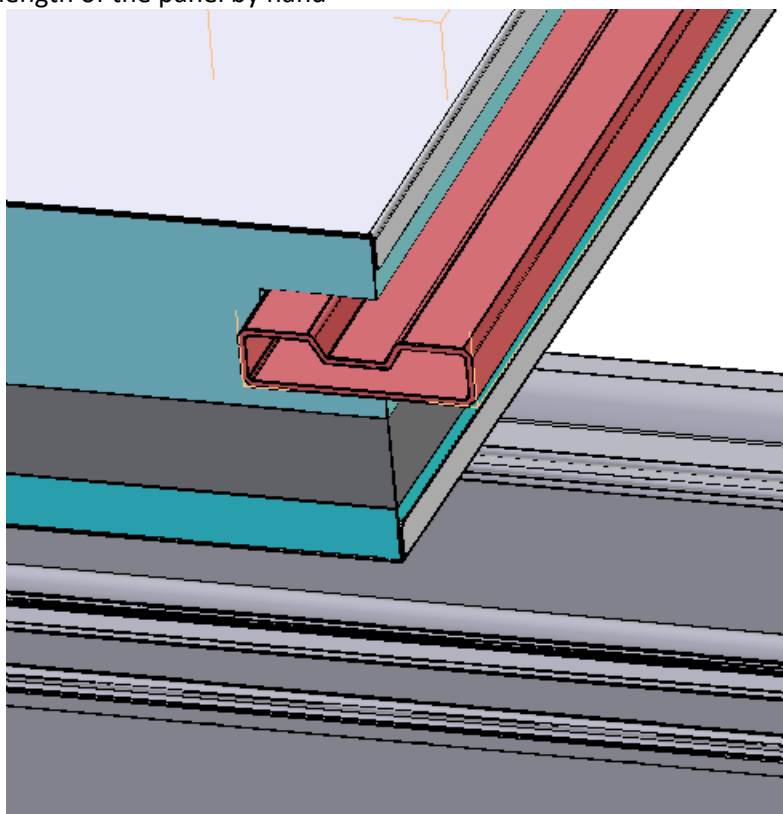
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6.3 Setting up the Aluminum Connector

6.3.1 Aluminum Connector :

After cutting the appropriate length of the aluminum junction key (7.5 ml and 4.5 ml bar) by integrating an over-length of at least 10 mm, the various operations to be carried out are :

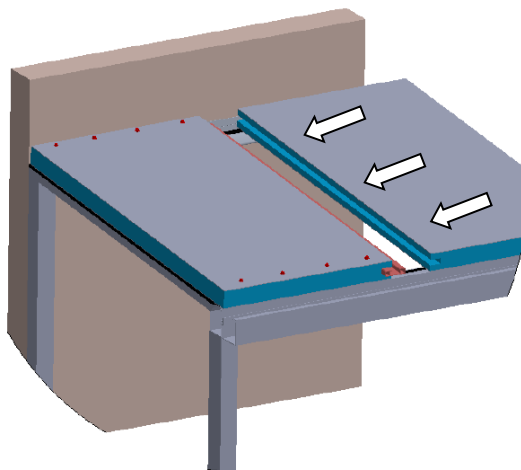
- Lubrication of the Aluminum Connector with a silicone spray
- Interlocking of the Aluminum Connector in the grooved edge of the panel by starting from one side of the panel (usually upper part)
- Allow 10 mm to overflow from the junction in the lower part of the roof to allow rainwater to flow
- Continue the interlocking of the Aluminum Connector along the entire length of the panel by hand



7. Installation of the following self-supporting panels :

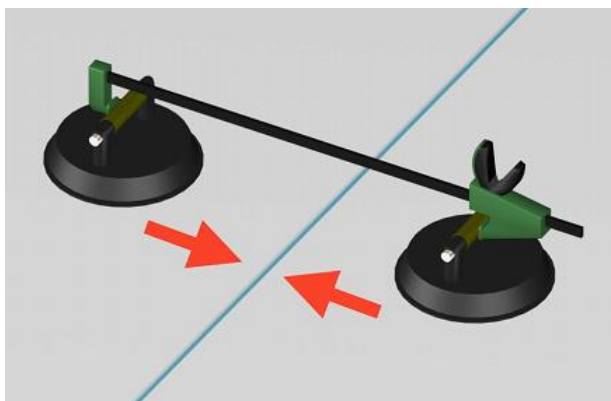
The other panels will be set up according to the description below (scissor movement) :

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- Possible installation of suction cups on the juxtaposed panels, to properly adjust the edge-to-edge junction between each panel;

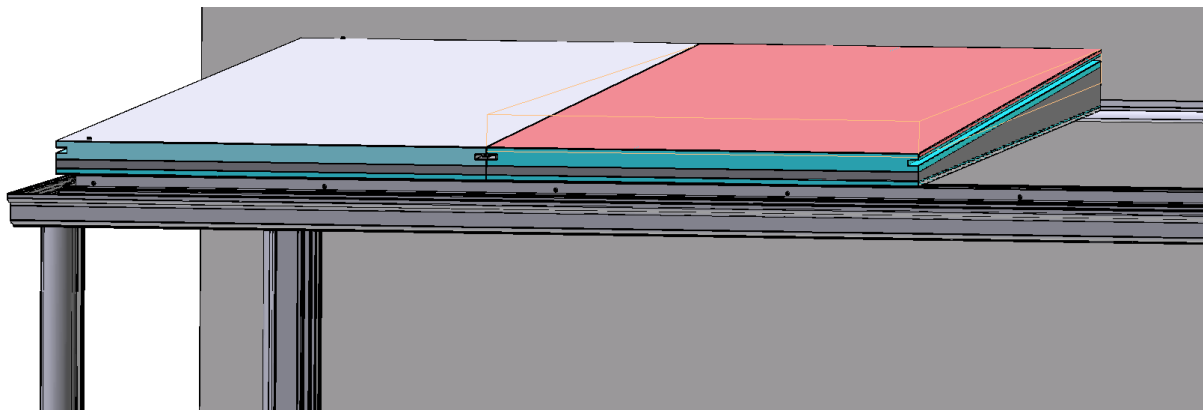
- Installation of "1 hand" clamp;
- Operate the liaison so that the panels make contact as shown in the drawing below:



After interlocking, push the panel to plate it well against the upper part of the upper aluminum profile.

When the second panel is well positioned and well assembled with the previous one, proceed to the fixing of the latter in the upper part (see § 6.2.) with four stainless steel self-drilling screws (Ref.: type SXC5-S19 5.5, length to be defined according to panel thickness).

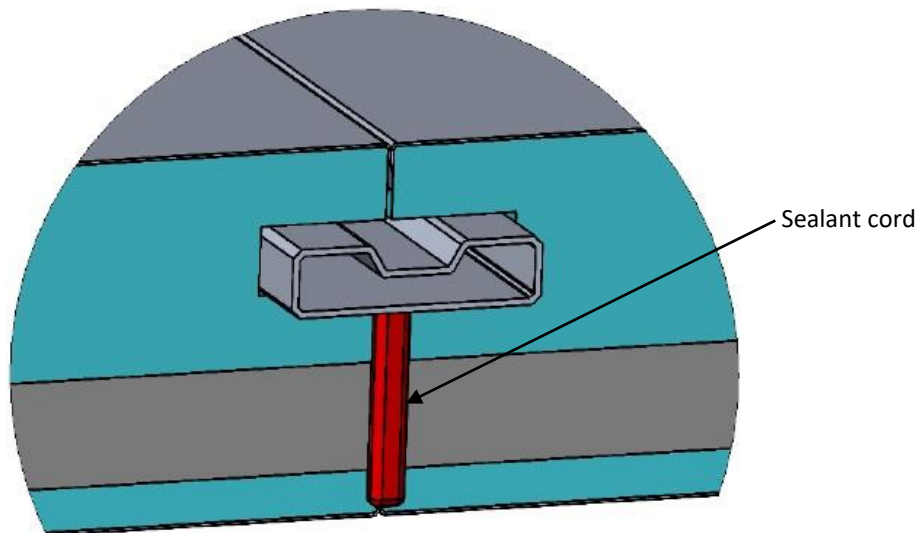
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Repeat these operations until the last panel is installed.

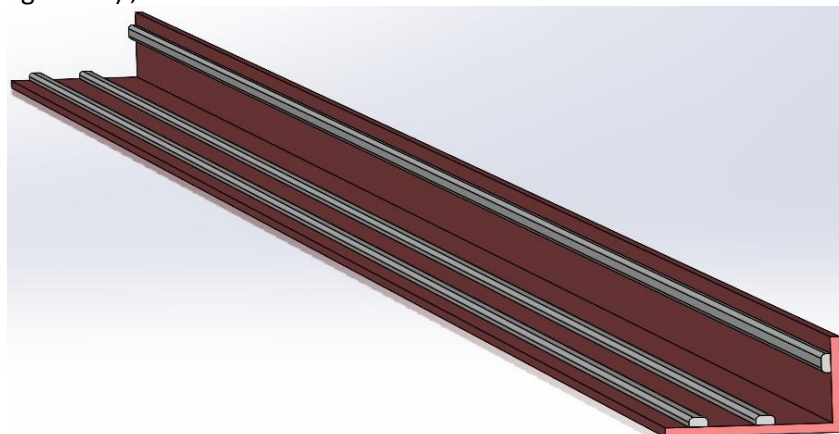
8. Installation of the anti-condensation barrier :

When all the panels are placed on the roof, in the lower part at the sand pit, a cord of putty (Ref. SikaFlex – 508) will be deposited to the right of each edge of the aluminum junction profiles.

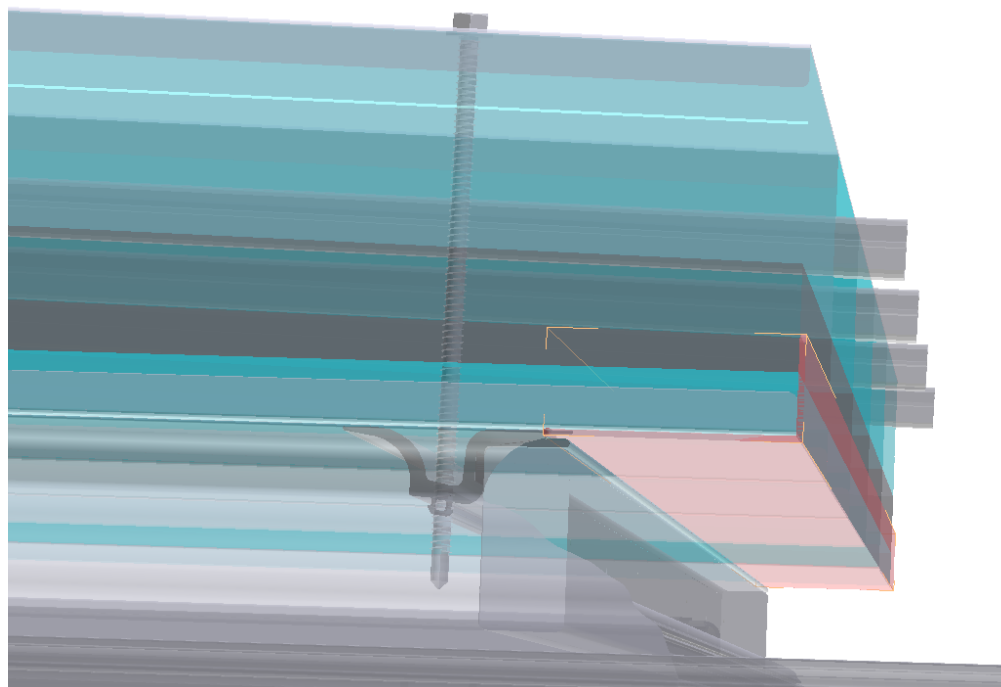


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Inside the anti-condensation barrier (PVC angle), 3 cords of sealant will be deposited (see drawing below) ;



The anti-condensation barrier will partially cover the lower part of the panels, as well as the outer underside protruding into the gutter.



When the barrier is installed (well plated against the edge of the panels), proceed to the final fixing of the panels in the lower part, using 4 self-drilling screws per panel (type SXC5 S19 5.5, length to be defined according to the thickness of the panel).

NO

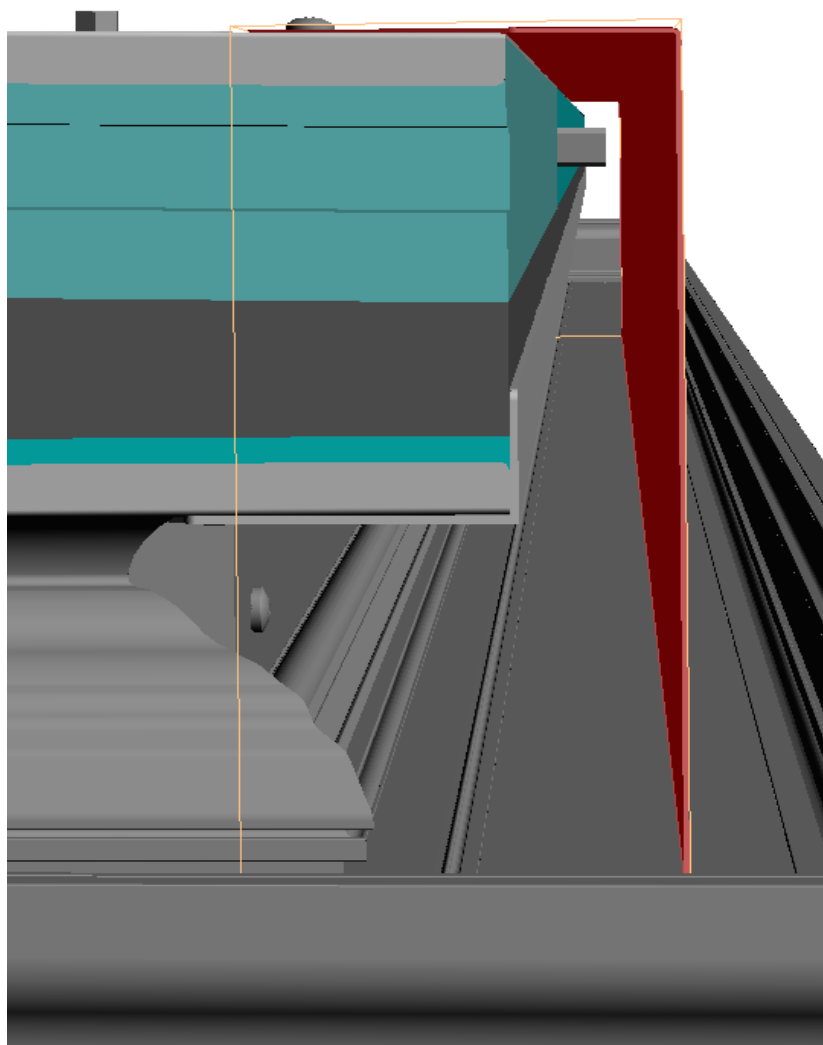
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9. Finishing of the panels on the top plate and gables :

9.1. Finish on the top plate gutter :

The finish on the top plate consists of laying a folding on the edge of the roof in the gutter. The installation of this finishing piece must respect a clearance of at least **10 mm** between the edge of the junction profiles, to promote the flow of water.

The aluminum bending will rest on a double cord of silicone sealant on the upper part of the roof and will be fixed by self-drilling stainless steel screws (ex. AUTO SCREW SFSSN2/13-7981-3.9x19).

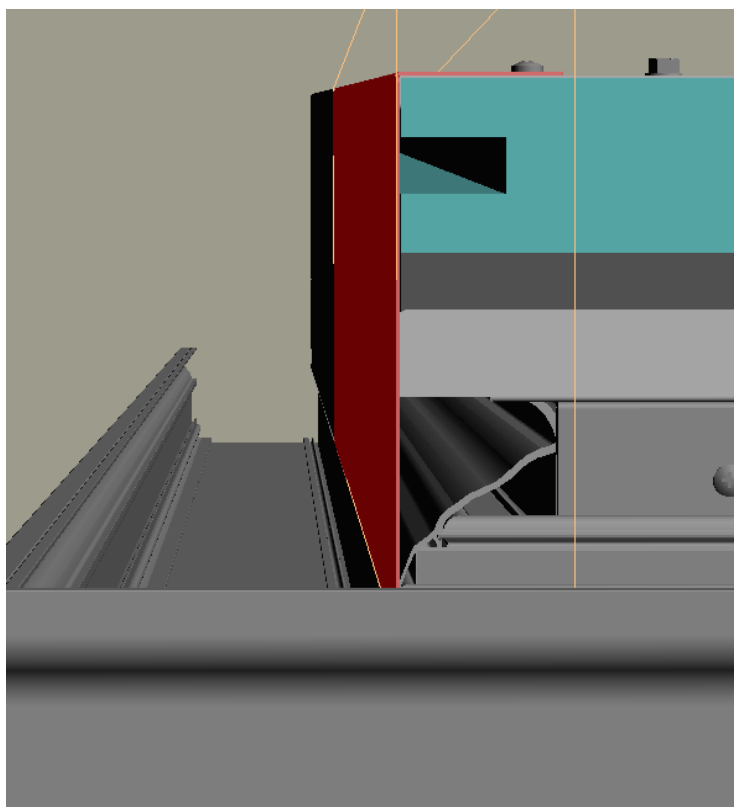


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9.2. Finish on the gables gutter :

9.2.1. Exterior side :

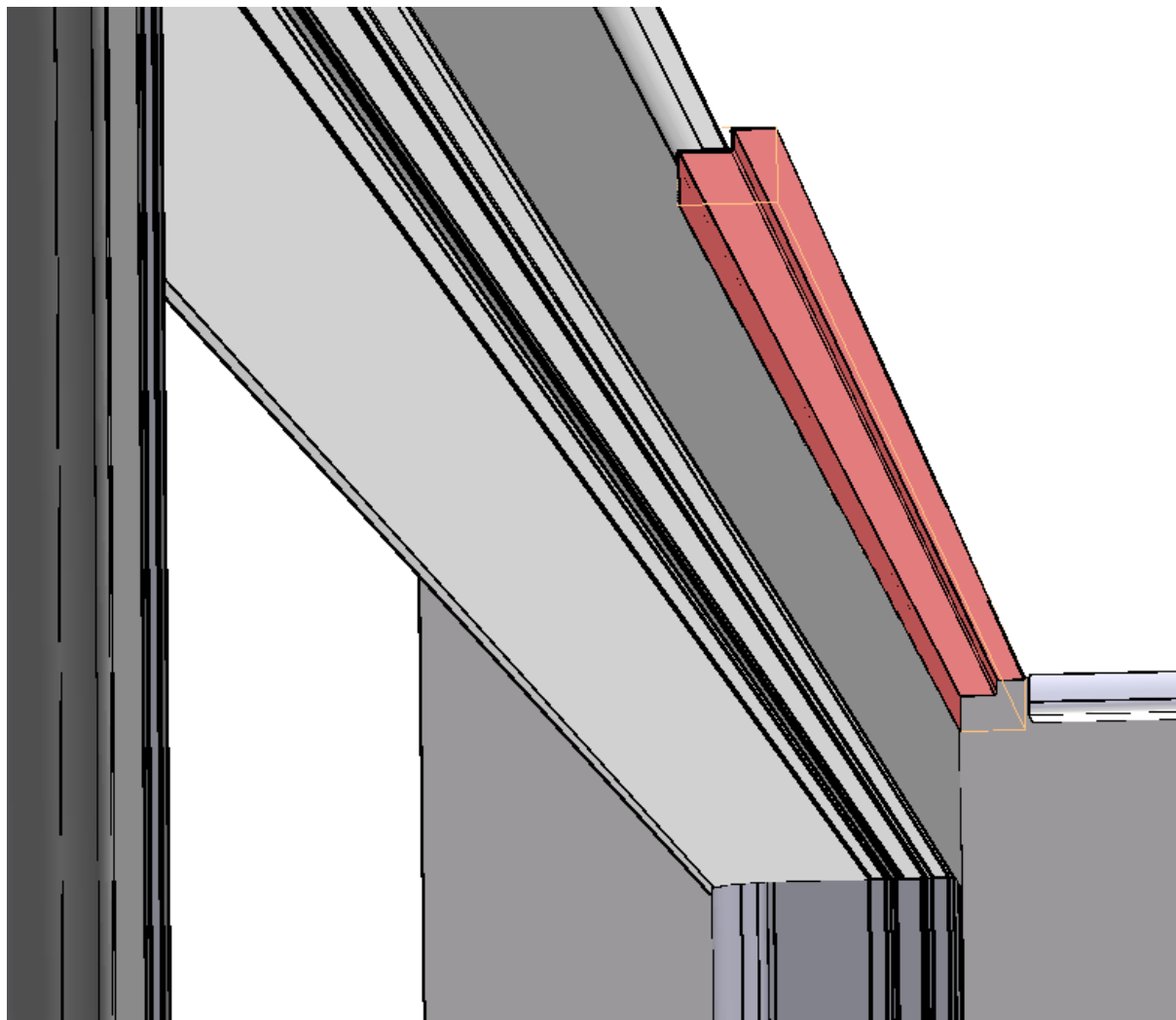
- The finish on the gables, consists in laying a folding on the edge of the roof in the gutter. The installation of this finishing piece must plate well against the edge of the panel. To perfect the thermal insulation, it is advisable to stick inside the fold a strip of extruded polystyrene at least 20 mm thick, which will come into contact with the panel.
- This aluminum bending will rest on a double cord of silicone sealant on the upper part of the roof and will be fixed by self-drilling stainless steel screws (ex. AUTO SCREW SFSSN2/13-7981-3.9x19).



9.2.2. Interior side :

- Installation of a gable joint cover (aluminum bracket type) to ensure finishing and aesthetics inside the conservatory, by double-sided bonding ;

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Note: The panels on the gables may move slightly, this is related to the phenomenon of bi-metallic effect, it occurs when there is a difference of temperature between the internal and external facings (example: sunshine in the middle of summer or heating inside the conservatory in winter...).

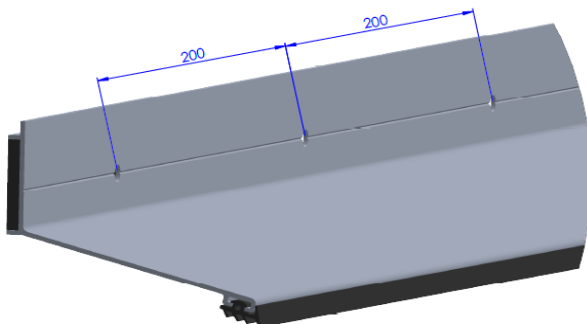
The panels must remain free on the gables.

9.3. Flashing installation :

9.3.1. Drilling the profile and laying the gasket :

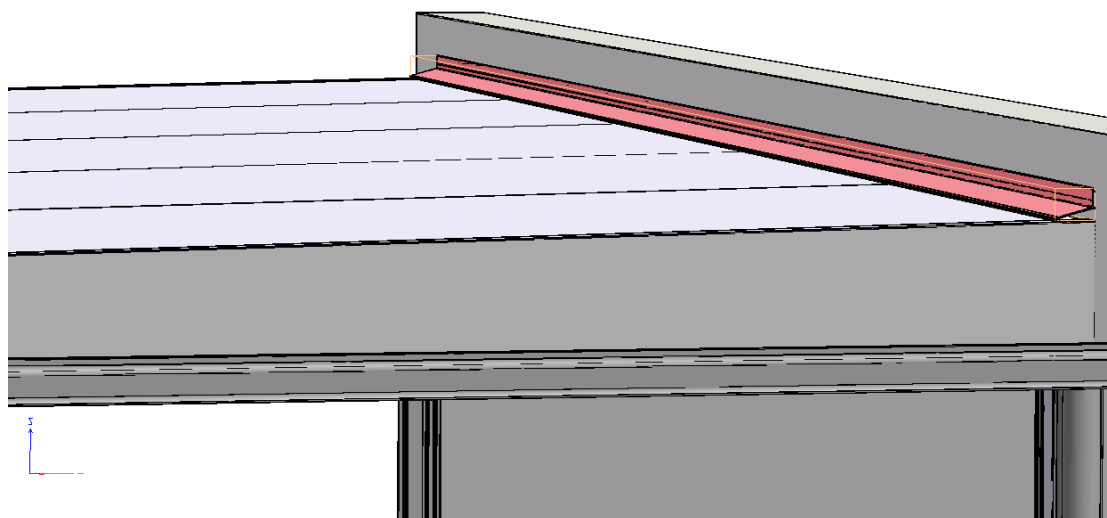
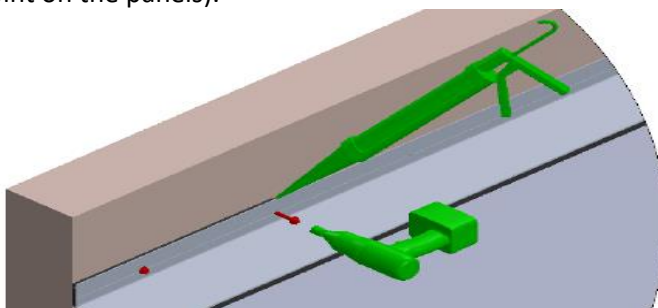
- Drill the upper wall hanging with a spacing of 200 mm between each hole ;
- Place the gasket (JJ 407) in the profile groove ;
- Place a 50x20 mm sticker "compriband" seal on the back of the Bottom Wall Bracketprofile to ensure good sealing.

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9.3.2. Placing flashing on the wall :

- The flashing joint should be well plated on the outer face of the panels.
- Attach the lower wall hanger to the support wall using aluminum dowels and screws, or make epoxy chemical seals (always ensuring the plating of the joint on the panels).



Sheet metal bending will be required to ensure sealing and finishing on the side parts of the flashing.

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10. Installation of self-adhesive sealing profiles

Aluminum waterproofing plates are positioned on the overlap of each panel junction with the outer membrane to complete the waterproofing.

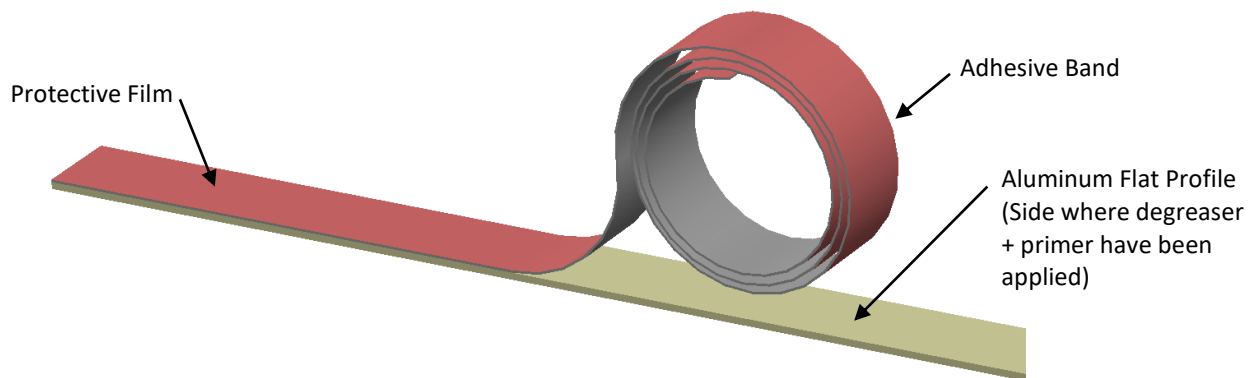
Optimum application range: [10°C to 38°C].

Unroll the membrane at the last moment on site; the panel must be clean and dry. To optimize adhesion, we recommend that you clean the surface to be covered and the panel itself with a degreaser and a clean cloth.

Apply primer only to the area covered by the aluminum plate where the panels meet. Then apply the primer to the side of the aluminum plate to be bonded.

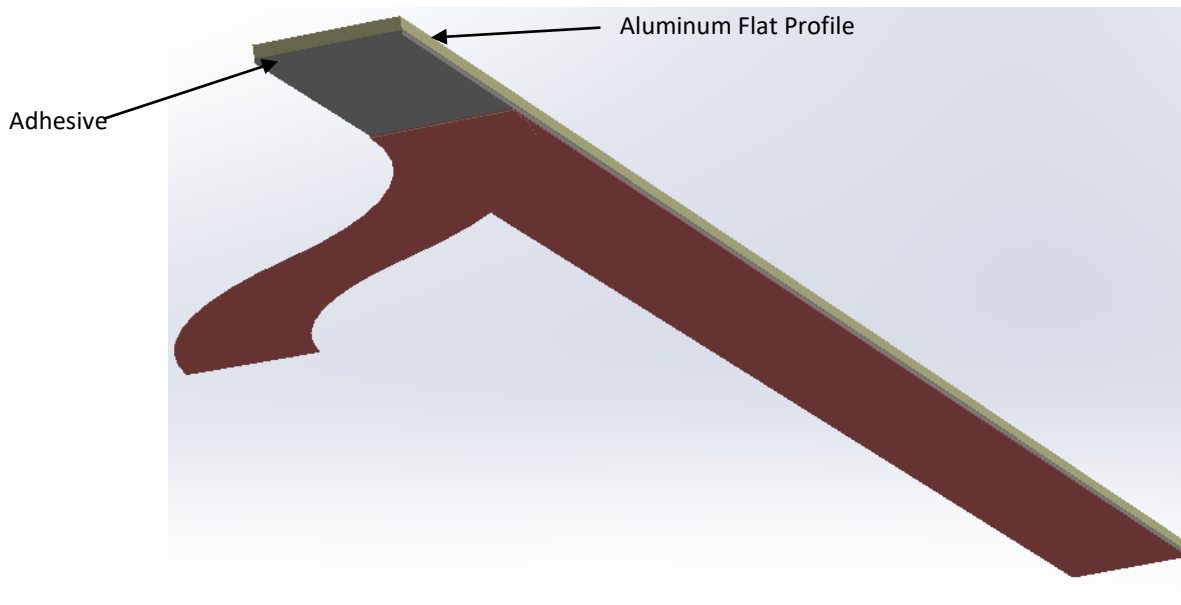
Allow to dry.

Apply the adhesive tape to the aluminum plate (primer side) and exert UNIFORM, DYNAMIC PRESSURE of at least 1 kg / cm² on the plate using a marouflage squeegee with felt edges.



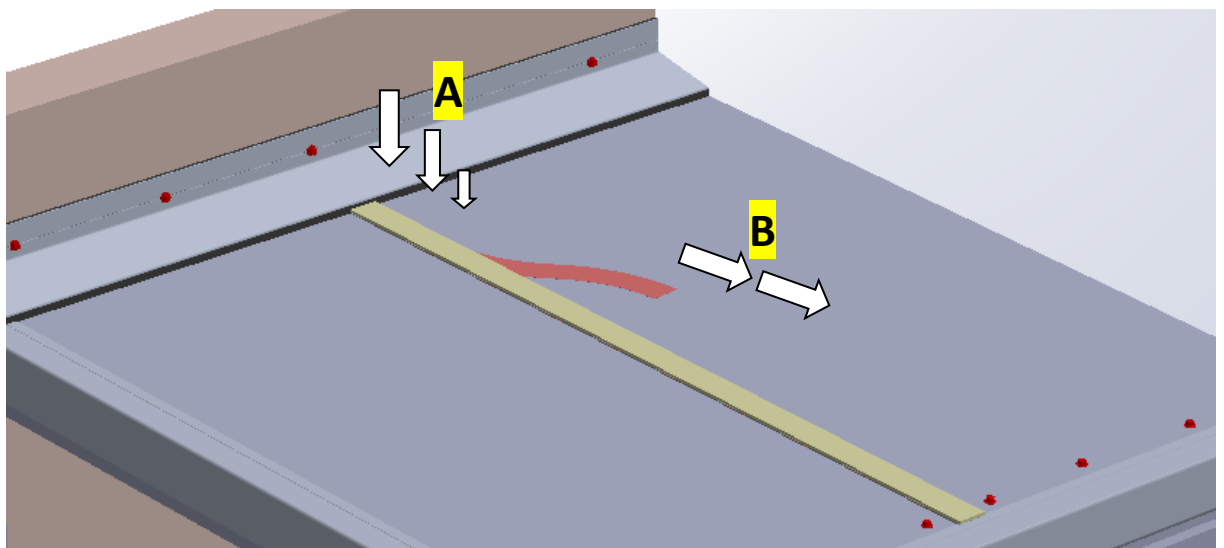
Partially remove the protective film from the adhesive tape on the aluminium plate that was previously adhesived:

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Apply the aluminum plate to the panel junction, starting at the top (step **A** below), and apply UNIFORM, DYNAMIC PRESSURE of at least 1 kg / cm² to the plate using a marouflage roller:

Little by little, remove the protective film (step **B** below) and press down. Proceed in small steps :



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11. Installation of gutter risers :

