Assembly Instructions

Façade profile
90 RHOMBA

TERAFEST

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BEFORE YOU START

- Profiles 90 RHOMBA can be used as façade cladding, sunshades for windows, partition structures between terraces, or certified balcony infills. From a fire safety perspective, they are classified under Reaction to Fire Class E. For higher buildings, their use must be consulted with a fire safety specialist, and installation should be carried out in accordance with the Fire Safety Solution.
- The TERAFEST® material is not a structural material and therefore cannot be used for load-bearing constructions. When installing additional accessories on the façade cladding (e.g., lighting, guttering, etc.), they should not be anchored solely to the cladding profiles. There is possible to fix the lighter objects directly to reinforced part of the 90 RHOMBA profile. We do not recommend implementing electrical cables inside the 90 RHOMBA profile.
- This is a natural product, which may exhibit slight colour variations and shading, enhancing its wood-like appearance. These variations do not affect the product's quality or durability. Before installation, the colour of the profiles should be checked, and profiles should be mixed during cladding installation to emphasize their natural character. We recommend ordering all profiles at once to ensure uniformity.
- Profiles may have minor dimensional variations. The manufacturing tolerances are as follows: Width: ±2 mm, Thickness: ±1 mm, Length: ±10 mm. Maximum longitudinal deflection: 5 mm per meter of length. Due to temperature fluctuations, TERAFEST® cladding profiles and trims expand and contract. Ensure that expansion gaps are in according as prescribed.
- TERAFEST® products are primarily designed for outdoor use. Sunlight and rain help maintain them naturally. If considering indoor use, consult your supplier. In partially covered installations, uneven exposure to rain may lead to dust water stains, which do not affect the cladding's functionality.
- Store on a dry and level surface. Before installation, protect profiles from direct sunlight to prevent uneven colour maturation.
- Do not treat the profile surface with stains, paints, varnishes, oils, or other products unless specifically recommended for composite materials by the manufacturer. Do not use solvents or thinners.
- When working with composite wood, use the same tools as for hardwood, such as a circular saw, drill, cordless screwdriver, measuring tape, level, pencil, rubber mallet, and square ruler.
- The 90 RHOMBA profile has an inserted aluminium reinforcement, there is a risk of it loosening during handling. Personal protective equipment must be used when cutting and drilling TERAFEST® façade profiles. Especially when cutting aluminium profiles, pay attention to eye protection.

Installation is possible in three ways

A. As a façade cladding element

B. As a freestanding sunshade

C. As a balcony railing infill

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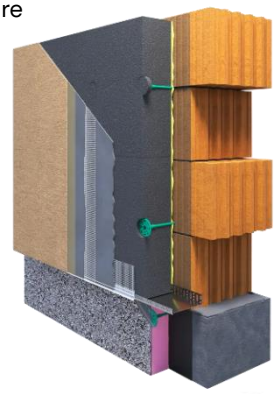
A. INSTALLATION AS A FAÇADE CLADDING ELEMENT

1. WALL PREPARATION

- The wall must support RHOMBA profile assemblies with a unit area weight of 16–21 kg/m².
- Standard exterior walls can safely handle this load. For insulated walls with a large insulation thickness (over 20 cm), suitability must be consulted with a project designer or structural engineer.

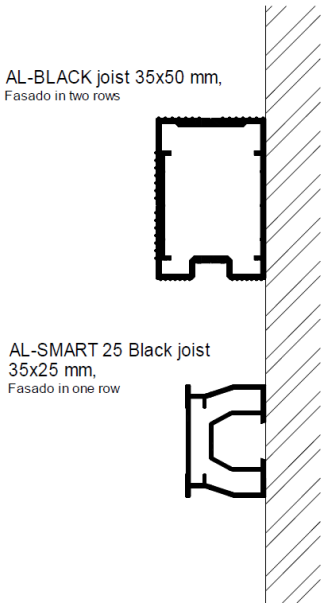
- **Specifics of Anchoring on an Existing External Thermal Insulation Composite System (ETICS)**
  - Façade joists must be anchored through the insulation into the load-bearing structure
  - As first, it is necessary to drill through the entire insulation thickness into the wall (the drilling depth depends on the type of anchor and the type of masonry/construction)).
  - Penetration of the anchor through the thermal insulation layer disrupts its overall thermal performance, which must be considered in advance. To minimize heat loss, it is recommended to use façade dowels with a thermal break.
  - For aesthetic reasons, it is advisable to paint the wall first with black or anthracite façade paint.



- **Specification of anchoring for a wooden building**
  - Facade supports can be anchored to the wooden structure of the perimeter walls.
  - For example, a static calculation was made on the model width of the outer battens of 625 mm (axially). The location of façade supports, and the frequency of anchors are elaborated in Table 2 for this model case. For other batten spacing, a new calculation must be created.
  - Part of the wall behind the façade supports should be covered with black diffusion foil with UV stabilization. This is both for aesthetic reasons of the wall cladding and to protect the layers behind the foil (protection of thermal insulation from water).

2. SELECTION AND INSTALLATION OF FAÇADE JOISTS

- We recommend using black joist AL-SMART 25 or black joist AL-BLACK 35 as under construction for installation of 90 RHOMBA profiles on wall.
- The extended joist is used in case of a gap between the 30 mm RHOMBA profiles and the concealed mounting (see detail in chapter 4).
- The AL-BLACK joist is mounted flat, with the reinforced side facing forward and the groove facing downward.
- The AL-SMART 25 Black joist is mounted with the groove facing the wall
- Before anchoring large façade dowels (into the load-bearing wall), the façade joists must be pre-drilled according to the selected dowel type.
- Joist anchoring should be carried out according to the project's structural calculations. For reference, a basic structural model has been created using FISCHER UX10 dowels with M8 screws into masonry and HBS 5x70 mm screws into wood (Table 1).
- It is also possible to install a UV stable insect protection screen on the joists (eyelet size: 1.2 mm x 1.4 mm).



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90 RHOMBA

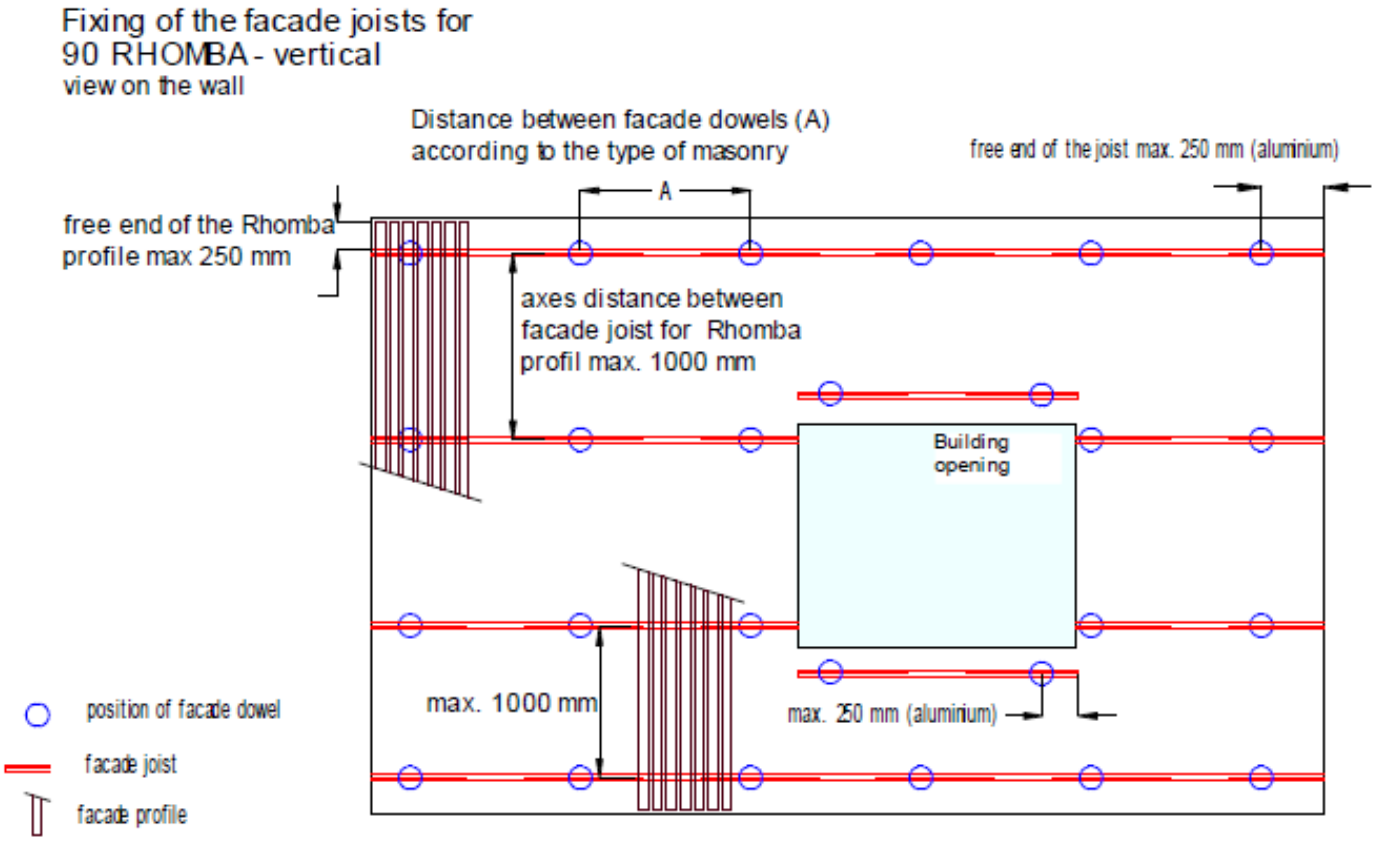

Table 1 Distances between façade dowels (A) by wall type

	Category 1	**Category 2**	**Category 3**	**Category 4**
	Concrete	Full burnt bricks	Ceramic blocks, aerated concrete	Wooden buildings
				
Dowel spacing on the joist (A)	A = 500 mm	A = 250	A = 200 mm	A = 200 mm

- The stated anchorage distances apply to FISCHER UX10 dowels with M8 masonry screw and HBS 5x70 mm wood screws.
- In the edge area of the walls at the corners, it is necessary to reduce the spacing A to 1/2 in a strip of about 1.0 - 1.5 m from the corner of the building.
- The first anchor must be placed at a maximum distance of 250 mm from the end of the profile.

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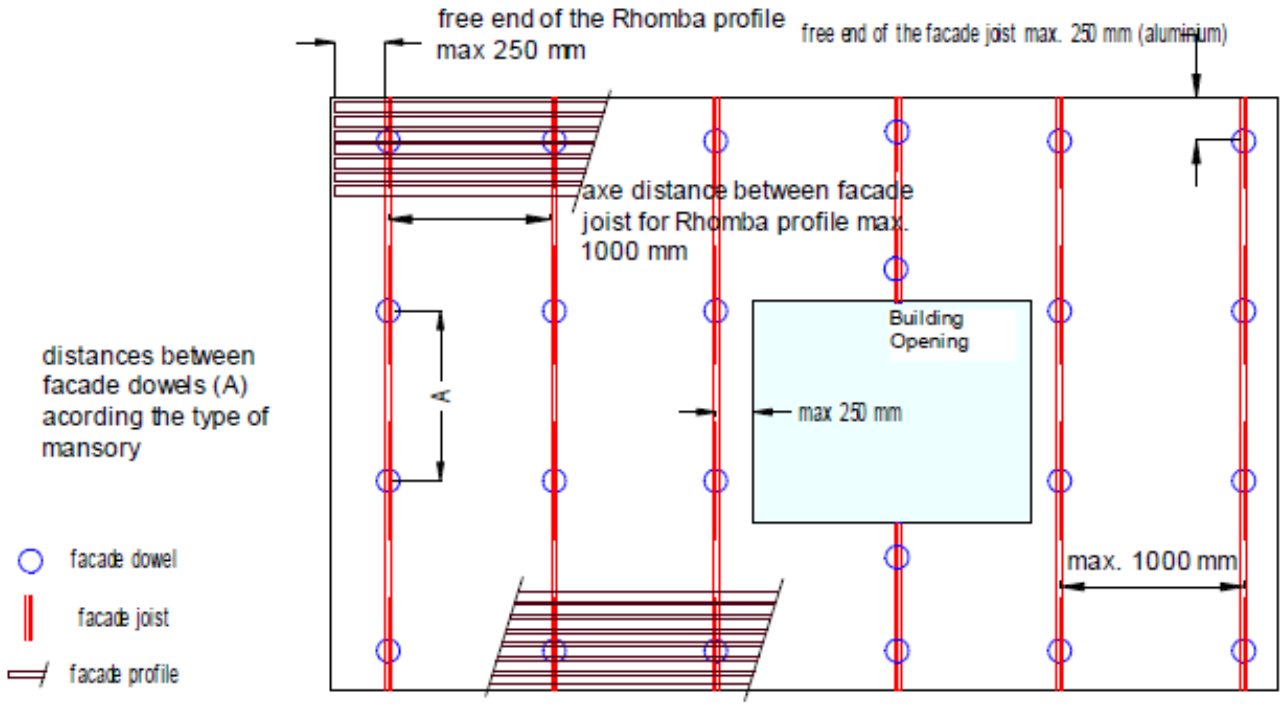
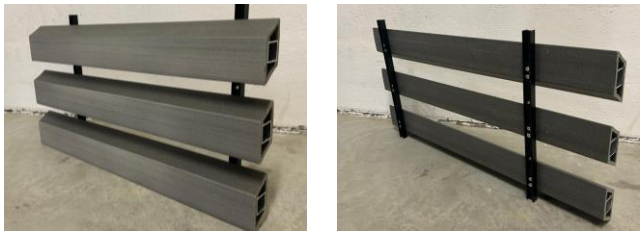
Fixing of facade joist for 90 RHOMBA profile - horizontal
view on the wall



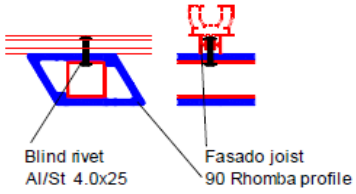
3. POSSIBLE METHODS FOR MOUNTING RHOMBA PROFILES

Section of RHOMBA Profiles on Fasado joist – hidden installation

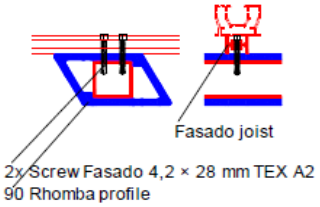


- Installation of RHOMBA profiles can be carried out with hidden anchoring elements (installation from the rear via the Fasado joist) or with visible anchoring elements (through the entire RHOMBA profile directly into the façade joist).).
- In the case of hidden mounting via the Fasado joist, it is anchored with blind rivets or screws from the back. This method is suitable for gaps between 30 and 50 mm profiles.
- Rivets are better able to withstand the dynamic effects of wind because they act similarly to nut bolts, i.e. they do not loosen over time, so one anchor point is enough. For screws, two pieces must be used, unless the static calculation determines otherwise.
- Direct mounting with a long screw through is used at a small gap of 20 mm, or where the visible screw heads do not visually interfere. This mounting method is also the fastest.

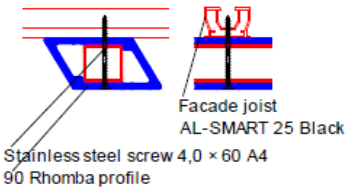
Hidden Rivet connection



Hidden screw connection

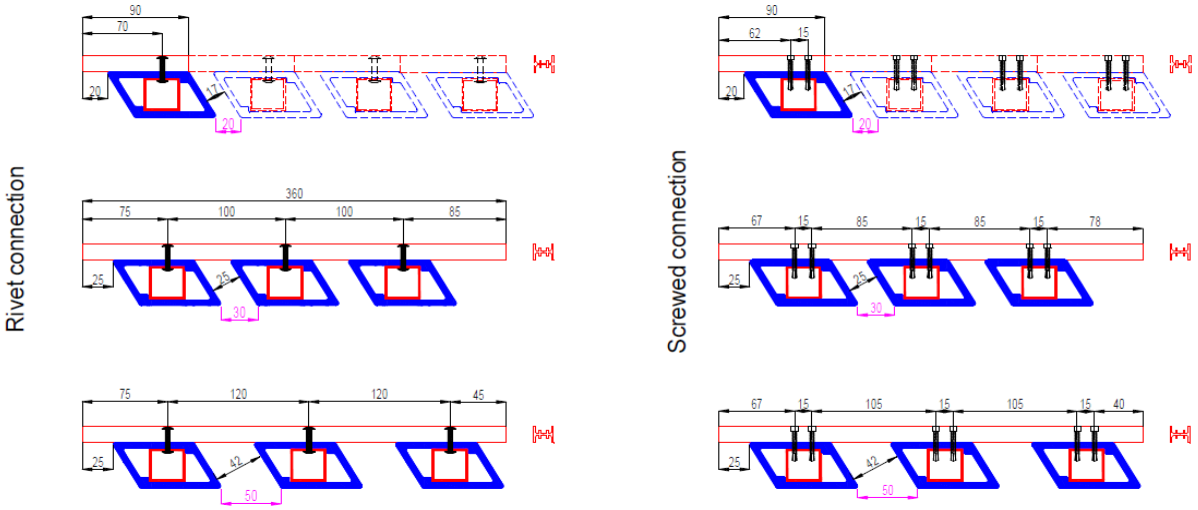


Direct screw connection
(visible screw heads)



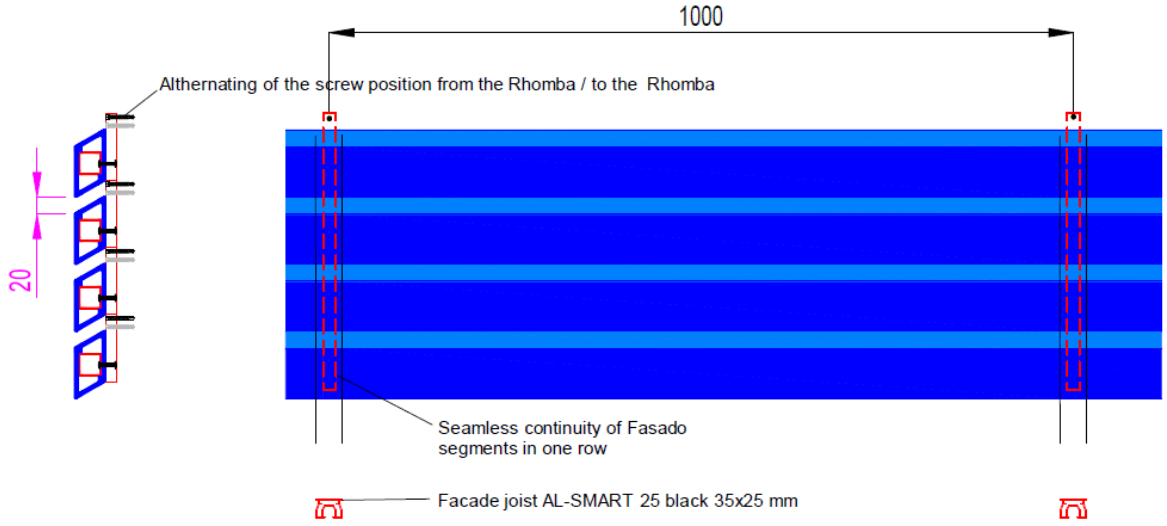
4. A HIDDEN MOUNTING VIA FASADO JOIST

- It is recommended to define the workspace with a protective underlay to prevent scratches on both the floor and RHOMBA profiles. The underlay should be large enough (longer than the façade profiles) to accommodate pre-drilling.
- Place the façade profiles on this underlay (e.g., cardboard sheets) at the desired spacing and orientation. For perfect alignment, it is essential to use a spacing template.
- In the case of riveting, Fasado profiles together with RHOMBA profiles must be pre-drilled using a 4.5 mm diameter drill bit. For a screwed connection, pre-drilling with a 3 mm diameter drill bit is sufficient. In both cases, drilling must go through the first reinforcement wall.
- Alternatively, RHOMBA profiles can be mounted one by one on a shortened Fasado joist (90 mm). This variant is used when there is a gap between RHOMBA profiles is 20 mm, or when increased installation accuracy is required.



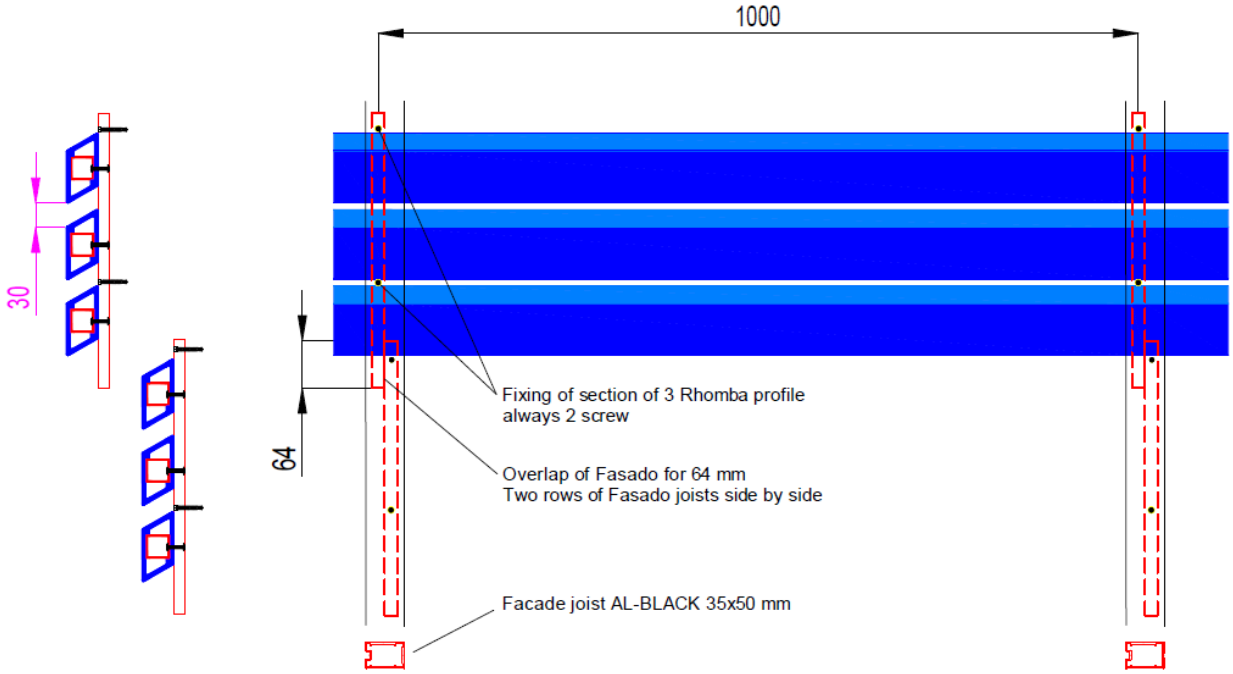
Installing RHOMBA profiles with a gap of 20 mm

- Each single RHOMBA anchored to the AL-SMART 25 Black façade joist using one or two screws/rivets in a single continuous row.
- If using only one screw/rivet per section, for vertically oriented RHOMBA profiles, the position of the fastening element must alternate (from the RHOMBA profile / to the RHOMBA profile) to prevent the Fasado joist from shifting downward ("sagging").

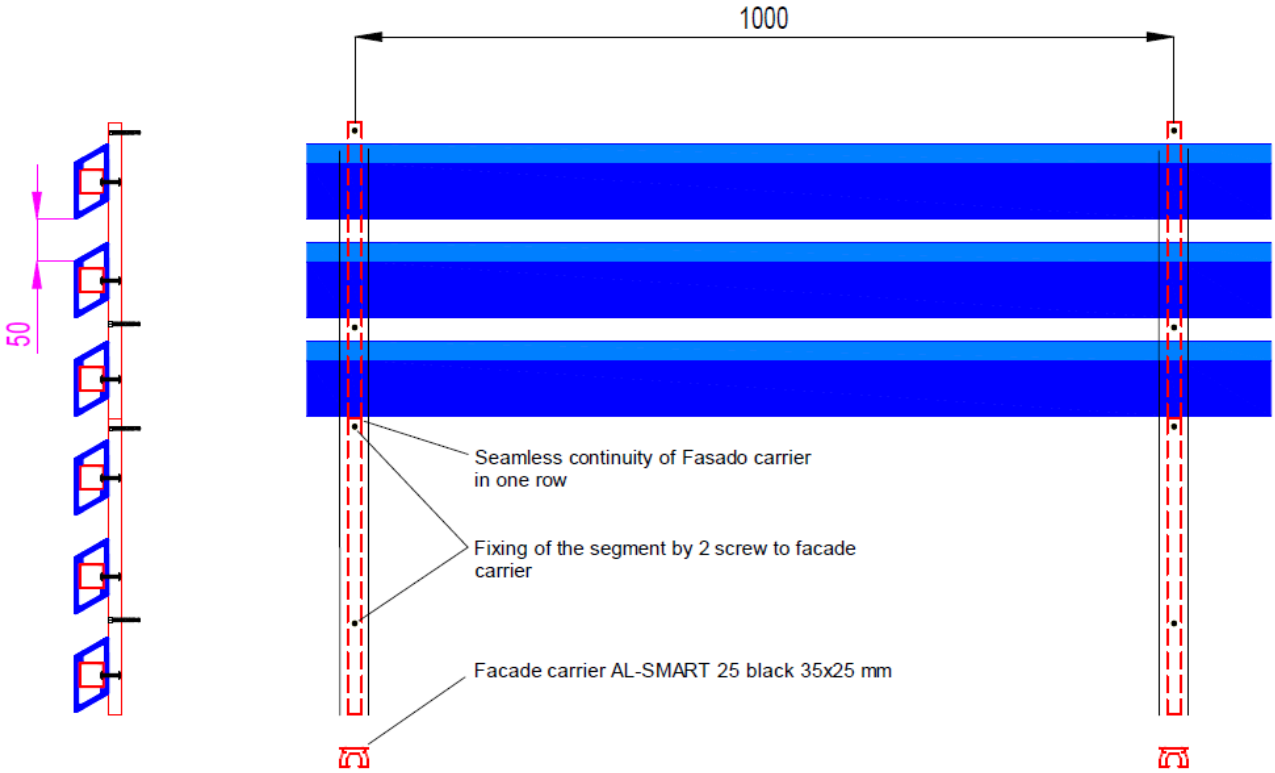


Installing RHOMBA profiles with a 30 mm Gap

- Fasado joists are placed in two alternating lines, following the same principle for both horizontal and vertical applications.

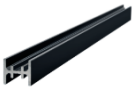
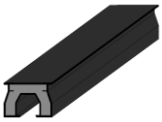
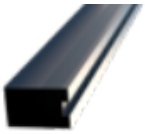
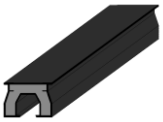


Installing RHOMBA profiles with a 50 mm Gap (Same principle for horizontal and vertical applications).



- Sections are anchored to the prepared AL-SMART 25 Black façade joist (with the opening facing the wall) or to the AL-BLACK joist (mounted flat)
- When anchoring to aluminium, use the FASADO screw 4.8 × 34 mm TEX Black. Pre-drilling with a 3.5 mm drill bit is recommended.

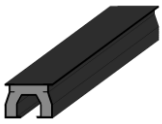
Table 2 Indicative material consumption for concealed façade mounting on Fasado joist

Gap		20 mm	30 mm	50 mm
Number of façade profiles 90 RHOMBA per m2	 90 RHOMBA	11,11 x	10 x	8,33 x
Option 1 – screw connection Type and number of screws per m2 for concealed rear mounting	 FASADO screw 4,2 × 28 mm TEX	22,22 x	20 x	16,66 x
Option 2 – riveted joint Type and number of rivets per m2 for concealed rear mounting	 blind Rivet Al/St 4.0x25	11,11 x	10 x	8,33 x
Auxiliary joist Fasado and its consumption per m2	 FASADO - façade joist 17 × 15 × 360 mm	2,78 x (11,11 pieces by 90 mm)	3,29 x	2,78 x
Succession of individual façade profiles		Seamless continuity	Local Overlay	Seamless continuity
Screws for anchoring the auxiliary Fasado joist to the aluminium façade supports	 FASADO screw 4,8 × 34 mm TEX Black	11,11 x	6,58 x	5,56 x
Recommended aluminium façade joist		 Basic joist **AL-SMART 25 Black** (35x25 mm)	 Wider joist **AL-BLACK** (35x50 mm)	 Basic joist **AL-SMART 25 Black** (35x25 mm)

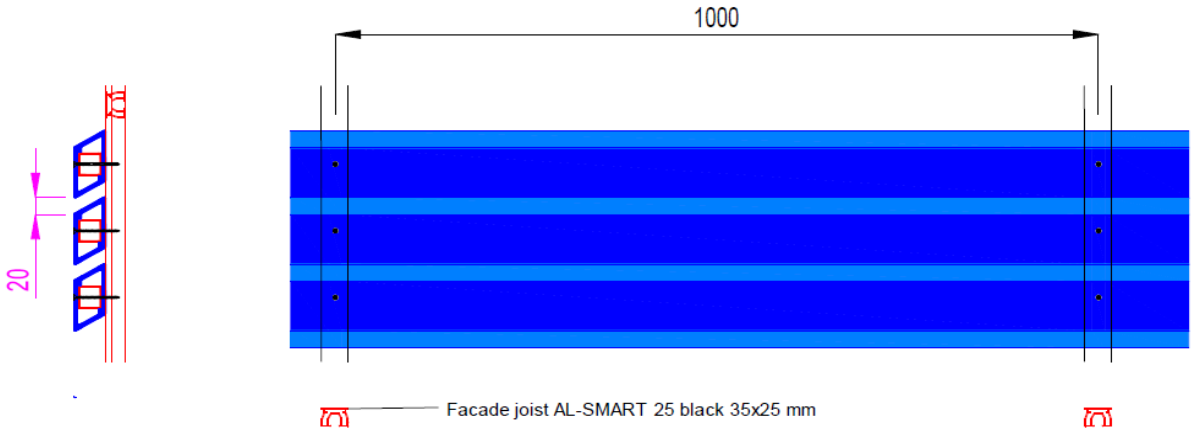
4. B DIRECT MOUNTING WITH A LONG SCREW THROUGH

This method of installation is the fastest. The disadvantage is the visible screw head on the RHOMBA profile.

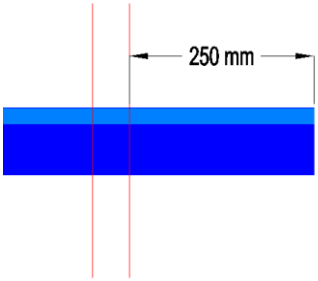
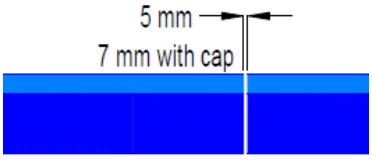
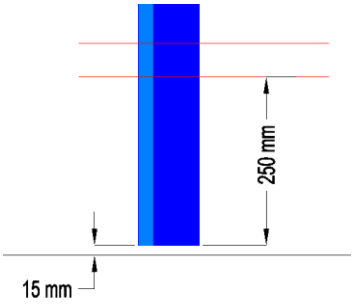
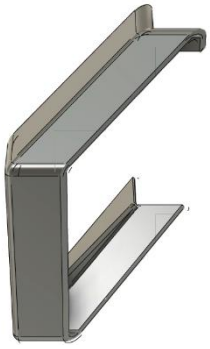
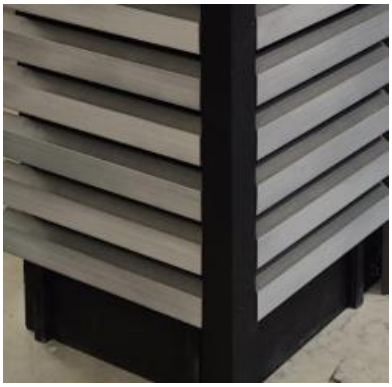
Table 3. Indicative material consumption for direct façade mounting with screws.

Gap		20 mm	30 mm	50 mm
Number of façade profiles 90 RHOMBA per m2	 90 RHOMBA	11,11 x	10 x	8,33 x
Type and number of screws for direct anchoring to the façade support	 Stainless steel screw 4,0 × 60 A4	11,11 x	10 x	8,33 x
Recommended aluminium façade joist	 Basic joist **AL-SMART 25 Black** (35x25 mm)	1 m	1 m	1 m

Screwed connection directly into the façade support (variant with a gap between 90 RHOMBA profiles of 20 mm)



5. CONNECTION AND FINISHING DETAILS

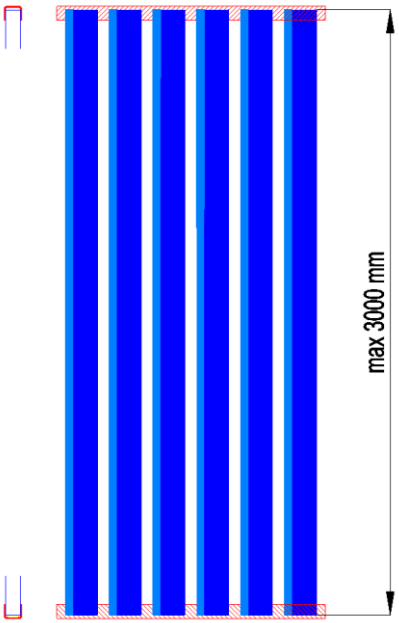
Ending RHOMBA Profiles Maximum length of free end 250 mm, terminated with end cap	End caps are in right/left variant	Detail of the End caps
		
Linking RHOMBA profiles Profile gap min. 5 mm With connecting cap 7 mm	The connecting caps are connected by a "hook" from above and by the free end "from below" of the RHOMBA profile	**Free distance from the ground** Minimum 15 mm
		
Outer corner - variant 1 Cutting profiles at an angle of 45%, use of Corner caps	**Outer corner - variant 2** Profile cutting at an angle of 45 %, L-rail 50x50 mm	**Outside corner - variant 3** RHOMBA profiles 5 mm from corner post 80x80 mm
		

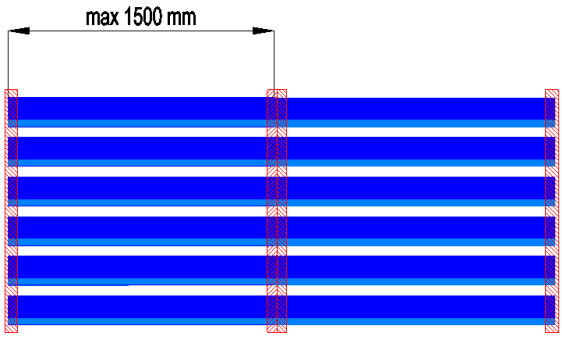
B. INSTALLATION AS A FREESTANDING SUNSHADE

A faster installation method using insertion and riveting into U-profiles.

1. Structural Assessment and Maximum Free Spans

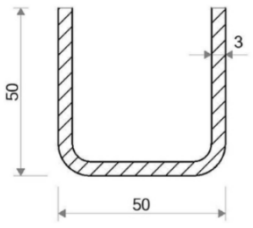
- The use of RHOMBA profiles as freestanding sunshades is designed based on a structural calculation specific to the European climate zones (Eurocode 1, NA appendix of EN 1991-1-4).
- Anchoring distances are significantly larger compared to the previous chapter, where calculations and certification followed general European façade cladding standards (ČSN EN 15534-5).
- The maximum span between supports is: 3 meters (vertically) 1.5 meters (horizontally) These values are calculated for a maximum dynamic wind pressure of qb = 0.680 kN/m².
- For Terrain Categories I-III (open landscapes with minimal development, areas near lakes, etc.), a verification structural calculation is required. In these zones, support distances must be reduced.

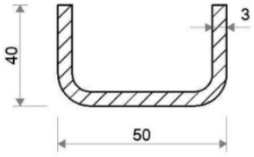


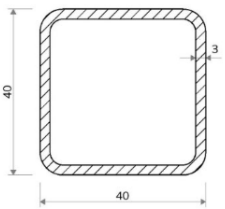


2. Preparation of U-Profiles and Rectangular Tubes

- Installation is carried out into U-profiles in both horizontal and vertical directions.
- It is necessary to use corrosion-resistant U-profiles, such as: Galvanized steel profiles Powder-coated steel profiles in the required colour Aluminium U-profiles as an alternative.
- The width of the 90 RHOMBA profile is 42 mm, so it is recommended to use a U-profile with an internal width of at least 45 mm to allow easy insertion of the RHOMBA profiles. Suitable U-profile dimensions include: 50x50x50x3 mm, 40x50x40x3 mm.
- If the sunshade is freestanding, support posts made of rectangular tubes (e.g., 40x40x3 mm) must be prepared.

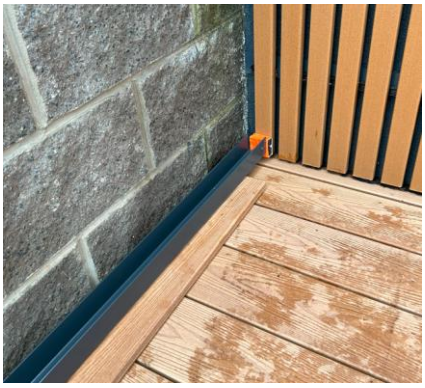
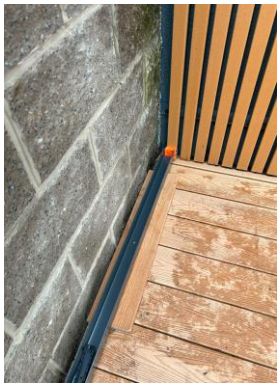


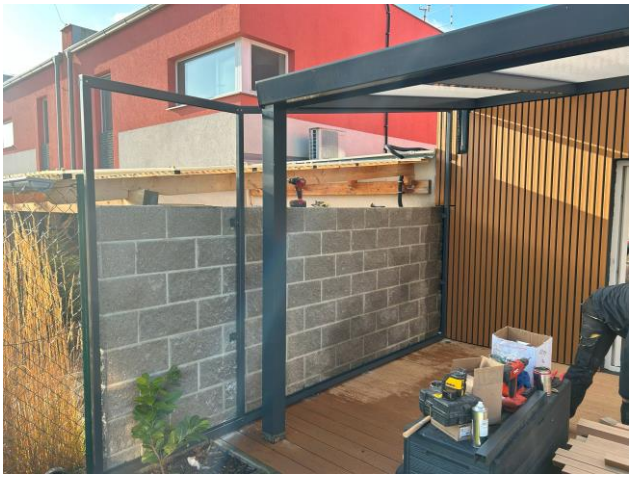




3. Assembly of the Structure from U-Profiles and Rectangular Tubes

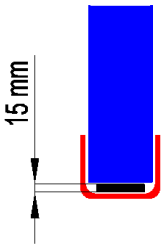
- The bottom profile must first be pre-drilled at the lower part. This is necessary to prevent water accumulation, which could otherwise be absorbed by the wood-plastic composite surface. Drainage holes should be spaced at least every 40 cm.
- Do not forget to pre-drill anchoring holes for securing the structure to the wall or floor. Pre-drilling must be done before hot dip galvanizing or powder coating.
- The pre-drilled bottom U-profile is then anchored to the wall or floor, depending on the planned RHOMBA wall placement.
- Next, the upper and possibly side U-profiles are installed. RHOMBA profiles are not a structural element. If the sunshade is freestanding, sufficiently rigid vertical support elements (e.g., rectangular tubes 40x40x3 mm) must be used.
- When installing a RHOMBA sunshade on a terrace, it is recommended to leave a gap of approximately 22 mm (equivalent to the thickness of one board) between the terrace surface and the bottom U-profile to allow water drainage during maintenance.



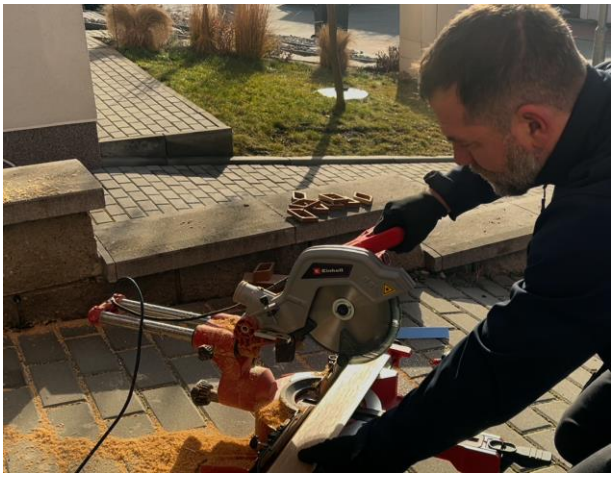

4. Preparation of Spacers

- For faster installation, it is necessary to prepare spacer elements for placement inside the U-profiles and between individual RHOMBA profiles.
- The distance between the bottom edge of the RHOMBA profile and the inner surface of the U-profile should be at least 15 mm. The same spacing should be maintained for the upper and, if applicable, side U-profiles.
- Spacers between RHOMBA profiles will define the gap between them. The recommended gap for sunshades is 50 mm, but smaller or larger gaps can be used based on project requirements.
- Suitable spacer materials include plastic façade shims.



5. Preparation of RHOMBA Profiles

- Before installation, verify the lengths of RHOMBA profiles and adjust them if necessary.
- RHOMBA profiles are cut together with the aluminium reinforcement using tools such as a mitre saw with a blade for aluminium.

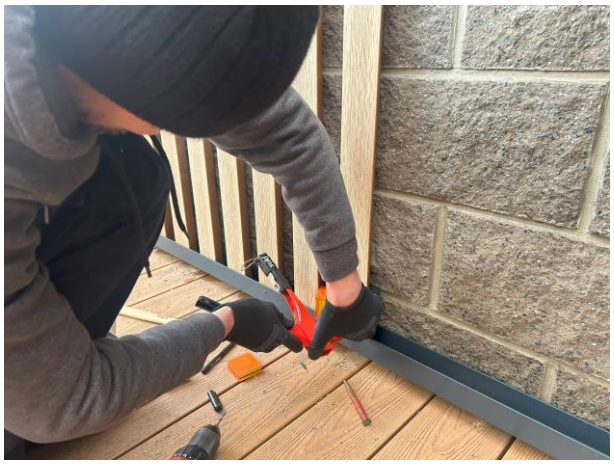



6. Inserting and Riveting Individual RHOMBA Profiles

- RHOMBA profiles are gradually inserted into both the bottom and top U-profiles.
- To achieve a perfect result, it is essential to use spacer elements to maintain uniform gaps.
- Before fastening, U-profiles, including RHOMBA profiles with aluminium reinforcement, must be pre-drilled according to the selected rivet size.
- The minimum rivet length is 16 mm. It is recommended to use rivets in the same colour as the U-profile, such as Al/St blind rivets (4.0 × 16 mm).


Assembly Instructions

Façade profile
90 RHOMBA



D. INSTALLATION AS A BALCONY INFILL

- RHOMBA profiles can also be used as vertical or horizontal balcony infills with a certified maximum gap of 80 mm.
- The height of the railing depends on the free fall height below the railing:
  - Railing height 900 mm (for a fall depth of up to 3 m)
  - Railing height 1000 mm (for a fall depth of up to 12 m)
  - Railing height 1100 mm (for a fall depth of up to 30 m)
- RHOMBA profiles must always be anchored to the load-bearing perimeter structure of the railing, using a screw through the entire profile into the load-bearing construction.

RHOMBA Railing in a Horizontal Position.

At the ends of the railing, it is necessary to use end caps (see the previous chapter).

RHOMBA Railing in a Vertical Position.

The termination can also be done using a horizontal RHOMBA profile.