

## Ventilated façade

### 1 General

These application instructions are specifically intended for the fastening of large-size EURO PANELS OVERSEAS façade panels as outside wall cladding on a ventilated and insulated structure in aluminium, fixed to a back construction. A number of basic principles are given that must be adhered to. For variations or additional advice one can always contact EURO PANELS OVERSEAS .

### 2 Cladding material

The following EURO PANELS OVERSEAS products are treated in this document.

• NATURA	8 mm
• TEXTURA	8 mm
• NATURA PRO	8 mm
• PICTURA	8 mm

Product data and processing information can be found in the product information sheets, available from EURO PANELS OVERSEAS .

For façade or ceiling applications only rectified boards may be used, non-rectified boards should not be used uncut.

REMARK: When sawing NATURA and NATURA PRO, the sawed edges must be impregnated with LUKO (a transparent impregnating agent) to minimize local colour differences due to moisture absorption.

### 3 Area of application

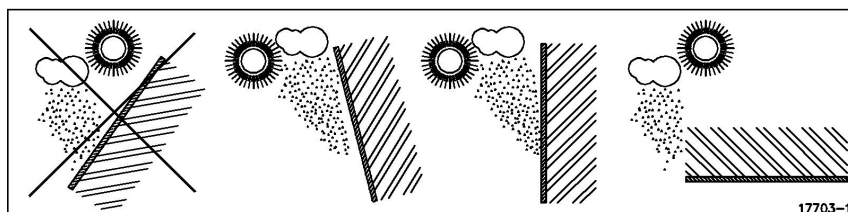
These instructions apply for buildings up to a certain height and subjected to a maximum actual wind load in a certain wind zone. The maximum intermediate distance of the supporting structure is determined in relation to the occurring wind load taking into account a safety factor. The table below only shows non-binding reference values for the wind loads. The exact values can be found in the standards EN 1991-1-4 (Eurocode 1) and the national NAD.

Location	Building height	Middle area façade		Edge area façade and single span	
		Max. actual wind load	Max. center-to-center distance supporting laths	Max. actual wind load	Max. center-to-center distance supporting laths
Wind zone	m	N/m <sup>2</sup>	mm	N/m <sup>2</sup>	mm
Land	0-10	650	600	1000	500
Land	10-20	800	600	1200	500
Land Coast	20-50 * 0-20	1000	500	1500	400

\* The fixing of OPERAL to a building height higher than 20 m is not advised.

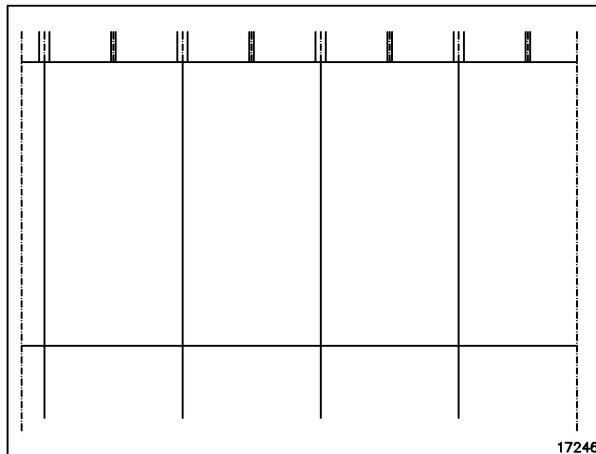
The width of the edge area amounts to at least 1 m from the corner of the building and must be further determined on the basis of prevailing national standards and conditions. If variations of the aforementioned load limits occur (e.g. due to certain location or form factors, etc.), the design must be determined by building services engineers.

When the façade panels are exposed to weather conditions (rain, sun) they may only be assembled on a vertical or leaned over supporting structure. For ceiling applications reference is made to the relevant application guidelines.

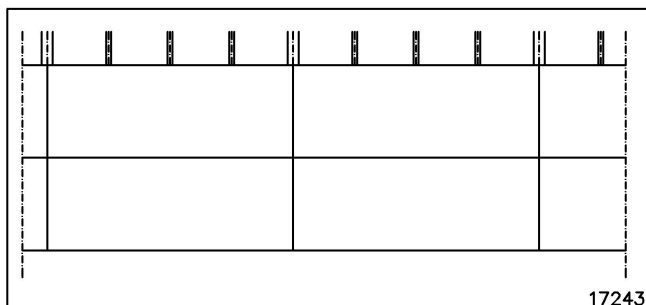


#### 4 Patterns with large-size façade panels

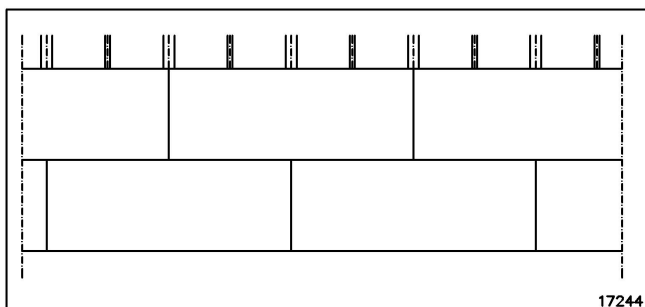
The following patterns are possible. For aesthetic reasons, use rectified panels only.



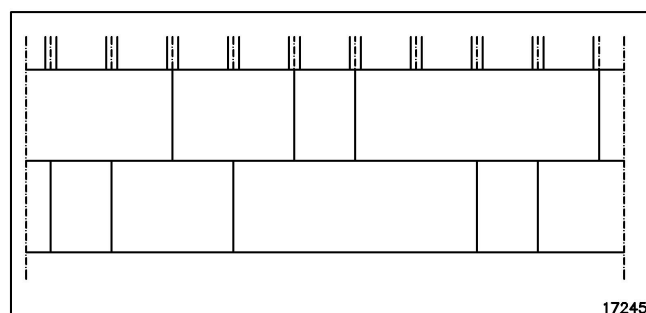
Straight pattern  
with vertical panels



Straight pattern  
with horizontal panels



Semi pattern  
with horizontal panels



Free pattern  
with horizontal panels

NOTE: semi pattern and free pattern are only advised for dark colours. With bright colours, there is a real risk of remarkable soiling on the panels in line with the overlying vertical joints.

## 5 Supporting structure

The guidelines for the construction of a ventilated aluminium structure can be found in the applicable instructions " D005-aluminium supporting structure\_ai\_eng.pdf".

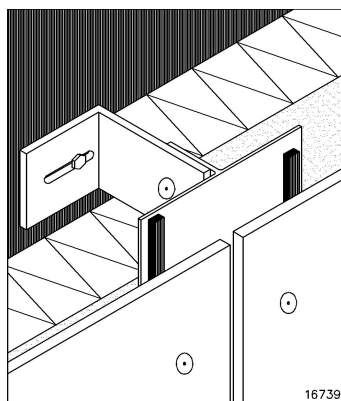
The dimensions of the supporting profiles (dimensions and width) and the different fastening variants are fully explained in the above mentioned application guideline.

## 6 Fixing method

The assembly of EURO PANELS OVERSEAS cladding panels is best started at the top. The panels are fitted by using a metal lath with leveler which is clamped on the supporting laths. By assembling from top to bottom, damaging the panel is avoided. Calibrating plates can be used to assemble the panels with the correct joint width. To obtain an attractive result it is best to minimise the tolerance of the vertical joints compared to the tolerance of the horizontal joints. The calibrating plates have to be removed carefully, so that the sheet edges are not damaged.

### 6.1 Visible fixing with rivets

The cladding panel is fixed with blind rivets with coloured heads. The blind rivets are inserted using an electric blind rivet machine.

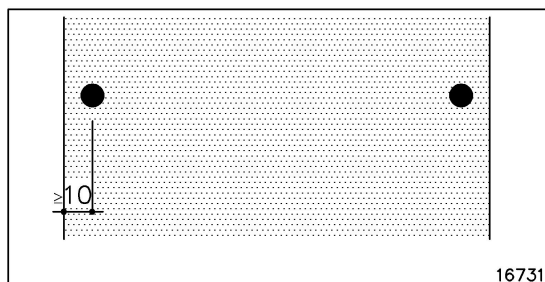


Drilling through the aluminium section must be done perpendicular and central with respect to the panel perforations. The predrilling of the aluminium section takes place using a special centring drill.

The blind rivets must be inserted perpendicular to the panel surface. The mouthpiece of the blind rivet machine may not damage the blind rivets.

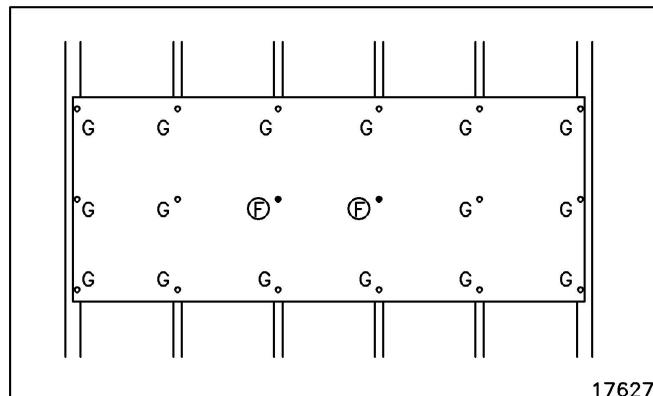
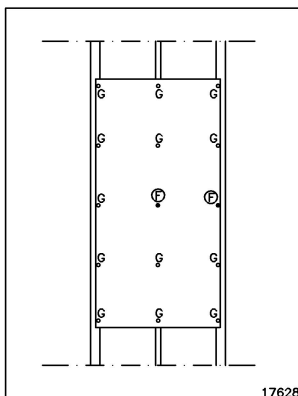
The distance from edge of the drilled hole to the edge of the aluminium section may not be too small.

- minimum distance from edge of drilled hole aluminium section : 10 mm



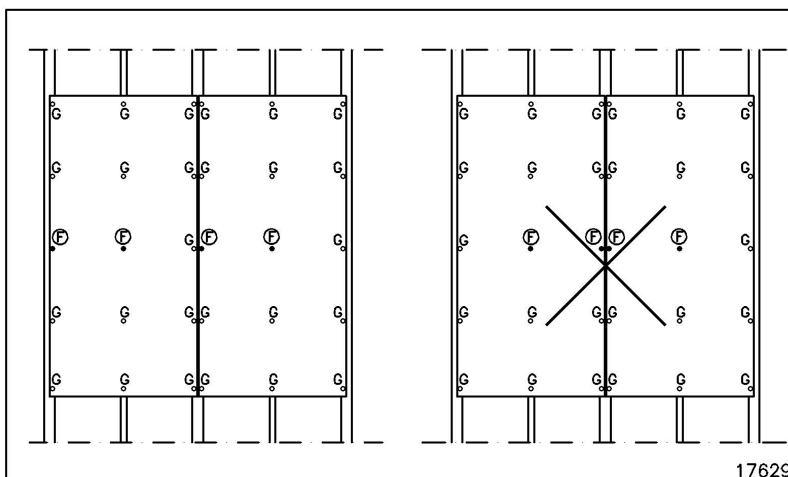
Drilling shavings must be removed before the drilled hole is blown out so that they do not become stuck between the panel and the section. For the same reason, the bottom blind rivets are only fixed after all drilling shavings have been removed by gently knocking the panel.

The cladding panels are fastened by fixed and free fastening points. Two adjacent fixed fastening points (F) are provided for each panel. All other pre-drilled holes are free fixing points to allow movements of the panel (G).

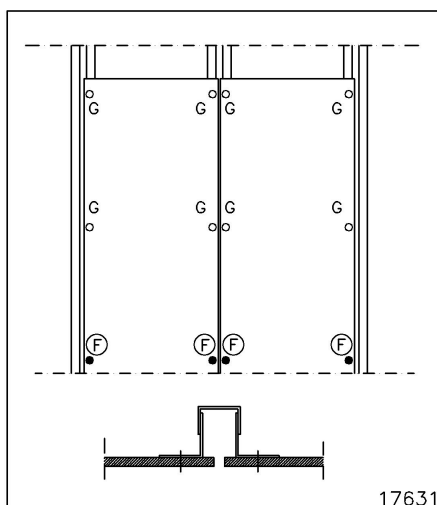


## 6.2 Points for particular attention:

Two fixed fastening points for one sheet may not be on the same section. Two fixed fastening points of adjacent sheets may not be on the same section to avoid coupling between the sheets.

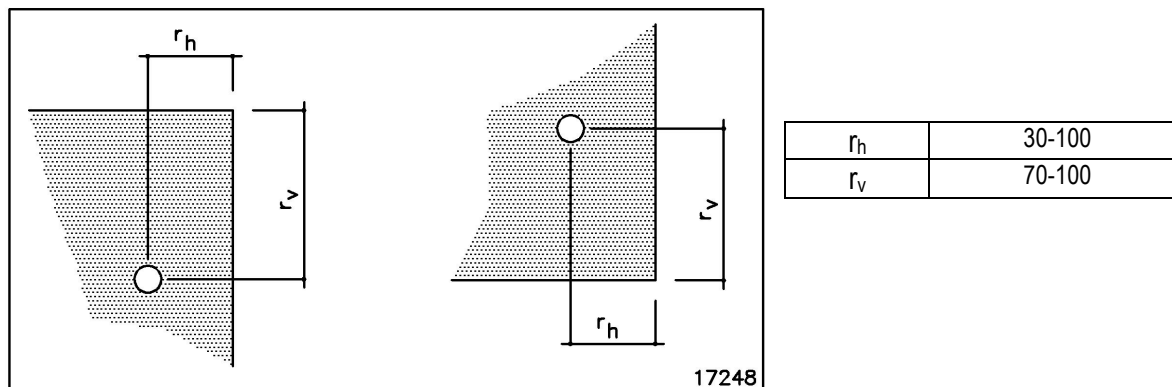


If this is not possible with narrow cladding sheets, one must detach the aluminium supporting section.



### 6.3 Edge distances

The following minimum and maximum distances from the edges of the rivets must be respected. Drilling the holes can be done using a template.



### 6.4 Maximum distance between aluminium profiles

The horizontal centre to centre distance between the supporting profiles is determined by:

- the width of the panel
- the maximum centre-to-centre distance of the supporting structure (see § 3 page 1)
- the maximum distance between the fastening accessories depending on calculated wind loads (see below)
- the distances from the edge of the screws (see § 6.2)
- the joint opening

As a general rule the following maximum distances between the fixing accessories must be respected.

Occuring wind load	Maximale centre distance of fasteners
N/m <sup>2</sup>	mm
≤ 800	600
≤ 1200	500
≤ 1500	400
> 1500	300

For single spans the following maximum distances between the fixing accessories must be respected.

	Maximale centre distance of fasteners	
	mm	
	Land 0-20 m	Land 20-50 m Coast 0-20 m
Single span	500	400

Example (fixing with rivets):

width of panel = 1220 mm, maximum distance between screws = 600 mm, distance from edge rivets = 40 mm, joint opening = 10 mm

→→→ centre to centre distance between supporting profiles =  $(1220+10)/2 = 615$  mm

→→→ distance between the screws =  $(1220-2*40)/2 = 570$  mm ≤ 600 mm

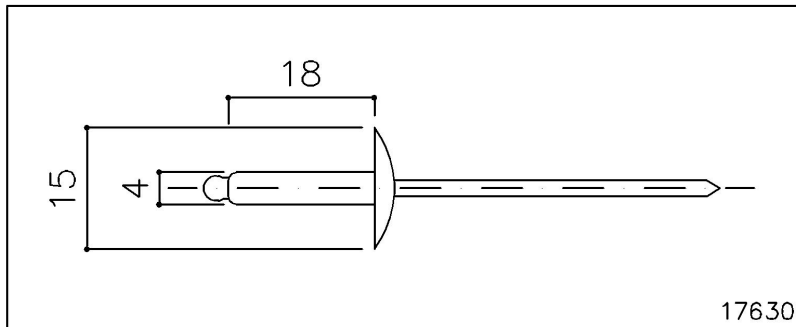
When the façade panels are exposed to weather conditions (rain, sun) they may only be assembled vertically. For ceiling applications reference is made to the relevant application guidelines.

## 6.5 Type of rivets

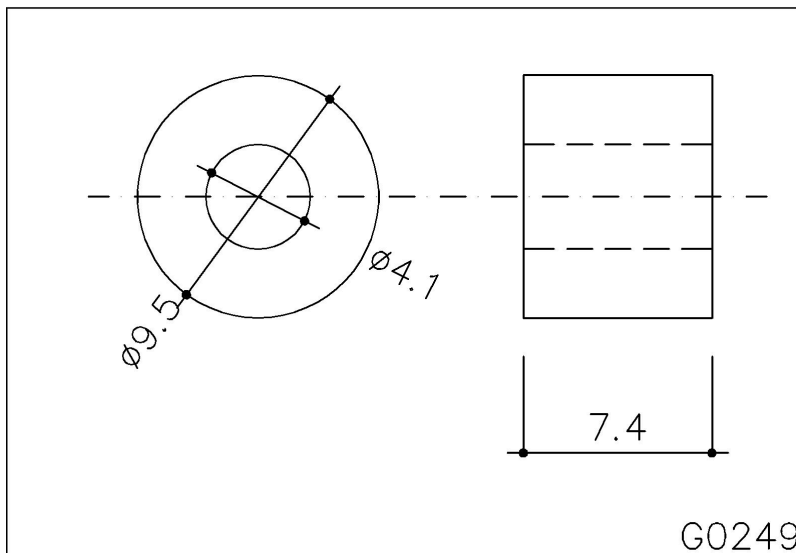
### a. TEXTURA, NATURA, PICTURA, NATURA PRO

The cladding sheet is fixed to the aluminium sections by means of an ALUMINIUM blind rivet with coloured head.

The following design of blind rivet must be respected.



Insertion cylinders are used for the fixed fastening points.

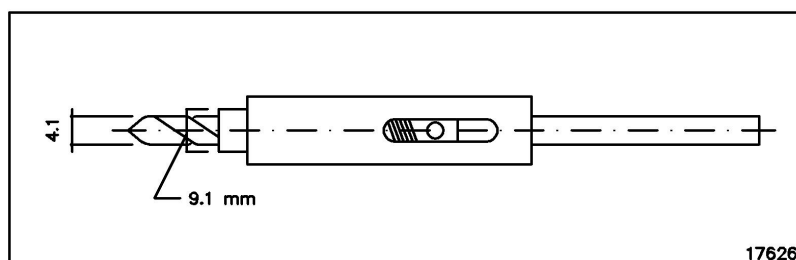


Holes for fixing points are pre-drilled in the panel. Only pre-drilling with special fibre cement drills in hard metal.

- diameter fastening point : 9,5 mm

The predrilling of the aluminium section takes place using a special centring drill.

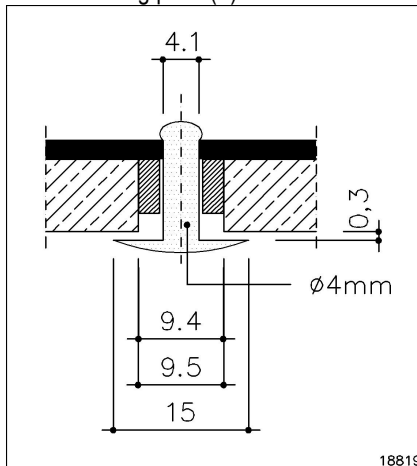
- diameter for predrilling aluminium section : 4,1 mm



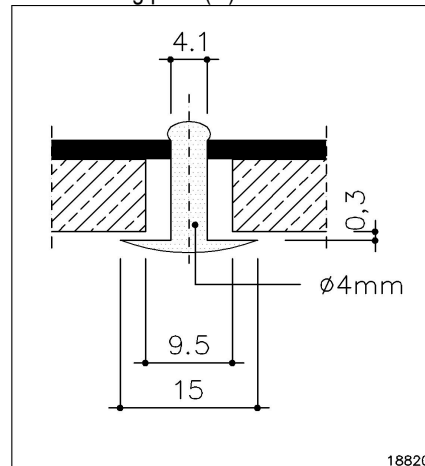
The sheet is correctly positioned and one can pre-drill the underlying aluminium section at the location of the fixed points (F). The façade panel is then fastened at the fixed points (F) with the blind rivets and filler cylinders by means of an electric rivet machine. The sheet and the blind rivet machine must be pressed on firmly.

The aluminium supporting structure is then pre-drilled at the free movement points (G). The façade sheet is then further fixed using the blind rivets.

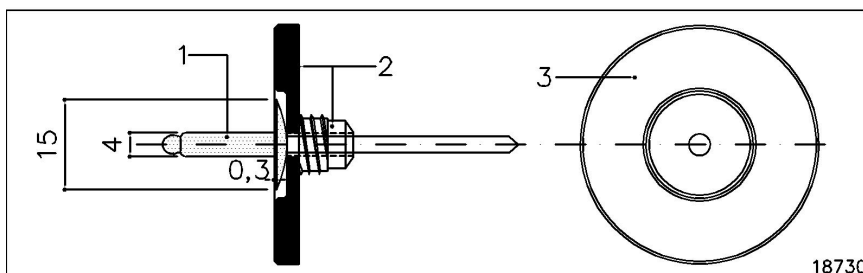
Fixed fastening point (F)



Free fastening point (G)



Both the fixed and the free fastening points are fixed with a blind rivet machine with rivet setting tool (spacer) to protect the surface of the panel.



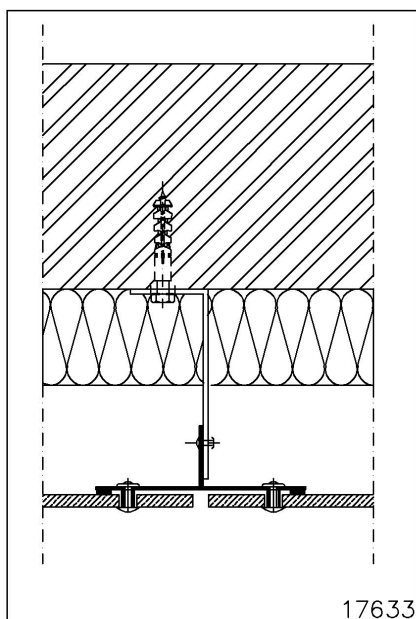
- 1 : blind rivet
- 2 : rivet setting tool
- 3 : front view of rivet setting tool

## 7 Joints

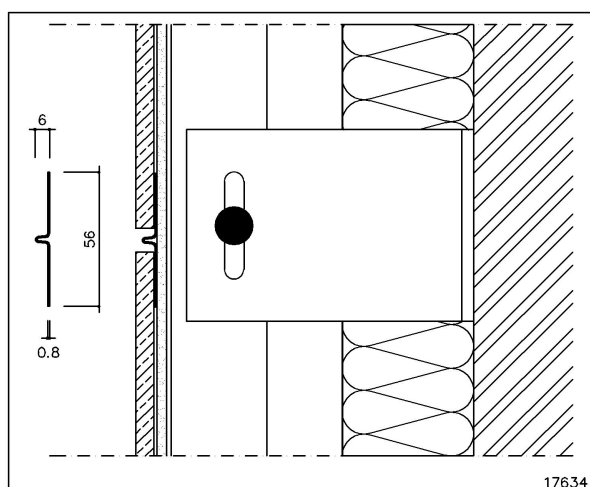
The façade panels are fixed with open joints to allow the free movement of the panel.

- joint width (horizontal/vertical) : 10 mm
- maximum thickness of underlying finishing profile : 0.8 mm

The vertical joints can be made black using black self-adhesive tape or a weather-resistant black coating. The vertical joints can be finished with decorative covering sections in wood or aluminium.



The horizontal joints can be finished with a black aluminium joint profile. This is particularly useful when the underlying insulation must be protected against the infiltration of rain. The part of the aluminium profile behind the panel may not be too thick to avoid tension. If this is the case, the wings of the profile must be wide enough for the fixing of the panel through the joint profile. The horizontal joint section is the same width as the panel so the vertical joint remains open. One can also make use of decorative horizontal joint sections. If necessary, the horizontal joints can be left open.





## 8 Accessories<sup>1</sup>

The following accessories can be obtained from EURO PANELS OVERSEAS .

Horizontal joint profile	Black coated aluminium	56 x 2500 mm
Perforated sealing profile	Blank aluminium	50 x 30 x 2500 mm
Perforated sealing profile	Blank aluminium	70 x 30 x 2500 mm
Perforated sealing profile	Blank aluminium	100 x 30 x 2500 mm
Outer corner profile	Black pvc	12 x 12 x 2500 mm
Outer corner profile	Anodised extruded aluminium	12 x 12 x 2500 mm
Outer corner profile	Black coated aluminium	15 x 15 x 2500 mm
Open outer corner profile	Black coated aluminium	17 x 17 x 2500 mm
Connection profile window	Black coated aluminium	8 x 15 x 45 x 3000 mm
Single sided adhesive foam strip	PVC	6 x 9 mm x 15 m
Rivet Textura	Coated aluminium	4.0 x 18 K15 mm
Rivet Natura	Coated aluminium	4.0 x 18 K15 mm
Rivet Pictura	Coated aluminium	4.0 x 18 K15 mm
Rivet Natura Pro	Coated aluminium	4.0 x 18 K15 mm
Rivet setting tool	Metal	Ø 7 – 12 mm
Centralising drill 9,5 mm	-	Ø 4.1 mm

## 9 Other construction details

*Movements in the metal sections (corner section, bottom section, etc.) must always be detached from the panels. If necessary, the aluminium sections must be pre-drilled, and are fixed according to the principle of fixed and free fastening points. Joints between the metal sections must coincide with joints between the panels.*

*Finishing sections in metals that can leach (such as zinc, copper, lead, etc.) are advised against because of possible soiling.*

*Metal finishing profiles (aluminium, zinc, steel ...) must be sufficiently thick protected or treated (coated, treatment, galvanized, ...) to avoid discoloration / deterioration due to bleeding alkaline rainwater from the fibre-cement sheets.*

The following detail drawings are available at the EURO PANELS OVERSEAS website:

**OUTER CORNER:** Corner finishing can be provided by means of a joint sealing strip or a finishing profile of aluminium or PVC.

**INNER CORNER:** A joint sealing strip or finishing profile in aluminium or PVC can also be used here.

**TOP FINISHING:** Sufficient ventilation openings must be provided.

**BOTTOM FINISHING:** The open cavity between the back of the panel and the insulation or the back construction must be sealed at the bottom by a perforated aluminium sealing profile. This profile prevents the entry of birds and vermin. The raised leg of the sealing profile is clamped between the aluminium supporting profile and the panel and is not thicker than 0,8 mm.

**WINDOW FINISHING WITH RETURN:** Sufficient ventilation openings must be provided at the top and bottom of the window.

**WINDOW FINISHING WITHOUT RETURN:** Sufficient ventilation openings must be provided at the top and bottom of the window.

**EXPANSION JOINT:** The expansion joints in the building must also be included in the cladding. They are obtained by placing an aluminium profile on both sides of the joint.

<sup>1</sup> Use Euro Panels Overseas accessories; not using standard Euro Panels Overseas accessories may lead to cancellation of the Euro Panels Overseas guarantee.

## 10 Health and safety aspects

During the mechanical machining of panels, dust can be released which can irritate the airways and eyes. Apart from this, the inhalation of fine (respirable size) quartz containing dust, particularly when in high concentrations or over prolonged periods of time can lead to lung disease and an increased risk of lung cancer. Depending on the working conditions, adequate machinery with dust extraction and/or ventilation should be foreseen. For more ample information, please check the Safety Data Sheet based on 1907/2006/EC, article 31.

## 11 More information

Information about the various cladding panels can be found in the EURO PANELS OVERSEAS product information sheets. They can be found on the website or can be obtained on demand by phone. Information about external suppliers can also be downloaded from the website.

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