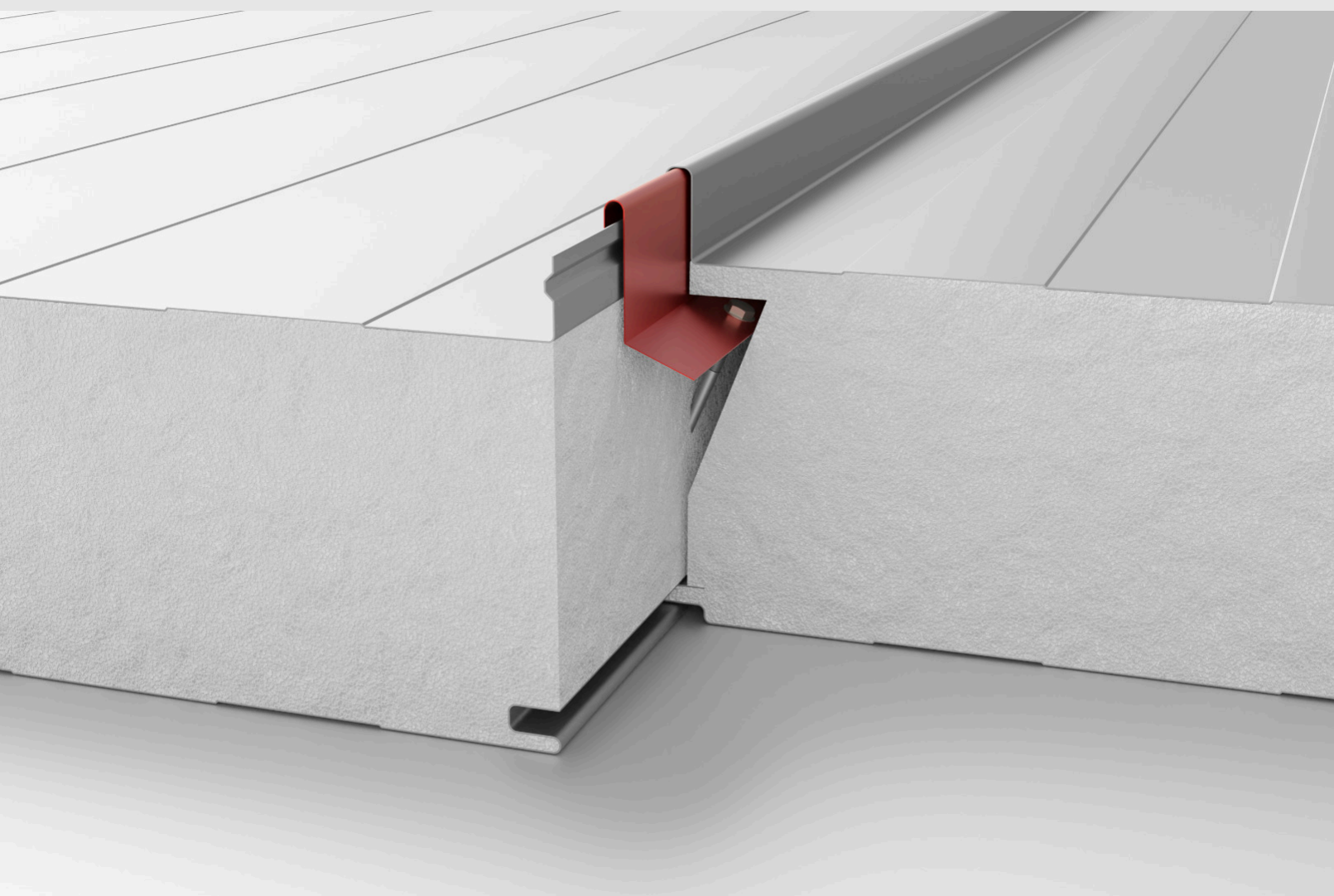


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PRODUCER OF SANDWICH PANELS



ASSEMBLY MANUALS FOR SANDWICH PANELS

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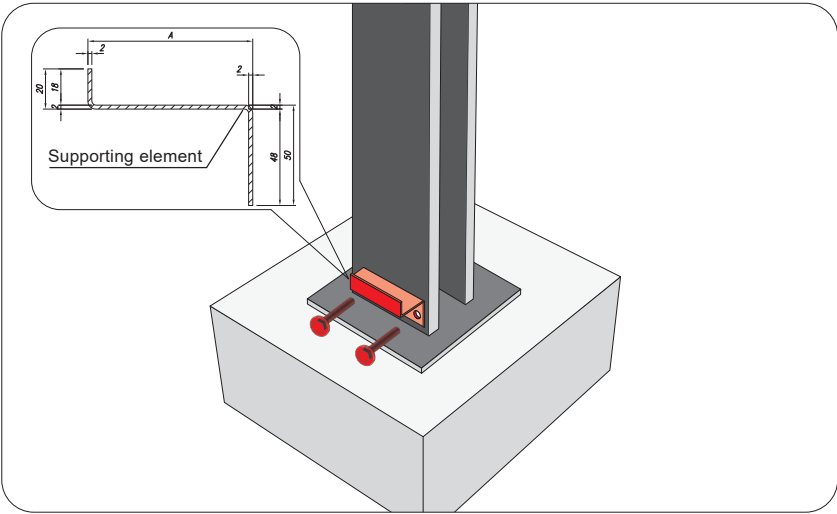
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1. PREPARATION FOR PANELS ASSEMBLING

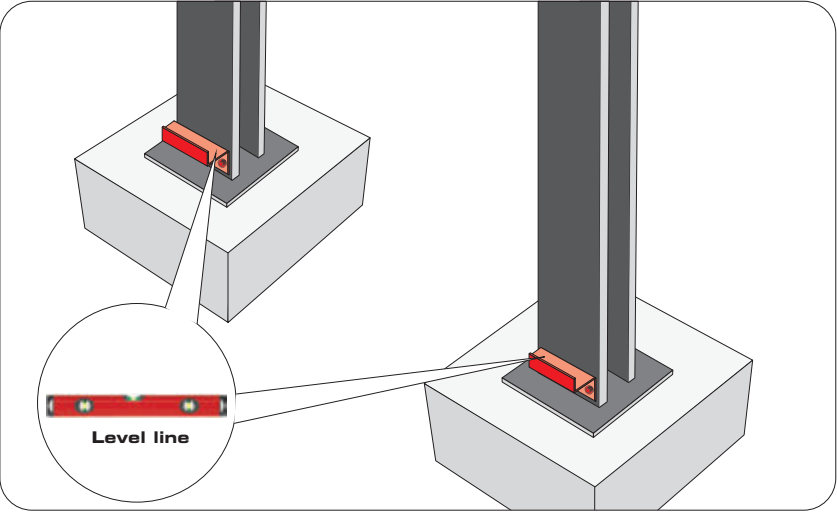
1.1. Preparation of assembling materials



In some cases there is a possibility to install panels in a horizontal, one span layout. It enables to secure PolTherma DS panels only to columns which are in base foundation. It is a great solution for buildings which do not require continuous footing and thus you can reduce costs of materials and labor at the installation stage.

Zet profiles are necessary for startup, securing first panels on a bottom side, enabling fastening them into columns at the upper side. The shape and dimensions of **Zet profiles** are shown on 1.1 drawing. Zet profiles should be mentioned (included) by a design plan and could be made either on construction site or delivered by EuroPanels.

1.2. Securing Zet profiles to columns



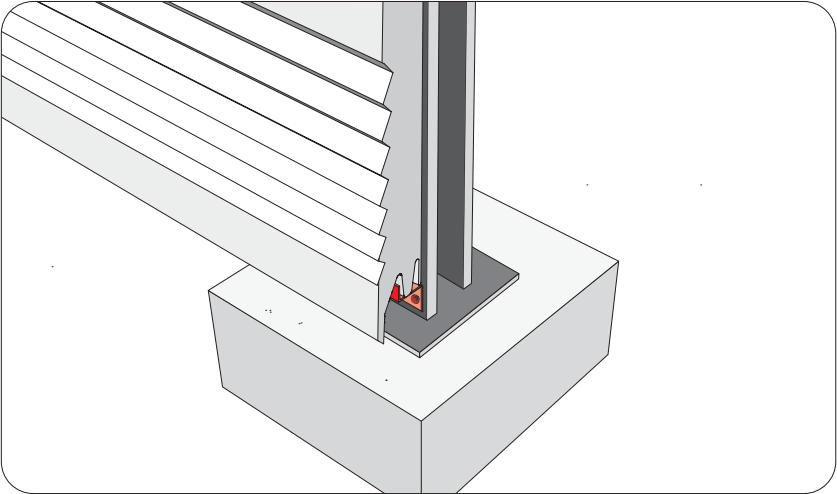
Start-up strip for DS panels

Panel thickness D [mm]	A [mm]	Sheet thickness [mm]	Expansion [mm]	Lengths [mm]	Flashing weight [kg]
50	32	2.0	102	300	0.48
60	42	2.0	112	300	0.53
80	62	2.0	132	300	0.62
100	82	2.0	152	300	0.72
120	102	2.0	172	300	0.81
160	142	2.0	212	300	1.00

Supporting zet profiles are always made of a flat bar with a thickness of 2 mm. They are secured to columns and create a basic bottom line for panels. Therefore it is crucial to install them in a **proper and precise way** (levelling).

Zet profiles are secure either by fasteners or by welding.

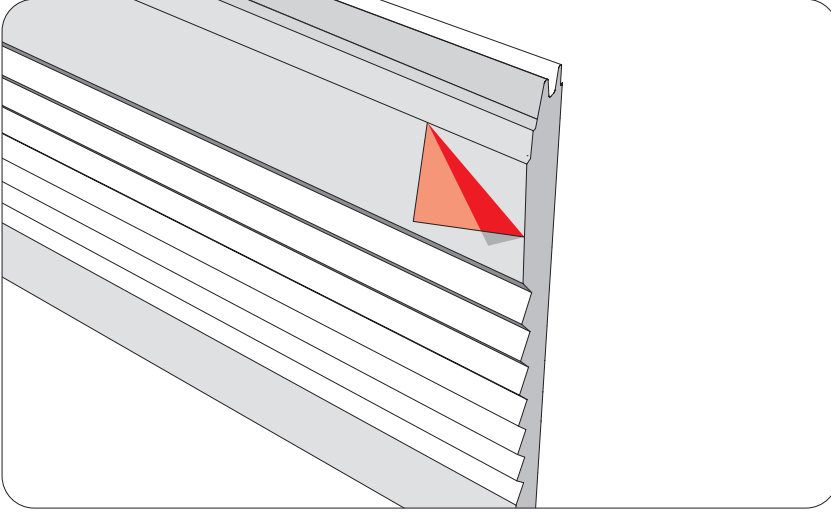
1.3. Securing panels to columns



When Zet profiles are installed you can start securing panels. Outer tongue of Zet profile should be located into outer groove of the panel. When panel stops because of tongue-groove joint it can be secured at the top part to the column with load distributor and two fasteners (one set for one securing location)

2. ASSEMBLING PANELS TO STEEL STRUCTURE

2.1. Removing of protection foil



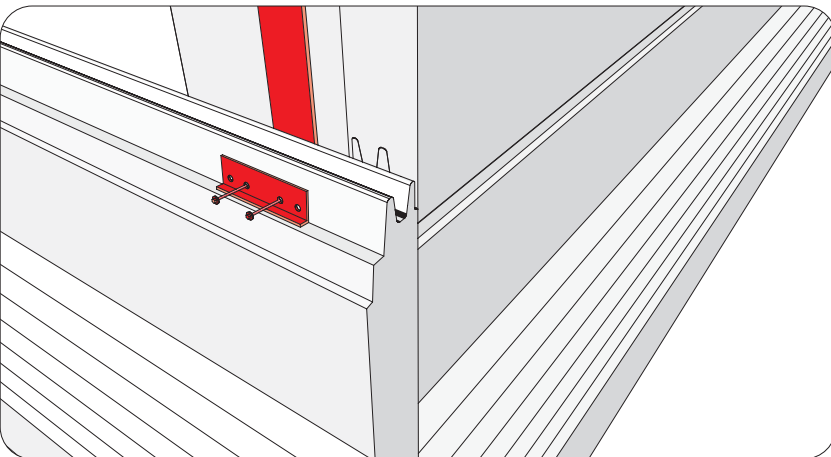
Protection foil should be removed not later than one month after production, however when the temperature at the construction site is high (e.g. in summer time, outdoor storage) it should be removed immediately after delivery (before assembling). Protection foil is necessary only during transportation of panels. In order to eliminate negative consequences of high temperature, bundle of panels should be covered by white canvas.

If protection foil is not removed, sun rays (UV) could finally vulcanize it and make the facing unsightly. If this happens, it could be extremely difficult to remove the remainders. Panel producer is not responsible for removing the protection foil and the consequences of the failure are not covered by a guarantee.



TIP: Protection foil covers the total area of the facing (also under fastening points). In some case it is applied also on the inner facing.

2.2. Securing of panels – load distributor

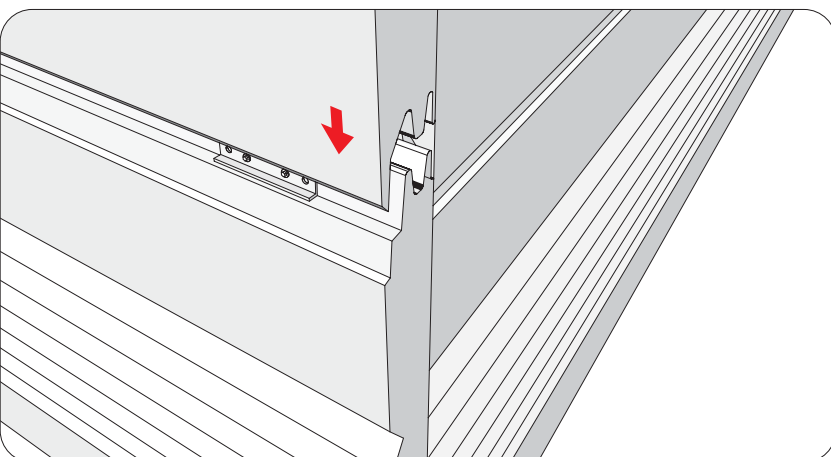


To secure PolTherma DS panels it is necessary to use load distributor. It is required for all DS panel types (outer facing profiling) and thicknesses. The load distributor is an angle bar with some holes. The distance between the holes lets to secure the panel to different types of sections. Each distributor should be secured with two fasteners.

Distributor together with the fasteners should be placed in outer groove of the panel. Thanks to shape of nose of the adjacent panel, heads of the fasteners are not visible on a facade.

Before securing panel be sure that EuroPanels' acoustic tape was applied on the structure.

2.3. Securing the next panel



It is important to secure the first panel in a proper and accurate way because it makes the basic line for the next panels.

When the first panel is secured to the column the next one could be installed (tongue-groove connection).

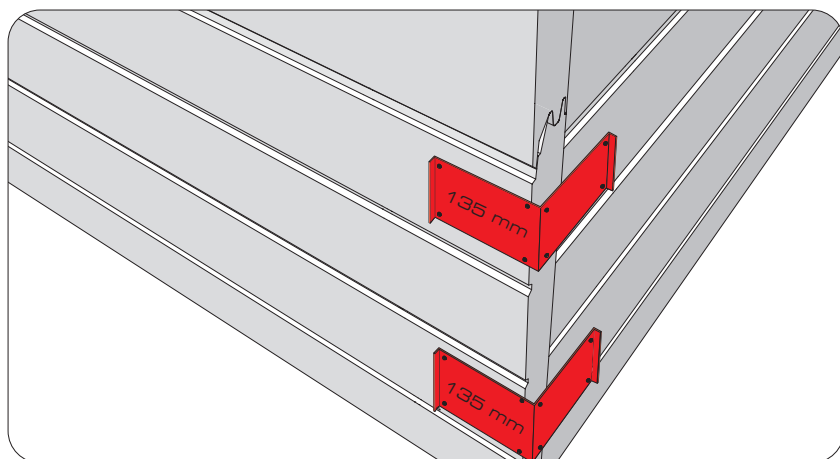
Be sure that the next panel is secured in a correct way and its load is taken completely by the former one. If so, you can secure the next panel.

It is really easy to assembly sandwich panels by EuroPanels.

3. NEW GENERATION CORNER FLASHING 046 ASSEMBLY

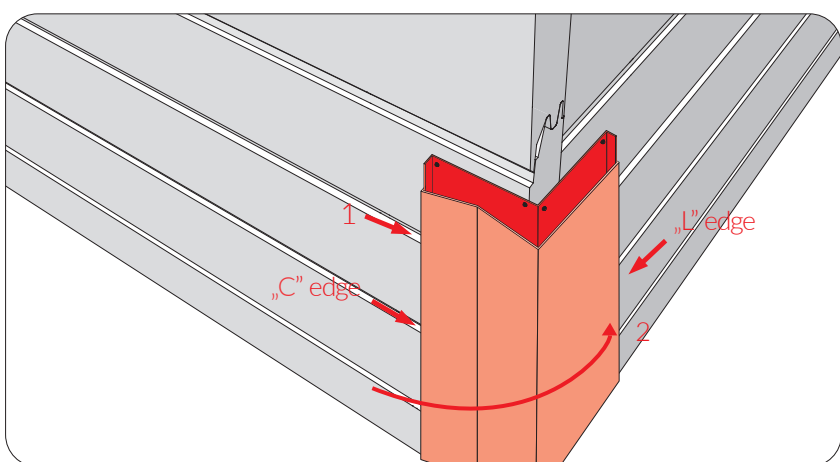
The new generation corner Europanels flashing with concealed fixings have been developed primarily for aesthetic finishing corners of buildings made of sandwich panels mounted horizontally.

3.1. Auxiliary brackets (base) 047



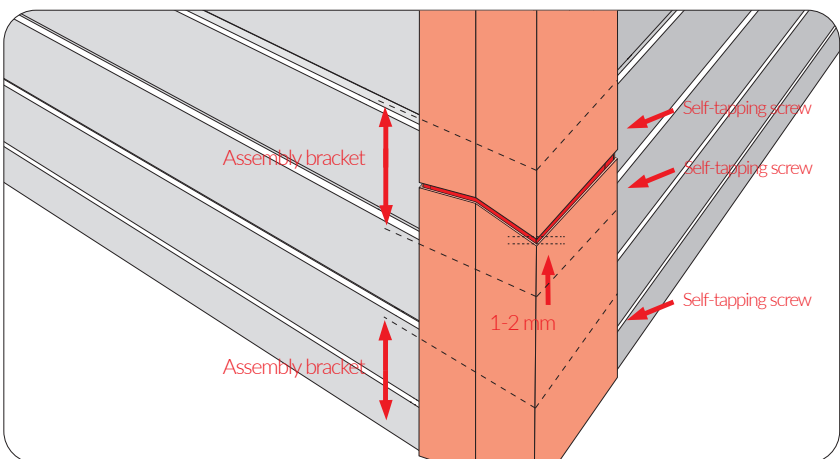
After attaching sandwich panels to the structure, corner flashing installation starts from arrangement, leveling and screwing auxiliary brackets 047 to the panel cladding. They have one fixed dimension (135mm) and the second is variable, depending on the thickness of the wall panels used at the facility. If the panels come to the front in the corner (are not cut at an angle of 45), the fixed-dimension side should be at the panel without the joint, and the second (variable) should go beyond the panels' joint. Per 1 piece of outer finishing 046 with the length of 2.5 m, 4 pieces of brackets 047 should be used. Distance between the brackets: one on each end of the finishing, and the other two at a distance of 1 m from each other. In the case of end brackets, they are to be visible after embedding flashings. Only the starting flashing should face the bracket at the bottom (as the end on from the top). Auxiliary brackets are mounted to the cladding with self-tapping screws or farmers. Per one bracket, four jigs placed in the corners are used, at a distance of about 25mm from the edge of the bracket.

3.2. Corner angle assembly 046



After such preparation of mounting brackets, you can install the outer 046. One flashing edge (profiled) is bent into the shape of the letter "C", the second (variable, non-profiled) in the shape of the letter "L". First, place the "C" edge into the gap between the cladding and the sandwich panel auxiliary bracket (step 1), then adjust the flashing in such a way as to keep 1mm space between the edge of the flashing and the panel flashings at the other side (step 2). During flashing assembly, pay attention to the sharp "L" edge. Be careful to avoid any body cuts and scratches on the sandwich panel cladding.

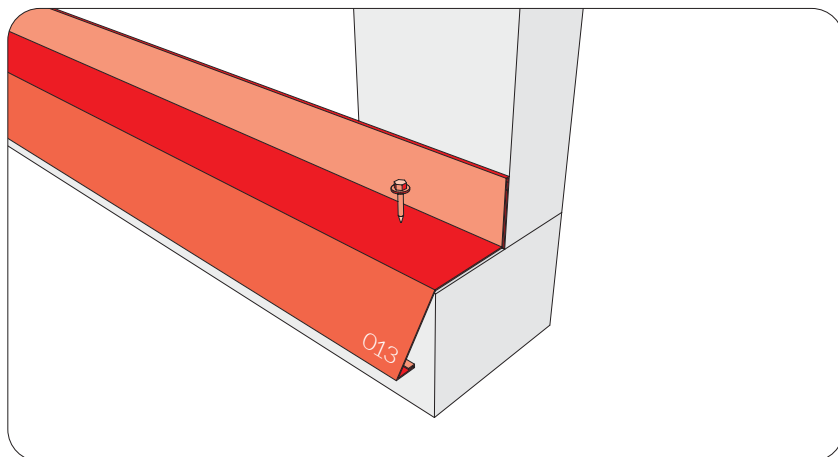
3.3. Final assembly



Flashings of this type are not intended for overlapping connection alongside the panel. For this reason, they are symmetric, and at the place of the connection, a gap with the width of about 2mm must be maintained. Flashing 046 is mounted on the "L" side with mini self-tapping screws or sealed steel rivets to the profiled element of bracket 047 at four locations, i.e. one self-tapping screw on each auxiliary bracket of the given flashing. During installation, pay attention not to scratch the cladding of the sandwich panel during drilling / screwing.

1. INSTALATION OF PANELS ON CONTINUOUS FOUNDATION

1.1. Securing the starting flashing - O13

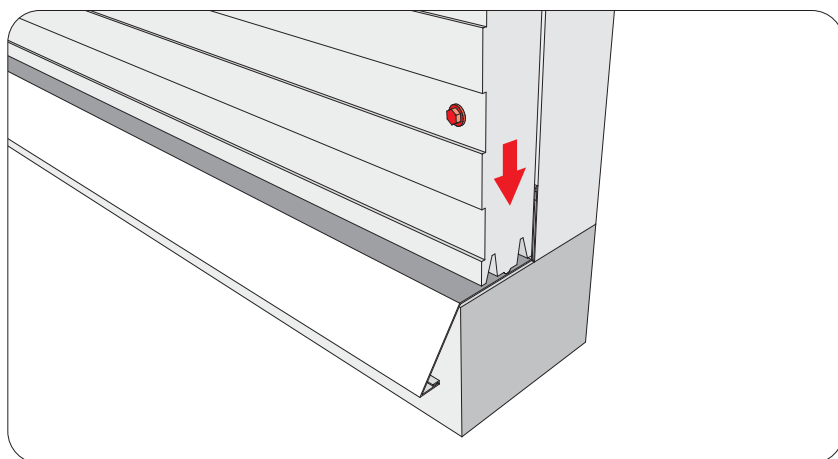


In traditional solutions there is a continuous foundation between the columns which is used as a base for panels securing both horizontally and vertically.

Check whether a continuous foundation is flat. If it is not, compensate the surface by a professional free proof mass.

If the continuous foundation surface is flat put a strip O13 and then secure it with EuroPanels fasteners.

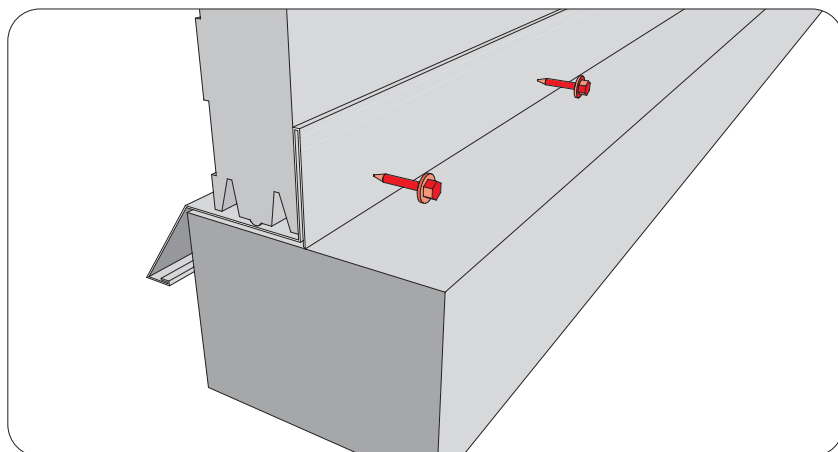
1.2. Securing the first panel



If the strip O13 is properly secured to the continuous foundation the first / lowest panel could be placed on it. It is important to secure it in a proper and accurate way (leveling), because the next panels will follow the former one and the faults and inaccuracies will increase.

Panel should be secured to the structure with the fasteners according to the panel thickness and the type and thickness of the structure. They should be located about 40-50 mm from panels edge.

1.3. Securing the strip O13



The inner flashing O13 should be secured with the EuroPanels fasteners. The distance between the fasteners should be about 300 mm.

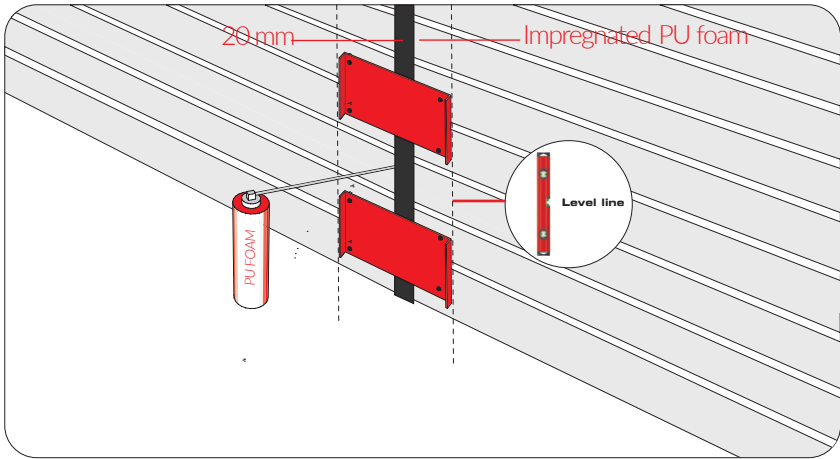


TIP: Use the dynamometer equipment for the best and safe securing of fasteners.

2. NEW GENERATION MASKING FLASHING O44 ASSEMBLY

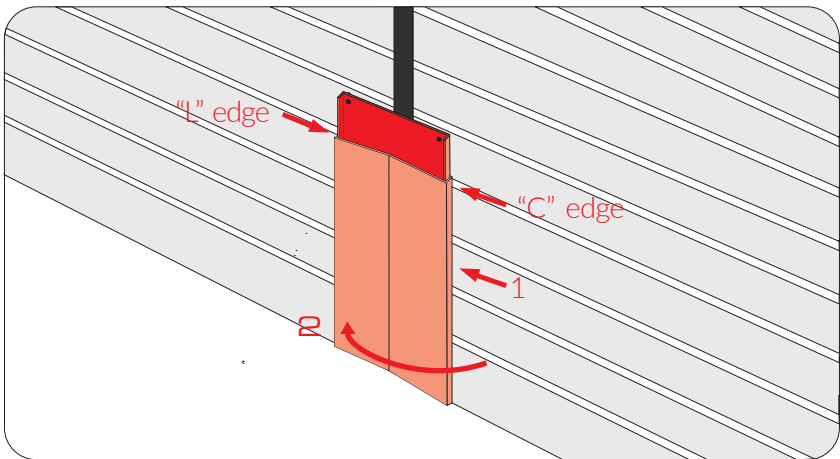
The new generation of Europanel's flashing with concealed fixing is designed for modern and aesthetic closing the wall panel joints alongside, they are mounted to the load bearing columns in horizontal single-span system. The main advantage are no visible fixing elements, which perfectly harmonizes, especially, with the PolTherma DS series of decorative wall panels.

2.1. Auxiliary brackets (base) O45



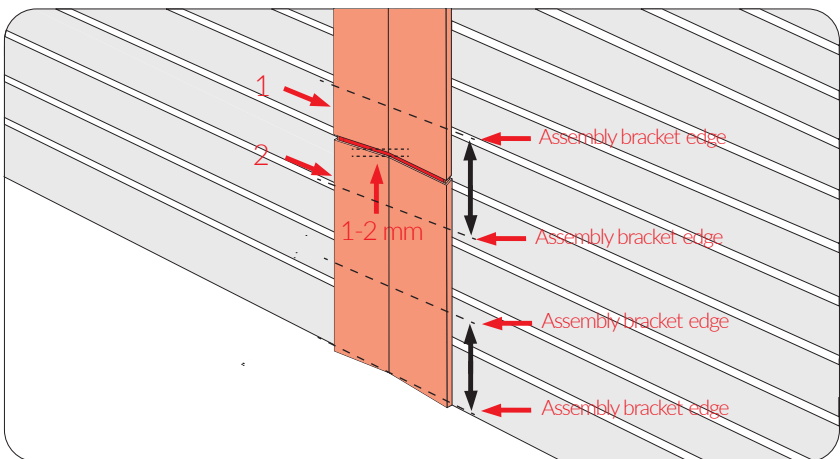
After fixing the panels to the columns (20mm expansion gap is required to be preserved and filled with low pressure assembly foam, onto which a strip of adhesive impregnated PU foam is glued), auxiliary brackets should be arranged, leveled and screwed to the panel cladding (base) O45. Per 1 piece of finishing with the length of 2.5 m, 4 pieces of brackets should be used. Distance between the brackets: one on each end of the finishing, and the others at a distance of 1 m from each other. In the case of end brackets, they are to be visible after embedding flashings. Only the starting flashing at the bottom and the end flashing at the top can cover the brackets. Auxiliary brackets are mounted to the cladding with self-tappingscrews or farmers. Per one bracket, four jigs placed in the corners are used, at a distance of about 25mm from the edge of the bracket.

2.2. Masking flashing (strip) installation O44



After such preparation of mounting brackets, you can install the masking strip O44. One flashing edge is bent into the shape of the letter "C", the second in the shape of the letter "L". First, place the "C" edge into the gap between the sandwich panel cladding and the auxiliary bracket (step 1), then adjust the flashing in such a way as to keep 1mm space between the edge of the flashing and the panel cladding (step 2). During flashing assembly, pay attention to the sharp "L" edge. Be careful to avoid any body cuts and scratches on the sandwich panel cladding.

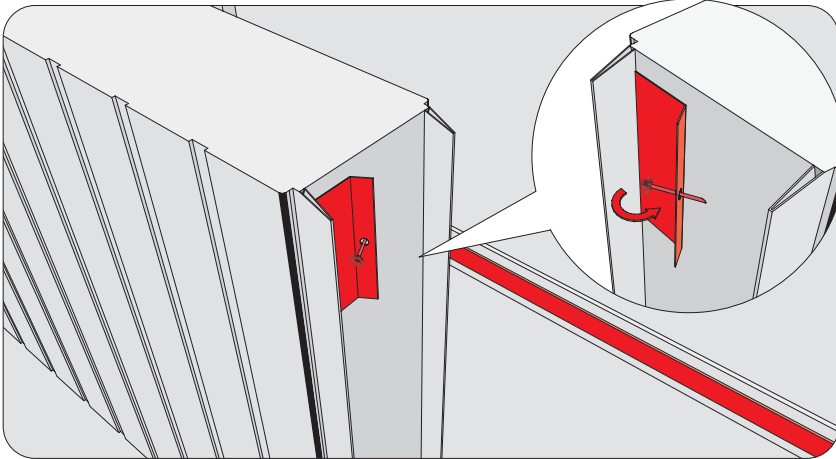
2.3. Final assembly



Flashings of this type are not intended for overlapping connection alongside the panel. For this reason, they are symmetric, and at the place of the connection, a gap with the width of about 2mm must be maintained. Flashing O44 is mounted on the "L" side with mini self-tapping screws or sealed steel rivets to the profiled element of bracket O45 at four locations, i.e. one self-tapping screw on each auxiliary bracket. During installation, pay attention not to scratch the cladding of the sandwich panel during drilling / screwing.

1. VERTICAL ASSEMBLY

1.1. Placing the EUROPANELS jumper



Using the EUROPANELS clamp allows to avoid any visible fastening elements on the facade of the building. The clamp is applied accordingly to supporting beams lining.

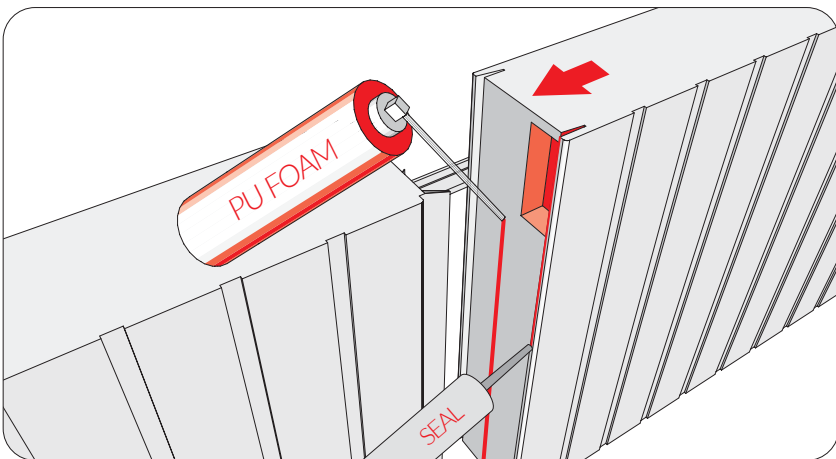
First, apply an acoustic tape onto beams' surface. Slide or fold over the EUROPANELS clamp on the male element of the joint until it reach core surface.

Now place a self-drilling screw into a hole of the clamp. Please be aware as the screw will be drilled into the beam at a certain angle (not straight-forward)

Do not use excessive force while fastening, otherwise you could break or damage panel's surface or joint.

The most important is leveling the first panel, as the next ones will follow.

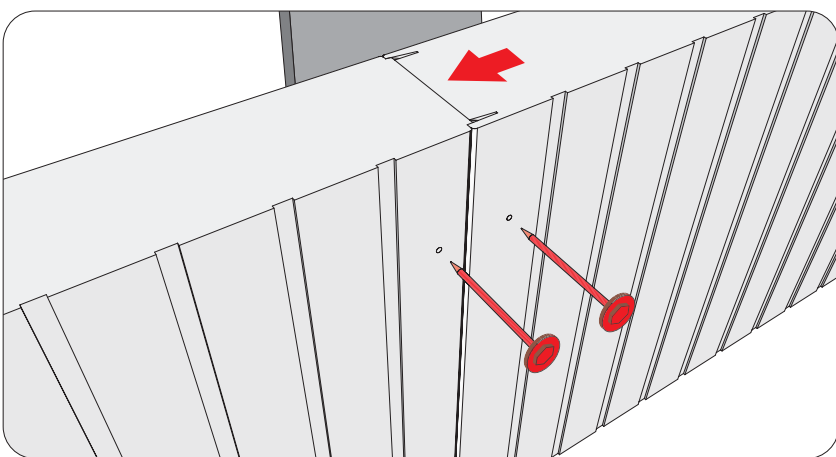
1.2. Joining the panels with the EUROPANELS jumper



As the first panel is secured properly, the next one shall be pushed tightly to close the joint. But before it is necessary to remove a part of EPS core from the upcoming panel in order to make some space for jumper to hide. To do this simply remove by a knife amount of EPS adequate to size of the joint. Wisest way is to do this all together for the whole panels is to measure beams span and knowing jumper size cut panels in bundle with about 2 cm tolerance. The same method is used for our roof EPS panels ThermaDeck PRO.

Close panels pushing them together in a way that ensures full tightness of locks without irregularities. Than secure the panel on the other side as shown in Figure 1.1. To improve the tightness of the joint, on the insulation core could be spread on a thin strip of polyurethane foam. Additionally a sealant could be applied into joint edges.

1.3. Other method of assembly – visible joint



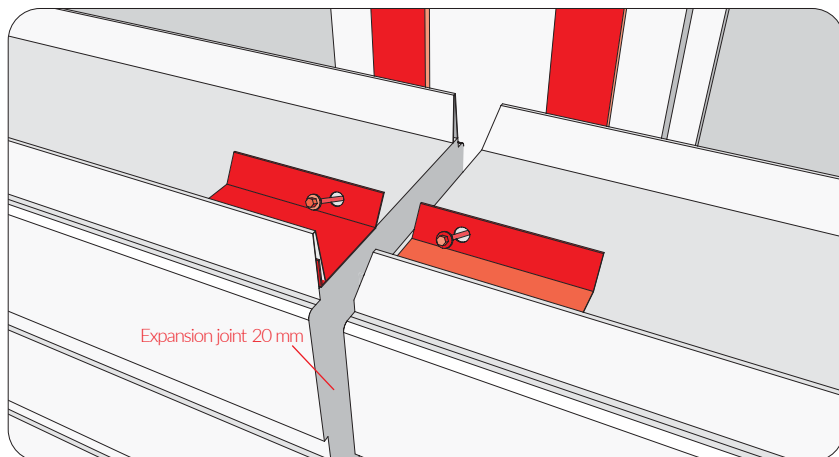
Traditional way of assembling panels is screwing them throughout to the supporting construction. In result heads of the fasteners remain visible on façade. To cover them we recommend to use a special coloured caps from our accessories range.



Hint: Screwing the boards try to avoid too strong tightening the screws, as this may result in visible deformation of steel skin (negative "bowl effect"). Tighten the screw until the first sign of rubber pad deflection.

2. HORIZONTAL ASSEMBLY

2.1. Fastening to main column

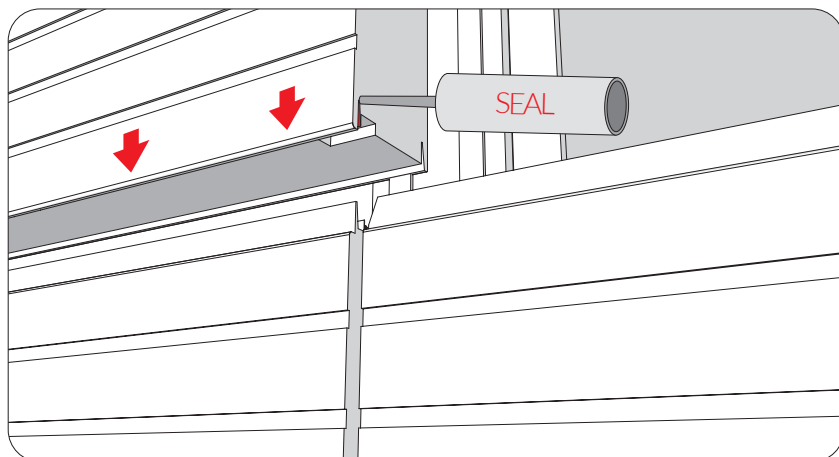


Another method of assembling the ThermoStyle PRO wall panels is horizontal position, preferably in one span layout.

Apply acoustic tape onto columns surface. Prepare panels, fasteners and the EURO PANELS jumpers. Place the first panel with male part of joint to the top. On external blade apply the EURO PANELS jumper. Sometimes it will be necessary to cut the jumper in order to fit it on place. Then fasten jumper to a column. The right distance between screw and edge of the panel is about 40-50mm.

Place the adjacent panel remembering to maintain a 20 mm distance as an expansion joint.

2.2. Assembly of another row of panels

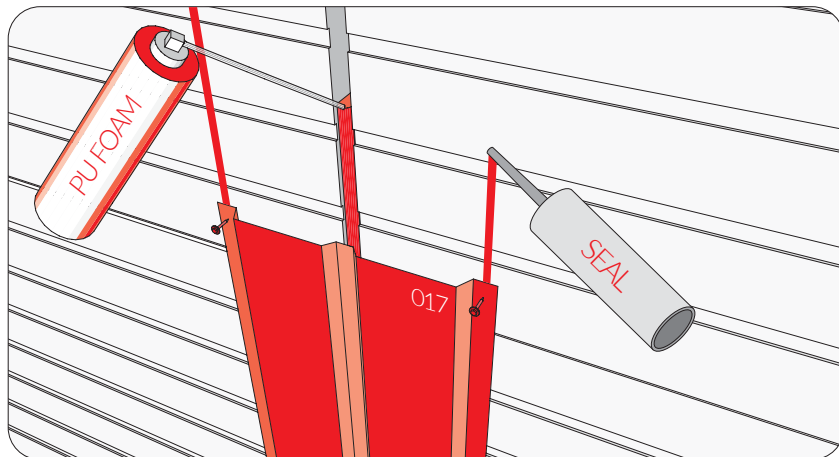


Similar to a vertical layout with the EURO PANELS jumper, (see picture. 1.2), using a knife remove a part of EPS core from the coming panel. Slide the nest panel downwards. Make sure, that incoming panel is fully lying onto the bottom one and that all joint is completely closed tightly.

Secure panel on the top repeating steps shown above.

In order to improve tightness of the joint, before panels are closed you can apply sealant into male-female joint elements.

2.3. Assembly of closing strip 017



Please do remember to remove protection foil from panels surface. All expansion joints shall be filled by PU foam.

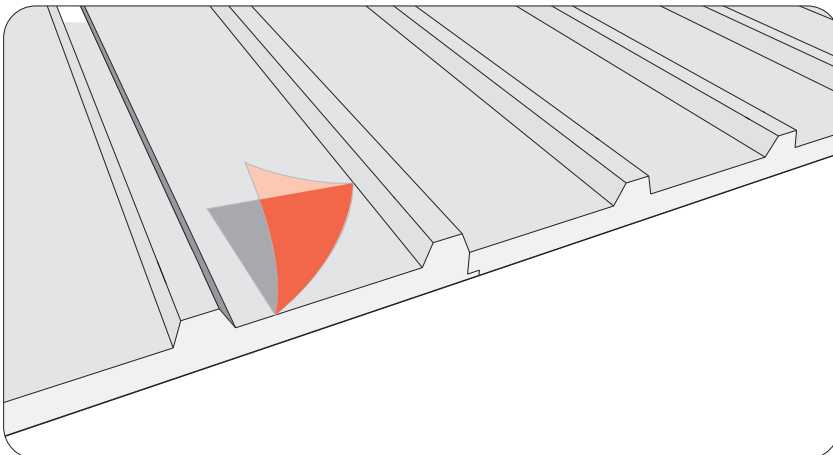
For closing of the expansion joint you can use per example stripe 017, which should be screwed to panels skin by special fastener. Edges of the flashing ought to be protected by sealant.

Alternatively, you can use an aluminium T profile for closing the expansion joint's gap.

Finally, it is also possible to assembly the horizontally laid panels straight throughout the whole panel to the column (without the EURO PANELS jumper).

1. ASSEMBLY THE ROOF PANELS TO FRAME

1.1. Removing of protection film



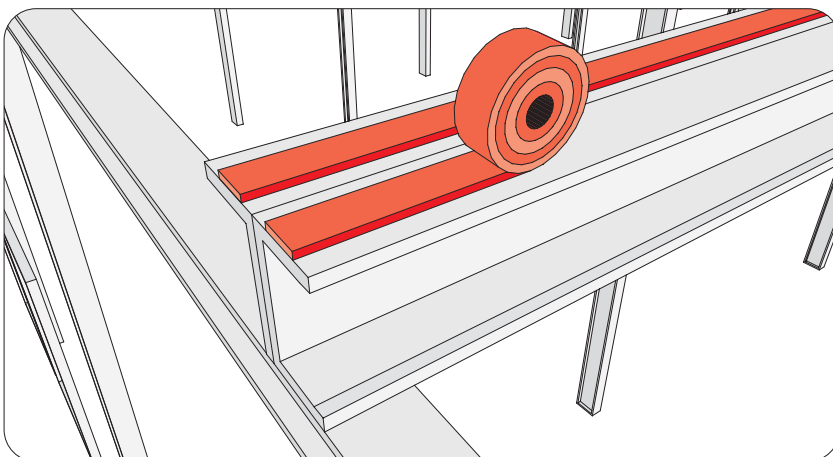
Protective film is applied on panels skins in order to protect panels against mechanical scratches during transportation only. **This is not possible for the foil to remain on panels skins for products lifetime.** If the film remains, due to sunlight and UV rays it will be vulcanized. As a result, the film will break into many small pieces and becomes irremovable. This will lead to losing warranty rights.

Because of this it is strongly recommended to remove film ASAP (not later than after 1 month from panels' manufacturing date).



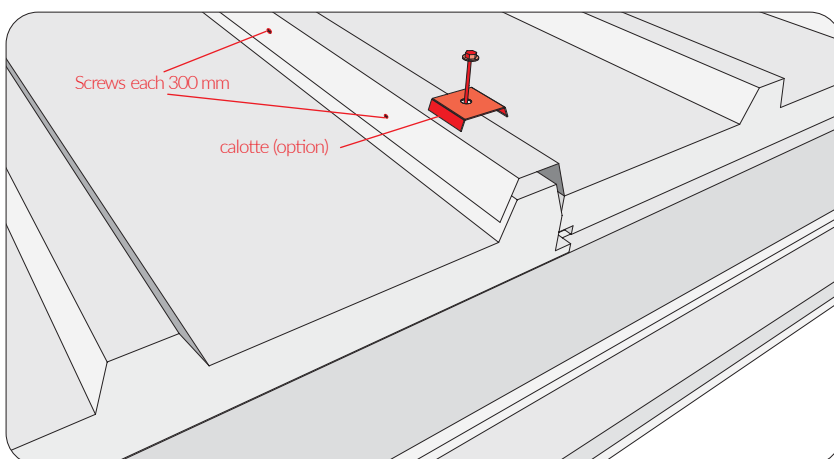
TIP: Beware of metal filings which are always present during cutting or drilling in metal. It is essential to remove them carefully as they are reasons of corrosive points! While removal please do not rub filings onto panels surface. It is wise to flash the roof with running water.

1.2. Installation of acoustic tape



Attach the acoustic tape onto the surface that has contact with the inner skin of the roof panels. Its special features allow you to align the panel and reduce the audible effects of the panels' work on the construction. In addition, this tape prevents panel from scratching while sliding panels during installation and transmission of any corrosion from the supporting frame's structure on the roof panels.

1.3. Placing and fastening the panels



Using the right equipment (vacuum pressure devices are recommended), move the panel from the storage place to the roof. Put the first panel and attach through the ribs to the construction by self-drilling screw from EuroPanels offer. Alignment of the first panel is critical as the others will only follow the joints. Before drilling, remove the protective film from the mounting points. Then download the adjacent panel, place it and secure. The steel fold shoulder of upcoming panel shall evenly adhere to the ribs surface of already screwed one on its entire length. Mounting points correspond with purlins and these should be specified in the building design.

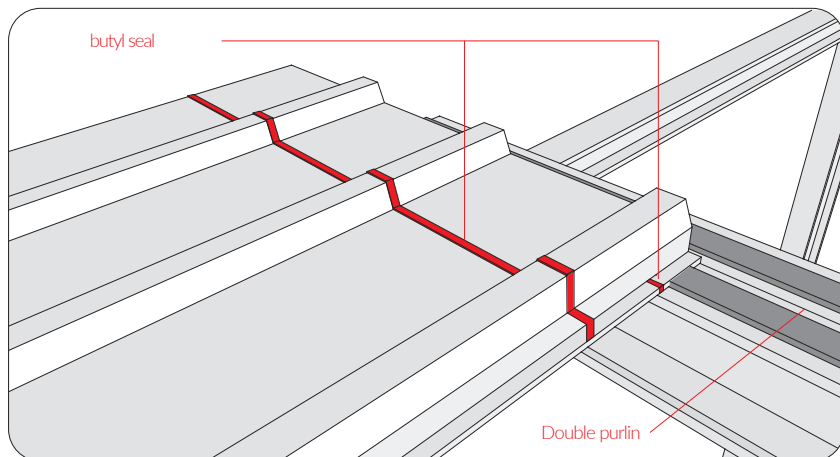
In addition, the fold shoulder is attached laterally by screws in each 300 mm distances. For installation of PolDeck TD roof panels it is recommended to use calottes, which act as shims improving down force in fastening panels to the construction.



TIP: Screws should be screwed when the roof is the most heated by sunlight (if possible).

2. OVERLAPPING

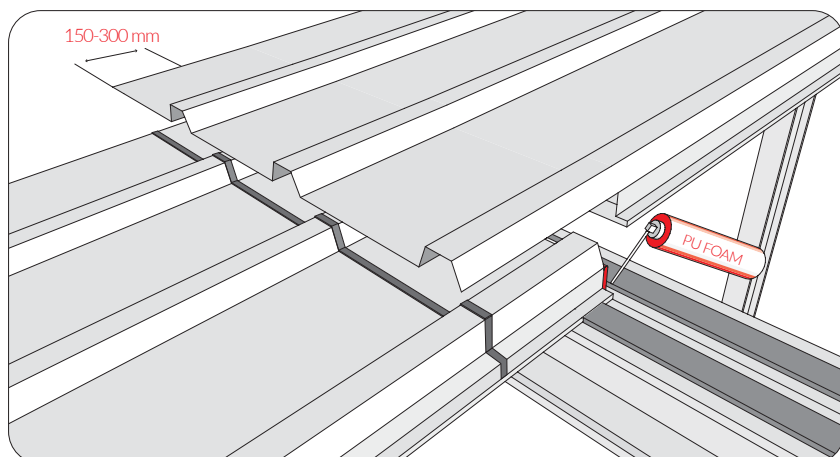
2.1. Alignment of the first panel



If the roof slope has a considerable length, due to strong heating of the panels surface it is recommended to avoid individual panels to have over a dozen meters length. Instead, it is better to combine several shorter sections joined on the length with an expansion joint. This is the so-called overlapping.

For this assembly, in an overlapping point a double purlin solution is necessary. Onto such a construction, place and align the first panel (lower, the one with a gutter). Then on the entire width of the panel's external skin apply butyl seal (approximately 50 mm from the overlapping edge and onto internal joint).

2.2. Preparation for overlapping

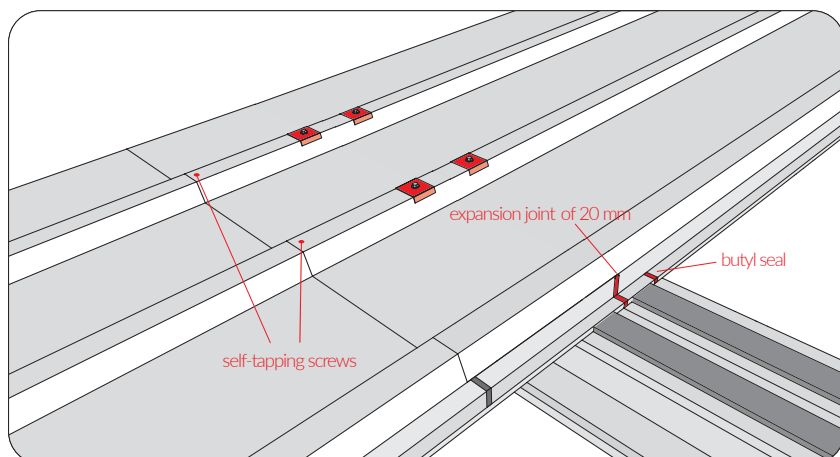


Incoming panel (upper, to the ridge side) are provided with undercut. Undercutting involves cutting the inner skin and a polyurethane core. Prior to installation, remove the undercut portion to remain only with upper steel. Undercut length is 150-300 mm, depending on the roof's pitch:

- 150 mm for pitch over 20%
- 200 mm for pitch around 16-20%
- 250 mm for pitch around 11-15%
- 300 mm for pitch around 7-10%

Before mounting the incoming panel, please apply a small amount of low-pressure PU mounting foam into full width of the inner edge of the lower panel.

2.3. Fastening



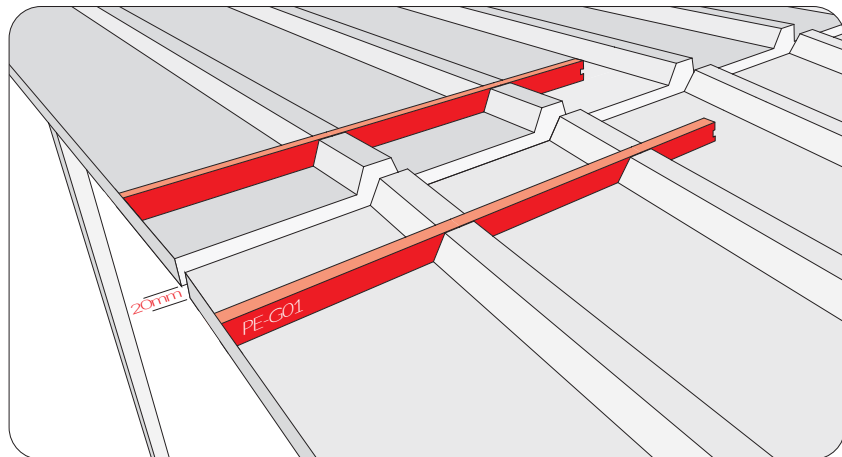
The next step is to close panels together with a 20 mm of expansion joint (space filled with PU mounting foam). This gap is essential, since it compensates the construction work of the panels (thermal, physical loads etc.)

Apply a butyl seal in overlap point and at the panel's edge (close to purlins).

Secure panels to purlins by self-drilling screws from EuroPanels offer. Additionally, in each rib use self-tapping screws applied to the point of butyl sealant discharge (as shown in Figure 2.1). Remember that at this stage of assembling you must not place any screw onto the last rib in order to make space for adjacent one.

3. ROOF RIDGE

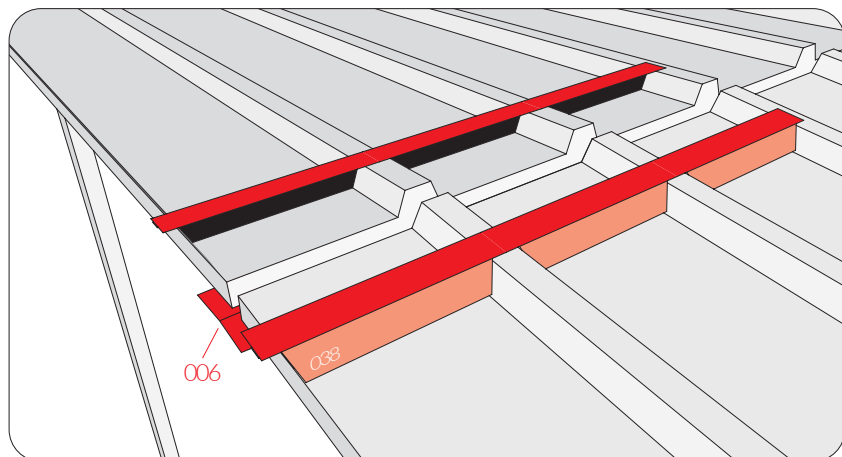
3.1. The PE-G01 Ridge Gasket



In a gable type roof, internal skins of the panels shall be placed with at least 20 mm distance between inner edges. It is necessary to keep the space as panels will work on a construction during lifespan. The expansion joint cave ought to be filled in with PU mounting foam.

As panels are placed and secured into supporting construction you can place the PE-G01 gaskets. One piece of the gasket comes into individual panel. Repeat the step for the counterpart panel. Positioning of the gaskets: the same spot as for the edge of final ridge flashing.

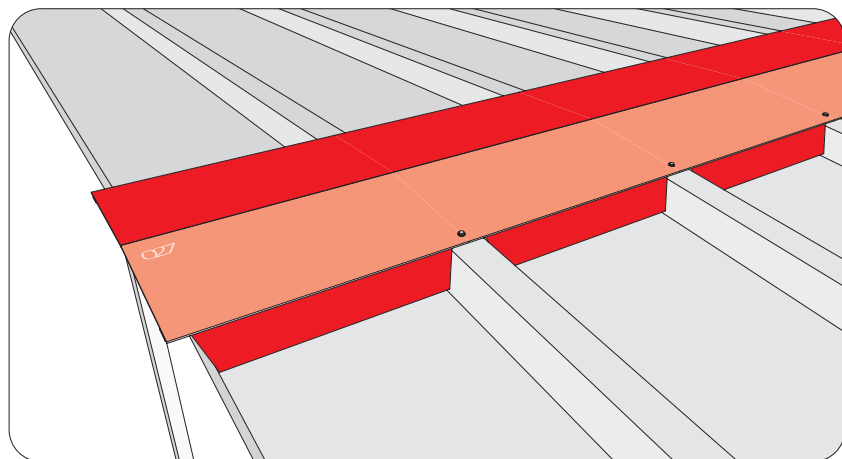
3.2. Ridge strip



Into the PE-G01 gasket place ridge strip 038. One strip is to be placed into one panel. Each ridge strip covers and evens ribs line. Repeat this step for counterpart panel.

To cover panels on inner side use flashing 006, which shall be screwed into panels internal skins by self-tapping fasteners from EuroPanels range.

3.3. Ridge flashing 027

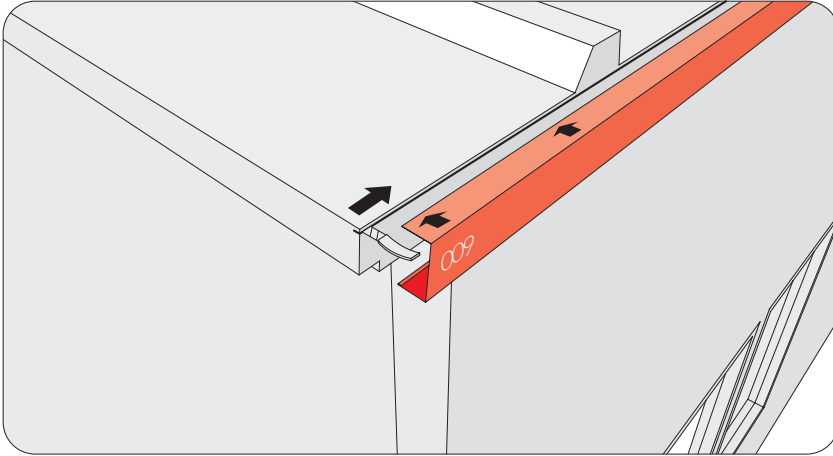


Align the roof ridge flashing to panel's ribs and attach using screws from the EuroPanels' range. This may be the outer ridge 027 (flat), or 005 (elevated).

It is recommended to prepare the number of gasket + ridge sets that corresponds to the length of the outer ridge - there are usually three such sets matching to flashing with length of 2500 mm.

4. STANDARD GUTTER AND GABLE END

4.1. C-profile 009

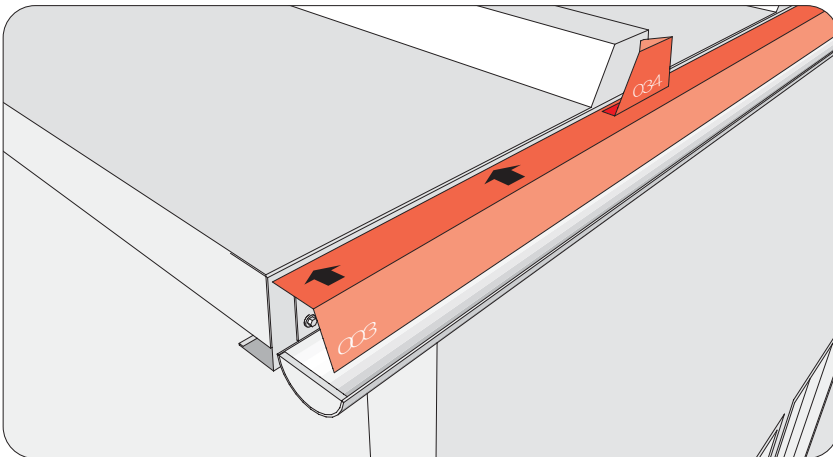


In standard method of finishing gutter and gable end there are ready to use profiles that shall be placed in proper order.

Let's get started with flashing 009 (C-profile) and 003 (eaves). Before you use them make a technological pre-cut just under the outer steel facing and a core using a knife. Depth of the cut shall be ca. 40 mm. Repeat edge cutting on entire width of each panel. To make gutter hooks secured strongly, it is advised to insert a steel stripes behind the 009 flashing's front. The stripes shall be made out of a steel of 1 mm thickness.

Now you can slip in the 009 into prepared slot. The flashing is dedicated to a panel thickness and has upper edge sharp, lower folded. Front shall lean against panel's core. Fasten the flashing on the bottom each 300 mm by short screws.

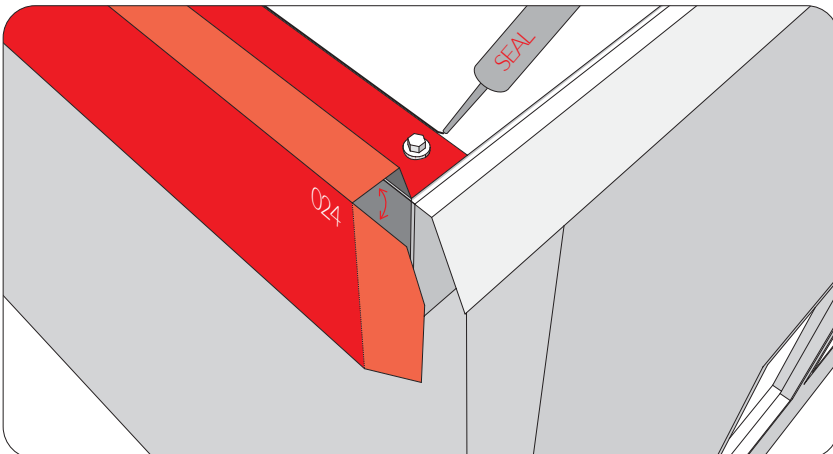
4.2. Eaves 003 and a cap 034



Next step is to place an eave 003. Between outer facing of panel and C profile 009 slip in the 003 eaves. Finally, drill and rivet the finished assembly (2 rivets between panel's ribs). Such a base is now prepared for installation of gutter's hooks.

Last stage of assembling TD panels is covering open ribs in order to prevent core against UV rays. Use element (a cap) 034, which shall be slipped into core and additionally riveted from the top.

4.3. Gable flashing 024

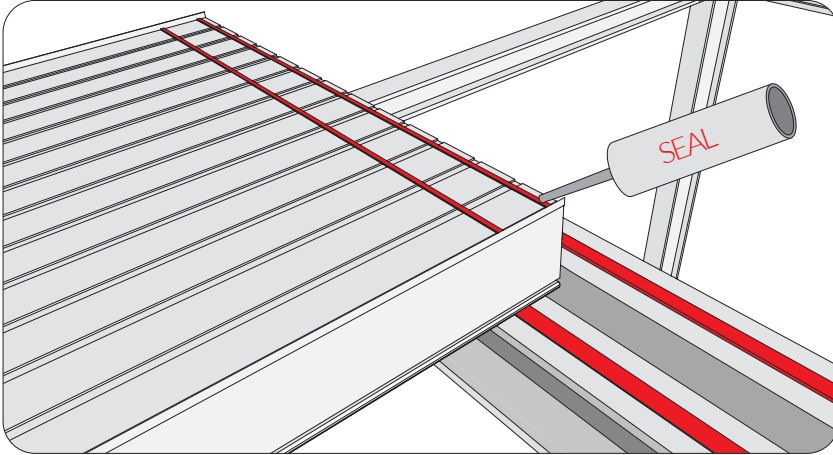


If the gable finishing (flashing 024) is to be placed on the initial panel (with steel shoulder unfilled), at first cut panel's shoulder alongside the profiled groove (in a half width of the shoulder). Start assembly from the gutter side to the ridge.

Make sure that the gable finishing comes to a rib filled with core. Remaining panels' surface should be cut off on width.

1. JOINING PANELS ON LENGTH

1.1. Preparation of the first panel

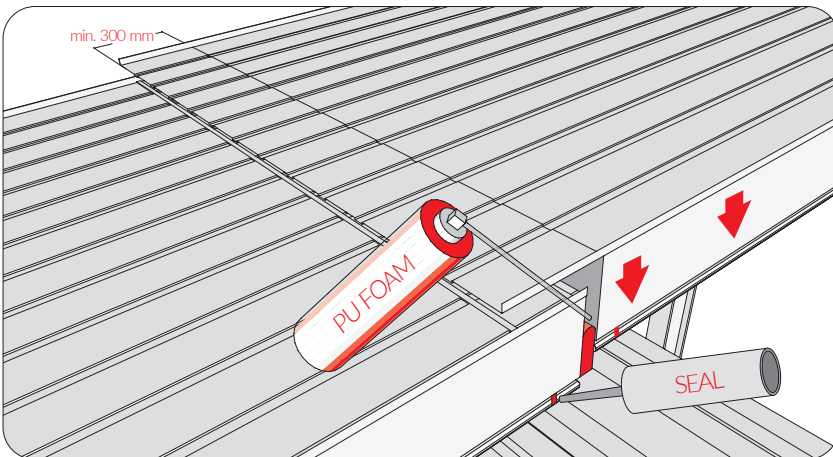


In case of a roof span longer than 7 m, due to technical reasons it is recommended to assemble panels divided into shorter lengths and joining them with expansion joint on double purlin.

It is related with thermal expandability of sandwich panels exposed onto direct sunlight. This is another reason why roof panels shall be light, preferably within first shiny colours group (like RAL9010).

Apply acoustic tape onto purlins. Place first panel - the one from the gutter's side and with standing edge to the assembly direction. Apply butyl sealant on joining area.

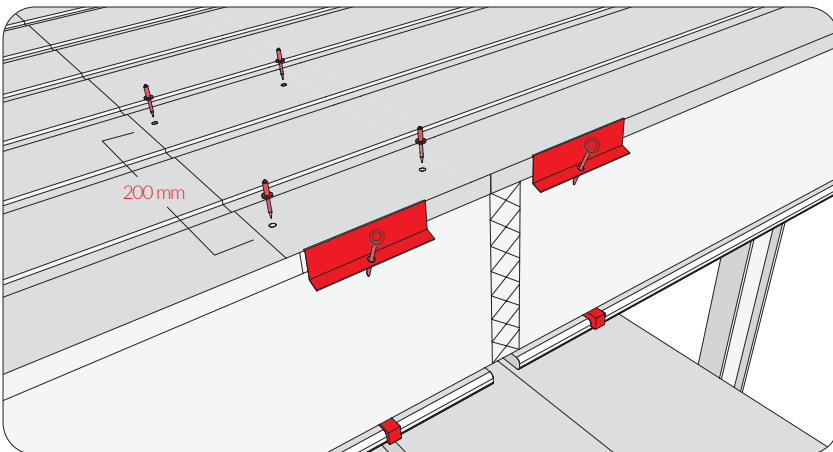
1.2. Overlapping



Overlapped panels have an overlapping undercut. It means, that the internal facing is pre-cut and the facing plus core shall be removed before assembly (only the upper steel remains). Length of the overlapping shoulder shall be ca. 300 mm.

Place the upcoming panel with 20 mm of expansion joint. Expansion joint shall be filled with PU assembly foam. Side joint shall be sealed with a roofing sealant.

1.3. Securing



Now secure panels to the supporting construction. First join external facing by riveting them to each other. Do it on the lines of the butyl sealant. Interval of riveting: each 200 mm.

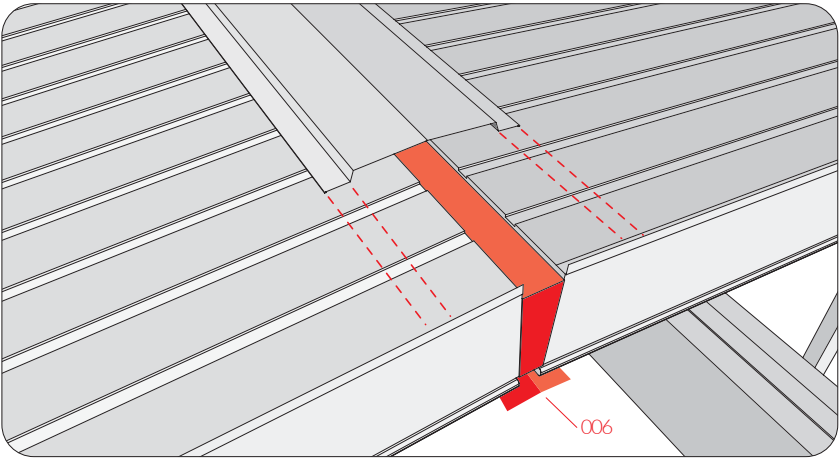
If assembling method is a hidden joint, place EUROPANELS jumpers on standing edges and secure by screwing them into supporting construction. Then place another panels remembering of the space for jumpers, that will require removal of some core in upcoming panel.



TIP: Last stage of assembly is riveting every jumper with a steel tight rivet. To do this just drill the hem and install the rivet. Remove metal filings and protective film from panels as soon as possible!

2. ROOF RIDGE FOR THERMADECK PRO

2.1. Thermal insulation and inner flashing 006

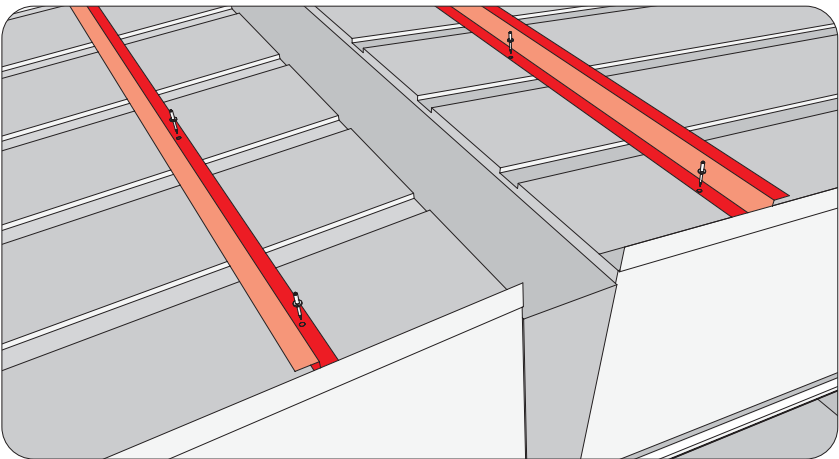


Roof gable could be closed in many ways. In our recommendation it is a set of ridge flashing 005A, inner closing 006 and a Z-profiles. For the ThermoDeck PRO it is best way due to standing edges of the panels.

In gable, a distance of about 20 mm between inner facings shall be maintained. After panels are secured to supporting construction, you can install a 006 inner flashing. The gap between panels should be sealed with an assembling PU foam.

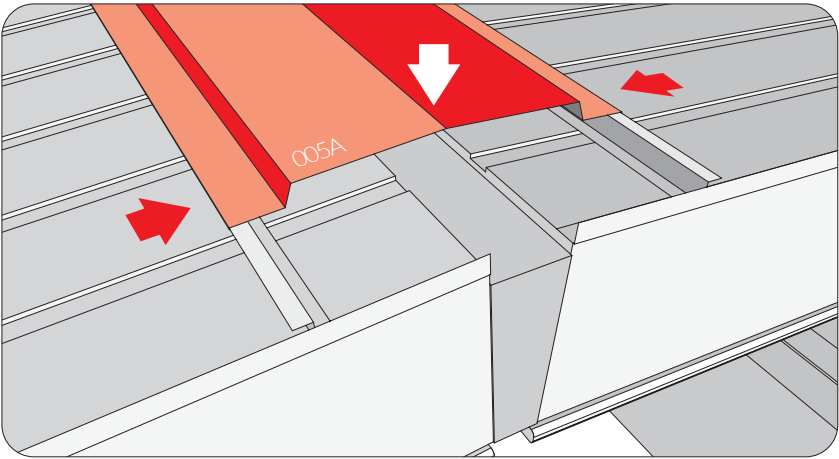
For lining of the outer flashing, place it on the gable and mark lines for Z-profiles.

2.2. Z-profiles



Place the 005 Z-profiles accordingly to the lines, then drill and rivet them to panel facings. Pay attention to direction of the Z-profiles - finally you will be sliding outer ridge on outer Z-edges. Properly, rivets should be covered by Z-profiles (directed into centre of the ridge), being invisible from outside.

2.3. External ridge 005A



In the end slide outer ridge into the Z-profiles. You can also place one edge first, than by pressing to the centre of the ridge place the other one and release. Finally, the 005 flashing shall completely cover the gable. If it is loose, tight / adjust the Z-profiles.



PU manufacturing plant
Latkowo 35, 88-100 Inowrocław

EPS manufacturing plant
ul. Toruńska 85, 87-800 Włocławek



Contact: export@europanels.pl

www.europanels.pl