INSTALLATION MANUAL

INTEGRATED ROOF PANEL

FIT VOLT

FIT VOLT

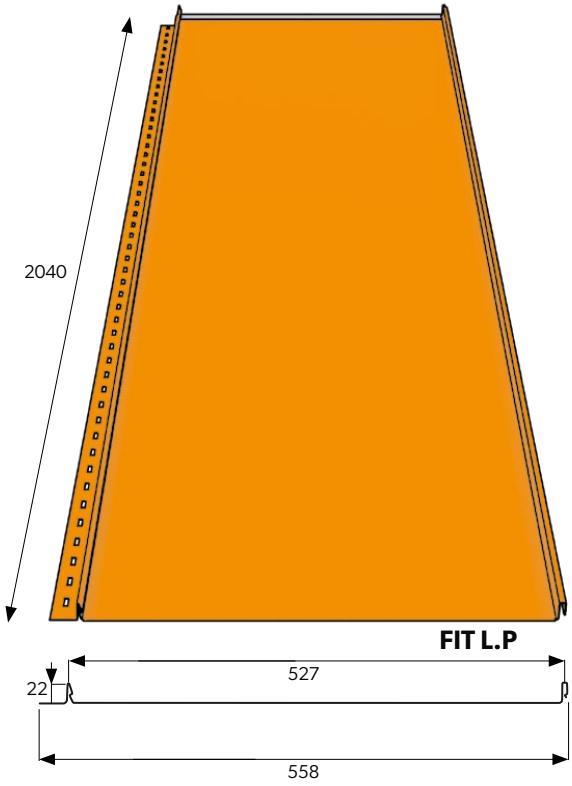
THE POWER OF ROOFS | SOLROOF

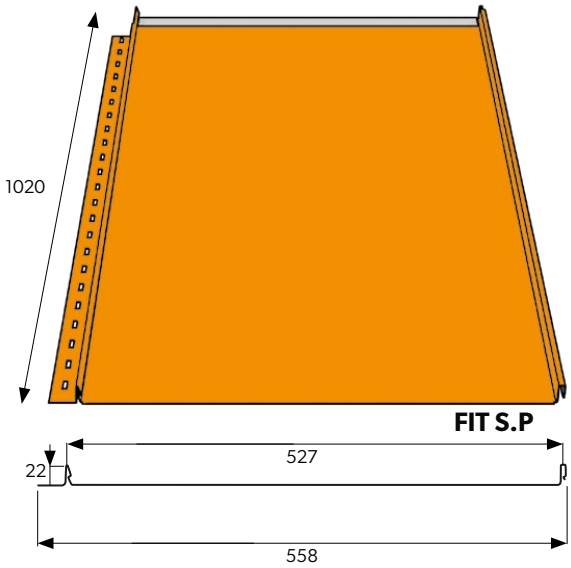
Contents

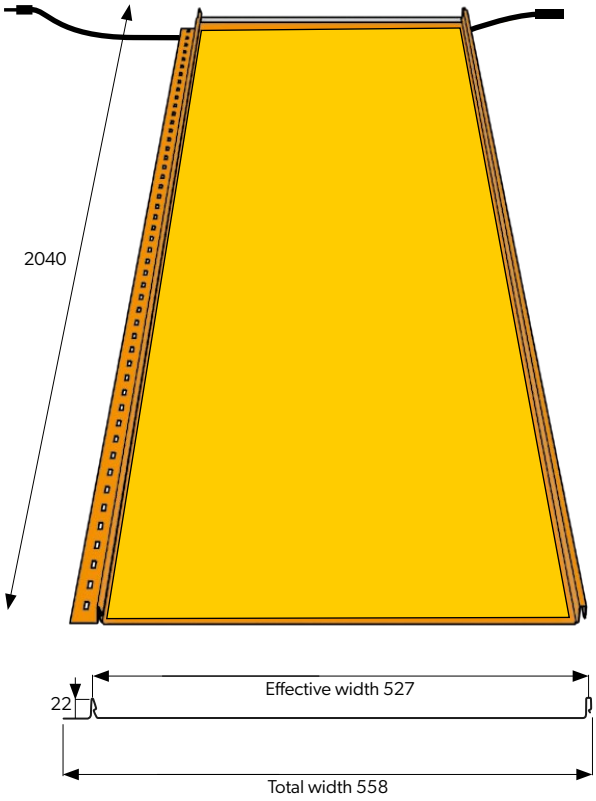
! This manual is only illustrative material and does not release the contractors from the obligation to observe the principles of best roofing procedures.

1. Specification of FIT / FIT VOLT roof panels

FIT – technical parameters (mm)		
Naming	FIT S	FIT L / FIT VOLT
The height of the seam	22	22
Effective width	527	527
Total width	558	558
Sheet thickness	0,5	0,5
Effective sheet length	990	2010
Total sheet length	1020	2040

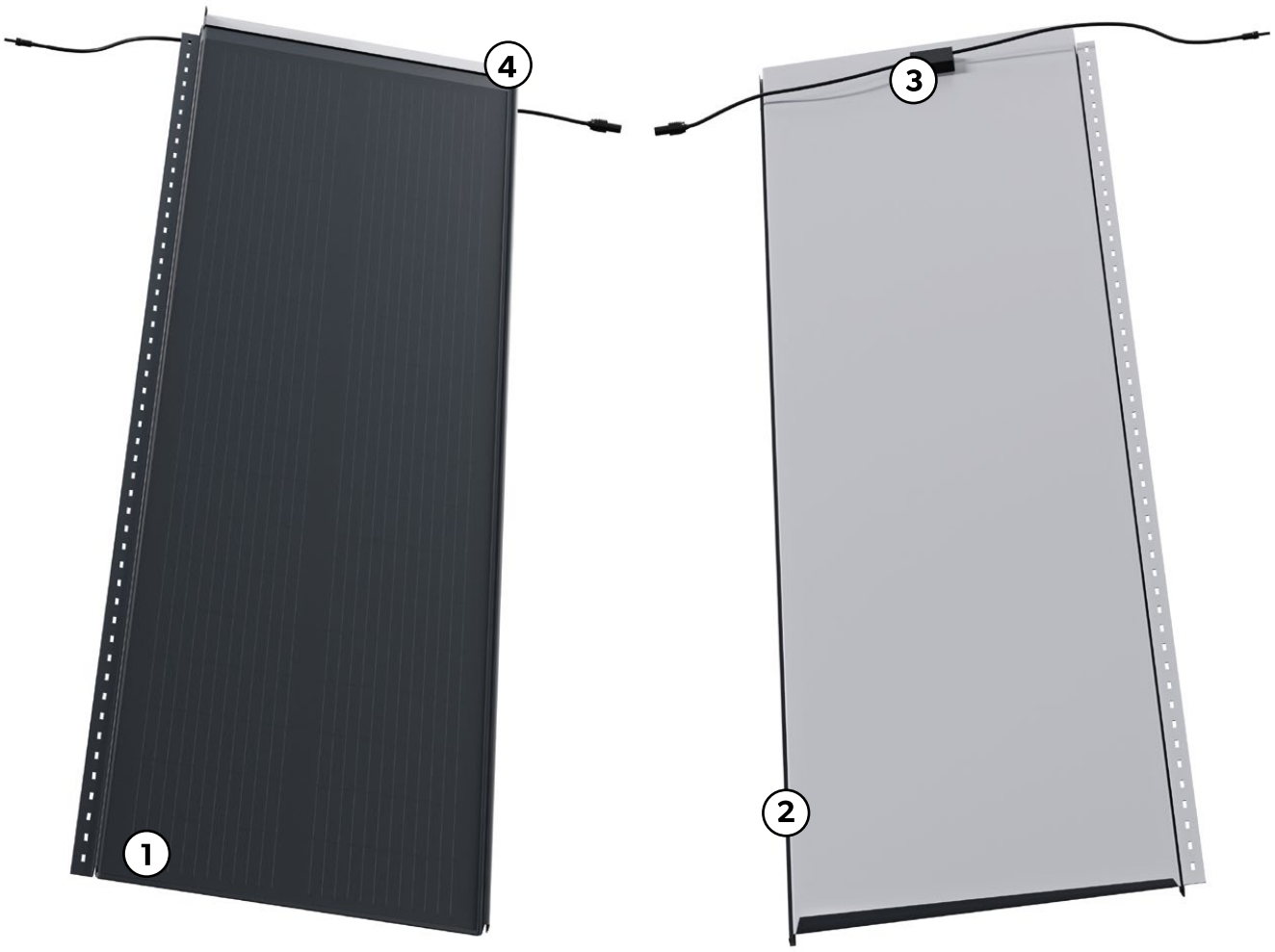






FIT modular roof panels are produced in two length variants:
FIT S – 1020mm
FIT L – 2040mm.

The FIT VOLT integrated photovoltaic panel is built on the basis of the FIT L panel and has the same dimensions.



FIT VOLT integrated photovoltaic panel - elements:

1. Monocrystalline photovoltaic cells.

2. **FIT** modular roof panel.

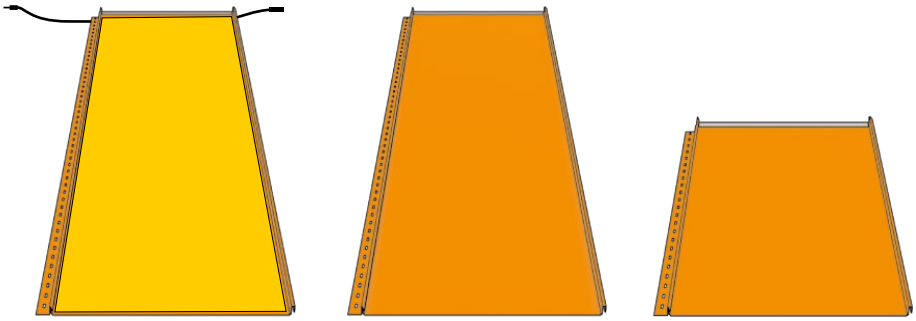
3. **J-BOX** and asymmetric connection cables.
The supplied asymmetric connections and cable lengths adapted to the panels facilitate installation and ensure that there is no need to shorten the wiring.

4. The layer of photovoltaic cells is moved away from the **BEND-LOCK** panel lock edge, which allows convenient connection of panels along its length without the risk of damaging the cells.

2. Elements of the SOLROOF FIT VOLT system

The roofing is made of **FIT VOLT** panels integrated with monocrystalline photovoltaic cells. The extreme parts of the slope and places requiring the cutting of the panels are covered with standard **FIT** panels.

Roof panels



FIT VOLT

Integrated photovoltaic panel

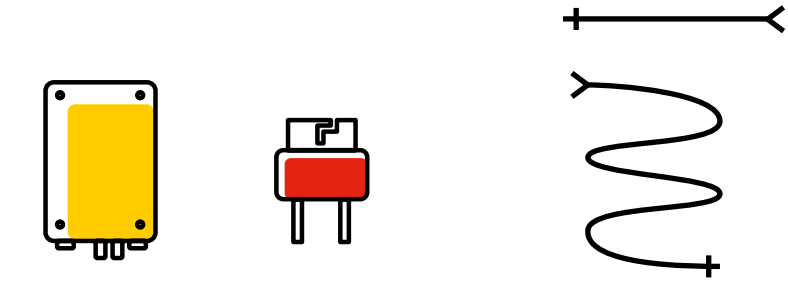
FIT L.P

FIT modular roof panels.

FIT S.P

Electrical installation

The main elements of the system's electrical wiring are optimisers and an inverter converting direct current generated by **FIT VOLT** panels into alternating current appropriate for the electrical network. The completeness of the system is complemented by extension cords and cables of appropriate length.



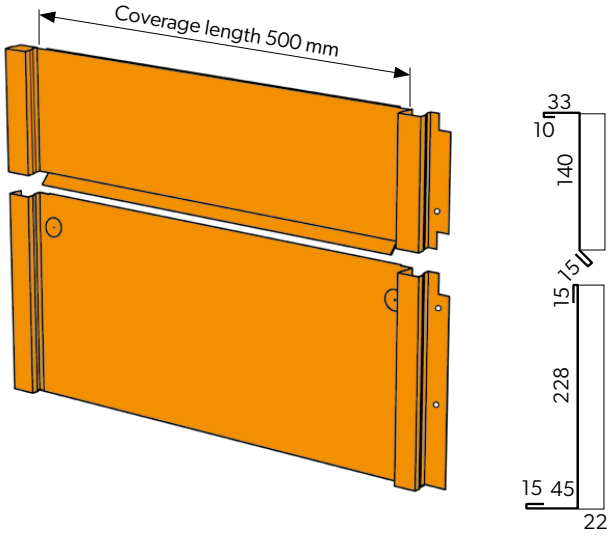
Inverters

Optimizers

Extension cords and wiring

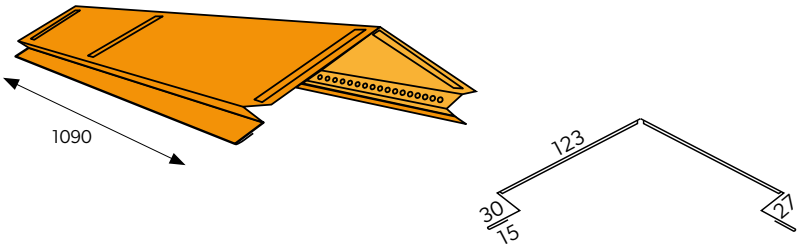
Fabricated elements:

Dedicated flashings for the **SOLROOF** system are made of sheets with the same palette of coatings and colours as the **FIT** and **FIT VOLT** panels produced by us, thanks to which they guarantee an aesthetic fit.

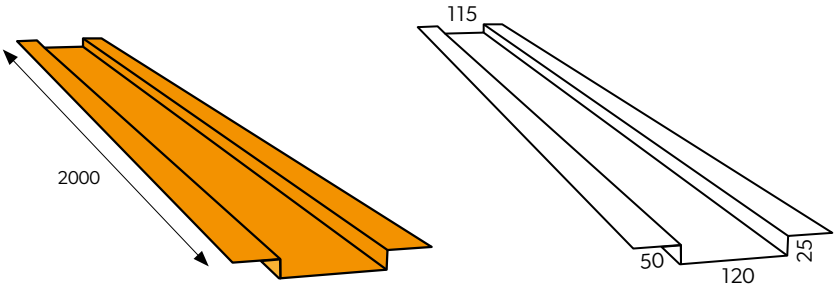


VOLT WIND BRACE
(versions: right/left)

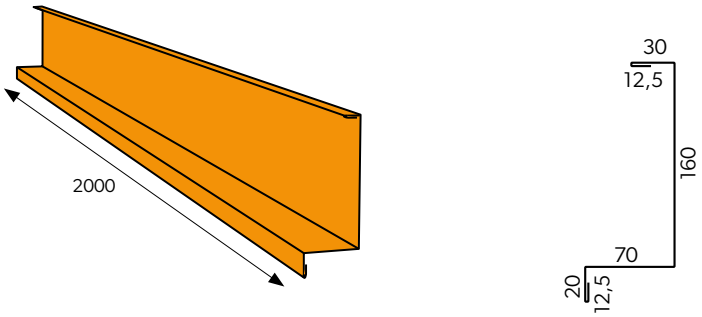
[mm]



VOLT VENTILATED RIDGE

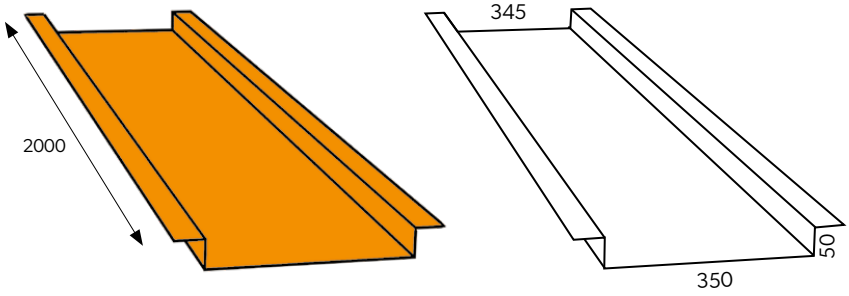


VOLT CABLE DUCT



GUIDE FOR OPTIMIZERS

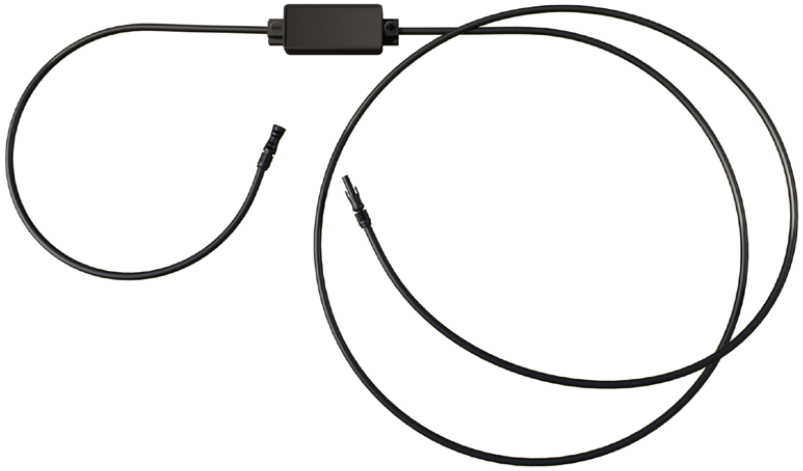
Dedicated flashings for the **SOLROOF** system are made of sheets with the same palette of coatings and colours as the **FIT** and **FIT VOLT** panels produced by us, thanks to which they guarantee an aesthetic fit.



SLOPE VOLT GUIDE FOR OPTIMIZERS [mm]

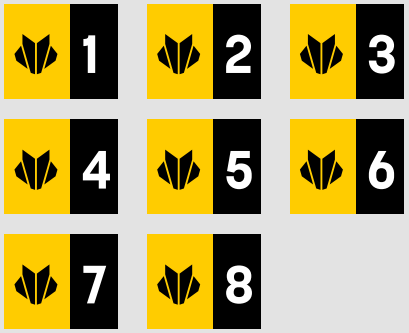
FIT VOLT SYSTEM WIRING ELEMENTS

J-BOX and asymmetric connection cables.
The supplied asymmetric connections and cable lengths adapted to the panels facilitate installation and ensure that there is no need to shorten the wiring.



EXTENSION CABLES with compatible connectors are prepared in optimal lengths to connect panels with optimizers, and are of the following variants: 1m (single-cable) and 2m/3m, 3m/4m, 4m/5m, 5m/6m, 6m/7m, 7m/8m (double-cable).

The connectors are marked with flags defining the cable length from 1m to 8m:

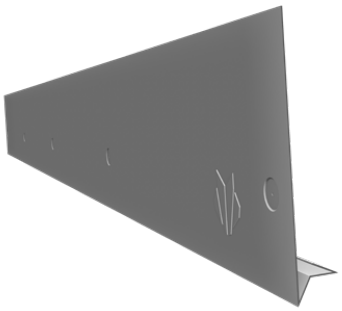


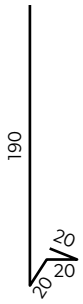
EARTHING CABLE LgY is equipped with ring terminals on both sides. On one side it is mounted to the guide for optimizers, and on the other side, to the potential equalization bar.

3. FIT flashing system

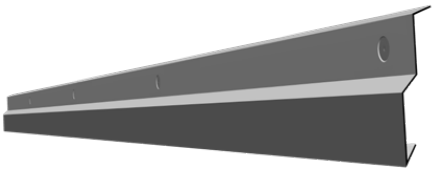
Flashings dedicated to **FIT** modular panels are made of sheets with the same range of coatings and colours as our metal roof tiles, trapezoidal sheets and roof panels.

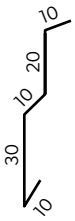
PANEL SERIES VALLEY GUTTER



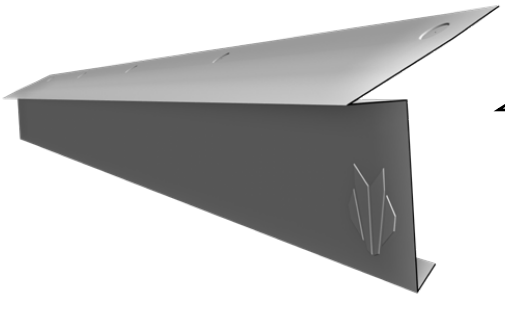


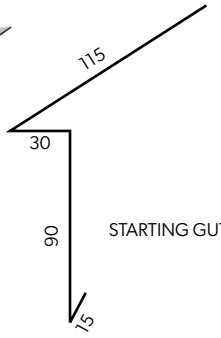
UNIVERSAL VERGE TRIM/
WIND BRACE EXTENSION





EXPANSION STRIP





STARTING GUTTER STRIP

We offer standard flashings with a length of 2 m and a thickness of 0.5 mm, as well as custom flashings up to a length of 8 m and a thickness of 2 mm.

4. General instructions

Transport

FIT modular roofing panels are delivered in boxes with lengths adapted to the length of the sheets: 1.02 m (**FIT S**) and 2.04 m (**FIT L**). Damage to the undercoat is not subject to complaint. When moving the sheets during manual unloading, the number of people should be selected in such a way as to prevent the sheets from moving one after another.

Rules for handling sheets

There may be slight undulation on the sheets, which is a normal phenomenon. **FIT** modular panels should be stored in dry and ventilated storage rooms. In case of long-term storage, the stacks must be placed on a sloped surface in order to enable moisture to evaporate or drain. The distance of the stored box from the ground should be at least 14 cm. Maximum storage time is 6 months since the production date. However, after 2 weeks from the production date, the foil in which the box with the sheets is packed should be removed, it will ensure air circulation between the sheets.

Important - damage on the metal sheet panel surfaces as a result of moisture dismisses any claims.

Cutting the steel sheet

It is not allowed to cut the sheets with tools that cause thermal effect (sudden increase of temperature), e.g. angle grinder. This causes damage to the organic and zinc coating and thus leads to corrosion accelerated by hot filings melting into the sheet surface. To cut the sheets, use a nibbler or manual scissors if the sections are short. **Cutting the sheet metal of FIT VOLT panels is not allowed.**

Maintenance

In case of coating damage caused during transport, installation or treatment, carefully clean the damaged surface of dirt and grease and coat the damaged area with lacquer. The edges of the roof which are not protected with lacquer may delaminate. This is a natural phenomenon and shall not constitute grounds for guarantee claims. It is recommended to control the roof every year in order to perform maintenance works.

Attention - one of the guarantee conditions is to protect of open cut edges of coated sheet with lacquer.

Depending on the angle of the roof and the height of the eaves, the suction forces under the roofing vary as follows:

Tilt angle	Eaves height (meters)	Wind suction(N/m²)		
		Corners	Edges	Intermediate surfaces
0 - 25°	0 - 8	1600	900	300
	8 - 20	2560	1440	480
	20 - 100	3520	1980	660
25° - 35°	0 - 8	900	550	300
	8 - 20	1440	880	480
	20 - 100	1980	1210	660

Depending on the eave height, the maximum wind load on the wall cladding changes as follows:

Eaves height (meters)	Wind suction (N/m²)		
	Corners	Edges	Intermediate surfaces
0 - 8	1250	750	500
8 - 20	20200	1200	800
20 - 100	27500	1650	1100

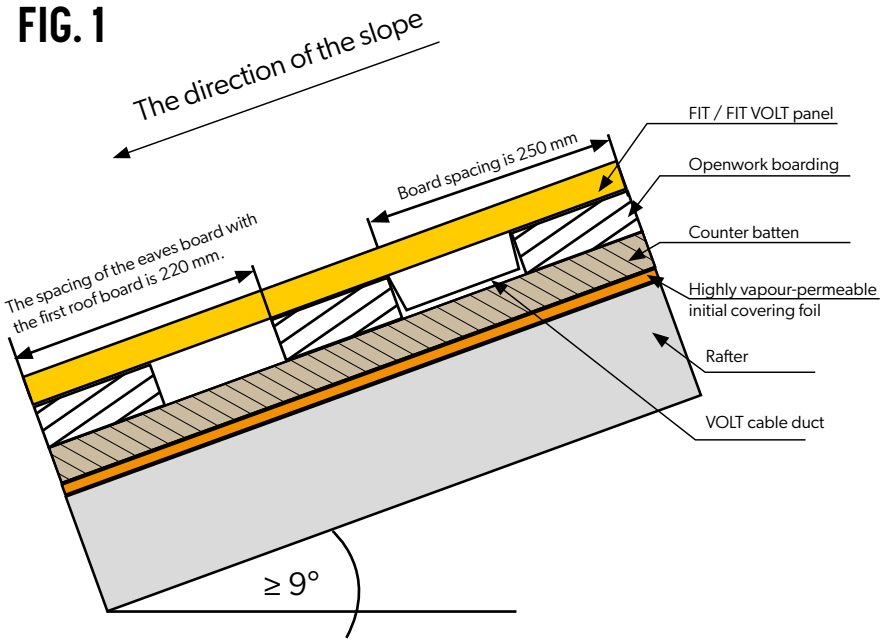
5. Types of bases for the installation of the SOLROOF FIT VOLT system

Openwork boarding with a spacing of 250 mm should be used in the construction of the base. The required board width is 100 - 120 mm, minimum thickness is 25 mm. (Wider boards cannot be used due to the width of the VOLT cable channel - 130 mm).

Follow carefully the guidelines for the spacing and width of the support structure. Deviations from the given parameters will cause complications in the proper location and installation of the guides for the electrical system.

The SOLROOF FIT VOLT system can be used on roofs with a slope of at least 9°.

FIG. 1



6. Roof construction

Before assembly, check the correctness of the construction, including: diagonals and flatness. The distance between the boarding and the eaves should be determined taking into account the installation of the starting gutter strip. Use boards with a width of 120 mm and a spacing of 250 mm.
The first **VOLT cable duct** from the eaves side should be installed between the eighth and ninth boards, and the next ones in every fourth space between the boards - as shown in **Figure 3**.

The **SOLROOF FIT VOLT** system can be used on roofs with a slope of at least 9°.

Maintaining proper care in the preparation of the roof structure is of key importance for the aesthetics and functionality of the roofing. Errors made at this stage may result in complications in the correct assembly of the electrical circuit.
The substrate should be constructed in accordance with the principles of best roofing practice.

NOTE!
Due to the construction of the roof panels, so-called sheet "corrugation" on the covering is possible. It is a natural phenomenon for this type of product.

FIG. 2 - DIAGONAL CONTROL

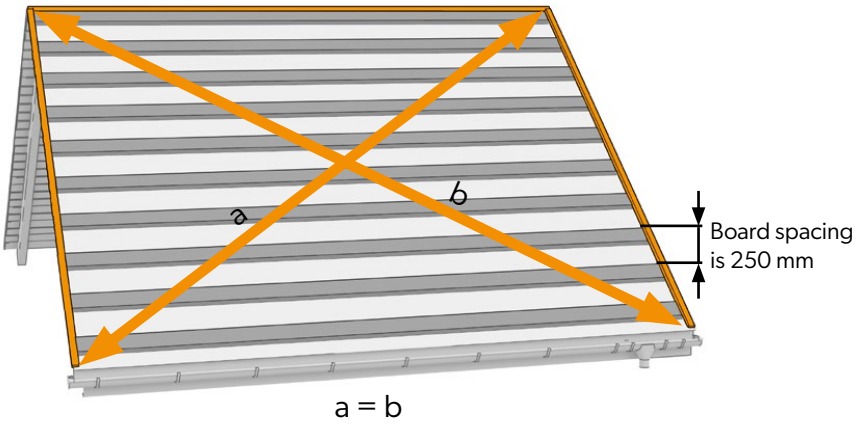
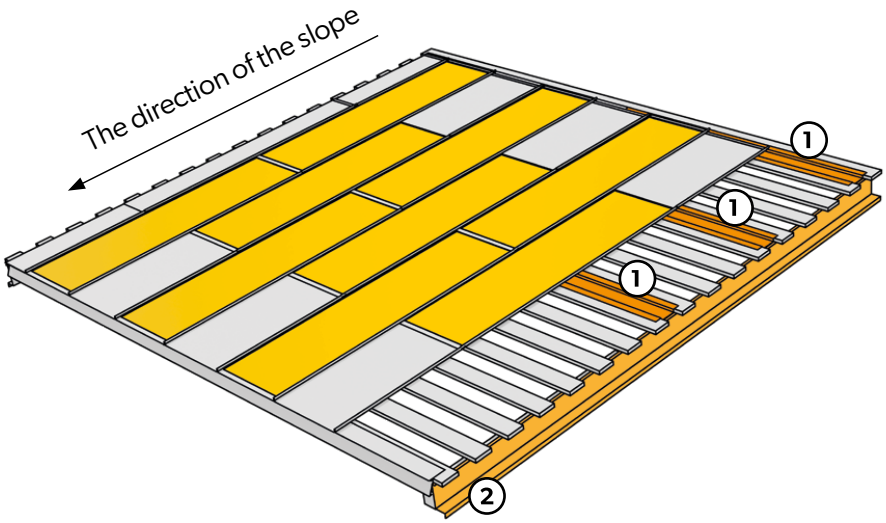
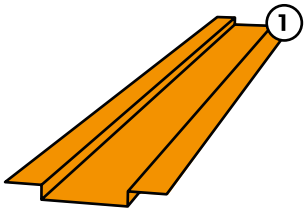
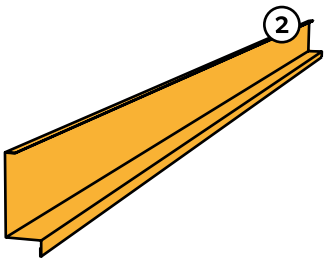


FIG. 3 - LOCATION OF GUIDES FOR ELECTRICAL SYSTEM



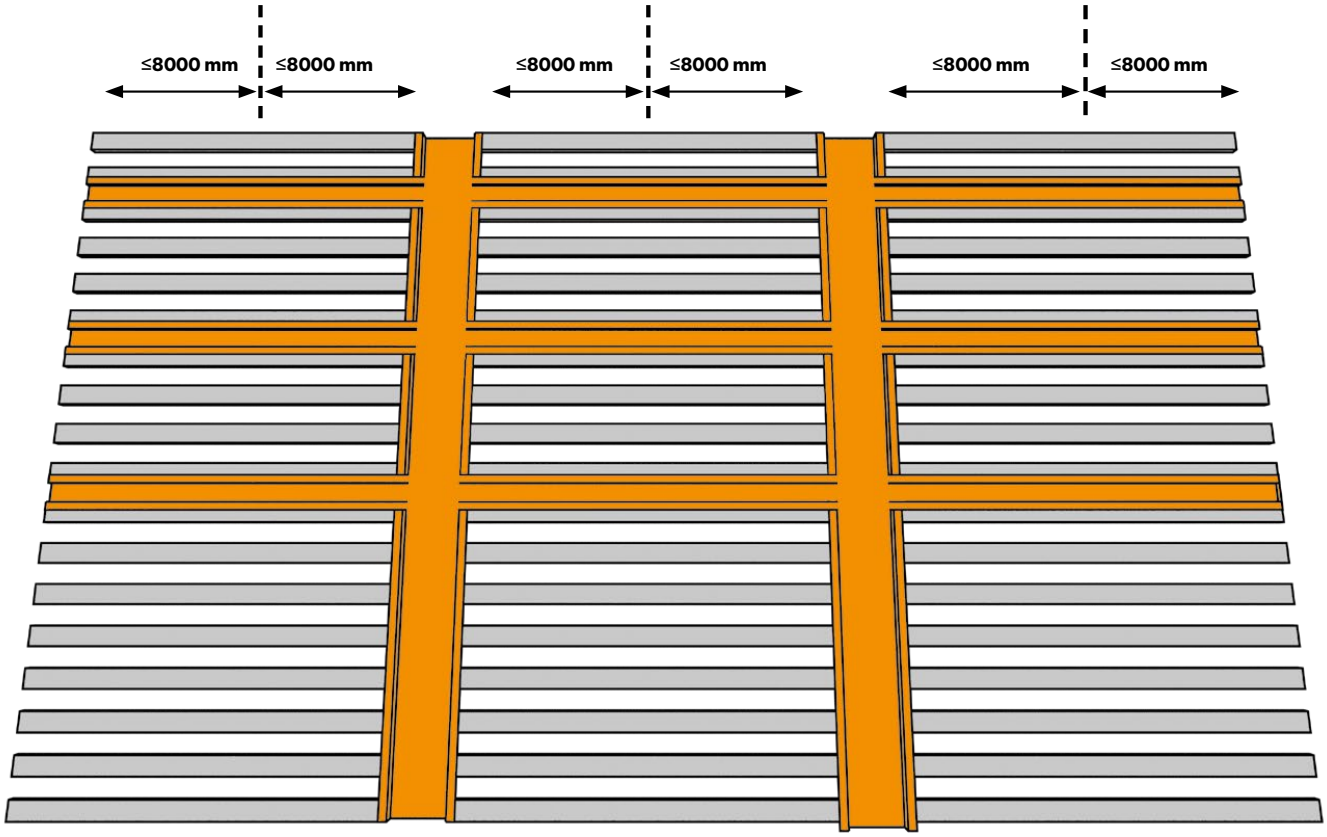


VOLT CABLE DUCT



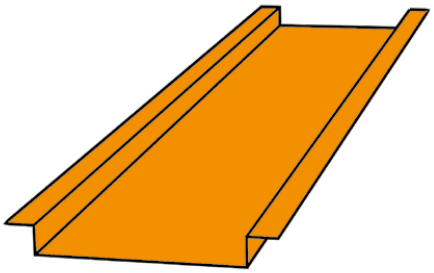
VOLT GUIDE FOR OPTIMIZERS

FIG.4 - SLOPE VOLT GUIDE FOR OPTIMIZERS



If the size of the slope makes the distance of the **FIT VOLT** panels from the nearest optimizer located in the guide to the optimizers exceed 8 meters, the guide for the roof optimizers should be used, which is installed in the slope line (**fig. 4**).

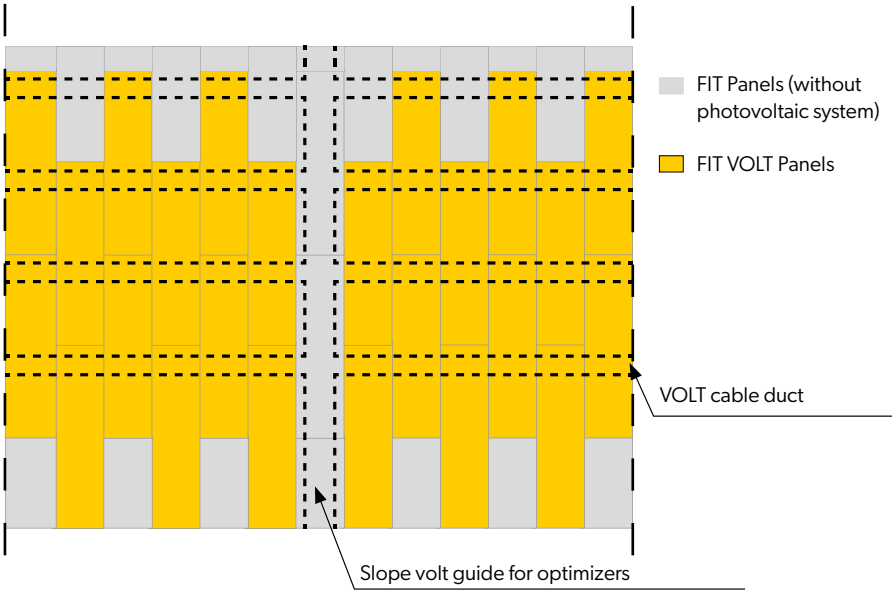
The panels directly above the guide to the roof optimizers have to be FIT VOLT inactive panels to allow easy access to the installation - fig. 5.



SLOPE VOLT GUIDE FOR OPTIMIZERS

The panels directly above the guide to the roof optimizers have to be FIT VOLT inactive panels to allow easy access to the installation - fig. 5.

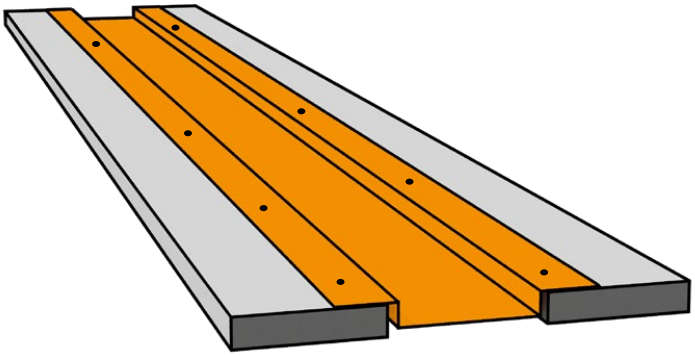
FIG.5 - LAYOUT OF PANELS ABOVE THE SLOPE GUIDE



7. Installation of cable ducts and guides to optimizers

The **VOLT** cable duct is mounted to the upper surface of the boards using **FIT** panel mounting screws. After laying the panel, it is then necessary to fix it to the panel and the board through the panel's mounting hole. Stainless steel screws must be used.
The ***VOLT*** cable duct should be installed between the eighth and ninth boards from the eaves side, and the next ones in every fourth space between the boards.

FIG. 6 - ASSEMBLY OF THE VOLT CABLE DUCT

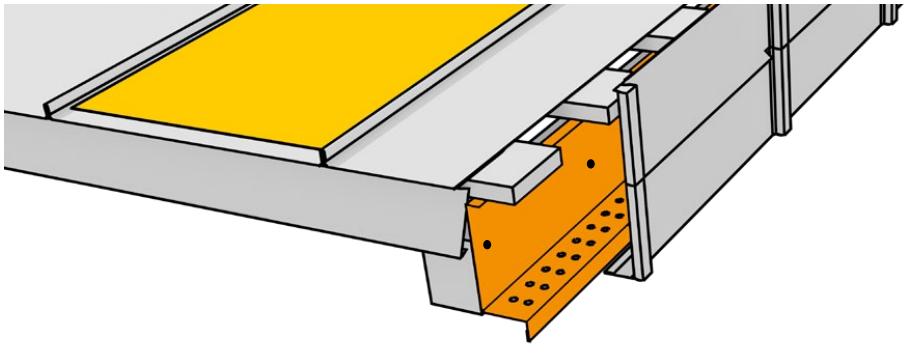


Use M8 stainless steel screws to connect the cable ducts.

Guides for VOLT optimizers are installed to the rafters along the line of the wind brace under the boarding. The boards should be extended to the width of the guide in order to provide a base for the extreme panel that is connected with the wind brace.

The VOLT cable duct should be placed on the guide to the VOLT optimizers, hence aligning the edge of the channel with the edge of the upper shelf of the guide, which will allow for convenient routing of cables connecting the panels with the optimizers. The elements are connected permanently with rivets.

FIG. 7 - ASSEMBLY OF THE GUIDE FOR VOLT OPTIMIZERS



In order to ensure proper equalization of electrical potentials of all elements of the SOLROOF roof, it is necessary to permanently connect the FIT VOLT panels with the VOLT cable duct and the guide to the VOLT optimizers.
To do so:

1. FIT VOLT panels must be screwed to the VOLT cable duct with an M8 stainless steel screw. The contact surface of the FIT VOLT panel should be cleaned of the UTK coating in the place where the screw is driven.

2. The VOLT cable duct should be permanently riveted to the guide to the VOLT optimizers.

FIG 9 - CONNECTION OF THE CABLE DUCT WITH THE GUIDE USING RIVETS

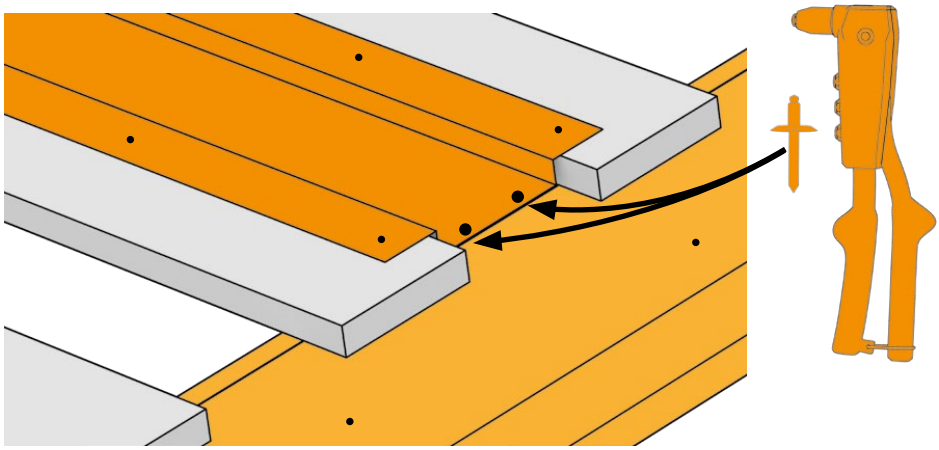


FIG. 9 - INSTALLATION OF OPTIMIZERS IN THE GUIDE

SolarEdge optimizers must be installed in the **VOLT optimizers track** close to the **cable duct**. When installing optimizers in the guide, careful selection of location is necessary in order to avoid small cable bending radii.

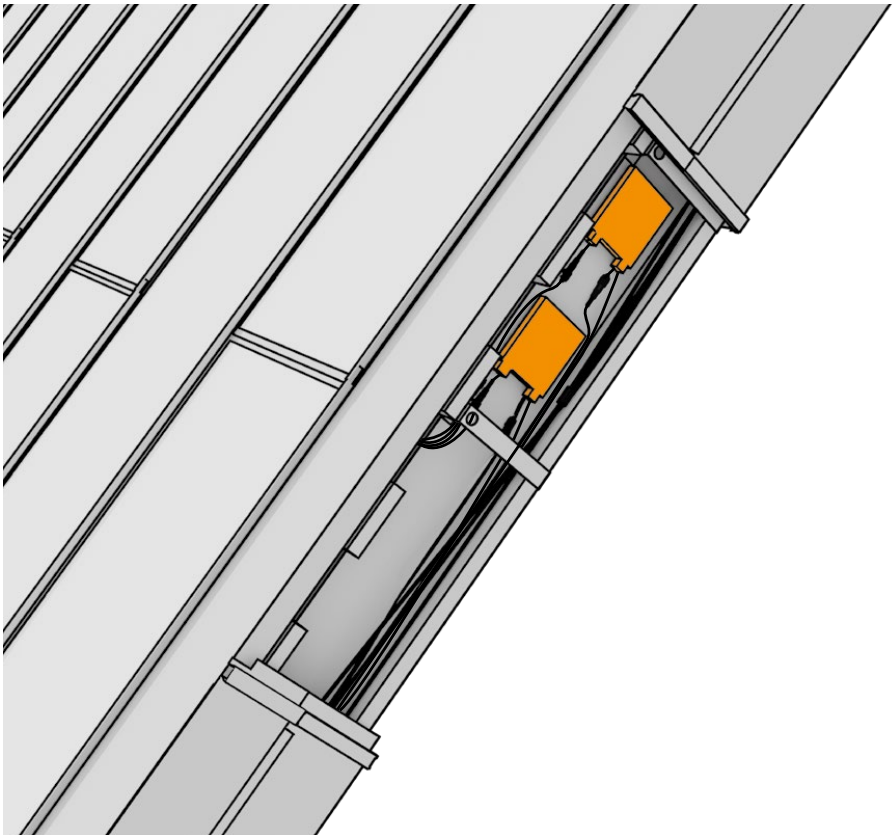
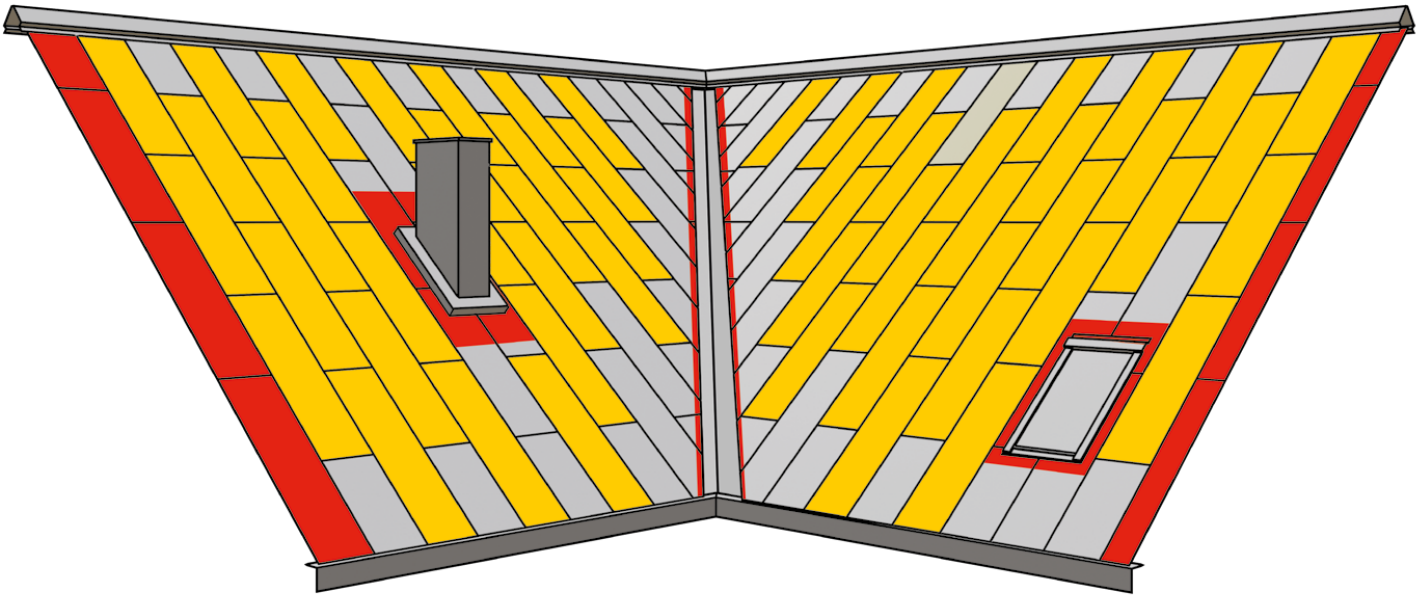


FIG. 10 - LAYOUT OF FIT VOLT PANELS



FIT panels (without photovoltaic system)
FIT VOLT panles

When planning the placement of FIT VOLT integrated photovoltaic panels, the following factors should be considered:

NOTE!

All edge panels and panels reaching the valley gutter, chimney, roof windows, hatches, etc. must be FIT panels (without photovoltaic system)!

FIT VOLT panels cannot be cut or split!

Do not walk on the FIT VOLT panels! If it is necessary to install roof communication, appropriate paths away from the FIT panels should be provided!

The distance of the FIT VOLT panels from the nearest optimizer located in the guide, to the VOLT optimizers must not exceed 8 meters!

A single optimizer supports two FIT VOLT panels, so there has to be an even number of them in the horizontal row.

The electrical system should be first earthed to the VOLT conduit and the guide to the VOLT optimizers, and then to the ground.

Connection of the system to the local power circuit must be done only by an authorized SOLROOF company representative!

8. Installation of the starting gutter strip

The starting gutter strip is a flashing dedicated to the installation of **FIT** roof panels. By designing it with a protruding edge, it combines the functionality of the gutter flashing and the starting profile and allows an aesthetically pleasing display of the fronts of the roof panels from the eaves side.
The starting belt should be installed after the other eaves flashing (gutter belt) and the gutter are installed. It precedes the installation of roofing panels.

The starting gutter strip is installed at the eaves line, and is attached to the first board (batten). Use only the recommended screws for roof panels. The leveling should be checked before the complete fixation of the flashing. In connecting the starting strips, there should be an overlap of min. 25 mm.

FIG. 11 - GUTTER STARTING STRIP

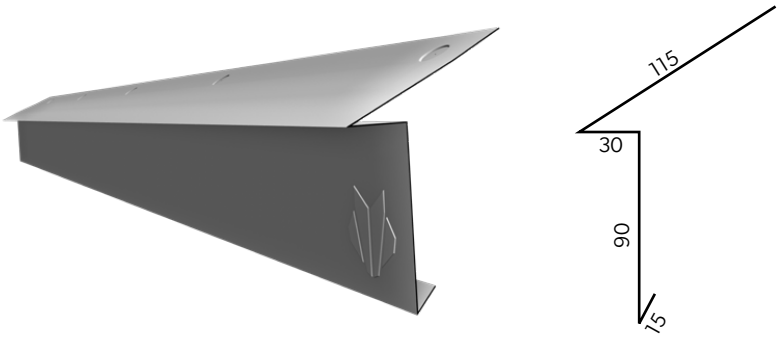
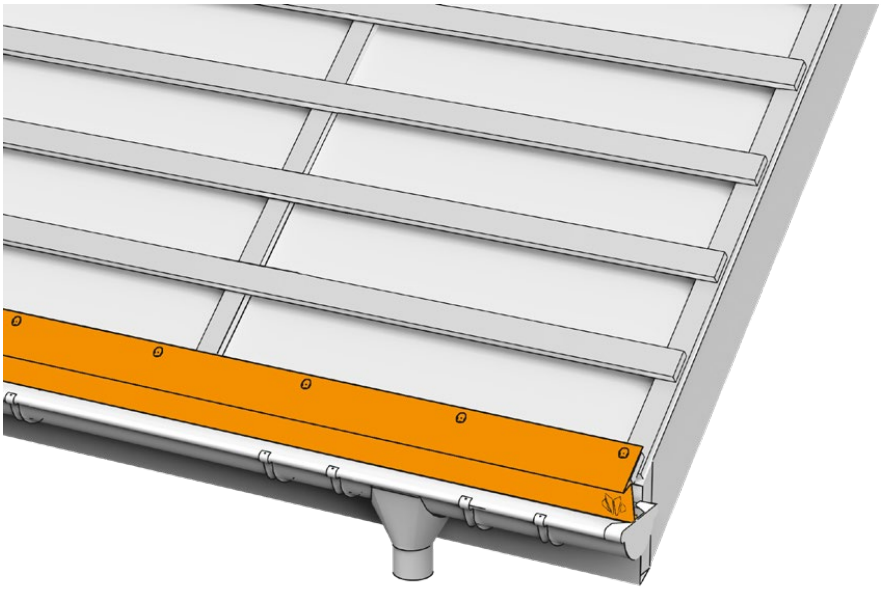


FIG. 12 - GUTTER STARTING STRIP - ASSEMBLY



Mounting screws for **FIT / FIT VOLT** panels:

Mounting screw
L 4.2 x 30 mm
for wood

Mounting screw
L 4.2 x 19 mm
for steel

9. Installation of the first panel

Sheets of FIT roof panels should be hooked to the starting gutter strip. The factory-prepared **"BEND-LOCK**" bend used to connect the panels has the parameters appropriate for the correct fastening of the sheet to the starting strip.

Taking into account the suction forces occurring under the roof covering, it is recommended that after measuring the roof slope, the extreme widths of the panels should be selected so that they do not appear in full widths: e.g. if the roof slope is 10 full panels, start and end the covering with panel halves. This way you will thicken the edge fixing of the panels.

Before screwing the sheet to the structure, gently tap the folded edge to the starting strip with a rubber hammer.

The outer panel is cut and bent at an angle of 90° to form an edge on which the **VOLT** wind brace is then attached. Remember that the edge panels are of the same width, so it is important to check the geometry of the roof before starting the installation. On the edge panels, installation clips are to be placed at a minimum of one every 300 mm.
The outermost panel should be fastened sufficiently firmly to the batten of the wind brace with the use of the supplied hook arrangement, which enable the panel to be worked along its length **(Fig. 14 a)**.

FIG.13 - BENDING THE BEND-LOCK

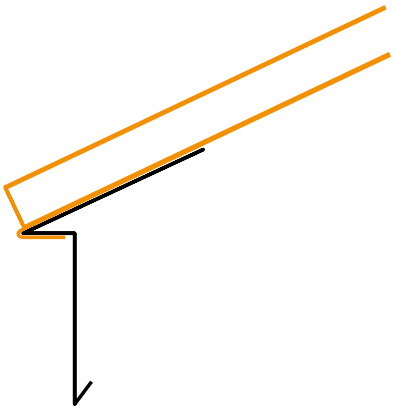


FIG. 14 - INSTALLATION OF THE FIRST PANEL

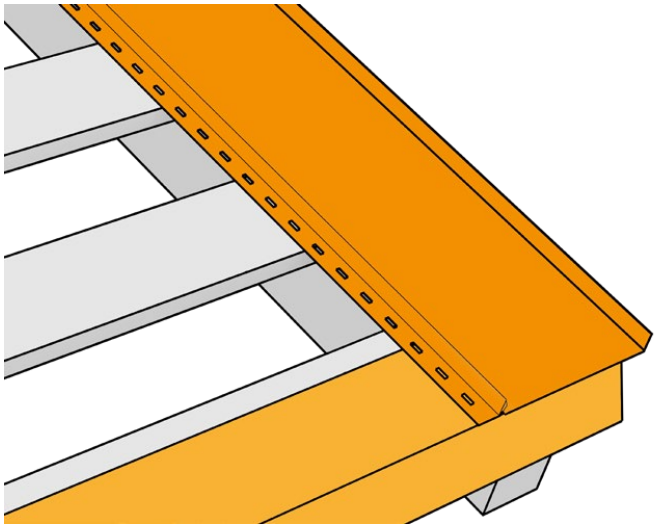
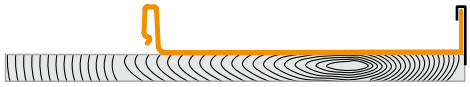


FIG. 14a - FIXING THE END PANEL USING THE SUPPLIED INSTALLATION CLIPS



10. Direction and sequence of assembly of sheets

Before starting roofing works, the roof surface should be carefully planned out. It is recommended to narrow the first and last panels in order to compact the edge and corner zones of the sheet fixing.

FIT roof panel sheets are installed in a series of vertical lines from the eaves to the ridge. Subsequent rows should be started alternately with a short sheet (**FIT S** - 1.02 m) and a long sheet (**FIT L / FIT VOLT** - 2.04 m), which will ensure a staggered arrangement (**Fig. 16**).
The roof from the ridge side can also be finished with short sheets (if the roof dimension justifies their use).
Only long sheets should be used in the central part of the slope, so that the joining of the panels in adjacent rows will be at different heights.
Installation should be carried out from the right to the left, which is determined by the arrangement of the mounting holes on the left side of the panel (unlike traditional roof panels, **FIT / FIT VOLT** modular panels have a specific eaves and ridge side, defined by **EASY LINK** cutouts and **BEND LOCK** bends, therefore, the mounting direction cannot be changed.
Taking into account the suction forces occurring under the roof covering, it is recommended that after measuring the roof slope, the extreme widths of the panels should be selected so that they do not appear in full widths: e.g. if the roof slope is 10 full panels, start and end the covering with panel halves. This way the edge fixing of the panels is strengthened.

FIG. 15 - PANEL ASSEMBLY ORDER

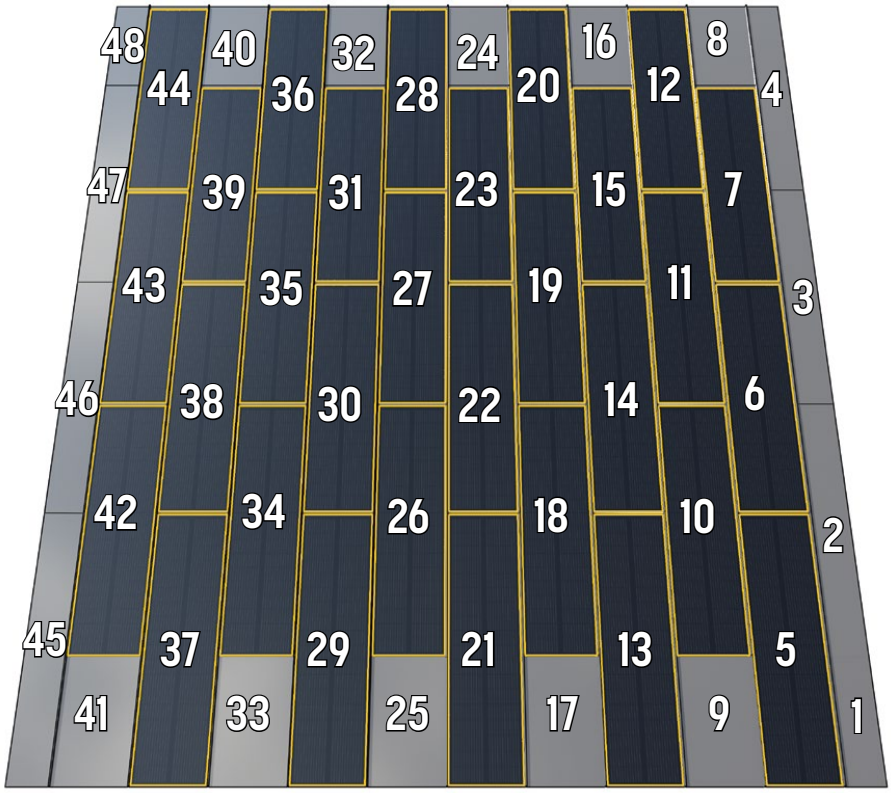


FIG. 16 - INSTALLATION OF THE PANELS IN STAGGERED ARRANGEMENT

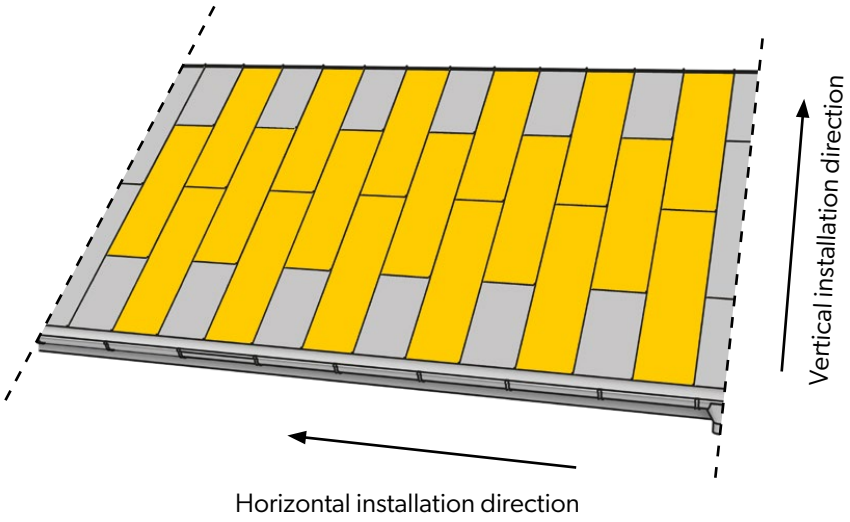
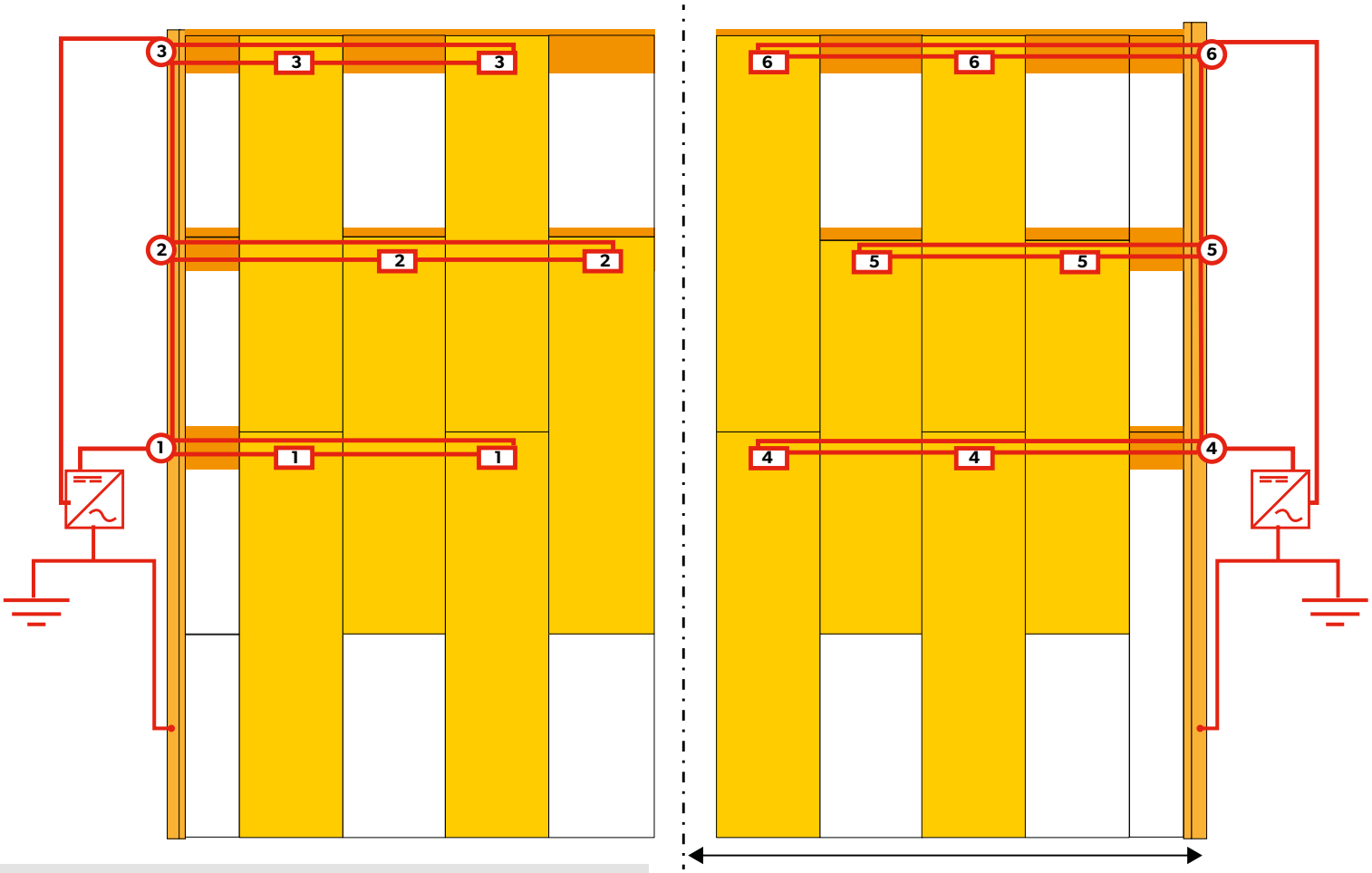


FIG. 17 - ELECTRICAL CONNECTION DIAGRAM.



The distance between the panels and the optimizer is maximum 8 m.

11. Layout of the electrical system

FIT VOLT panels are connected in pairs of two adjacent panels at the same level. Each pair is connected to a dedicated optimizer. The optimizers are then connected to each other and the created chain of optimizers is connected to the inverter.

The distance of the FIT VOLT panels from the nearest optimizer located in the guide, to the VOLT optimizers must not exceed 8 meters! The photovoltaic installation must be earthed to the VOLT cable duct and the VOLT optimiser guide, and then to the ground. Mounted firmly with an M8 stainless steel screw, the earthing cable must be terminated with an eyelet and connected to the PV plant's equipotential rail and further to the inverter.

The connection of the PV plant to the building's electrical grid is carried out by an authorised solroof company.

JUNCTION BOXES

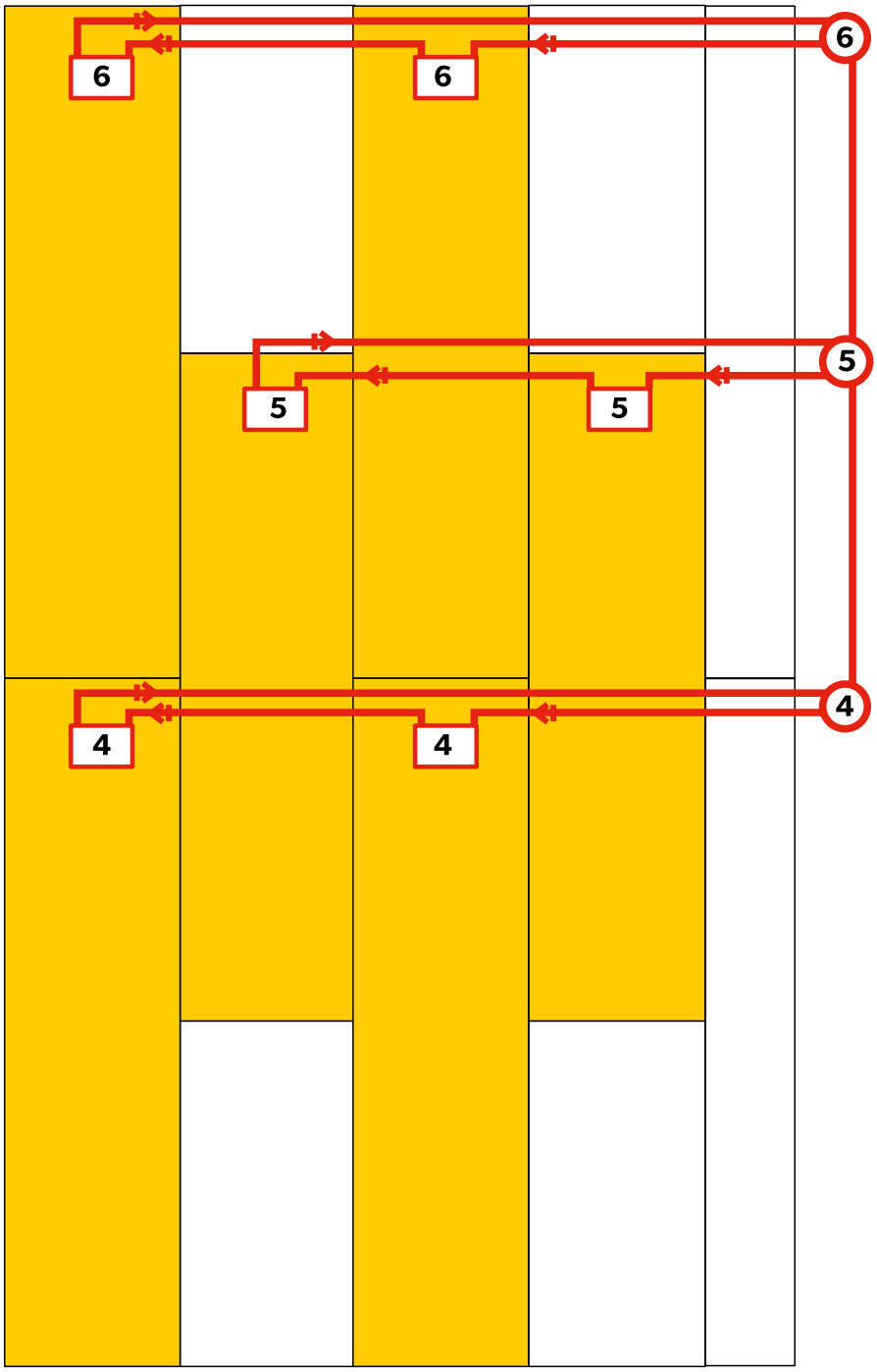
OPTIMIZER

INVERTER

MOUNTING POINT OF THE EARTHING CABLE OF THE PV SYSTEM

FIG. 18 - ELECTRICAL CONNECTION DIAGRAM

The diagram in **Fig. 18** shows the locations and directions of wiring connection as per specification.



The distance of the FIT VOLT panels from the nearest optimizer located in the guide, to the VOLT optimizers must not exceed 8 meters!
The photovoltaic installation must be earthed to the VOLT cable duct and the VOLT optimiser guide, and then to the ground. Mounted firmly with an M8 stainless steel screw, the earthing cable must be terminated with an eyelet and connected to the PV plant's equipotential rail and further to the inverter.

The connection of the PV plant to the building's electrical grid is carried out by an authorised solroof company.

The system is delivered to the client with dedicated extension cords that are part of the system

JUNCTION BOXES

OPTIMIZER

12. Installation of panels from the eaves side

For the assembly of modular **FIT** roofing panels, "L" (4.2 x 30 mm) mounting screws are driven in using a tip with a length of min. 50 mm. It is important to place all screws in the centre of the mounting hole to allow for a little play so as to compensate for thermal stresses.

FIG. 19 - FIXING THE PANELS THROUGH ASSEMBLY HOLES

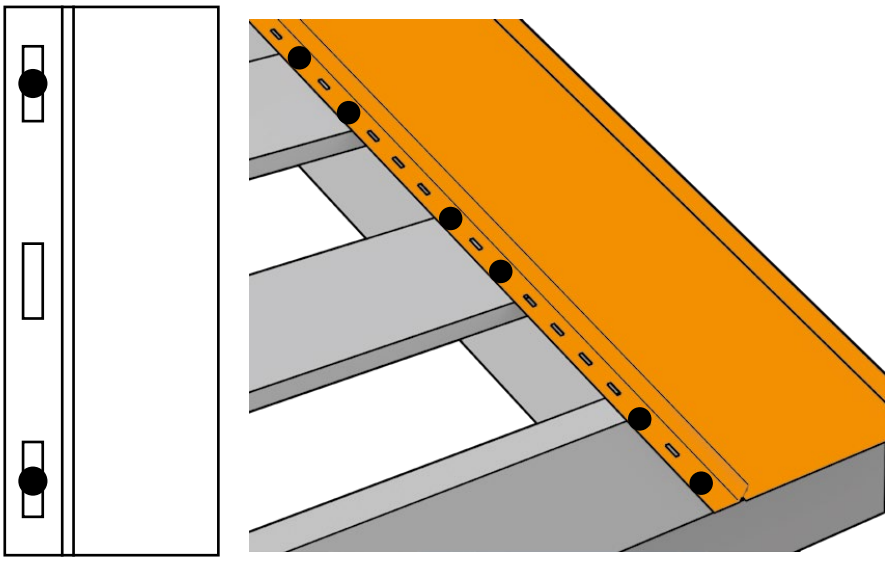


FIG.20 - FIXING THE PANELS TO THE VOLT CABLE DUCT

In places where the roof panels overlap the **VOLT cable duct**, it is recommended to additionally fix the panel to the board through the duct. When fixing the **FIT / FIT VOLT** panels to the board through the **VOLT cable duct**, stainless steel screws should be used.

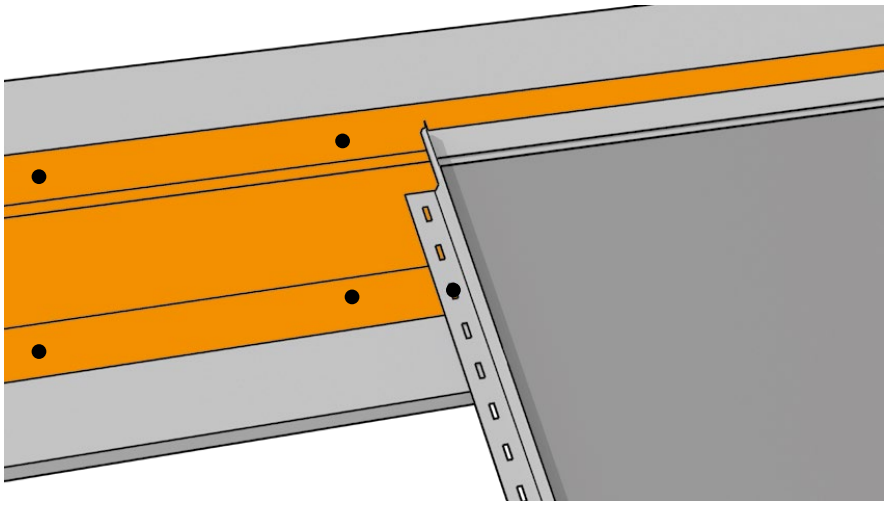
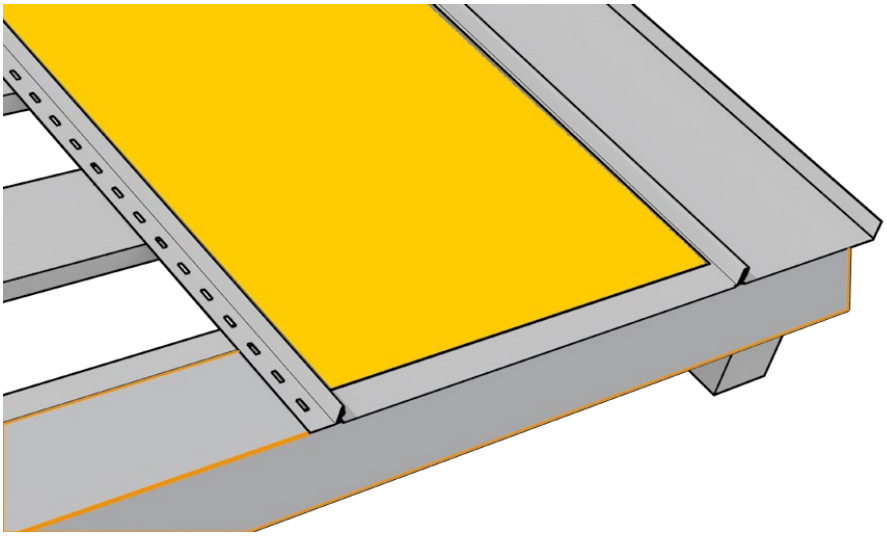


FIG. 21 - FASTENING SHEETS TO THE STARTING STRIP AND JOINING PANELS - “ZIPPER" ARRANGEMENT

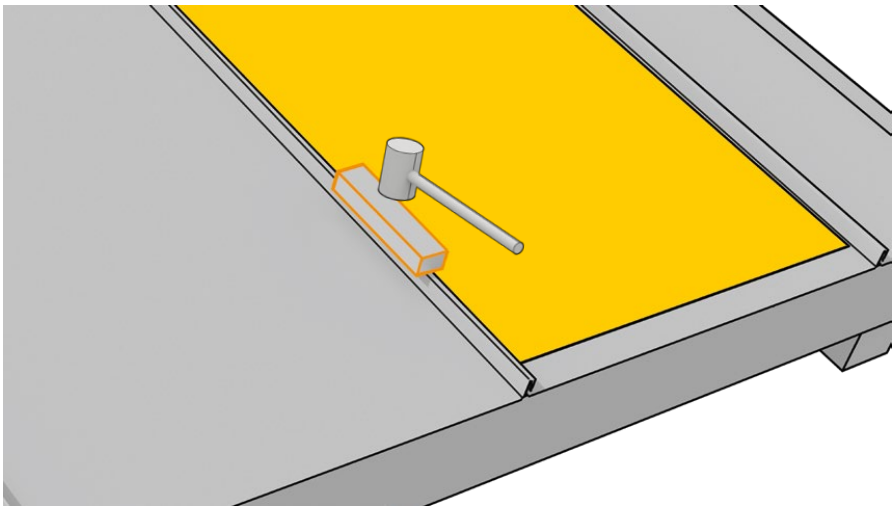
After the initial panel, subsequent panels are installed first by fastening the **BEND-LOCK** fold within the gutter starting strip, and then by snapping the lock along the entire length of the sheet. This is called the "Zipper method" (start from the eaves and move towards the ridge).



Note!
Please note that the first panels from the eave side should alternate between a long FIT L / FIT VOLT (2.04 m) and a short FIT S (1.02 m).

FIG. 22 - SETTING THE OVERLAPS

After snapping the lock, gently press the panel on the overlap with a wooden block and a tinsmith's hammer (rubber or plastic) .



NOTE!
Do not fold the FIT VOLT panels crosswise!
The overlaps are set only through the seam.

13. Connecting panels along the length.

In order to securely and quickly connect the **FIT / FIT VOLT** roof panels along their length, they are factory-fitted with sealed **BEND LOCK** bends **(Fig. 23, Fig. 25)**.

The edges of the panels are equipped with an **EASY LINK (Fig. 24)** cutout, which negates the pushing out effect at joints involving three sheets.

FIG. 23 - SEALANT

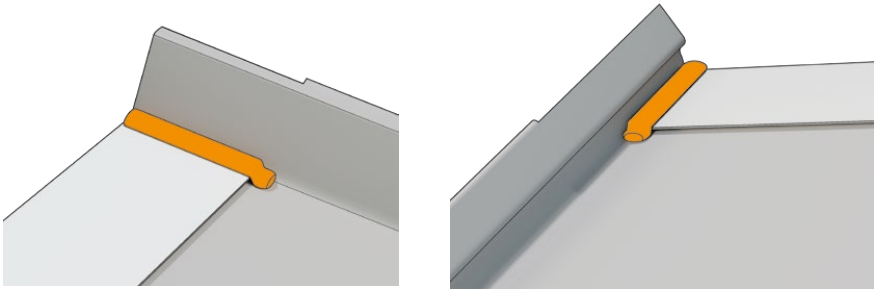


FIG. 24 - EASY LINK CUTOUT

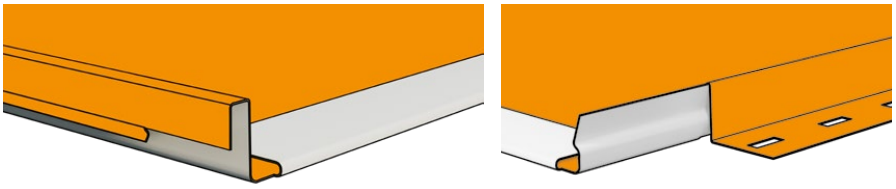
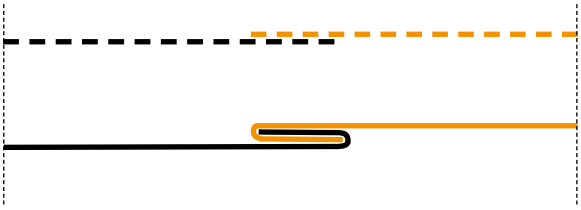


FIG. 25 - BEND LOCK FOLD



The **EASY LINK** cutout, visible at the joint of two panels **(Fig. 26)**, is covered by the panel in the subsequent row of sheets **(Fig. 27)**.

FIG. 26 - EASY LINK CUTOUT AFTER PANELS FOLDING

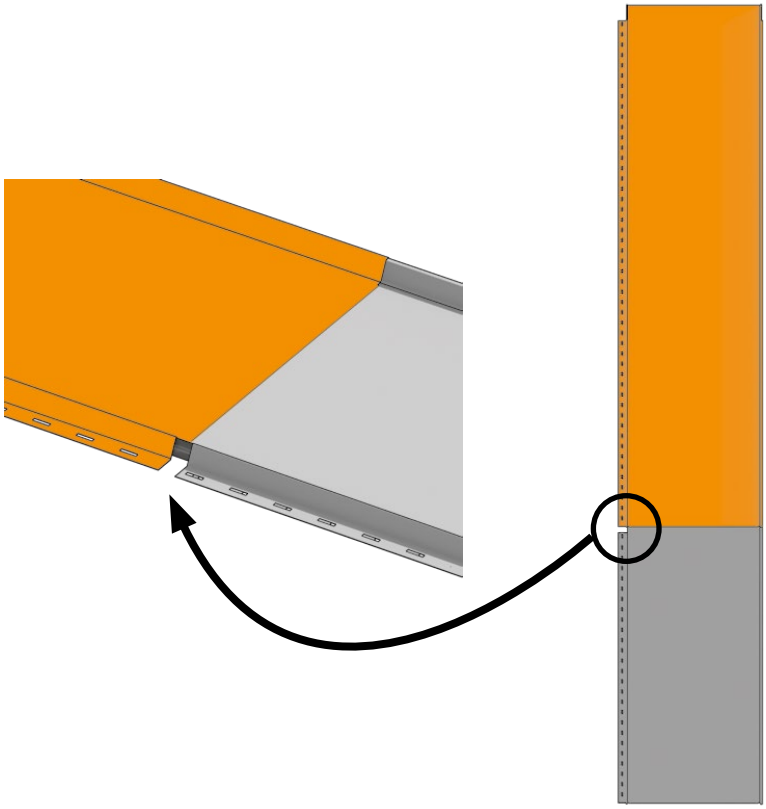
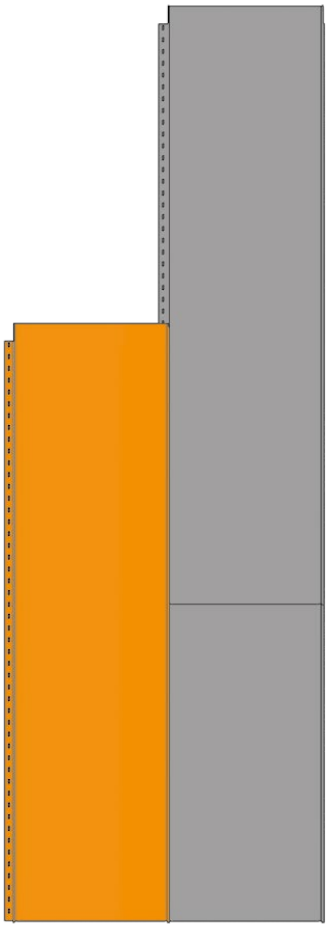


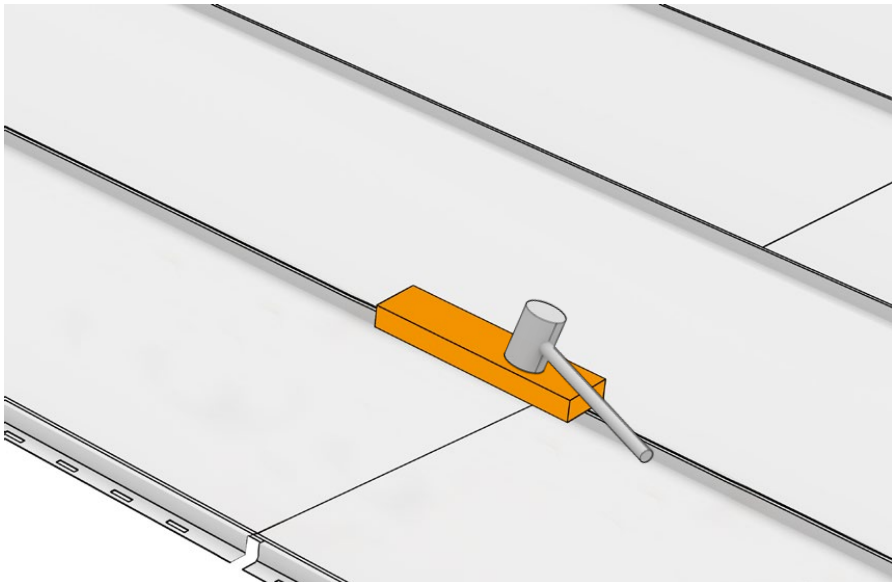
FIG. 27 - EASY LINK CUTOUT COVERED BY ANOTHER PANEL



After fastening the upper panel with the BEND-LOCK bend, set the tabs and then, using a block and a tinsmith's hammer, gently close the lock through the seam.

NOTE!
Do not fold the FIT VOLT panels crosswise!
The overlaps are set only through the seam.

FIG. 28 - SETTING THE OVERLAPS

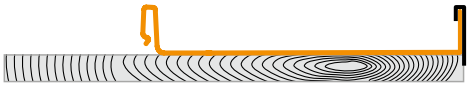


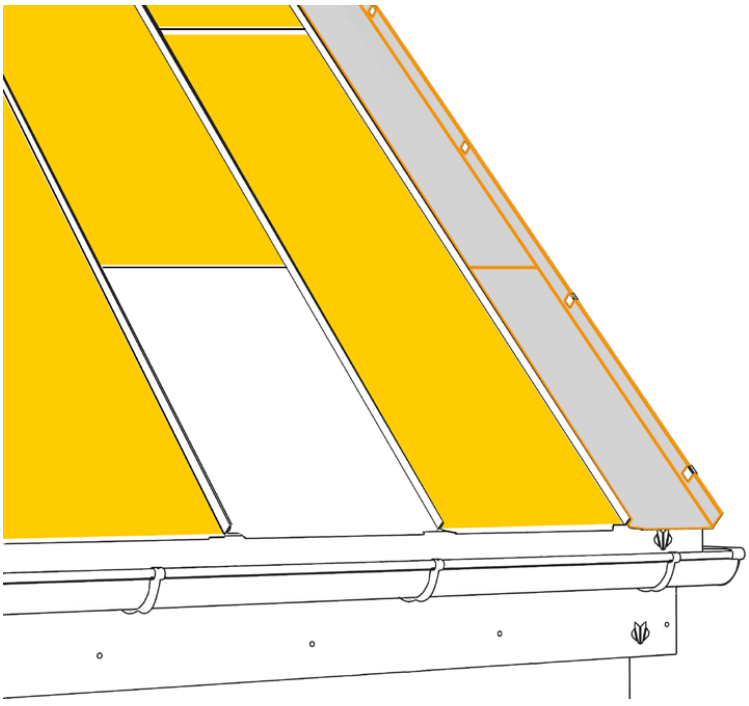
14. Installation of the VOLT wind brace

The edge part of the roof slope is the place where high suction forces occur, therefore, it is necessary to use compacted fastening.

Installation of the wind brace follows the installation of the roof panels.
The wind brace will be attached to the extreme panel.
Remember that the edge panels are of the same width, so it is important to check the geometry of the roof before starting the installation. On the edge panels, place the installation clips at a minimum of 300 mm apart.
The extreme panel should be bent to the height of the wind brace and fastened from the outer side of the slope sufficiently firmly with the use of the supplied hooks so as to allow the panel to work along its length.

FIG. 29 - ASSEMBLY OF THE END PANEL





A guide for **VOLT optimizers** is installed on the edge of the roof slope, therefore, dedicated brackets should be used for proper installation of the wind brace. They are supplied as a system with the guides for **VOLT optimizers**. Screw the brackets to the guide as shown in **Figure 30.**

FIG.30 - WIND BRACE BRACKETS

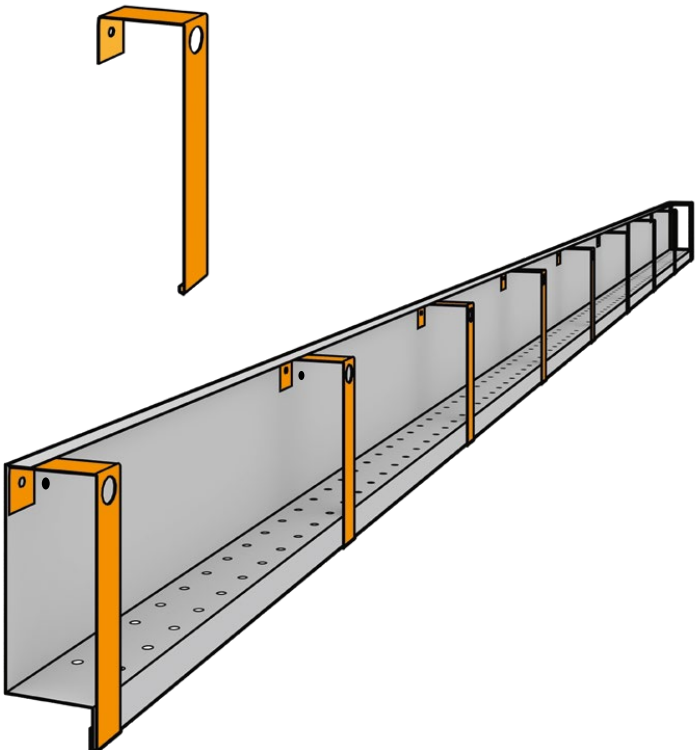


FIG. 31 - INSTALLATION OF WIND BRACE BRACKETS

The spacing of the brackets is determined by the places where the lower modules of the wind brace are installed and the points where the upper modules are joined to the lower.

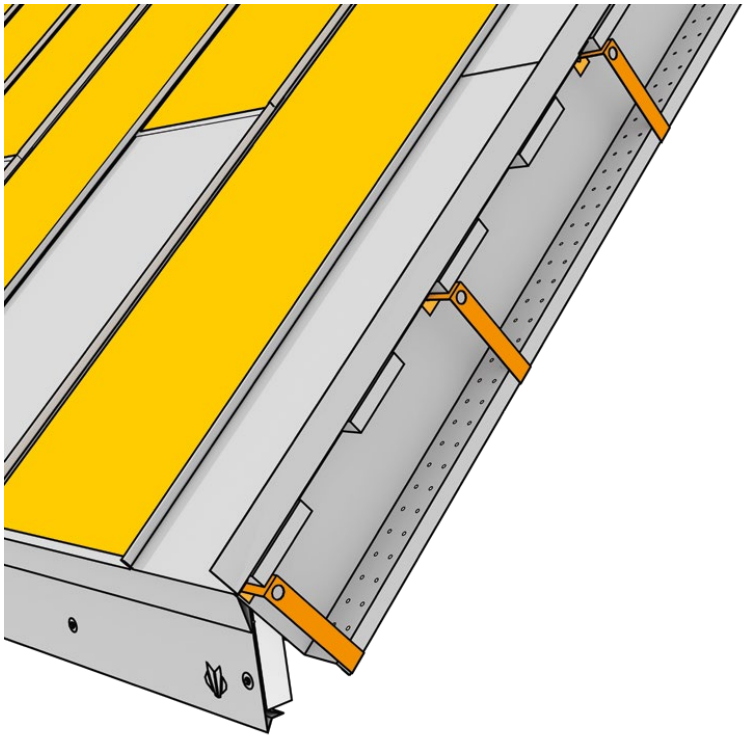


FIG. 32 - ASSEMBLY OF THE FIRST WIND BRACE MODULE

Assemble the lower module of the wind brace by screwing it to the brackets of the wind brace in places of recesses and mounting holes **(Fig. 32)**.
Install the bottom two modules first.

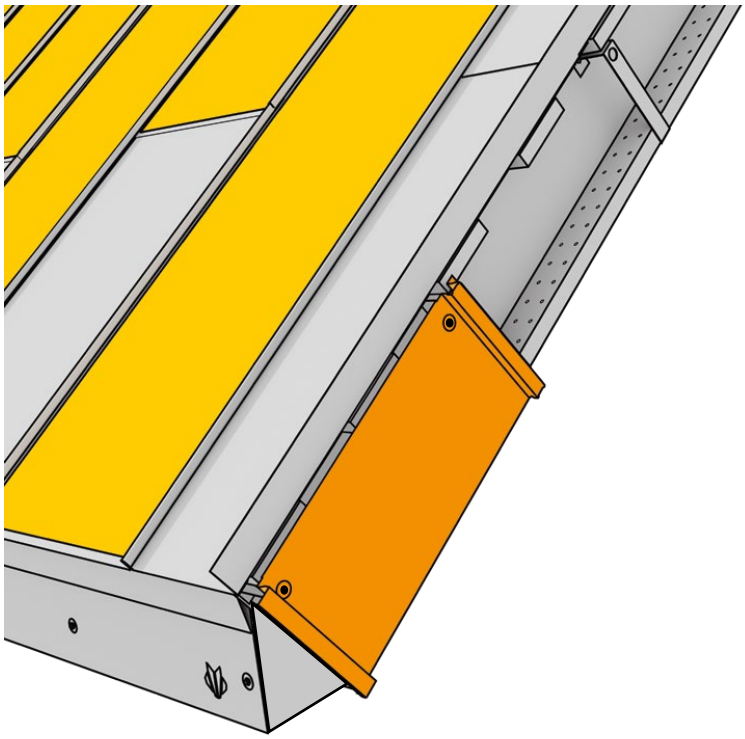
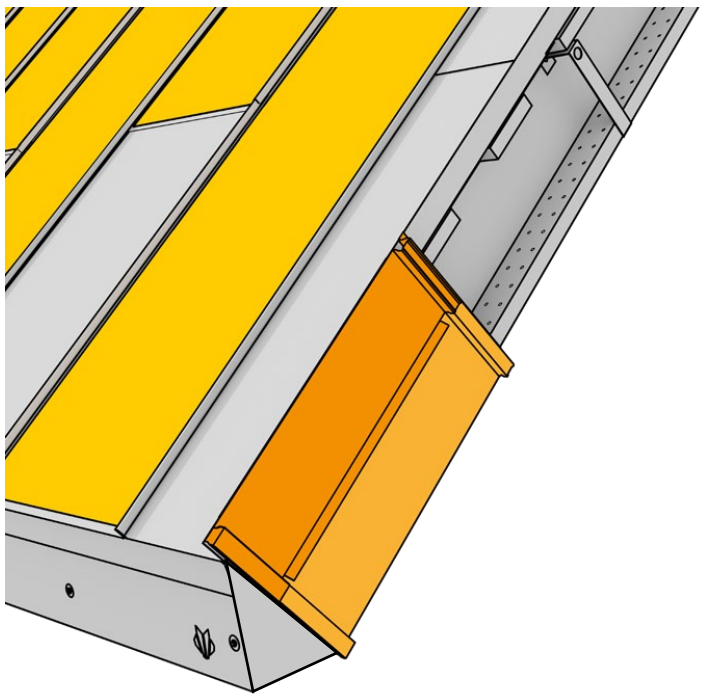


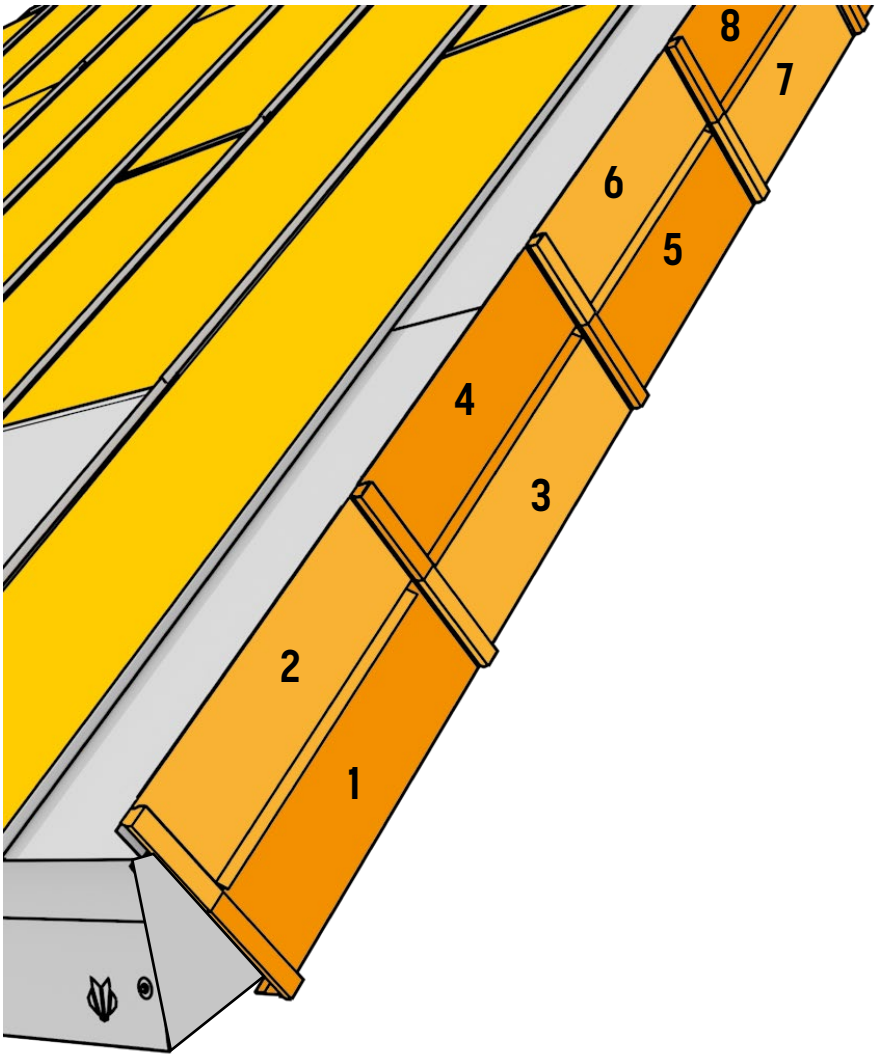
FIG. 33 - ASSEMBLY OF THE UPPER MODULE OF THE WIND BRACE

Afterwards, attach the upper module of the wind brace by hooking it to the previously prepared bend of the outer panel and connect it with the lower module through the mounting holes on the overlap by screwing them to the previously installed bracket.



Install the next modules alternately by first mounting the lower module and adding the upper module, by attaching them to the brackets previously attached to the guide.
The assembly order of the **VOLT wind brace** modules is shown in **Fig. 34**.

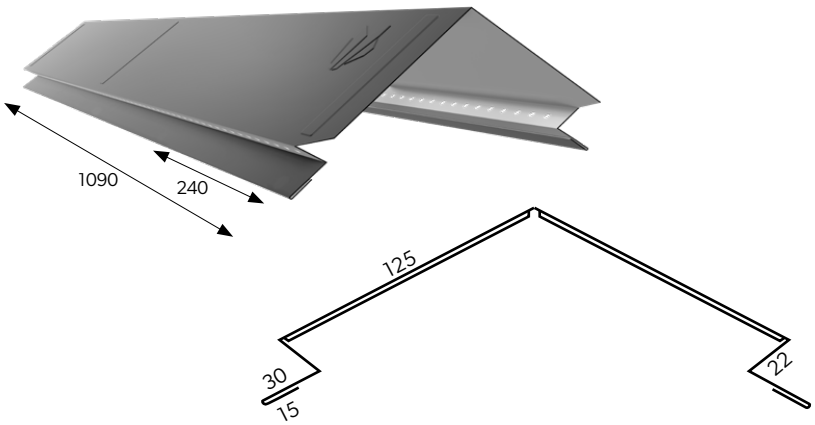
FIG. 34 - ASSEMBLY ORDER OF MODULES OF THE WIND BRACE VOLT



15. Installation of the VOLT ridge tile

The ventilated ridge tile with a length of 1 m is a flashing crowning the roof covering in the ridge. It is dedicated for use with roof coverings from the **PANEL SERIES** and **FIT VOLT** series. Its task is to seal, as well as to aesthetically finish the roof ridge. The biggest advantage of the ventilated ridge tile is the factory-made perforation on the front wall, which allows ventilation of both the roof and the attic without the need to install an additional ventilation strip in the ridge line.

FIG. 35 - VENTILATED VOLT RIDGE TILE



ATTENTION!
The panels reaching the ridge should be conventional FIT panels (without photovoltaic system).

FIG. 36 - LAYOUT OF PANELS REACHING TO THE RIDGE

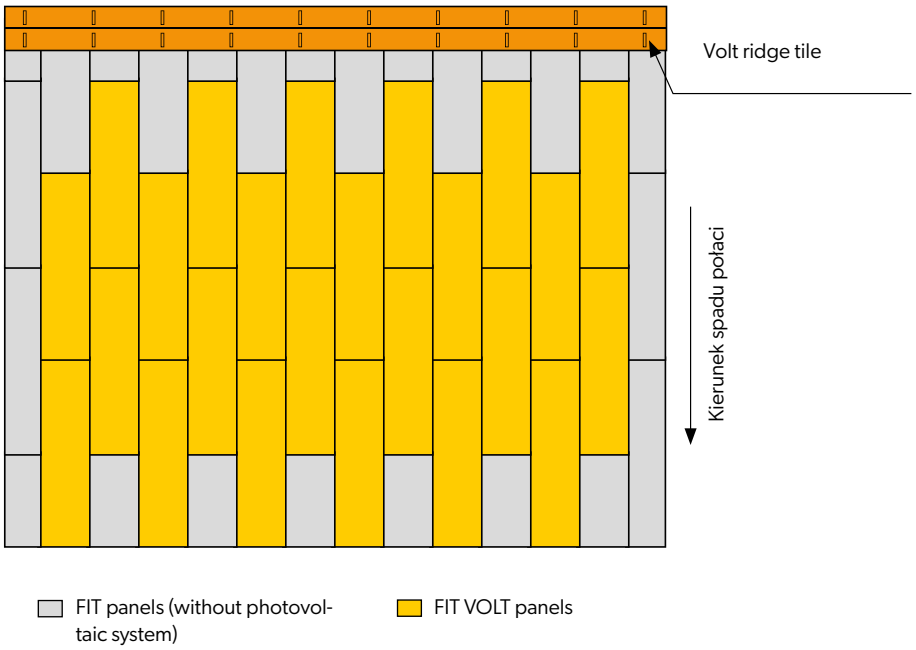


FIG. 37 - PREPARING THE VOLT RIDGE TILE FOR INSTALLATION

Before placing the ridge tile on the roofing, make cutouts corresponding to the spacing and width of the seams of the **FIT / FIT VOLT roof panel (Fig. 37)**.

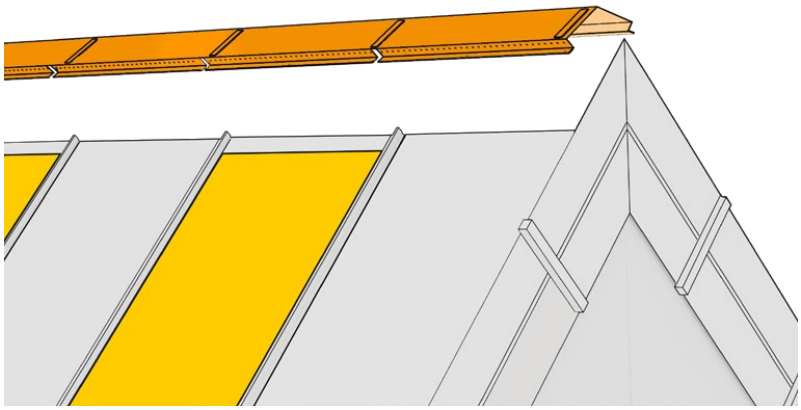
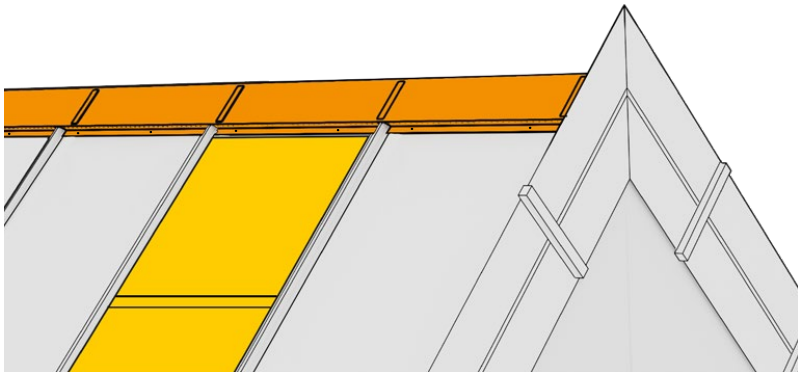


FIG. 38 - ASSEMBLY OF THE VOLT RIDGE TILE

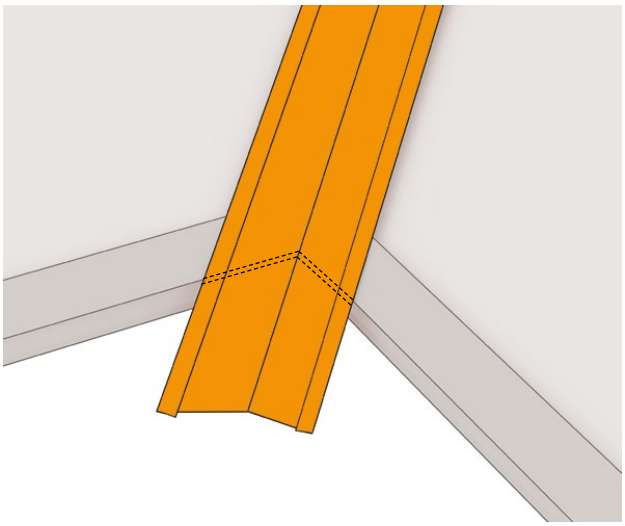
For fixing use short 20 mm screws with a density of 2 screws per flat surface of a single panel **(Fig. 38)**.



16. Installation of a basket gutter

The assembly of the valley gutter begins with adjusting it to the corner. When marking and cutting off the shape, a 30 mm overlap should be provided for making the bend to the starting belt.

FIG. 39 - INSTALLATION OF THE VALLEY GUTTER



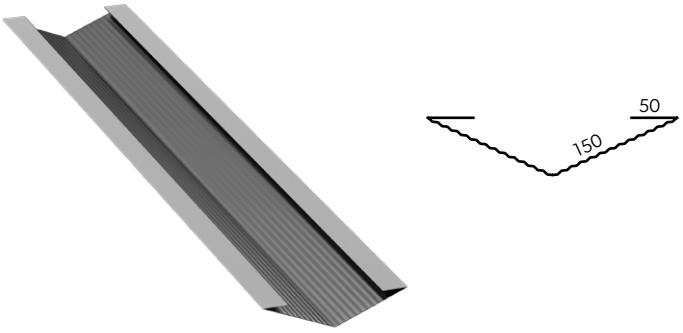


FIG. 40 - INSTALLATION OF THE VALLEY GUTTER

Using the folding made, the gutter is fastened to the starting strip and attached to the structure from the eaves to the ridge by means of the supplied installation clips (remember to adjust the appropriate overlap to the angle of the roof slope).

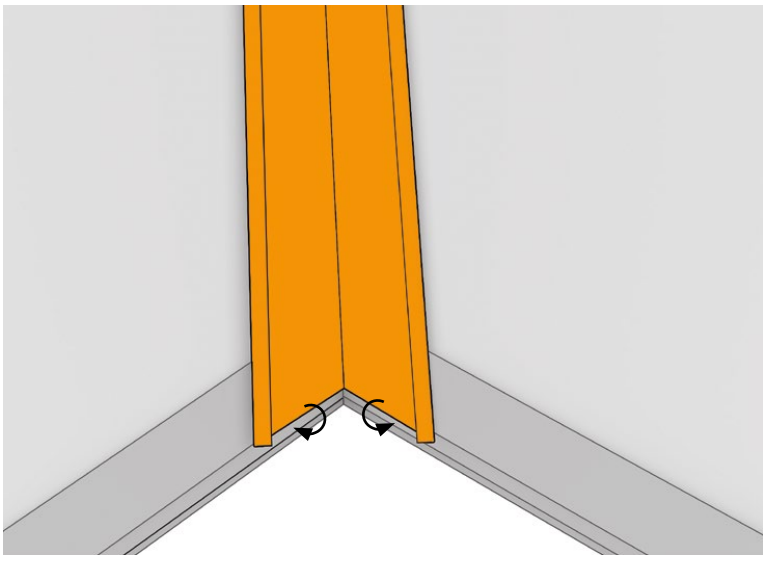
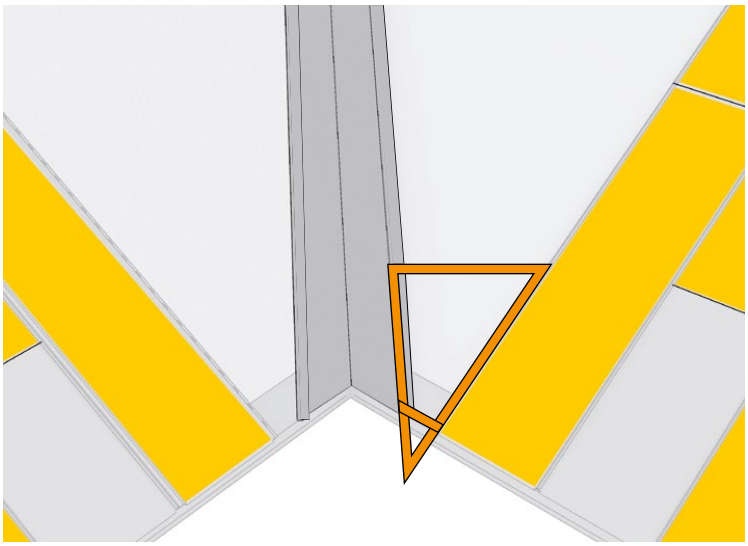


FIG. 41 - CUTTING THE PANELS TO THE VALLEY GUTTER

Before cutting and assembling the panels adjacent to the valley gutter,
the angle should be measured by making a temporary template made of slats.



Then, using the template, cut the panel, leaving a 30 mm overlap for the folding to the gutter.

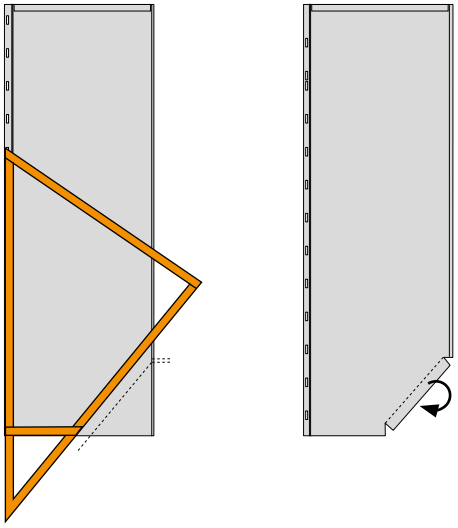
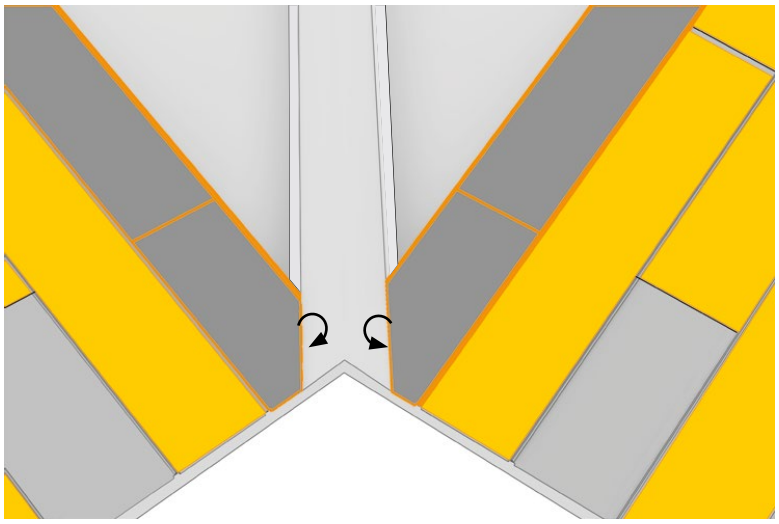


FIG. 42 - ASSEMBLY OF PANELS TO THE VALLEY GUTTER

The panel is subsequently hooked to the edge of the valley gutter.



17. Installation of wall flashing

In this manual, we present one of several possible solutions.

The first step is to prepare and attach to the roof the grips that will be used to fix the edge panel. Such grips can be prepared from strips of sheet metal bent at right angles.
In the discussed solution, the wall flashing is the bending of the edge panel against the wall. This bending must be min. 200 mm, therefore, the section of the grip adjacent to the wall should be sufficiently longer than the bend of the edge of the panel to enable the connection to be made.

The flashing made of the edge panel should be at least 200 mm high. Moreover, its upper edge should be folded upwards, as doing so will allow for a secure attachment that does not require additional fastenings to ensure connection with the previously prepared grips.

FIG. 43 - FIXING THE BRACES TO THE ROOF

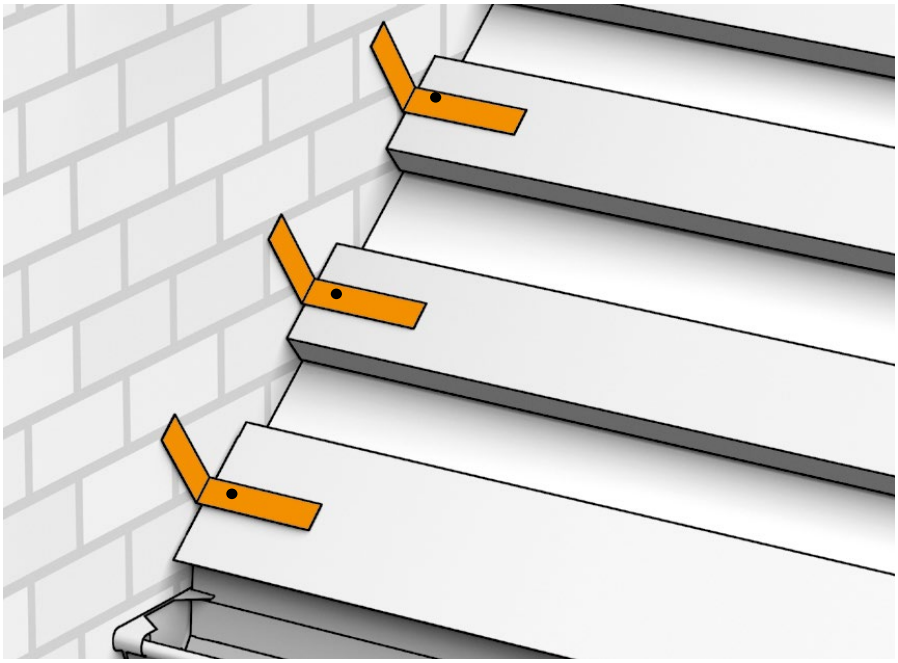
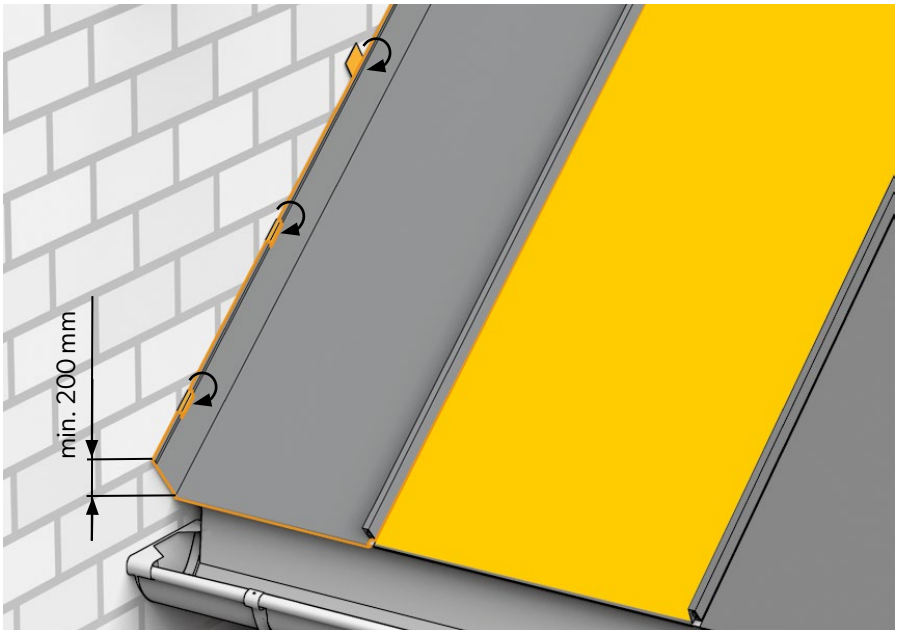
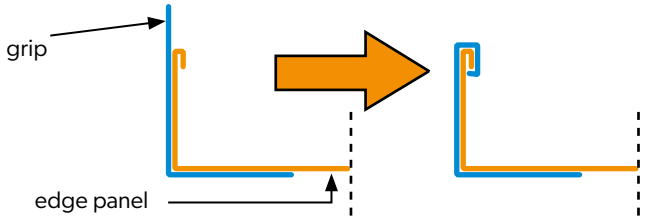


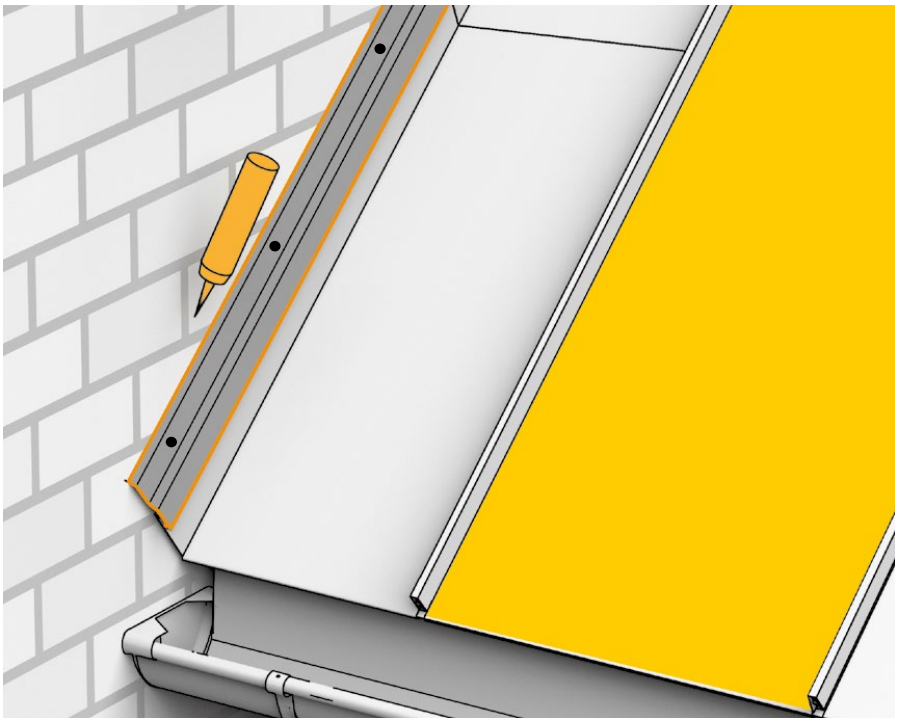
FIG.44 - INSTALLATION OF THE WALL FLASHING





The joint with the wall should be protected with an expansion strip and, if necessary, additionally sealed with roofing sealant.
The expansion strip must be attached to the wall.

FIG. 45 - INSTALLATION OF THE EXPANSION STRIP



18. Roof window installation

Before starting the work, remember to accurately measure the place where the window will be installed, so that you can start laying with panels of the appropriate width. It is important because we must remember that due to the specificity of this product and ensuring the highest possible tightness, it is best to perform flashings on a rabbet made of covering panels and flat sheet. Full boarding should be used as a base in this place (**Fig. 46**).

After determining the window installation location, cut the hole in the roof structure. For this purpose, outline the window frame, bearing in mind the structure and shape of the frame holders, so that after cutting an opening in the boarding, assembly to the structure is possible.

The next step is to protect against condensate. For this purpose, we use systemic treatments recommended by window manufacturers.

Around the area of full formwork, we make bypasses for cable ducts **(fig. 46)**.

When planning window bypasses for cable ducts, consider the additional distance in the layout plan of the guides for optimizers.

All panels adjoining the window should be inactive FIT VOLT panels (without a PV installation) - Fig. 47.

FIG.46 - A SOLUTION FOR A ROOF WINDOW

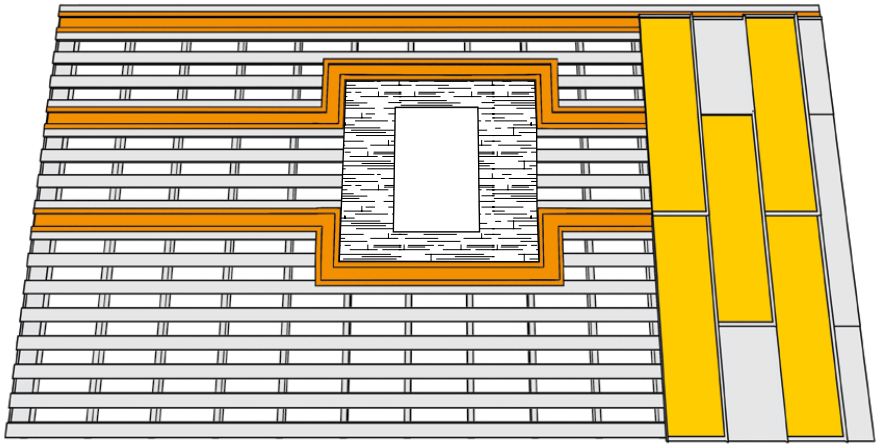


FIG.47 LAYOUT OF THE FIT VOLT PANELS AROUND THE WINDOW

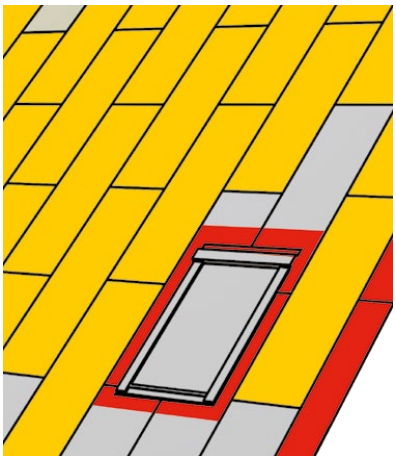


FIG.48 - INSTALLATION OF PANELS UNDER THE WINDOW

After securing the window, proceed with the installation of the panels under the window.

Finishing the window from below can be done in two ways:

1.by making a window sill flashing, where the base of the flashing is a ventilation strip,2. with the use of a custom-made starting flashing. This manual presents the second method as more universal.

Cut the panels to the size so that there is a space of about 10-15mm between the window and their egde after fastening them on the initial flashing of the eaves.

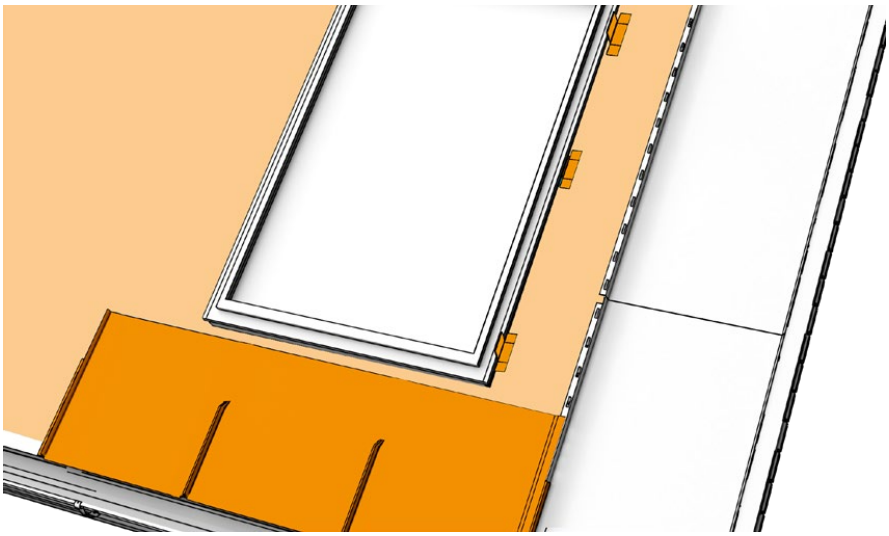
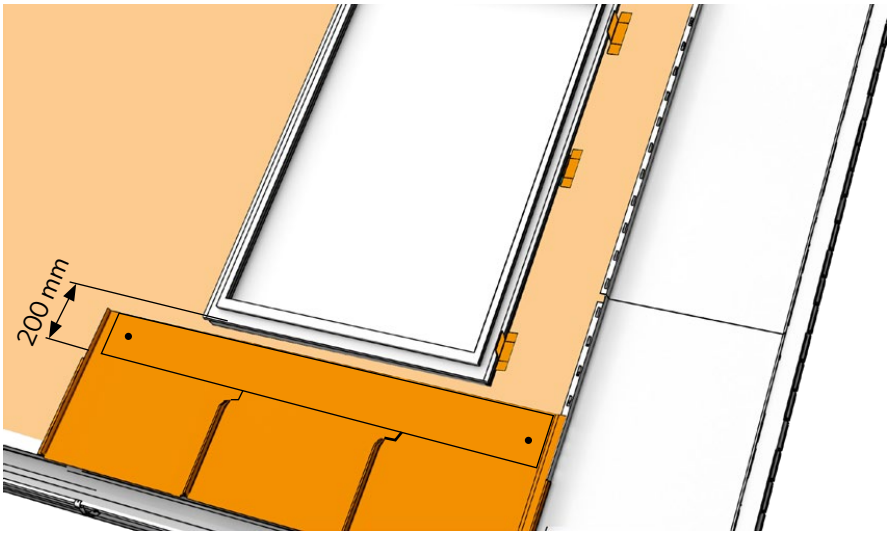


FIG.49 - INSTALLATION OF A CUSTOM-MADE STARTING FLASHING

The next step is to prepare the seams for the transverse connection of the panels. For this purpose, cut the outer parts of the seams on both sides of the window to the length of the overlap to enable the execution of longitudinal joining with the subsequent roof panels.

On the other hand, the seams falling directly under the window should be tapped flat to allow the installation of a custom-made starting flashing.



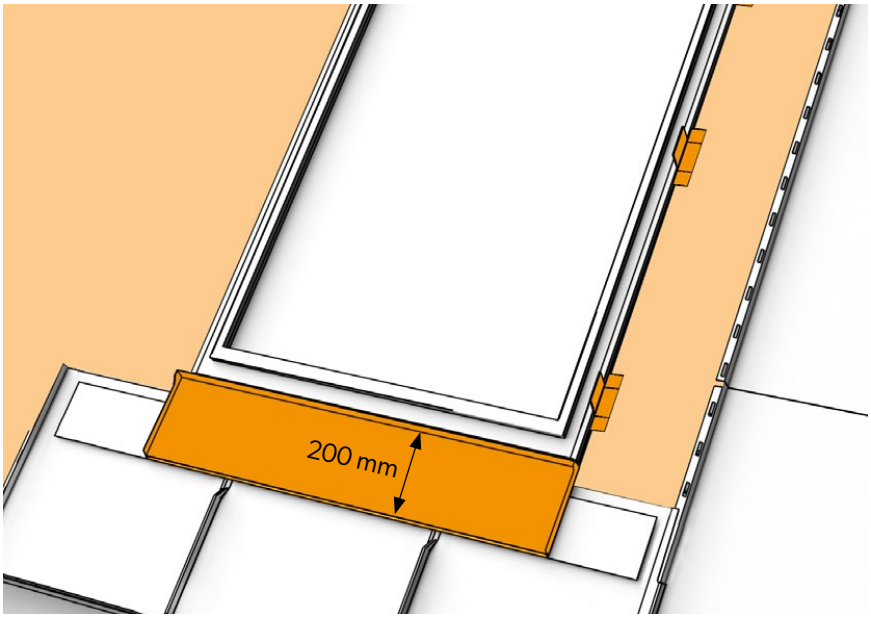
It should be remembered that the seams are always seamed down.

FIG.50 - SILL FLASHING ASSEMBLY

Measure approx. 200 mm for the lower flashing and install the starting flashing. This strip will also serve as a start for the side flashing panels.

Measure the bottom flashing of the window, mark it, roll the side edges with a folding device, creating a transition from the roof plane to the vertical plane of the window frame. Clamp the fold and profile the edges into an arc. This will allow us to have an aesthetic and tight connection with side flashings.

Fasten the flashing with the previously installed starting flashing.



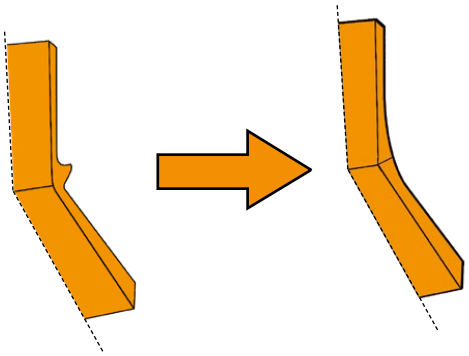


FIG.51 - ASSEMBLY OF THE WINDOW SIDE FLASHINGS

Make side flashings of the window from **FIT** panels, cutting and bending them to the side surface of the window and to top and bottom flashings. Also, remember to cut out the outer parts of the locks on the upper part of the flashings in order to connect them later in length with the next panels above the window.

In the next step, join the side flashing with the bottom flashing using welt. Finally, install factory window flashings.

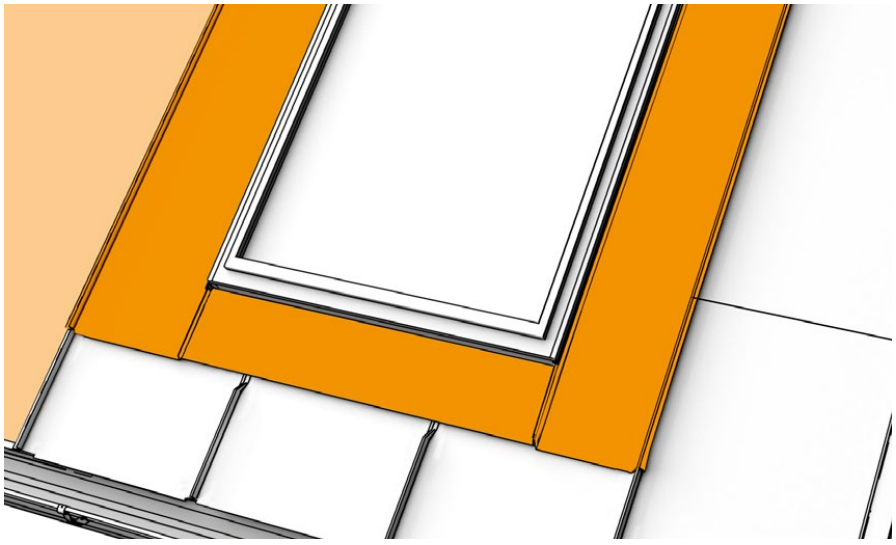


FIG.52 - PREPARATION FOR MOUNTING THE UPPER WINDOW FLASHING

The upper part of the side flashing should be cut into an arc and a welt element should be made - the edge bent outwards about 10 mm, which will be used to slide the upper window flashing over. The upper flashing will be stamped on the side flashing prepared in this way.

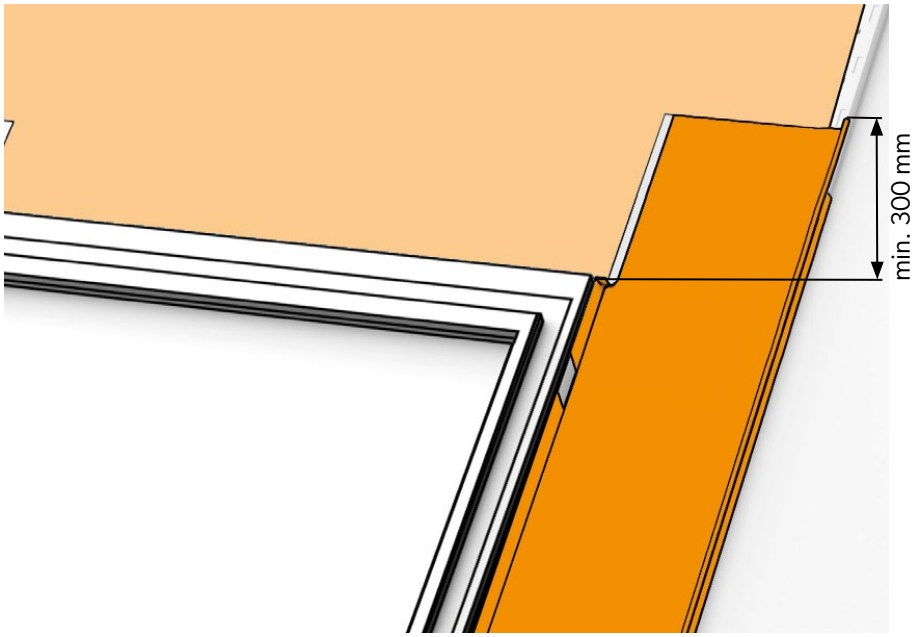


FIG.53 - WINDOW FLASHING ASSEMBLY

The metal sheet for the upper flashing of the window should be bent approx. 10 mm at the side edges, leaving approx. 2 mm for its stamping.

Then, use a batten to nail the back flashing to the height of the side flashing, remembering to form an approx. 20 mm waterproofing strip on the upper edge.

Placing a smaller sheet and using it as a guide makes it easier to slide the upper flashing.

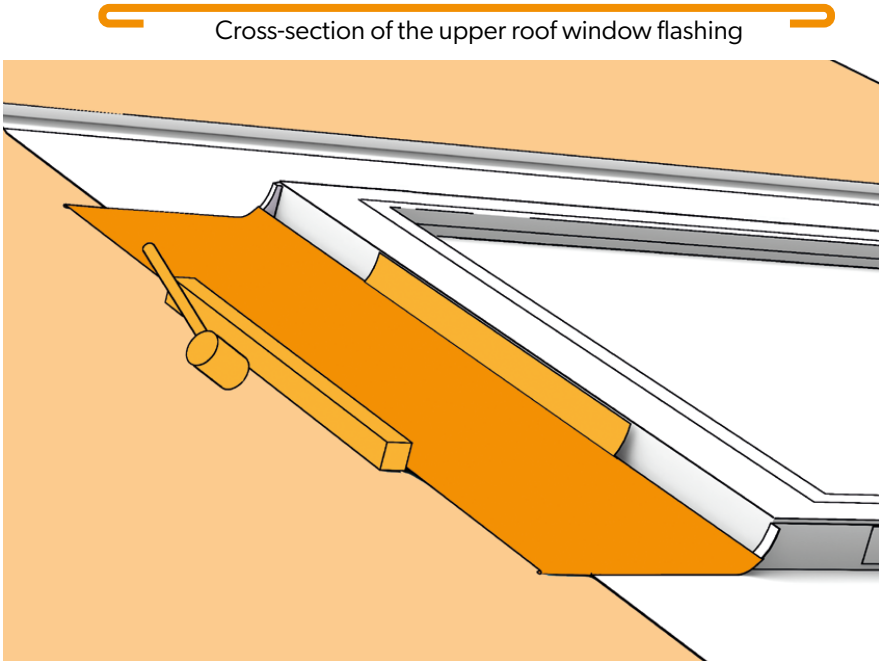


FIG.54 - BEND OF THE WATERPROOFING STRIP

After inserting the upper flashing, bend the waterproofing strip downwards, tap the top of the welt on the window frame, and then install the factory closing flashing.

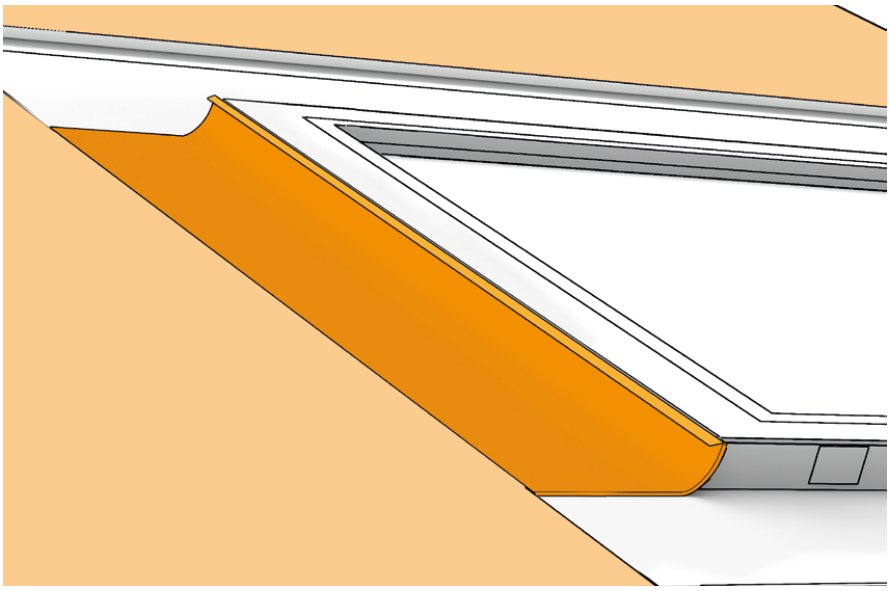


FIG.55 - MOUNTING THE STARTING STRIP ABOVE THE WINDOW

Install the starting flashing on the side of side flashings and window flashings.

Remember to tap the joints and horizontal welts with a batten.

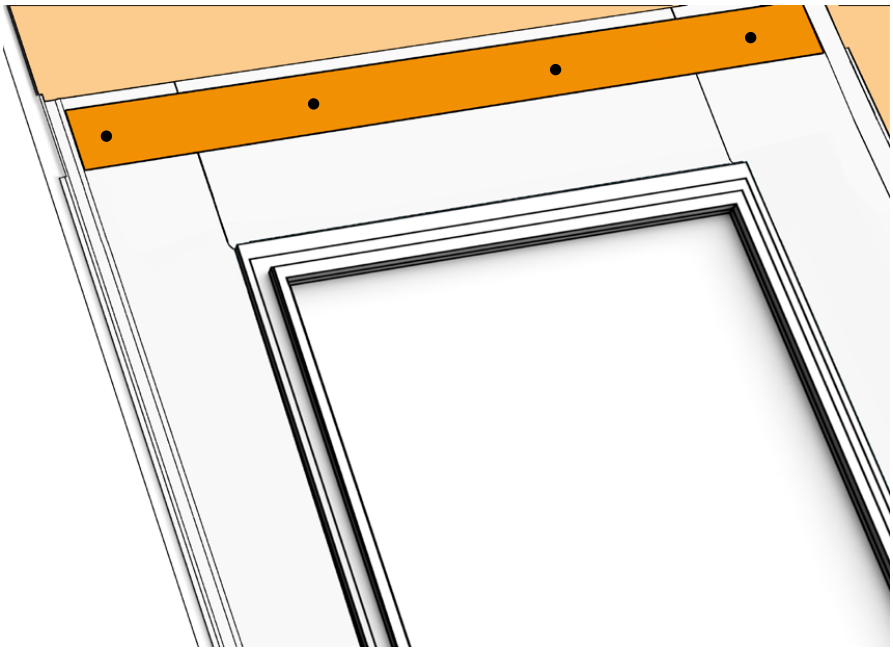
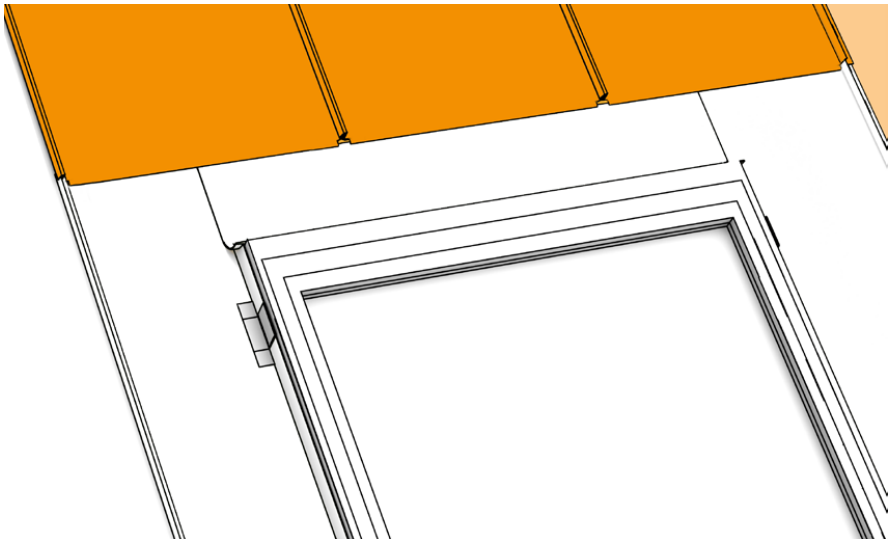


FIG.56 INSTALLATION OF PANELS ABOVE THE WINDOW

Install the panels above the window by hooking the starting flashing and joining the seams with the previously cut panel seams below.



19.Stack flashings installation

If it is possible, when planning the layout of the **FIT / FIT VOLT** panels on the roof slope on which the chimney is located, it is worth noting that the chimney flashings will look best in terms of aesthetics if the panels are arranged symmetrically to the chimney.

Around the chimney, full boarding should be used as a substrate for the flashings. Around the area of full formwork, we make bypasses for cable ducts **(fig. 57)**.

When planning stack bypasses for cable ducts, consider the additional distance in the layout plan of the guides for optimizers.

All panels reaching the chimney should be inactive FIT VOLT panels (without PV installation) - fig. 58.

The bottom panels should be installed right up to the stack, leaving 10-15 mm of play to allow the sheet to work freely.

As in the case of the roof window flashings, keep in mind to cut the external elements of the seam to the connecting distance.

To connect the panels or fasten the flashing, use the so-called custom-made starting flashing, remembering to seal between the sheets. It is of great importance for capillary rise of rainwater. **Fig. 59**.

FIG.57 - SOLUTION FOR THE CHIMNEY

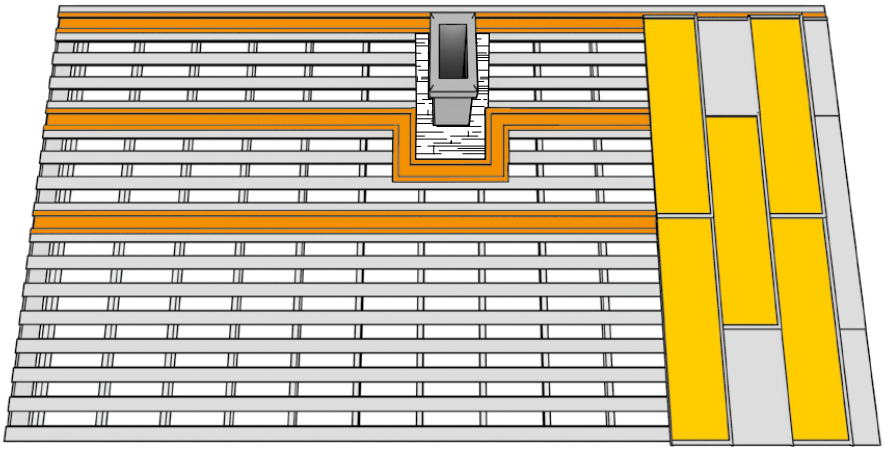


FIG.58 - LAYOUT OF THE FIT VOLT PANELS AROUND THE CHIMNEY

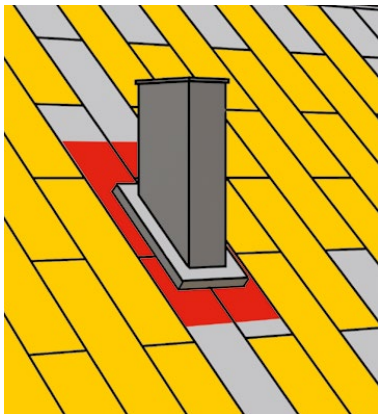
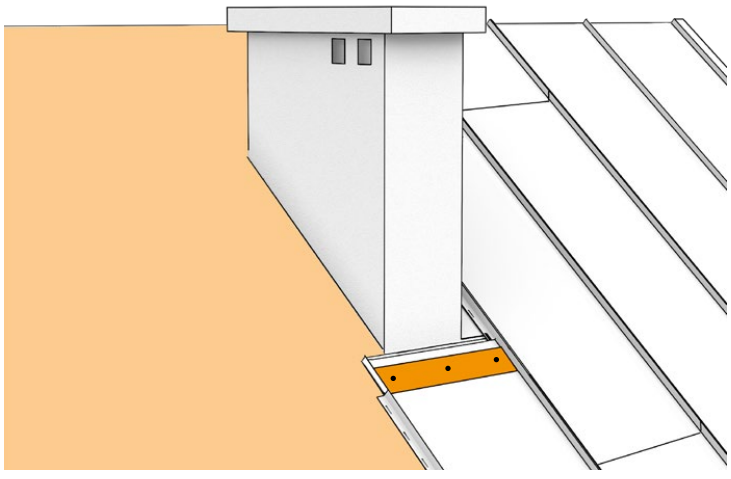


FIG.59 - INSTALLING A CUSTOM-MADE STARTING FLASHING



The stack flashing should begin with the preparation of the bottom flashing. The first step is to measure and mark the sheet from which the processing will be made. After cutting the steel sheet and tracing the cuts and fractures, make a transition from the roof plane to the stack plane using a folding device.

The panels are installed by connecting them along their length in accordance with the rules described in point. **13. Connecting panels along the length**.

FIG.60 - BOTTOM FLASHING OF THE STACK WITH A BENDING INTO A FOLD

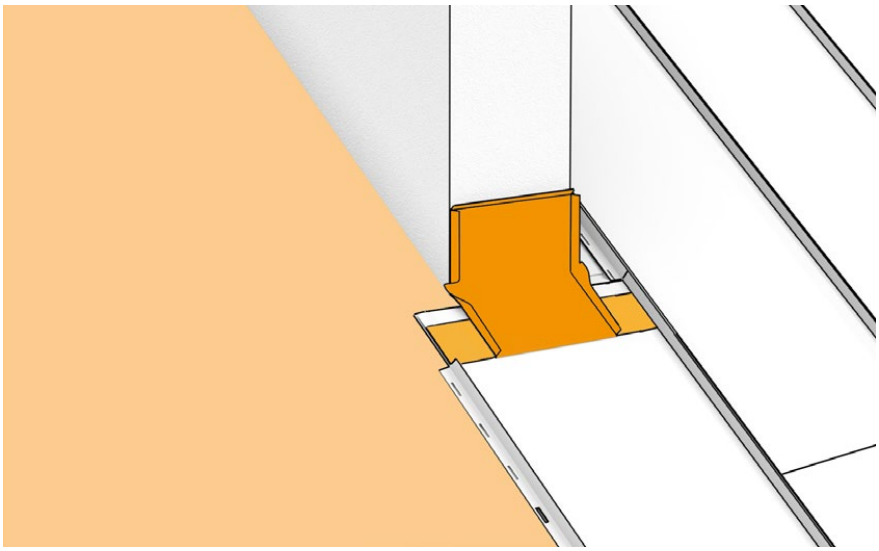


FIG.61 - TRANSITION FROM THE STACK PLANE TO THE ROOF PLANE MADE WITH A FOLDING DEVICE

After tightening the fold, the edge radius should be cut to the shape of an arc. It will allow for the seam and aesthetic finishing of the flashing.
When installing the stack flashing, remember to make a two-centimetre waterproofing strip on their upper edge.

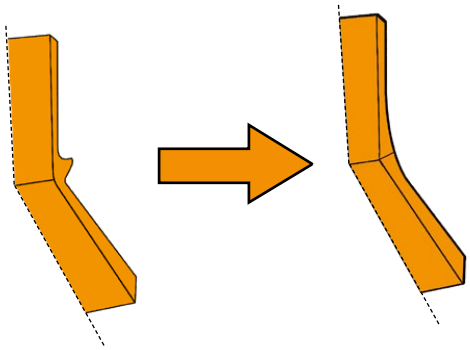


FIG.62 - CLAMPING THE FOLD AND CUTTING THE RADIUS IN THE SHAPE OF AN ARC

The external side flashing must be positioned perfectly, otherwise it will not allow the panels to be fastened in a neat and even manner.

Side flashing should be cut approx. 10 mm higher than the lower flashing arc, enabling them to be joined together using a welt. Before starting the welting, the distances of the seam of the steel sheet above the stack should be checked.

After welting, in the upper part of the flashing, tap the seam flat, which will not allow the welt to open.

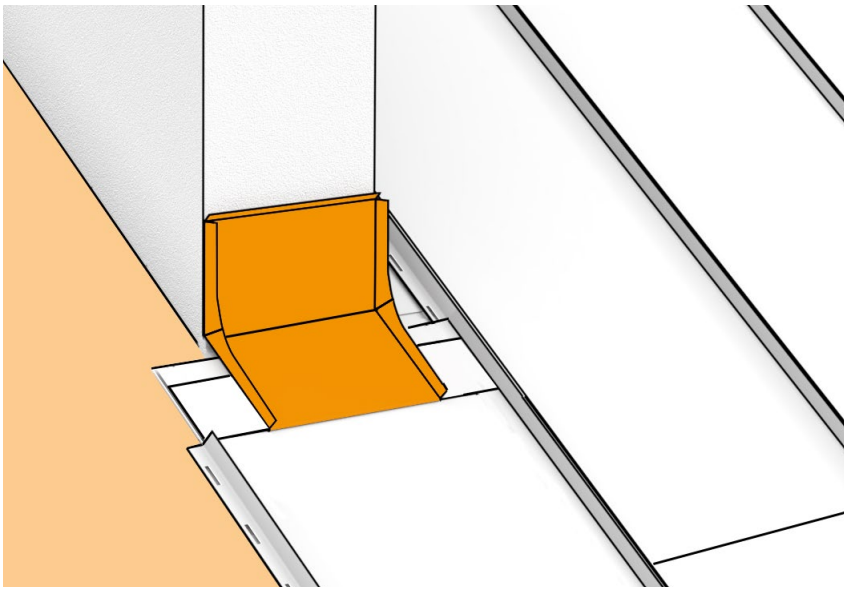


FIG.63 - CONNECTING THE FLASHING TO THE REBATE

This operation should be startd from the centre of the arc because the sheet will undergo additional stretching at this point.

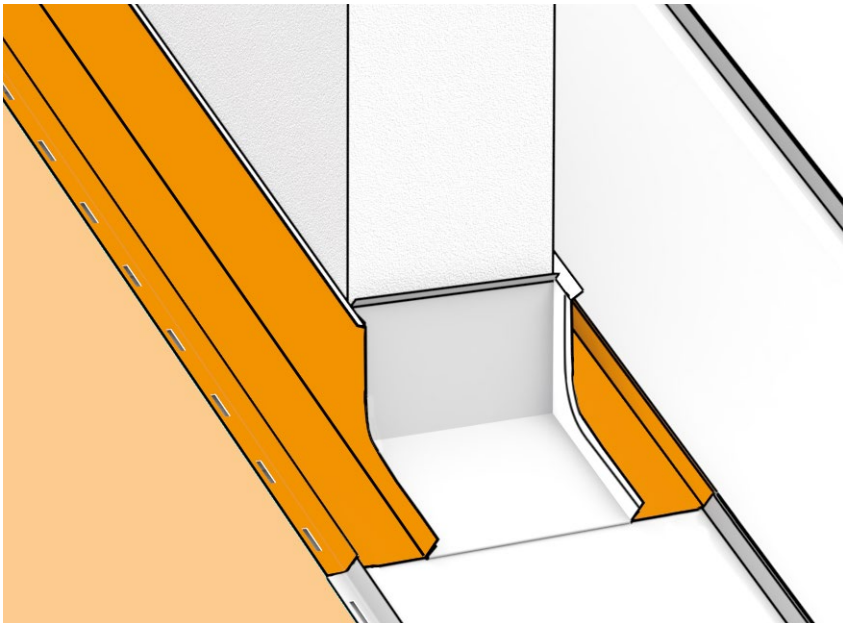


FIG.64 - UPPER STACK FLASHING ASSEMBLY

The upper part of the side flashing should be cut into an arc and a welt element should be made - the edge bent outwards about 10 mm, which will be used to slide over the upper flashing of the stack.

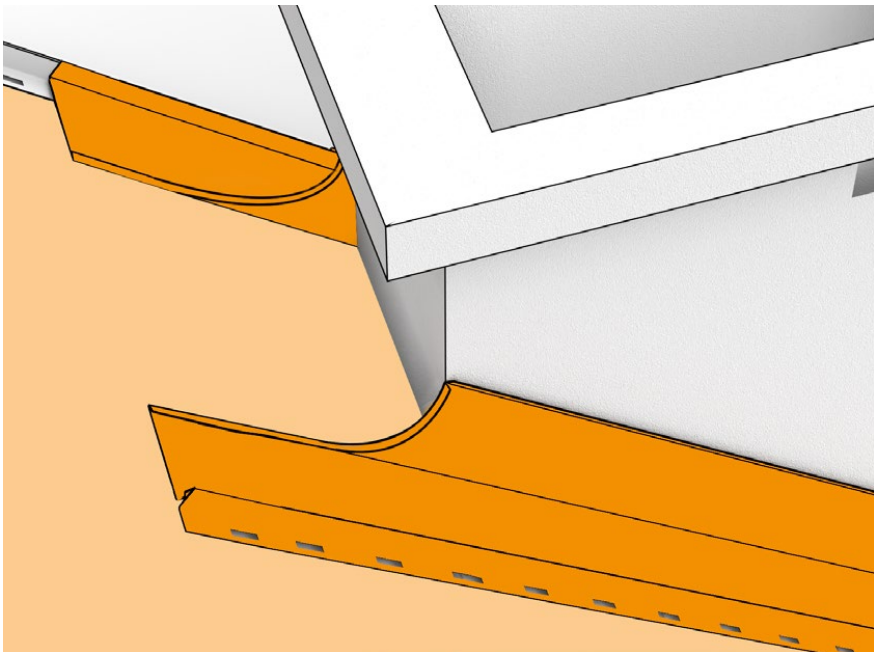


FIG.65 - UPPER STACK FLASHING ASSEMBLY

Top flashing cross-section

The steel sheet for the top flashing of the stack should be bent approx. 10 mm on the side edges, leaving approx. 2 mm for its tapping.

Then, use a batten to nail the back flashing to the height of the side flashing, remembering to form an approx. 20 mm waterproofing strip on the upper edge.

Placing a smaller sheet and using it as a guide makes it easier to slide the upper flashing.

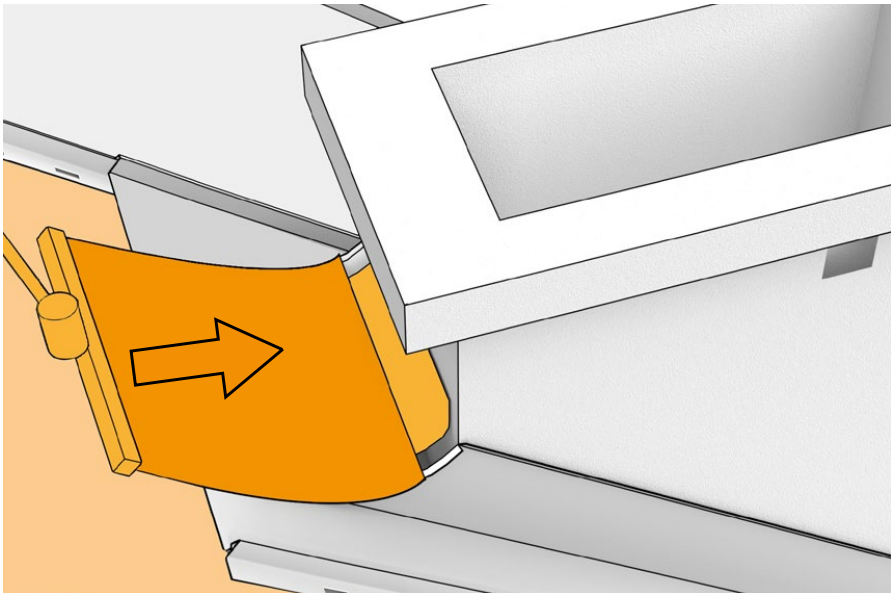


FIG.66 - STARTING FLASHING ASSEMBLY

After sliding over the upper flashing, fold the waterproofing strip down.

Remember to tap the places of the joints and seams with the batten.

After the upper stack has been processed, install the starting flashing for further assembly of the roof panels.

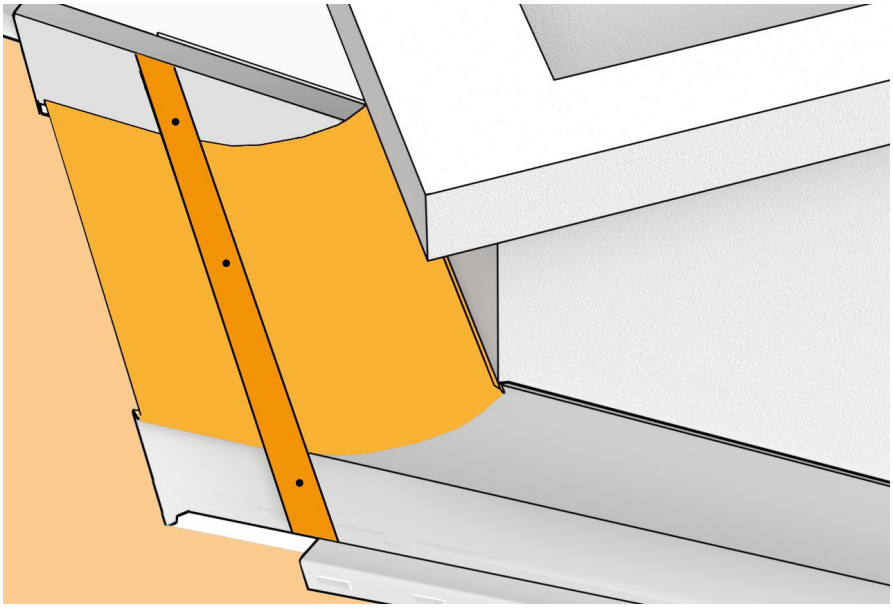
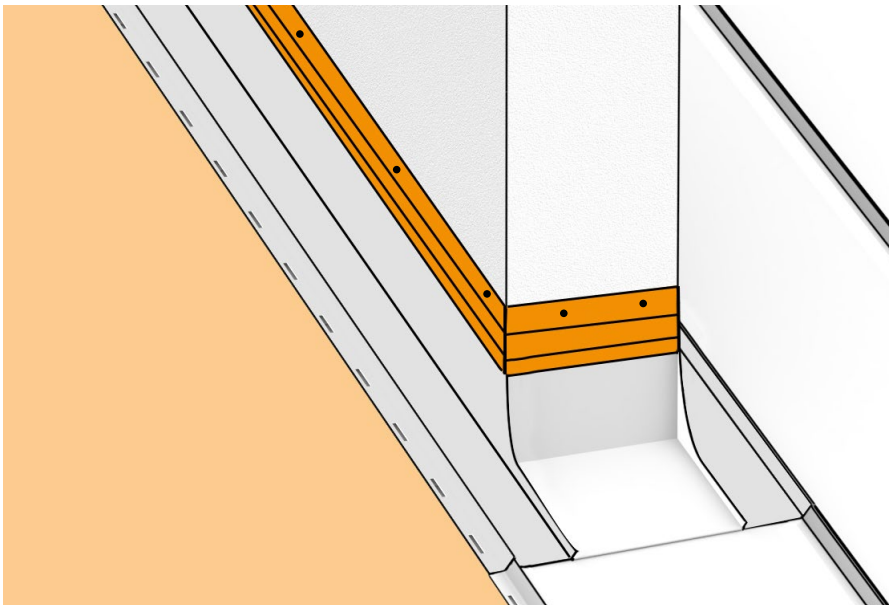


FIG.67 - ASSEMBLY AND SEALING OF EXPANSION STRIPS

The last step is to install the expansion strip, which is mechanically attached to the stack wall. The main flashing of the stack must never be mechanically fastened to its wall.



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