Alumil SOLAR

H2200 - AS250

TECHNICAL MANUAL

Version:05.23

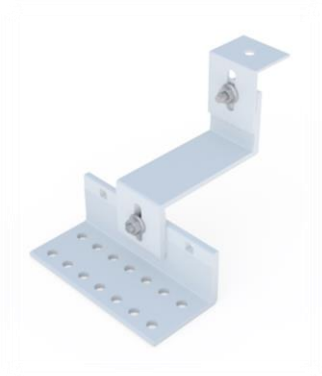
Assembly Instructions

❖ CONTENTS

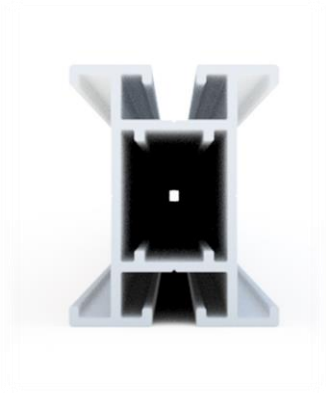
A. MATERIAL LIST

1. Accessories for tile roof

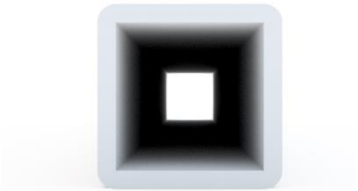
TILED ROOF HOOK WITH HORIZONTAL ADJUSTMENT
(EX- 8962220101)



SET FOR NEW HINGE FOR TILE ROOFS WITH L END
(EX- 8962216100)



PROFILE H2216



CORE FOR H2216 PROFILE
(EX-8962200200)

HANGER SCREW A2 INOX
M10x250 SW 7
DIN 6923+EPDM
(EX-8968222116)

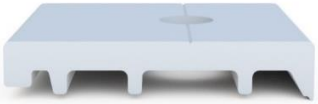
HANGER SCREW A2 STAIN ST
M10x300 SW7
DIN 6923+EPDM
(EX- 8968201316)

ADAPTER SHEET FOR HANGER BOLT
82x40x5
(EX- 8962210101)

2. Fasteners & other accessories.

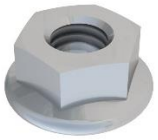
- **Accessories needed to mount the profiles**

HAMMER HEAD BOLT WITH EPDM M8*22 INOX A2
(EX-8969122081)



CLAMP FOR H2401 PROFILE
(EX- 8962406000)

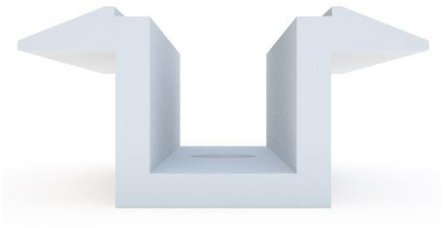
DIN 7504-K SELF DRILLING SCREW 5,5x19 A2 INOX
(EX-7626701901)



HEXAGON NUT DIN6923 M8 WITH SERRATION M8 INOX
(EX-8968808201)

HEX LAG SCREW DIN571 M8x100mm GALVANIZED
(EX-8969910080)

➢ Accessories needed to mount PV panels to the structure



MID CLAMP PANEL
(EX-8960180200)

END CLAMP LENGTH : X mm*
**Height of end clamp depends on the thickness of the PV panel*

SERRATED LOCK WASHER DIN6798-A M8 A2 INOX
(EX-7627300801)

T-SLOT NUT M8 ALUMINUM
(EX-8968008103)

ALLEN BOLT M8x'LENGTH*'
**Length of allen bolt depends on the thickness of the PV panel*

Panel thickness (mm)	***End clamp***	***Allen bolt***
50	*EX-8960330100*	*EX-7629085001*
46	*EX-8960430100*	*EX-7629084501*
42	*EX-8960340100*	*EX-7629084001*
40	*EX-8960440100*	*EX-7629084001*
38	*EX-8960720100*	*EX-7629084001*
35	*EX-8960450100*	*EX-7629083501*
34	*EX-8960460100*	*EX-7629083001*
32	*EX-8960621100*	*EX-7629083001*
30	*EX-8960630100*	*EX-7629083001*

3. Tooling set

Spirit Level (2m)

String Line

Stell Tape Measure (50 -100m)

Spanners Sockets (Metric)

Tap screw adaptor

Torque Wrench

Screw Rivet Tool

Power Driver & Bits
Impact Driver

Suitable Angular Measuring Device

Health & Safety

It is the installer's responsibility that their personnel ensure that safe working practices as required by the site specific contract are adopted and achieved at all times.
No operation should cause danger to employer, employee, contractor, sub-contractor or any member of the public.

4. Nut's torques

The table below represents the specific torques that should be used for fastening the screws and nut's, according to size (i.e. M8 or M10) and aluminum's finishing (i.e. mill finished or anodized).

SCREW TIGHTENING TORQUES (MILL FINISHED PROFILES)		
M10	**M8**	**M8 Allen**
T=40-45 Nm	T=25 Nm	T = 9 - 10Nm (for thin film panels) T =12-15 Nm (for poly panels)
SCREW TIGHTENING TORQUES (ANODISED PROFILES)		
M10	**M8**	**M8 Allen**
T=50 Nm	T=25-30 Nm	T = 9 –11 Nm (for thin film panels) T =14–17 Nm (for poly panels)

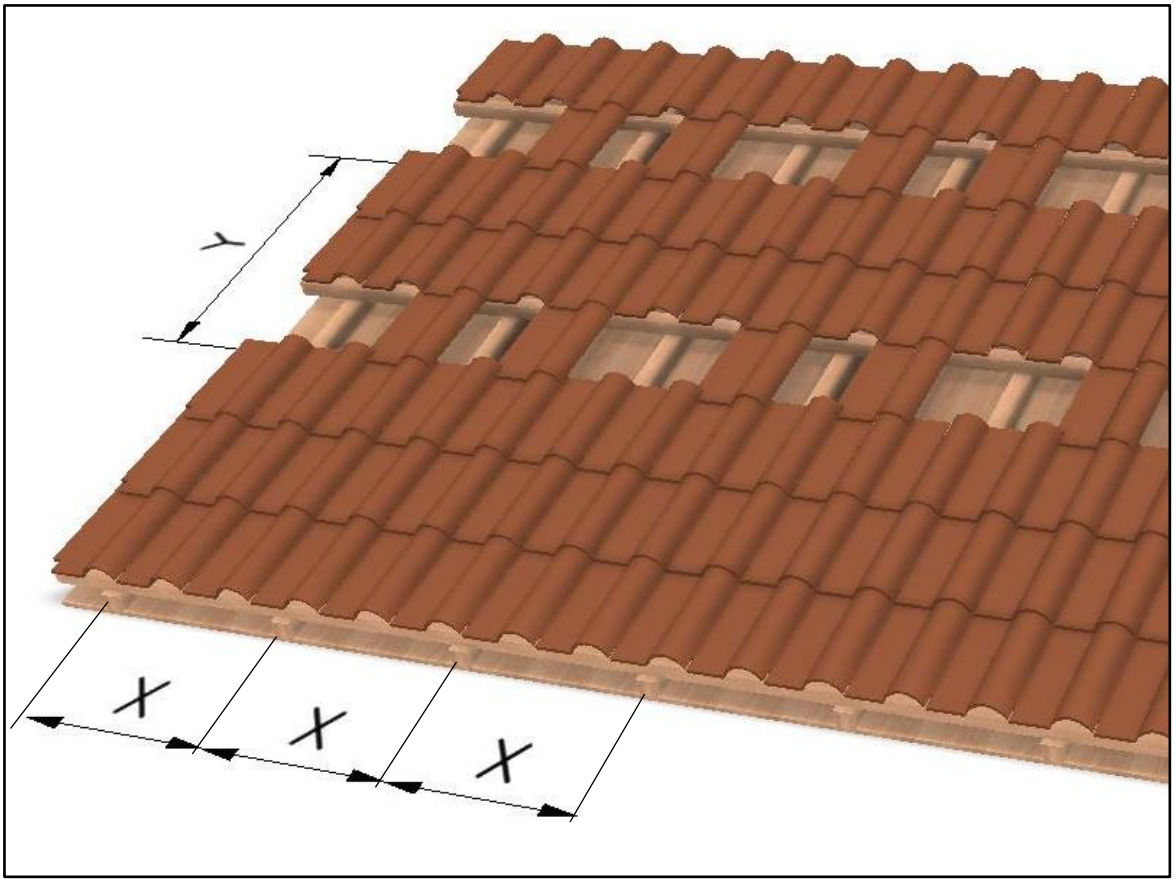
B. ASSEMBLY INSTRUCTIONS FOR AS250

1. AS250 Support with hooks (Portrait)

➢ Placing hook on tile roof.

Remove the tile carefully where you want to install the aluminum hooks.

Place the hook on the tile roof according to X and Y dimension.

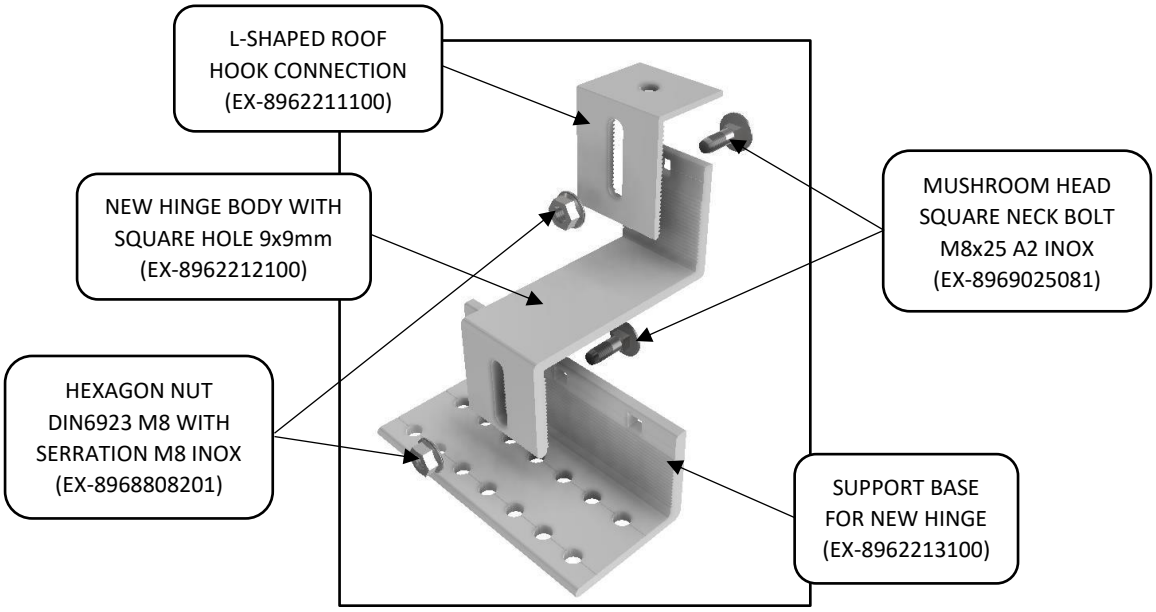


X = 1.200mm for hooks

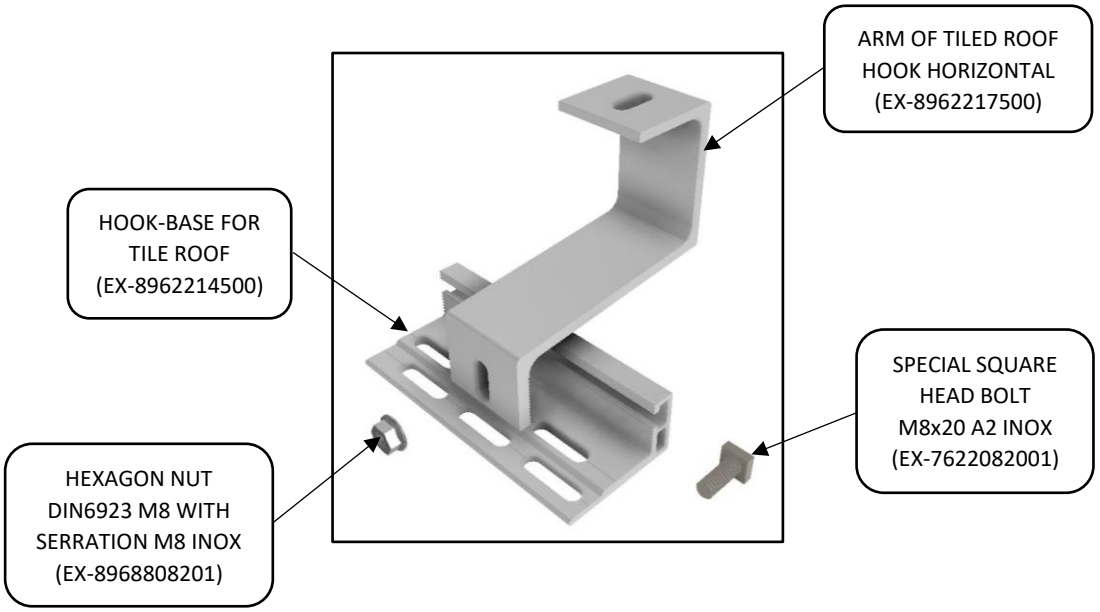
Y = Distance of horizontal profiles according to panel manufacturer.

Install support base (EX-8962213100) or (EX-8962214500) to the wooden beam and screw it with 2 half shank hex screw lag.

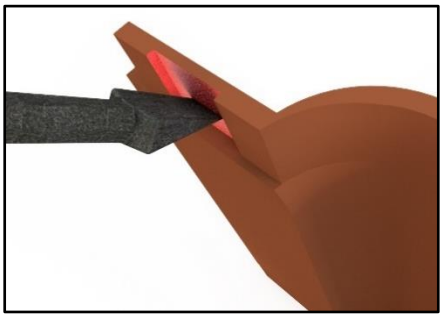
Connect accessories support base for new hinge and new hinge body with square hole 9x9mm and L-shaped roof hook connection with mushroom head square neck bolt and with hexagon nut with serration, after setting the desired height.

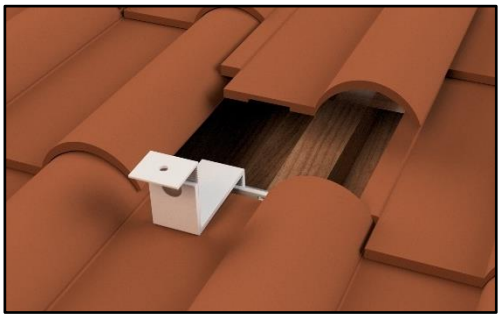


Similarly, when used other hooks, such as hook-base for tile roof. Screw the base to the wooden beam, adjust the arm to the proper position. Pay attention to proper tightening of nut.

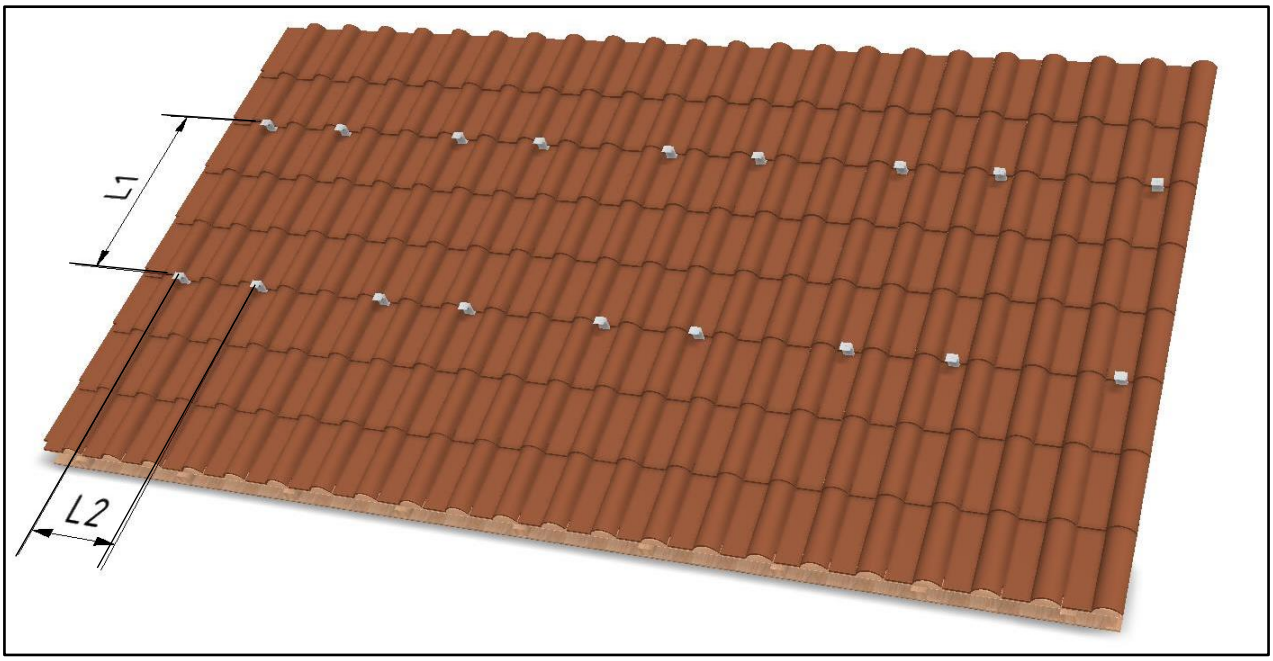


Reinstall tile to extend only the horizontal support beam socket. Beware the edge of the tile will need a light treatment, with a wheel or a chisel, so that it snaps.





Hooks are installed at specific distances in height and width depending on project requirements.



L1 = Portrait distance L1 defined according to the panel inclination and the panel manufacturer's specifications. Suppose the panel manufacturer provides a support point 1/4 from the panel edge for portrait. Therefore, for panel dimensions 1650 x 990mm weathering profiles screwed at L1 = 825mm.

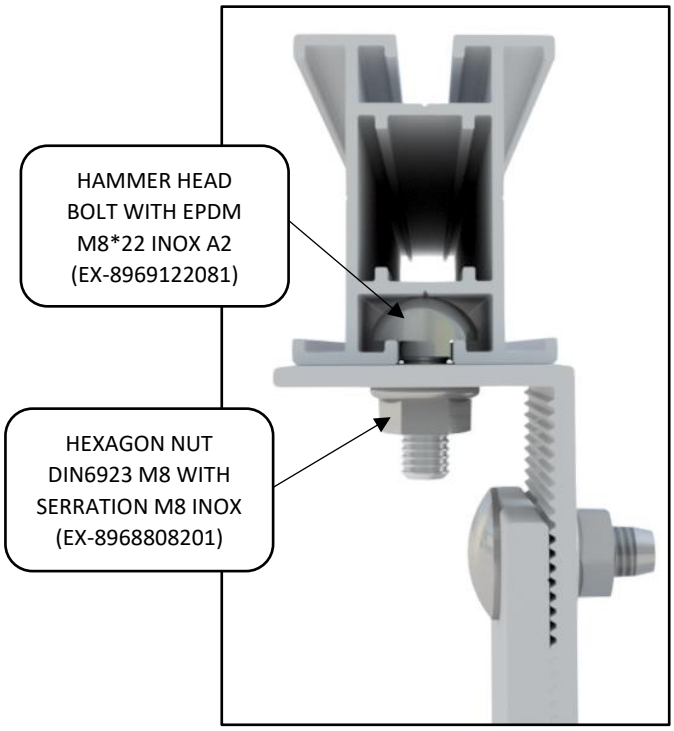
L2 = Horizontal distance L2 is determined by the static analysis based on the specifications of the Eurocodes 1,3,9. Always check the load capacity and the adequacy of current static wooden construction. Regardless of aluminum profile, recommended perimetrical mount always be by wooden beam

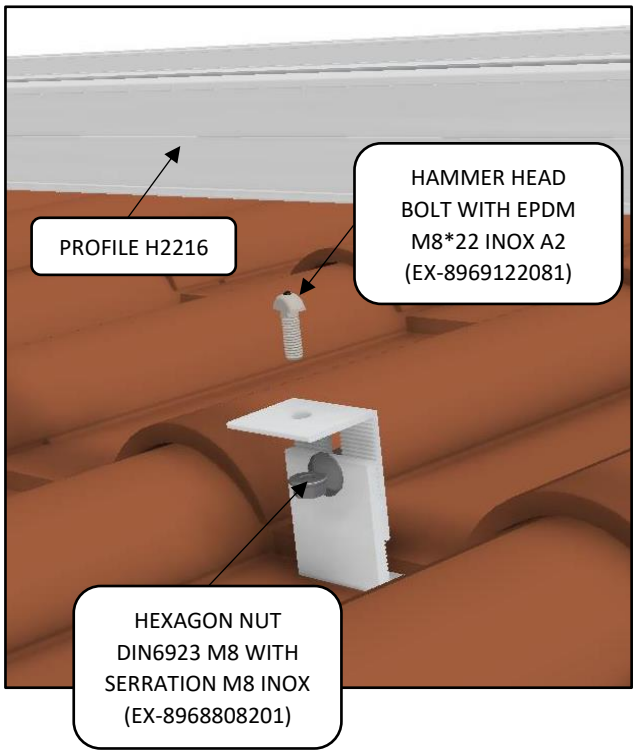
According to the horizontal beam profile which will use, the distance defined as:

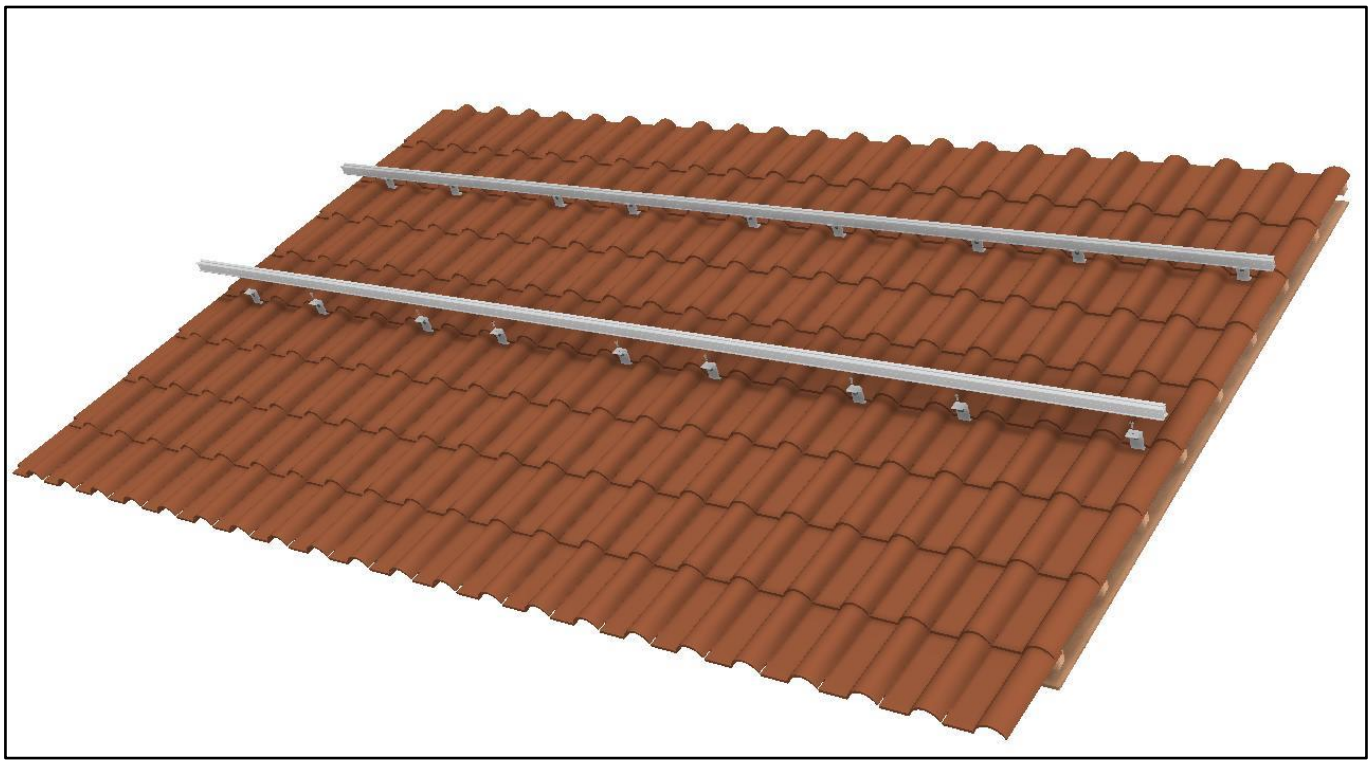
- H2216 - anchoring distance: 1400mm

➢ Placing H2216 on Hook

After you install the profiles in the right places, screw on them the horizontal beam. At the beam bottom there is a gutter socket for hammer head bolt with EPDM and hexagon nut with serration that connects the profile to the hook.

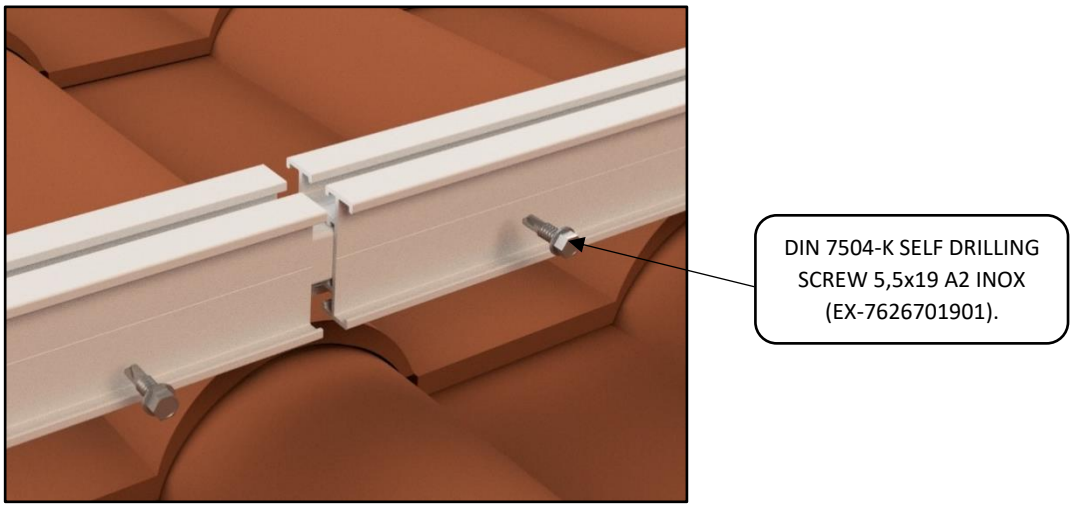


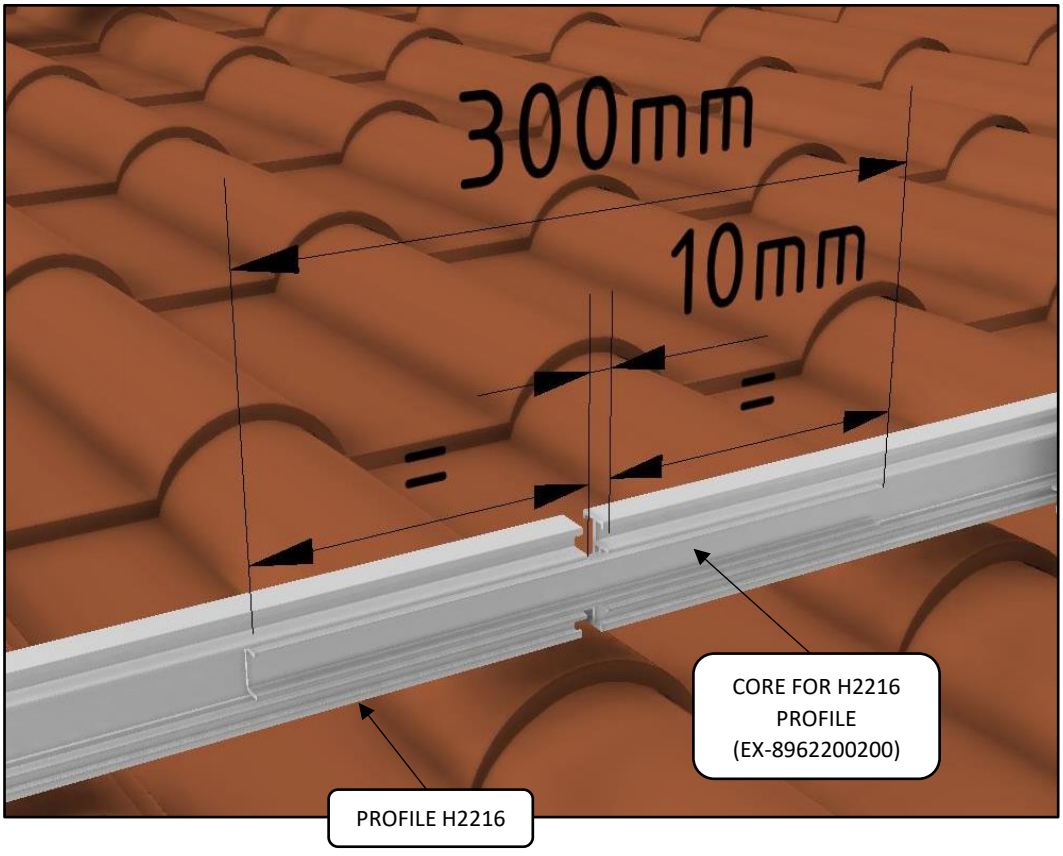




➢ Placing core in profile H2216

Place the core for H2216 profile in the 2 successive profiles H2216 and mount the with 2 self-drilling screw



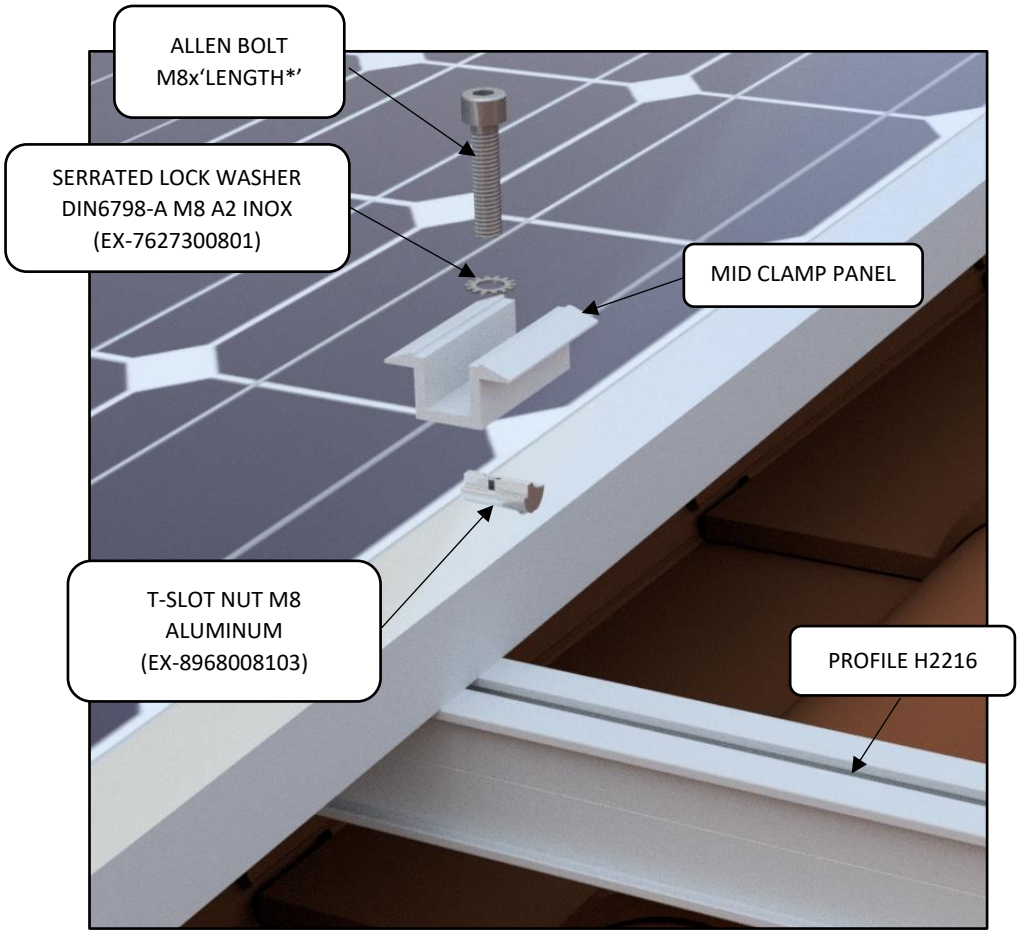


➢ Mounting panel on profile H2216.

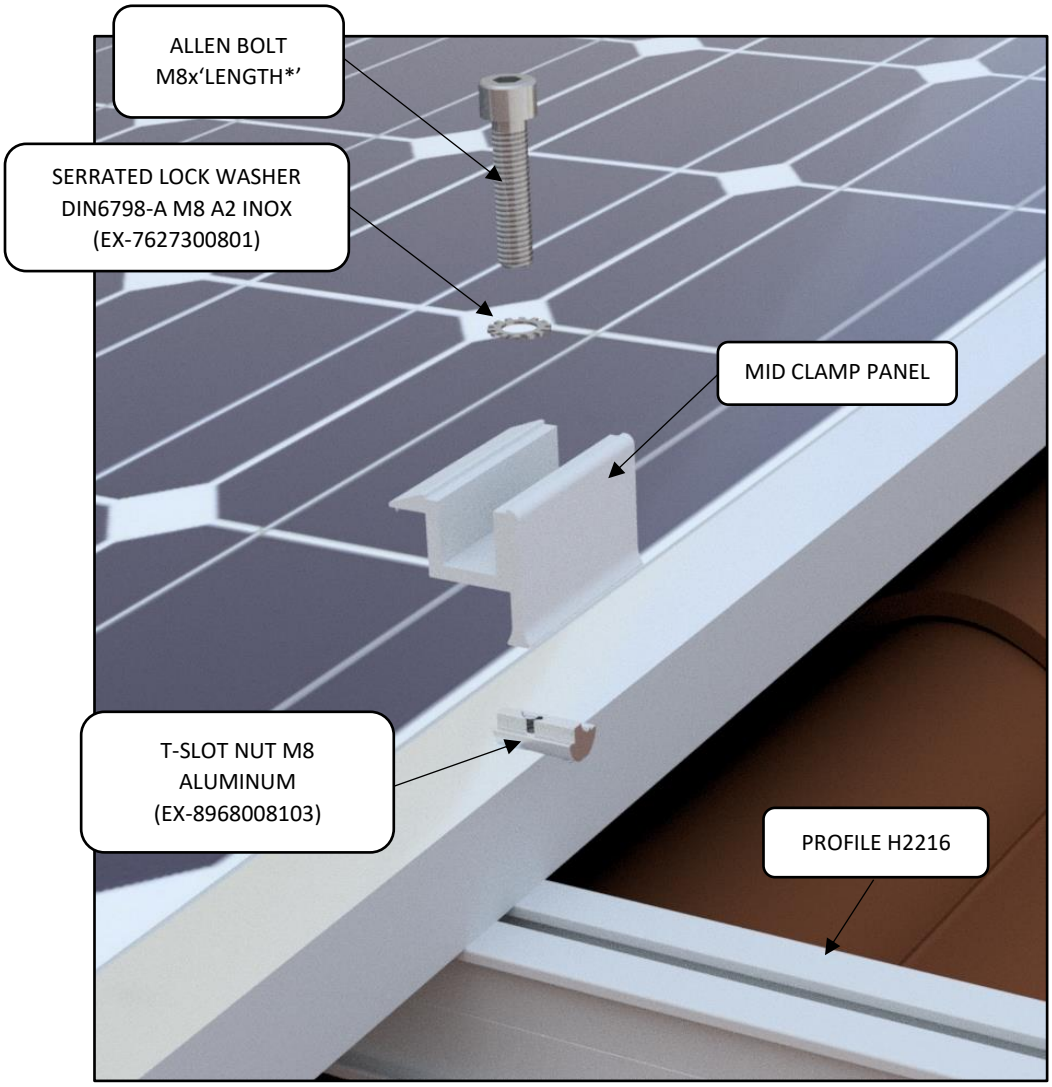
The process for fixing the photovoltaic (PV) modules with clamps after fixing the purlins is as follows:

1. Gather all necessary tools and materials, including the PV modules, clamps, and any other necessary hardware.
2. Locate the purlins that have already been fixed in place.
3. Place the clamps loosely on the purlins, making sure that they are spaced evenly and positioned in a way that allows them to be used to secure the PV modules.
4. Begin with the placement of the PV modules on the purlins. Start by positioning the end clamps at the start and end of a line, and then place the middle clamps at all other locations along the line.
5. Secure each PV module in place by tightening the clamps, making sure that each module is securely fastened to the purlins.
6. Repeat the process of placing and securing PV modules along each line, making sure that each module is properly aligned and that all clamps are tightened securely.
7. Inspect the entire installation to make sure that all components are securely attached and that there are no gaps or other issues.

To mount two intermediate panels on the purlins, use a Mid Clamp, an M8 Allen Bolt of specified length, a M8 Grover, and a T-Slot Aluminum Nut.

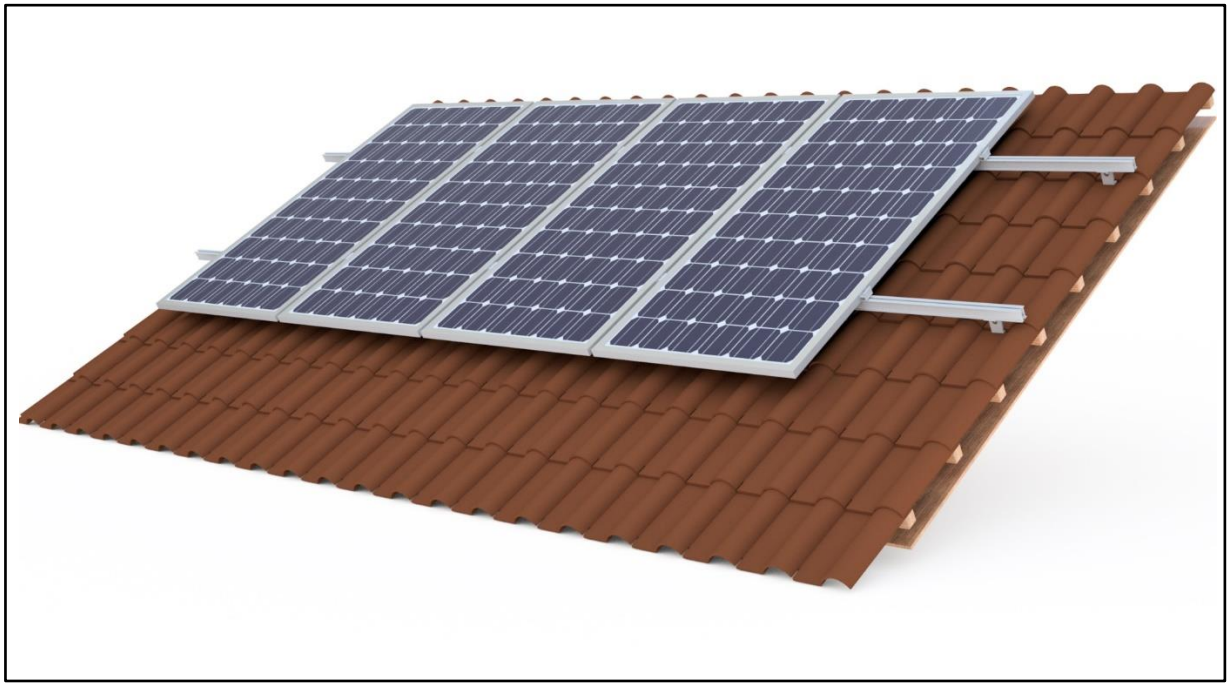


Mount the edge panels onto the purlins using an End Clamp, an M8 Allen Bolt of specified length, a M8 Grover, and a T-Slot Aluminum Nut.



Note: It is important to follow the manufacturer's specifications and guidelines for the installation of the PV modules, clamps, and other components, as these will vary based on the specific application and requirements. Failure to properly install these components can result in damage or failure of the system.

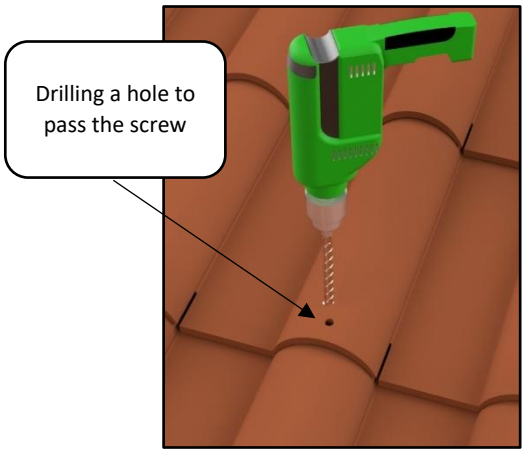
A complete installation with AS250 (Support with hook) mounting system for vertical orientation.



2. AS250 Support with hanger screw (Portrait)

➢ Drilling the tiles

In case you use screw, you don't need to remove the tile. Drill the tile at the point where there is a wooden beam.

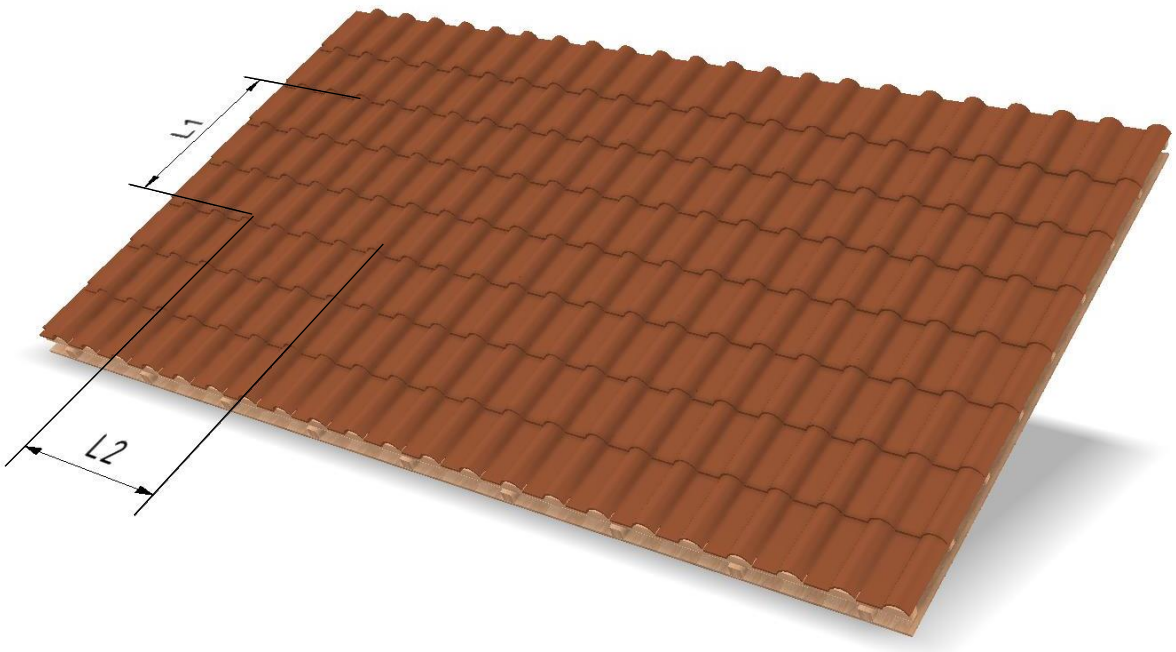


The screw mounting points are in certain distances according to the project requirements.

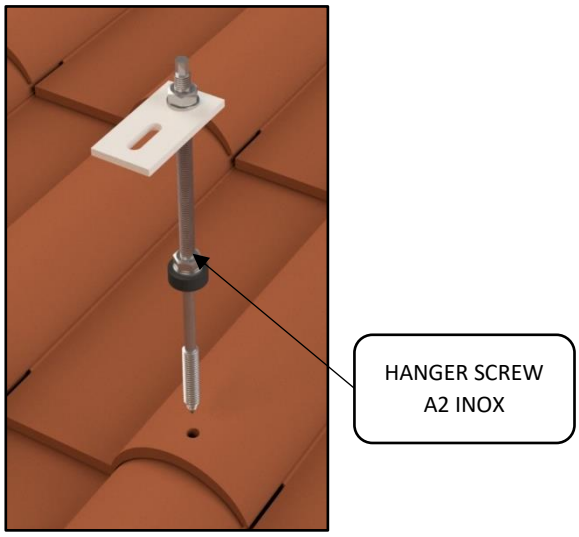
Portrait distance L1 defined according to panel manufacturer's specifications.

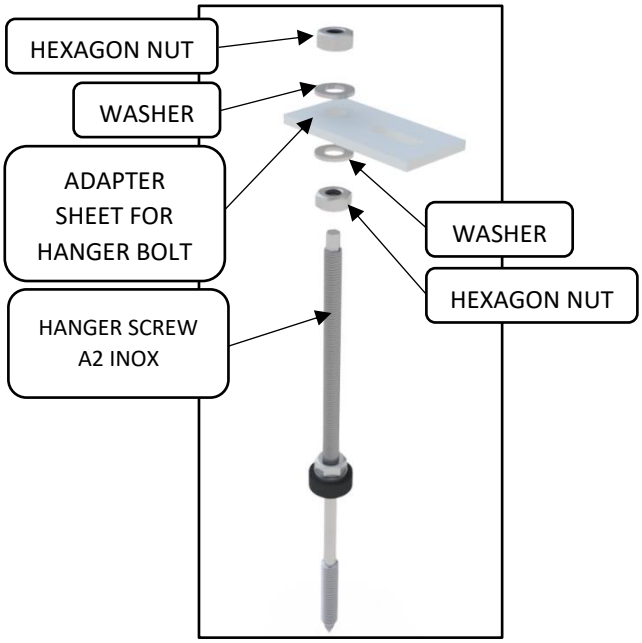
L1 = Suppose the panel manufacturer provides a support point 1/4 from the panel edge for portrait.
Therefore for panel dimensions 1650 x 990mm profiles screwed at L1 = 825mm.

L2 = Horizontal distance is the maximum L2= 1000mm.
Recommended, around the created grid, the first and the last mounting point to be installed at 600mm maximum, because with this distance, the wooden roof construction is stressed less.



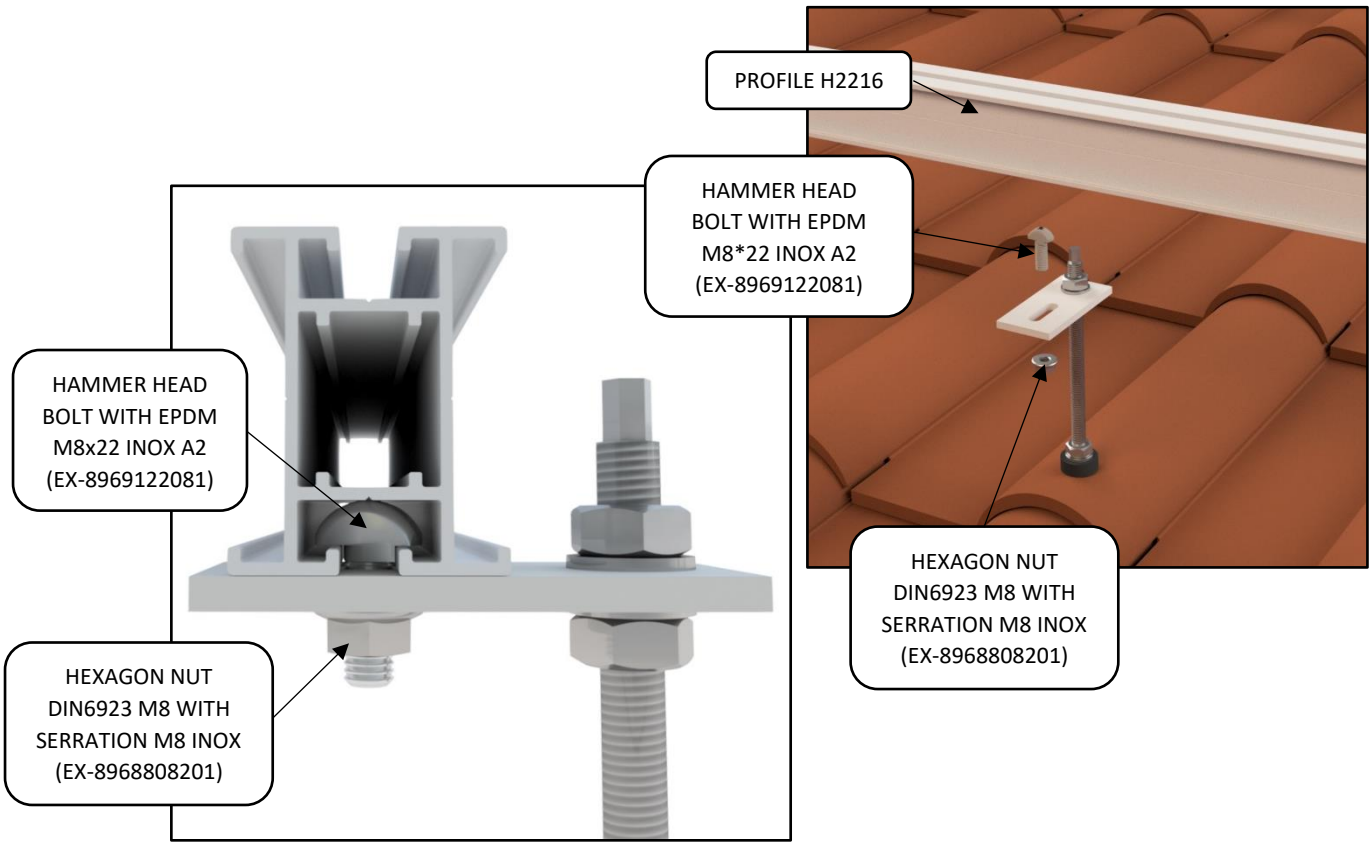
Place the hanger screw in the hole.





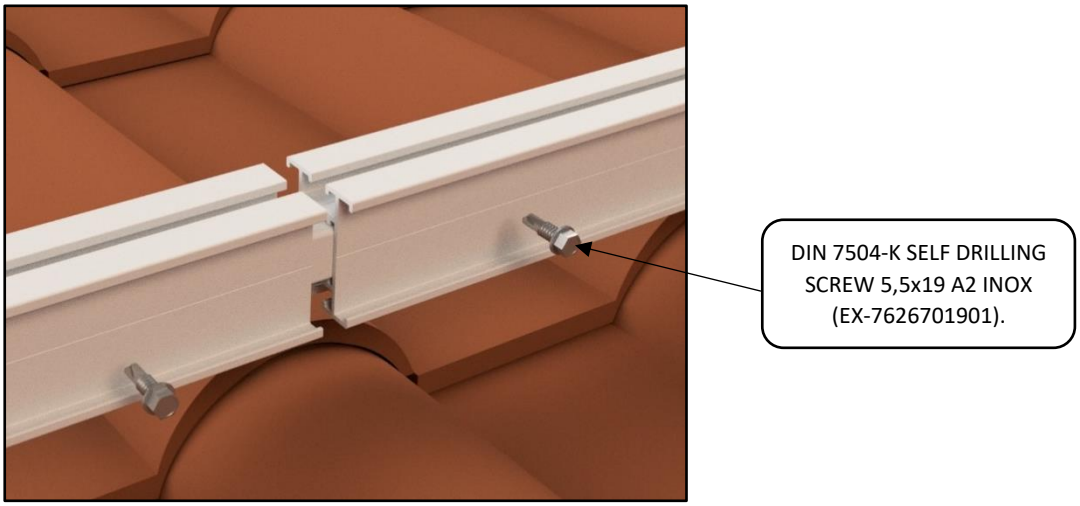
➢ Placing H2216 on Plate

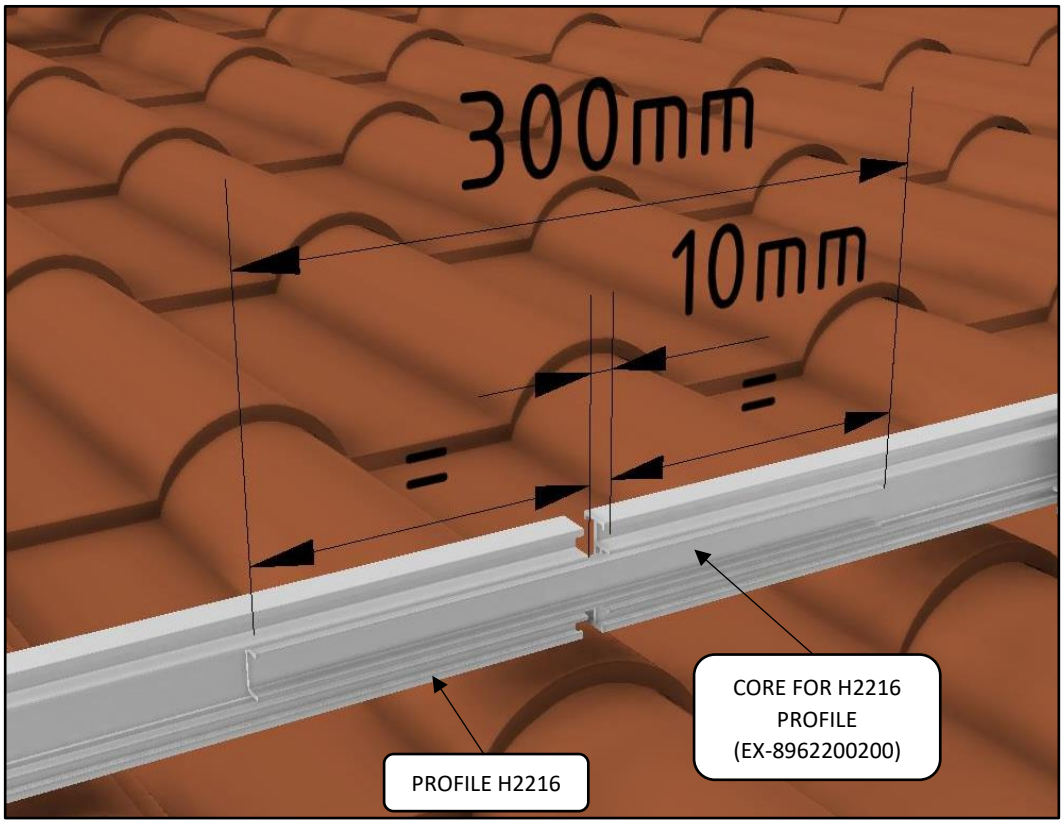
Support profile H2216 with the hammer head bolt with EPDM and hexagon nut with serration through the adapter sheet for hanger bolt.



➢ Placing core in profile H2216

Place the core for H2216 profile in the 2 successive profiles H2216 and mount the with 2 self-drilling screw.





➢ Mounting panel on profile H2216.

The process for fixing the photovoltaic (PV) modules with clamps after fixing the purlins is as follows:

1. Gather all necessary tools and materials, including the PV modules, clamps, and any other necessary hardware.
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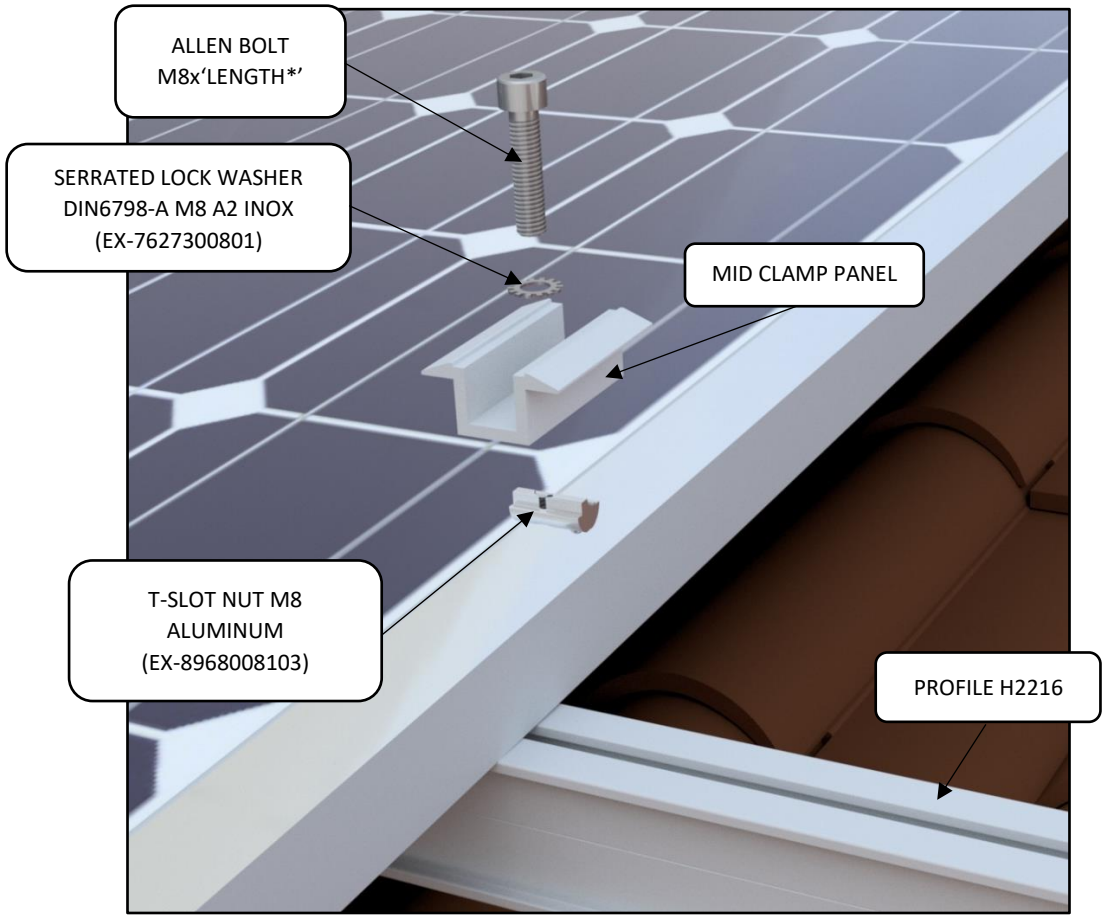
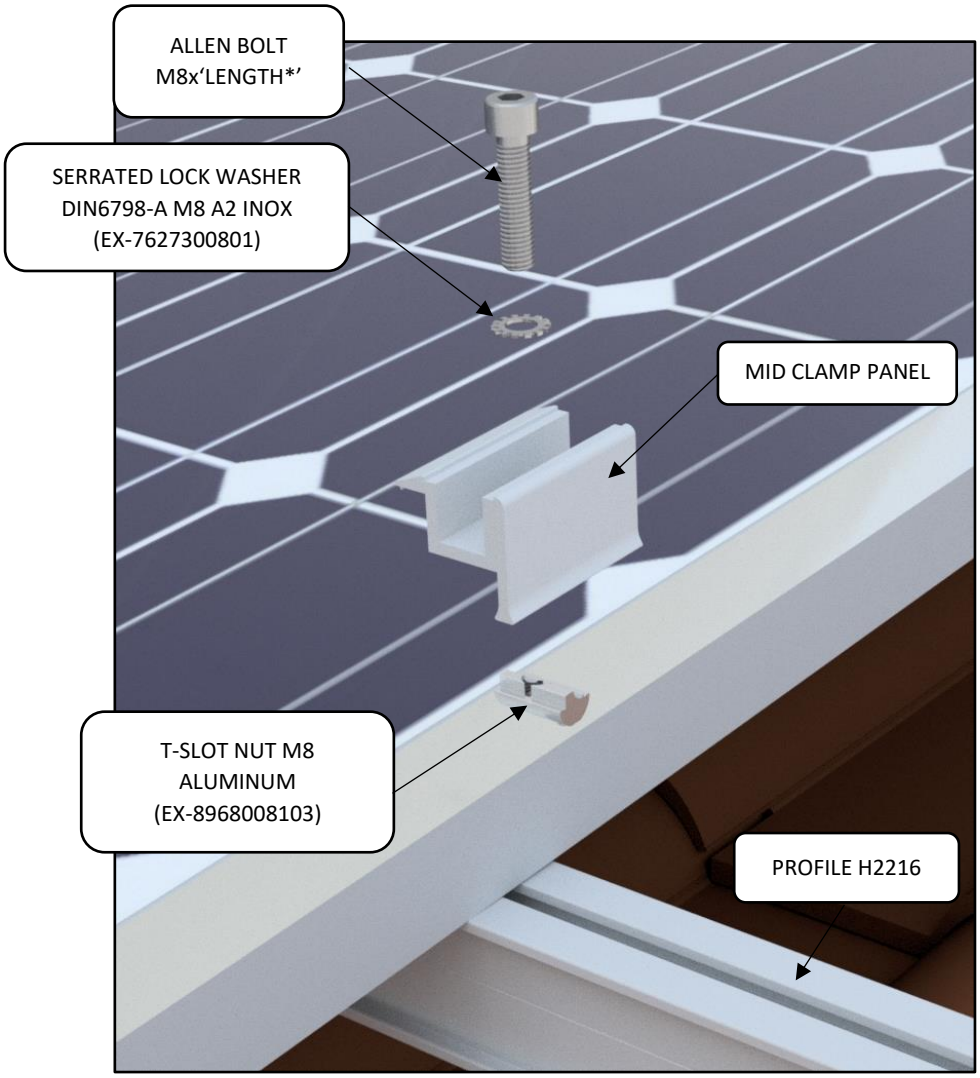
4. Begin with the placement of the PV modules on the purlins. Start by positioning the end clamps at the start and end of a line, and then place the middle clamps at all other locations along the line.
5. Secure each PV module in place by tightening the clamps, making sure that each module is securely fastened to the purlins.
6. Repeat the process of placing and securing PV modules along each line, making sure that each module is properly aligned and that all clamps are tightened securely.
7. Inspect the entire installation to make sure that all components are securely attached and that there are no gaps or other issues.

To mount two intermediate panels on the purlins, use a Mid Clamp, an M8 Allen Bolt of specified length, a M8 Grover, and a T-Slot Aluminum Nut.

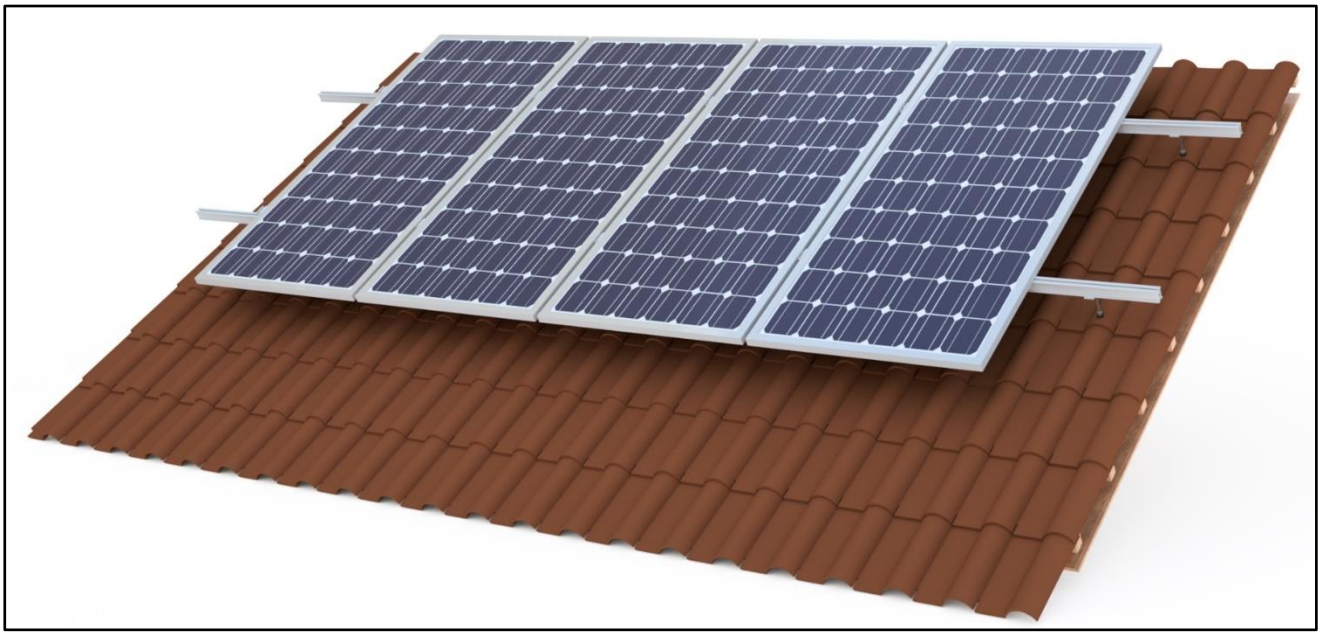


Mount the edge panels onto the purlins using an End Clamp, an M8 Allen Bolt of specified length, a M8 Grover, and a T-Slot Aluminum Nut.



Note: It is important to follow the manufacturer's specifications and guidelines for the installation of the PV modules, clamps, and other components, as these will vary based on the specific application and requirements. Failure to properly install these components can result in damage or failure of the system.

A complete installation with AS250 (Support with screw) mounting system for vertical orientation.

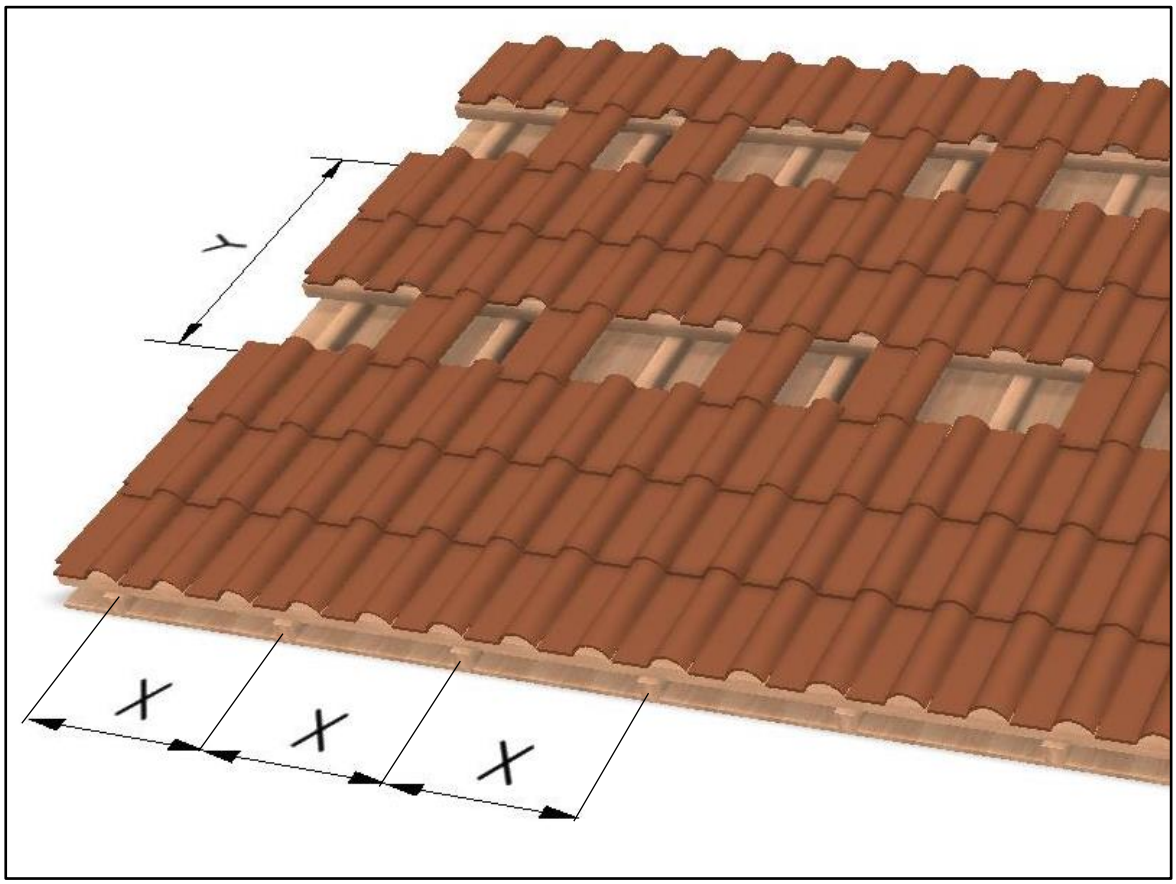


3. AS250 Support with hook (Landscape)

- **Placing hooks on tile roof.**

Remove the tile carefully where you want to install the aluminum hooks.

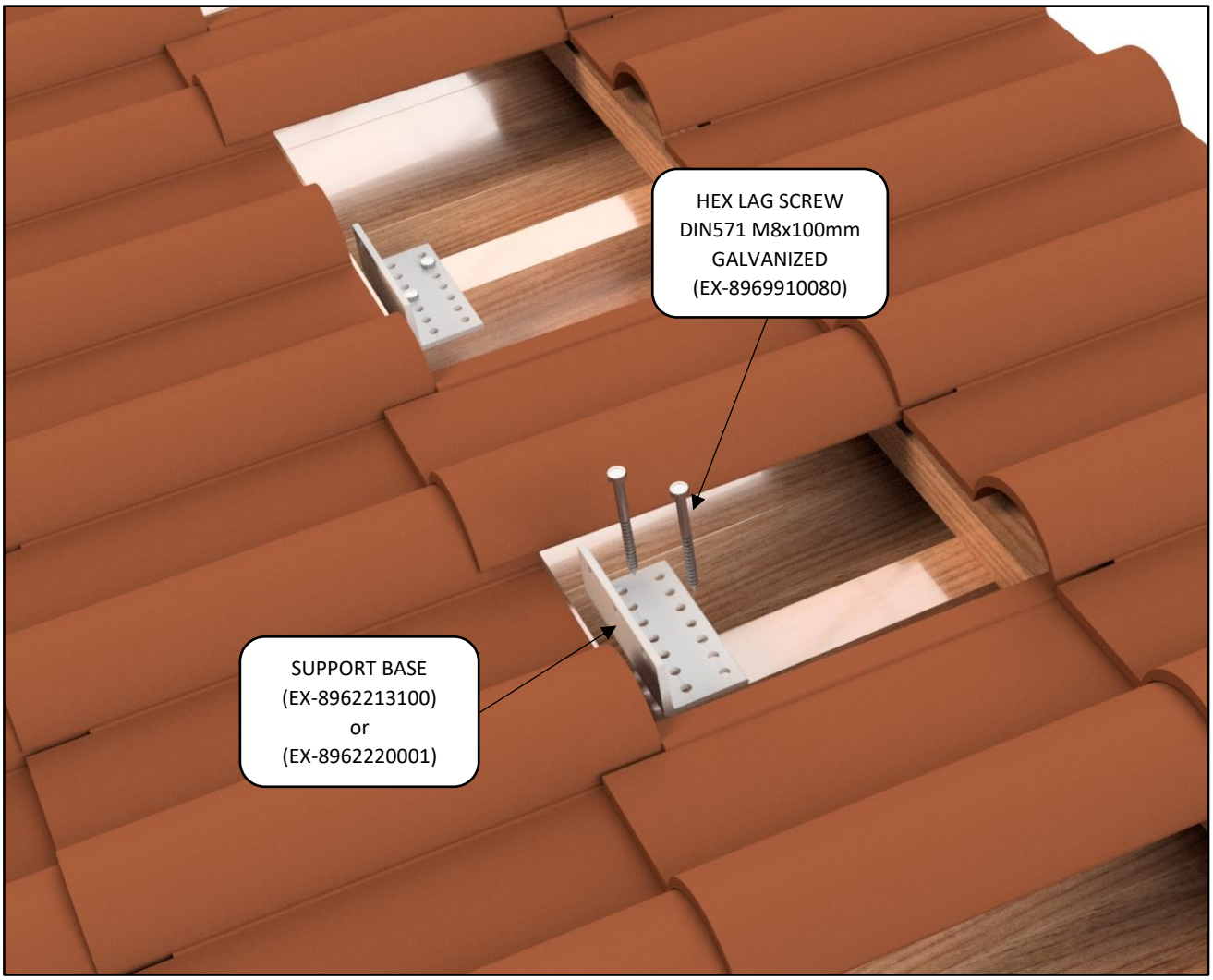
Place the hinge on the tile roof according to X and Y dimension.



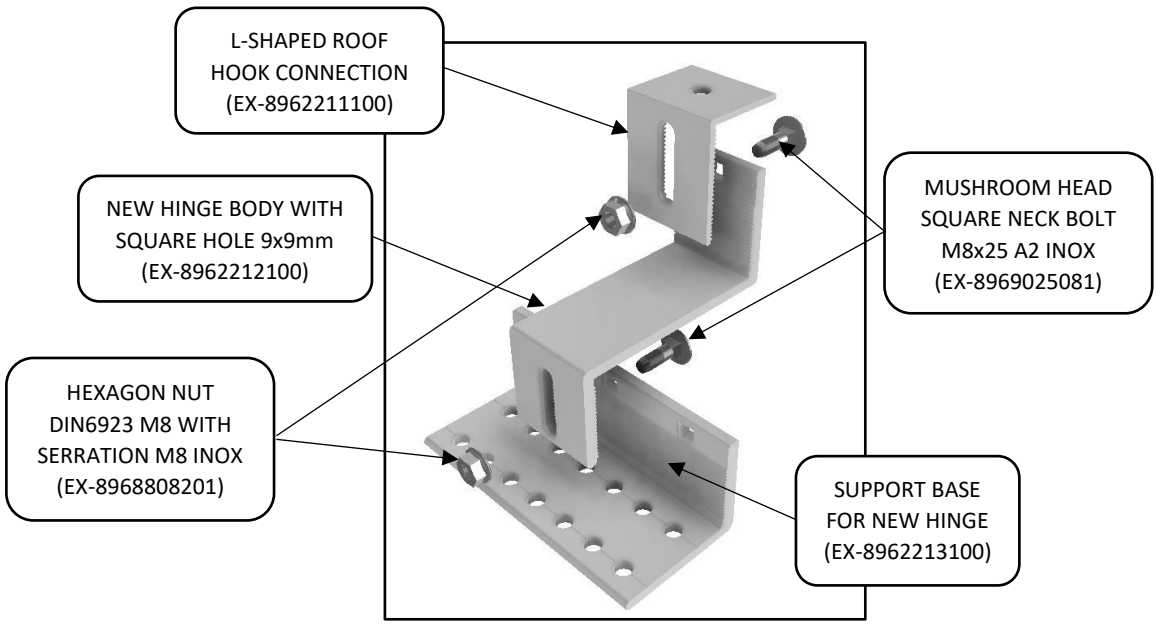
X = 1.200mm for hooks

Y = Portrait distance L1 defined according to the number of panels. Maximum distance 1500mm.

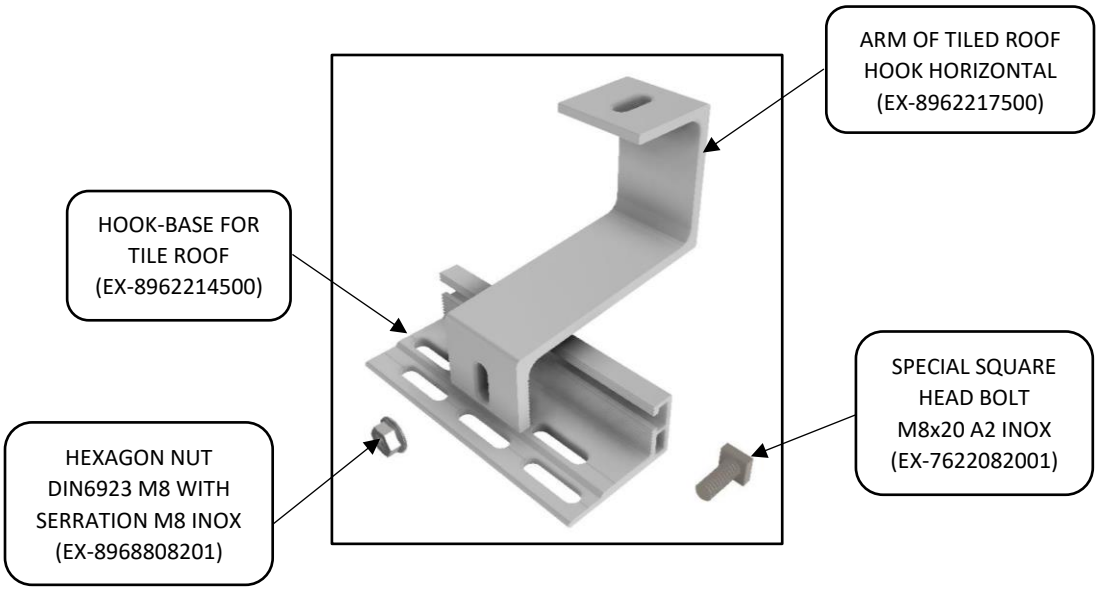
Install support base (EX-8962213100) or (EX-8962214500) to the wooden beam and screw it with 2 half shank hex screw lag.



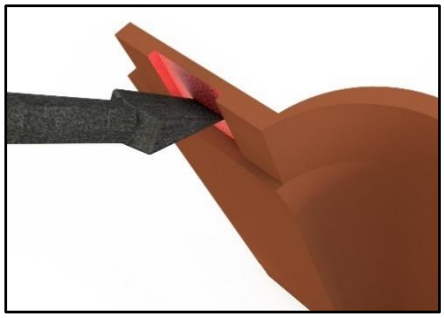
Connect accessories support base for new hinge and new hinge body with square hole 9x9mm and L-shaped roof hook connection with mushroom head square neck bolt and with hexagon nut with serration, after setting the desired height.

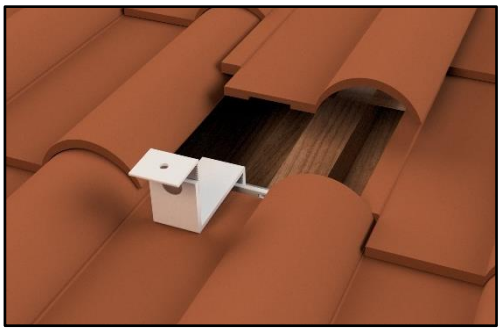


Similarly, when used other hooks, such as hook-base for tile roof. Screw the base to the wooden beam, adjust the arm to the proper position. Pay attention to proper tightening of nut.

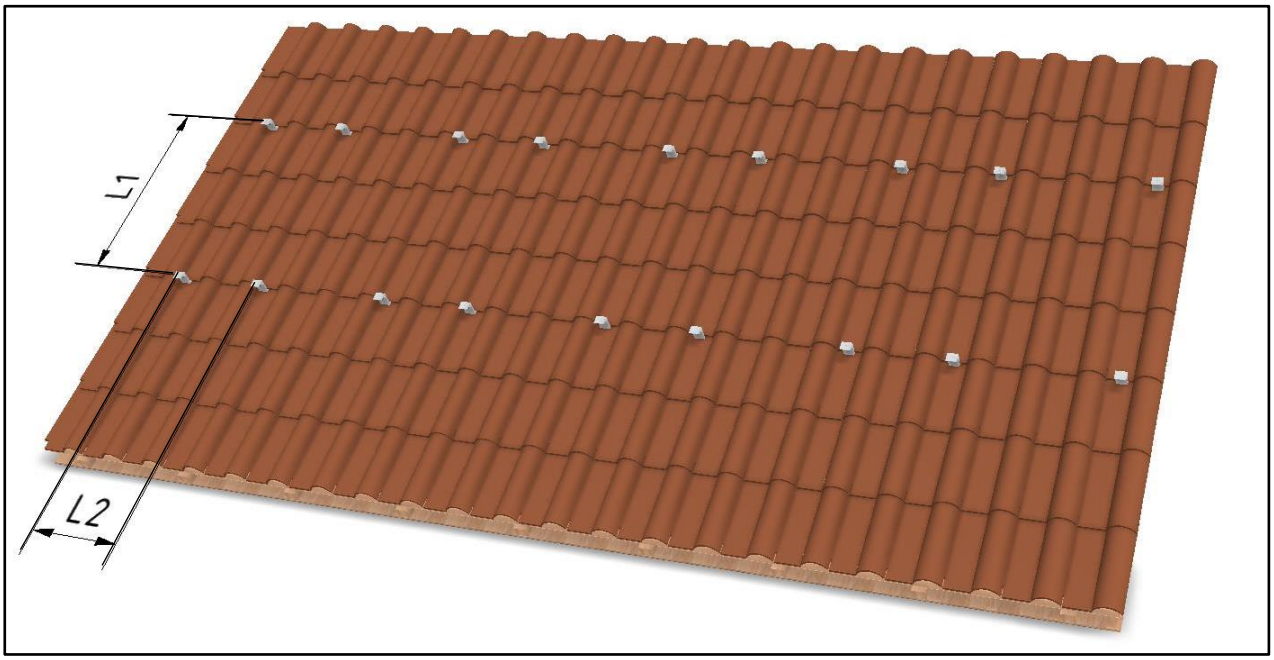


Reinstall tile to extend only the horizontal support beam socket. Beware the edge of the tile will need a light treatment, with a wheel or a chisel, so that it snaps.





Hooks are installed at specific distances in height and width depending on project requirements.



L1 = Portrait distance L1 defined according to the number of panels. Maximum distance 1500mm.

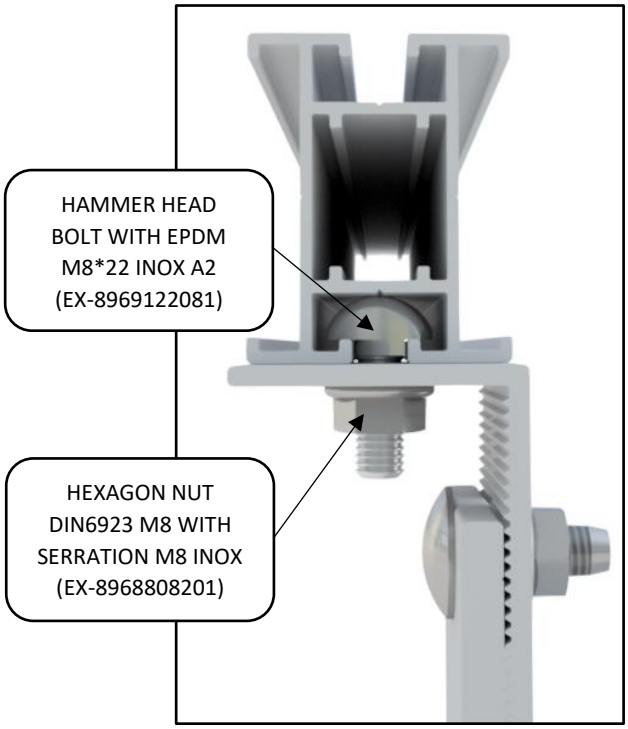
L2 = Landscape distance L2 is determined by the static analysis based on the specifications of the Eurocodes 1,3,9. Always check the load capacity and the adequacy of current static wooden construction. Regardless of aluminum profile, recommended perimetrical mount always be by wooden beam

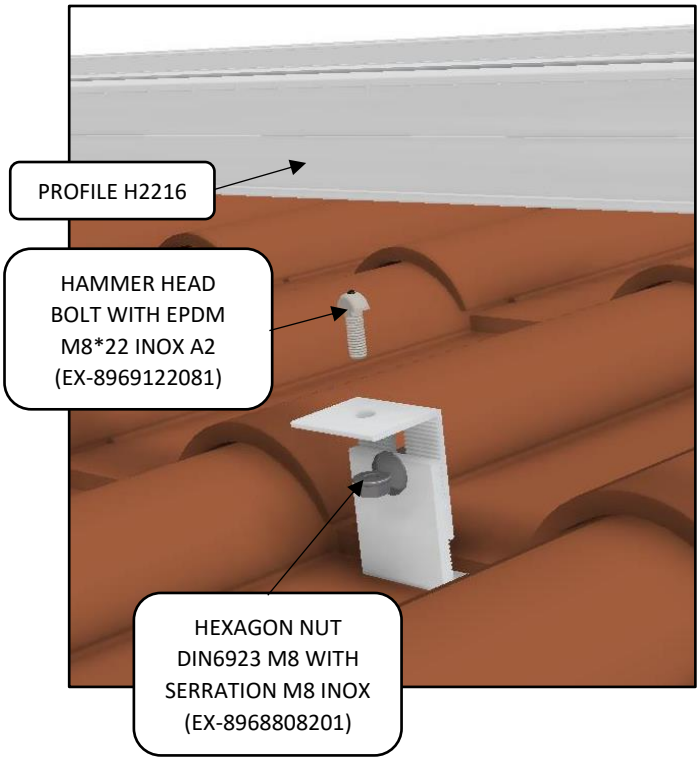
According to the horizontal beam profile which will use, the distance defined as:

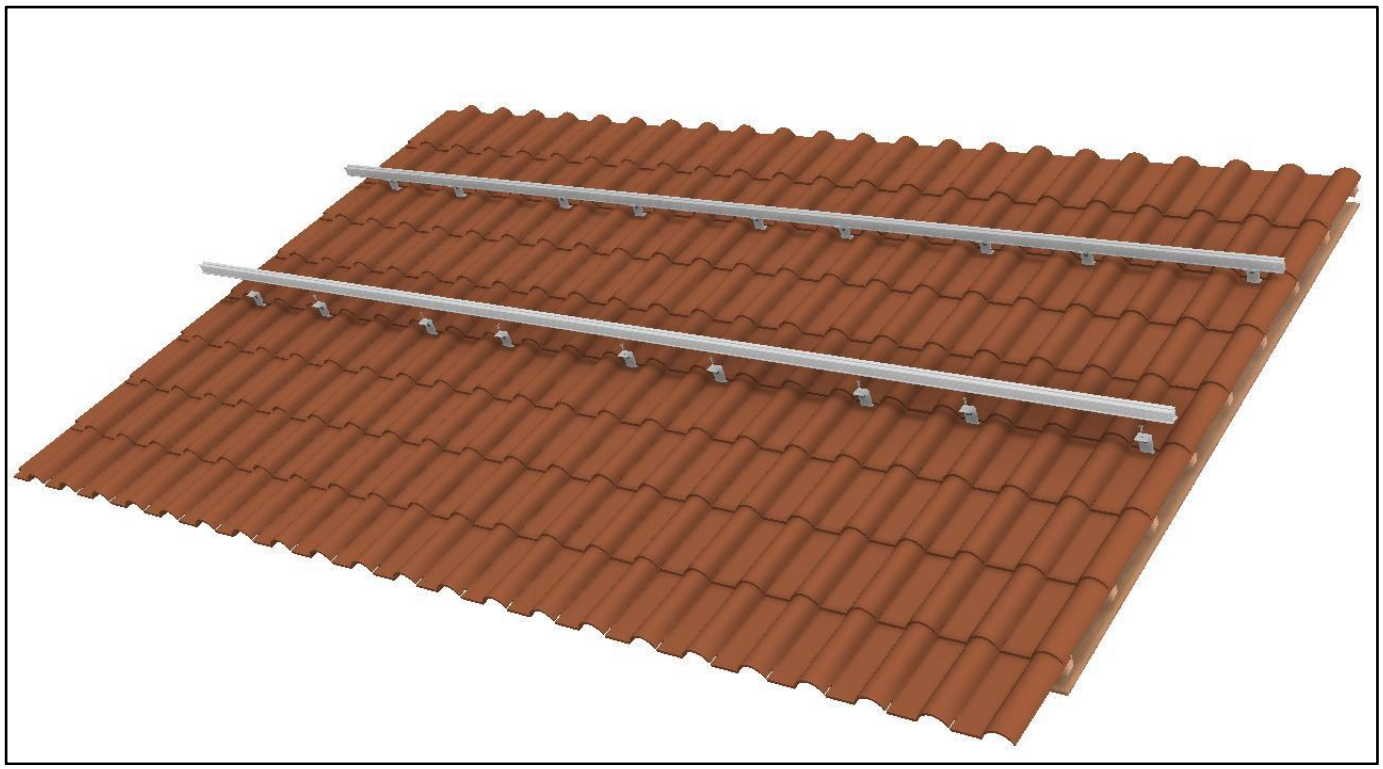
- H2216 - anchoring distance: 1400mm

➢ Placing H2216 on Hook

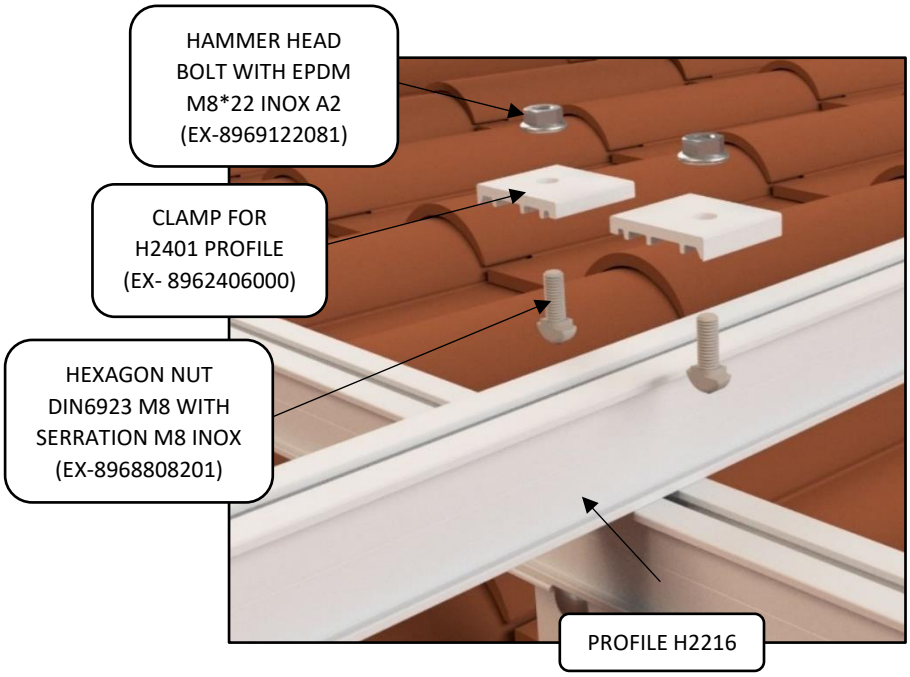
After you install the weathering profiles in the right places, screw on them the horizontal beam. At the beam bottom there is a gutter socket for hammer head bolt with EPDM and hexagon nut with serration that connects the profile to the hook.

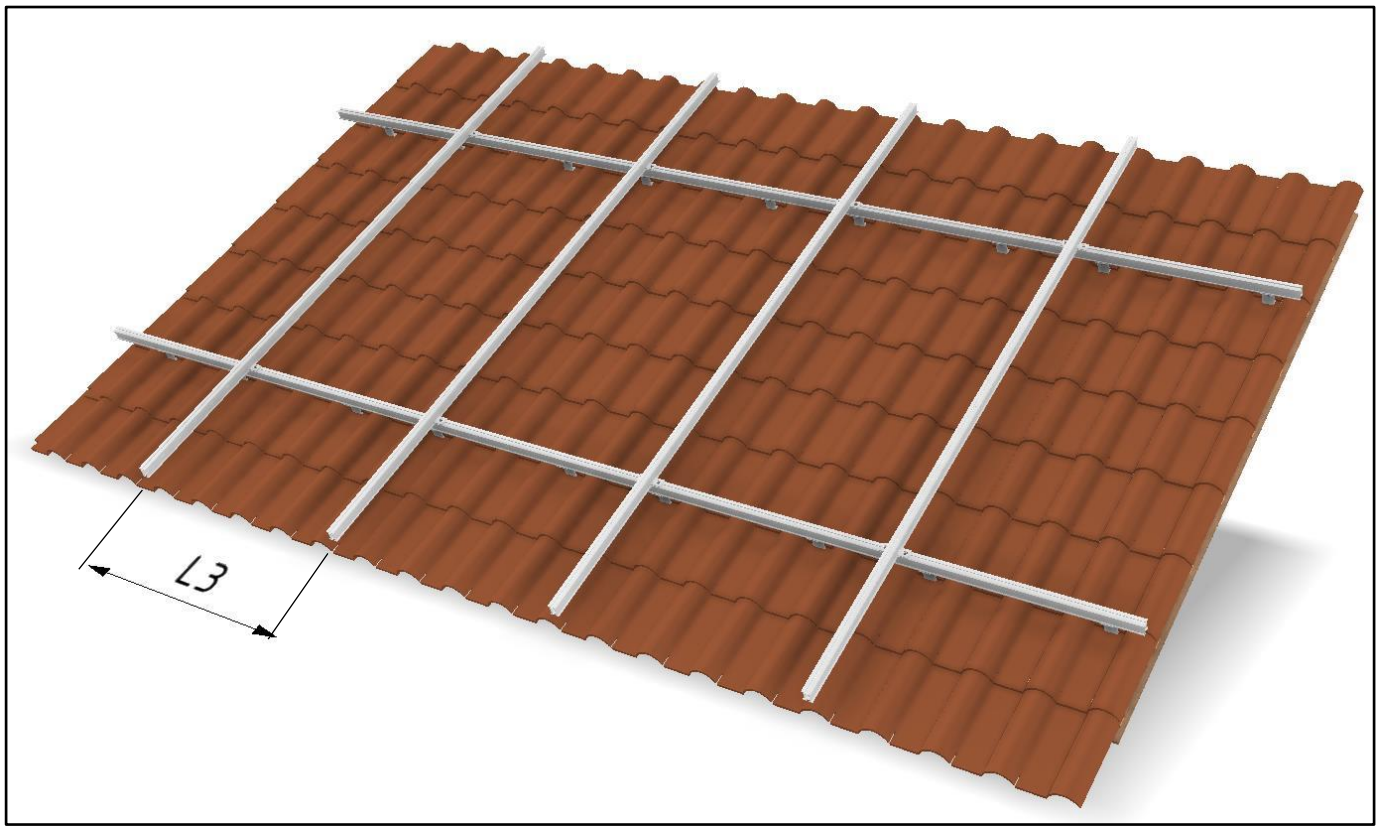






Use hammer head bolt with EPDM, hexagon nut with serration, clamp and to mount the vertical profile to horizontal.

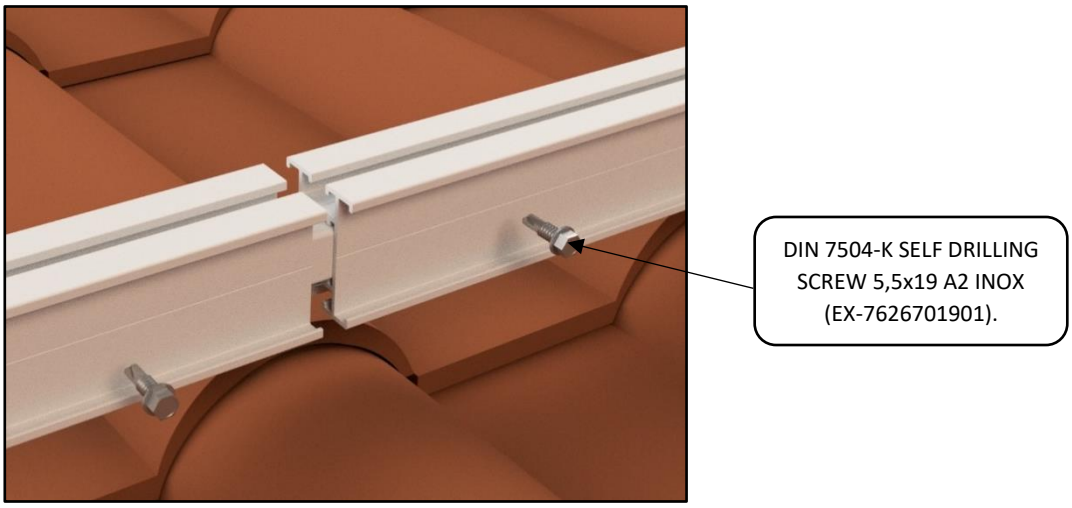


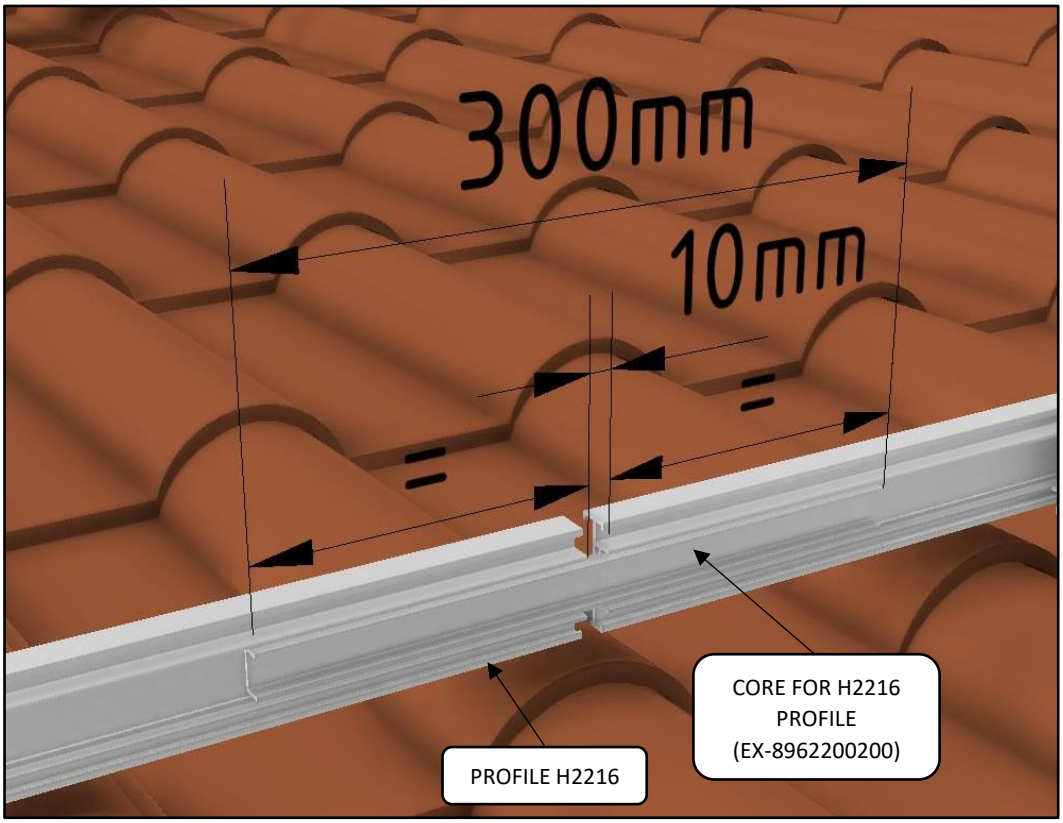


L3 = Portrait distance L3 defined according to the panel inclination and the panel manufacturer's specifications. Suppose the panel manufacturer provides a support point 1/4 from the panel edge for portrait. Therefore, for panel dimensions 1650 x 990mm profiles screwed at L3 = 825mm.

➢ Placing core in profile H2216

Place the core for H2216 profile in the 2 successive profiles H2216 and mount the with 2 self-drilling screw.



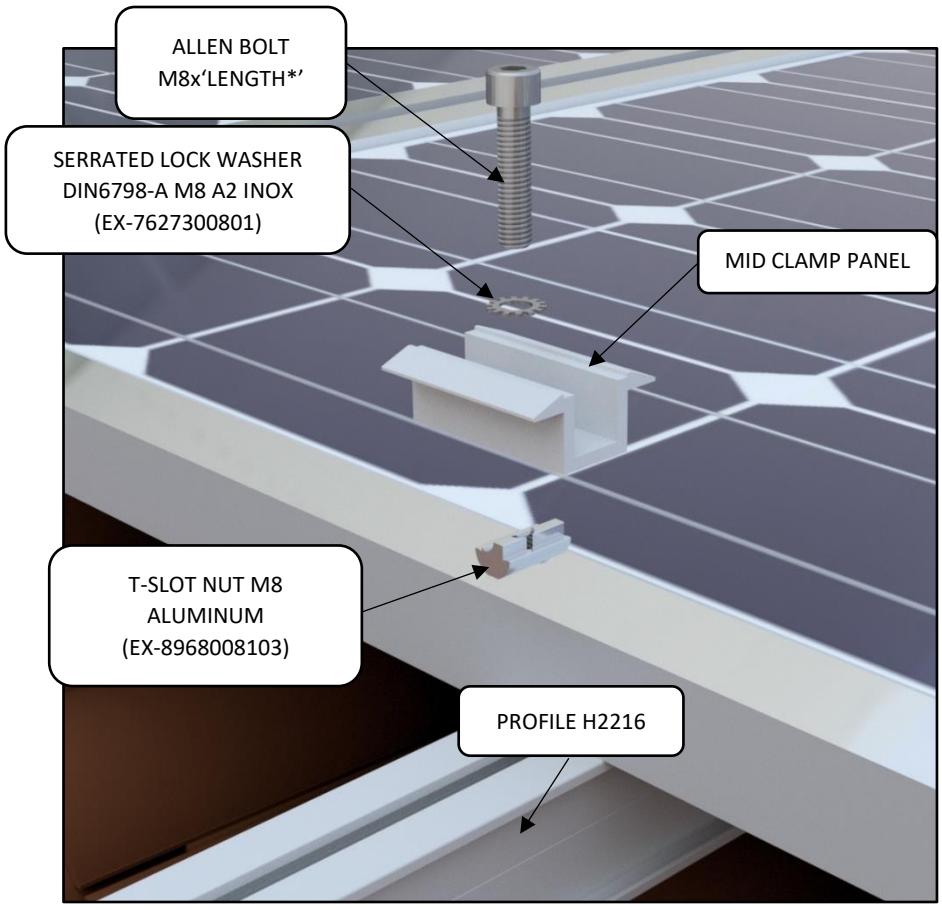


➢ Mounting panel on profile H2216.

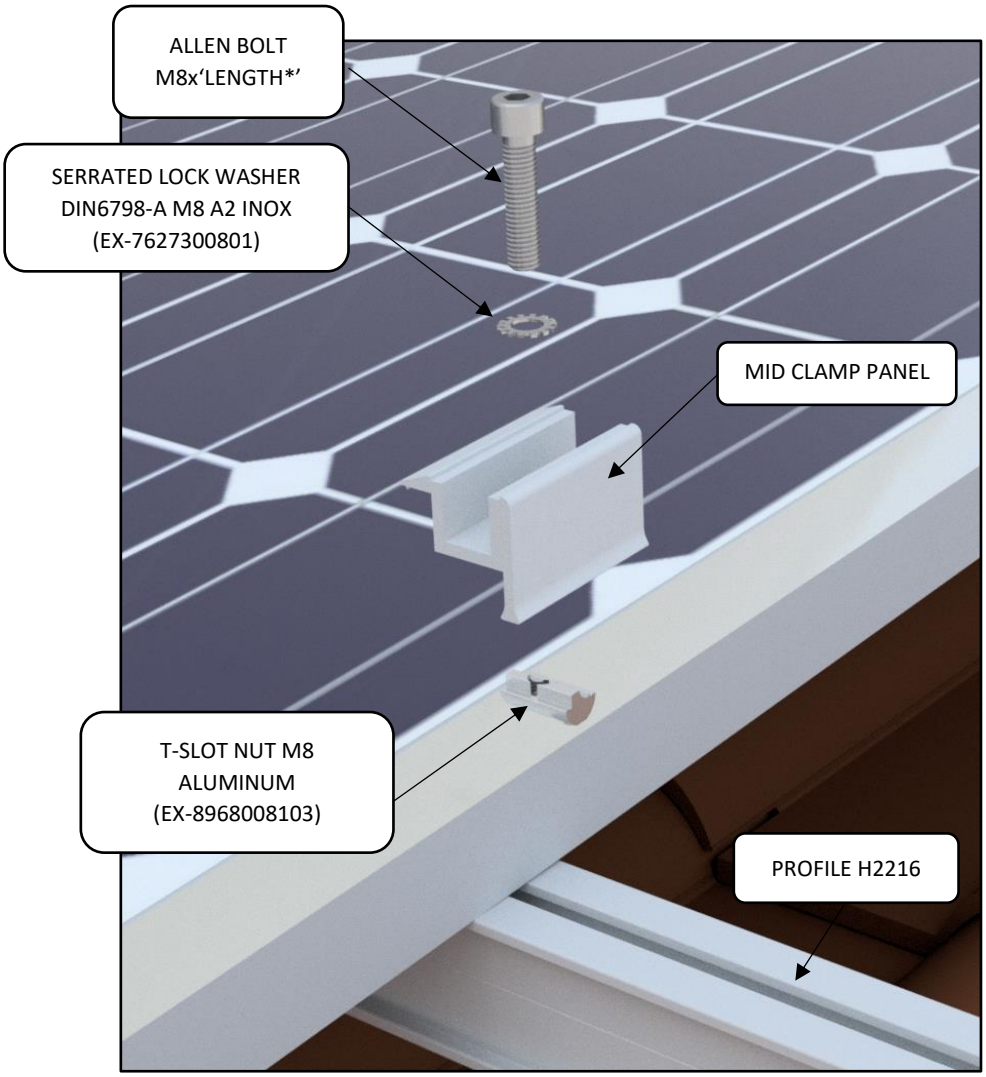
The process for fixing the photovoltaic (PV) modules with clamps after fixing the purlins is as follows:

1. Gather all necessary tools and materials, including the PV modules, clamps, and any other necessary hardware.
2. Locate the purlins that have already been fixed in place.
3. Place the clamps loosely on the purlins, making sure that they are spaced evenly and positioned in a way that allows them to be used to secure the PV modules.
4. Begin with the placement of the PV modules on the purlins. Start by positioning the end clamps at the start and end of a line, and then place the middle clamps at all other locations along the line.
5. Secure each PV module in place by tightening the clamps, making sure that each module is securely fastened to the purlins.
6. Repeat the process of placing and securing PV modules along each line, making sure that each module is properly aligned and that all clamps are tightened securely.
7. Inspect the entire installation to make sure that all components are securely attached and that there are no gaps or other issues.

To mount two intermediate panels on the purlins, use a Mid Clamp, an M8 Allen Bolt of specified length, a M8 Grover, and a T-Slot Aluminum Nut.



Mount the edge panels onto the purlins using an End Clamp, an M8 Allen Bolt of specified length, a M8 Grover, and a T-Slot Aluminum Nut.

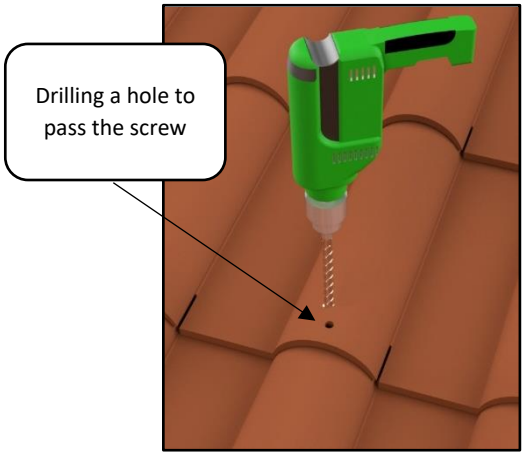


A complete installation with AS250 (Support with hook) mounting system for horizontal orientation.

4. AS250 Support with hanger screw (Landscape)

➢ Drilling the tiles

In case you use screw, you don't need to remove the tile. Drill the tile at the point where there is a wooden beam.

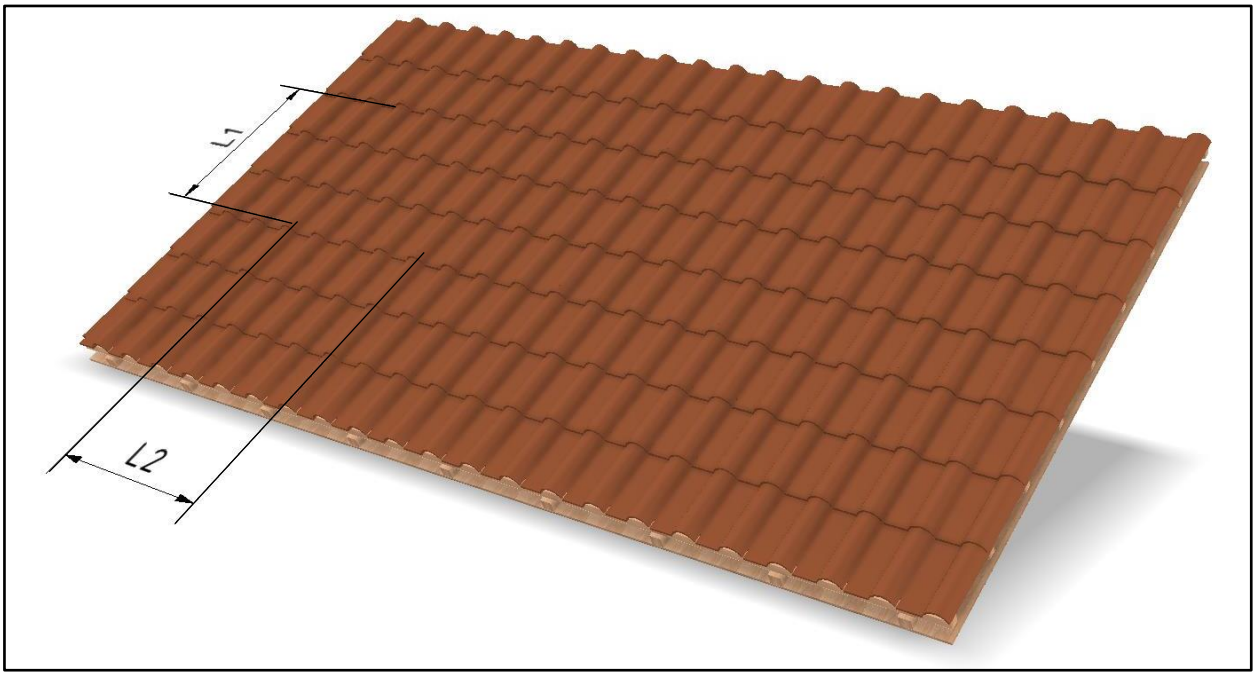


The screw mounting points are in certain distances according to the project requirements.

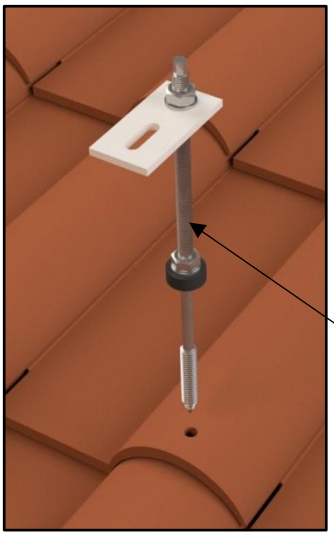
Portrait distance L1 defined according to the panel inclination and the panel manufacturer's specifications.

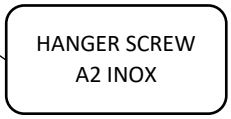
L1 = Suppose the panel manufacturer provides a support point 1/4 from the panel edge for portrait.
Therefore for panel dimensions 1650 x 990mm weathering profiles screwed at L1 = 825mm.

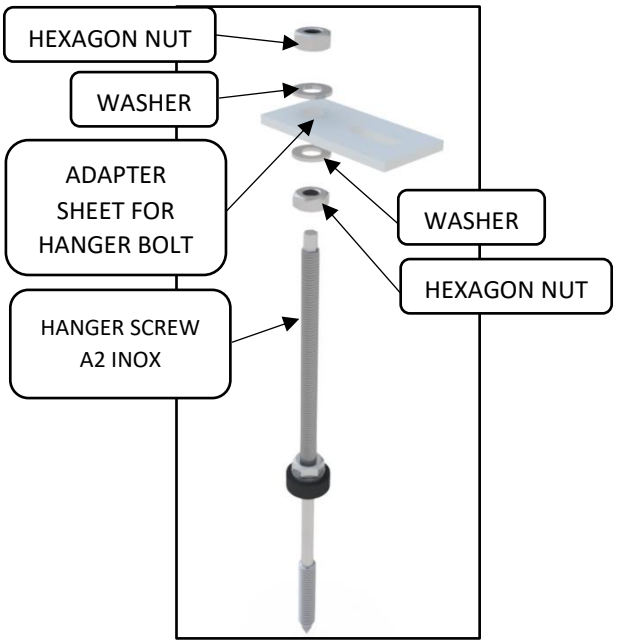
L2 = Horizontal distance is the maximum L2= 1000mm.
Recommended, around the created grid, the first and the last mounting point to be installed at 600mm maximum, because with this distance, the wooden roof construction is stressed less.



Place the hanger screw in the hole.

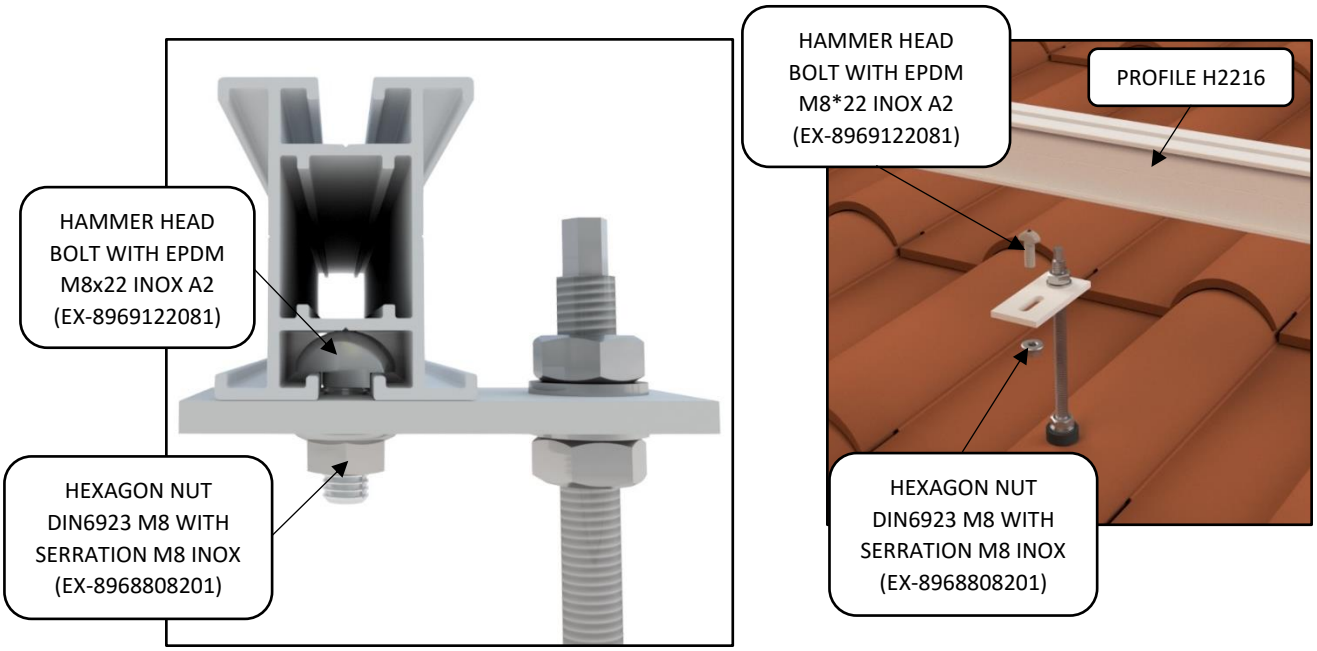




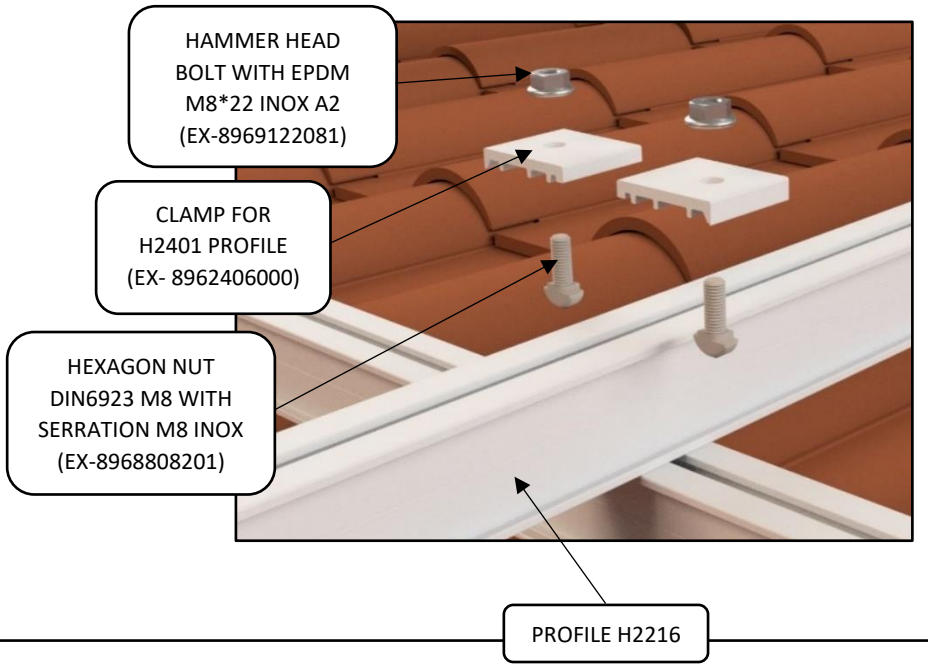


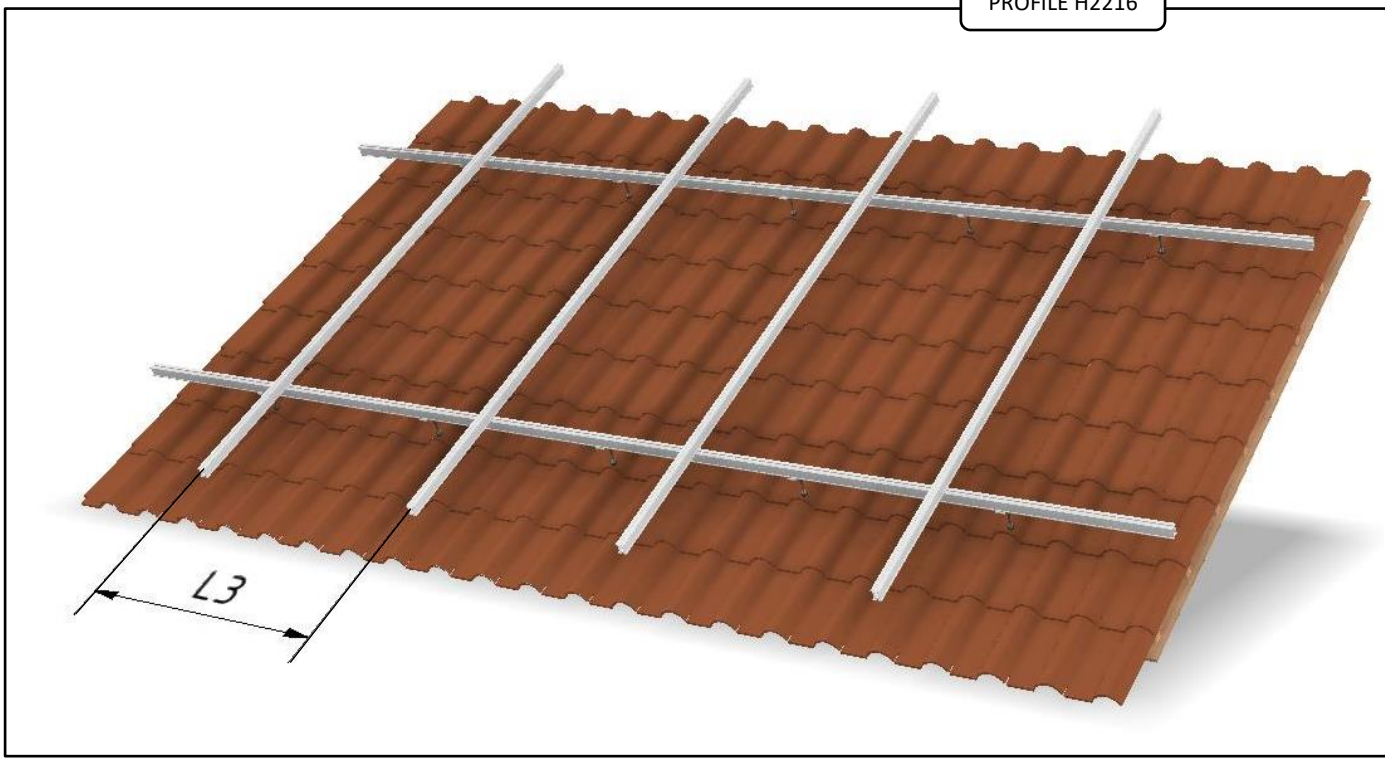
➢ Placing H2216 on Plate

Support profile H2216 with the hammer head bolt with EPDM and hexagon nut with serration through the adapter sheet for hanger bolt.



Use hammer head bolt with EPDM, hexagon nut with serration, clamp and to mount the vertical profile to horizontal.

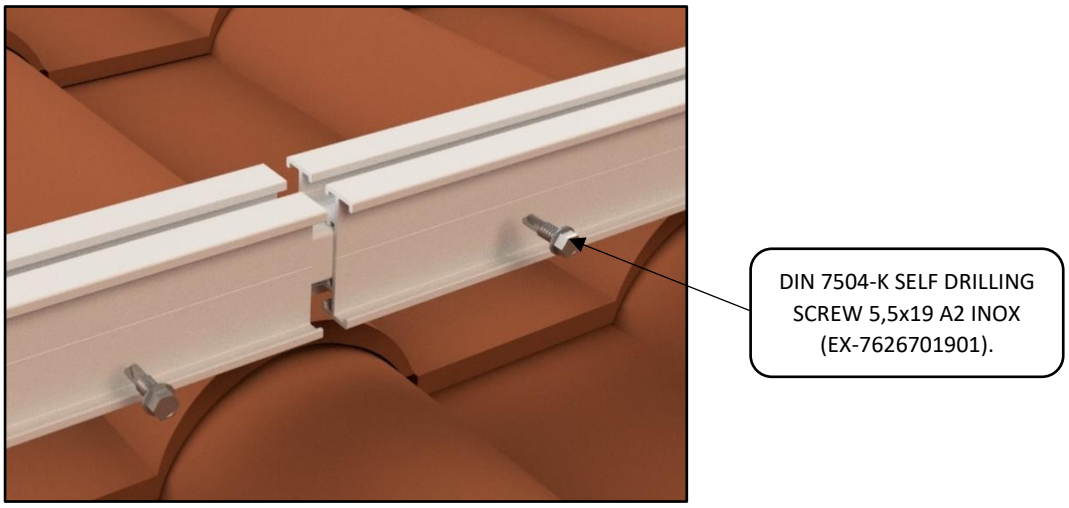


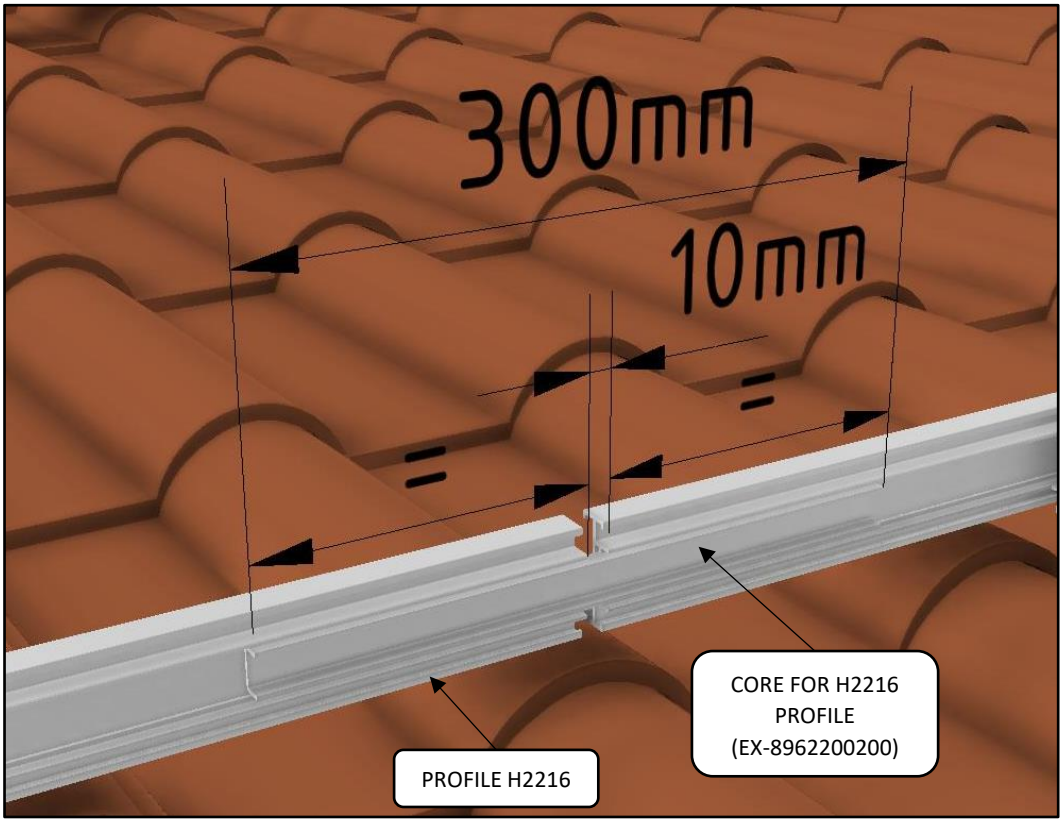


L3 = Portrait distance L3 defined according to the panel inclination and the panel manufacturer's specifications. Suppose the panel manufacturer provides a support point 1/4 from the panel edge for portrait. Therefore, for panel dimensions 1650 x 990mm profiles screwed at L3 = 825mm.

➢ Placing core in profile H2216

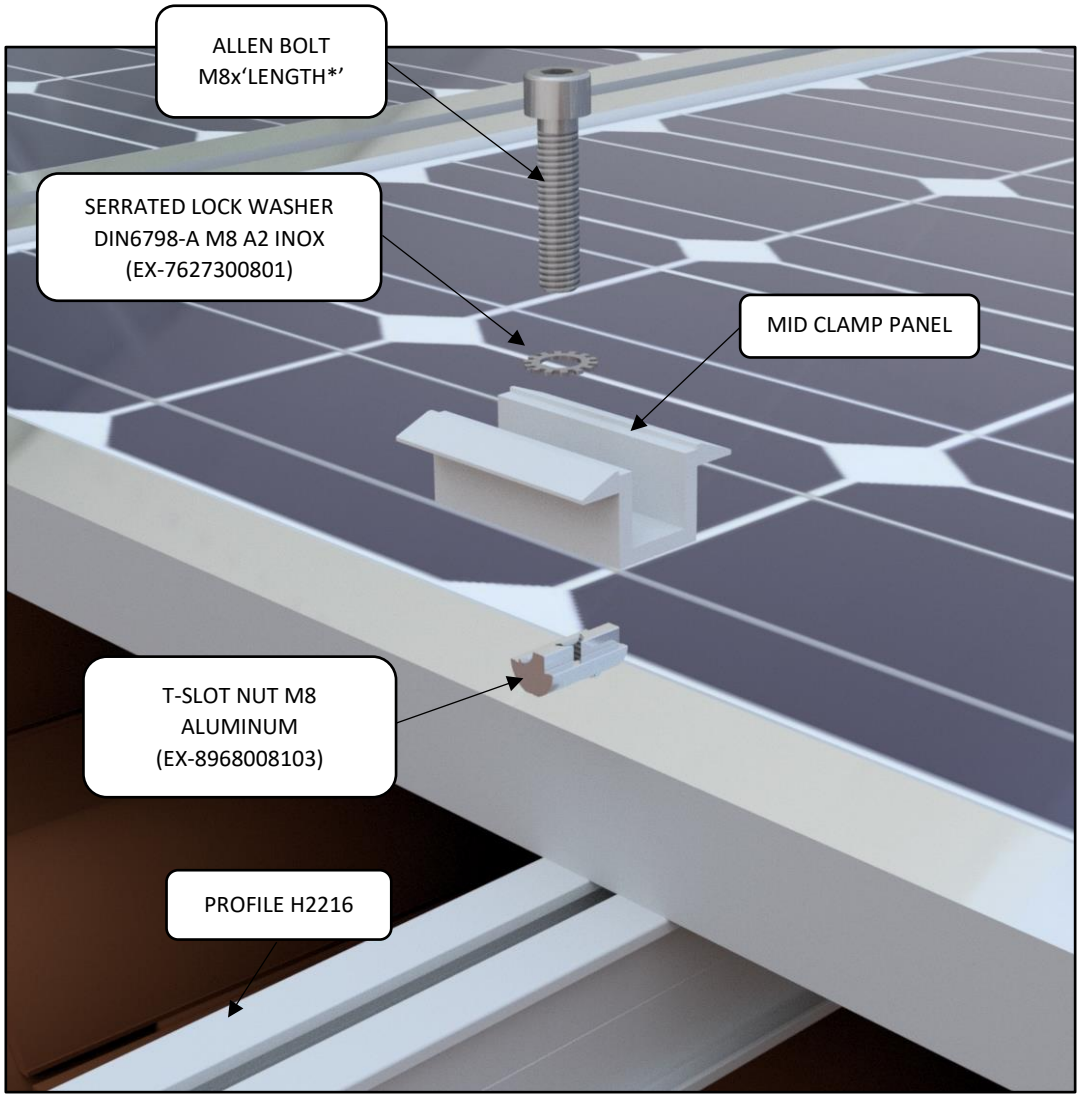
Place the core for H2216 profile in the 2 successive profile H2216 and mount the with 2 self-drilling screw.



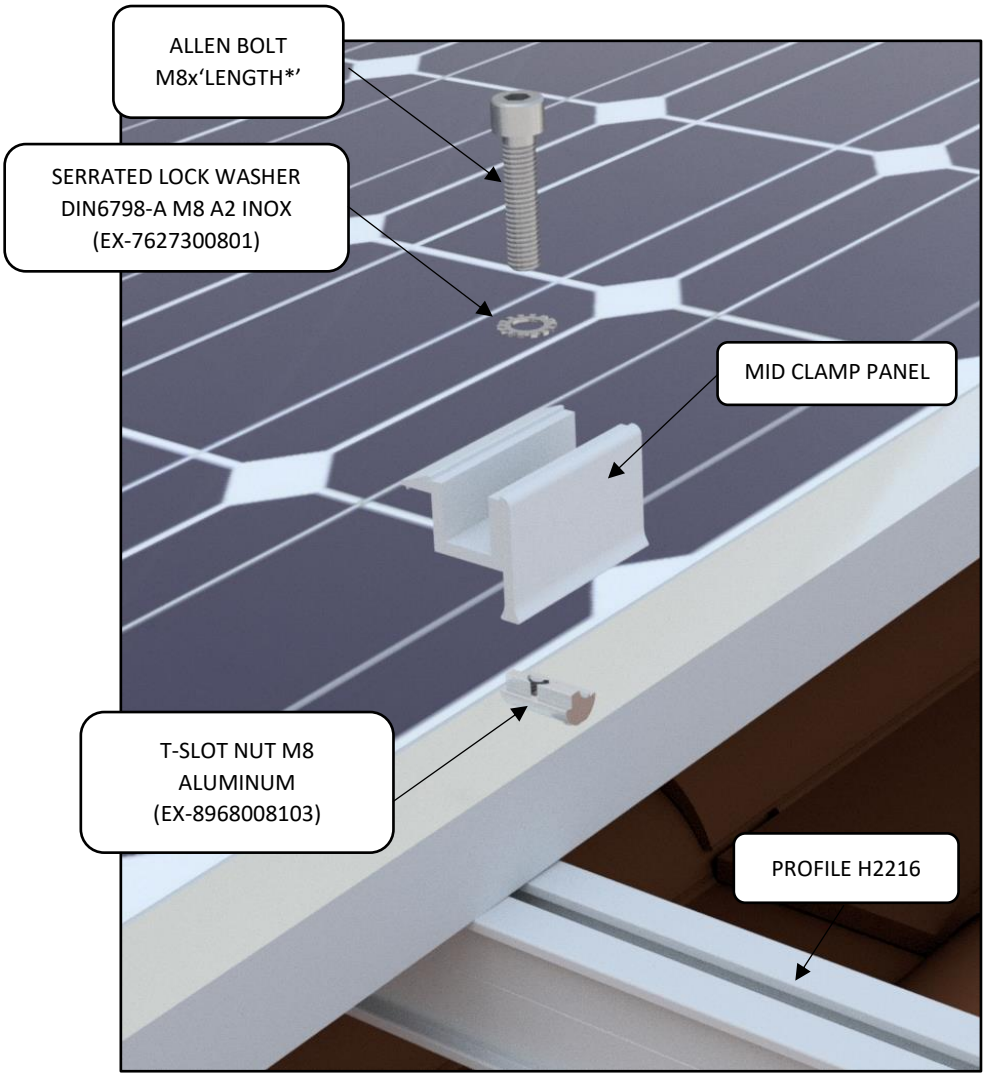


➢ Mounting panel on profile H2216.

Use mid clamp, Allen bolt, serration lock washer and T-Slot nut aluminum to mount 2 successive PV panels to the profile H2216.



Use end clamp, Allen bolt, serration lock washer and T-Slot nut aluminum to mount 2 successive PV panels to the profile H2216.



A complete installation with AS250 (Support with screw) mounting system for horizontal orientation.

C. MAINTENANCE

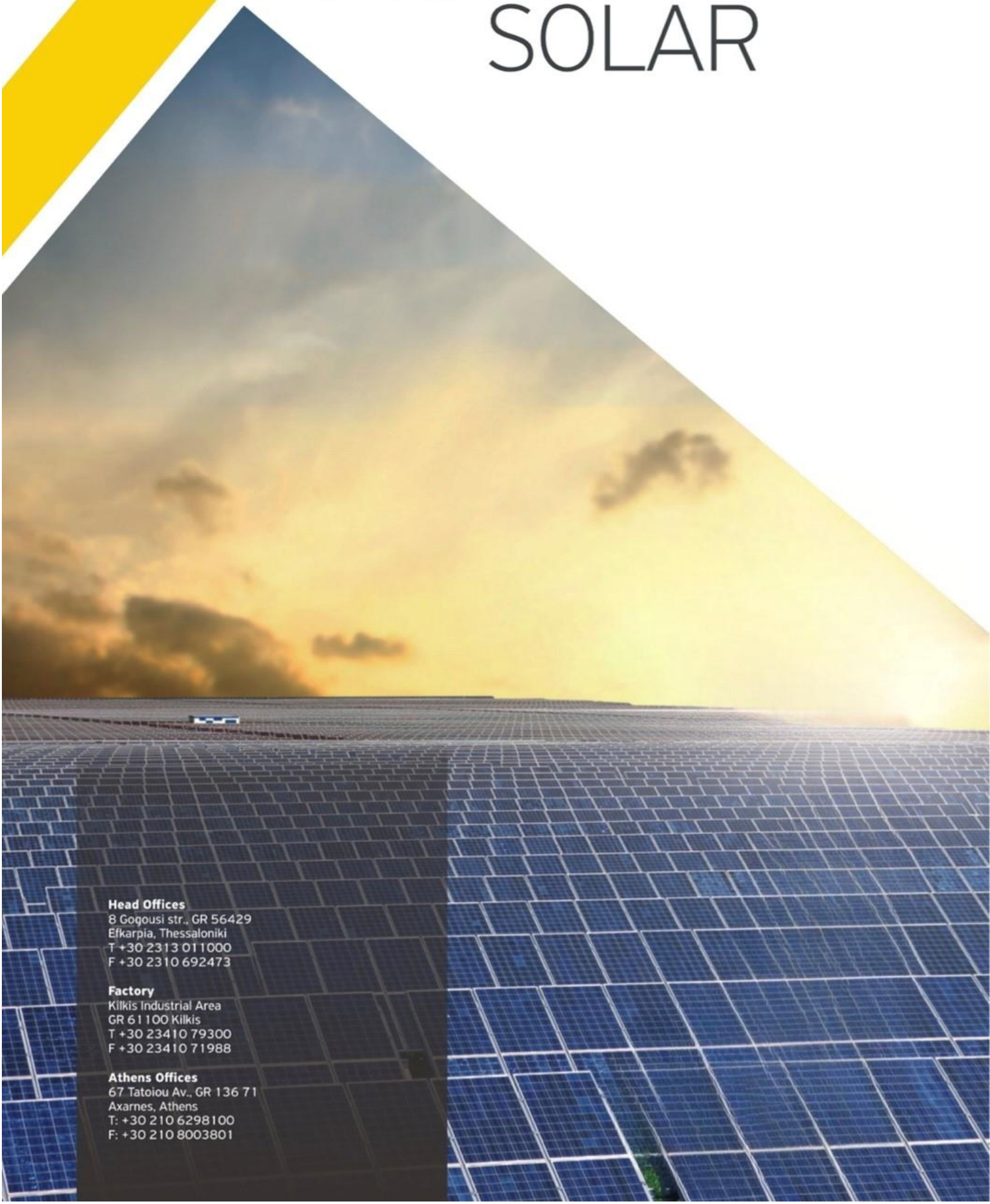
The PV mounting structures of ALUMIL S.A are designed in accordance with the European Standards (Eurocode 1, 3, 9) and do not require any special attention. ALUMIL also offers certified aluminum PV mounting structures made from durable aluminum alloy (Al 6005T6).

However, regular maintenance is recommended to maintain the high quality and longevity of the structures.

During site inspections, it is advisable to pay close attention to areas such as joints and holes. Specifically, the following checks are recommended:

- *Inspect bolted joints annually and replace them if bolt corrosion is detected.*
- *Periodically check the torque of bolted joints (every 1-2 years).*
- *Verify the torque on panel clamps every 6-9 months or after severe weather conditions to ensure the installation and torque settings remain accurate. Torque specifications can be found in the installation manual.*
- *Inspect aluminum and plastic components for any deformations and replace any deformed parts as needed (every 2 years).*
- *For locations close to sea level (<150m), it is important to clean the structures with water (no pressure) to prevent salt corrosion (annually).*
- *If snow accumulates, the panels must be cleared within 2 days of being fully covered to avoid freezing. Remove the snow without allowing it to freeze.*

Alumil SOLAR



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