

Assembly Systems for photovoltaics plants

Assembly Instructions – Pitched Roof

Assembly Systems for photovoltaics plants



ASSEMBLY INSTRUCTIONS PITCHED ROOF

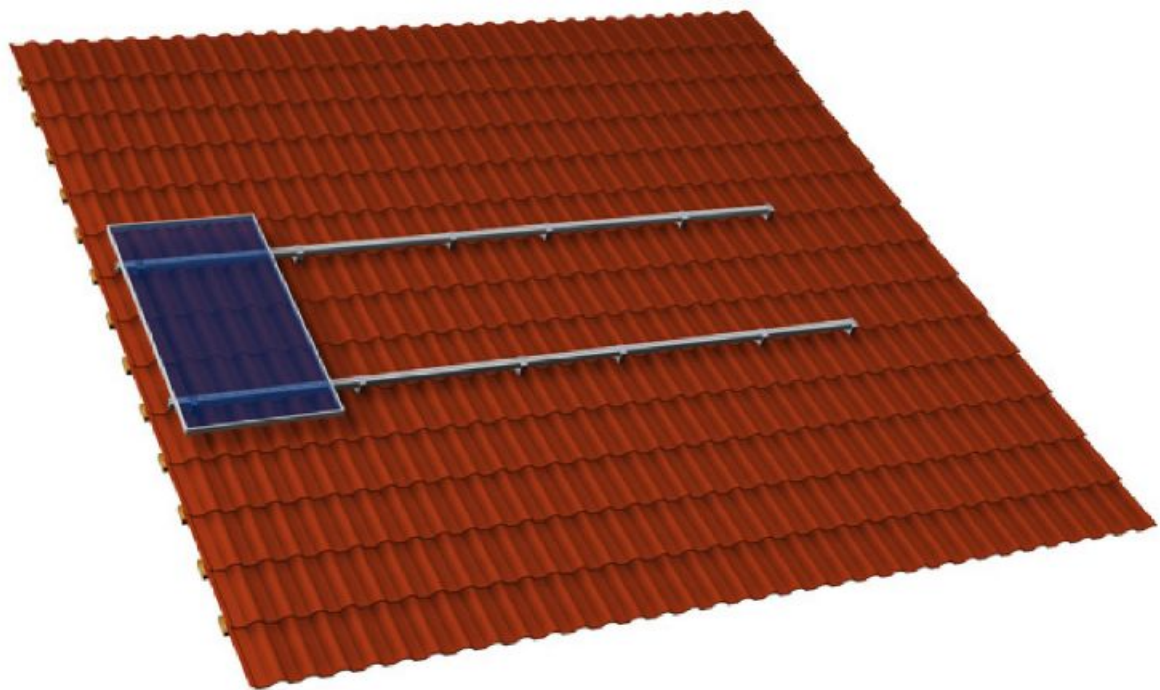
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ASSEMBLY INSTRUCTIONS PITCHED ROOF GENERAL

Two things were decisive for us when constructing and developing PROFINESS assembly systems: the simplest installation and a long-life which guarantees for safety. This is what the PROFINESS Solar programme is based on.

We would like to point out that these assembly recommendations reveal the standard of the technology and the experience gained over many years, showing how our systems can be installed locally.



As there are individual particularities to be considered for every roof, we request you, prior to tackling the installation, to seek professional clarification. Particularly the requirements of statics must be considered. When assembling the equipment, care shall be taken that the corresponding standards and accident prevention regulations are abided by.

Important standards and regulations
BGV A2 Electrical plants and equipment

BGV C22 Construction work

BGV D35 Ladders and stairs

BGV A1 Accident prevention regulation

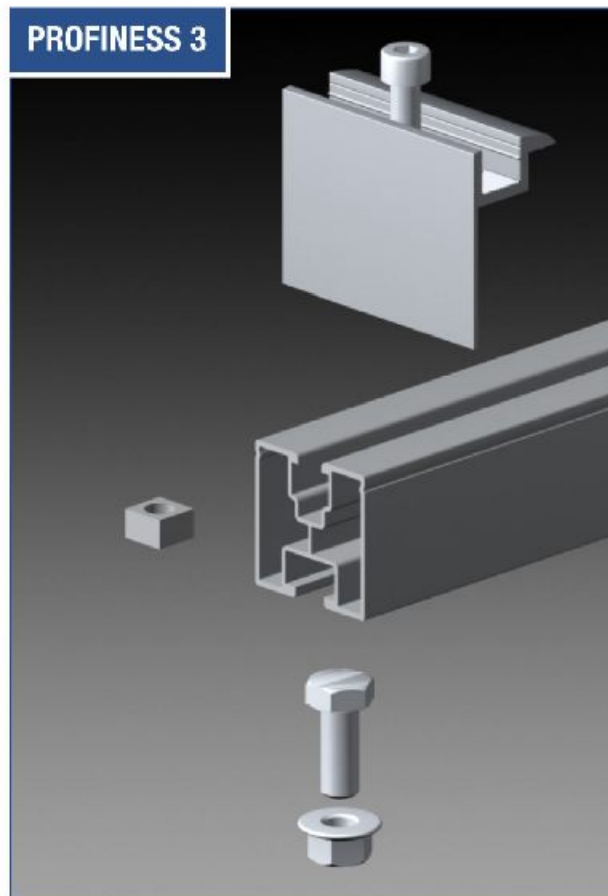
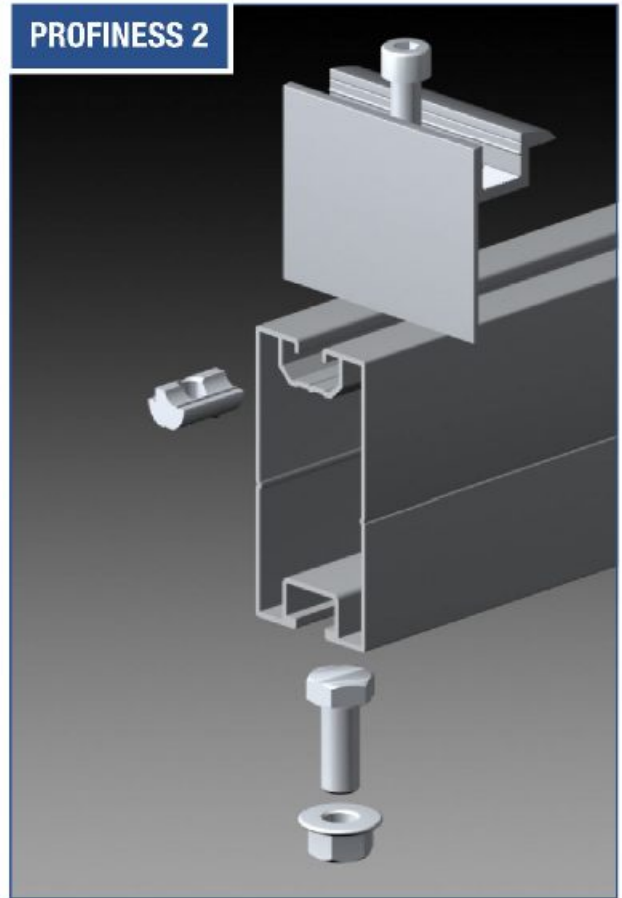
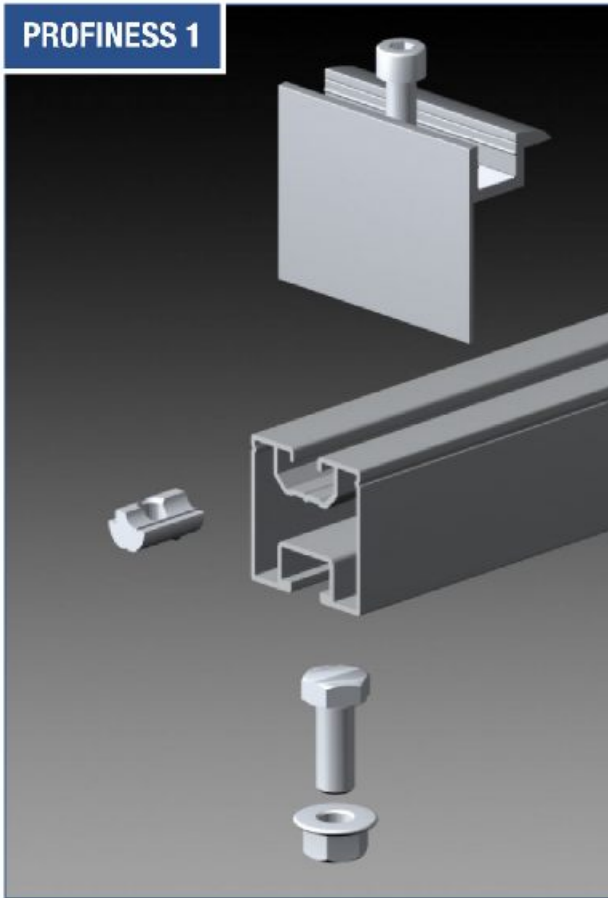
DIN 1052-2 Wooden construction:
mechanical connections

DIN 1055 Designed load for buildings

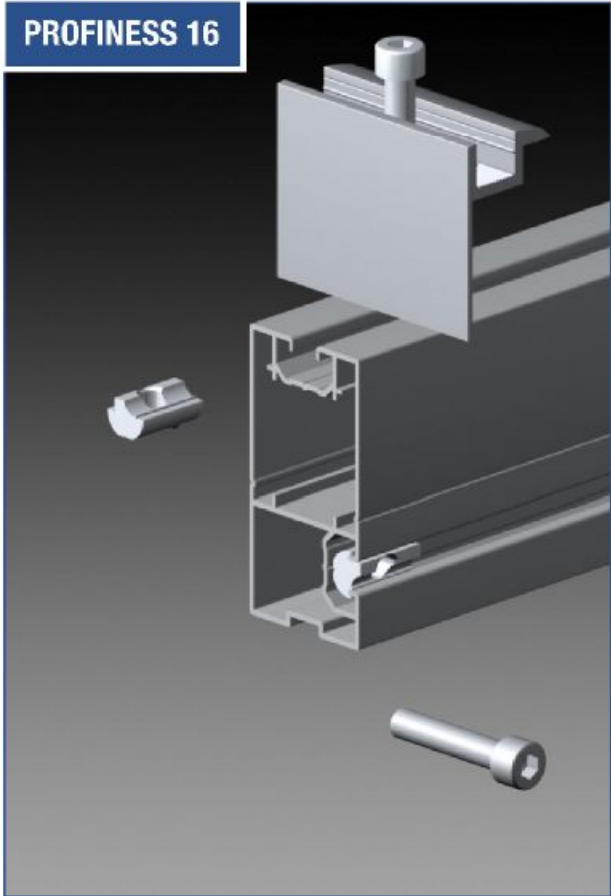
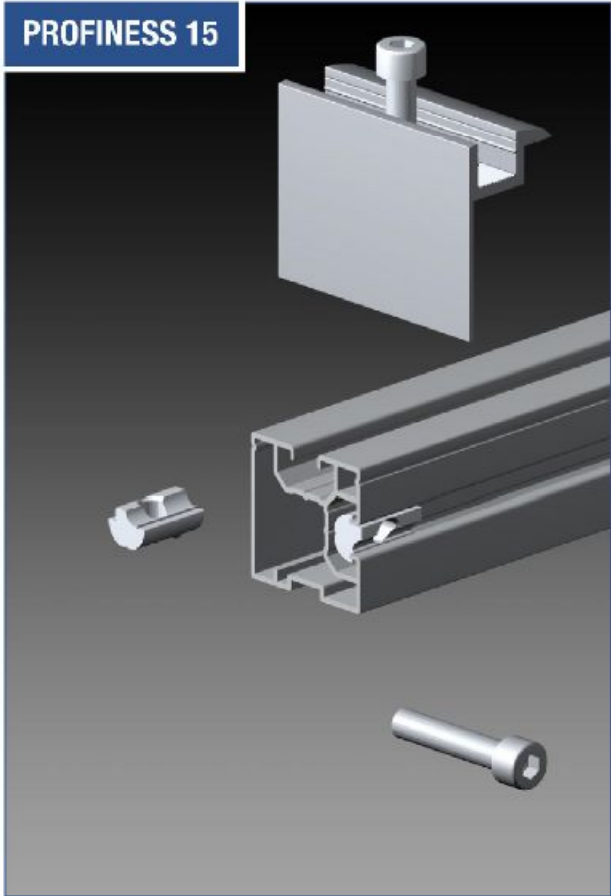
DIN 18299 General regulations for
construction work of all kinds

DIN 18451 Scaffolding

ASSEMBLY INSTRUCTIONS PITCHED ROOF SYSTEM OVERVIEW



ASSEMBLY INSTRUCTIONS PITCHED ROOF SYSTEM OVERVIEW



ASSEMBLY INSTRUCTIONS PITCHED ROOF POSSIBILITIES OF APPLICATION TO THE ROOF –



1

The majority of the roofing is with roofing tiles. The roof hooks of the type Vario (for heavy load, FIG. 1), for example the adjustable roof hook and the roof hook Standard (FIG. 2) can be used. The assembly is described in the following



2

These roof hooks are, as a rule, mounted to wooden beams. For this purpose the following screws can be used:

- Wood screw DIN 571 A2 8*80/100/120 mm
- Flat head screw 9810 A2 8*80/100/120 mm



3

For corrugated roofing (FIG. 3) or trapezoidal metal sheeting, stair bolts and special panels/brackets (FIG. 4,5 and 6) can be used. The choice of the corresponding stair bolts depends on the respective substructure (e.g. wood or steel).

We offer the following possibilities:

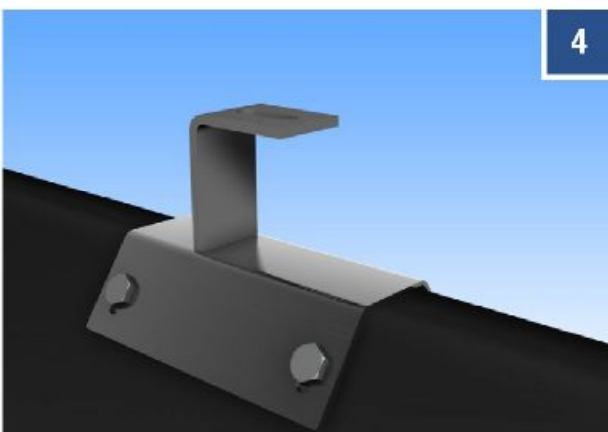
For wood substructures:

- see product range 9215+9216+9217+9219

For steel substructures:

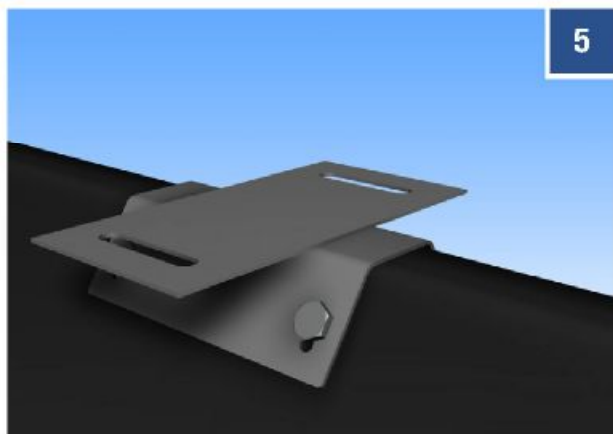
- see product range 9222
- approved solar mounting!

The choice of the right mounting bracket complies with the respective roof covering.

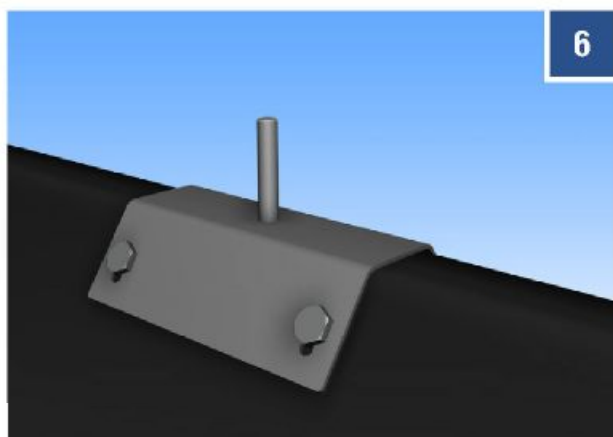


4

ASSEMBLY INSTRUCTIONS PITCHED ROOF POSSIBILITIES OF APPLICATION TO THE ROOF



Should roof penetration not be possible, the mounting may be applied directly to the available trapezoidal or corrugated metal roofing with a panel/bracket (see below) for mounting to metal.

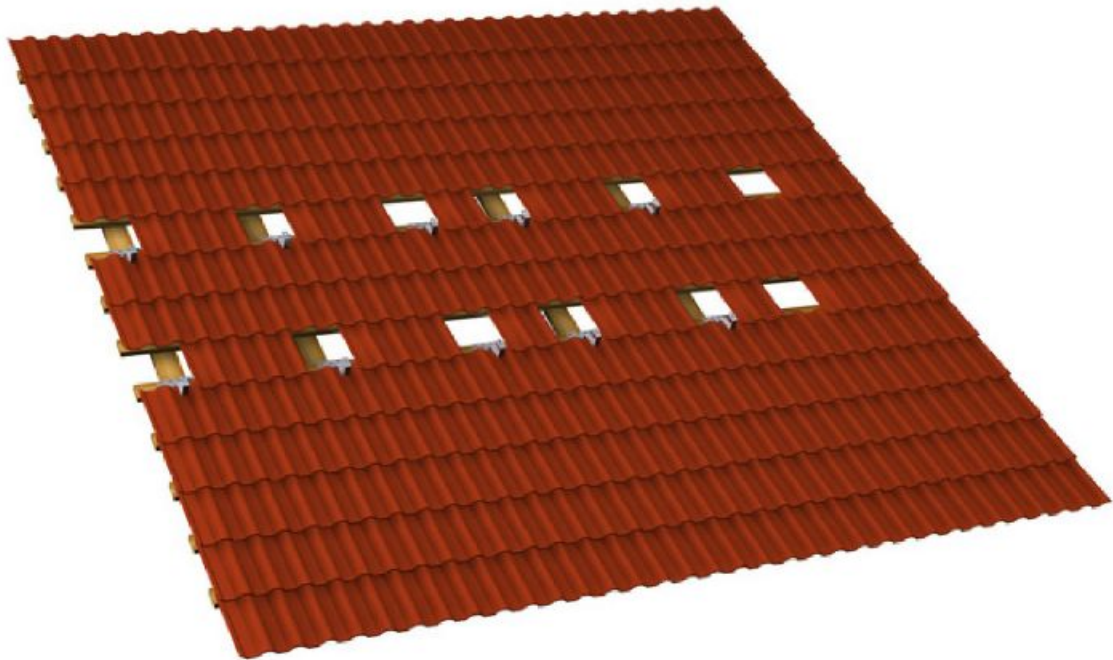


The brackets can, depending on construction design and type of roof inclinations, be used for inclinations of up to 30°. Sufficient attachment of the metal to the substructure and the max. load of the metal plating shall be considered in the forefront.

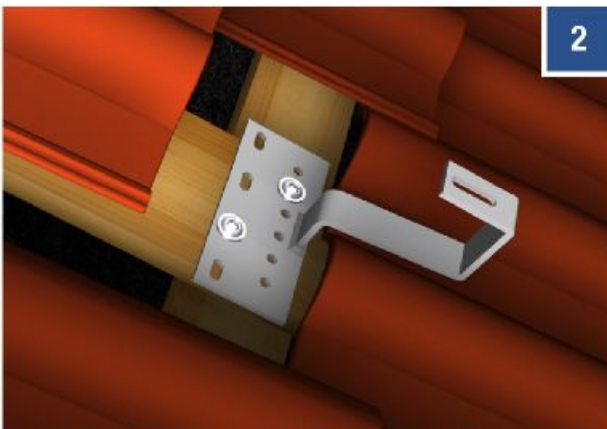
ASSEMBLY INSTRUCTIONS PITCHED ROOF

ASSEMBLY SEQUENCE OF THE PITCHED ROOF FRAME

Define the position of the roof. Hooks in line with the plans. Please find these positions in the assembly drawings related to the project



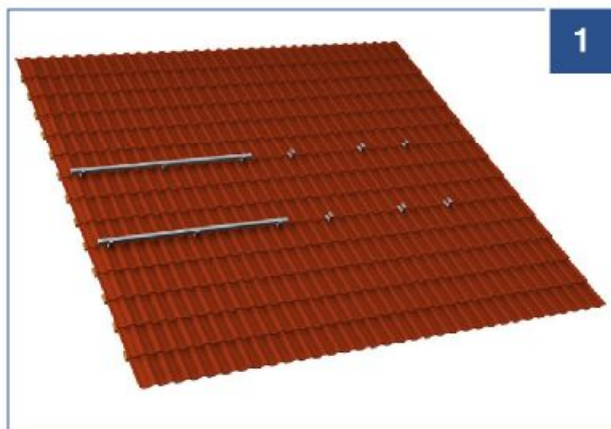
Remove the tiles at the respective positions, or if necessary push them upward. Position the respective roof hooks, however it may not be pressed against the tile. Depending on the type of roof hook, you can adjust the roof hook in height and to the sides, so that it is accommodated in the trough of the tile. The roof hooks are mounted to the rafters with two wood screws each (for example wood screws DIN 571 or flat head screw standard 9810*80mm or M8*100mm).



If necessary cut out the tile above the roof hook at the penetration point of this roof hook using an angle grinder. The roof hook may not elevate/lift off the tile lying above. In the case of grooved tiles the recommendation is also to cut out the lower tile.

ASSEMBLY INSTRUCTIONS PITCHED ROOF

ASSEMBLY SEQUENCE OF THE PITCHED ROOF FRAME



Mount the assembly rails for each series of modules using various screws and nuts: (in the case of FIG. 2 and FIG. 3 self-locking nuts DIN 985 with grommets can be used; torque max. 18 Nm.) Please check the required rail connectors in the forefront (see page 10.)

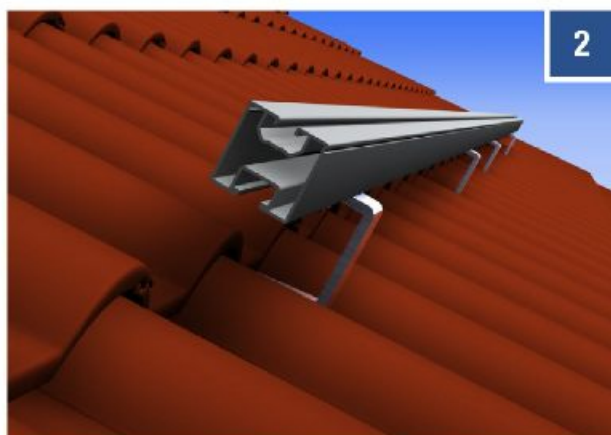


FIG. 2.
DIN 933 A2 M10*25 (hexagonal screw) plus 9345 A2 M10 (self-locking nut) or M10*25 (hammer head screw) plus 9345 A2 M10 (self-locking nut)



FIG. 3
Slot nut 9431-120901 plus DIN 912 A2 M8*16 (cylinder screw) or DIN 603 A2 M8*25 (round-head screw) plus 9345 A2 M8 (self-locking nut)

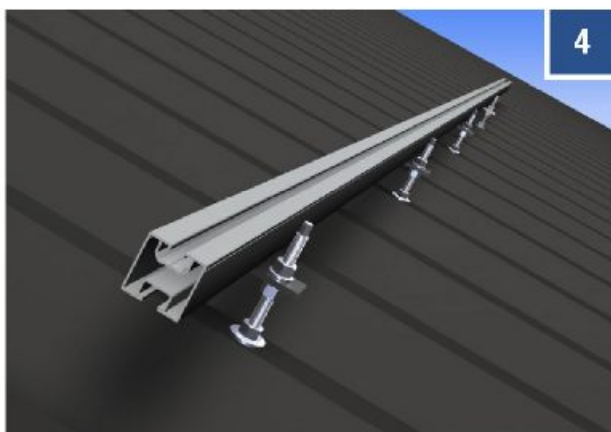
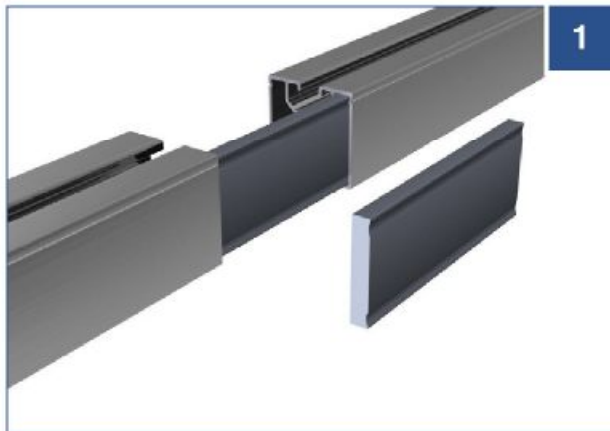


FIG. 4:
DIN 933 A2 M10*25 (hexagonal screw) plus 9345 A2 M10 (self-locking nut) or M10*25 (hammer head screw) plus 9345 A2 M10 (self-locking nut)

ASSEMBLY INSTRUCTIONS PITCHED ROOF ASSEMBLY OF THE RAIL CONNECTORS



To string several system supports together, various connectors can be used:

FIG. 1: The connector (PROFINESS 18) is pushed 50% into the mounting rail. Then the other mounting rail is pushed onto the connector. Finally exert pressure to the mounting rails to connect them flush to each other.

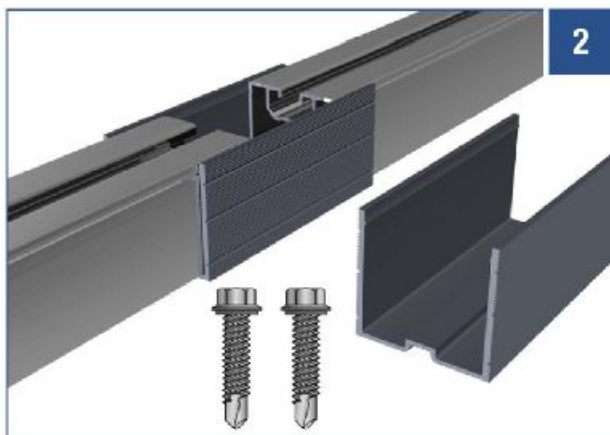


FIG. 2: Push the connector (PROFINESS 12) over the first mounting rail and click into the exiting groove. Then click in the second mounting rail and press both together. Finally this connection is screwed tight crosswise.(torque 8-10 Nm)

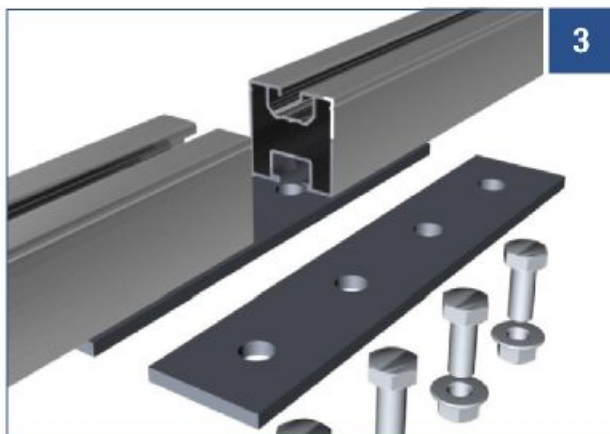
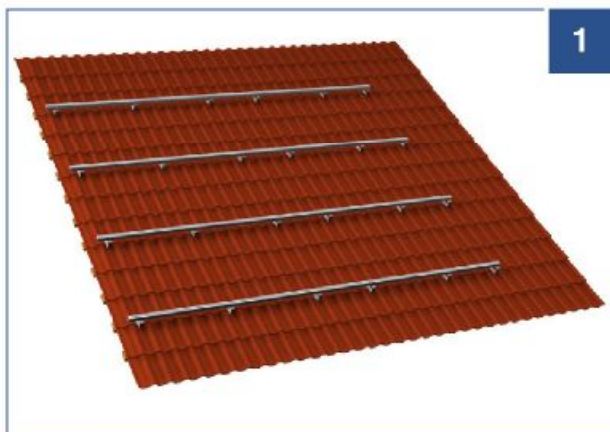


FIG. 3: Fit the connector (4-hole) with four hexagonal screws and slide the first two screw heads into the lower duct of the first assembly rail. Then slide the last two screws into the other rail. Finally fasten all the screws with 4 nuts each.(torque 10-12 Nm)

ASSEMBLY INSTRUCTIONS PITCHED ROOF ASSEMBLY SEQUENCE IN CROSS RAIL SYSTEM



When laying non-framed PV modules mounting in the cross rail system may be specified. This is a particularly sturdy construction. Please consider mounting specifications of the module manufacturer.

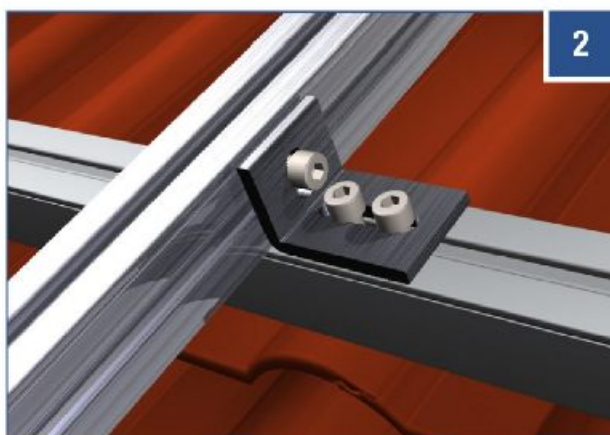


FIG. 2: Connection of the two rails by cross bracing angle
- 912 A2/A4 8*16 (3x) cylinder screws
- 9431 120901 (3x) slot nut
- 9701 PROFINESS 14 angle cross bracing

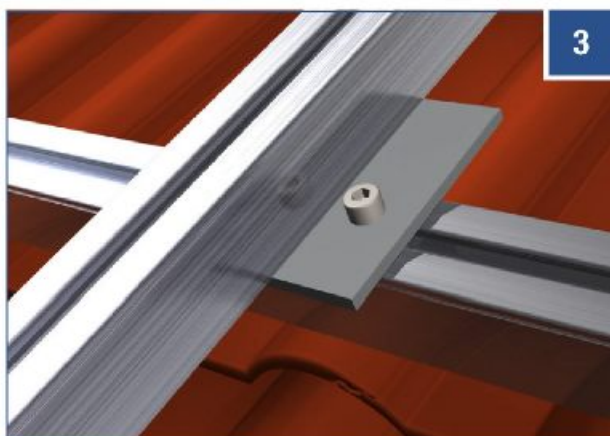
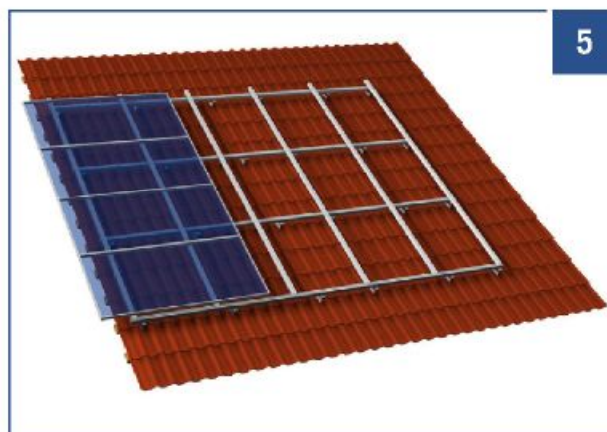
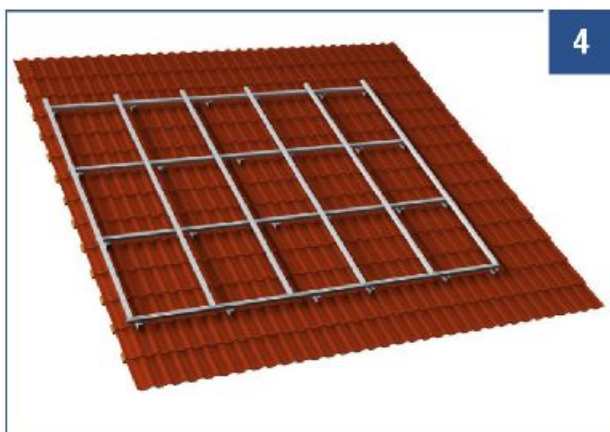
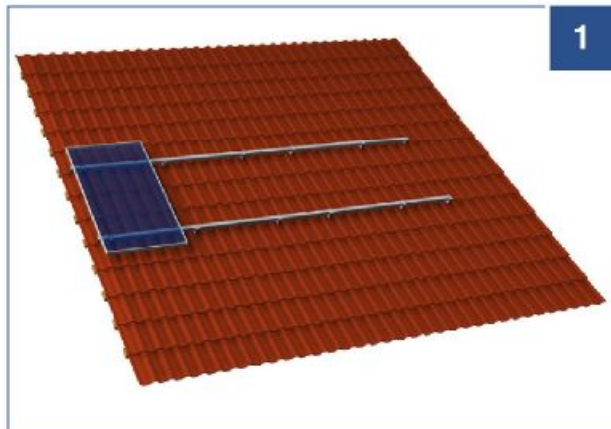


FIG. 3: Connection of the two rails by cross bracing angle
- 912 A2/A4 8*16 (2x) cylinder screws
- 9431 120901 (2x) slot nut
- 9701 PROFINESS 23 cross bracing
- 933-2 10x25 hexagonal screw
- 9345-2 10 self-locking nut



ASSEMBLY INSTRUCTIONS PITCHED ROOF

ASSEMBLY SEQUENCE OF THE PITCHED ROOF FRAME WITH FRAMED PV MODULES



Mounting for centre and terminal clamps::

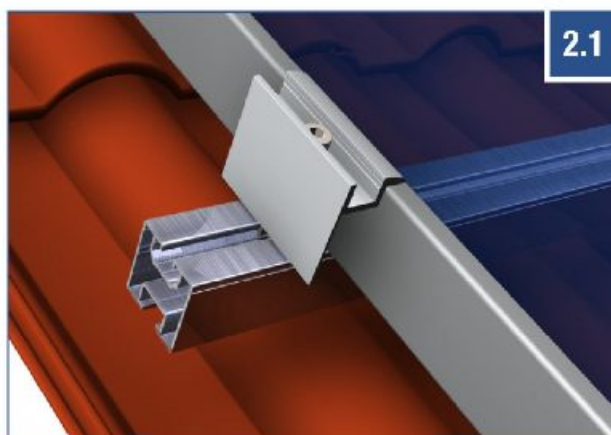


FIG. 2.1: Swivel the slot nut into the upper rail and click together. Screw the terminal clamp with the appertaining screw (each depending on module height) into the slot nut. Alternatively, click the click element into the upper duct of the rail and tighten (torque up to a max. 18 Nm depending on module manufacturer.) A cover may be used to close off the form. (FIG 2.2)

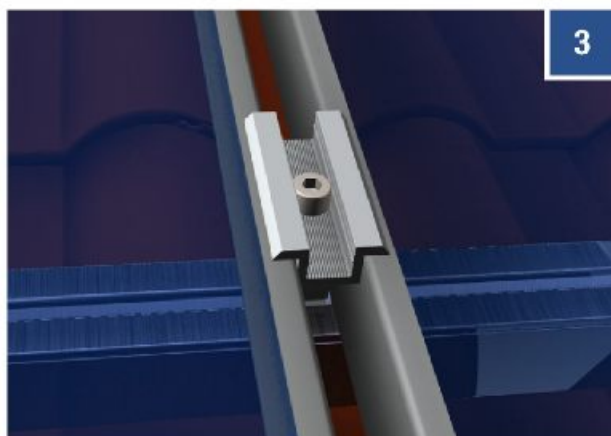
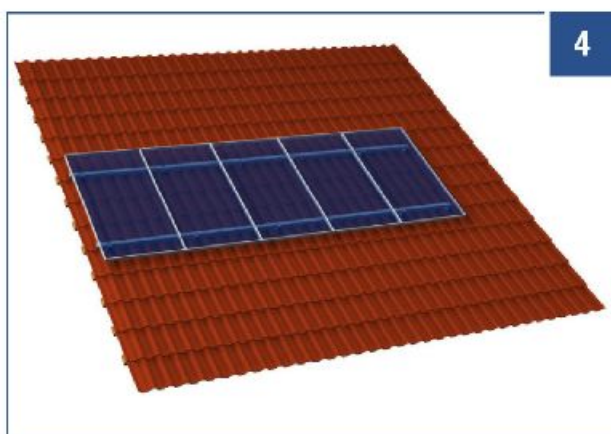


FIG. 3: Swivel the slot nut into the upper rail and click together. Then turn the centre clamp with the appertaining screw (depending on module height) into the slot nut. Alternatively click the click element into the upper duct of the rail and tighten (torque up to a max. 18 Nm depending on module manufacturer.).



ASSEMBLY INSTRUCTIONS PITCHED ROOF

ASSEMBLY SEQUENCE OF THE PITCHED ROOF FRAME WITH FRAMELESS PV MODULES

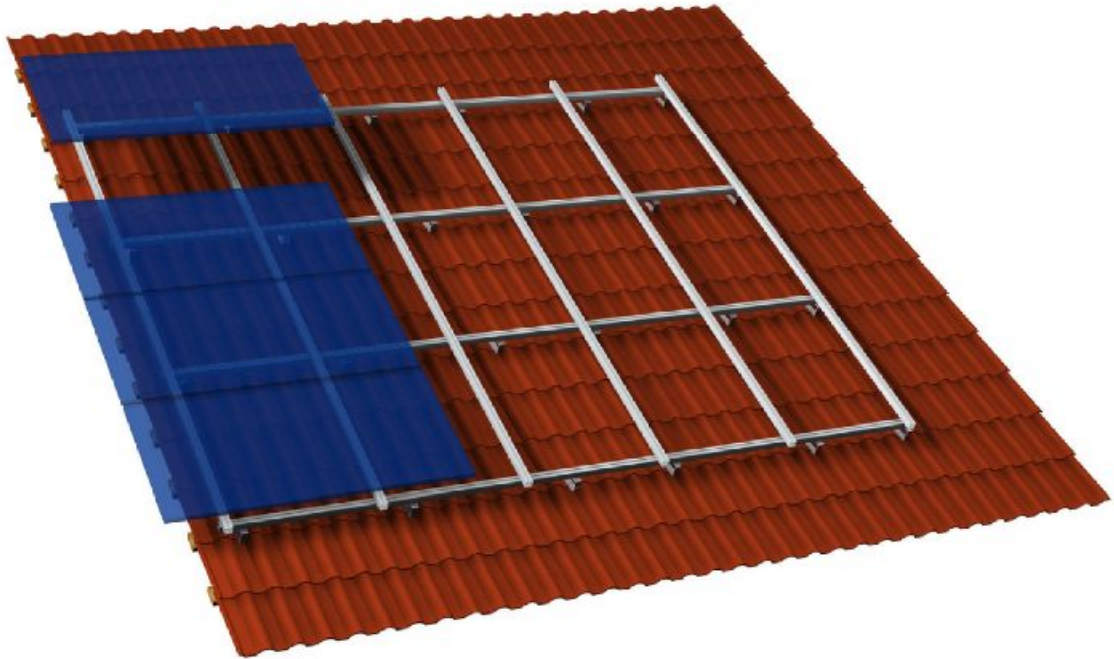
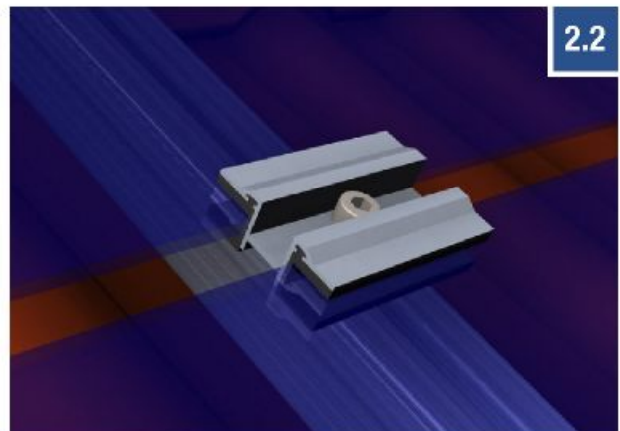
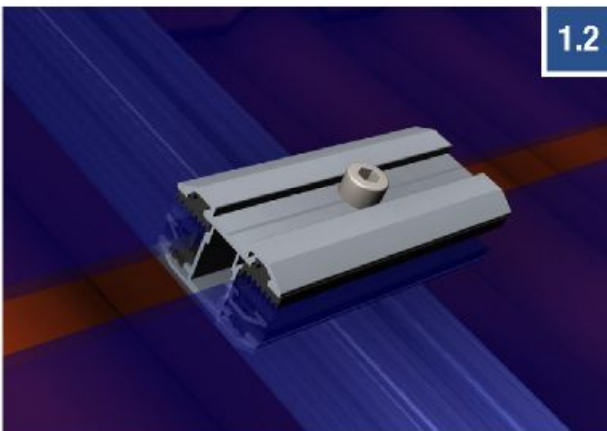
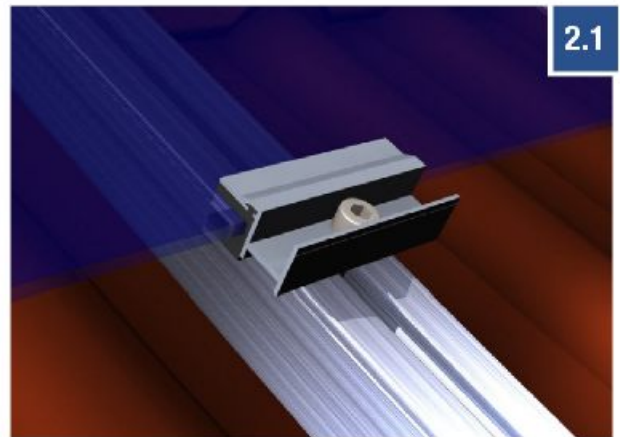
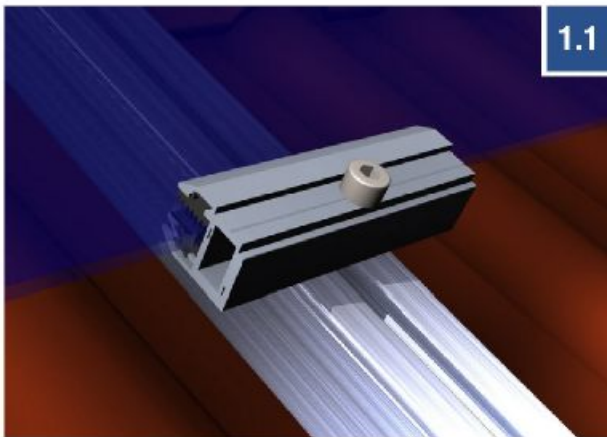


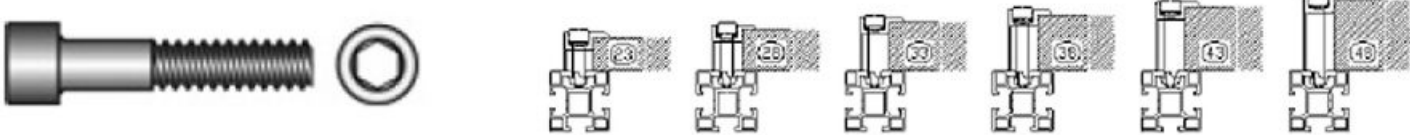
FIG 1: Swivel the slot nut into the upper rail and click together. Screw the terminal clamp with the appertaining screw DIN 912 A2/A4 M8*35mm into the slot nut and tighten (torque up to 15 Nm.)

FIG 2: Swivel the slot nut into the upper rail and click together. Screw the terminal clamp with the appertaining screw DIN 912 A2/A4 M8*35mm into the slot nut and tighten (torque up to 15 Nm.)



ASSEMBLY INSTRUCTIONS PITCHED ROOF SCREWS FOR FRAMED PV MODULES

3.2. Screws and accessoires for module clamps

Art.Nr.	Item	Price
	Allen screws:	
		
912-2-8*30	M8*30 mm	On Enquiry
912-2-8*35	M8*35 mm	On Enquiry
912-2-8*40	M8*40 mm	On Enquiry
912-2-8*45	M8*45 mm	On Enquiry
912-2-8*50	M8*50 mm	On Enquiry
912-2-8*55	M8*55 mm	On Enquiry
912-2-8*60	M8*55 mm	On Enquiry
9250-2-8.4	Locking washer A2 8,4mm	On Enquiry

3.3. Use of Allen screws for different module heights

Modul height	Screw for rail with Sliding block	Locking washer (for sliding block channel only)	Screw ¹⁾
32 mm	Allen, M8 * 35		Allen, M8 * 35 oder *40
34 mm	Allen, M8 * 35		Allen, M8 * 35 oder *40
35 mm	Allen, M8 * 40	x	Allen, M8 * 40 oder *45
36 mm	Allen, M8 * 40	x	Allen, M8 * 40 oder *45
38 mm	Allen, M8 * 40		Allen, M8 * 40 oder *45
40 mm	Allen, M8 * 45	x	Allen, M8 * 45 oder *50
41 mm	Allen, M8 * 45	x	Allen, M8 * 45 oder *50
42 mm	Allen, M8 * 45		Allen, M8 * 45 oder *50
45 mm	Allen, M8 * 50	x	Allen, M8 * 50 oder *55
46 mm	Allen, M8 * 50	x	Allen, M8 * 50 oder *55
50 mm	Allen, M8 * 55	x	Allen, M8 * 55 oder *60

¹⁾ Both specified lengths can be used with these square nuts.

ASSEMBLY INSTRUCTIONS PITCHED ROOF

ARTICLE LIST ACCESSORIES

Roof hook Standard



Roof hook Vario



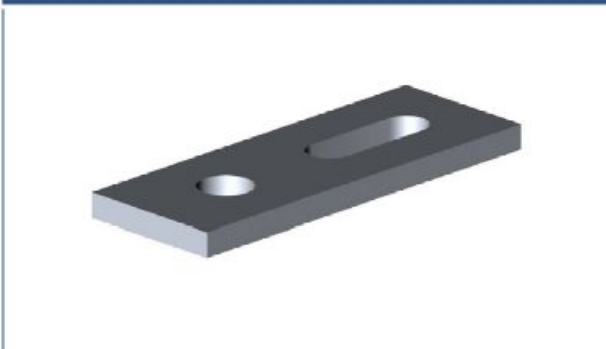
Trapezoidal metal cover



Stair bolt



Adapter metal plate



Mounting angle



Slot bolt



Profile connector 9557



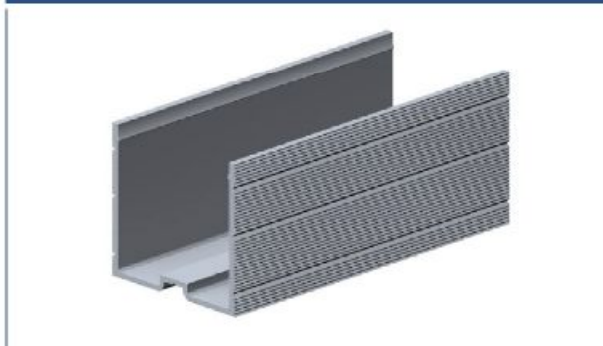
ASSEMBLY INSTRUCTIONS PITCHED ROOF

ARTICLE LIST ACCESSORIES

Profile connector PROFINESS 18



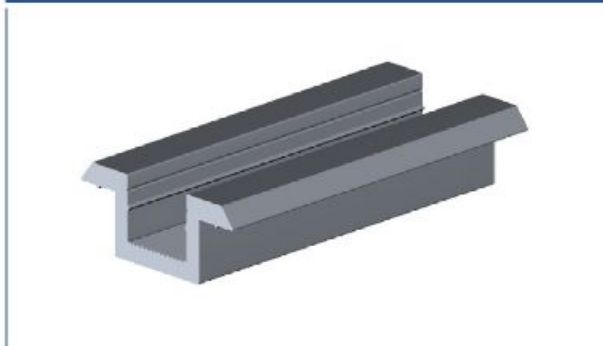
Profile connector PROFINESS 18



Terminal clamp



Centre clamp



Terminal clamp for glass modules LAMINATE L



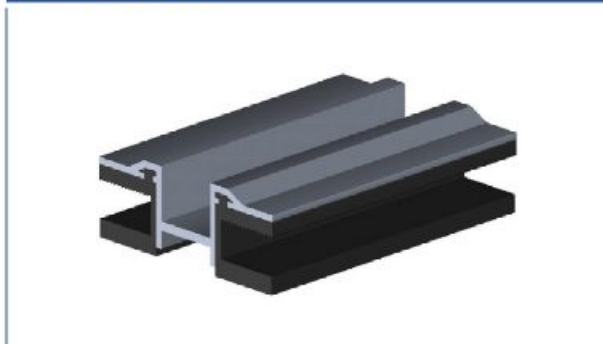
Centre clamp for glass modules LAMINATE L



Terminal clamp for glass modules LAMINATE JT



Centre clamp for glass modules LAMINATE JT





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