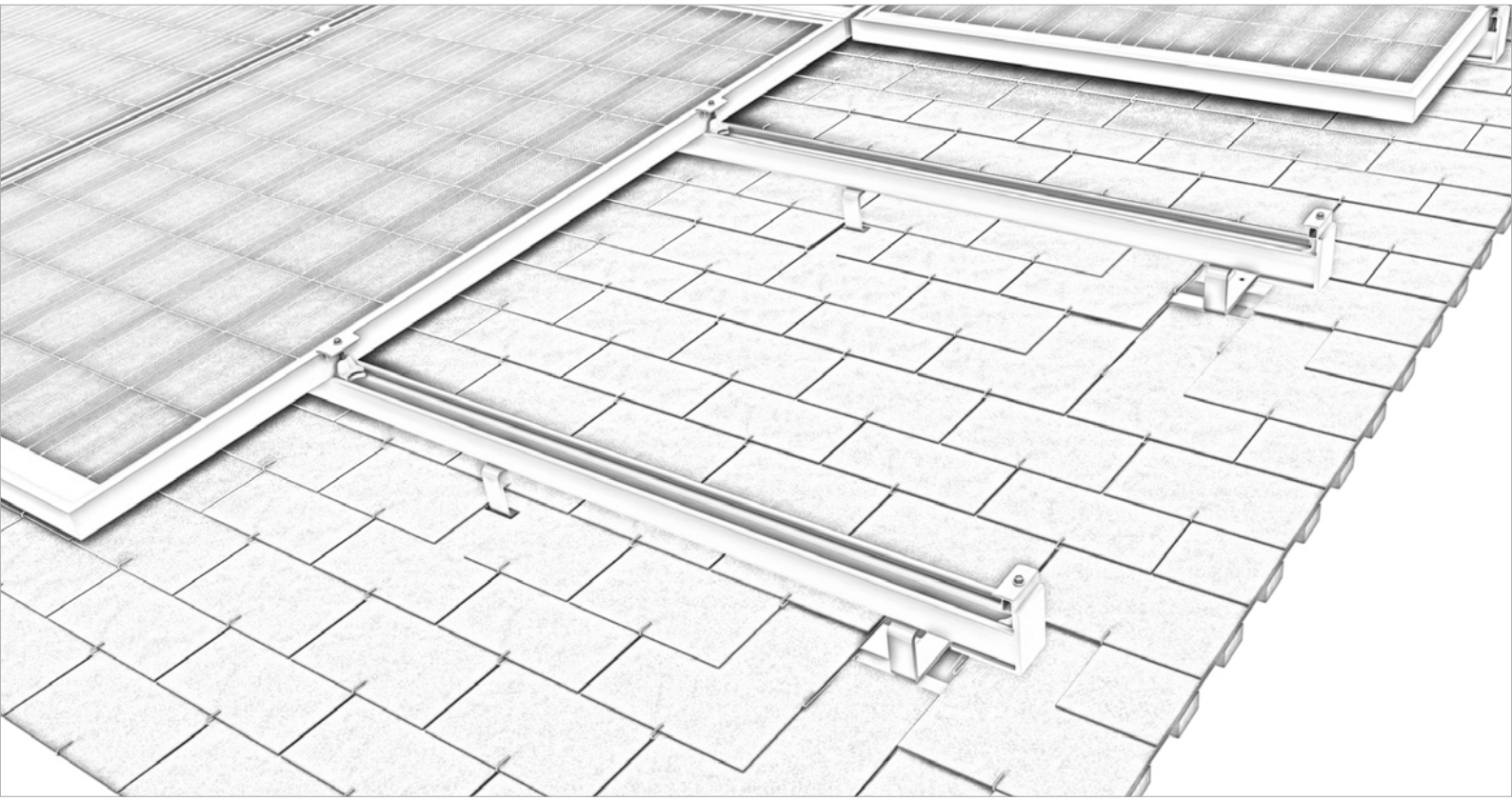
Pitched roof | Slate roof | top-fix



Mounting instructions

- Safety instructions 2
- General conditions & Notes on mounting 3
- Tools, system components and optional components 4–5
- Mounting the substructure 6–15
- Mounting variations 16–20
- Mounting optional articles 21-22
- Maintenance of the mounting system 23

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Status: 06/2025

Safety instructions

The following instructions are to be understood as generally valid for our novotegra installation system and are to be applied accordingly, regardless of the particular roof type and installation system.

Systems may only be installed and commissioned by persons who are able to ensure that they are carried out in accordance with the regulations on the basis of their professional qualifications (e.g. training or activity) or experience.

All relevant national and locally applicable occupational health and safety regulations, accident prevention regulations, standards, construction regulations and environmental protection regulations as well as all regulations of the employers' liability insurance associations must be observed.

- During the work, safety clothing must be worn in accordance with the relevant national regulations and guidelines.
- The assembly must be carried out by at least two persons in order to be able to guarantee help in case of an accident.
- The national regulations for work at heights and on roofs must be observed.
- The electrical work must be carried out in compliance with the national and locally applicable standards and guidelines in compliance with the safety regulations for electrical work.

The installer is responsible for dimensioning the novotegra mounting system. Before installation, it must be checked whether the mounting system meets the static requirements on site For roof systems, the on-site load-bearing capacity of the roof must also be checked. Please note our instructions on static calculations, which can be viewed at www.novotegra.com/downloads.

The installer is responsible for connecting the interfaces between the mounting system and the building. This also includes the tightness of the building envelope. The mounting system must always be statically calculated individually for each project using the design software provided by novotegra GmbH.

The mounting system is suitable for mounting PV modules with standard market dimensions. The installation instructions of the module manufacturers must be observed and complied with. There is no inspection by novotegra GmbH regarding constructability or mounting guidelines.

The specifications of the cable and inverter manufacturers must be observed. If there are any contradictions to these installation instructions, please be sure to consult your novotegra GmbH sales team or - in the case of components not supplied by novotegra GmbH - the manufacturer concerned before installing the novotegra mounting system.

It must be ensured that a copy of the assembly instructions is within reach in the immediate vicinity of the work on the construction site.

Since our assembly systems are constantly being further developed, assembly procedures or components may change. Therefore, please check the current status of the installation instructions on our website www.novotegra.com/downloads before installation. The assembly sequence of these instructions must be observed. We will also be happy to send you current versions on request.

In the event of improper use and non-compliance with our safety instructions and installation specifications, as well as non-use of associated installation components or use of third-party components that are not part of the installation system, all claims under guarantee, warranty and liability vis-à-vis novotegra GmbH shall lapse. The user is liable for damage and resulting consequential damage to other components such as PV modules or to the building itself, as well as for personal injury.

The permissible roof pitch for the use of the mounting system in accordance with these installation instructions is 0 to 60 degrees for installation parallel to the roof on a pitched roof and 0 to 5 degrees for elevated installation on a flat roof. Facade systems are to be mounted parallel to the facade.

The grounding / potential equalization of the mounting system must be carried out in accordance with the national and locally applicable standards and guidelines.

If all safety instructions are observed and the system is installed properly, there is a product warranty claim of 12 years. Please note our warranty conditions, which can be viewed at www.novotegra.com/downloads.

The system can be dismantled in reverse order to the steps described below.

General conditions

Location:	Roof covering with slate
Roof inclination:	0° – 60°
Roof cover:	Slate, fibre cement panels
Module mounting:	portrait and landscape
Rail length:	max. 13 m then expansion joints, 40 m module field separation

General installation instructions for pitched roofs

The suitability of the mounting system for the respective project must be checked on a case-by-case basis using the existing roof covering and roof structure. The roof covering, roof structure or facade must fulfil the requirements of the mounting system in terms of load-bearing capacity, load-bearing structure and state of preservation.

For roof-parallel installation with the clamping system, two module support rails per module must be mounted symmetrically under the modules for equal load transfer into the substructure. Alternatively, the roof-parallel installation can also be installed with insertion rails. The specified tightening torques must be adhered to and checked randomly on site.

Requirements for the material of the roof construction or roofing:

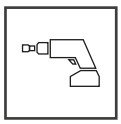
- Wooden components (rafters/purlins): At least strength class C24 (no fungal decay or rottenness), OSB with material grade OSB 3.
- Steel purlins for stock screw installation exclusively material grade S235.

The load bearing capacity of the roof / roof construction (rafters, purlins, trapezoidal metal, concrete floors, number of adhesive points, folded seams, etc.) or the facade (wall construction materials) must be checked by the user or a check be commissioned. Physical building aspects concerning insulation penetrations (e.g. condensation) must be taken into account by the user.

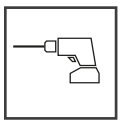
The contents of these installation instructions describe how to install the substructure on roofs with slate roofing. Installation can be carried out using the S C-shaped V2A roof hook or with stock screws and metal shingles. The specified screw-in depths of the stock screws must be observed, as this is the only way to ensure that the corresponding load-bearing capacity values are met.

The individual installation steps for module upstand installation are explained below. Reference is made to installation variants for the various design options. The associated work steps follow.

Tool and equipment

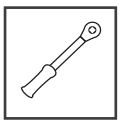


Cordless screw-driver



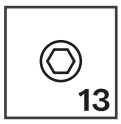
Drilling machine

Mitre saw



Torque spanner 20-50 Nm

Driller



special nut socket 13 mm

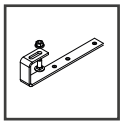
special nut socket 18 mm

special nut socket 8 mm

Hexagon socket AF 3

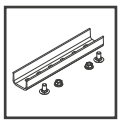
Assembling jig

Mounting system components**



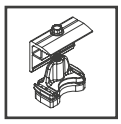
Roof hook S C-shape A2SS

C-rail



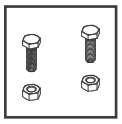
Rail connector - set C

Middle clamp set C

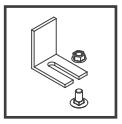


End clamp set C

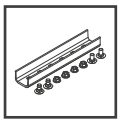
MDF screws 6x80 mm countersunk head



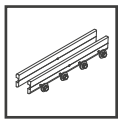
Module slip guard-Set M8/M6



Slip guard for landscape mounting-set



Expansion joint C 47



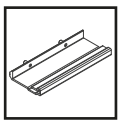
Rail connector set C 47 S

*The components vary depending on the requirements of the roof, the structural analysis and the choice of components and may deviate from the images above

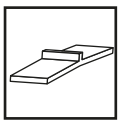
Mounting system components – variations**

Insertion rail 30-50 mm

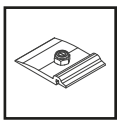
Edge stop set IR



Rail connector Set IR



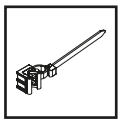
EPDM-T protection IR



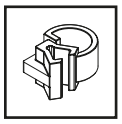
Cross rail connector-set C IR M8

**The components vary depending on the requirements of the roof, the structural analysis and the choice of components and may deviate from the images above

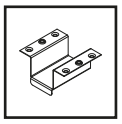
Mounting system components – optional***



Cable-tie clip for profile flange

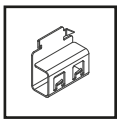


Cabel-Clip d = 10 mm



Contact latch middle clamp

Grounding connector C-rail

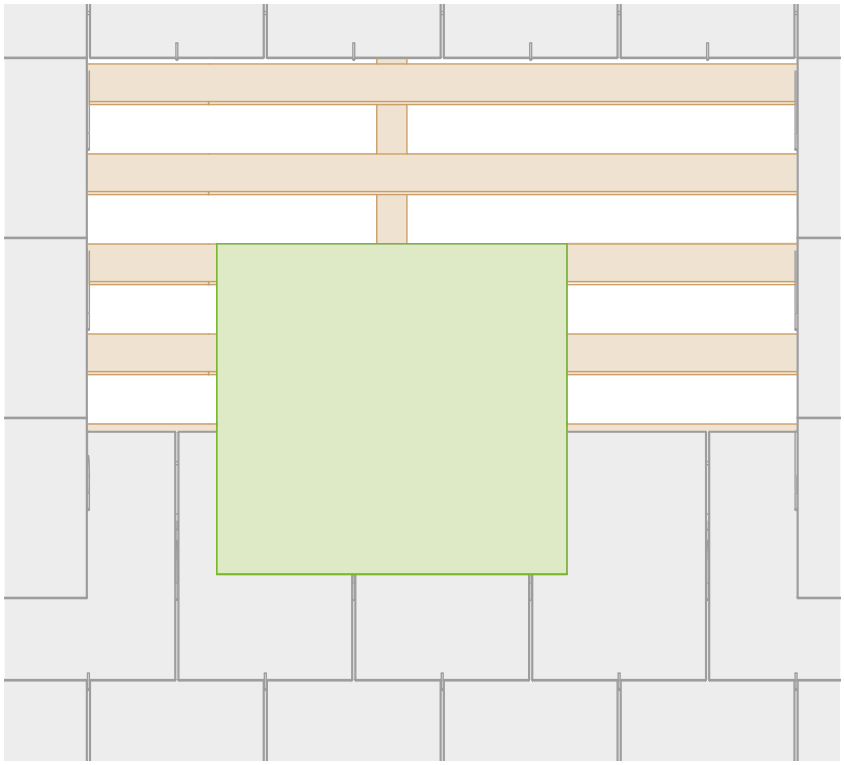


Contact latch IR

***Optionally available installation system components, e.g. for improving the aesthetics of the system, cable management or grounding of the installation system.

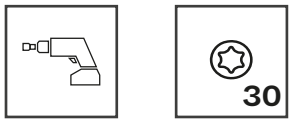
Mounting the substructure

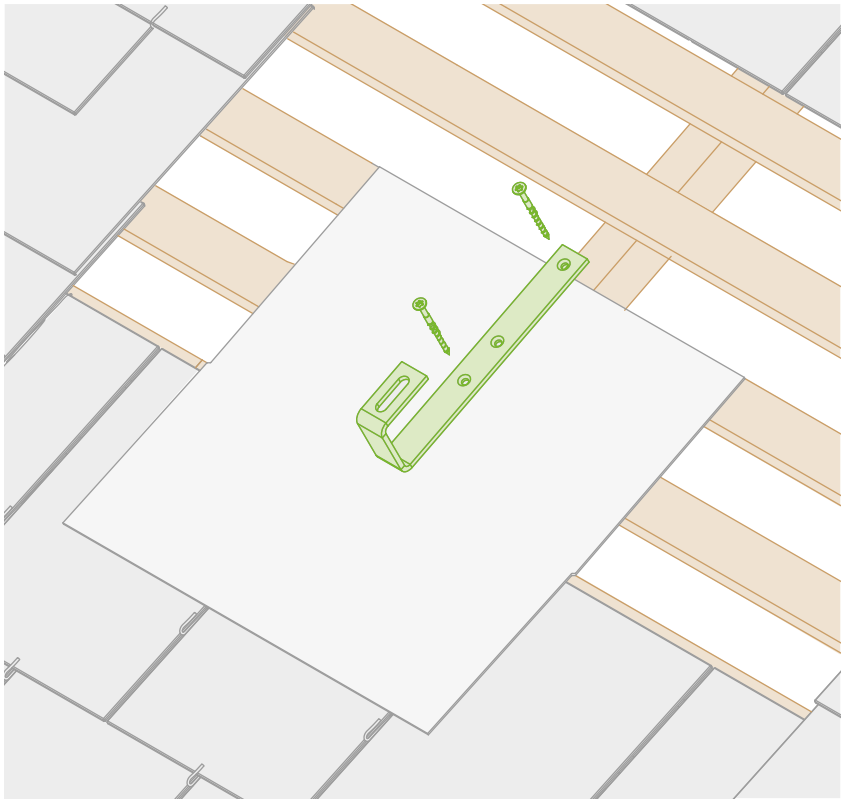
1 Roof hook mounting



Notice:
Built-in parts must be installed and covered using sufficiently wide metal sheets. The cover plates require a side flap and must be provided by the customer. The minimum overlaps of the adjacent surface coverings must be observed and comply with the technical rules for roofing with slate.

A The cover plates must be aligned centrally above the rafters and mounted on the substructure.





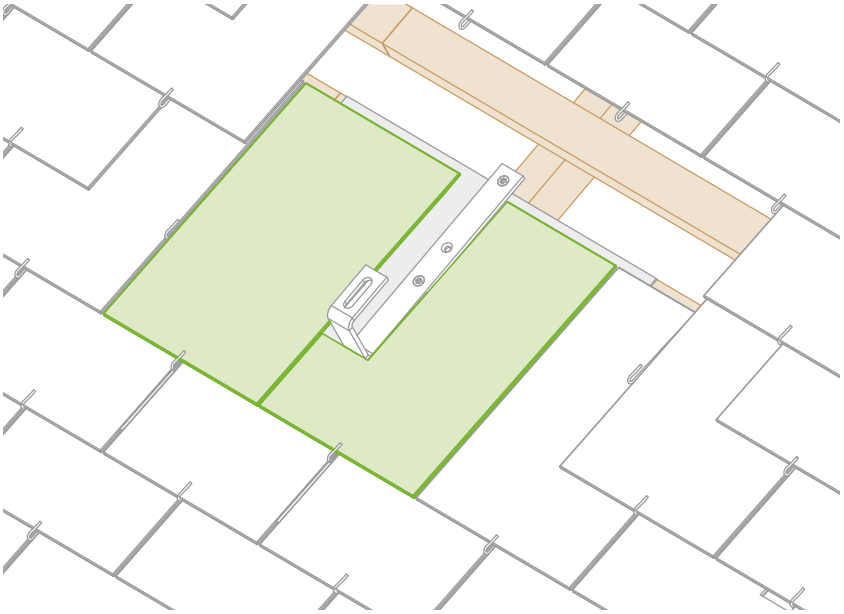
B The roof hook must be fastened to the rafter with two fastening screws.

Warning:

Risk of injury when cutting the slate.

There is a risk of injury from the sharp edges of the slate and the cutting tool.

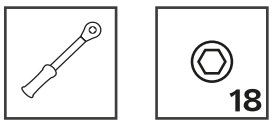
- Comply with UVV
- Wear protective gloves
- Wear safety goggles



C The slate must be cut out at the position of the roof hook.

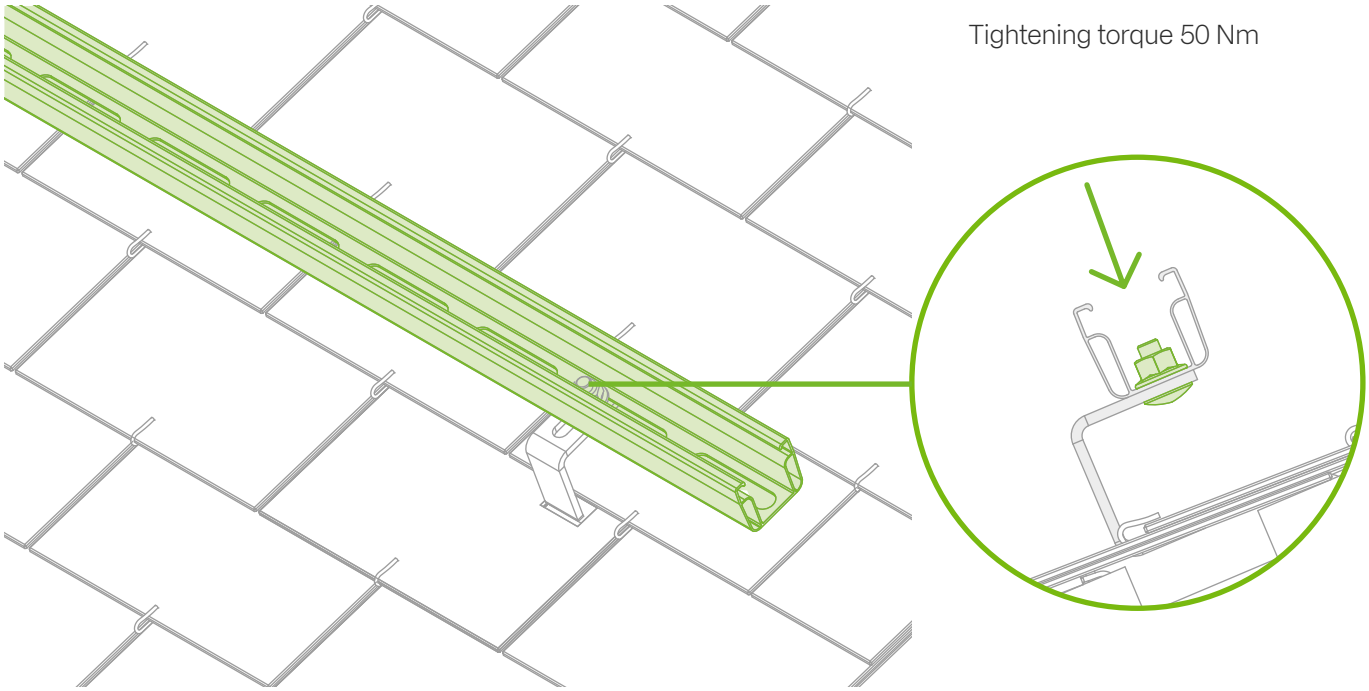
D The cover plates must be aligned centrally above the roof hook and fastened to the substructure. The roof must then be re-covered.

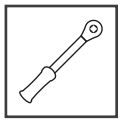
2 Rail mounting



A The fastening screw must be inserted through the long hole in the roof hook and the C-rail. Align the C-rail and tighten with the lock nut from above.

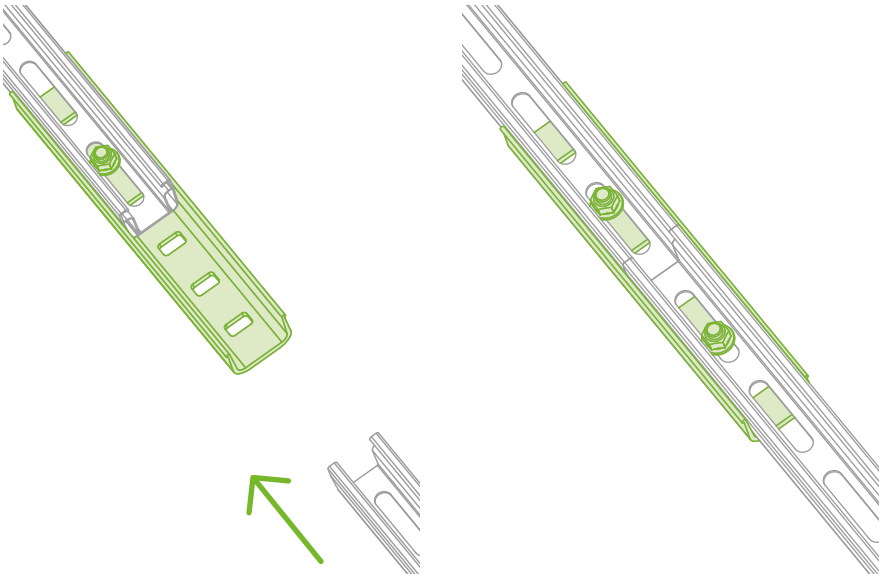
Tightening torque 50 Nm




Warning:
Risk of injury when sawing the rail to size
There is a risk of cutting yourself on the sharp edges of the rail and the saw blade.

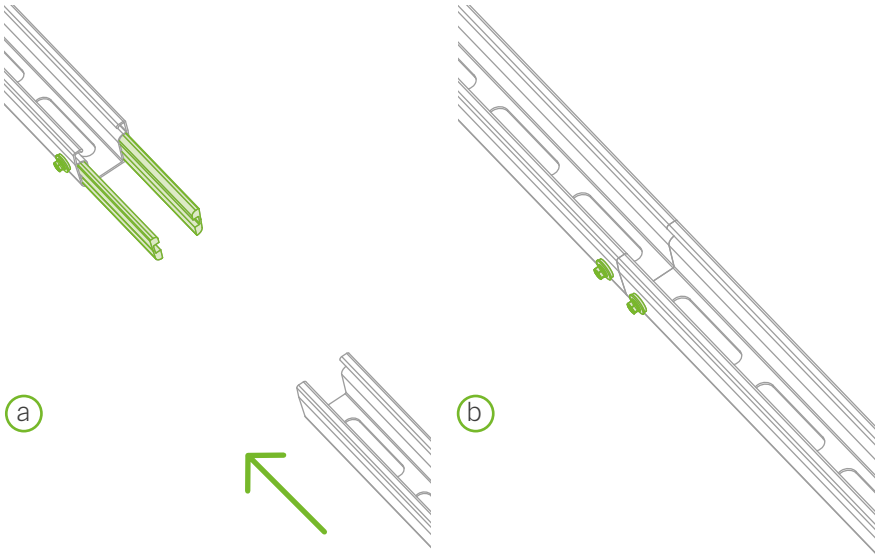
- Comply with UVV
- Wear protective gloves
- Wear safety goggles



B Connecting the rails.

Push the ends of the rails tightly together, place the rail connectors centrally and screw together. Using the bolts contained in the set.

Tightening torque 50 Nm
max. rail length: 13 m



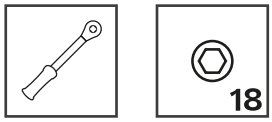
C Mounting of the rail connector C 47 S.

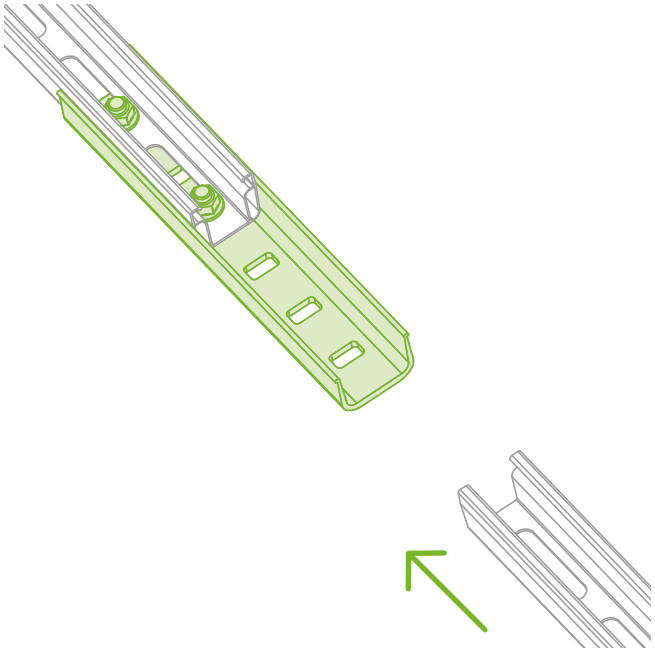
(a) Push the rail connector set halfway into one of the rails to be connected and secure it by self-tapping screws each on both sides approx. 20 mm from the rail end.

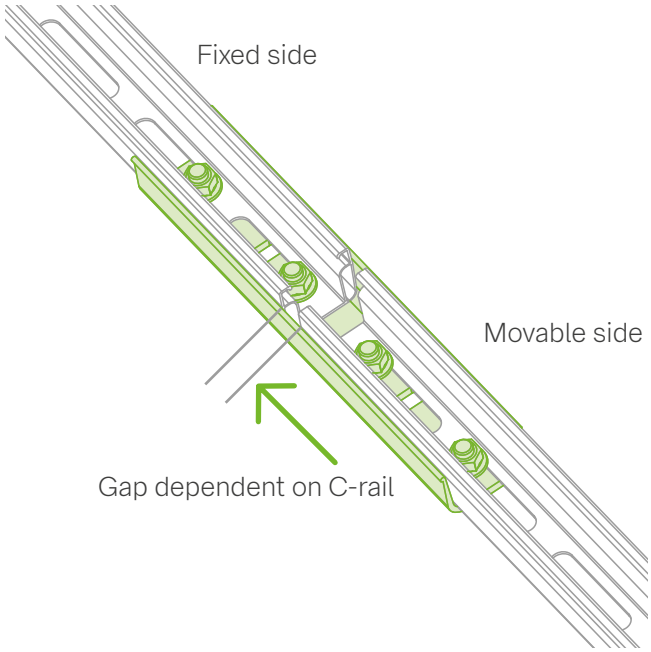
(b) Next push the other rail completely onto the rail connector set until both rail ends make contact and screw it tight as described above.

max. rail length: 13 m

3 Mounting expansion joint for C-rail







Warning:
Risk of injury when sawing the rail to size
There is a risk of cutting yourself on the sharp edges of the rail and the saw blade.
- Comply with UVV
- Wear protective gloves
- Wear safety goggles

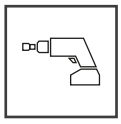
Warning:
A expansion joint must not be installed under a module.

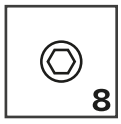
D Mounting of the expansion joint.

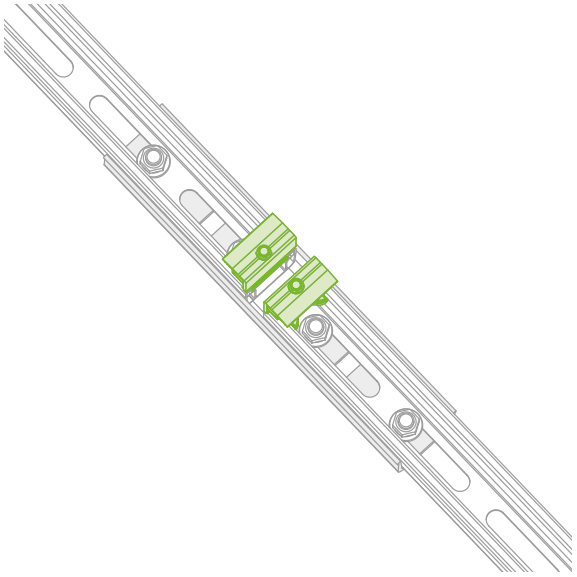
Place rail ends onto the gap, apply the rail connector and connect it to the rail at the fixed and movable sides using the mounting screws. Tighten the screws firmly on the fixed side. The screws on the movable side are coated in red and must be released again after tightening (approx. ½ turn).

Distance of adjacent rail ends
C-rail 38 and 47: 20 mm
C-rail 71 and 95: 40-50 mm

Tightening torque: 50Nm
max. rail length: 13 m







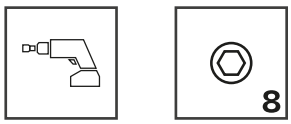
Warning:
A expansion joint must not be installed under a module.

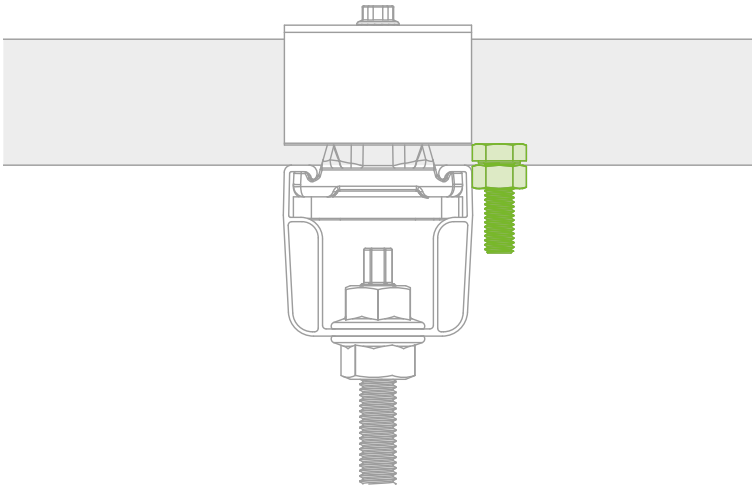
E Mounting end clamp by expansion joint.

An end clamp must be placed on each side of a expansion joint.

novo-tip:
It is possible to mount the end clamp flush with the end of the rail.

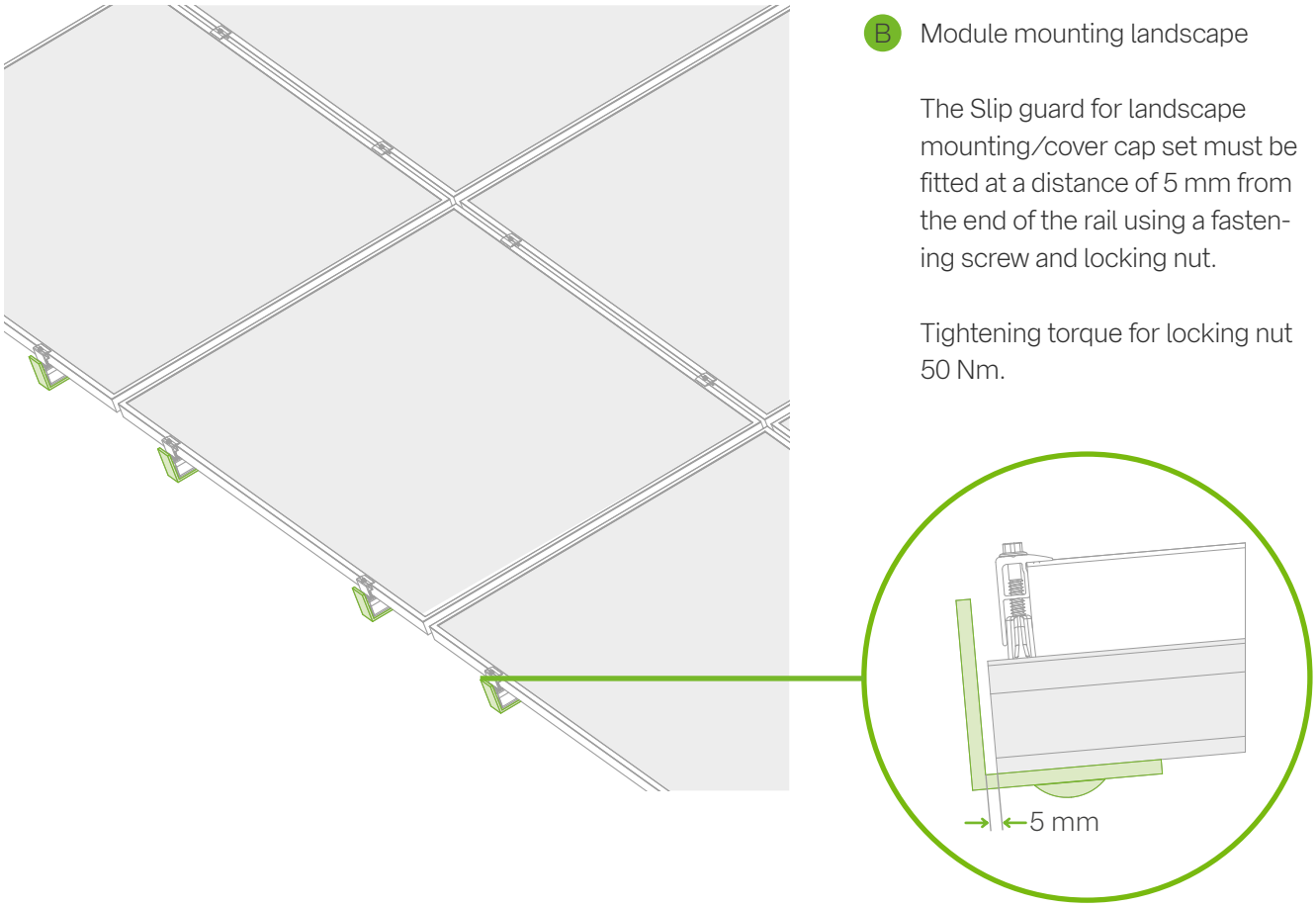
4 Module mounting





A Module mounting portrait

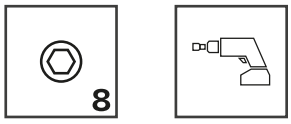
From a roof pitch > 10° the slip guard device must be fitted to the frame holes of each module in the bottom row of rails.

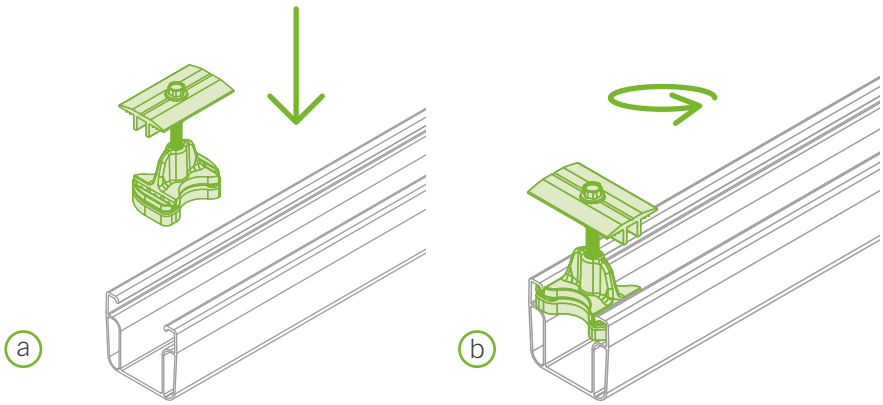


B Module mounting landscape

The Slip guard for landscape mounting/cover cap set must be fitted at a distance of 5 mm from the end of the rail using a fastening screw and locking nut.

Tightening torque for locking nut 50 Nm.





C Inserting module clamps.

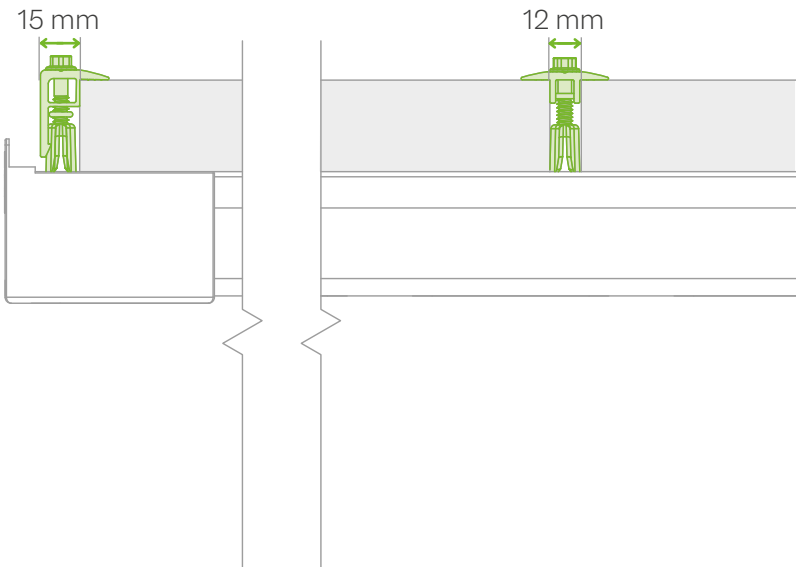
(a) Insert into the rail from above.

(b) Rotate by 90°

D Tightening module clamps.

Tightening torque Middle clamp 10 Nm.
Tightening torque End clamp 8 Nm.

novo-tipp:
For mounting contact latch, see page 21.



E Space requirement for Middle and End clamps.

The modules must be pushed all the way onto the rail nut of the Middle and End clamps.

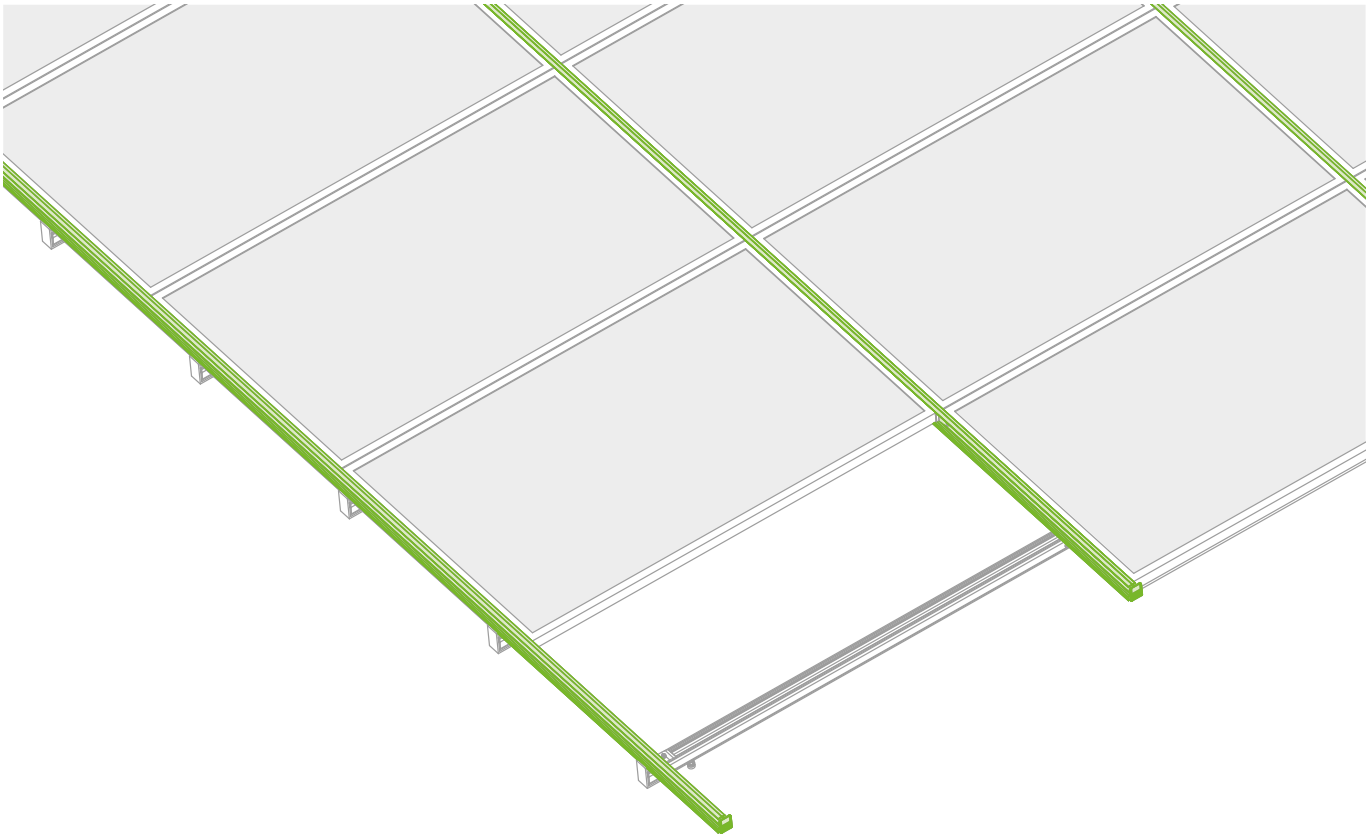
Tightening torque Middle clamp 10 Nm.
Tightening torque End clamp 8 Nm.

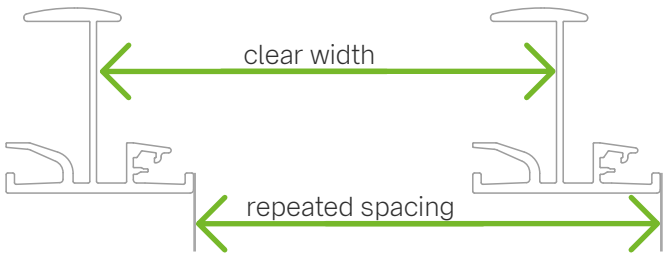
novo-tip:
The End clamp can also be installed aligned with the rail end.

If End caps are fitted, the C-rail must be cut to length 1 cm longer than specified in the rail sawing plan.

Mounting variation insertion system

1 Rail mounting



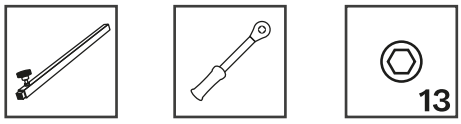


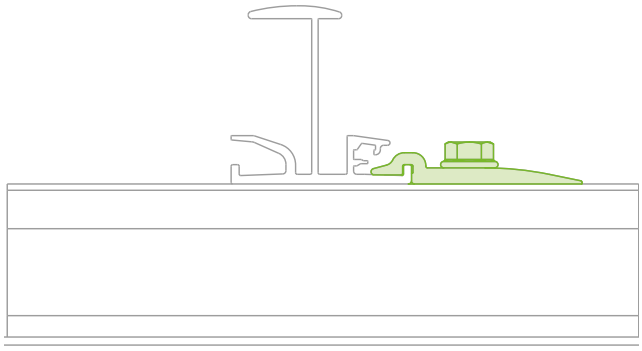
Repeated spacing = Module width W + 12 mm
Clear width of rails = Module width W + 10 mm

A Measure the insertion rail.

The insertion rails must be marked on the vertical rails depending on the module orientation.

For vertical module installation, the module length must be used instead of the module width.



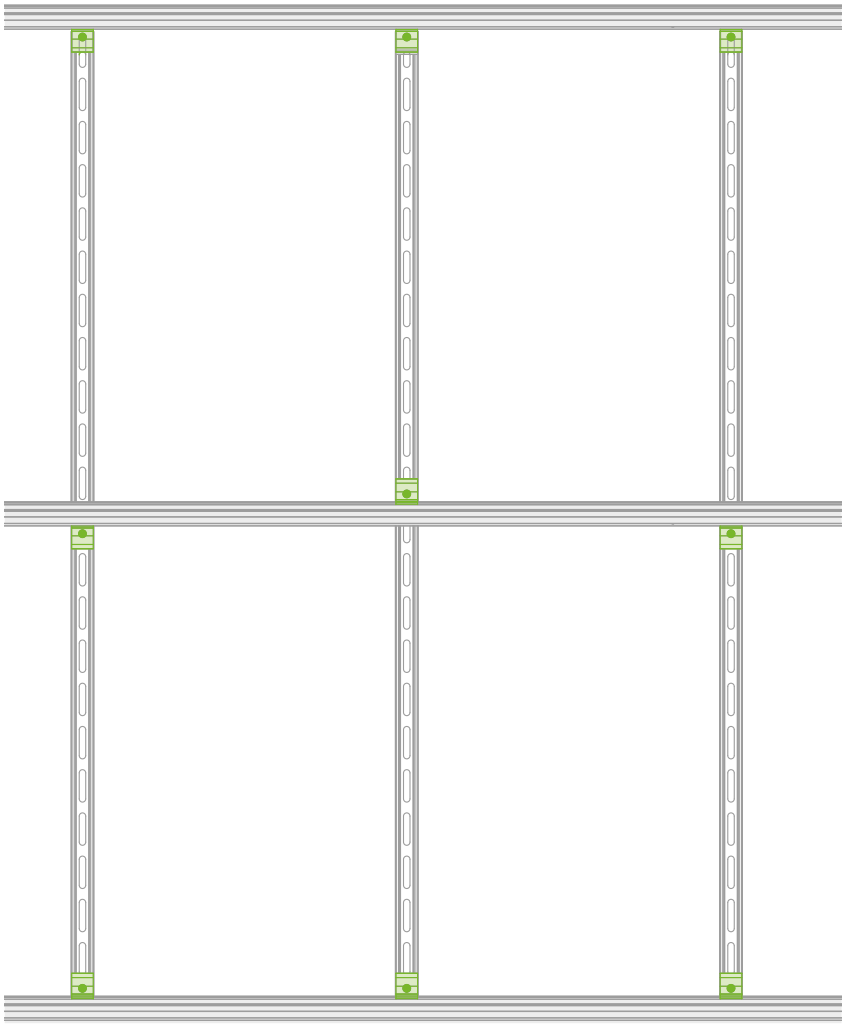


B Mounting Cross rail connector IR

Cross rail connector set C IR has to be engages with the mounting flange.

The plate of the cross-rail connector set must be in full contact with the rail.

The tightening torque for the Cross rail connector set C IR is 25 Nm.



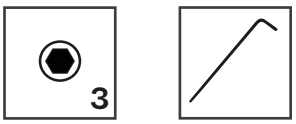
C Position of the cross rail connector IR

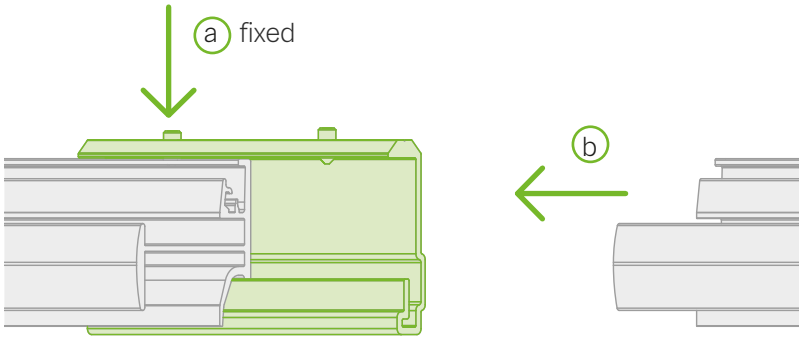
For the top and bottom insertion rail of the module field the Cross rail connector set C IR M8 is fitted on the inside in each case.

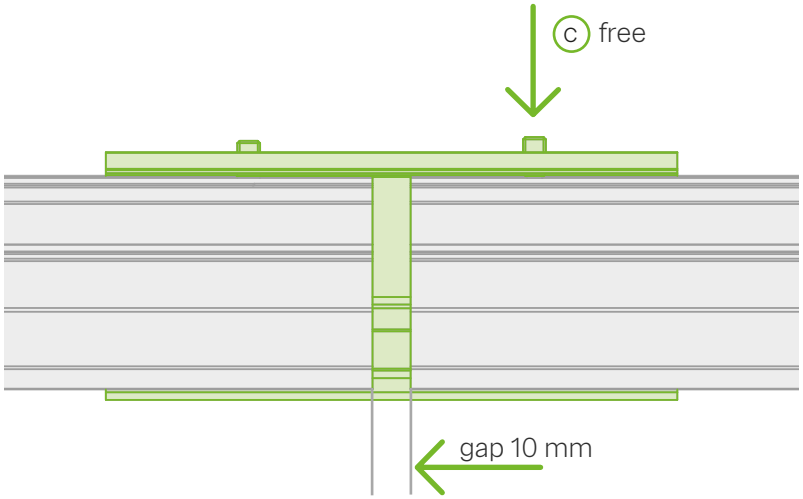
The cross rail connector set C ES must be fitted to the centre insert rails alternately at the top and bottom in a w-shape.

novo-tip:
The assembling jig must be set to the module dimension + 10 mm. The valid module dimension is the width or length of the module and can be found in the module manufacturer‘s data sheet.

2 Mounting rail connector insertion system







Warnung:
Risk of injury when sawing the rail to size
There is a risk of cutting yourself on the sharp edges of the rail and the saw blade.
- Comply with UVV
- Wear protective gloves
- Wear safety goggles

A Fitting rail connectors

max. rail length: 5,40 m

a Attach the rail connector up to the centre of the connector and tighten the threaded pin.

b Insert the rail to be connected into the connector. Gap between the rails 10 mm.

c Tighten the threaded pin without play so that longitudinal expansion is not blocked during heating.

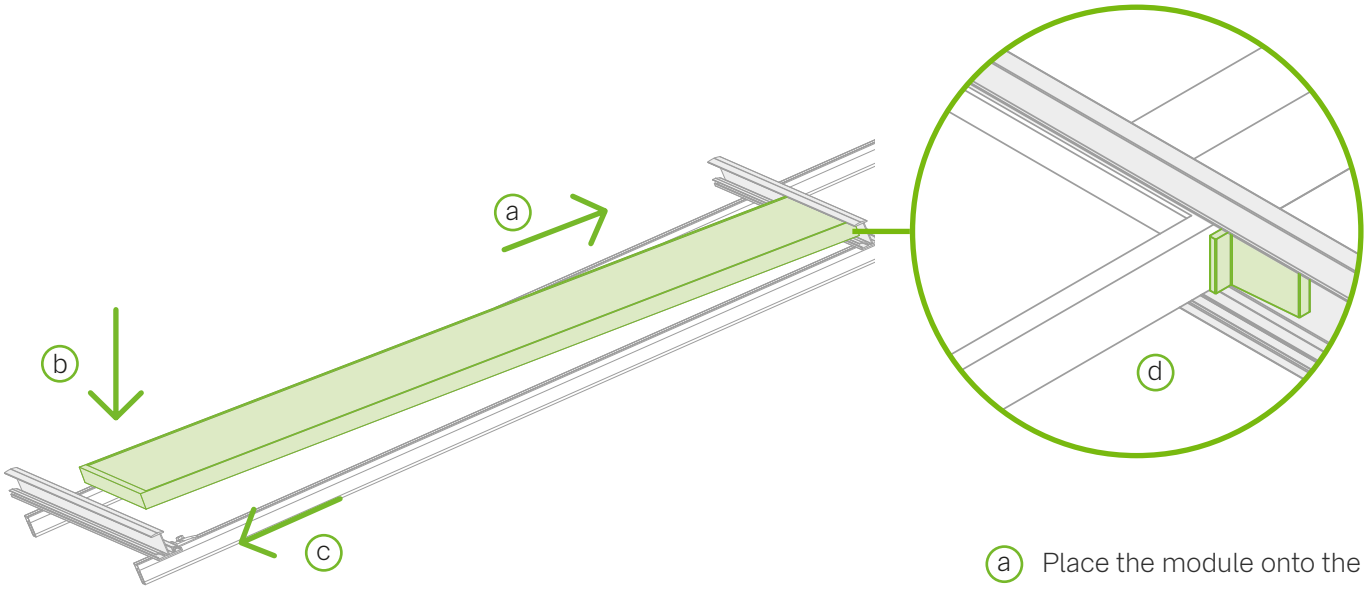
Warning:
No connector may be placed outside the last support point of the rail.

Each rail section must be fastened at at least one point

The connector cannot be mounted above a fixing point. If this is the case, the rail cut or arrangement must be changed.

3 Module mounting insertion system

A Place module in insertion rail



(a) Place the module onto the top insertion rail and push it up.

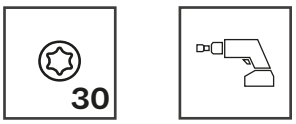
(b) Then lower the module onto the bottom insertion rail.

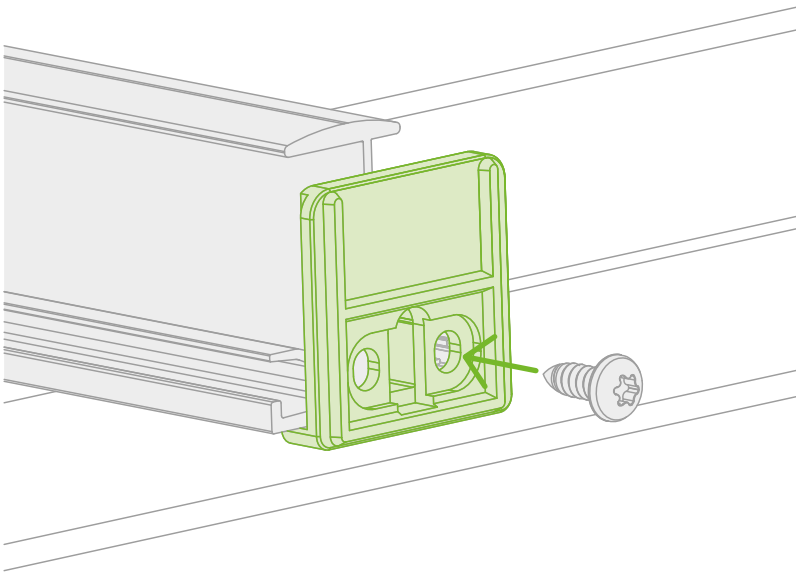
(c) Push it down against the insertion rail. Mount the next modules following the same principle. The gap between the modules must be min. 5 mm

(d) For roof pitches > 10°, the EPDM T-lock must be inserted between two modules.

novo-tip:
If contact latches for the insertion rail are installed, see page 21, these must now be inserted.

4 Edge stop mounting



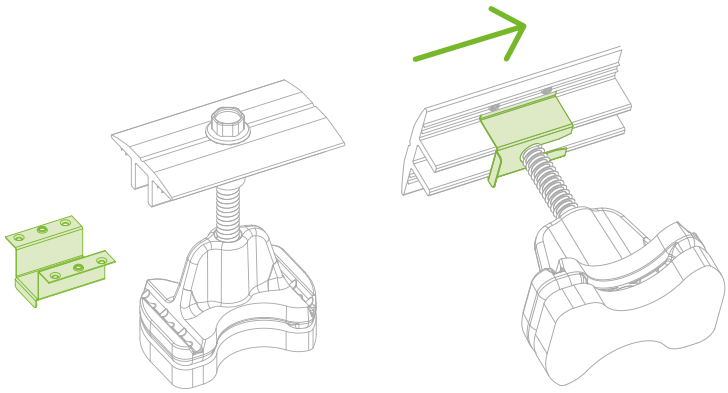


Warning:
The opening of the edge stop must expose the drainage channel of the insertion rail.

A Fit an edge stop at the end of a module row at each insertion rail with a metal screw in the screw channel.

Mounting optional articles

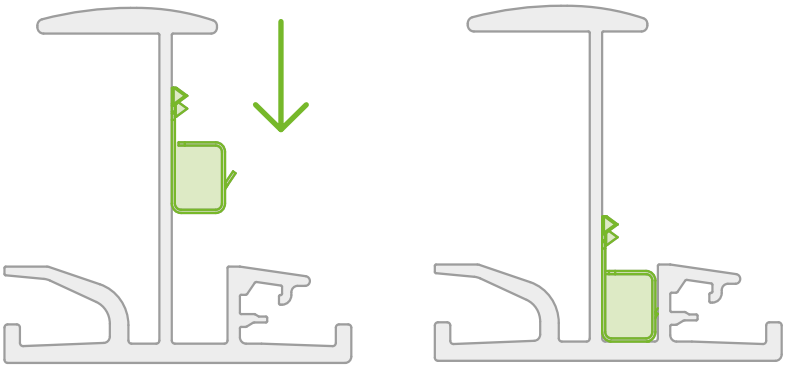
1 Installing contact latch



Warning:
The applicable standards and guidelines, e.g. lightning protection standard, must be observed.

A Assembly of contact latch for middle clamp.

Push the contact latch on the sliding plate over the vertical webs of the middle clamp up to the screw.

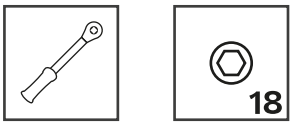


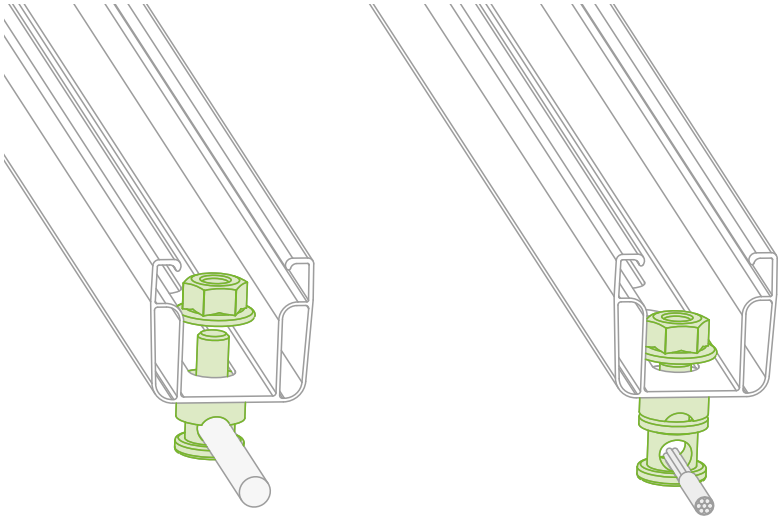
Warning:
The applicable standards and guidelines, e.g. lightning protection standard, must be observed.

B Assembly of contact latch for insertion rail.

A contact latch must be installed under each module. The contact plate must be pressed into the channel until it rests on the bottom of the insertion rail.

2 Mounting grounding connector





Warning:
The applicable standards and guidelines, e.g. lightning protection standard, must be observed.

A Install grounding connector set. One grounding connector must be installed per module field.

Earthing wire: 20 Nm
Earthing cable: 10 Nm

Maintance mounting system

The mounting system must be checked for stability and function at regular intervals during plant maintenance. We recommend an annual visual inspection.

In addition to the visual inspection of the components, we recommend a random check of the connections and the safe and correct position of the ballasting on the base rails and ballast trays. The screw connections should also be checked and, if necessary, retightened in accordance with the tightening torques specified in the assembly instructions.

All system components should be checked for damage caused by, for example, weathering, animals, dirt, deposits, adhesions, fouling (especially on green roofs), roof penetration, sealing, stability and corrosion. The inspection of the system and maintenance work must be carried out by a specialist company that has experience with electrical systems and work with mounting systems, or by an expert. After unusually strong impacts (e.g. from earthquakes, heavy snowfall, storm events, etc.), an inspection of the system must always be carried out.