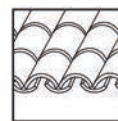


Tile roof | Stockscrew on concrete



Mounting instructions

- Safety instructions [2](#)
- General conditions & Notes on mounting [3](#)
- Tools, system components and optional components [4](#)
- Mounting the substructure [5–15](#)
- Mounting optional articles [16](#)
- Maintenance of the mounting system [17](#)



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 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 Solar-Plan-it design software. With the exception of concrete facades, which are calculated 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 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 novotegra.com/downloads.

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

General conditions

Location:	Concrete roof
Roof inclination:	0° – 60°
Roof cover:	Monk nun tile
Module mounting:	portrait/landscape
Rail length:	max. 13 m then expansion joint, 40m 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 façade 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/roof cover:

- 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.

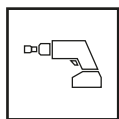
The load bearing capacity of the roof / roof construction (rafters, purlins, trapezoidal metal, concrete floors, number of adhesive points, folded seams, etc.) or the facade (wall construction materials) must be checked by the user or a check be commissioned.

Physical building aspects concerning insulation penetrations (e.g. condensation) must be taken into account by the user.

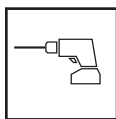
The content of these installation instructions describe the installation of the substructure on concrete roofs with stock screws. The specified screw-in depths of the stock screws must be observed, as this is the only way to fulfil the corresponding load-bearing capacity values.

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.

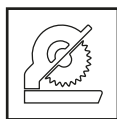
Tool and equipment



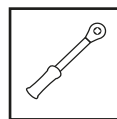
Electric
screwdriver



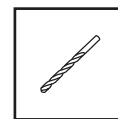
Drilling
machine



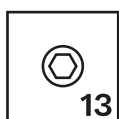
Mitre saw



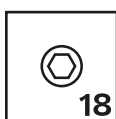
Torque spanner
20-50 Nm



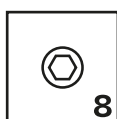
Driller



special
nut socket
13 mm

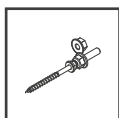


special
nut socket
18 mm

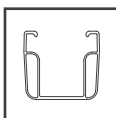


special
nut socket
8 mm

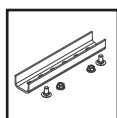
Mounting system components*



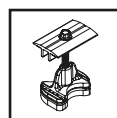
Stock screw set
for wood



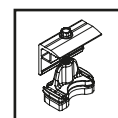
C-rail



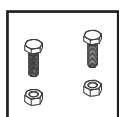
Rail connector-
set C



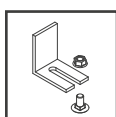
Middle clamp
Set C



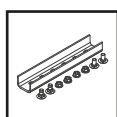
End clamp
Set C



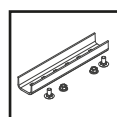
Module slip
guard set
M8/M6



Slip guard/ End
Cap Set C47
black



Expansion joint
C47

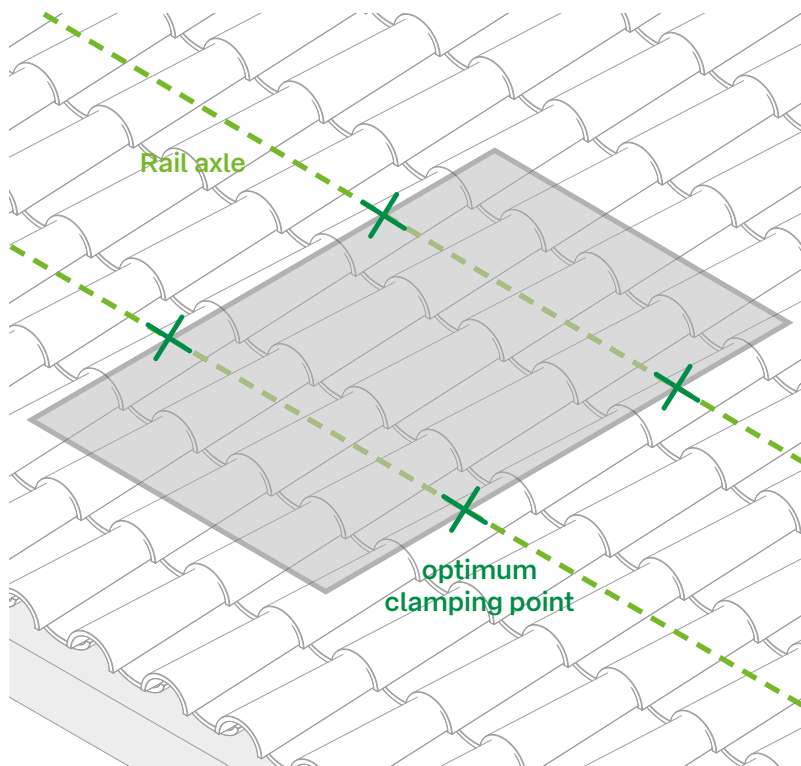


Rail connector
set C47 S

*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 stockscrew on concrete

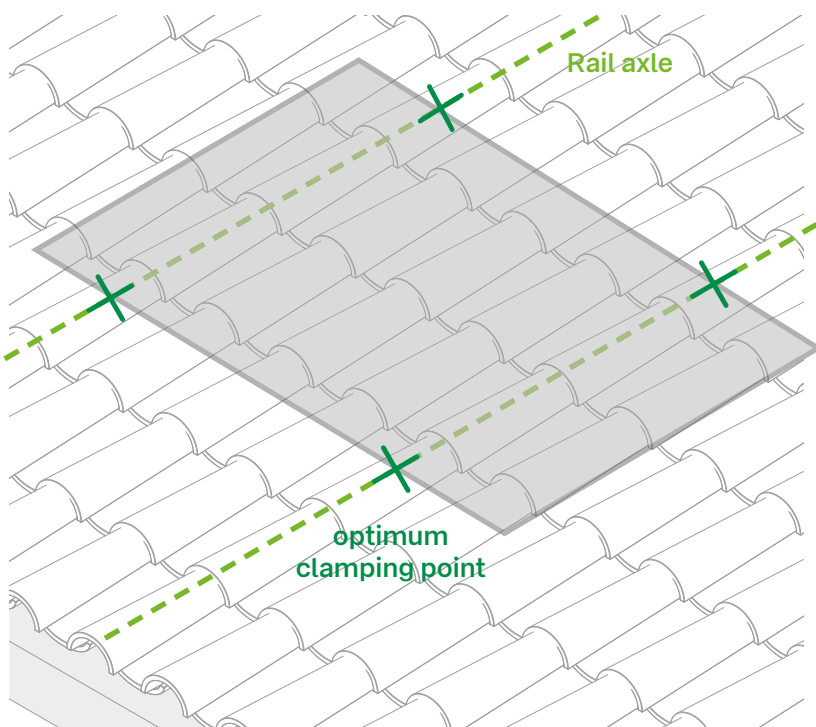
1 Measuring module field



- A** Determine the position of the stockscrew.
The position of the stockscrews must be determined taking the static calculation into account.

Module installation portrait

The optimum clamping point of the module must be determined and marked at the high point of the monk nun tile. The module support rails run horizontal. The position of the stockscrews can be found in the planning documents.



Module installation landscape

The optimum clamping point of the module must be determined and marked at the high point of the monk nun tile. The stockscrews must be placed at the marking. The module support rails run vertical. The position of the hanger bolts can be found in the planning documents.



novo-tipp:

The optimum clamping ranges can be found in the module manufacturer's installation instructions.

2 Insert chemical anchor in concrete

Stock screw set	M10	M12
Predrilling roof cover	14 mm*	16 mm*
Predrilling concrete ceiling	12 mm*	14 mm*
Clamping length stock screw	80 mm*	96 mm*

*The specified values depend on the chemical anchor manufacturer. The specific values must be checked in the installation instructions of the respective manufacturer.

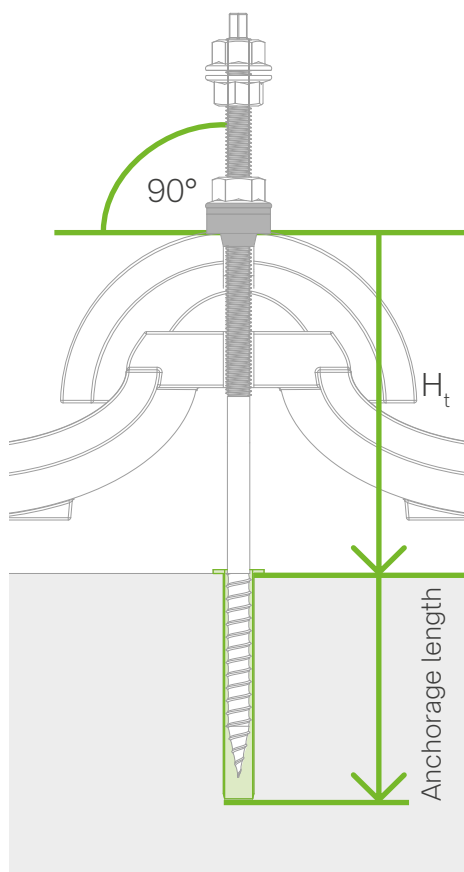
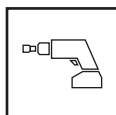
- A** The roof covering and the concrete ceiling must be pre-drilled according to the dimensions of the stock screw.



novo-tip:

The anchor manufacturer points out that the dust must be blown out of the drill hole for correct fixing.

3 Mounting the stock screw

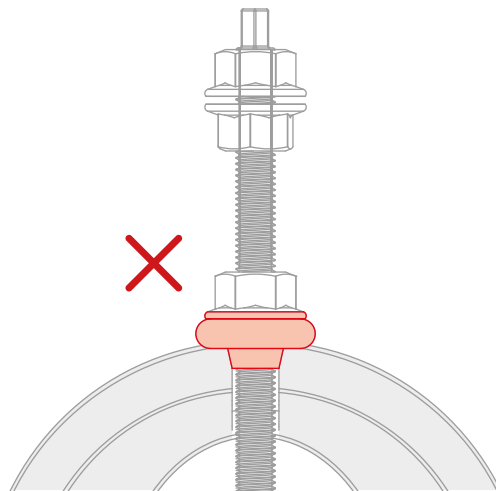


- A** The stock screw must be screwed vertically into the chemical anchor.
- B** The length of the stock screw must be selected depending on the height of the roof covering H_t .

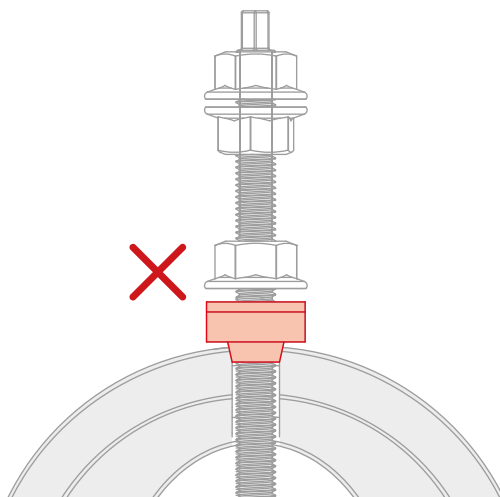
Height of cover H_t	Stock screw length
up to 100 mm	250 mm*
101–150 mm	300 mm**

*for clamping length 80 mm

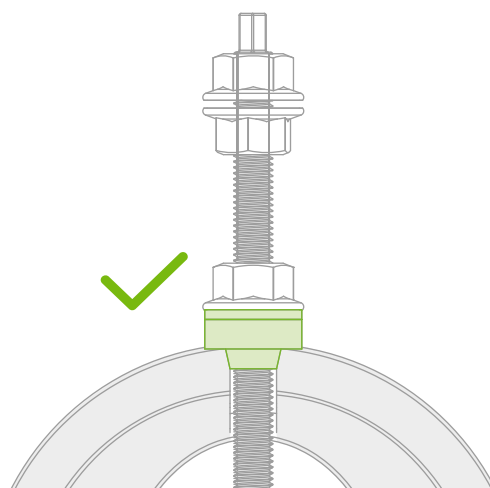
**for clamping length 96 mm



Seal compressed too much.



Seal not compressed enough.



Seal slightly compressed.



Notice:

There is a risk of leakage. Water can penetrate if the stock screws are screwed in at an angle. Tightness is only guaranteed if the hanger bolts are screwed in vertically.

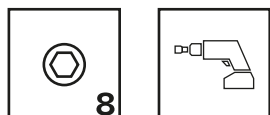


B Correct fit of EPDM seal

Tighten the lower self-locking nut until the EPDM seal is slightly compressed – the seal cone enters the predrilled hole of the roof cover.

Mounting variants wood purlin

1 Install stock screw for wooden purlin



Warning:

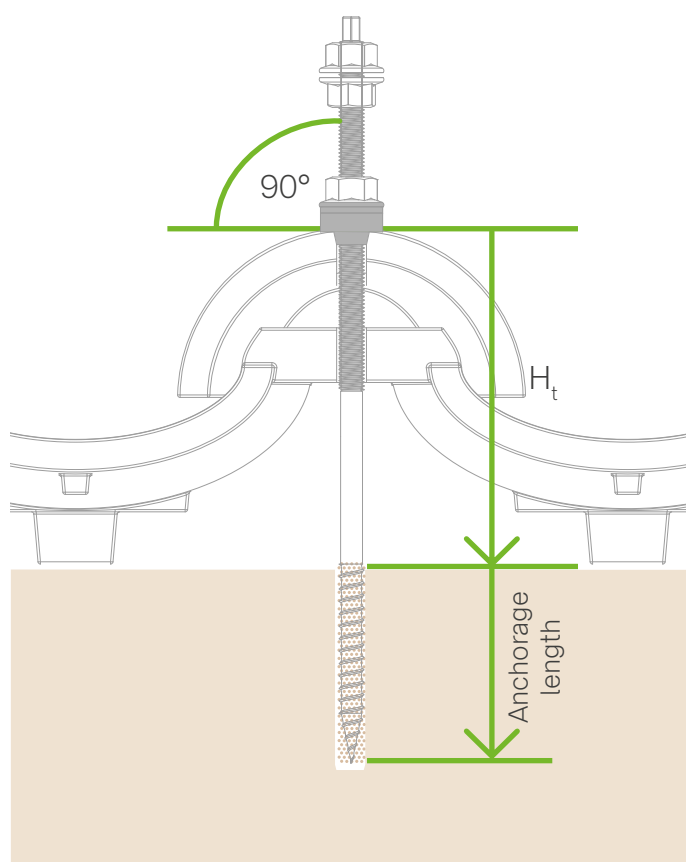
The instructions for the correct position of the EPDM sealant must be observed. See page 7



Pre-drill the wooden purlin through the roof covering, then drill out the roof covering. The stock screw must be screwed vertically into the purlin.



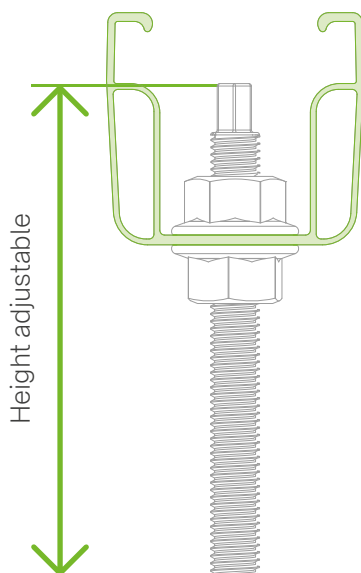
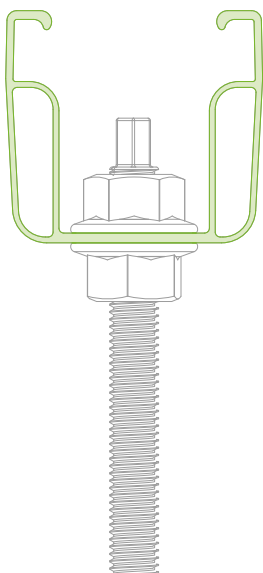
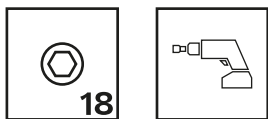
The stock screw length must be selected depending on the height of the roof covering.



Height of cover H_t	Stock screw length
up to 60 mm	200 mm*
61-110 mm	250 mm*
111-160 mm	300 mm
clamping length stock screw	> 40 mm

*for clamping length 80 mm

3 Rail mounting



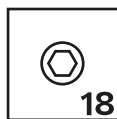
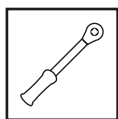
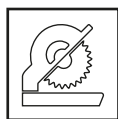
A

The C-rail must be placed on the lower self-locking nut.

The height of the rail can be adjusted by the position of the self-locking nut. To do this, screw the locking nut higher or lower on the thread.

The upper locking nut must be screwed on and screwed flush with the bottom of the rail. The upper locking nut must be fully seated in the threaded area of the stock screw.

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



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: uninterrupted rail length:
13 m



Mounting of the rail connector C 47 S.

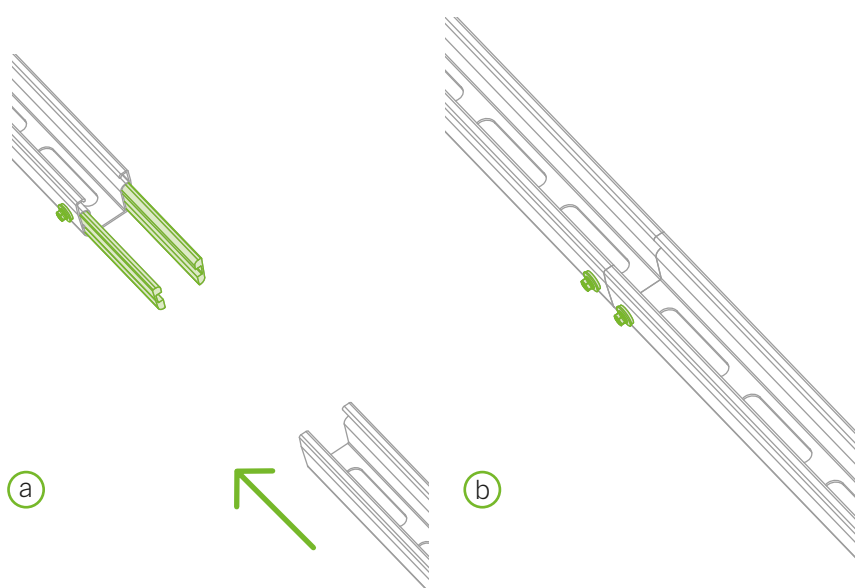
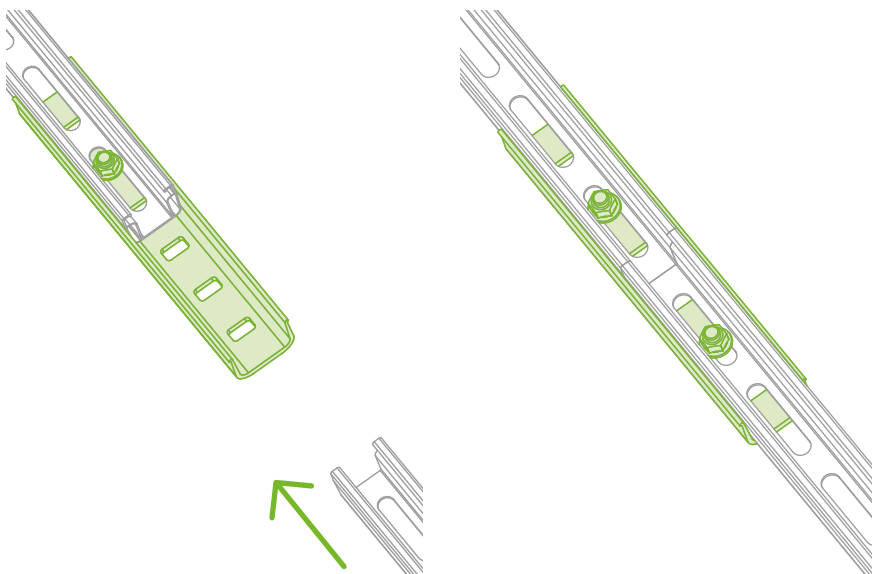


Push the rail connector set halfway into one of the rails to be connected and secure it by self-tapping screws each on both sides approx. 20 mm from the rail end.

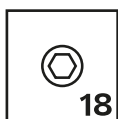
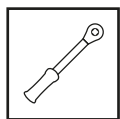


Next push the other rail completely onto the rail connector set until both rail ends make contact and screw it tight as described above.

Max: uninterrupted rail length:
13 m



4 Installing expansion joints on C-rails



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:

An expansion joint must not be installed under a module.

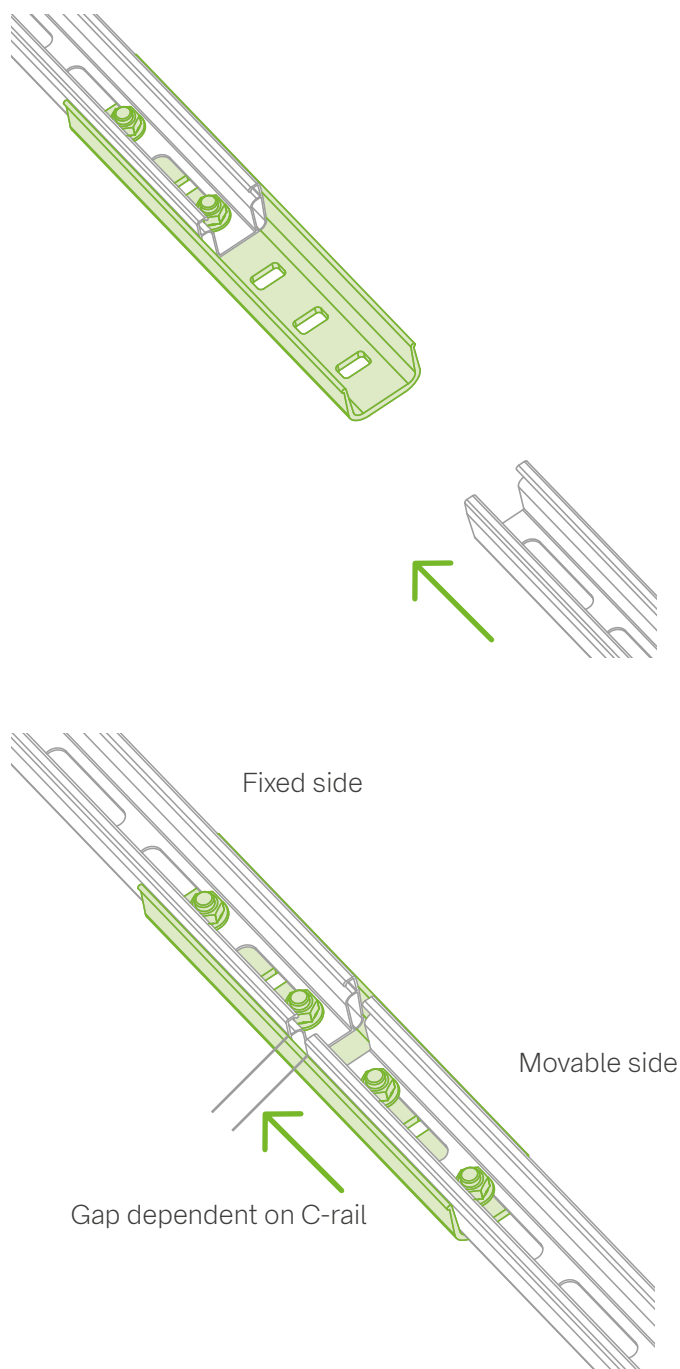


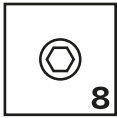
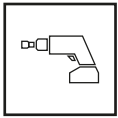
Mounting of the expansion joint.

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. uninterrupted rail length:
13 m.





Warning:

A expansion joint must not be installed under a module.



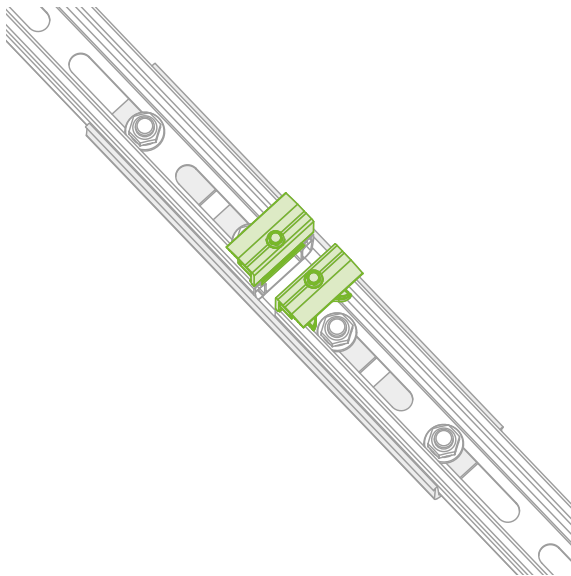
B Mounting end clamp by expansion joint.

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

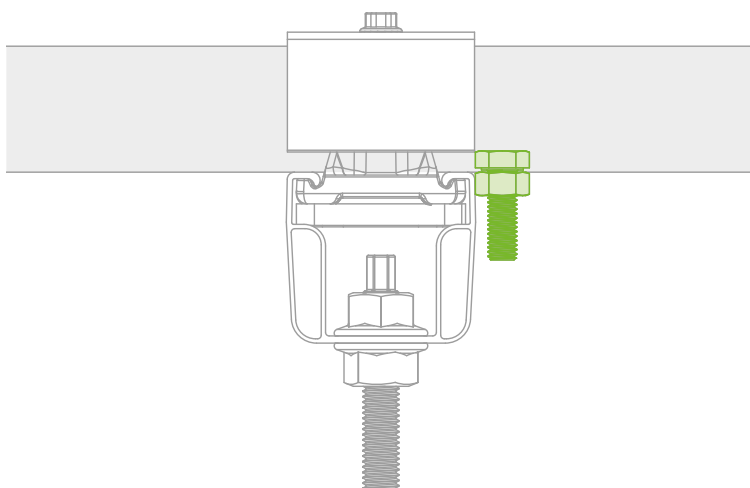
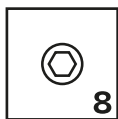
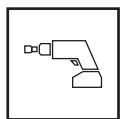


novo-tip:

It is possible to mount the end clamp flush with the end of the rail.

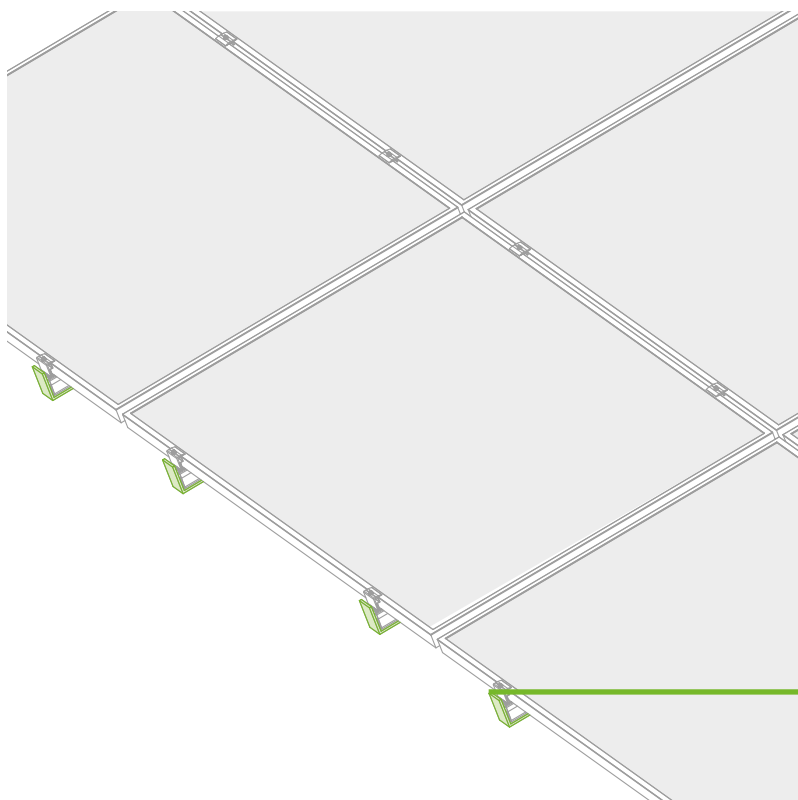


5 Module protection



A Module mounting portrait

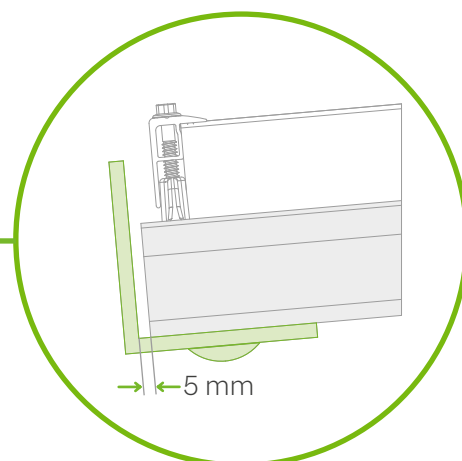
From a roof pitch $> 10^\circ$ the slip guard device must be fitted to the frame holes of each module in the bottom row of rails.

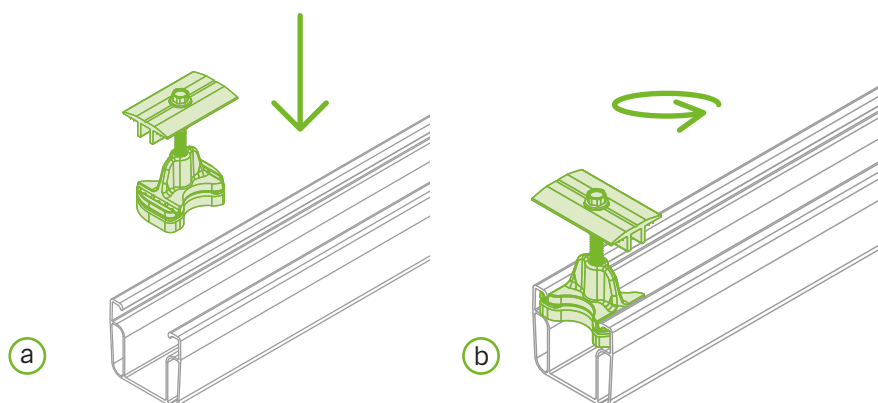
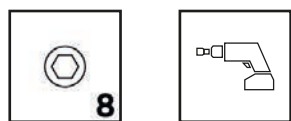


B Module mounting landscape

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.



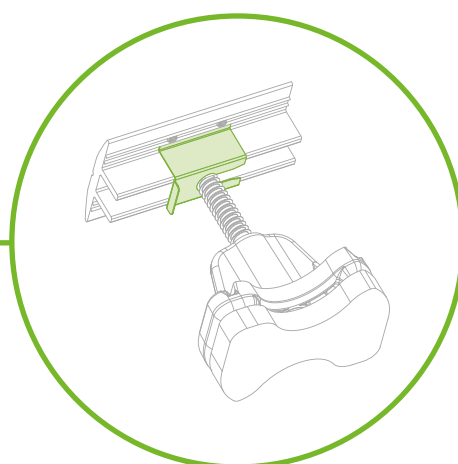
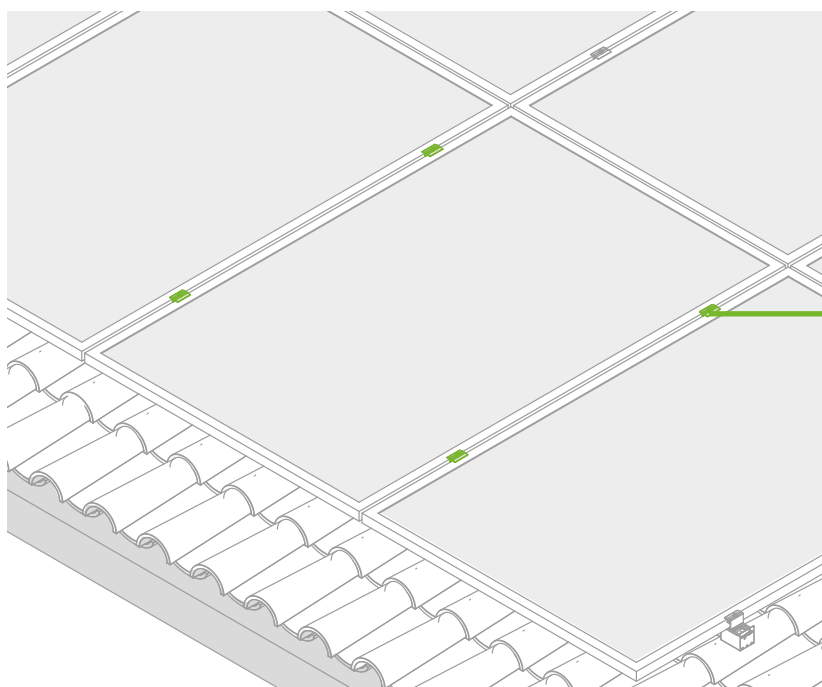


B Inserting module clamps.

- a** Insert into the rail from above.
- b** Rotate by 90°

C Tightening module clamps.

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



novo-tipp:
For mounting contact latch, see
page 16.

D 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.

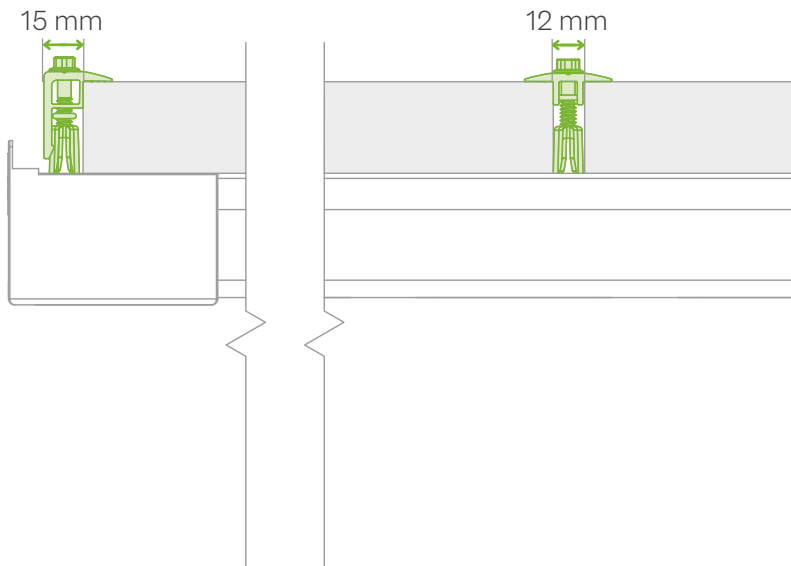
Tightening torque End clamp
8 Nm.



novo-tip:

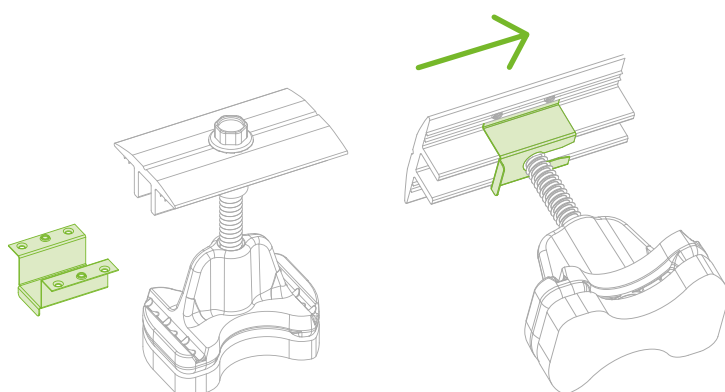
The End clamp can also be installed aligned with the rail end.

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



Mounting optional articles

1 Installing contact latch



Warning:

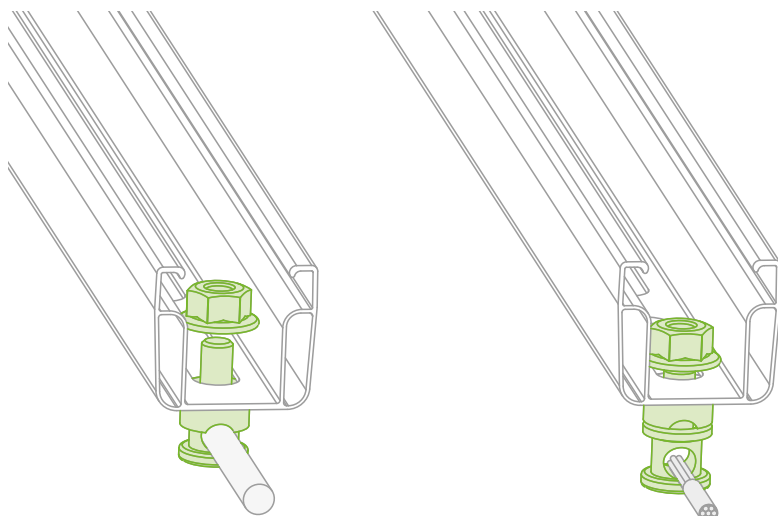
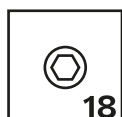
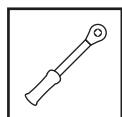
The applicable standards and guidelines, e.g. lightning protection standard, must be observed.



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.

2 Mounting grounding connector



Warning:

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



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

Earthing wire: 20 Nm
Earthing cable: 10 Nm

Maintenance 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.

