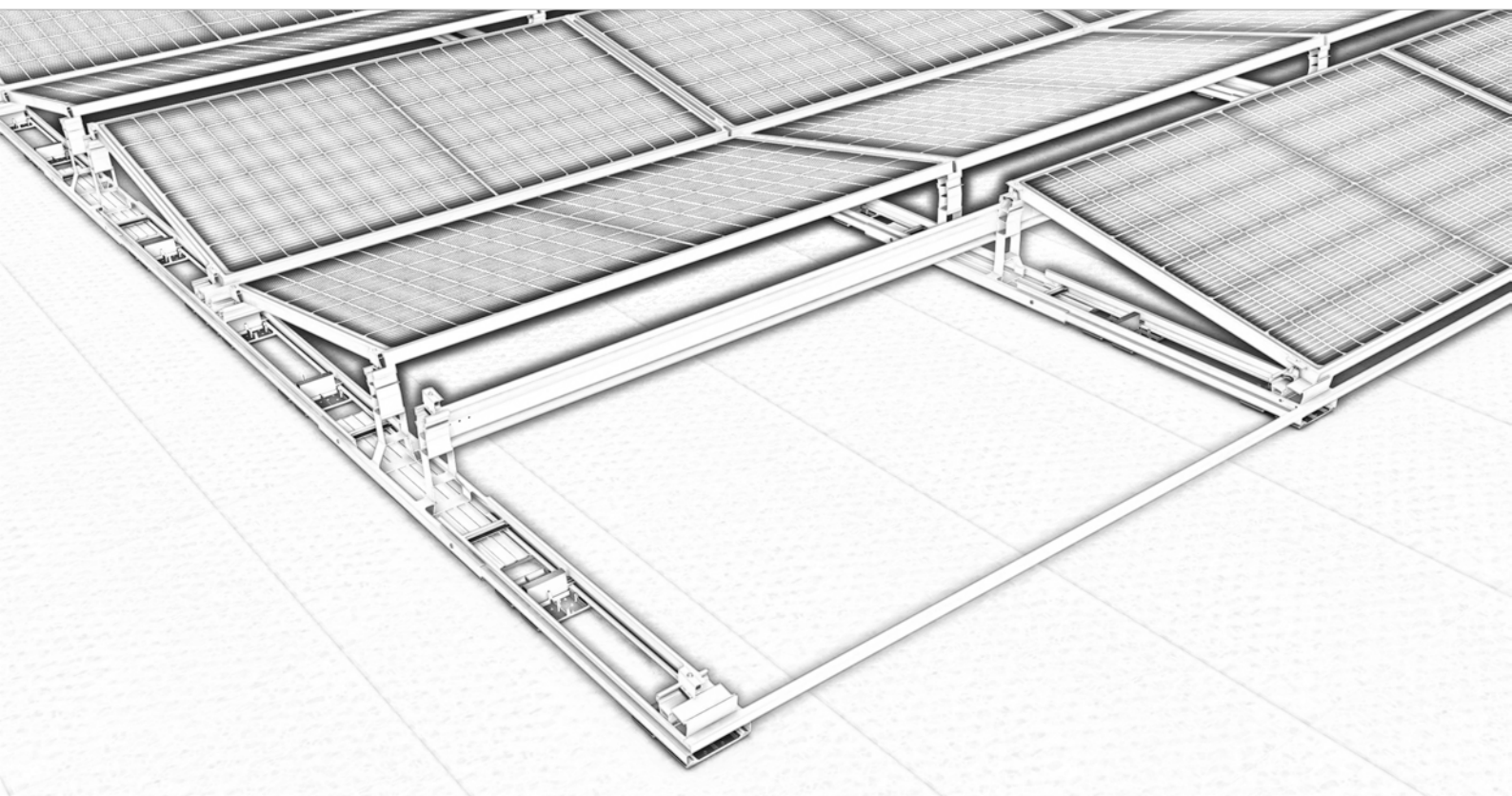
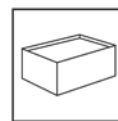


Flat roof East-West-System “The shortcut”

„Modular clamping system with cross elevated modules“



Mounting instructions

- Safety instructions [2](#)
- General conditions & Notes on mounting [3](#)
- Tools, system components and optional components [4–5](#)
- Mounting the substructure [6–14](#)
- Mounting variations [15–18](#)
- Maintenance of the mounting system [19](#)



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-Planit design software. Except for facade systems, the calculation for this is carried out 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/flat-roof 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:	Flat roofs with and without parapet
Roof inclination:	0° – 5°
Alignment:	East/West
Edge distance:	Distance from system to roof edge (without parapet) = 0.50 m Distance from system to parapet (inside edge) = 0.50 m
Elevation angle:	10°
Module mounting:	landscape
Module size:	Module width: 995 mm – 1145 mm Module length: max. 2280 mm
Distance between rows:	2230 mm – 2483 mm (depending on module width)
Module field size:	max. module field length: 40 m (rail length) max. module field width: 21 m

General installation instructions for flat roof system

For flat roofs the roof insulation must be evaluated by the installer on site within his own responsibility regarding the material of the sealing layer, resistance, ageing, compatibility with other materials, overall condition of the roof insulation, need for a separating layer between the roof insulation and the mounting system. The required and necessary measures or precautions for the protection of the roof insulation for the mounting of the substructure of a PV system must be initiated by the installer with the aid of a specialist tradesman where necessary.

Depending on the roof seal material, separation and/or protection membranes may need to be added between the roof seal and the substructure. This must be agreed upon directly between the company installing the PV system, the building owner and the specialist roof sealing company.

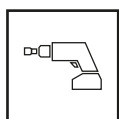
The substructure is installed without penetrating the roof. The PV system is secured against wind suction by

providing ballast (e.g. suitable stones), based on the results of the wind tunnel tests for the system. The required ballast is determined by BayWa r.e. Solar Energy Systems GmbH based on the project data provided by the installation company. The ballast applies to the planned system; on-site deviations from planning may lead to different results.

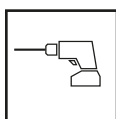
The installer must review the friction coefficient used in the calculation for the verification of the slip safety of PV systems on flat roofs on site. Friction coefficients determined on site can be taken into account by entering them in the Solar-Planit planning tool.

The system must be secured on site to prevent it from „creeping“ due to expansion caused by temperature. This can be achieved by installing suitable stop points on the roof surface or by anchoring to the parapet, for example. The connection points on the building and building parts must be able to bear the forces exerted.

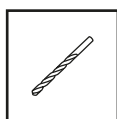
Tools and equipment



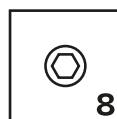
Cordless
screwdriver



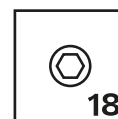
Drilling machine



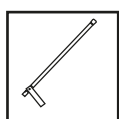
Driller
d = 12 mm



special
nut socket
8mm



special
long nut socket
18 mm

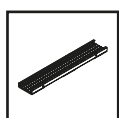


Mounting &
removal tool
150-30

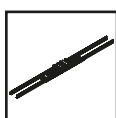


Assembling jig
1300-1700mm
without C-Shape

Mounting system components*



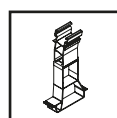
Base element
e/w
690/840 mm



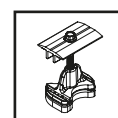
Connector set
e/w
1940 mm



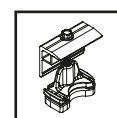
Edge closure set
970 mm



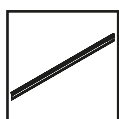
Module support
10°



Middle clamp
set C



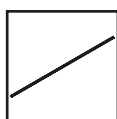
End clamp
set C



Crossbar
2000/2400 mm



Flat roof
mounting screw
chipless



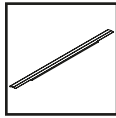
Support brace
20x20x1,5
2000/2400 mm

*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

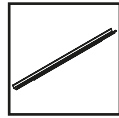
Mounting system components – optional**



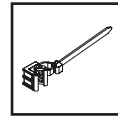
Cable channel
base element
1250 mm



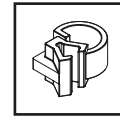
Cover
cable channel
1250 mm



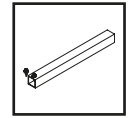
Cable channel
module support
2000/2400 mm



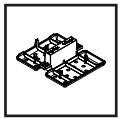
Cable-tie clip for
profile flange



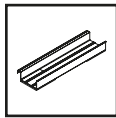
Cable clip
d = 10 mm



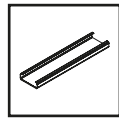
Mounting-Set
Optimizer FR



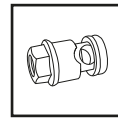
Surface extension
180x150 mm



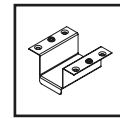
Ballast trough
530 mm



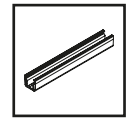
Ballast cantilever
650/1150 mm



Grounding
connector C-rail



Contact latch
module clamp

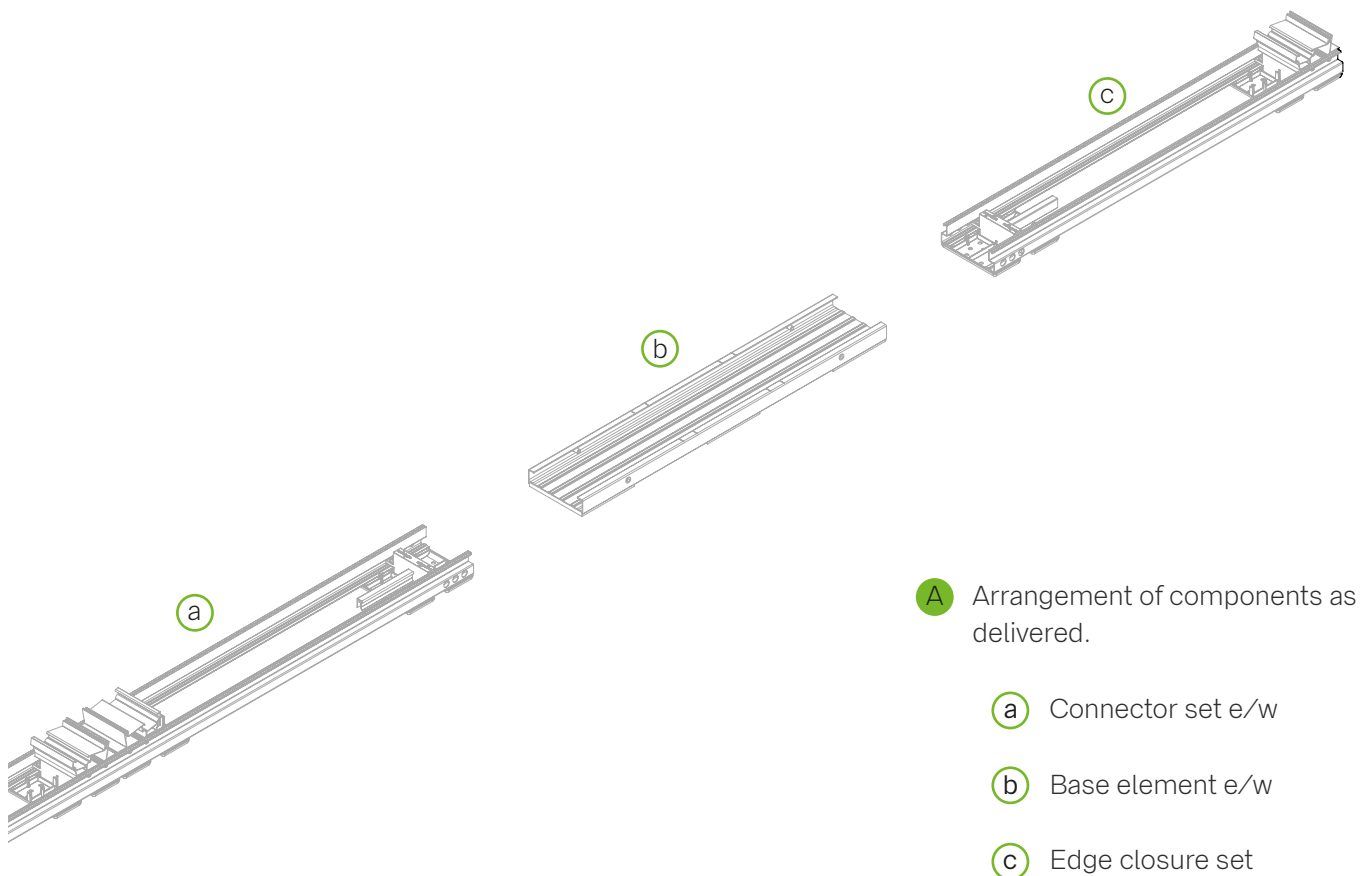


coupling profile

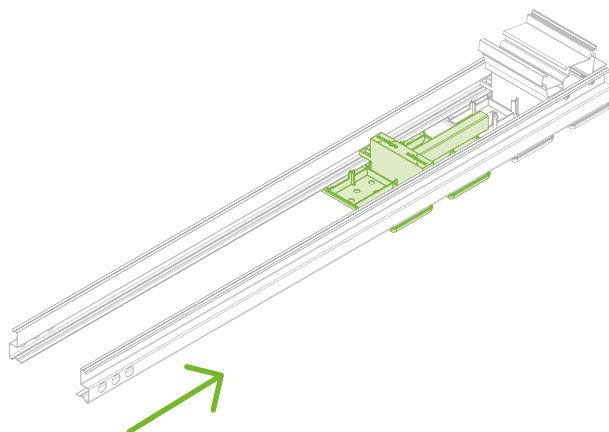
**Optionally available installation system components, e.g. for improving the aesthetics of the system, cable management or grounding of the installation system.

Mounting the substructure

1 Laying out components



2 Rail mounting



A Push back surface extension.

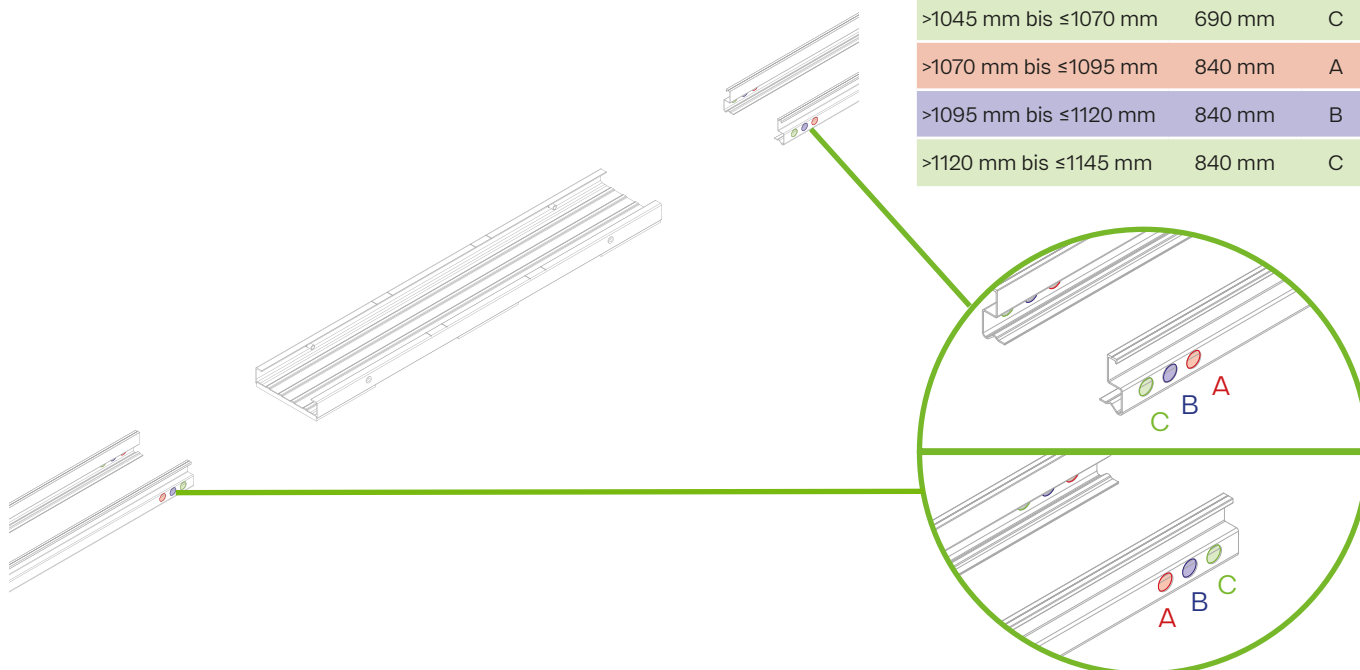


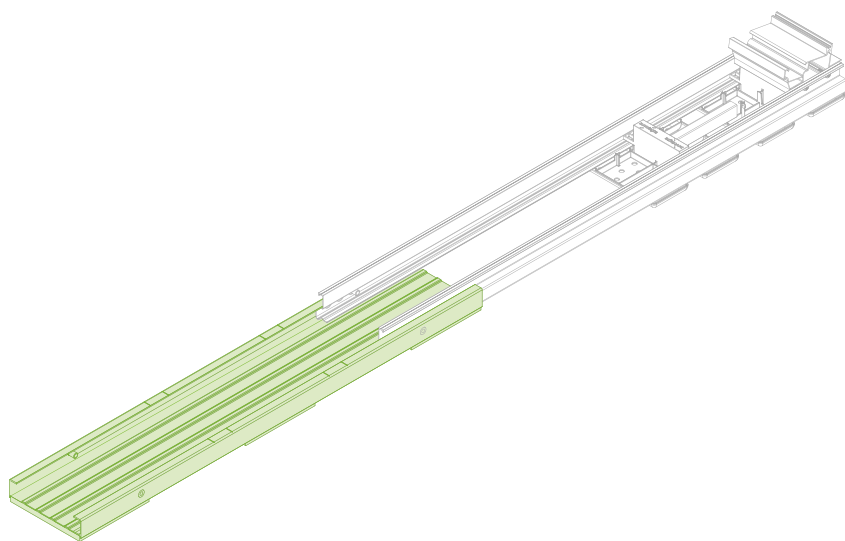
novo-tip:

To make it easier to click in the components later, push the surface extension all the way back.

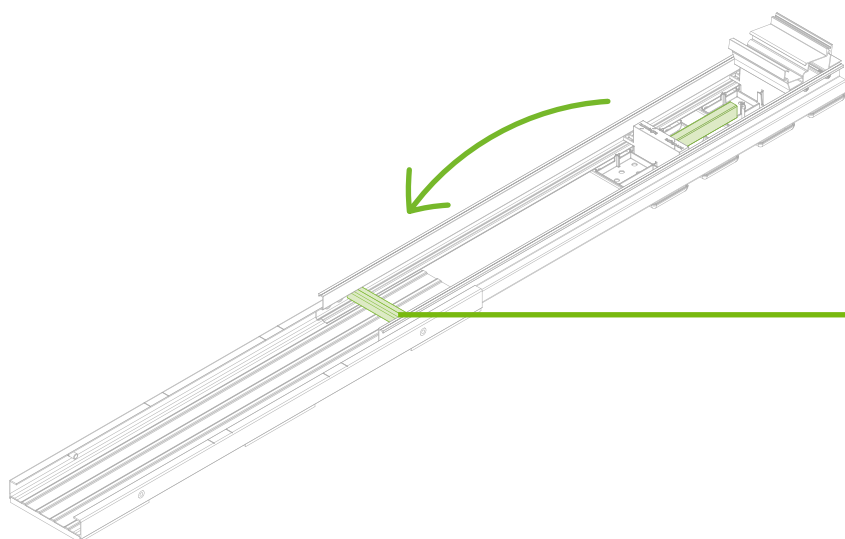
B Observe module width.

Module width	Base element	
≥ 995 mm bis ≤ 1020 mm	690 mm	A
> 1020 mm bis ≤ 1045 mm	690 mm	B
> 1045 mm bis ≤ 1070 mm	690 mm	C
> 1070 mm bis ≤ 1095 mm	840 mm	A
> 1095 mm bis ≤ 1120 mm	840 mm	B
> 1120 mm bis ≤ 1145 mm	840 mm	C

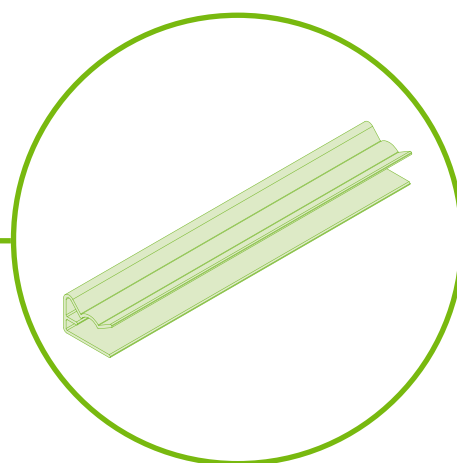




- C** Connecting the base element with the edge closure set.

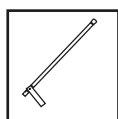


- D** Remove the connecting safeguarding from the support and install it.

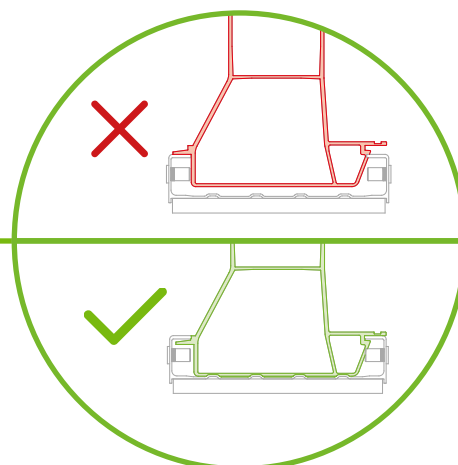
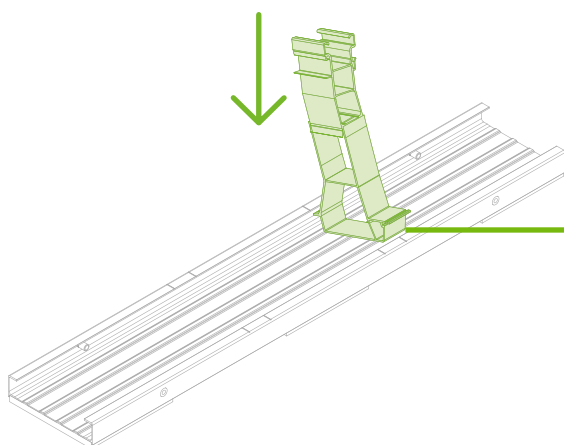


- novo-tip:**
An audible click indicates that the system securing device has been installed correctly.

3 Installing module supports

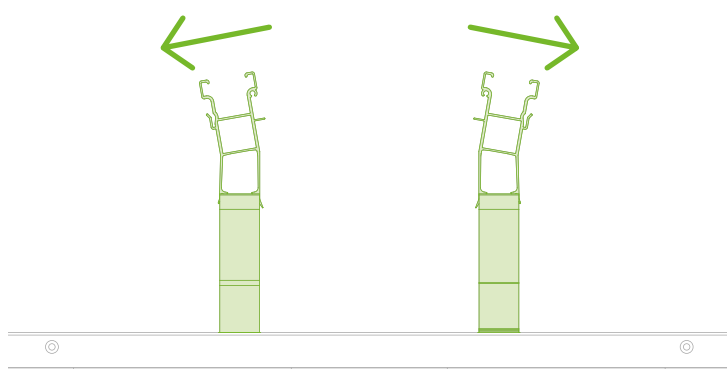
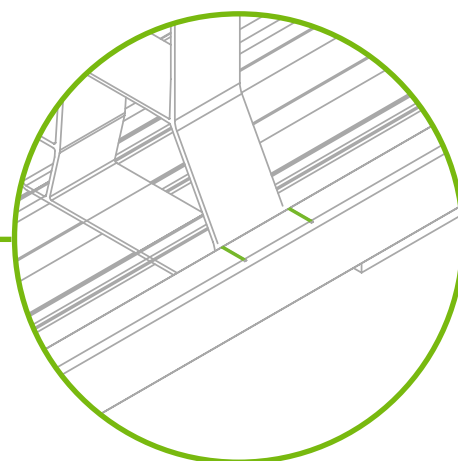
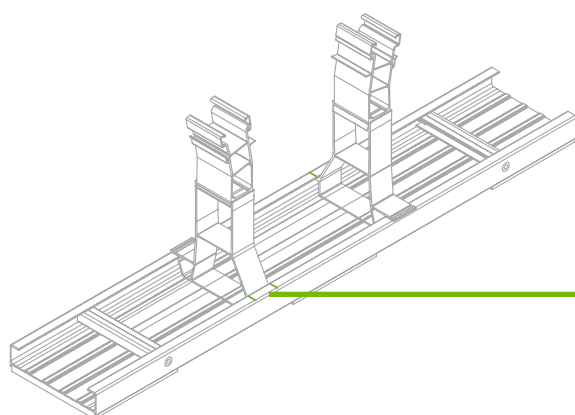


- A** Use the mounting and removal tool to click in the module supports.



novo-tip:

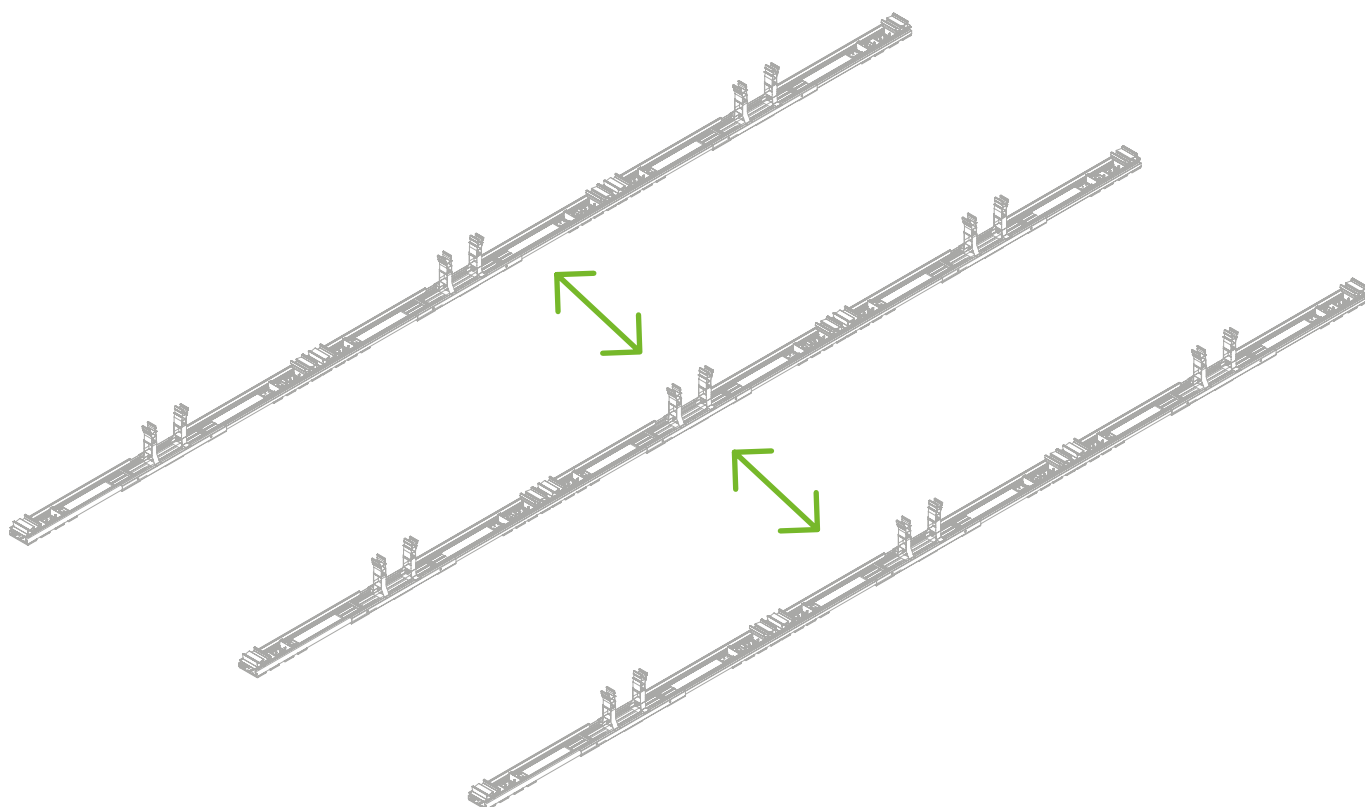
The mark defines the position of the module support.



- B** Check the alignment of the module support.

The head of the module support must tilt towards the base foot.

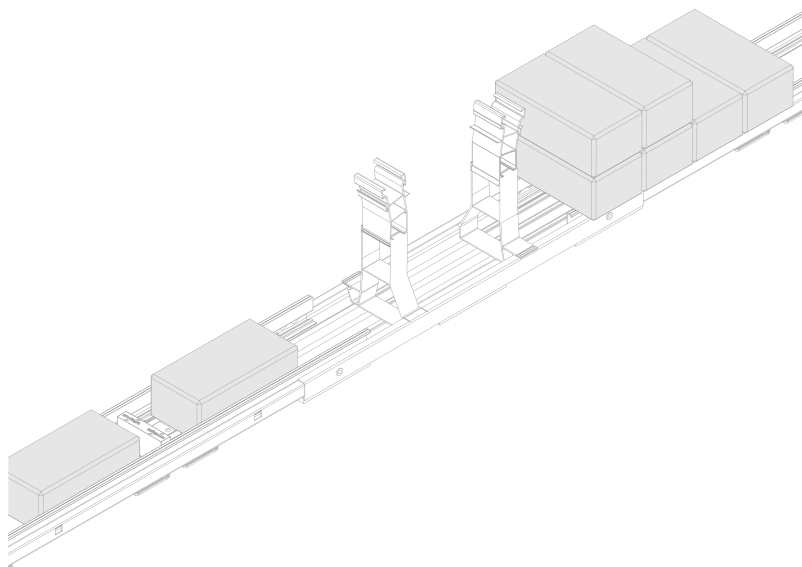
4 Laying out rails



- A The distance between the rails can be found in the planning documents.

Use assembling jig.

5 Ballast

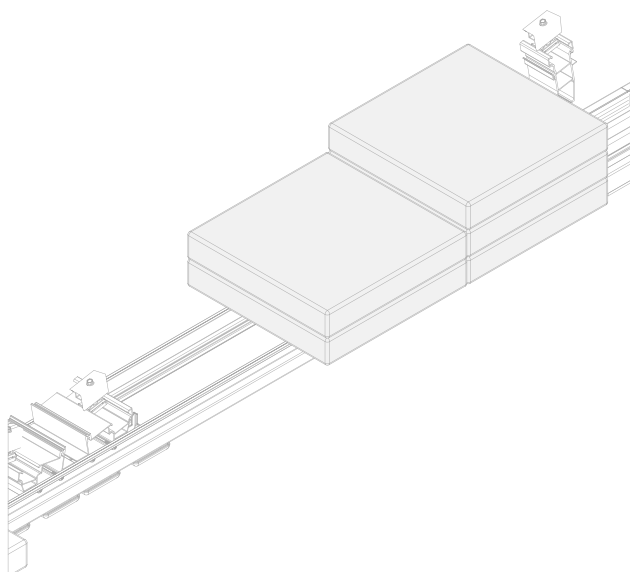


- A** Place the required ballast in accordance to the ballast planning inside or on top of the base element, connector- and edge closure set.



novo-tip:

For ballast installations using large amounts of ballast, ballast troughs (MV 10) or additional base cantilevers (MV 10.1) are recommended.

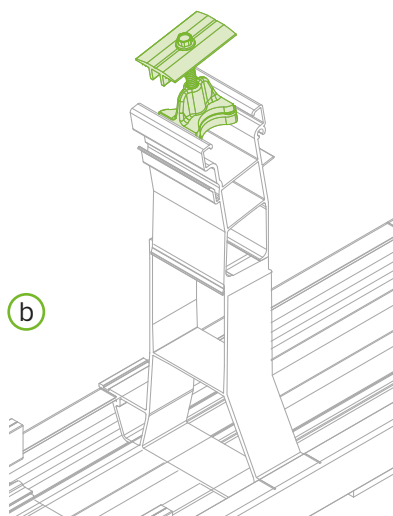
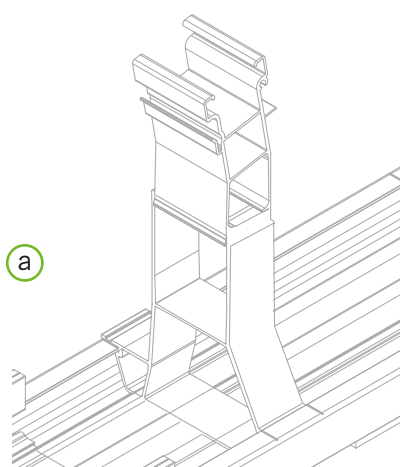
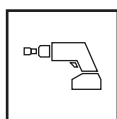
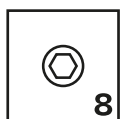


Warning:

The selection of the ballast stone is up to the customer.

The dimensions are to be adapted to the weight of the ballast indicated at each point.

6 Module clamping



A Insert module clamps.

a Insert into the rail from above.

b Rotate by 90°.

B Tighten module clamps.

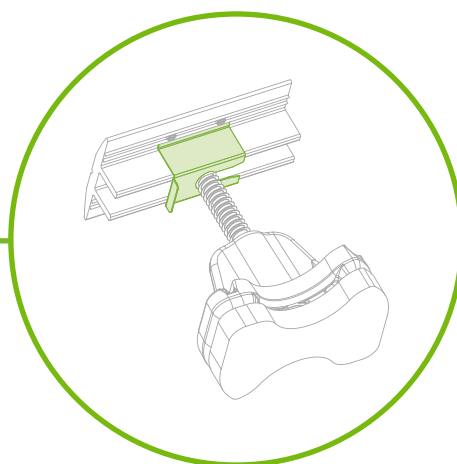
Middle clamp: 10 Nm

End clamp: 8 Nm



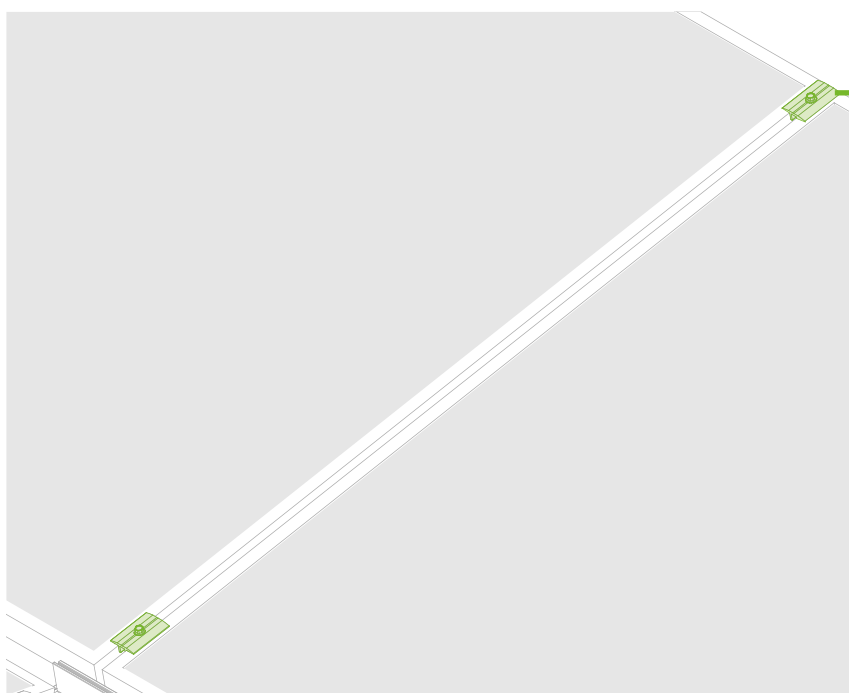
novo-tip:

First mount one module row completely. Then insert the crossbar (see step 7). Then mount the other side of the double row. The position of the cross bar can be found in the planning documents.

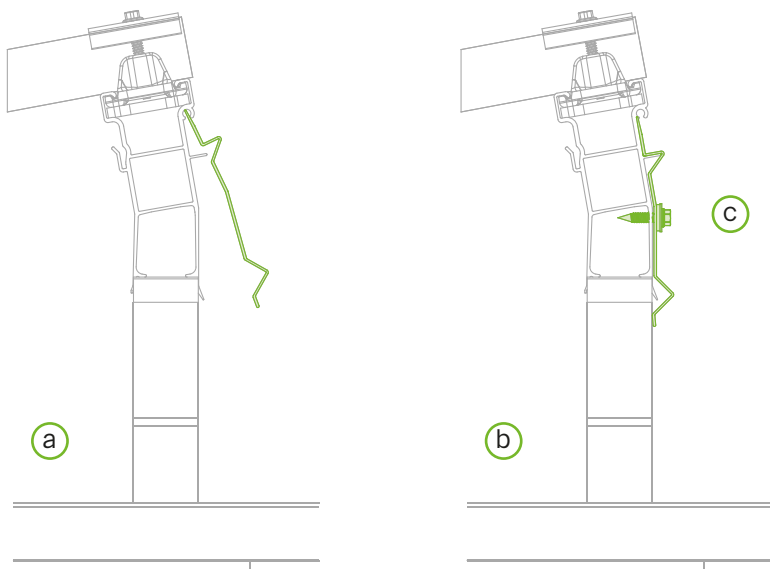
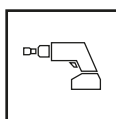
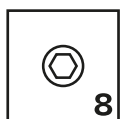


novo-tip:

Assembly of contact latch see mounting variant 3. If a cable channel is to run under the module, it must be installed now. For assembly of cable channel, see mounting variant 1.



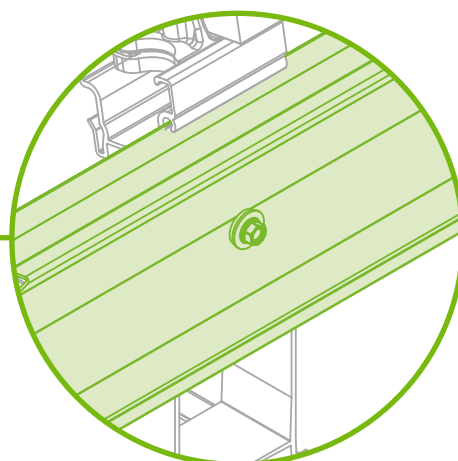
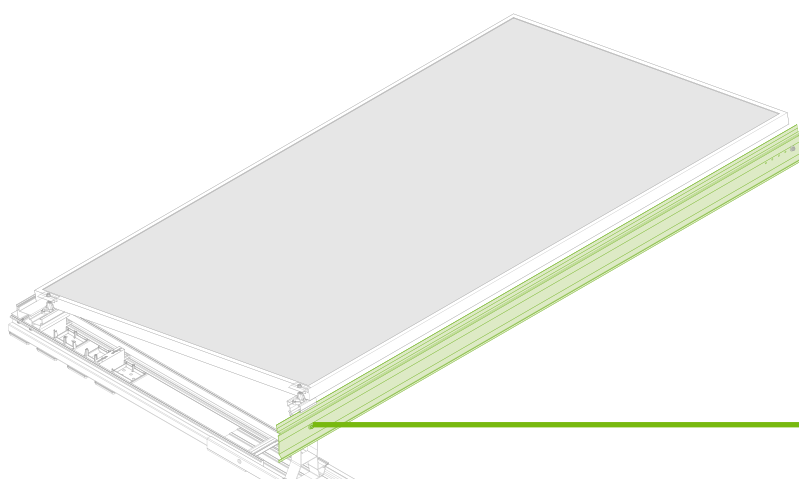
7 Installing crossbar

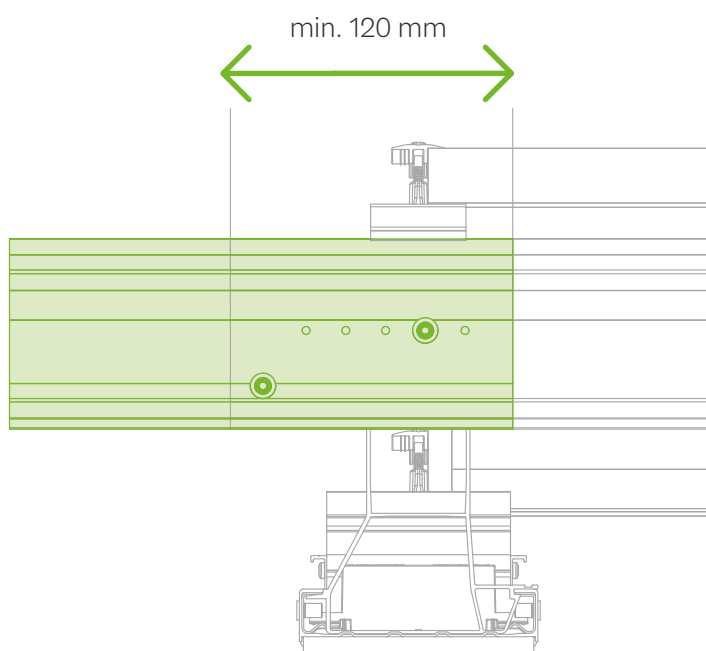


A Mount cross member to module support.

- a** hang up
- b** flip down
- c** fixing

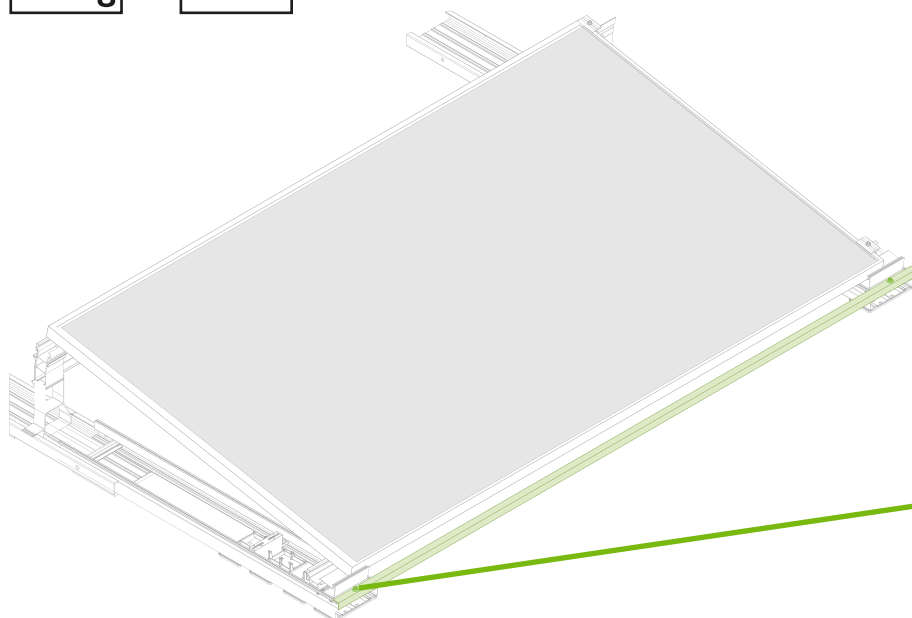
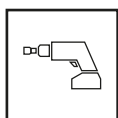
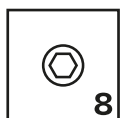
! Warning:
The screw must not be overtightened! Do not use an impact function when tightening the screws.





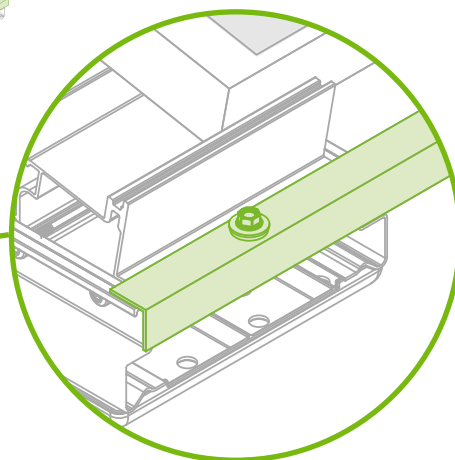
- B** Successive crossbars must be mounted with an overlap of 120 mm and fastened with two screws.

8 Installing support brace



- A** Mount the support brace flush at the edge and overlapping in the middle. The support brace must be screwed to each end set.

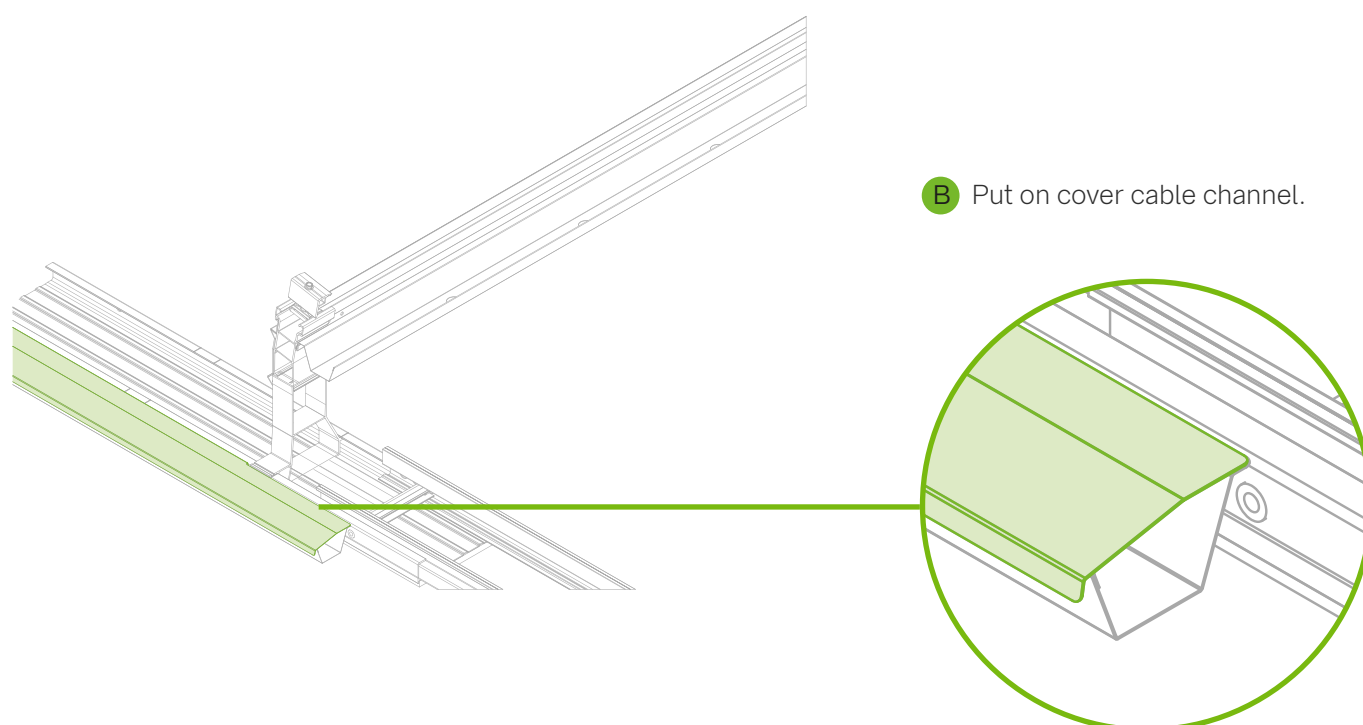
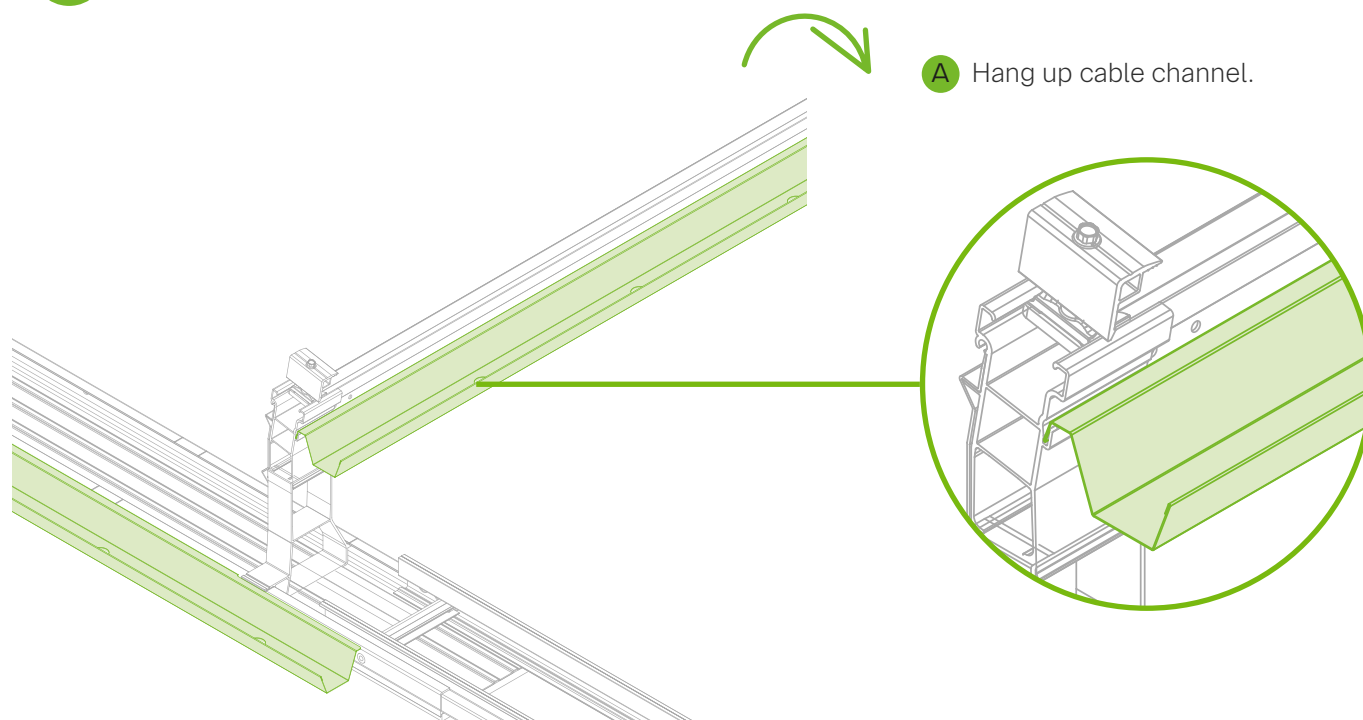
Warning:
The screw must not be overtightened! Do not use an impact function when tightening the screws.



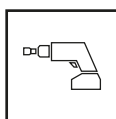
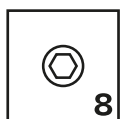
novo-tip:
If ballast cantilever are used, see mounting variation 2, we recommend mounting them before the support brace.

Mounting variations

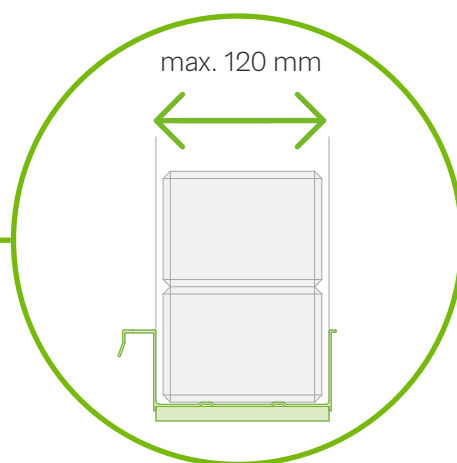
1 Cable channel



2 Optional ballasting



A Hang up ballast troughs.



novo-tip:

Using ballast troughs allows small and large ballast which can be securely inserted or laid on if required. The ballast troughs must be mounted side-ways to the base elements.



B Slide on ballast boom and screw tight on both sides.



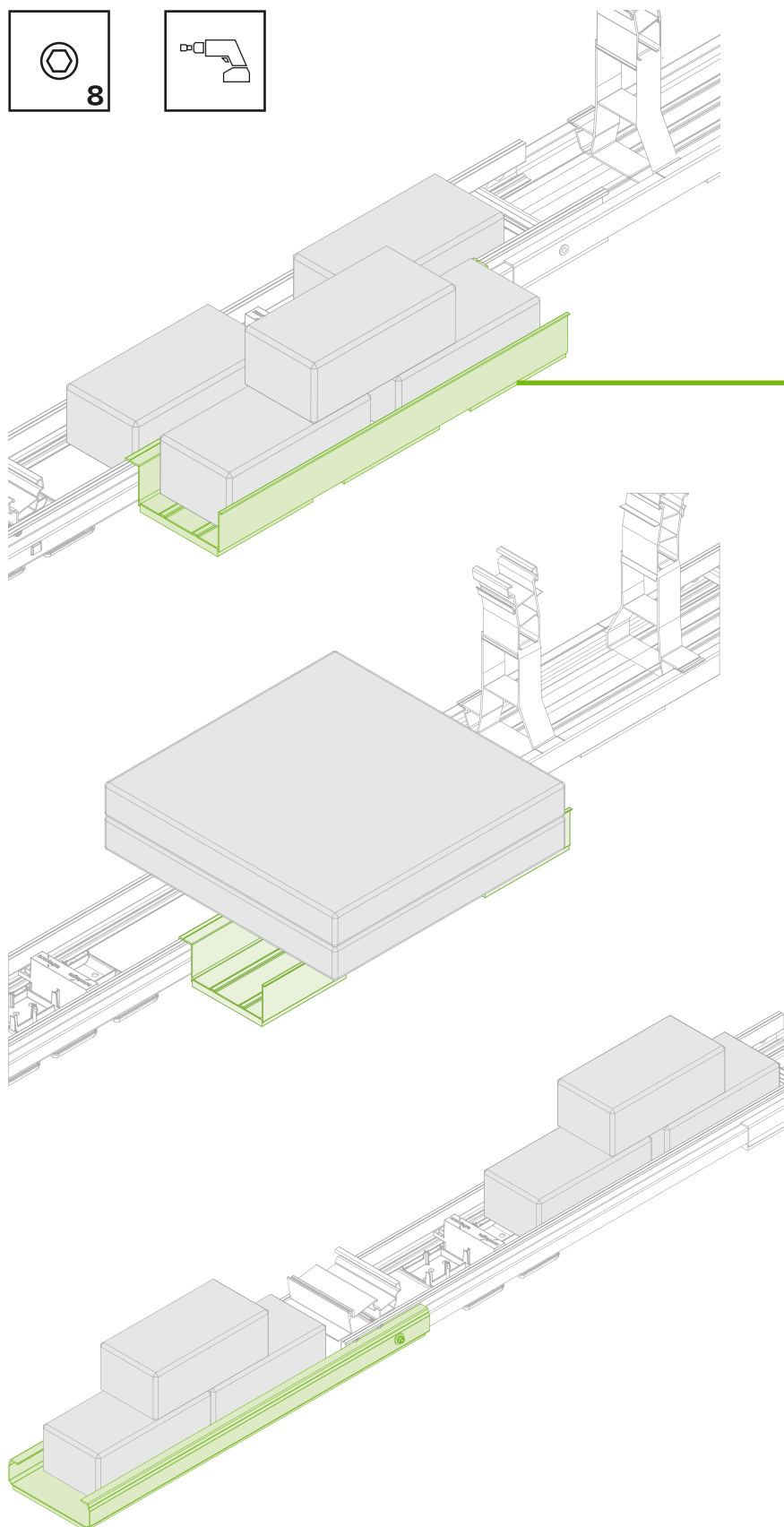
novo-tip:

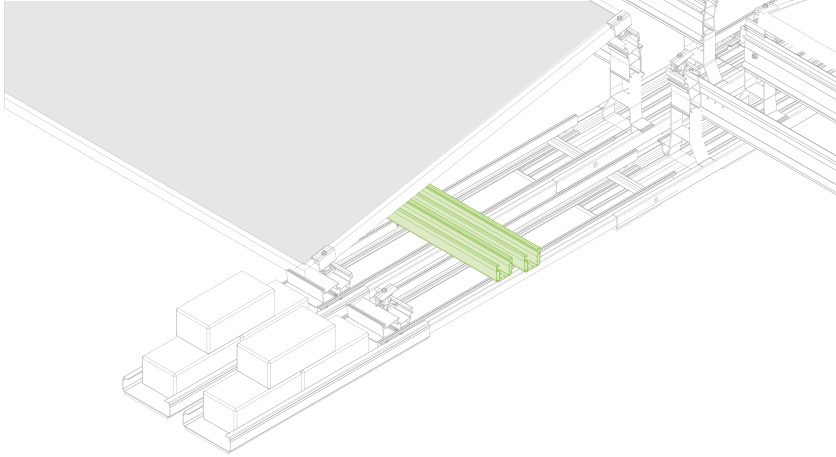
Ballast cantilever allows to redistribute ballast at installation edges.



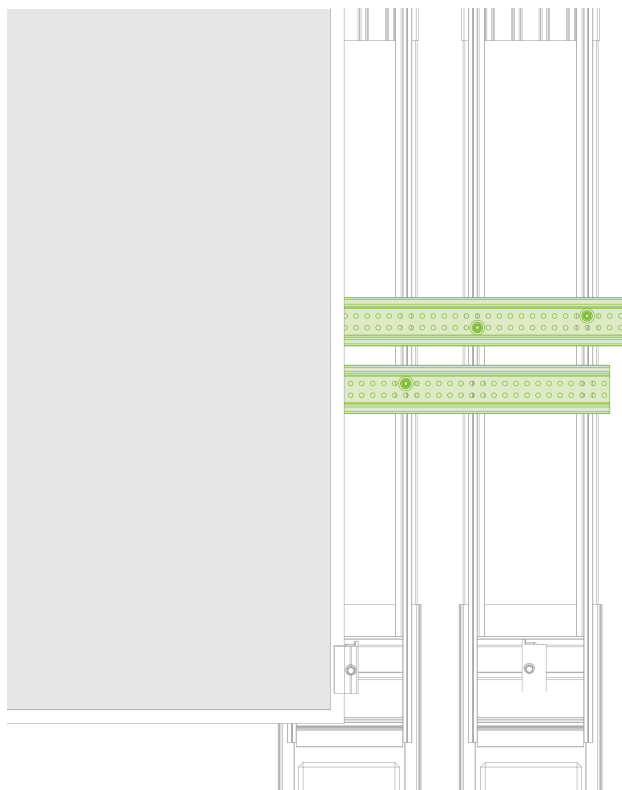
Warning:

The screw must not be overtightened! Do not use an impact function when tightening the screws.





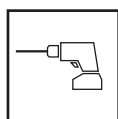
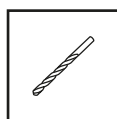
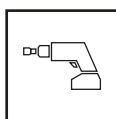
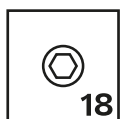
- C Connect parallel module fields with two coupling profiles. One coupling profile is firmly connected to only one rail line. Distance between base troughs: 50 mm.



- i **novo-tip:**
Coupling profiles serve to reduce ballast for neighboring module fields.

- ! **Warning:**
The screw must not be overtightened! Do not use an impact function when tightening the screws.

3 Lightning protection and potential equalization



Warning:

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



A Install grounding connector set.

The base element is to be pre-drilled in the center with a 12 mm drill bit. The grounding connector is to be fed through the drilled hole and fastened.

Earthing wire: 20 Nm

Earthing cable: 10Nm

One grounding connector must be installed per module field.



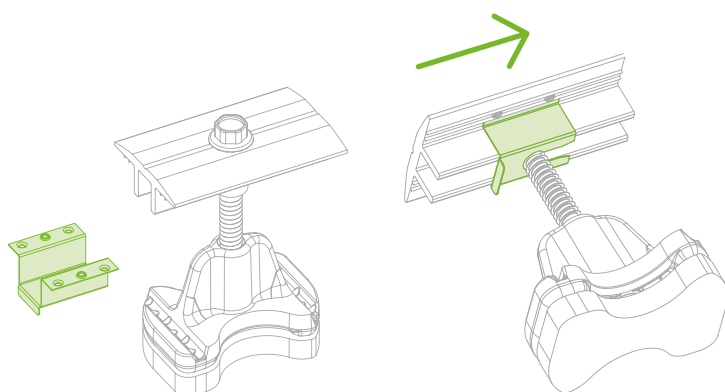
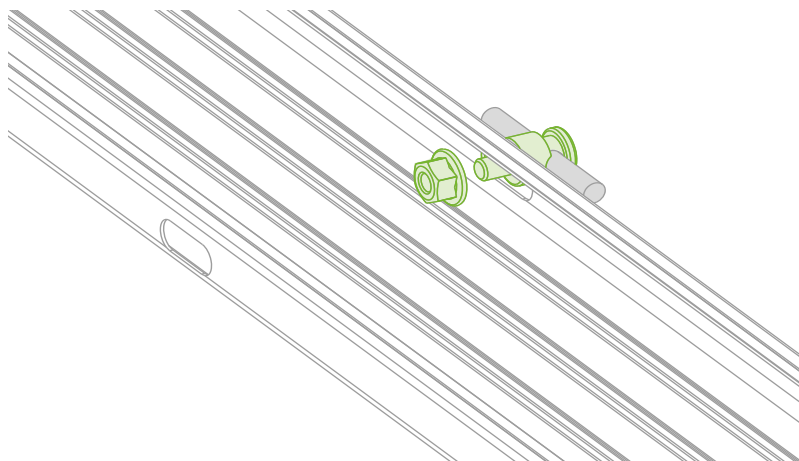
B Assembly of contact latch.

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

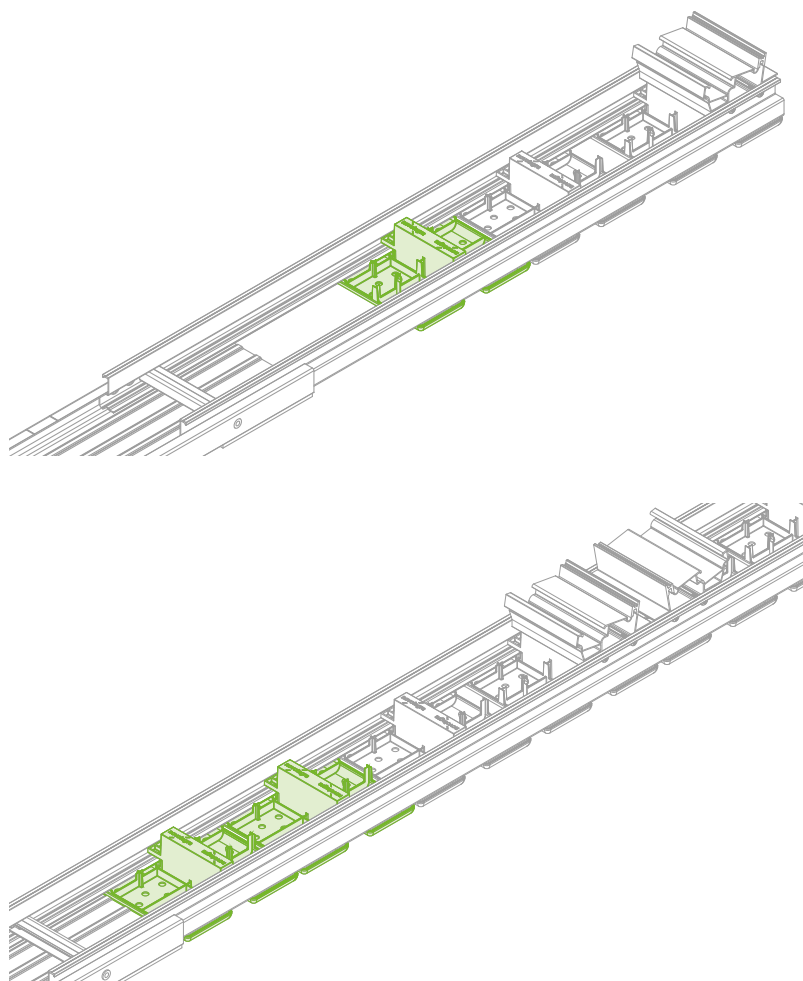
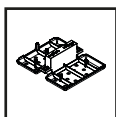


novo-tip:

The contact latch is used for carrying potential equalization and lightning protection capacity of the system.



4 Increase surface pressure



A Insert surface extension.

The surface extension must be inserted into the edge closure set or connector set before clicking it into the base element.



novo-tip:

The surface extension can be used when the surface pressure of the insulation is overloaded. Up to two surface extension can be used per edge closure set or connector set.

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.