

Installation Instructions

Fallnet® SB 200-Rail

Fallnet® SB 200 Rail in combination with a solar installation (photovoltaic or solar thermal) or a railing system and a correspondingly high load of suitable bulk material (e.g. ZinCo system soil, Zincolit®, gravel 16/32 mm or slabs in a chippings bed) represents an anchoring device in accordance with DIN EN 795:2012 types D and E for fall protection on flat roofs with a roof pitch of up to 5°.

A fixing point (the so-called runner) may only be used by one person (up to 100 kg) at a time and this person should be wearing personal protective equipment (PPE, e.g. ZinCo PPE-Set) in accordance with EN 363. The safety harness, in accordance with EN 361, can only be used in conjunction with tested and approved components.

Important note:

We would like to state explicitly that, regardless of product liability, ZinCo shall only assume liability for the consultancy process where installation has been carried out in line with ZinCo site planning. Installation without planning carried out by ZinCo is at your own risk. The assembly and installation instructions as well as the instructions for use, both of which are supplied with the products, must be observed regardless of this.

We recommend having Fallnet® SB 200-Rail planned or checked by ZinCo Technical Department before starting installation.

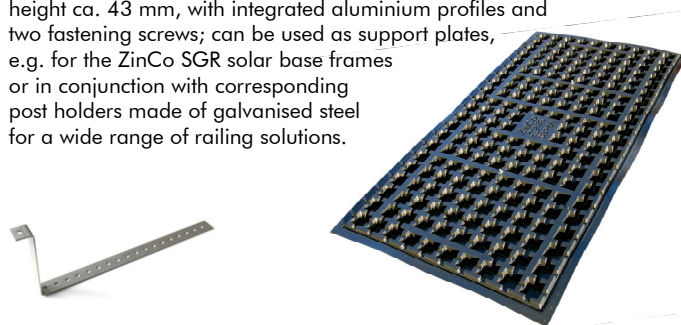
1. Prior to installation

1.1 Check of the scope of delivery and condition of system components

The delivery of an object-specific Fallnet® SB 200-Rail safety device comprises:

a. Fallnet® SB 200-Rail components, like e.g.

ZinCo Solar Base® SB 200, of hard plastic (ABS), length ca. 2.0 x 1.0 m, height ca. 43 mm, with integrated aluminium profiles and two fastening screws; can be used as support plates, e.g. for the ZinCo SGR solar base frames or in conjunction with corresponding post holders made of galvanised steel for a wide range of railing solutions.



SB Rail holder made of stainless steel, for connecting the rail to the solar base, available in lengths of 600 mm and 1200 mm.



Rails made of a high quality aluminium alloy in standard lengths of 2.0 m, 3.0 m and 6.0 m, butt joint connectors, end pieces, runners, etc.

The required quantities and characteristics of the components can be found in the delivery note.

b. Documents included with each order:

Installation Instructions, User Instructions and Control Card.

The installation plan (if planned by the ZinCo GmbH) is provided separately to the person stating the order and is to be handed to the client.

Please note:

Incomplete, incorrect or defective deliveries are to be objected immediately.

1.2 Check of the initial situation

The basis for a perfect function of Fallnet® SB 200-Rail is that at least five SB 200 solar bases (in a row or across a corner), mechanically connected to each other by mounting profiles or guardrail rails, are present and serve as a load-bearing surface (total area thus at least 10 m²).

Before starting installation, check whether the roof construction is suitable for the loads to be applied, make sure that the maximum possible roof pitch (5°) is not exceeded, check whether the waterproofing, root protection, etc. have been applied professionally. If there are any doubts, these must be clarified and if necessary eliminated before installation.

1.3 Admissible types of installation

The following types of installation are admissible for Fallnet® SB 200-Rail:

a. With multi-layer build-ups:

Fallnet® SB 200-Rail is applied above the drainage layer (e.g. Fixodrain® XD 20-Bahnen) directly over the corresponding filter sheet.

b. With mono-layer build-ups:

Fallnet® SB 200-Rail is applied directly over the protection layer (> 300 g/m²), whereby drainage elements of a comparable height (e.g. Floradrain® FD 40-E) are subsequently to be fitted into the spaces between the SB 200 elements.

2. Installation instructions

2.1 Completing the Solar Base SB 200/Attaching the Rail Supports

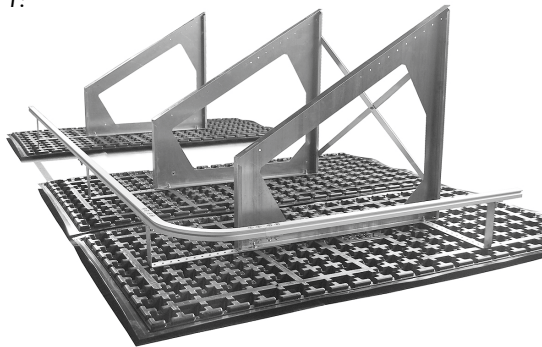
Fallnet® SB 200-Rail can be combined with the ZinCo Solar Base® SB 200 in two different ways:

- ZinCo Solar Base® SB 200 and Solar Base Frame SGR (see variant 1):
The rail supports are to be placed on the screws of the Solar Base SB 200. Then the Solar Base Frame is to be placed on the rail supports and attached (> 20 Nm) to the SB 200 base plate using both nuts.
- Guardrail Base GB-Rail / GB-Rail Corner (see variant 2):
The rail supports are placed on the posts of the post supports of the GB-Rail / GB-Rail Corner. It should be connected (> 20 Nm) using a carriage bolt (including U-washer and a stop-nut).

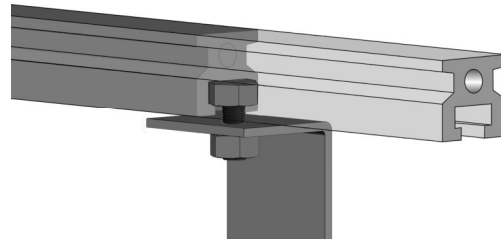
To achieve the frictional connection between rail supports and grid units, the first grid element unit is moved over the rail support with its colour coding and pressed by foot to snap. Install all grid units in such a way that the rail support is located centrally in the grid unit (one more in the centre resp. two more at the beginning and the end of the rail). All grid elements of a grid unit must be plugged together at the connection points and thus form a tension distributing disc.

Installation Instructions Fallnet® SB 200-Rail

variant 1:



Assembly rail and support

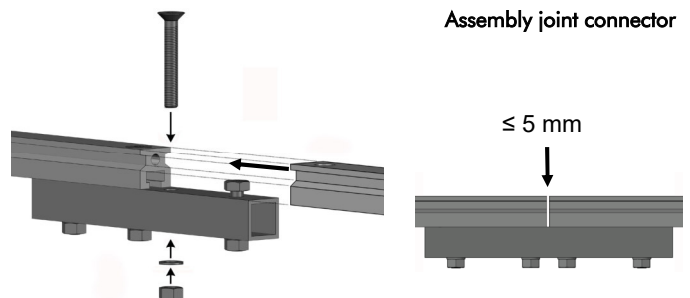


- The rail track is extended by attaching further pieces of rail by means of butt joint connectors. The self-locking nuts are to be tightened manually (max. 20 Nm). A maximum gap of 5 mm between the rail pieces is to be observed.

variant 2:



Assembly joint connector



2.2 Measuring and Positioning the Solar Base SB 200/Rail Supports

The positioning of the SB 200 Solar Base plates with the rail supports (maximum distance between rail supports is 1.5 m) is to be measured using a map of the roof. The Solar Base SB 200 must lie flat, straight and on a clean and suitable (see 1.2).

The multiple perforation of the SB Rail holders makes it possible to place them in such a way that the rail line later runs with sufficient distance to the PV modules or to the railing and the distance of the rail to the edge of the fall specified in the planning is maintained.

We recommend that you let the ZinCo technical department plan or check the requirement and location plans.

2.3 Assembly of the rail

Required tools:

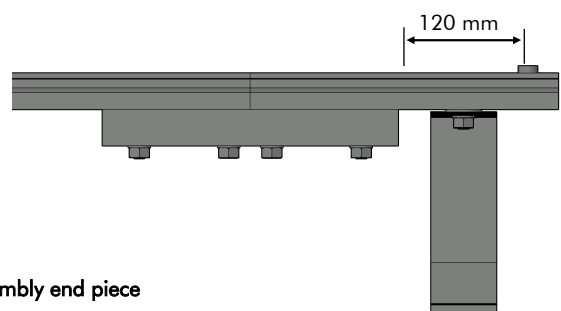
- wrench/ratchet 17.0
- allen or allen key size 6.0
- torque wrench
- optionally ZinCo Drilling Set to manufacture rail pieces of special lengths on-site

Je nach Einplanung besteht eine Anschlagschiene aus:

- | | | |
|--------------------------------|-------------|-----------------------|
| - rail 6 m | - rail 3 m | - rail 2 m |
| - joint connector | - end piece | - 90°-corner piece |
| - 3-way junction incl. support | - runner | - rail special length |

- Every rail support is equipped with a square-head bolt. Using this square-head bolt the rail is threaded with the T-slot and thus connected to the already positioned grid unit.

- Before completing the rail track, insert the mobile attachment point (runner) onto the rail.
- Any required fitting pieces can be manufactured directly at the construction site using the ZinCo Drilling Set (see separate instructions).
- Depending on the site planning, a closed loop-shaped system or a termination with ending pieces is possible.
- Finishing with rail end pieces:
Screw end pieces onto the ends of the rail using butt joint connectors. The end pieces are threaded over the rail support of the grid unit AE and fastened between the first or last butt joint connector and the stop screw of the end piece (available room approx. 120 mm). A longer rail overhang is not permitted!



Assembly end piece

- Finally, check all screw connections and tighten them.

Installation Instructions

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→ Important:

In general, the material temperature during installation should not be below +5 °C.

Applying the graphite or copper paste which is included in the delivery will prevent the stainless steel screws from seizing.

2.4 Application of the required load

Prior to the application of the required load the on-site situation needs to be documented and photographed if necessary.

Documentation - Corresponding templates can be found under:
<https://zinco-greenroof.com/downloads>

The solar bases of Fallnet® SB 200-Rail must be evenly filled and covered with suitable bulk material. In the case of solar installations, this can be done with ZinCo system soil, Zincolit®, gravel with a grain size of 16/32 mm or a comparable bulk material. In the case of railings, the ballast can also be provided by a slab covering laid in a bed of chippings.

Required load* for Fallnet® SB 200-Rail:

min. 120 kg/m² (roof inclination 0° to 2°)
min. 140 kg/m² (roof inclination > 2° to 5°)

*** These minimum values include the dead weight of the superstructures (e.g. PV modules, collectors, railings, etc.) and apply to the function as fall protection. If higher superimposed loads have to be applied according to the static calculation, e.g. to prevent a solar installation from lifting due to wind suction, these must of course be taken into account!**

The values apply for the dry state of the bulk material. The layer thickness of the bulk material used depends on its bulk density (dry). To achieve the 120 kg/m², for example, the solar bases must be evenly filled and covered with at least 85 mm of Zincolit® or System Substrate Sedum Carpet. 40 mm thick concrete slabs laid in a 40 mm thick gravel bed, including backfilling, result in a superimposed load of approx. 180 kg/m². For reasons of UV protection, a gravel cover must reach at least 50 mm above the upper edge of the plastic grid.

→ **Important:** Direct contact between the load (bulk material) and the grid elements is required at all times.

3 Completion

Make sure that all work is done professionally according to the site planning and the Installation Instructions. Check the identification label at the point of entry, it must be permanently well recognizable. Only rail systems marked with a label may be used.

3.1 Installation documentation

The installation documentation allows for providing evidence of a professional installation to the client. Furthermore it is an indispensable base for future inspections of the Fallnet® SB 200-Rail fixing devices. A template for the installation documentation is available as a PDF file from the manufacturer. Document copies must be handed over to the client after installation and must be kept on the object for future inspections of the Fallnet® SB 200-Rail.

Required information:

- address of property
- installation company
- technician in charge of installation
- Fallnet® SB 200-Rail serial number (see runner or label)
- details of superimposed load (type of bulk material, weight, include delivery note if relevant)
- site planning (please include serial number(s) here too)

The site planning should be affixed to the building where it is clearly visible, e.g. at the roof access point.

Statement issued by the technician in charge of installation (signature):

- the Fallnet® SB 200-Rail Installation Instructions were adhered to
- installation was carried out as planned
- the minimum load requirements have been adhered to
- photo documentation, in particular of details that are no longer visible after installation.

3.2 Handing over the Fallnet® SB 200-Rail documentation to the client/owner

The delivery scope includes the following documents, which the installer must hand to the client:

- Installation Instructions and User Instructions
- Installation documentation
- Control card, Fallnet® SB 200-Rail must be maintained and inspected regularly. Please enter serial numbers (see runner or label)
- Site planning

3.3 Queries

Should you have any queries, or be unsure about the correct use/ installation of the product or require further detailed information for your own specific building project, please contact ZinCo GmbH, Hotline phone +49 7022 6003-0.

User Instructions

Fallnet® SB 200-Rail

Your roof protects your building, the contents and any valuables in it. In order to have the benefit of a fully-functioning roof over a long period of time, your roof must be installed professionally and must be inspected at regular intervals during its lifetime and, where necessary, repair work carried out. Therefore, it is important to ensure that any works on the roof are carried out safely. The client (and later on possibly other) owner also have a duty here and are responsible for adherence to any regulations pertaining to occupational safety on a roof.

Fallnet® SB 200 Rail in combination with a solar installation (photovoltaic or solar thermal) or a railing system and a correspondingly high load of suitable bulk material (e.g. ZinCo system soil, Zincolit®, gravel 16/32 mm or slabs in a chippings bed) represents an anchoring device in accordance with DIN EN 795:2012 types D and E for fall protection on flat roofs with a roof pitch of up to 5°.

1. Fallnet® SB 200-Rail - System components:

a. Solar Base plates

ZinCo Solar Base® SB 200 or GB or GB corner, of hard plastic (ABS), length ca. 2.0 x 1.0 m, height ca. 43 mm, with integrated aluminium profiles and two fastening screws; can be used as support plates, e.g. for the ZinCo SGR solar base frames or in conjunction with corresponding post holders made of galvanised steel for a wide range of railing solutions.

At least five solar bases mechanically connected to each other in conjunction with a load form the basis to absorb and transfer load in the event of a fall. The load of at least 120 kg/m² (incl. superstructures such as PV modules) for roof pitches up to 2° or 140 kg/m² for roof pitches >2° to 5° can be applied e.g. in the form of ZinCo system soil, gravel 16/32 mm or comparable bulk material or, in the case of railing solutions, in the form of slabs in a bed of chippings.

b. SB Rail support

The connection between the solar bases and the rail is made by SB Rail holders made of stainless steel. These are available in lengths of 0,6 m and 1,2 m. The multiple perforation of the holders makes it possible to mount them on the fastening screw of the base plate in such a way that the rail later runs with sufficient distance to the PV modules or to the railing and the specified distance to the fall edge is maintained.

c. Rail with runner, further accessory

The supports are connected by an anchorage rail made of high quality aluminium. A mobile attachment point runs along the rail on its four stainless steel rollers (therefore also called "runner"). The carabineer hook of the personal protective equipment can only be attached to the eyelet of this runner. In order to prevent the runner from slipping off the rail at its ends, end pieces with "stoppers" must be mounted there. The single pieces of the rail, which have a length of up to 6 m, are held together by special butt joint connectors. Gaps between two pieces shall not exceed 5 mm.

d. Documents

The delivery scope includes the following documents, which the installer must hand to the client:

- Installation Instructions
- User Instructions
- Control Card. Please record the serial number of the Fallnet® SB 200-Rail in the chart. This number can be found on the identification label attached to the product. Fallnet® SB200-Rail must be inspected regularly.

Furthermore the following documents need to be handed over:

- installation documentation
- eventually separate site planning (if planning was done by ZinCo). If the planning has not been carried out by ZinCo, it must be approved by ZinCo Application Engineering.

2. Scope and requirements for use

Fallnet® SB 200-Rail must only be used for the intended purpose as a fixing device for personal protection equipment. Fallnet® SB 200-Rail must not be used for lifting weights or for attaching objects. Any modification or addition to any of the system components requires the prior written permission of the manufacturer.

Please note also:

- Fallnet® SB 200-Rail may only be used by max. 1 person (max. 100 kg, including equipment) in conjunction with personal protective equipment (PPE, such as the ZinCo PPE-Set) acc. To EN 363. The harness according to EN 361 may only be used with tested and approved components.
- Additional persons (max. 100 kg, including equipment) can use the rail system with an additional anchorage point (runner) if it is ensured that a distance of at least 4.5 metres (3 free rail holders) is maintained.
- The use of Fallnet® SB 200-Rail is permitted up to a maximum roof inclination of 5° in the direction of the edge which is to be secured.
- Fallnet® SB 200-Rail should only be installed on suitable subsurfaces e.g. either on the filter sheet (multi-layer build-up) or on a protective mat (mono-layer build-up), see Installation Instructions.

Important: Direct contact between the load (bulk material) and the grid elements is required at all times.

If the site planning is done by ZinCo GmbH, Fallnet® SB 200-Rail is always applied as a fall arrest system. This means that it is planned with a uniform rope length, which is dimensioned so that the roof edge can be reached, but one can not fall at all. The planning can be done in such a way that the rail runs partly through the area at risk of falling (≤ 2 m to the fall edge), provided that the entry point is located outside the danger zone.

Nevertheless, misuse - in particular an incorrectly set rope length - can never be completely ruled out. Fallnet® SB 200-Rail has therefore proven in extensive tests that it can also reliably absorb a fall.

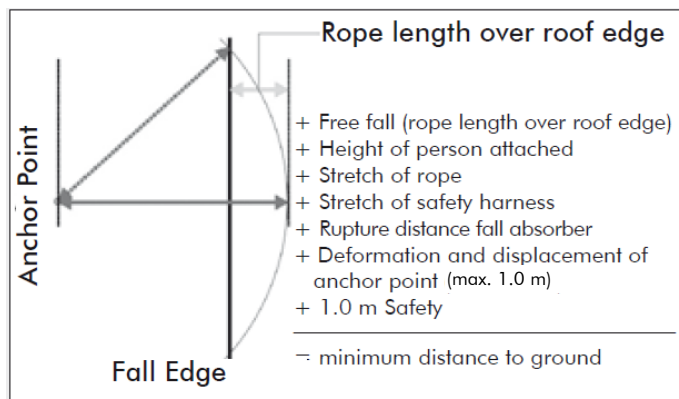
Precondition for this is that the minimum fall distance to the ground (fall height) must be such as to prevent a person hitting the ground in the case of a fall event and to allow the person to swing freely.

The required minimum fall distance to the ground (potential impact area) is resulting from the following parameters:

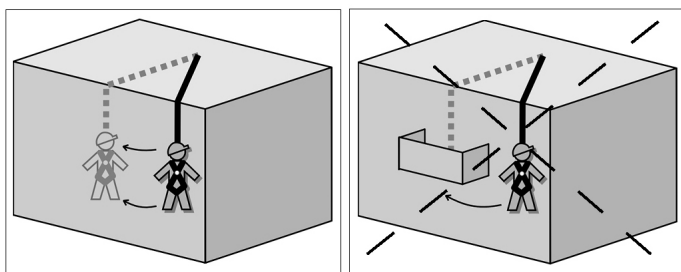
- the part of the connecting device being pulled over the fall edge (= maximum rope length to the fall edge minus the shortest rope length, rectangular to the fall edge),
- height the person attached,
- stretch of rope and safety harness
- rupture distance of the fall absorber
- displacement and deformation of fixing device (max. 1.0 m) and
- 1.0 m safety value.

User Instructions

Fallnet® SB 200-Rail



- In the case of a fall event, the person may swing to and fro. It is important to ensure that there are no building elements in the way (e.g. balcony, awning etc.) and that impact is prevented.



It is important that Fallnet® SB 200-Rail is only used in conjunction with a suitable “personal protective equipment against falling”, which of course must be set correctly. This “PPE” according to EN 363 (not included in the Fallnet® SB 200-Rail fall protection device) must contain the following components:

- safety harness in compliance with EN 361
- fall absorber in compliance with EN 355 or safety appliance for use at height in compliance with EN 360 (arresting forces ≤ 6.0 kN each)
- connecting device (rope) according to EN 354
- connecting elements (carabiner) in compliance with EN 362

Please ensure that the individual system components are compatible and suitable for use on the horizontal and for a fall event over a roof edge. Potential danger resulting from a combination of the components used (in particular fall absorber, EN 355 or safety appliance for use at height, EN 360) should be eliminated. Therefore, prior to using personal protective equipment for fall arrest we recommend that you seek the advice of the manufacturer of the PPE. Please observe the manufacturer's User Instructions.

The following hazards may impact the proper functioning of the equipment: e.g. putting stress on the connection devices due to sharp edges, cuts, abrasion, slack rope, chemical, electric or climatic impact, extreme temperatures, swinging movement in the event of a fall. The connection devices, therefore, should always be inspected prior to use and if necessary, an edge protector must be provided.

Fallnet® SB 200-Rail requires no special cleaning procedures; if necessary, dirt can be removed with a damp cloth.

The fixing device may be used in frosty conditions provided the device was installed in frost-free conditions.

3. Requirements for the use and for the user of Fallnet® SB 200-Rail

The fall protection system Fallnet® SB 200-Rail must only be used by persons who have been instructed in the safe use of the equipment, who have the necessary knowledge and who, in terms of their health, are capable of using the equipment (e.g. no impairment due to medication, alcohol abuse, coronary or circulatory problems etc.).

The user is to be instructed such that s/he will carry out the following visual and manual inspections of the fixing device prior to each use:

- manual tensile loading and visual inspection of the visible stainless steel components, the support and the anchor eye
- visual inspection of the load height

Indications that the good working condition of the fixing point is restricted could be:

- any rail components are deformed, weakened, soiled or are not in their original condition,
- the mobile attachment point (runner) does not sit firmly on the rail or even can be removed from it during manual testing
- there is an uneven level of superimposed material, e.g. as a result of drifting
- the grid elements are visible.

If there are concerns about the safe condition or the proper functioning of the fall protection device, the builder/the owner must be notified. It must not be used until the doubts are clarified.

The use of the fall protection device must be in accordance with the utilization plan. If no utilization plan is available, the rope length of the PPE should always be adjusted in a way that a possible fall is ruled out or a possible swinging fall does not result in an impact.

Prior to use, an emergency plan must be available in which all possible occupational emergency situations are addressed.

At the request of the client/owner, an inspection of the proper functioning of the entire safety equipment is to be carried out:

1. **at least once a year**
2. **if required**, e.g. if there is doubt about the proper functioning of the equipment (see “Indications of restricted functioning”)
3. **after 10 years a complete inspection** to be carried out by the manufacturer

The equipment must only be inspected by persons qualified to do so and details of all inspections must be recorded in the inspection chart. The relevant check list is available in PDF from the manufacturer.

User Instructions

Fallnet® SB 200-Rail

Attention:

After a fall event the fall protection system Fallnet® SB 200-Rail must be **removed from service immediately**. It can only be released for use again after testing and repair by a knowledgeable person.

The product SB 200-Rail must only be used for the purpose and application as described. The manufacturer accepts liability for the product within the framework of applicable statutory requirements.

The manufacturer accepts no liability for any other deviating use of the product. Furthermore, the manufacturer accepts no liability where the Installation Instructions and the User Instructions have been insufficiently adhered to. We wish to state explicitly that, regardless of product liability, ZinCo shall only assume liability for the consultancy process where installation has been carried out in line with ZinCo site planning. Installation without site planning carried out by ZinCo is at your own risk.

Where the fixing device Fallnet® SB 200-Rail is sold in another country, the technician/user must receive a copy of the Installation/User Instructions and the Control Card in the language of that country.

4. Label

Every runner is equipped with an identification label. The label contains the following information:

Manufacturer: ZinCo GmbH **Type:** Fallnet® SB 200-Rail

Standard: Fall Protection System acc. To EN 795:2012, Type D+E **Year of manufacture:** Date of manufacture (year)

Serial-No.: **max. 1 person:** max. number of users



The notified body nominated for certification



Note that the Instruction Manual is to be observed



Fall protection equipment only to be used with a fall absorber

5. Details of manufacturer and testing institute

Manufacturer:

ZinCo GmbH
Lise-Meitner-Straße 2
72622 Nuertingen, Germany
Phone +49 (0) 7022 9060-770
E-Mail: info@zinco-greenroof.com
www.zinco-greenroof.com

Testing institute:

DEKRA EXAM GmbH
Dinnendahlstraße 9
44809 Bochum, Germany

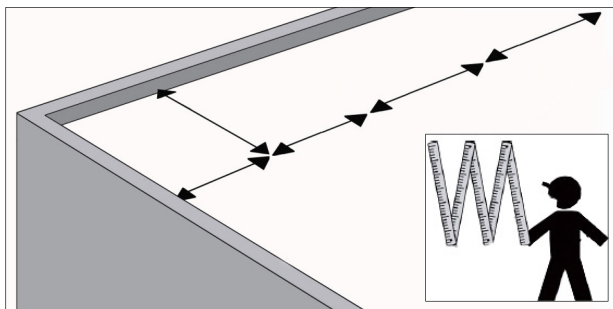
ZinCo GmbH

Lise-Meitner-Strasse 2 · 72622 Nürtingen · Germany
Phone +49 7022 6003-0
info@zinco-greenroof.com · www.zinco-greenroof.com

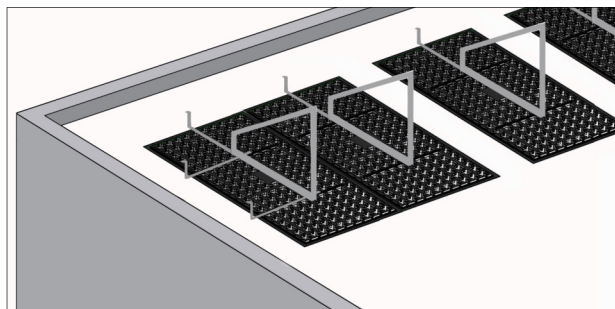
Life on Roofs



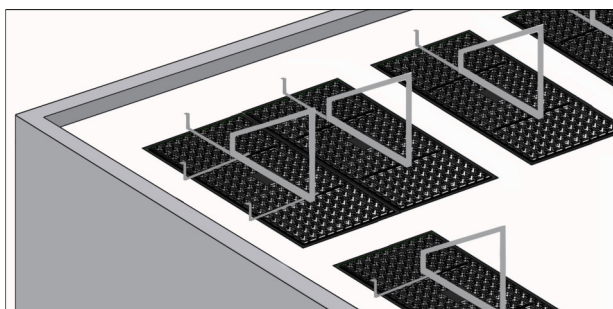
Main steps of the installation of Fallnet® SB 200-Rail...



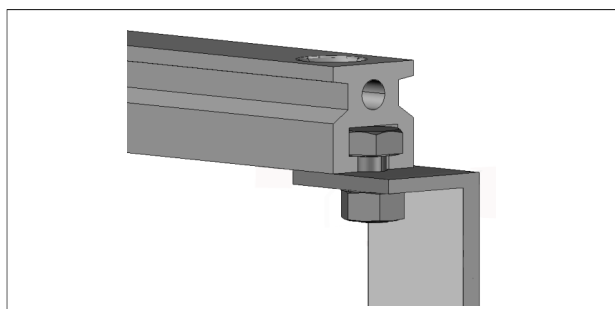
1. Measure the position of the solar base plates and the SB Rail holders according to the planning.



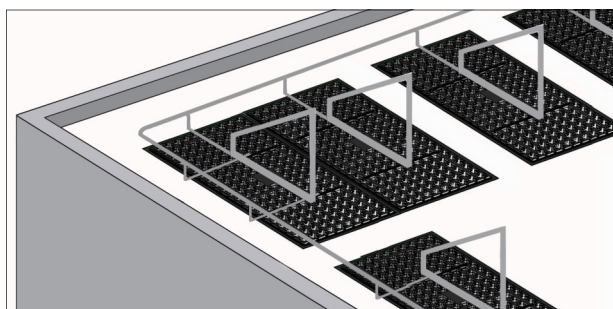
2. Lay out the first row of solar base plates and mount SB Rail holders in the direction of the fall edge(s).



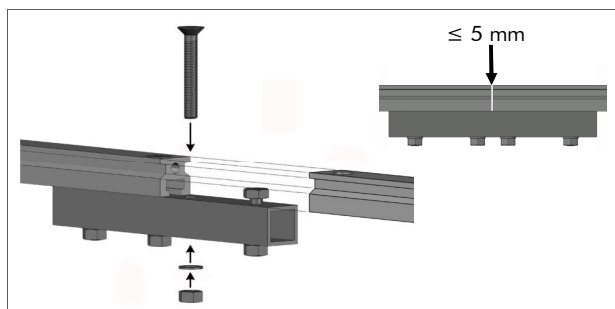
3. Place further row(s) of solar base plates and equip with the required SB Rail holders.



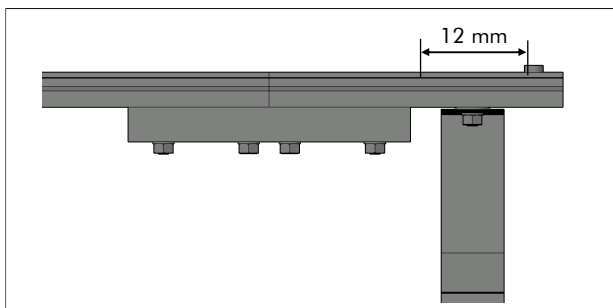
4. Slide the stop rail onto the hexagonal screws of the SB rail holders.



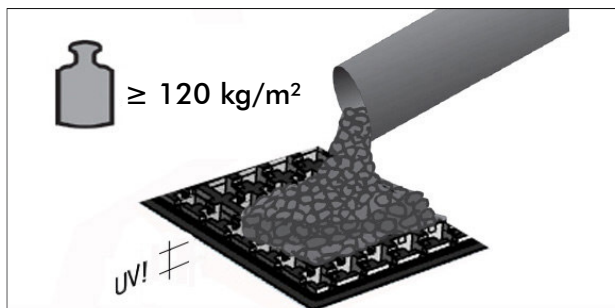
5. Completing the rail track along the fall edge(s) according to the planning.



6. For this purpose, the individual rail sections must be connected by butt connectors. Gap max. 5 mm!



7. Attach the end pieces with the stop screws at each end of the rail.



8. Applying the required load (min. 120 kg/m² dry weight)

Control Card

Fallnet® SB 200-Rail

Product Identification Card in accordance with EN 365			
Product:	Fallnet® SB 200-Rail		
Manufacturer:	ZinCo GmbH, Lise-Meitner-Strasse 2, 72622 Nürtingen, Germany		
Planned Construction:			
Serial Number(s):			
Year of manufacture:		Date of installation:	

Fallnet® SB 200 Rail in combination with a solar installation (photovoltaic or solar thermal) or a railing system and a correspondingly high load of suitable bulk material (e.g. ZinCo system soil, Zincolit®, gravel 16/32 mm or slabs in a chippings bed) represents an anchoring device in accordance with DIN EN 795:2012 types D and E for fall protection on flat roofs with a roof pitch of up to 5°.

A fixing point (the so-called runner) may only be used by one person (up to 100 kg) at a time, and this person should be wearing personal protective equipment (PPE, e.g. ZinCo-PPE-Set) in accordance with EN 363. The safety harness, in accordance with EN 361, can only be used in conjunction with tested and approved components.

Regular Inspections

Regular checks are required to ensure that the fixing device is functioning properly. These must be carried out at least every 12 months or immediately after the anchor device has been used, e.g. due to a fall, or if there are indications of limited functionality. The inspection work must be initiated by the building owner/property owner and must be carried out by competent persons authorised by the manufacturer and documented on the reverse side of this inspection card.

The following inspections are necessary:

- Visual check of damage to and position of the fixing device
- Check of all connections and gaps (maximum 5 mm)
- Manual inspection of the tensile load on the fixing point
- Sufficient coverage, check of the necessary superimposed load
- Readability of the product label

Note:

If there are any doubts regarding the sound condition or the safe usage of the device, then any further use is prohibited. The builder must be informed immediately. The latter is required to take appropriate measures to restore the safe usability of the facility.

After 10 years, the manufacturer must undertake a full inspection of the Fallnet® SB 200-Rail system.



Control Card

Fallnet® SB 200-Rail

Documentation and Planning of Inspections			
Object:			
Inspection	Date	Signature	Date for next inspection
1 st year			
2 nd year			
3 rd year			
4 th year			
5 th year			
6 th year			
7 th year			
8 th year			
9 th year			
10 th year	Authorise a full inspection by the manufacturer		

Person/company authorised by the manufacturer:

