

Assembly instructions

Hanger bolts on tiles

SingleRail and SolidRail system



Connecting Strength

k2-systems.com

Content

• Tool overview	3
• General safety information	4
• The following generally applies	5
· Planning with K2 Base	5
· Roof requirements	5
· Structural requirements	5
· Important mounting instructions	5
• Components	6
· SingleRail	6
· SolidRail	7
· Components for two rail layers	8
• Description hanger bolts	10
· Configuration	10
· Pre-drilling diameters	10
• Disclaimer chemical anchor	
installation in concrete substructure	11
• Assembly	12
· Module blocks and thermal separations	12
· Pre-drilling and chemical anchor	14
· Fixation hanger bolts	15
· Rail connection and rail layering solutions	16
· Rail connections	17
· Module fixation	18
· Module grounding options	19



Tested quality - multiple certifications

K2 Systems stands for secure connections, top quality and maximum precision. Our customers and business partners have known this for a long time. Independent bodies have tested, verified and certified our competencies and components.

You can find our quality and product certificates at k2-systems.com.



Tool overview

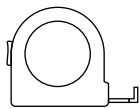


 
3/4/5/6 mm 7/9/13 mm



6 - 30 Nm
(4.5 - 22.2 lb-ft)

 
3/4/5/6 mm 7/9/13 mm



≥ 3.0 m



≥ 6.0 m

General safety information

Please note that our general mounting instructions must be followed at all times and can be viewed online at k2-systems.com

- The equipment may only be installed and operated by qualified and adequately trained installers.
- Prior to installation, ensure that the product complies with on-site static loading requirements. For roof-mounted systems, the roof load-bearing capacity must always be checked.
- National and local building regulations and environmental requirements must be adhered to.
- Compliance with health and safety regulations, accident prevention guidelines and applicable standards is required.
 - Protective equipment such as safety helmet, boots and gloves must be worn.
 - Roofing works must be in accordance with roofing regulations utilising fall protection safeguards when eaves height exceeds 3 m.
 - At least two people must be present for the duration of the installation work in order to provide rapid assistance in the event of an emergency.
- K2 mounting systems are continuously developed and improved and the installation process may thereby change at any time. Prior to installation consult our website at k2-systems.com for up-to-date instructions. We can send you the latest version on request.
- The assembly instructions of the module manufacturer must be adhered to.
- Equipotential bonding/grounding/earthing between individual parts is to be performed according to country specific standards, as well as national laws and regulations.
- At least one copy of the assembly instructions should be available on site throughout the duration of the installation.
- Failure to adhere to our general safety and assembly instructions and not using all system components, K2 is not liable for any resulting defects or damages. We do not accept liability for any damage resulting in the use of competitor's parts. Warranty is excluded in such cases.
- German law shall apply excluding the UN Convention on CISG. Place of venue is Stuttgart. Our General Terms of Business apply.
- If all safety instructions are adhered to and the system is correctly installed, there is a product warranty entitlement of 12 years! We strongly recommend reviewing our terms of guarantee, which can be viewed at k2-systems.com. We will also send this information on request.
- Dismantling of the system is performed in reverse order to the assembly.
- K2 stainless steel components are available in different corrosion resistance classes. Each structure or component must be carefully checked for possible corrosion exposure.

The following guidelines apply



The SingleRail and SolidRail system with hanger bolts on tiles can be used without further testing by K2 Systems in the following standard conditions. To calculate maximum distances between supports we recommend using our calculation tool K2 Base.

The system is also suitable for higher requirements. However, if a value exceeds the standard conditions, please contact us.

Please note the disclaimer concerning chemical anchor on page 11.



Roof requirements

Roof pitch of 5 - 75°

- For manufacturer information regarding clamps see the manufacturing module data sheet.



Structural requirements

- The static verification of components is automatically calculated for each location using our K2 Base planning software
- The sufficient holding force of the roof covering at the support or substructure must be ensured on site.

- A module row spacing according to planning specification K2 Systems must be observed.

- The earthing must be provided by the customer and must be carried out according to the respective country-specific regulations.

- On-site general standards and regulations for lightning protection must be observed and consultation with a specialist to create a lightning protection concept is recommended (use lightning protection clamp if necessary).



Important mounting instructions

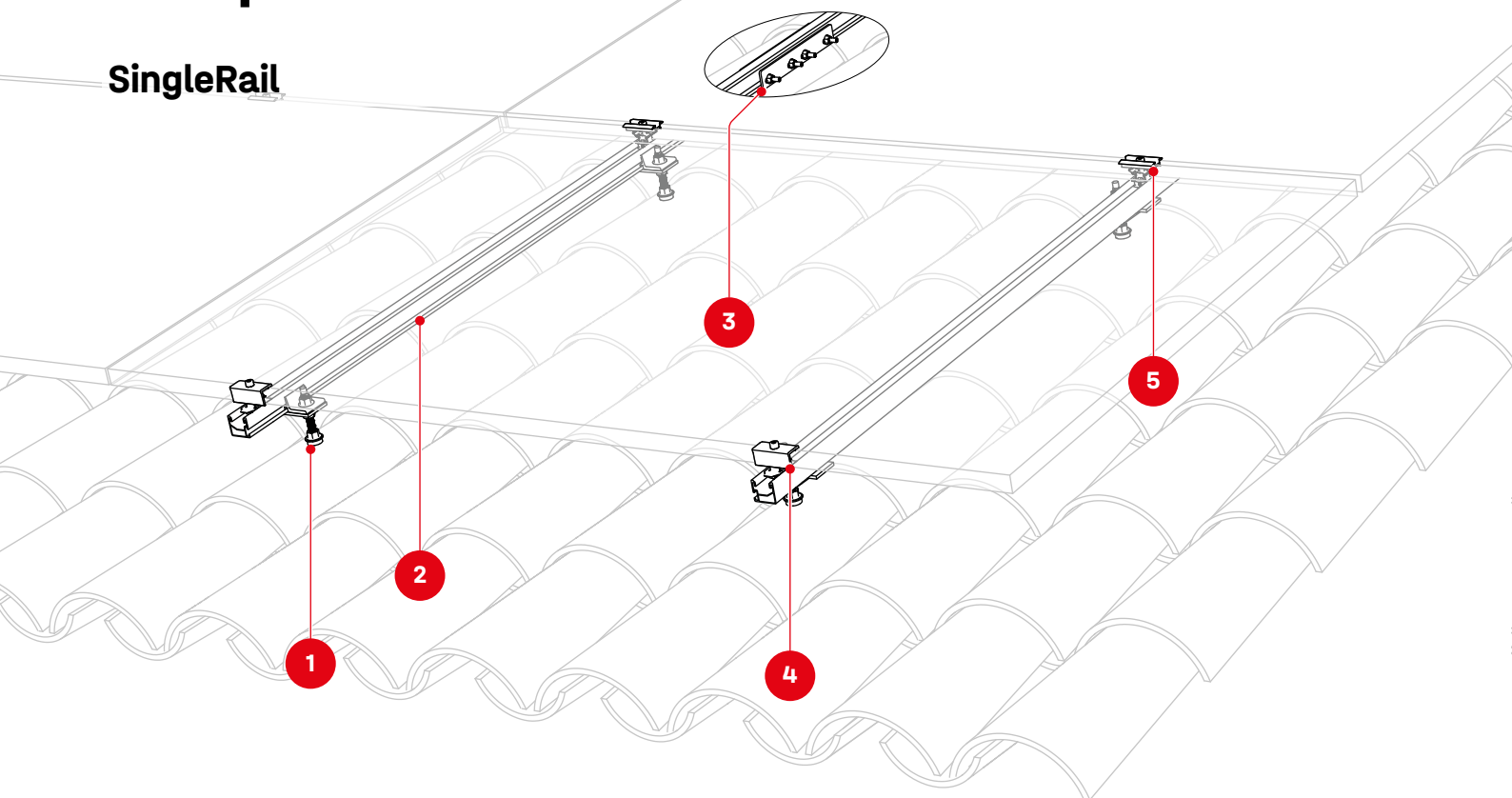
- We recommend a thermal separation after maximum of 17.60 m.
- Minimum spacing of 50 mm from rail end to module frame.
- Tightening torque of all module clamps 16 Nm

- Please note the specified screw-in depth of the hanger bolts for wood substructure. You can find this in our K2 Base Report in the Results chapter.

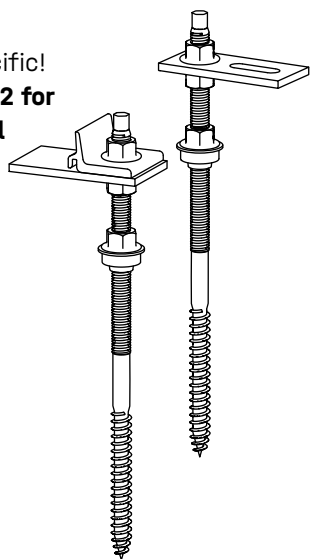
Only if the specified screw-in depth of the hanger bolts is adhered the corresponding values of the load-bearing capacity can be fulfilled.

Components

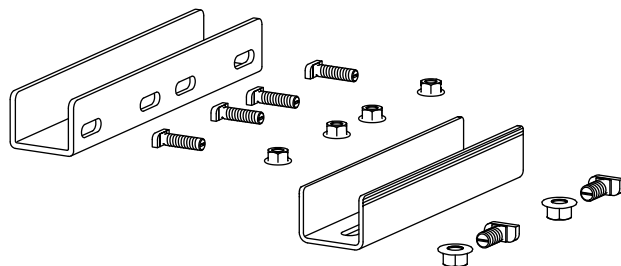
SingleRail



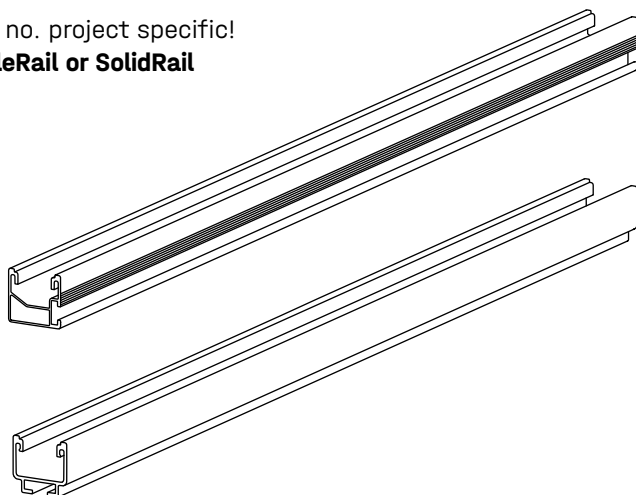
- 1** Item no. project specific!
**Hanger bolts M10/M12 for
SingleRail or SolidRail**



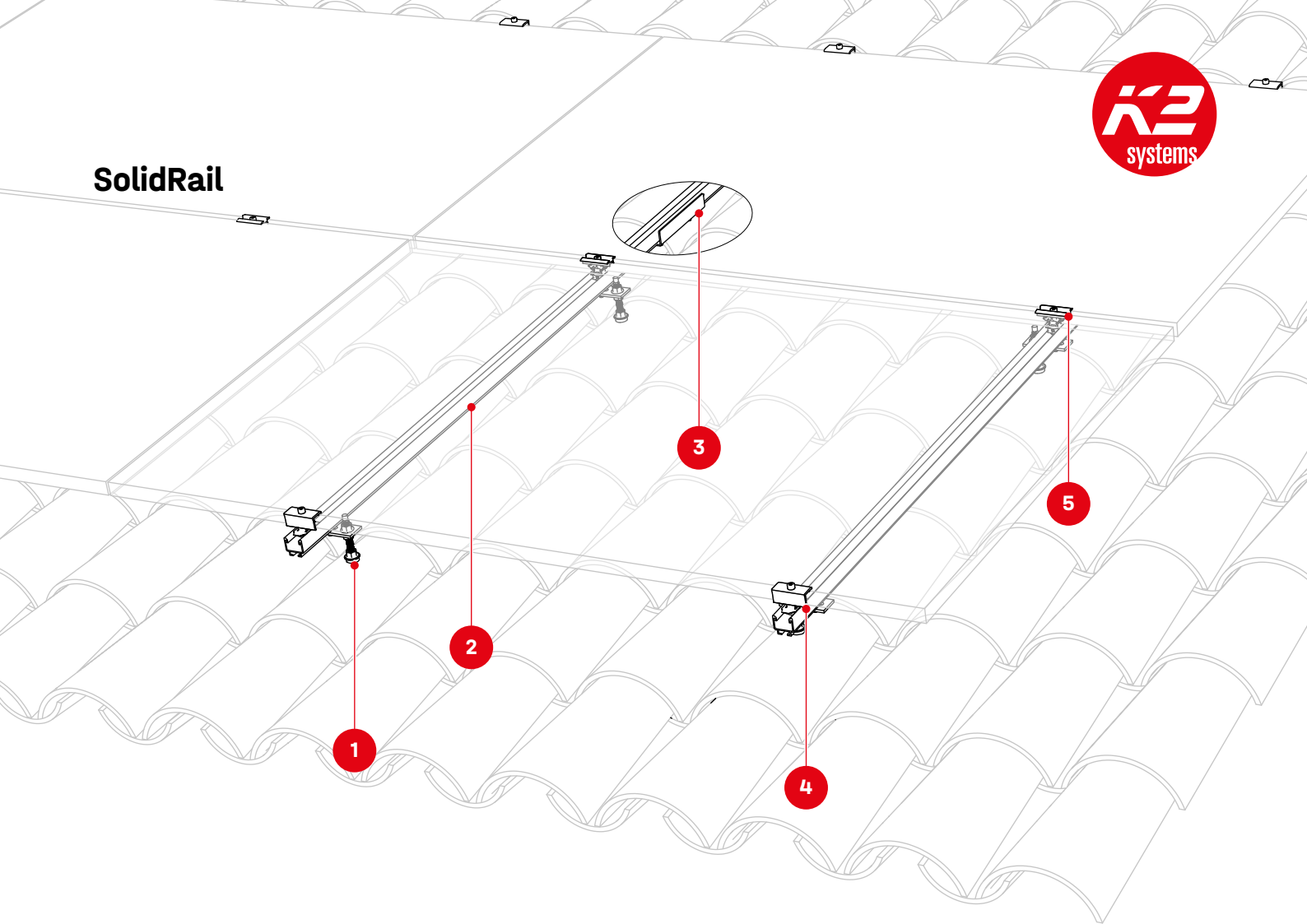
- 3** Item no. project specific!
**Rail connector Set
SingleRail or SolidRail**



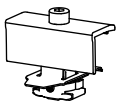
- 2** Item no. project specific!
SingleRail or SolidRail



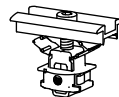
SolidRail



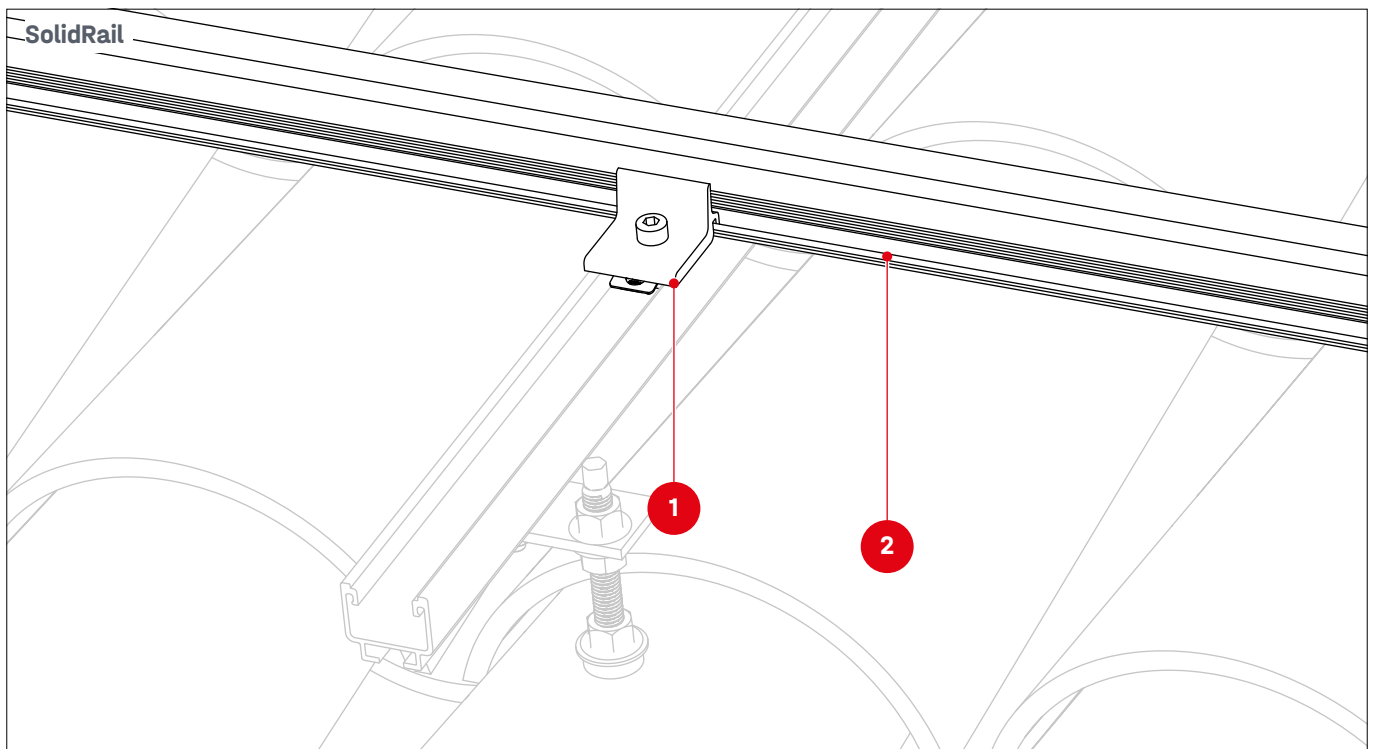
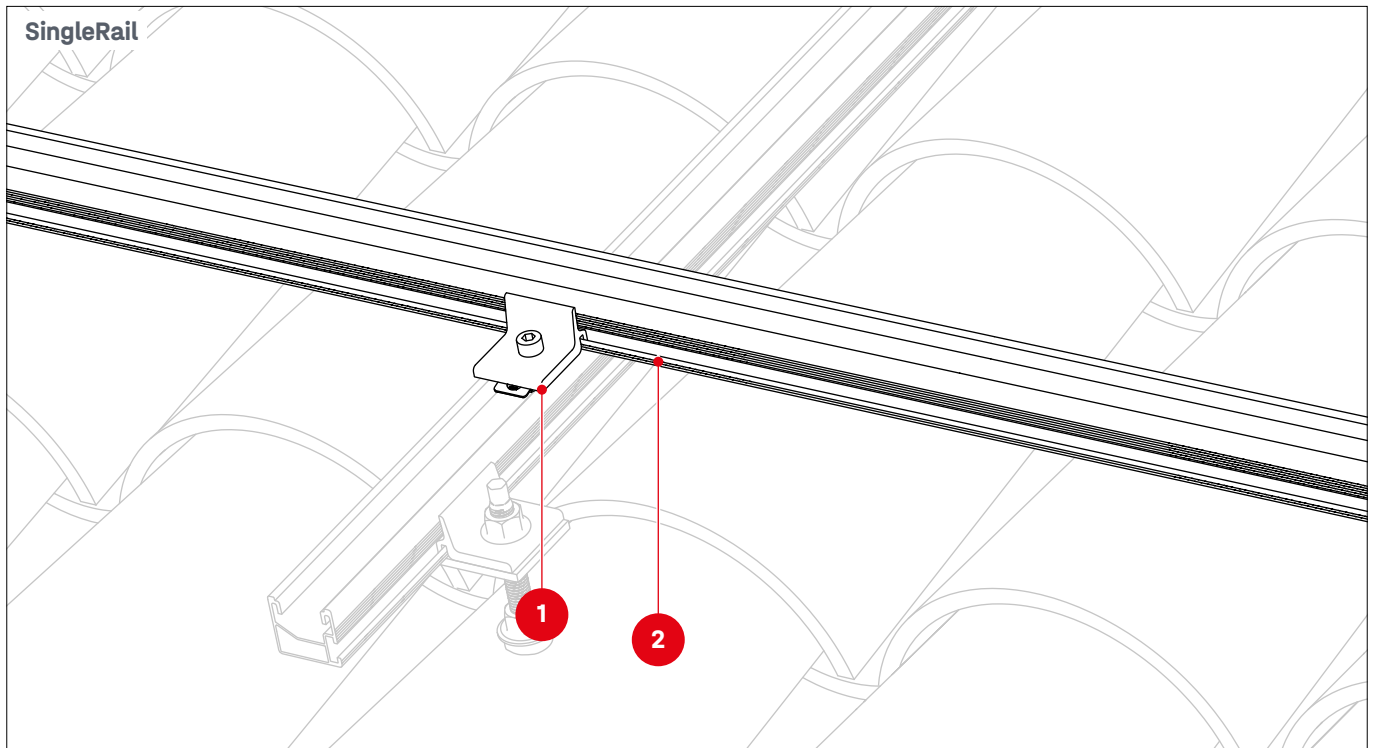
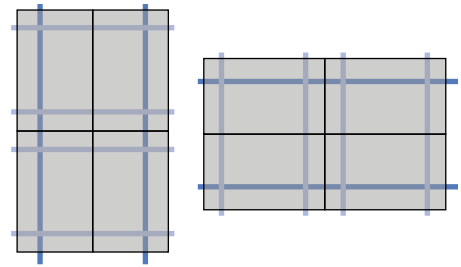
- 4** Item no. project specific!
Module end clamps



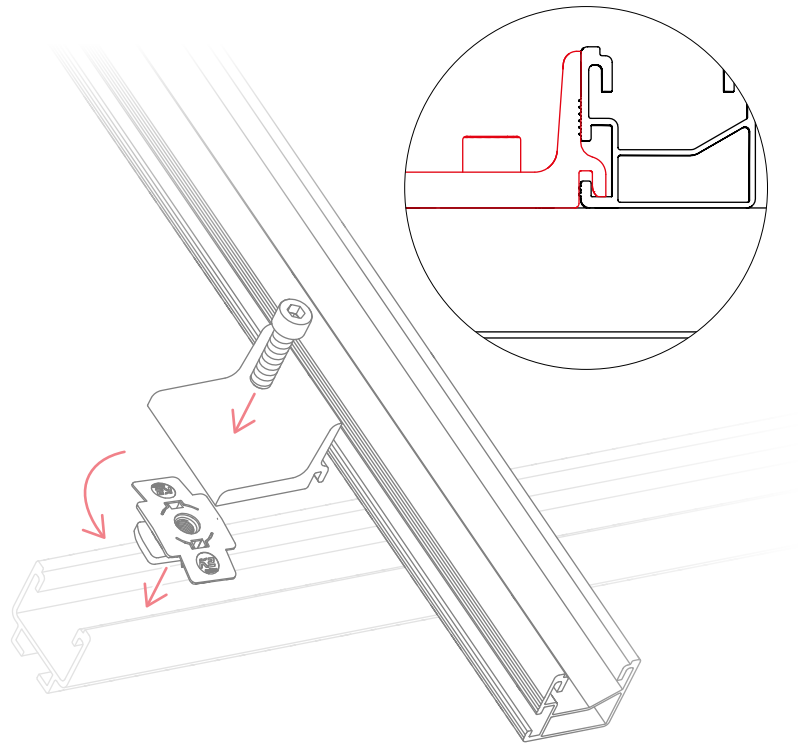
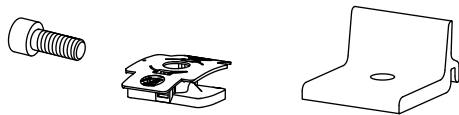
- 5** Item no. project specific!
Module middle clamps



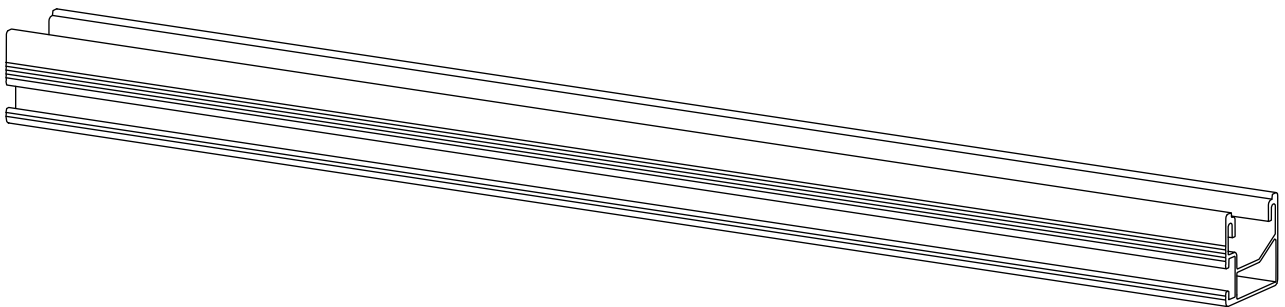
Components for two rail layers



1 2003145
Climber 36/50 Set

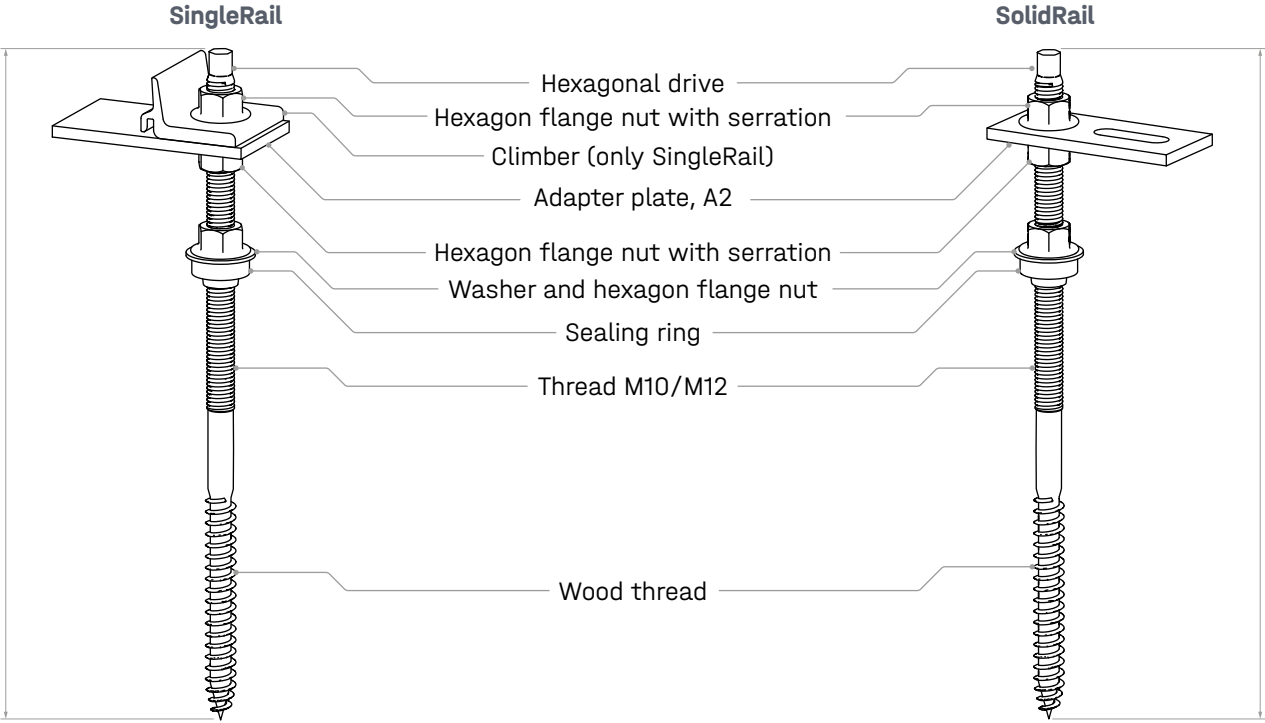


2 Item no. project specific!
SingleRail



Description hanger bolts

Configuration



Pre-drilling diameters

Thread	Pre-drilling diameters [mm]	
	Roofing/tiles	Substructure
M10	14.0	7.0
M12	15.0	8.5

Important notes and disclaimers

chemcial anchor: Installation in concrete substructure

For the application of our hanger bolt system on a concrete roof with tiles, we need to formulate clear specifications/disclaimers regarding the use of so-called chemical anchors (adhesive anchors).

The selection, quantity, product properties and execution of the **chemical anchors** must be decided and checked by the project owner. The same applies to the assessment and decision as to whether it is possible to use chemical anchors (adhesive anchors) for the specific project in a professional and appropriate manner. The chemical anchor is not included in the scope of delivery of K2 and must be provided by the customer.

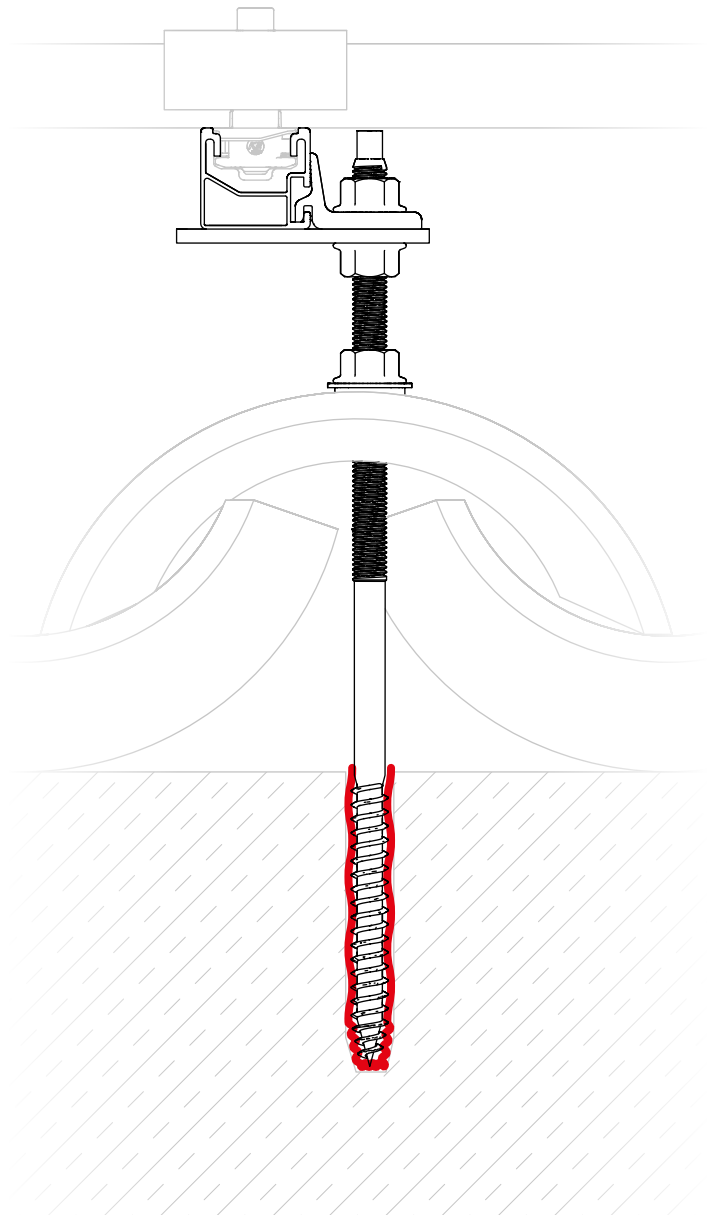
The specifications (approvals, data sheets, manufacturer's specifications, installation instructions) of the respective product manufacturer apply to the execution of the chemical anchor. K2 will not provide any further information on installation and execution.

The K2 installation instructions only describe the components supplied by K2. Tile processing, drill hole diameter, embedment depth etc. must be carried out in accordance with the specifications of the chemical anchor manufacturer.

The structural design of the chemical anchor is not part of the structural analysis of K2. In particular, the connection to the roof for a tensile load due to wind suction must be checked and guaranteed by the project owner. The structural analysis of K2 only includes the components supplied by K2.

Sufficient water tightness must be ensured after installation of the hanger bolts. A suitable sealing measure must be properly implemented in the water-bearing layer in relation to the project specifics.

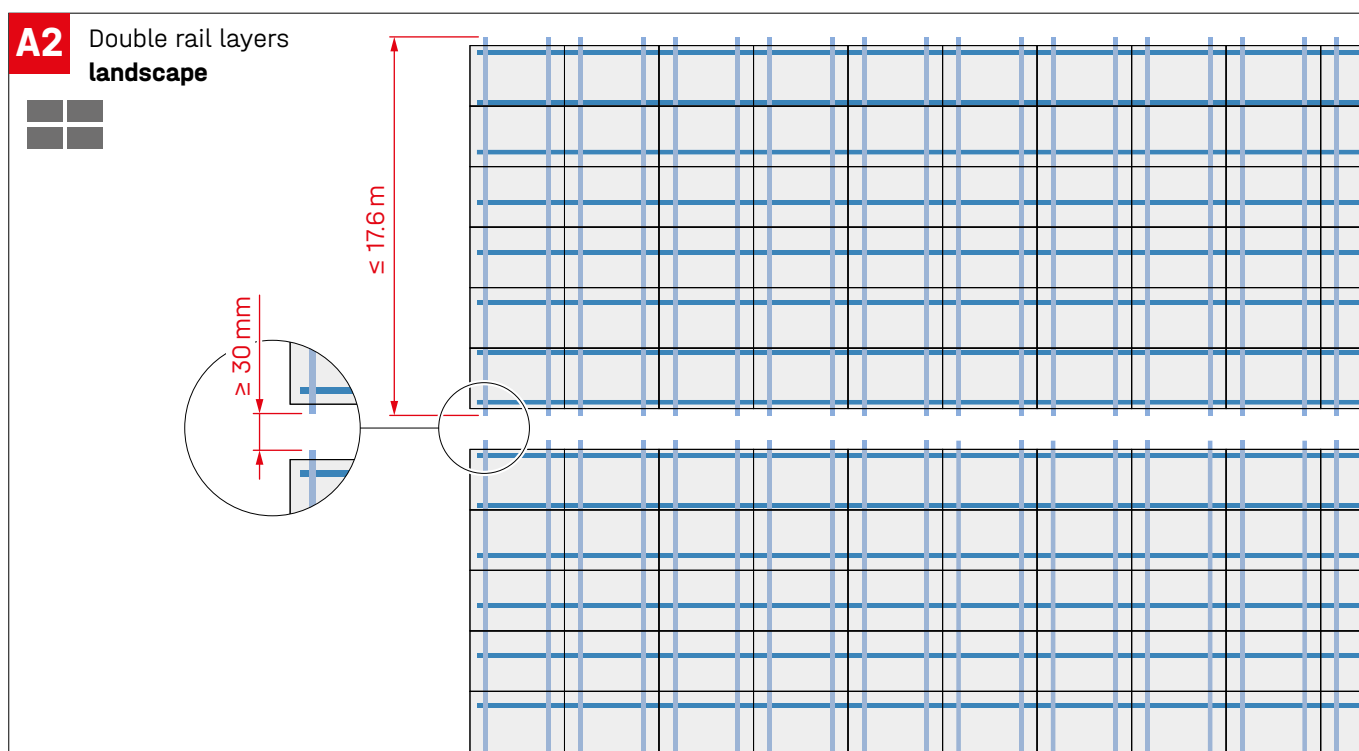
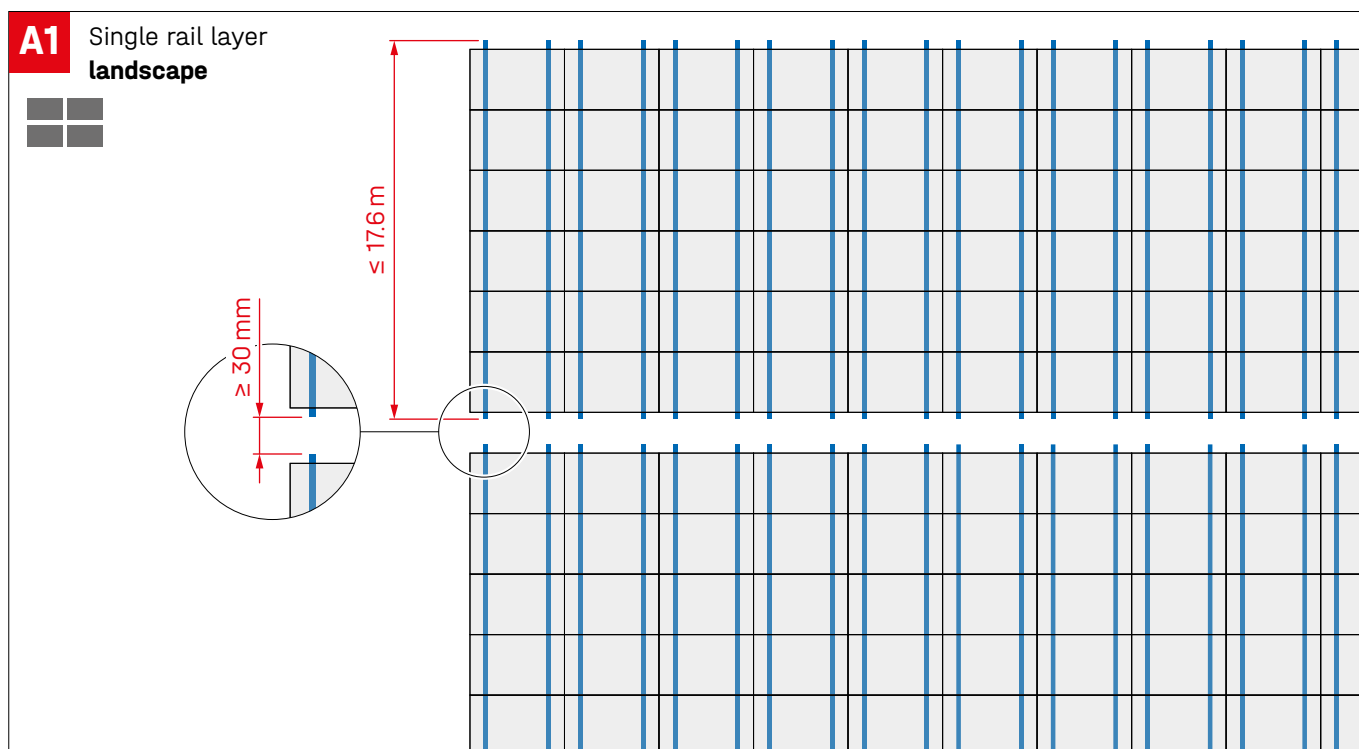
Subsequent leaks are not the responsibility of K2 if the leaks are not originally due to material defects in the components supplied by K2, but to components provided by the customer or the interaction of these components provided by the customer with the components supplied by K2.



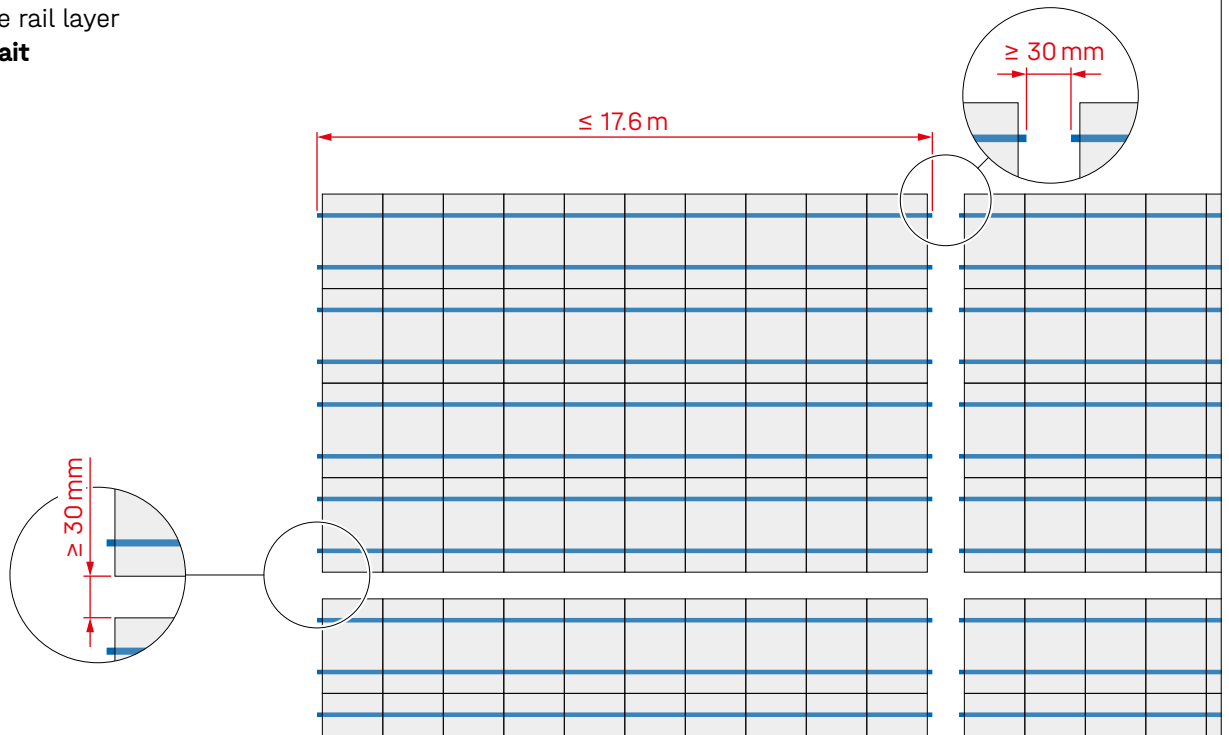
The chemical anchor (red) is inserted in a pre-drilled installation hole for the hanger bolt.

Assembly

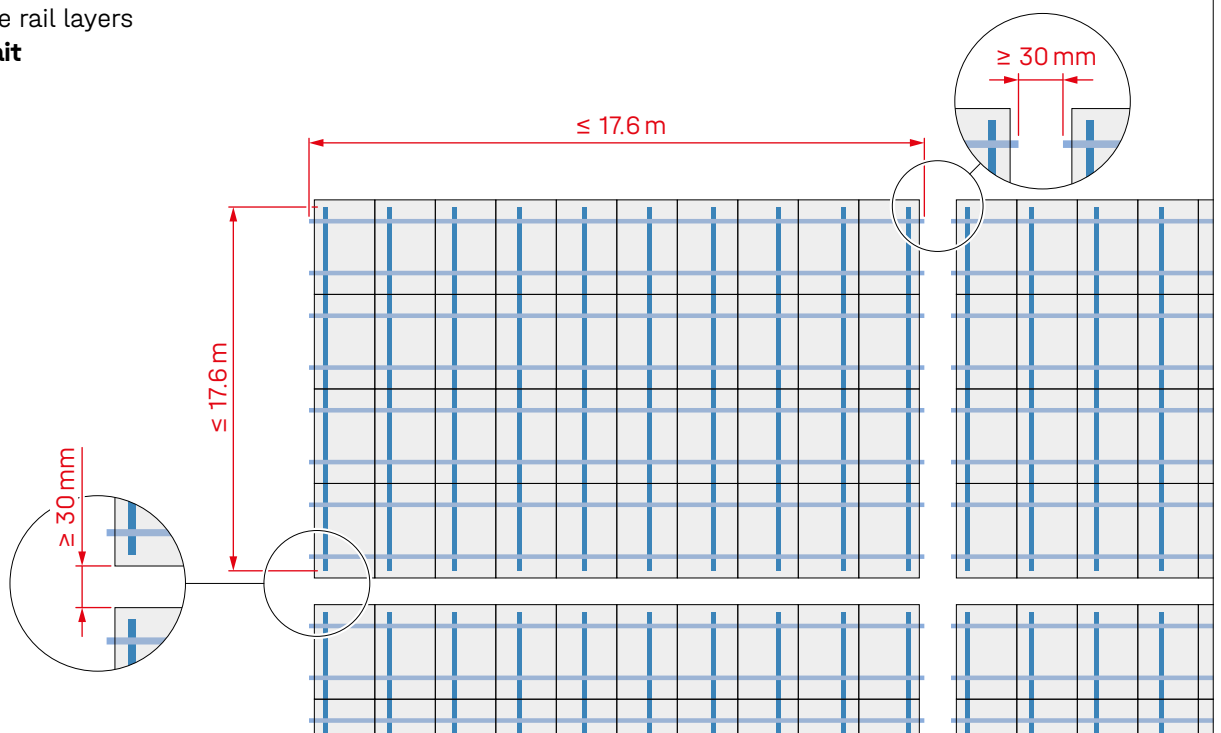
Module blocks and thermal separations



B1 Single rail layer portrait



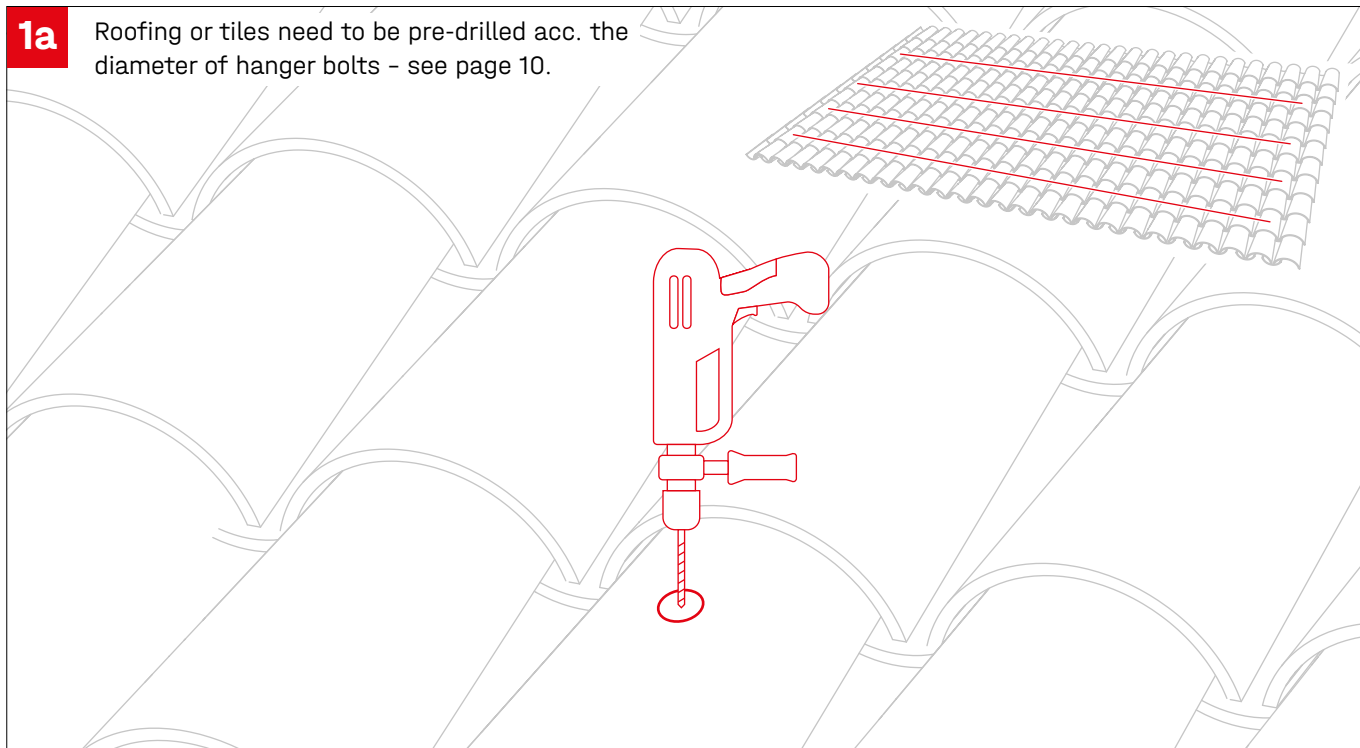
B2 Double rail layers portrait



Pre-drilling and chemical anchor

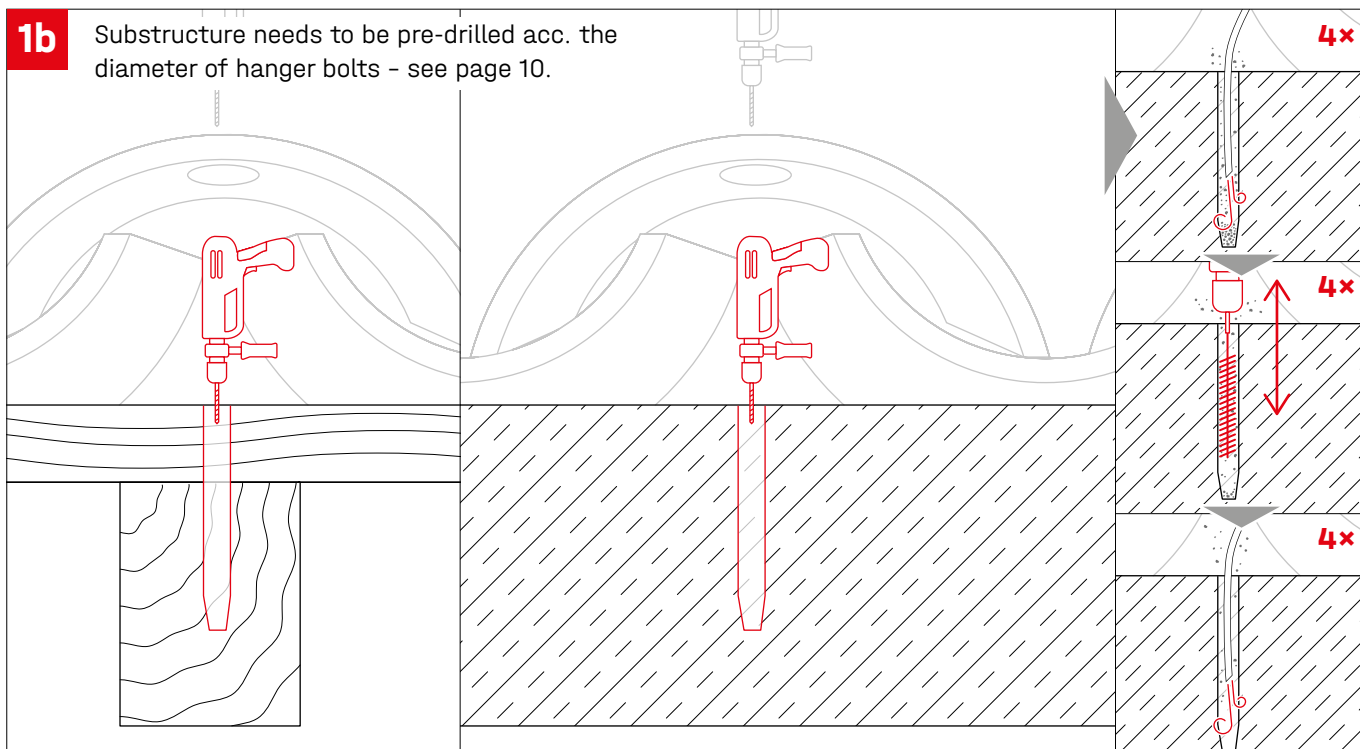
1a

Roofing or tiles need to be pre-drilled acc. the diameter of hanger bolts – see page 10.



1b

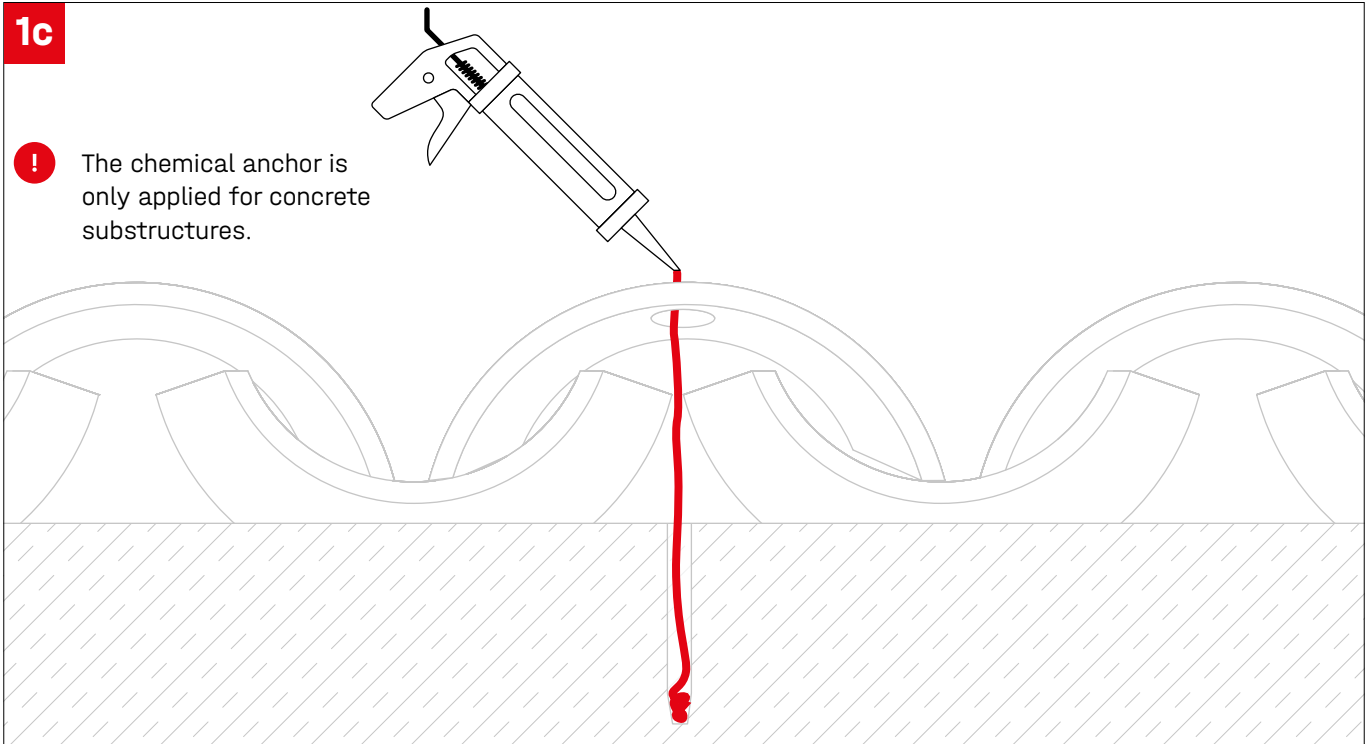
Substructure needs to be pre-drilled acc. the diameter of hanger bolts – see page 10.



1c

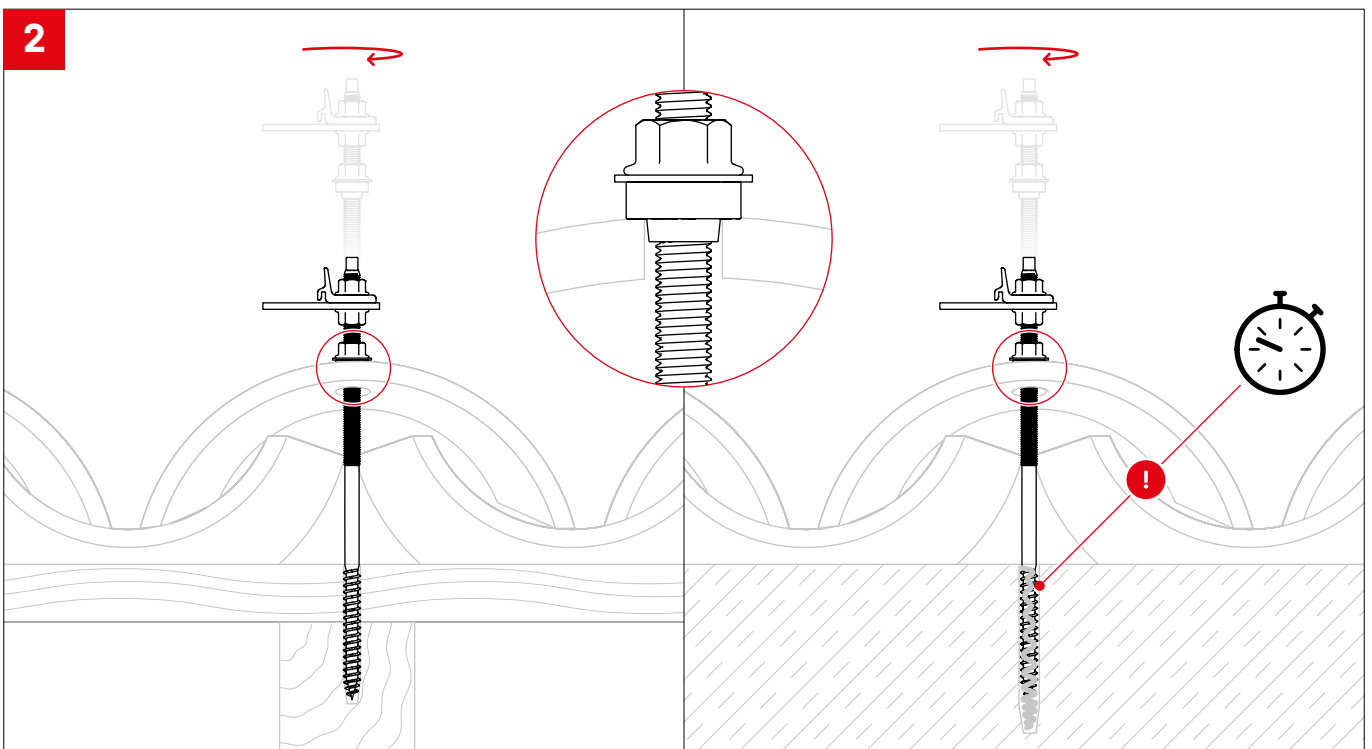


The chemical anchor is only applied for concrete substructures.

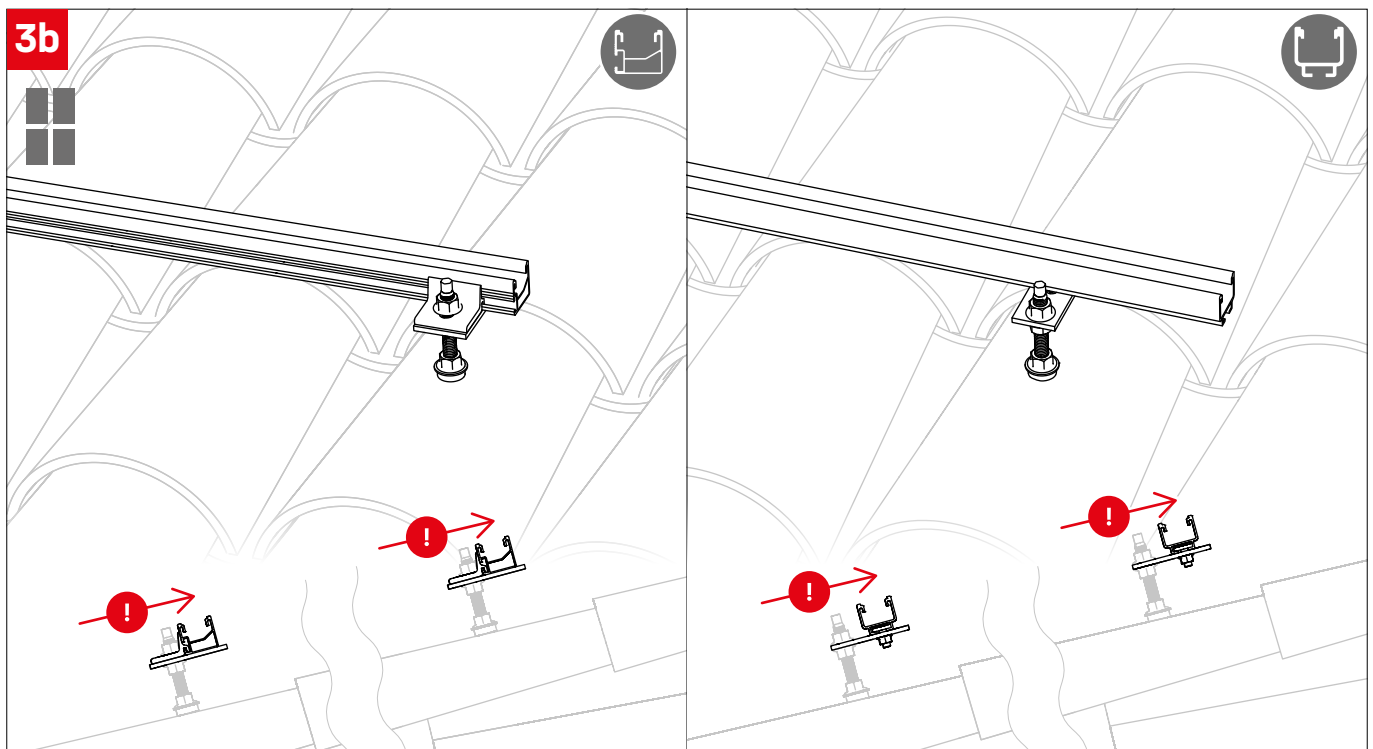
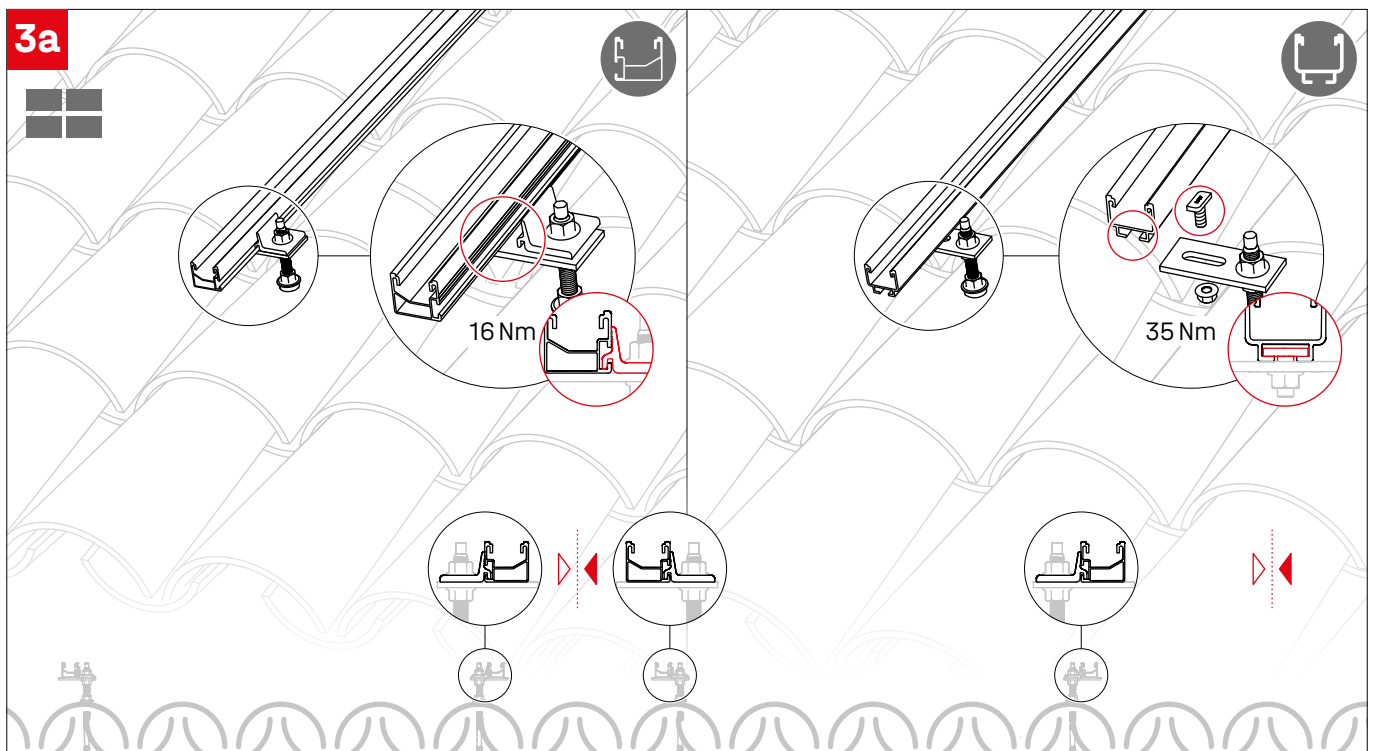


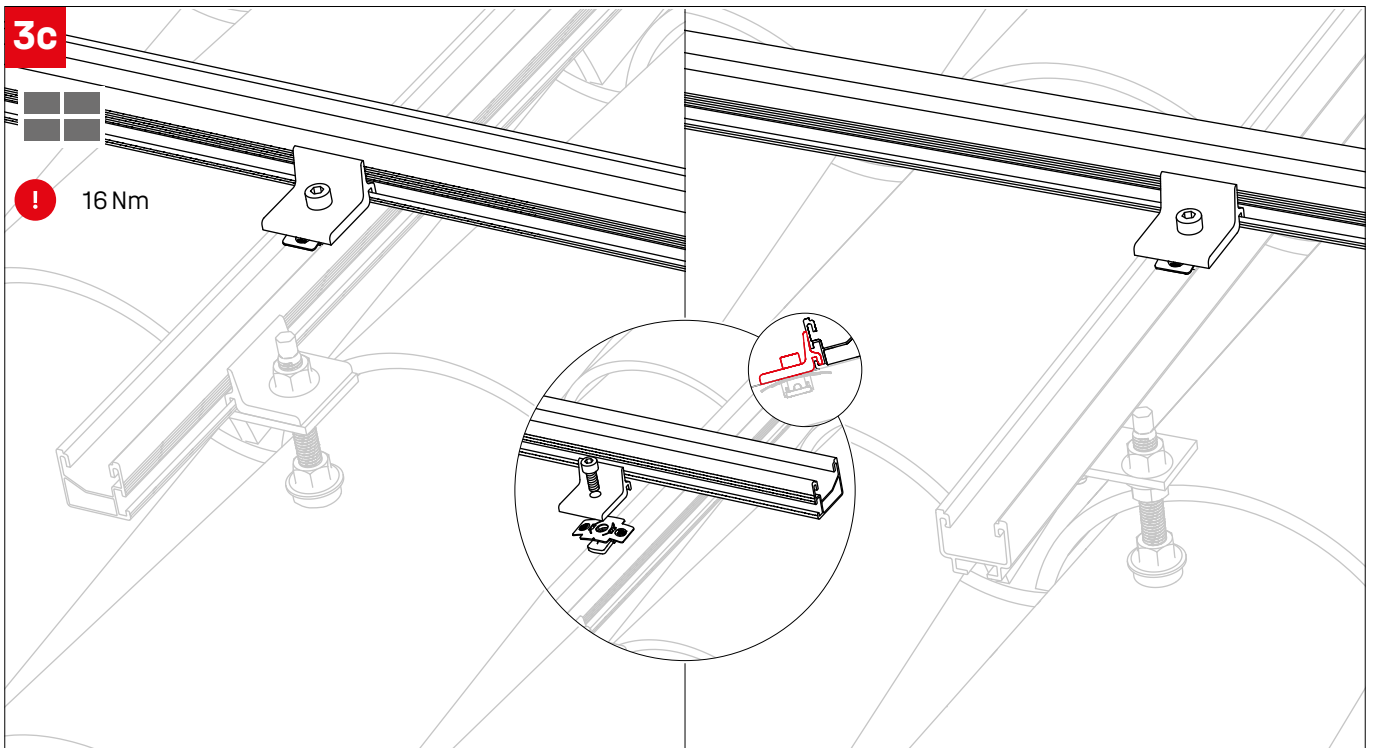
Fixation hanger bolts

2

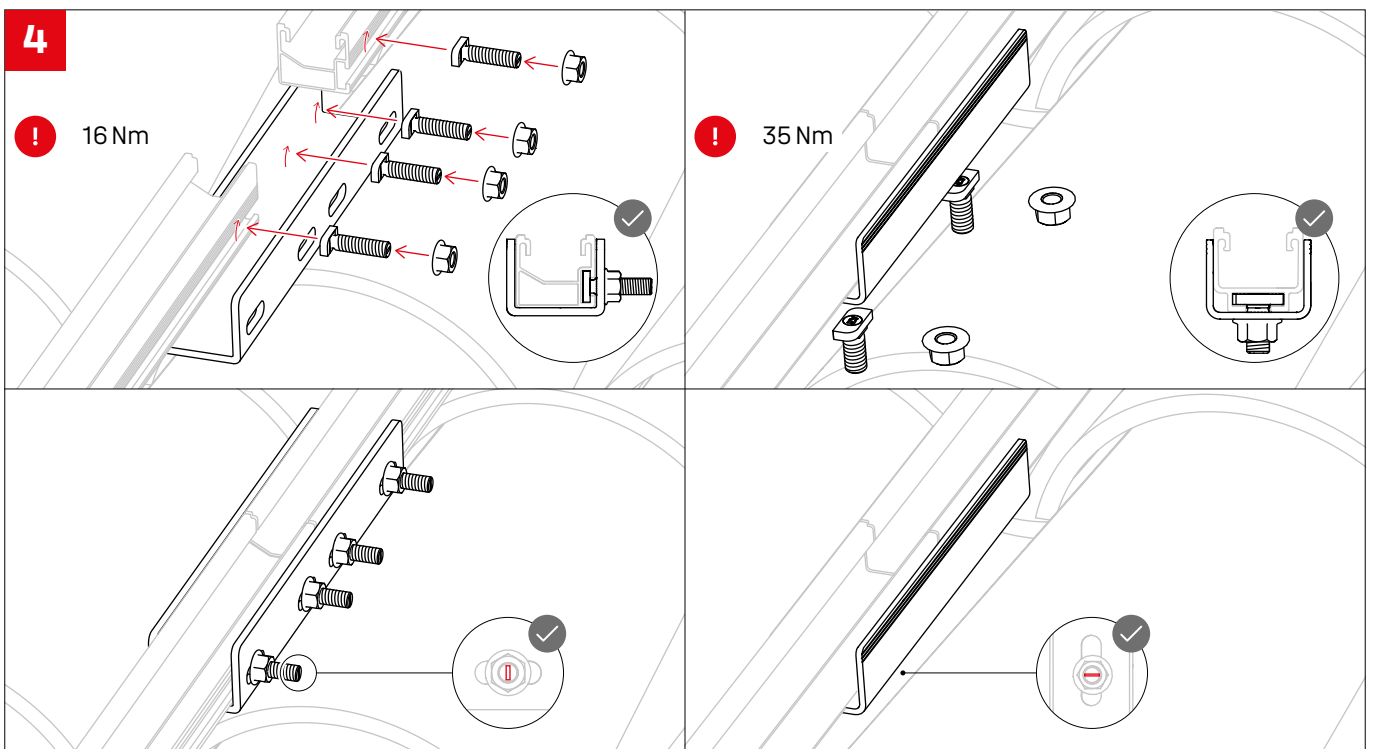


Rail connection and rail layering solutions

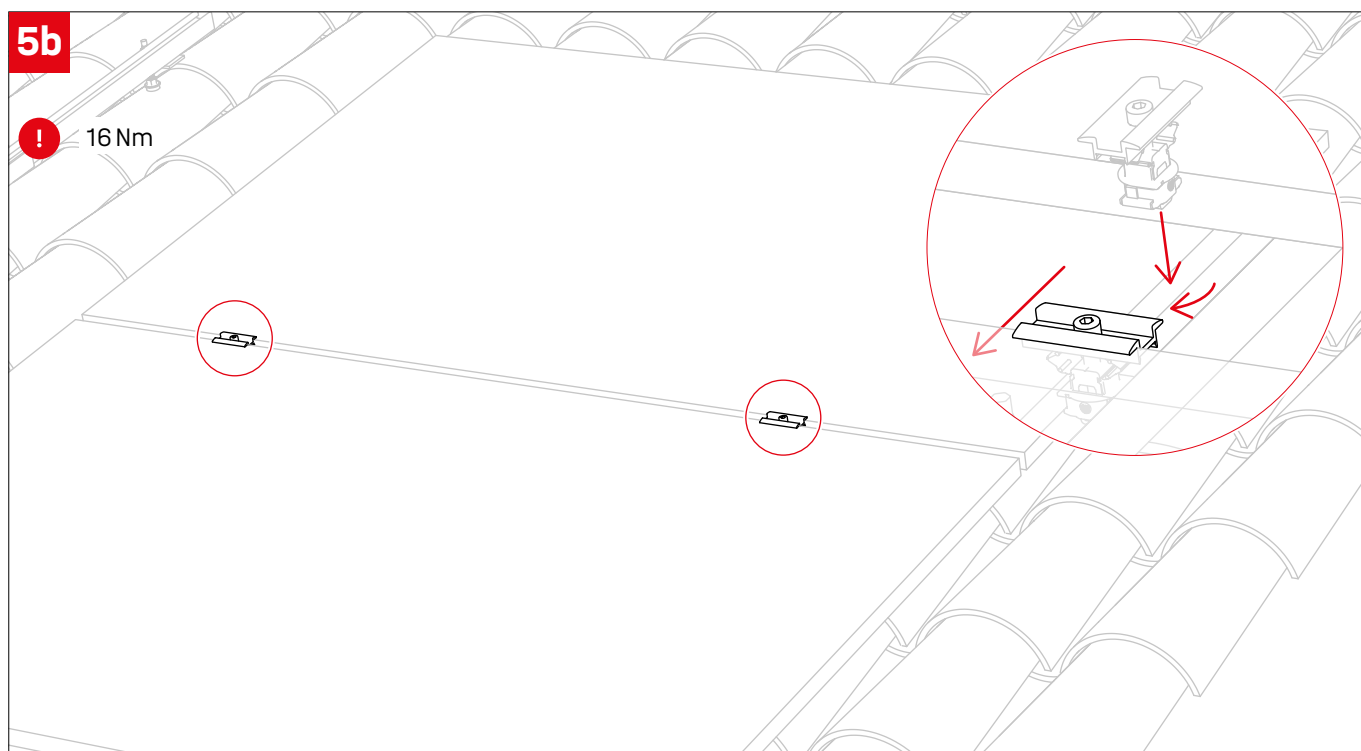
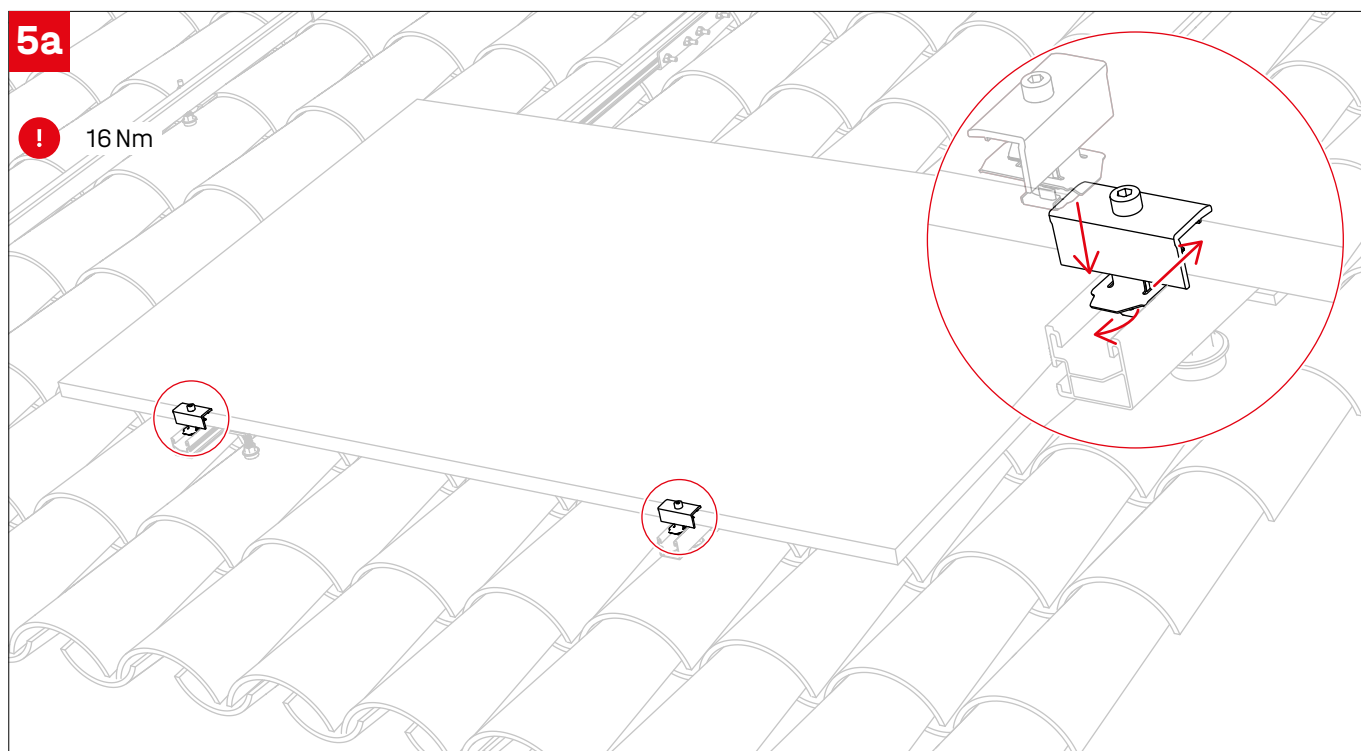




Rail connections

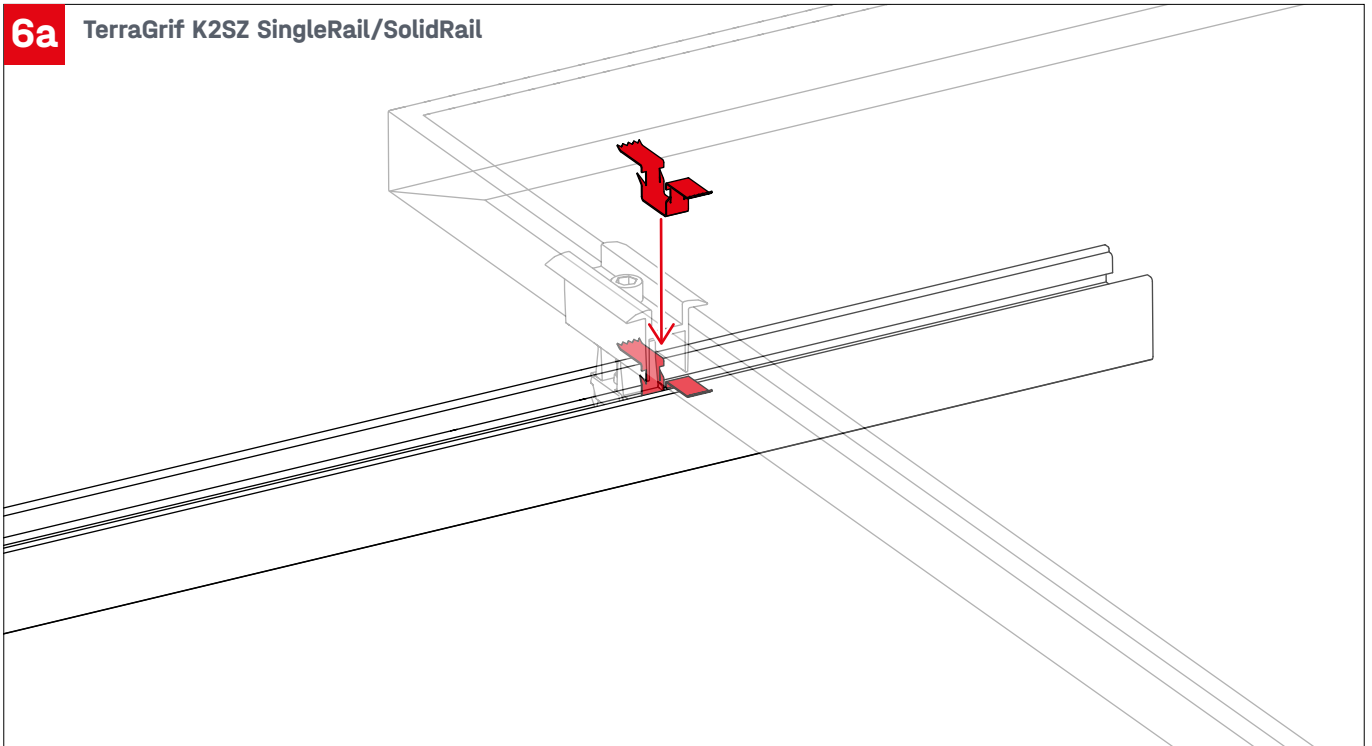


Module fixation

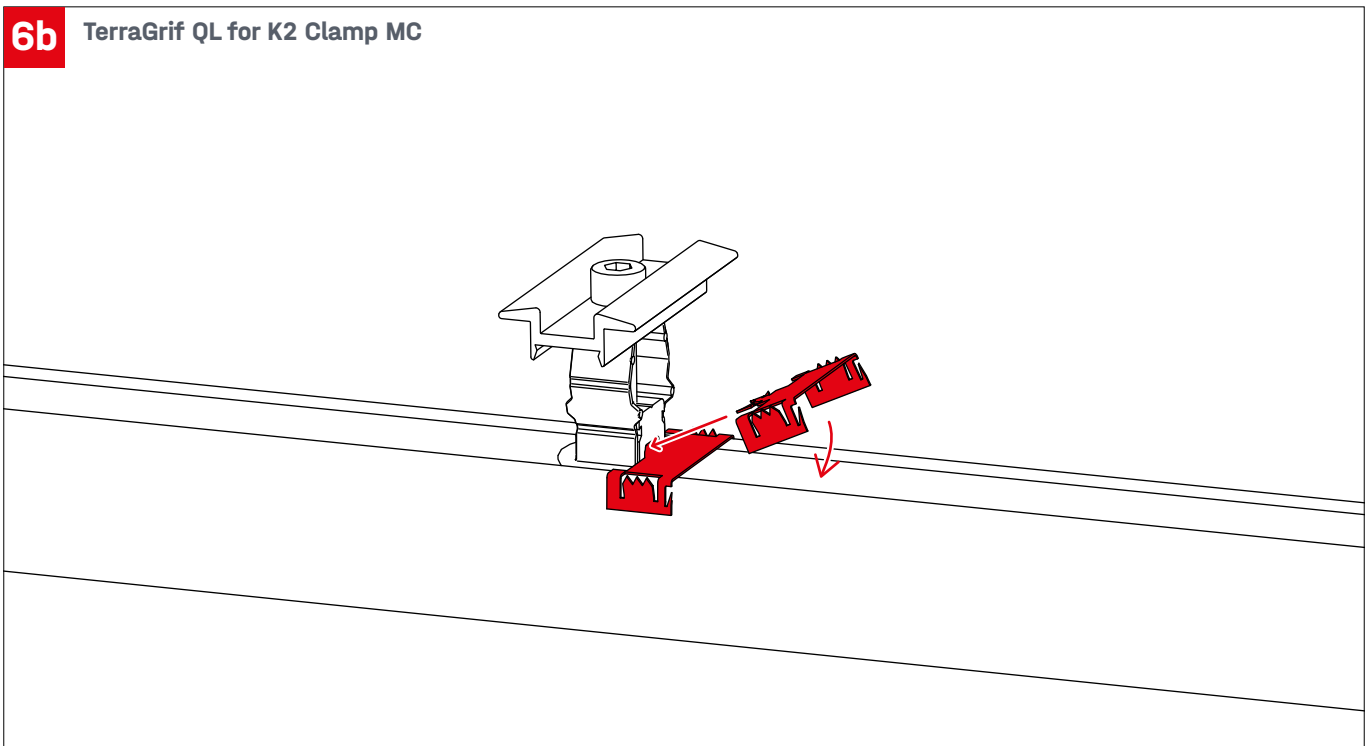


Module grounding options

6a TerraGrif K2SZ SingleRail/SolidRail



6b TerraGrif QL for K2 Clamp MC



Thank you for choosing a K2 mounting system.

Systems from K2 Systems are quick and easy to install.
We hope that these instructions have been of help to you.
Please do not hesitate to contact us if you have any suggestions,
questions or ideas for improvements. All contact details can be found
at:

- k2-systems.com/en/contact/
- **Service hotline: +49 (0)7159 420 590**

Our General Terms and Conditions of Delivery apply and can be found
at: k2-systems.com

K2 Systems GmbH

Haldenstraße 1 · 71272 Renningen · Germany
+49 (0) 7159 - 42059 - 0 · info@k2-systems.com · k2-systems.com

Hangar bolts on tiles manual EN V1 | 0825 · Subject to change without notice
Images of the products are exemplary and may differ from the original.



Connecting Strength

k2-systems.com