

# CompactMETAL

## ASSEMBLY INSTRUCTIONS

<b>COMPACTMETAL TS</b>	Short rails for direct mounting on trapezoidal metal sheets
<b>COMPACTMETAL T</b>	Bridge rails for direct mounting on trapezoidal metal sheets
<b>COMPACTMETAL T+</b>	Bridge rails with elevation for direct mounting on trapezoidal metal sheets
<b>COMPACTMETAL T1</b>	Standing seam clamps for direct mounting on standing seam metal sheet

Installation Videos:



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## Safety

### **Occupational safety on the roof and the ground:**

Occupational health and safety requirements that apply to the construction of PV systems are defined in numerous laws, directives, rules and regulations that differ nationally and regionally. An approximate list of regulations is not listed in this document.

An approximate list of regulations is not listed in this installation manual.

The operating company is responsible for ensuring that the relevant laws are applied as necessary.

The focus in this manual is the goal of accident prevention, which i.a. the following hazards and measures are covered:

Fall protection at the roof edges even at a few meters height of fall threatens to mortal danger. Therefore, crashes are to be prevented by suitable safety measures. Collective protection in the form of a sturdy railing is usually preferable to single securing with PPE harness, guide rope and lifting point on the roof, sometimes accepted as the only solution.

Breakthrough protection in the roof area, roof windows, skylights, large ventilation flaps, etc. often do not withstand the weight or impact of a person. Such objects are to be secured similarly as the roof edge. Corrugated fiber cement roofs can be breakthrough-prone in the whole area, here running paths must be defined and secured with load distribution measures.

Use of safe climbing aids only suitable, intact, and tested conductors may be used. These must be correctly set up according to technical specifications and secured at a certain height. For mechanical climbing aids (telescopic elevators), separate rules apply. Under no circumstances may the PV mounting system be used as a climbing aid.

### **Protection against electric shock:**

There is a danger from the PV system itself when modules are connected in series to form strings. Just a few modules are enough to trigger a violent electric shock, which may be harmless, but may cause the affected person to lose their balance. Longer strings deliver voltages up to 1000V (latest technology up to 1500V) that are potentially deadly. On the other hand, when working on the roof, you can quickly reach within reach of above-ground power supply lines. Here, the required safety distances must be observed, or - if this is not possible - the affected lines must be de-energized.

### **Protection against falling objects:**

Areas below the roof on which work is carried out must be protected against any falling objects. Where this fails, affected areas are to be closed to the public. The person involved in the construction project must wear protective helmets.

The operating company is responsible for ensuring that all regulations are being used and followed.

Always observe all safety regulations and ordinances. This includes checking that all accident prevention regulations in their currently valid version are complied with and that sufficient protection is provided against falling parts (e.g., health and safety regulations).

In unsuitable weather condition, work on the roof must not be continued for longer than necessary - or even taken up at all. Wet or over-frozen roof coverings are slippery, which significantly increases the risk of an accident. Strong wind prevails v.a. tremendous forces on the large-area PV modules, with the likelihood that a module will be torn from the roof, and people may come to harm.



It is important that you install person-independent fall arrest systems or reception system according to Norm in your Country prior to the start of work! Occupational Safety Regulation for Construction Workers and country specific regulations must be followed!!



If person-independent fall arrest systems or reception systems are not available for work-related reasons then safety harnesses must be used!



Use only safety harnesses (harnesses and catching belts, connecting ropes/belts, fall absorber, rope cutter) marked and tested by authorized testing laboratories.



If person-independent fall arrest systems or reception systems are not available and safety harnesses are not used, it can result in falls from great heights and therefore to severe or deadly injuries!



Leaning ladders can cause dangerous falls, if the ladder caves in, slips, or falls over!



Work in close proximity of live, electrical overhead power lines, with which you can come in contact, only if - power is turned off and that condition is guaranteed for the time of the work - the parts under power are protected through covers or barriers. - the safety distances are not too short.

Radius of voltage:

1 m in 1,000 Volt of voltage

3 m in 1,000 to 11,000 Volts of voltage

4 m in 11,000 to 22,000 Volts of voltage

5 m in 22,000 to 38,000 Volts of voltage

> 5 m if the voltage is unknown



The manufacturer hereby agrees to take back for recycling all products that are marked with the eco-label as well as all materials used herein. Only the approved heat transfer medium may be used!



If at all possible, the safety harness must be fastened above the user. Fasten safety harnesses only on building elements or fastening points that can carry the load!



Do not use defective ladders, e.g. cracked steps and rails of wooden ladders, bent and kinked metal ladders. Do not fix partially broken steps, rails and braces!



Safely place a leaning ladder. Make sure the installation angle is correct (68° - 75°). Secure leaning ladders against sliding, falling, slipping and sinking e.g. by using enlarged bases, feet braces of ladders that are adapted to the ground, fastening devices.



Lean ladders only against secure support points. Secure ladders in traffic areas with barriers.



Touching live electrical overhead lines can result in death.



Wear safety goggles when drilling!



Wear safety shoes for the installation!



Wear cut-proof work gloves when installing the collectors!

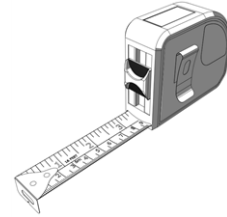


Wear a helmet during installation!

## Required tools

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Metal tape measure



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Chalk line



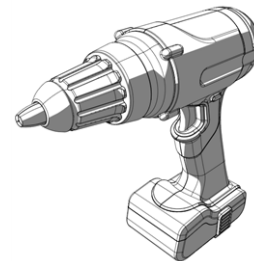
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hex-wrench



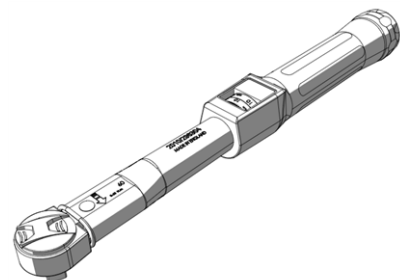
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Cordless screwdriver



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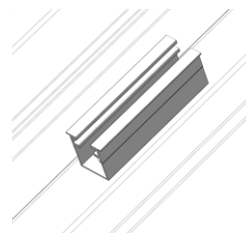
Dynamometric key / Torque spanner



# Overview of components and product benefits

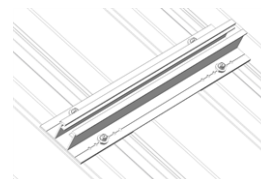
## TS - short rails made of extruded aluminum

- Pre-assembled, to be fixed on trapezoidal sheet (steel from 0.4 mm, aluminum from 0.5 mm)
- Module assembly horizontal, roof-parallel



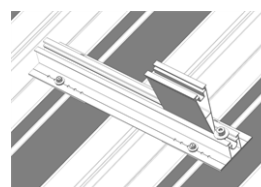
## TS-RAIL -400mm (~16") rail made of extruded aluminum,

- Pre-assembled, to be fixed on trapezoidal sheet (steel from 0.4 mm, aluminum from 0.5 mm)
- Module mounting vertically, roof-parallel



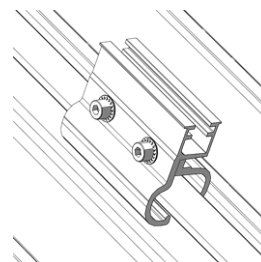
## T + trapezoidal elevated rail made of extruded aluminum,

- Pre-assembled, to be fixed on trapezoidal sheet (steel from 0.4 mm, aluminum from 0.5 mm)
- Module assembly vertical, slightly elevated



## T1- universal clamps made of extruded aluminum,

- Pre-assembled, to be fixed on folded standing seam sheets (various shapes and types)
- Module assembly horizontal, roof-parallel

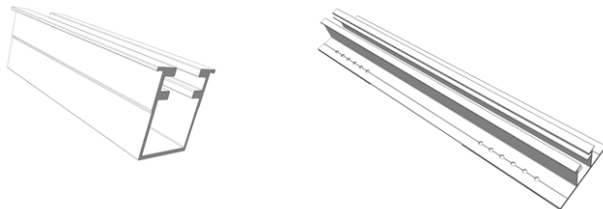


## BENEFITS

- Material-saving and easy to transport (without long rails)
- Compatible with all common modules (frame height 30-50 mm)
- Can be used in any load situation (actions according to ASCE or EN)
- Flexible in system design (roof-parallel or slightly elevated)
- Quick and easy to process (only small parts, pre-assembled)
- Made of aluminum and stainless steel (corrosion-resistant, recyclable)
- Numerous expansion options (by building rails)

## Components

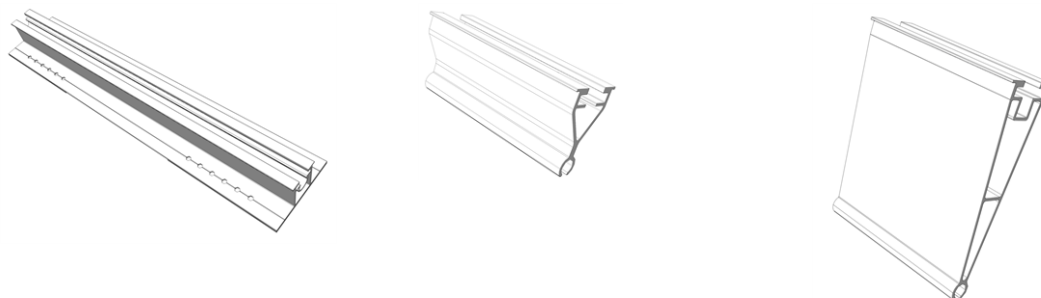
**For both landscape and portrait installation on trapezoidal sheet metal:**



TS trapezoidal short rail TS-RAIL trapezoidal rail, length 250/400 mm (802442)

TS-RAIL trapezoidal rail, length 250/400 mm, (802441), (802440)

**For both landscape and portrait elevated mounting on trapezoidal sheet metal:**

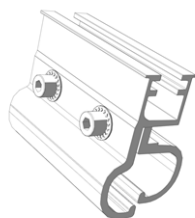


T + trapezoidal rail, 250/400 mm T + low side 5-7° / 8-13° T + high side (802452/802445)

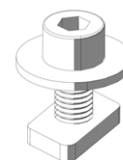
T + low side , (802446 /802444)

5-7° / 8-13° T + high side (802447 / 802443)

**For landscape only installation on standing seam sheet metal: Accessories:**



T1 Universal Clamp (824001)

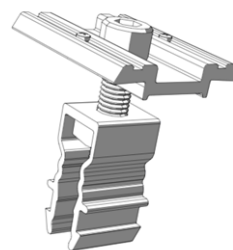
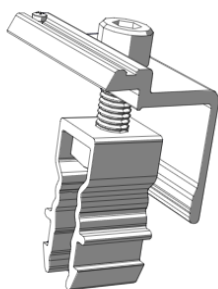


Security Bolt for T+ (802448)

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### Module clamps with click base and pin, aluminum

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End Clamp 30-50 mm (830304-30CP bis -50CP)

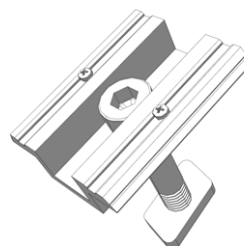
Mid Clamp 30-50 mm (830301-30-40CP / -41-50CP)  
Aluminum

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### Module clamps with threaded plate with grounding pins, aluminum

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End Clamp 30-50 mm (830304-30VP to -50VP)

Mid Clamp 30-50 mm (830301-30-40VP / -41-50VP)  
including pin

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### Other accessories options:

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Cable tie with clip (800706) to be fixed on the  
module frame

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## System Description

Direct roof connection and module carrier in one component.

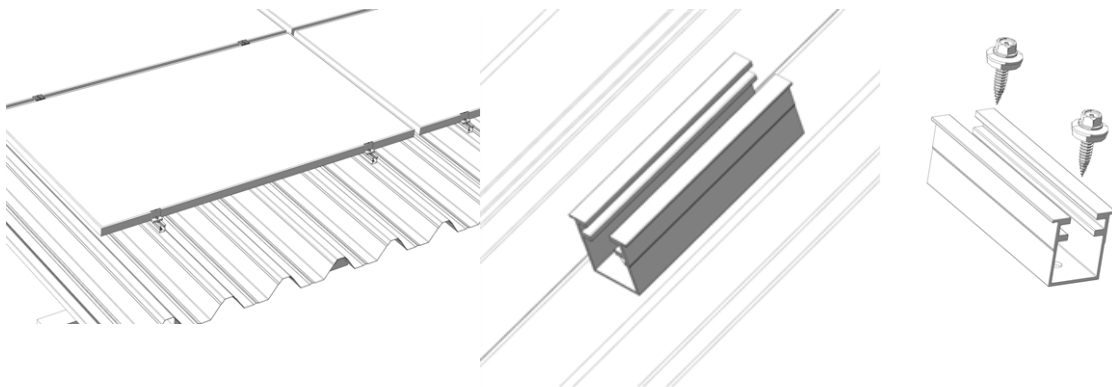
For pitched roofs with trapezoidal sheet metal and standing seam sheet metal, the CompactMetal system offers suitable fasteners that connect directly to the existing roofing.

On the trapezoidal sheet rails, a sealing membrane made of EPDM rubber is pre-assembled on the underside. A washer with welded-on EPDM gasket is pre-mounted on the sheetmetal screws.

## Parts Breakdown:

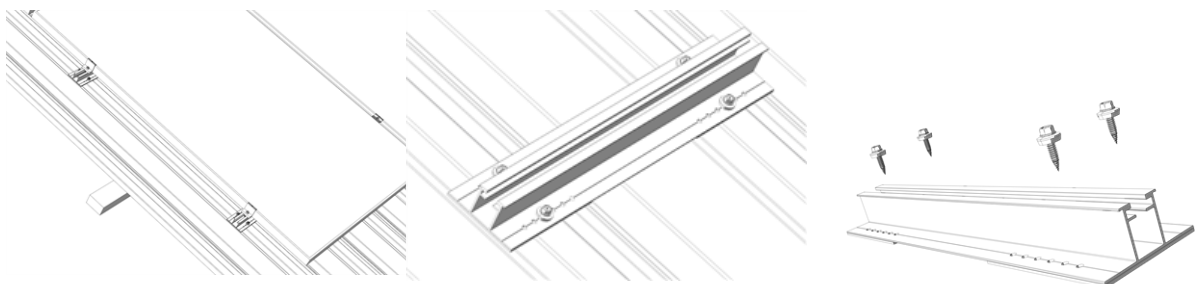
### 1. Trapezoidal sheet with TS short rail, modules in landscape

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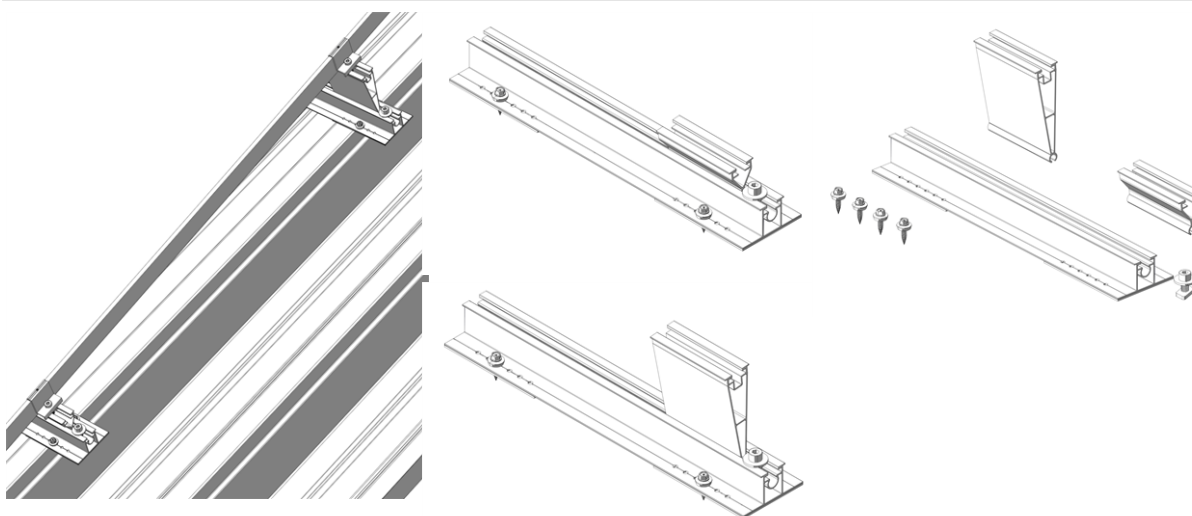
### 2. Trapezoidal sheet with T bridge, modules in either portrait or landscape

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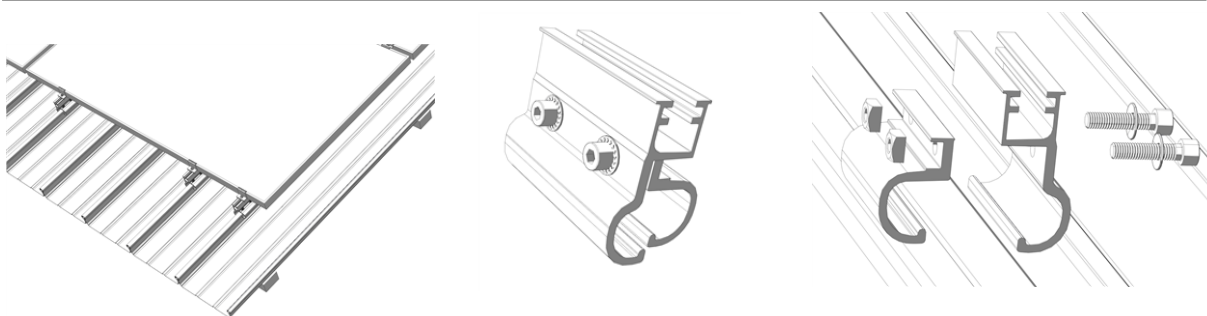
### 3. Trapezoidal sheet metal with T + bridge, modules raised by 5-7 °, portrait or landscape

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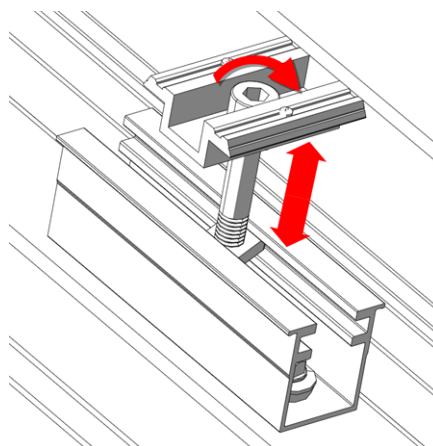
### 4. Standing seam sheet metal with T1 clamp, modules in landscape

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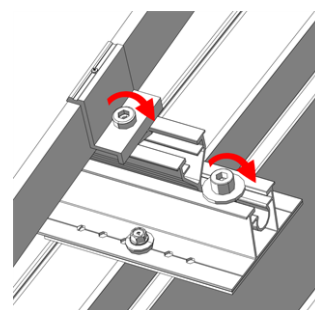
## Module clamps

Height-adjustable middle clamps and frame depth specific end clamps for virtually any module frame height between **30 to 50 mm** allow manufacturer-compliant installation of all standard PV modules.



PLEASE MAINTAIN THE FOLLOWING TORQUES WHEN INSTALLING SCREWS:

**133 lbf (15Nm) in M8 screw (fixa-  
tion of module clamps and acces-  
sories)**

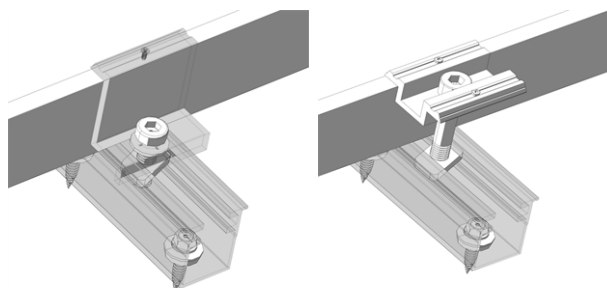
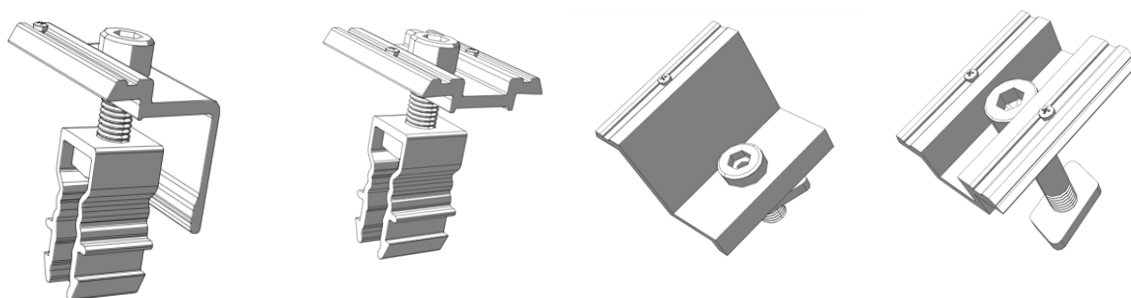


## Select the product under the following criteria:

Most PV modules on the market may be mounted with these clamps without any special restrictions. However, some manufacturers make particular demands, e.g., in terms of length and support width or contact surface of the clamps.

**Module clamps with threaded plate or with click base and with grounding pins.**

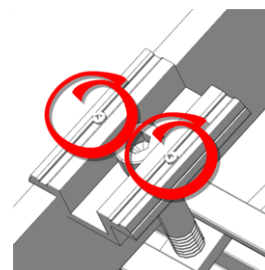
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## The function of the grounding pins

Equipotential bonding between system components and, if necessary, grounding of the mounting system must be ensured according to the country-specific rules. In addition, the grounding of the module frames is required by the manufacturer for some PV modules.

The grounding pins in the Aerocompact module clamps support both by ensuring a permanent electrically conductive connection between the module frame and the roof connection.



## Assembly of modules with module clamps:

### General information:

- Lay and secure the string leads before mounting the module, and string the modules into place during installation, as long as there is no risk of electric shock.
- The plugging of the module clamps near the scheduled end position can facilitate the assembly.
- Start module mounting on the left or right top corner of the module box and work from top to bottom and bottom (never from bottom to top) so you can always stand below or next to the modules and not need to enter the modules. For horizontal module rows, you can also measure the middle module precisely and work in 2 teams to the right and left.
- Provide anti-slip devices for the launched but not yet attached modules. On horizontal rails, the small screws may be in the mounting holes of the module frame. On vertical rails, you can connect module terminals loosely.
- Make sure that the module frame rests on at least 20 mm length of the profile piece (T, TS, T1, T + attachments). If the module manufacturer demands more contact surface, more work must be done.
- Take special care when aligning the modules of the first row (horizontal or vertical) so that you can continue the module field without making any corrections.
- Use the middle clamps as spacers when aligning one row with the previous one.
- Fixing the module clamps with threaded plate:
- Place the module clamp on the module rail so that the threaded plate is longitudinal to the groove.
- Turn the screw (with the threaded plate) clockwise until the threaded plate sits transversely in the slot.
- Place the module clamp tightly (max 1 mm gap) on the module frame and recheck the threaded plate.
- Check the alignment of the module and tighten the screw with a tightening torque of 15 Nm or 11 ft-lbs.

### Warning



Don't leave the construction site before the modules are tightened and all the required ballast blocks are placed according the project report. Without installation of the ballast blocks the stability of the module array is not guaranteed. The correct position of the ballast blocks and building protection pads must be checked at the annual maintenance inspection. It is the responsibility of the installer to check the required ballast block specification and weight.

## Fixing the module clamps with click :

- Press the insert into the groove of the module rail in such a way that the click mechanism clicks into place.
- audibly and noticeably.
- Place the module clamp tightly (max 1 mm gap) on the module frame and check again for tightness.
- Check the alignment of the module and tighten the screw with a tightening torque of 15 Nm.

### Module mounting on a trapezoidal rail:

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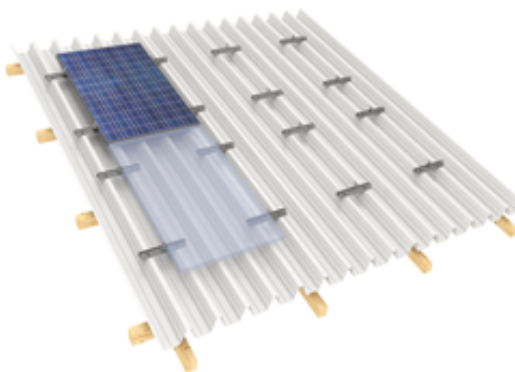
Fix the first module on the left or top right with two terminating clamps.

Loosely place two middle clamps on the other side of the frame into the module rails.

Place the second module next to the first one and fix the middle clamps in between.

Please continue to the last module in the series and fix it with two terminating clamps.

Mount the second row in the same way in parallel (spacers!) Under the first row.



### Module mounting on short rails and standing seam clamps:

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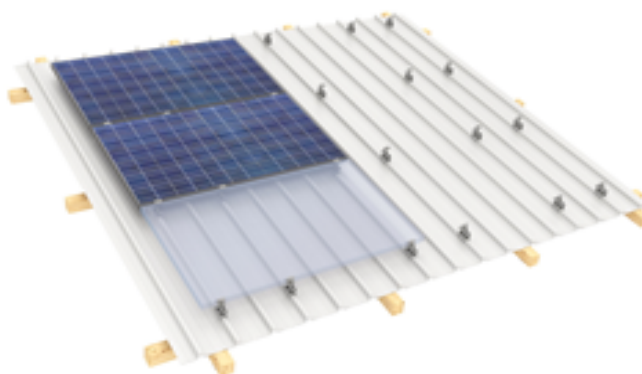
Fix the first module on the top left or top right with two terminating clamps.

Loosely place two middle clamps on the lower side of the frame into the module rails.

Place the second module under the first one and fix the middle clamps in between.

Please continue to the bottom module of the row and fix it with two terminating clamps.

Mount the second row in the same way in parallel (spacers!) Next to the first row

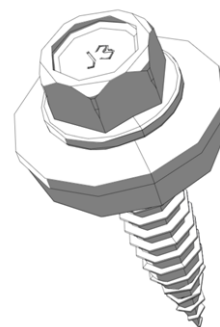


## Instructions for thin sheet metal screws

The screws are made of stainless steel, which does not react magnetically. From conventional bits - even with magnetic insert - the screws fall out easily. Use individual retaining bits (available upon request).

Center each screw with the tip into the hole in the rail base and slowly turn it in. Depending on the material (steel, aluminum, plate thickness), you have to press hard until the tip penetrates. Then immediately reduce contact force and speed and continue to screw until the rail base rests on the roof and resistance occurs.

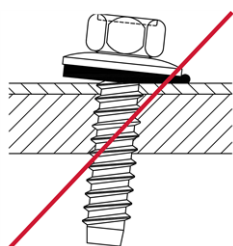
Once all the screws on the components have been screwed in, check the exact alignment, and then tighten the screws one after the other as follows:



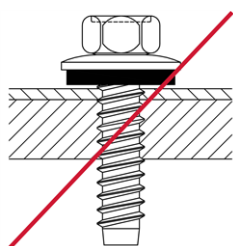
Screw slowly, in a controlled manner and with low torque, to avoid over-tightening of the screw or damage of the sheet.

Only screw in the screws so that the EPDM sheet under the rail is compressed to about half the original thickness.

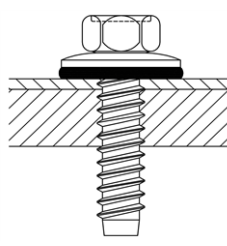
Further rotation does not increase the strength of the connection, but only the risk of failure.



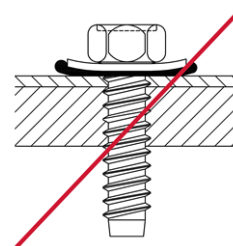
wrong



wrong



right



wrong

## Certificate of Compliance screw manufacturer



### Certificate of Compliance

This certificate is issued for the following:

JZ3-6,3xL; JT3-6-5,5xL; JT3-6-6,3xL; JZ1-6,3xL; JZ7-6,3xL; JT2-6-5,5xL; JT3-18-5,5xL; JT3-12-5,5xL; JT3-D-6H-5,5/6,3xL; JT3-D-12H-5,5/6,3xL; JF3-2H-4,8xL; JT3-2H-4,8xL; JT3-FR-2H-4,8xL; JT3-2H-Plus-5,5xL; JT3-FR-2H-Plus-5,5xL; JF3-2-5,5xL; JF3-FR-2-5,5xL; JT3-2-6,3xL; AND JT2-2H-6,3xL STEEL DECK FASTENERS (CLASS 4451); JT3-X-2-6,0xL; JF3-2-5,5xL; JT3-2H-4,8xL; AND JT2-6-5,5xL STEEL DECK FASTENERS (CLASS 4471)

**Prepared for:**

EJOT Baubefestigungen GmbH  
In der Stockwiese 35  
Bad Laasphe, 57334  
Germany

FM Approvals Class: 4451, 4471

Approval Identification: 3051208

Approval Granted: 12/19/2014

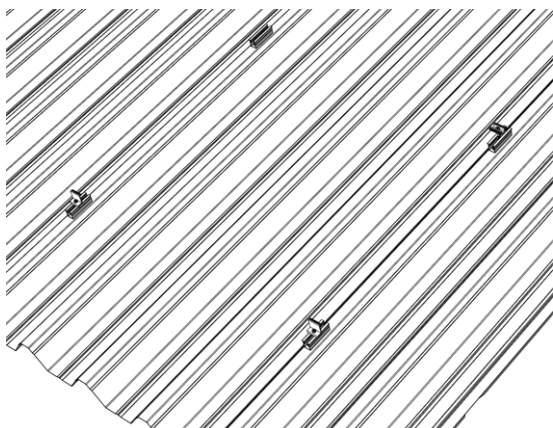
To verify the availability of the Approved product, please refer to [www.roofnav.com](http://www.roofnav.com)

Said Approval is subject to satisfactory field performance, continuing Surveillance Audits, and strict conformity to the constructions as shown in RoofNav, an online resource of FM Approvals.

Cynthia Frank  
AVP - Manager of Materials  
FM Approvals  
1151 Boston-Providence Turnpike  
Norwood, MA 02062

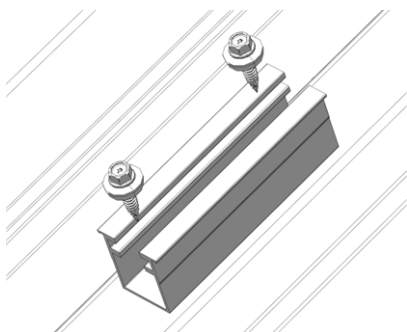


## Installing TS short rails on trapezoidal sheet



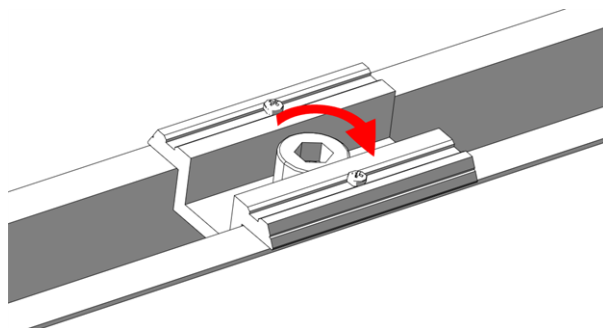
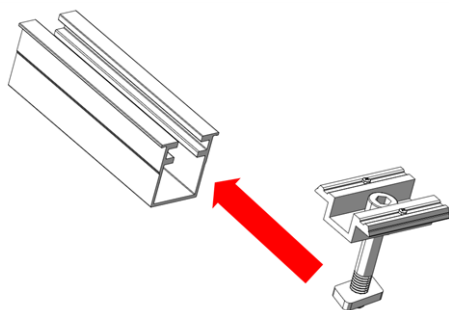
Take the positions of the short rails on the roof from the assembly plan and mark at least one horizontal row on the roof with a tape measure and chalk line.

Start on either the top left or top right with the assembly. Position the shims longitudinally along the center of the beading of the trapezoidal sheet at the marked points and fix them with 2 screws as per the instructions above.



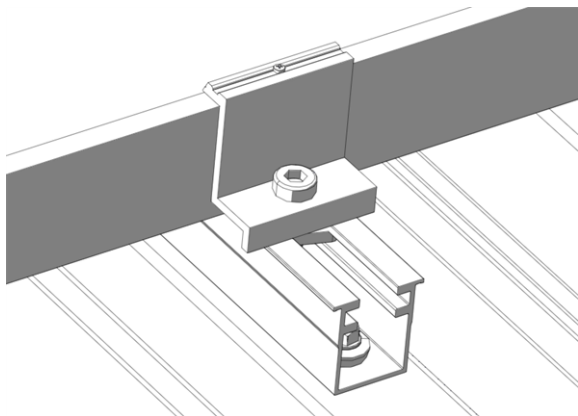
Mark further rows with spacer / gauge / measuring tape and chalk line (jump dimension = module width + 0.79 inch, modules crosswise).

Screw all short rails on the roof surface according to the instructions above.

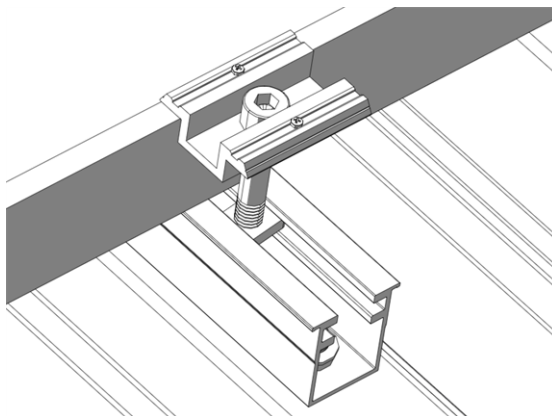


PLEASE MAINTAIN THE FOLLOWING TORQUES WHEN INSTALLING SCREWS:

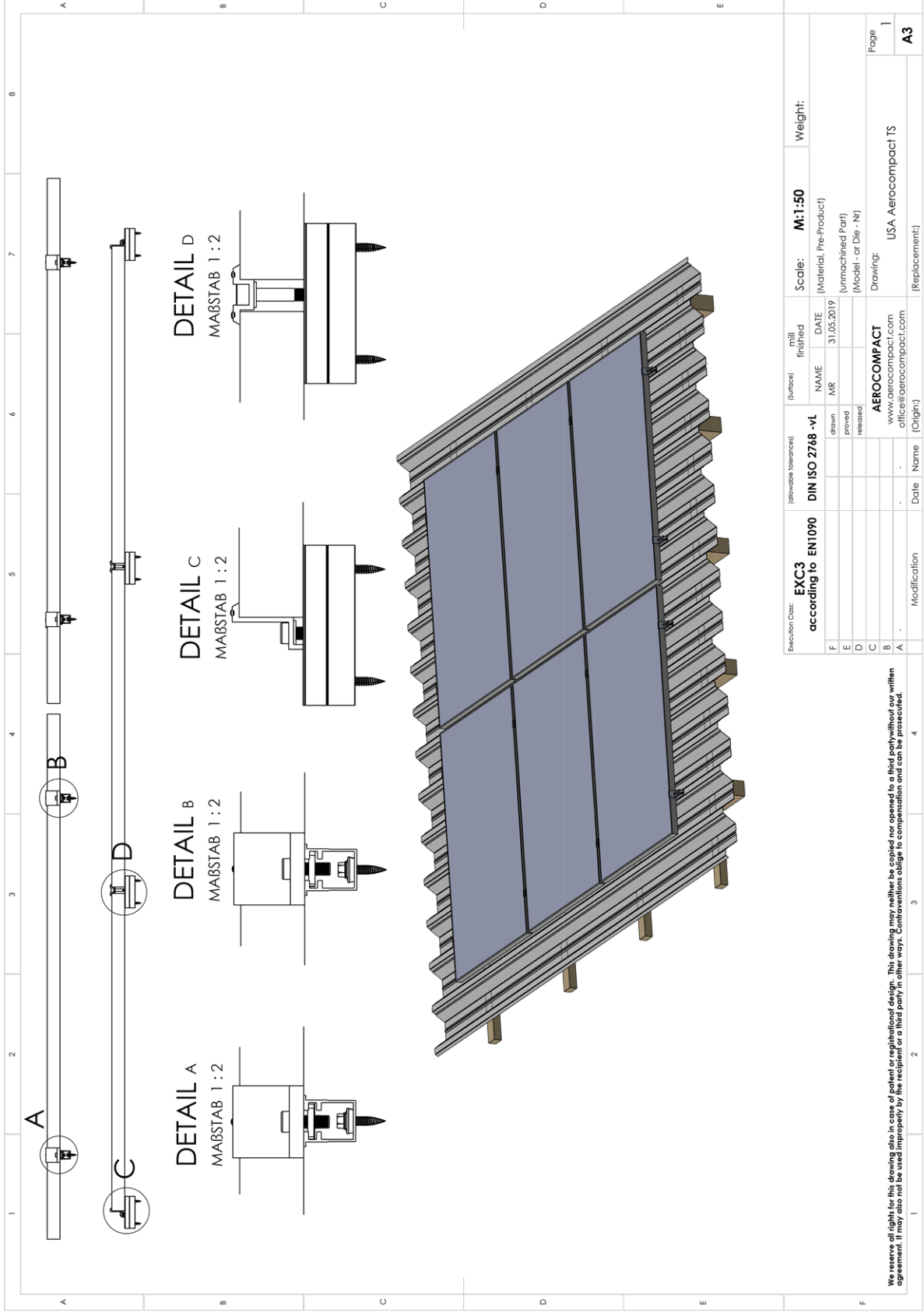
**133 lbf (15Nm) in M8 screw  
(fixation of module clamps  
and accessories)**



Final Situation (End-clamp).

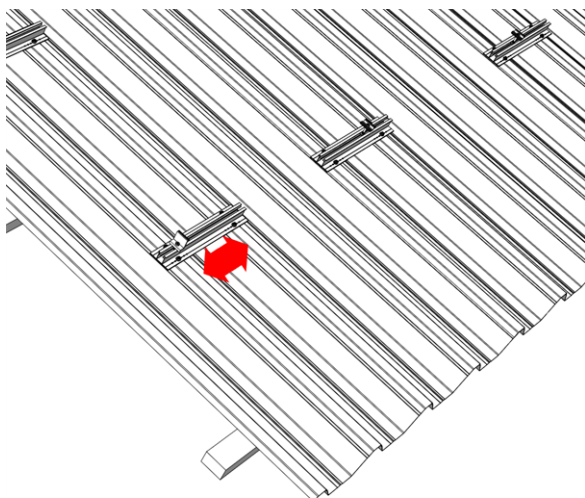


Final Situation (Mid-clamp).



Execution Class: <b>EXC3</b> according to <b>EN1090</b>		(allowable tolerances)		mill finished		Scale: <b>M:1:50</b> (Material, Pre-Product)		Weight:	
F		drawn		NAME		DATE			
E		checked		MR		31.05.2019			
D		approved							
C		revised							
B									
A									
		Modification		Date		Name		Drawing: <b>AEROCOMPACT</b> USA AeroCompact TS	
								Replacement:	
								Page <b>1</b>	
								A3	

## Installing T-rail on trapezoidal sheet metal

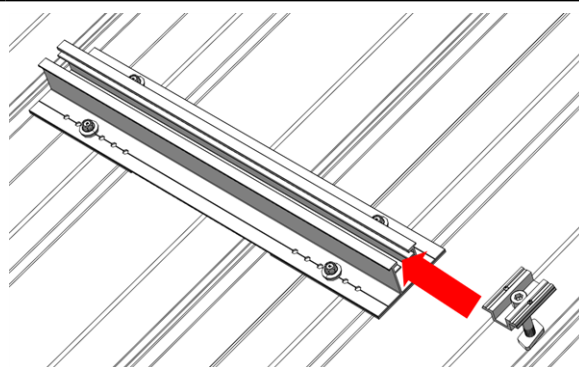
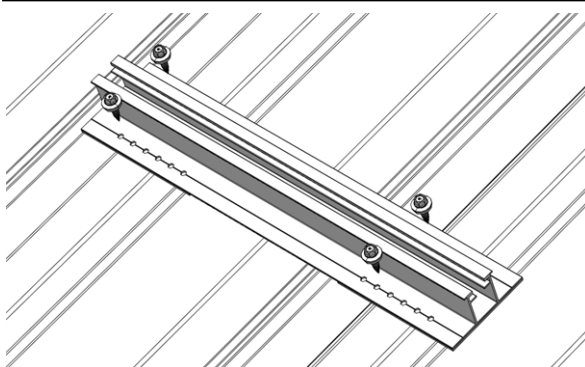


Take the positions of the T-rail on the roof from the mounting plan and mark them on the roof.

Start on the left or top right with the assembly. Place the rail at the marked points approximately in the middle over two beads and fix them with 4 screws each according to the instructions above.

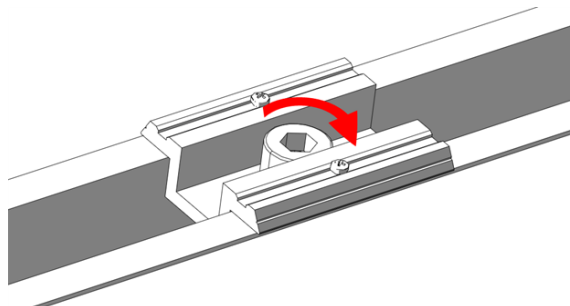
Select the holes for the screws as close as possible to the center of the bead.

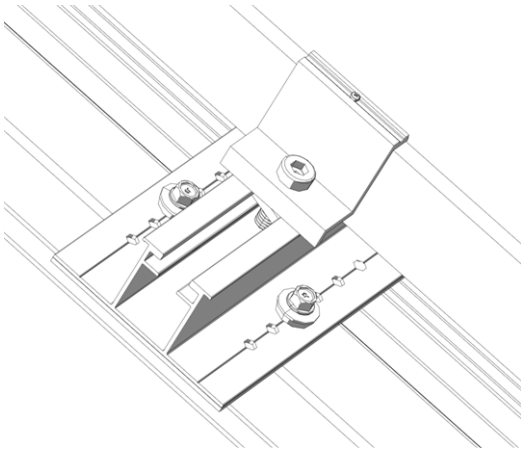
Screw all short rails on the roof surface according to the instructions above.



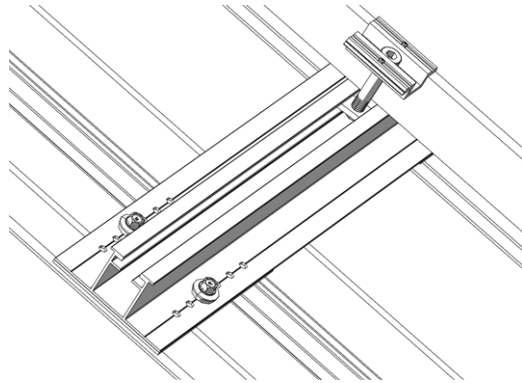
PLEASE MAINTAIN THE FOLLOWING  
TORQUES WHEN INSTALLING SCREWS:

**133 lbf (15Nm) in M8 screw  
(fixation of module clamps  
and accessories)**

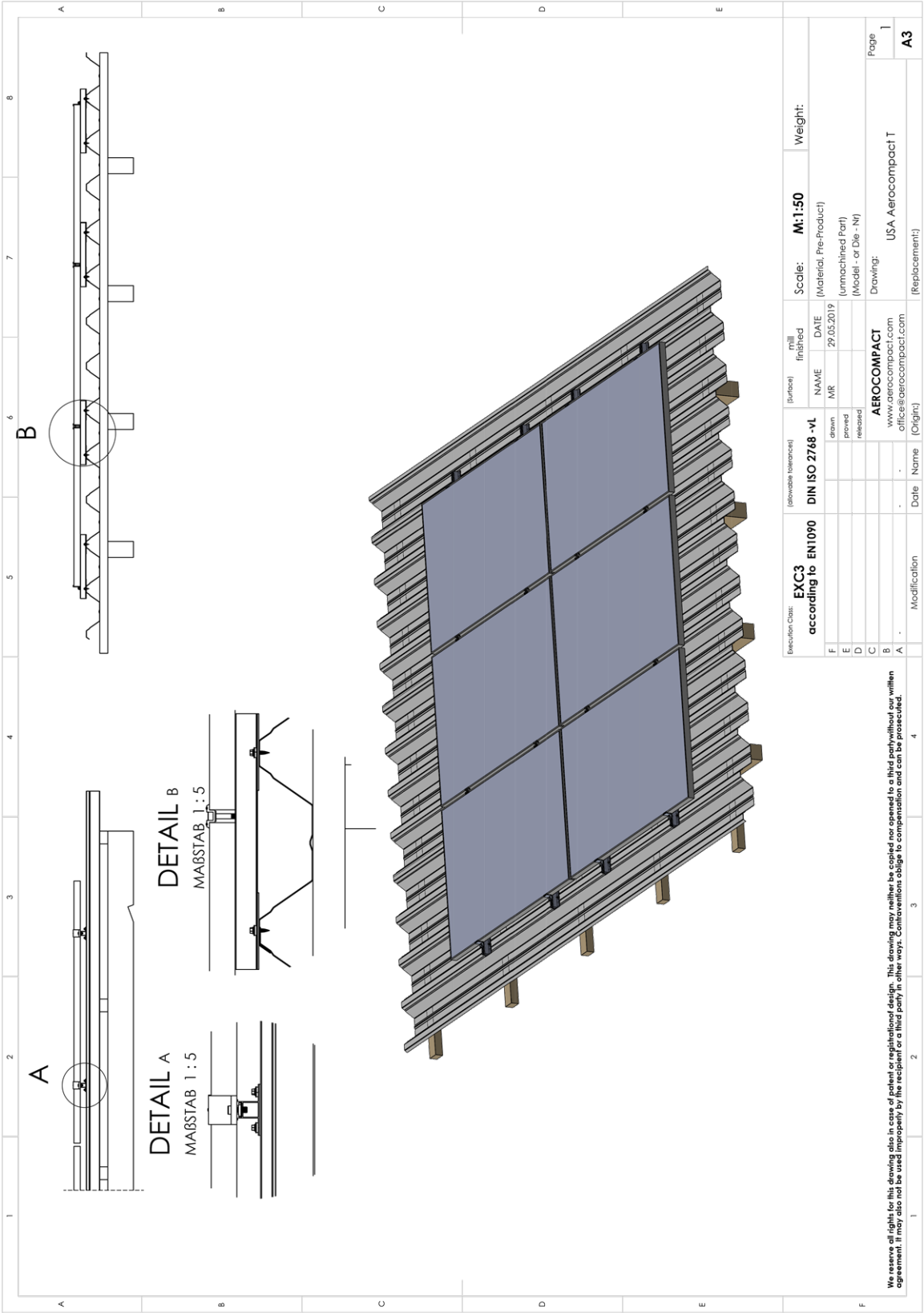




Final Situation (End-clamp)



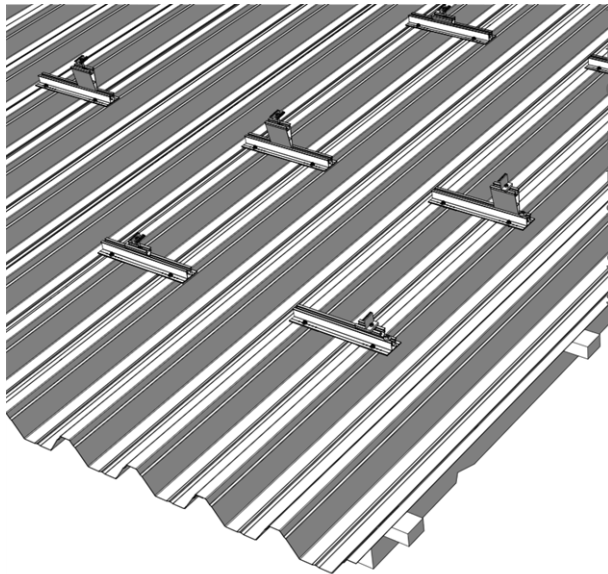
Final Situation (Mid-clamp)



We reserve all rights for this drawing also in case of patent or registration of design. This drawing may neither be copied nor opened to a third party without our written agreement. It may also not be used improperly by the recipient or a third party in other ways. Contraventions shall be prosecuted.

Execution Class: <b>EXC3</b> according to EN1090		(allowable tolerances)	DIN ISO 2768 - vL		(Surface)	mill	finished	Scale: <b>M:1:50</b>	Weight:
F			drawn		NAME	DATE		(Material Pre-Product)	
E			proved		MR	29.05.2019		(unmachined Part)	
D			released					(Model - or Die - Nr)	
C									
B									
A									
Modification		Date	Name	(Origin)	Drawing: <b>AEROCOMPACT</b> www.aerocompact.com office@erocompact.com				
					USA AeroCompact T				
					(Replacement!)				
					Page <b>1</b>				
					<b>A3</b>				

## Installing T+ rail on trapezoidal sheet



Take the positions of the T + rail on the roof from the mounting plan and mark them on the roof. Start on the left or top right with the assembly.

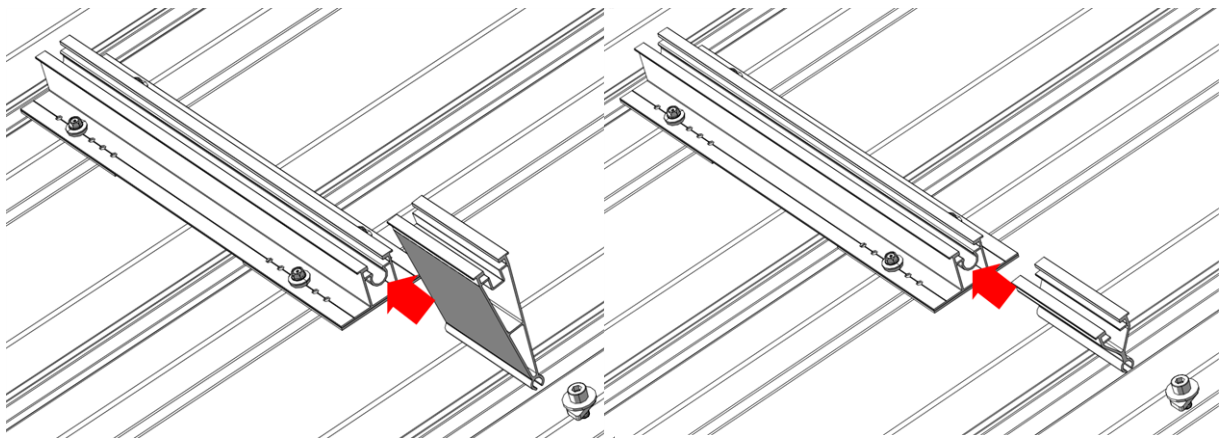
Place the rail at the marked points approximately in the middle over two peaks and fix them with four screws each according to the instructions above.

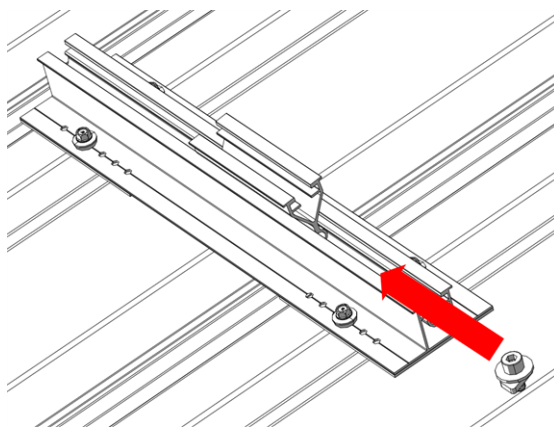
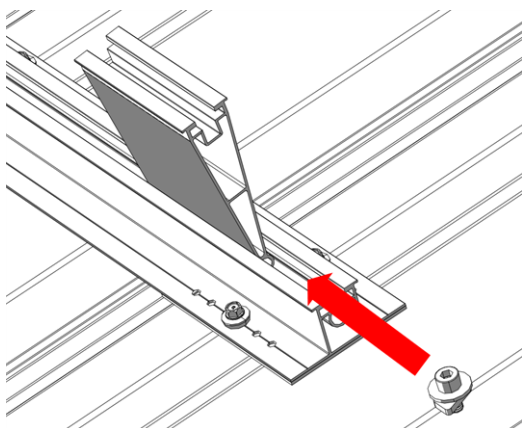
Select the holes for the screws as close as possible to the center of the peak.

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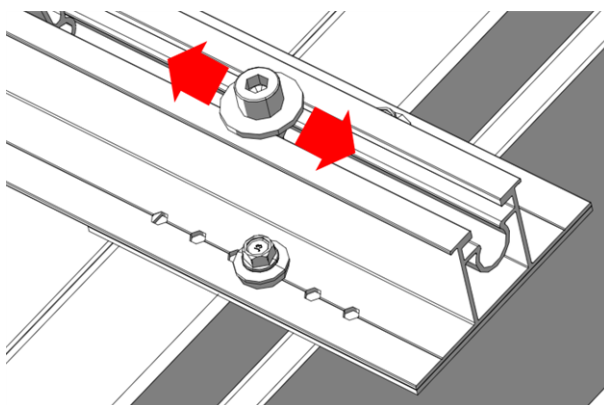
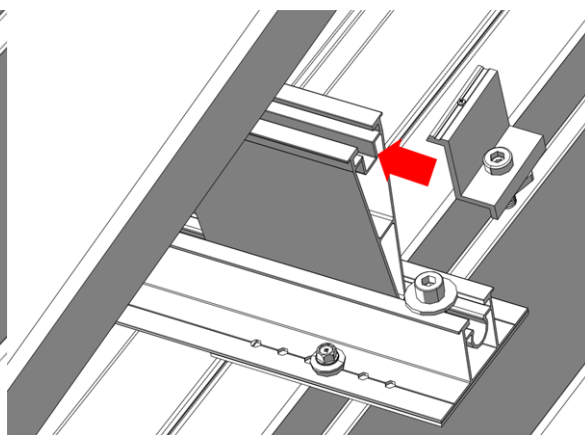
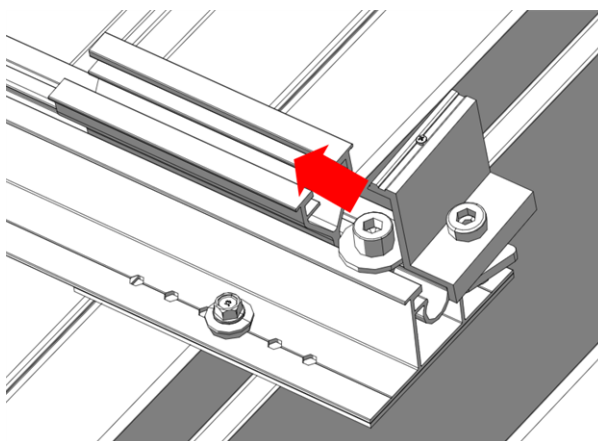
Slide the front and back rails into the T + bridges until they are roughly centered.

---

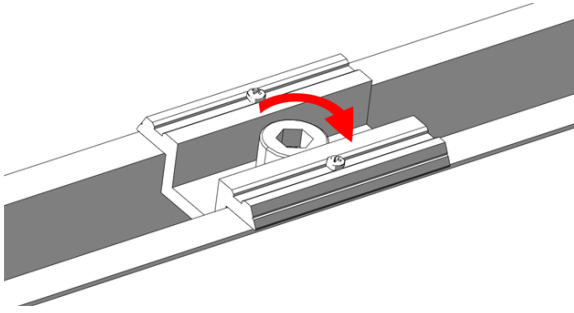




Place a security bolt from the outside against the front or end rail at both the right and left edge of the module field. Do not tighten the security bolts yet (the final position will only be achieved **with the module assembly**).

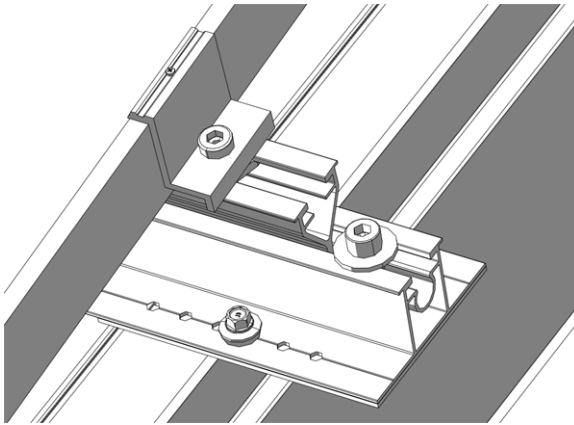


**Do not** tighten the security bolts yet (the final position will only be achieved with the module assembly).

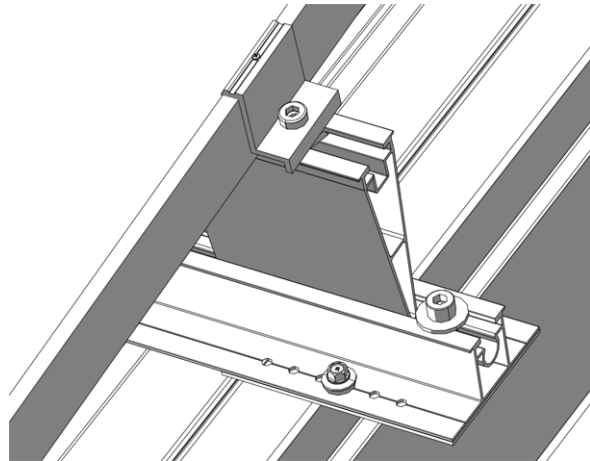


PLEASE MAINTAIN THE FOLLOWING  
TORQUES WHEN INSTALLING SCREWS:

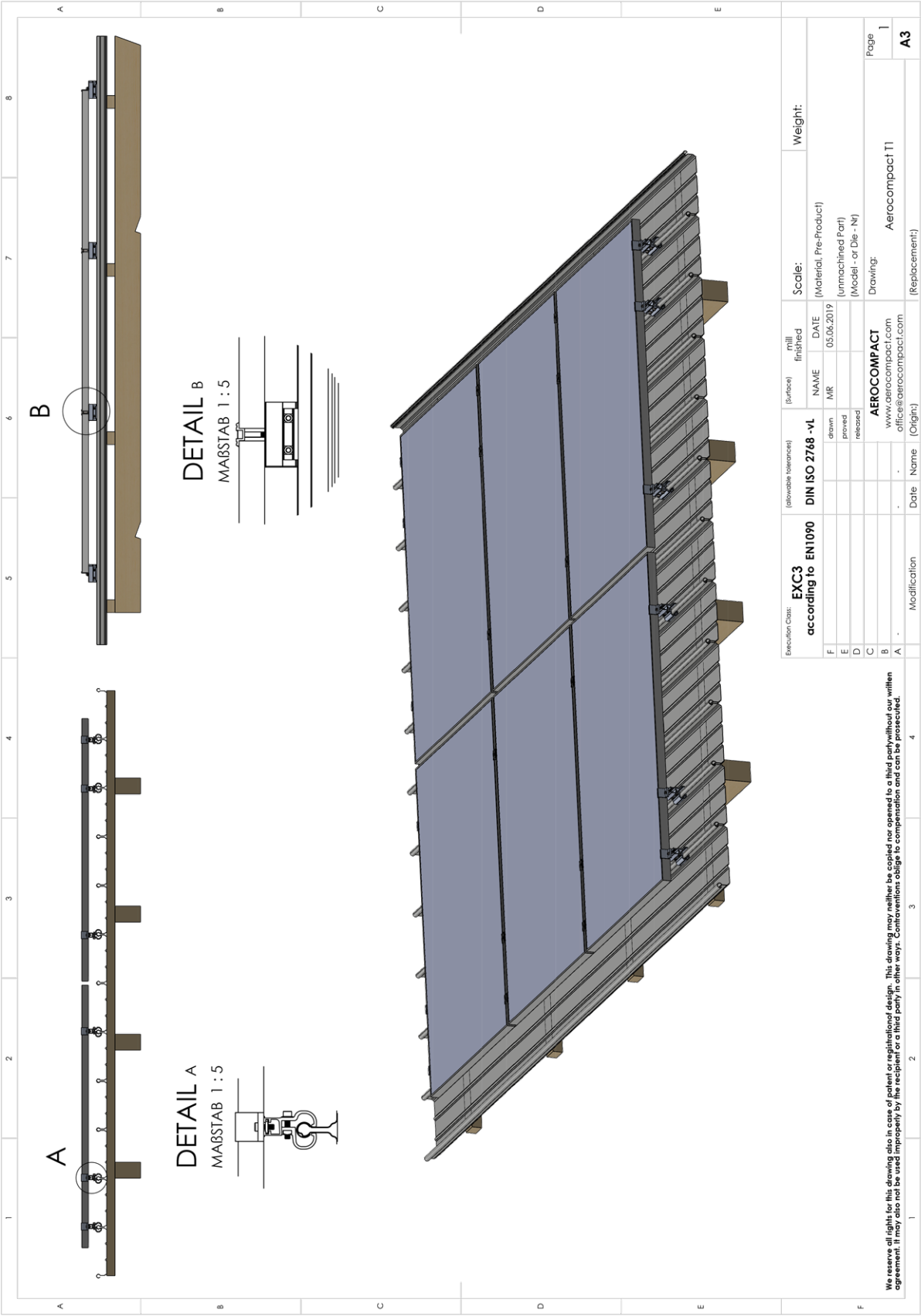
**133 lbf (15Nm) in M8 screw  
(fixation of module clamps  
and accessories)**



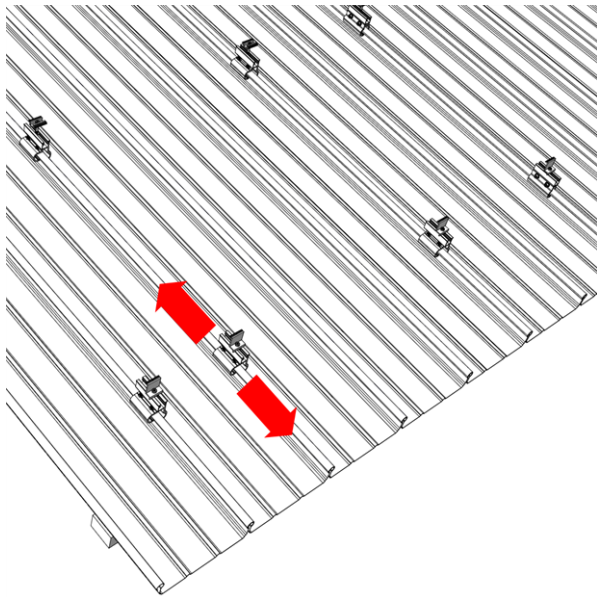
Final situation lower side (End-clamp).



Final situation elevated side (End-clamp).



## Installing T1 folding clamps on round fold

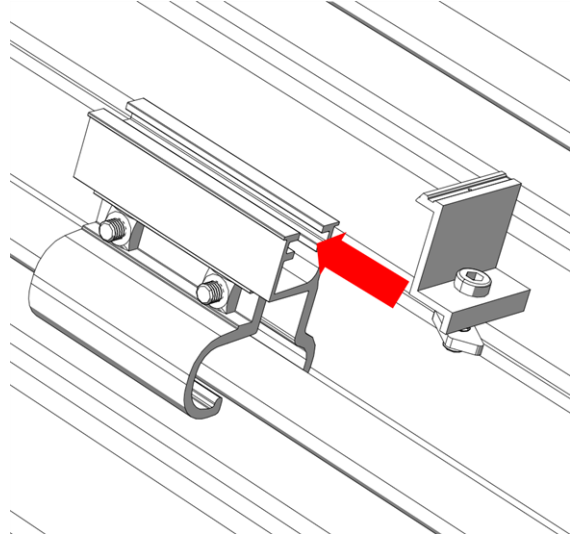
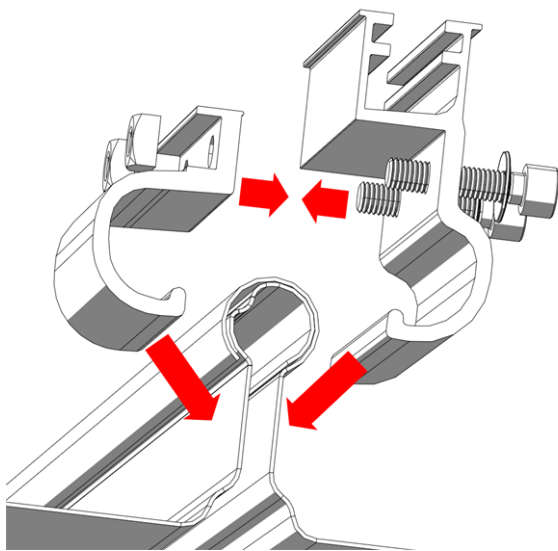


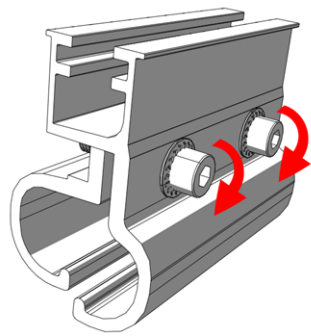
T1 folding clamps on round fold, standing seam or system folding roofs.

Place the clamps in the marked places on the folds (ATTENTION: not on fixing of the sheet to the roof), keep the minimum distance (0.79inch) from the folded base and tighten the two fixing screws according to the instructions above.

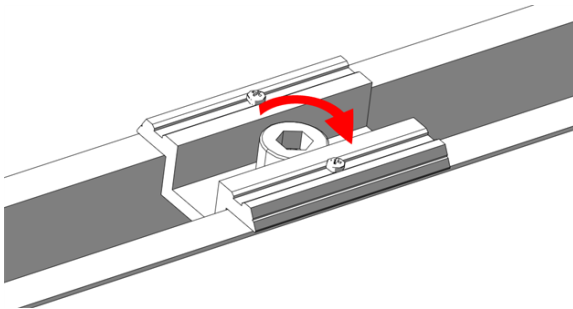
Mark further rows with spacer / gauge / measuring tape and chalk line (jump dimension = module width + 20mm, modules crosswise). Finally, check the tightness of all terminals.

Material adjustments must be compensated by tightening the screws (with torque control).



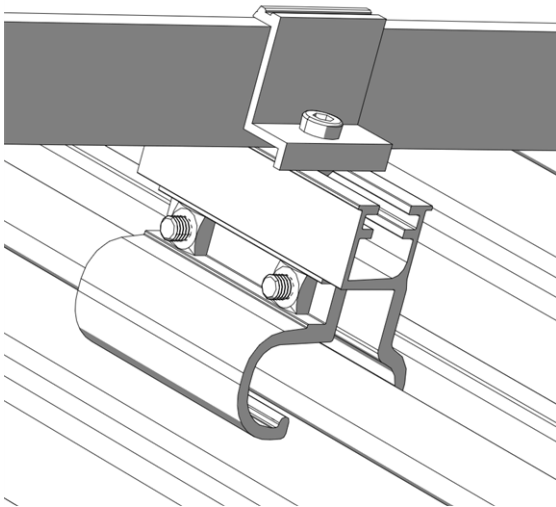


**Torque  
20-25 Nm**

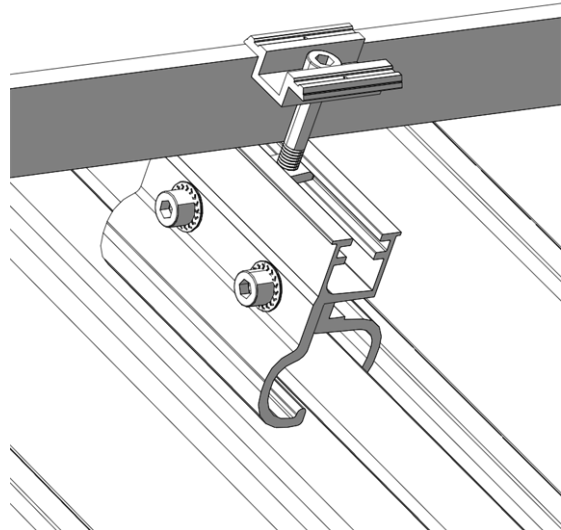


PLEASE MAINTAIN THE FOLLOWING  
TORQUES WHEN INSTALLING SCREWS:

**133 lbf (15Nm) in M8 screw  
(fixation of module clamps  
and accessories)**



Final situation (End-clamp)



Final situation (End-clamp)

## Note about the use of our Standing Seam Clamps

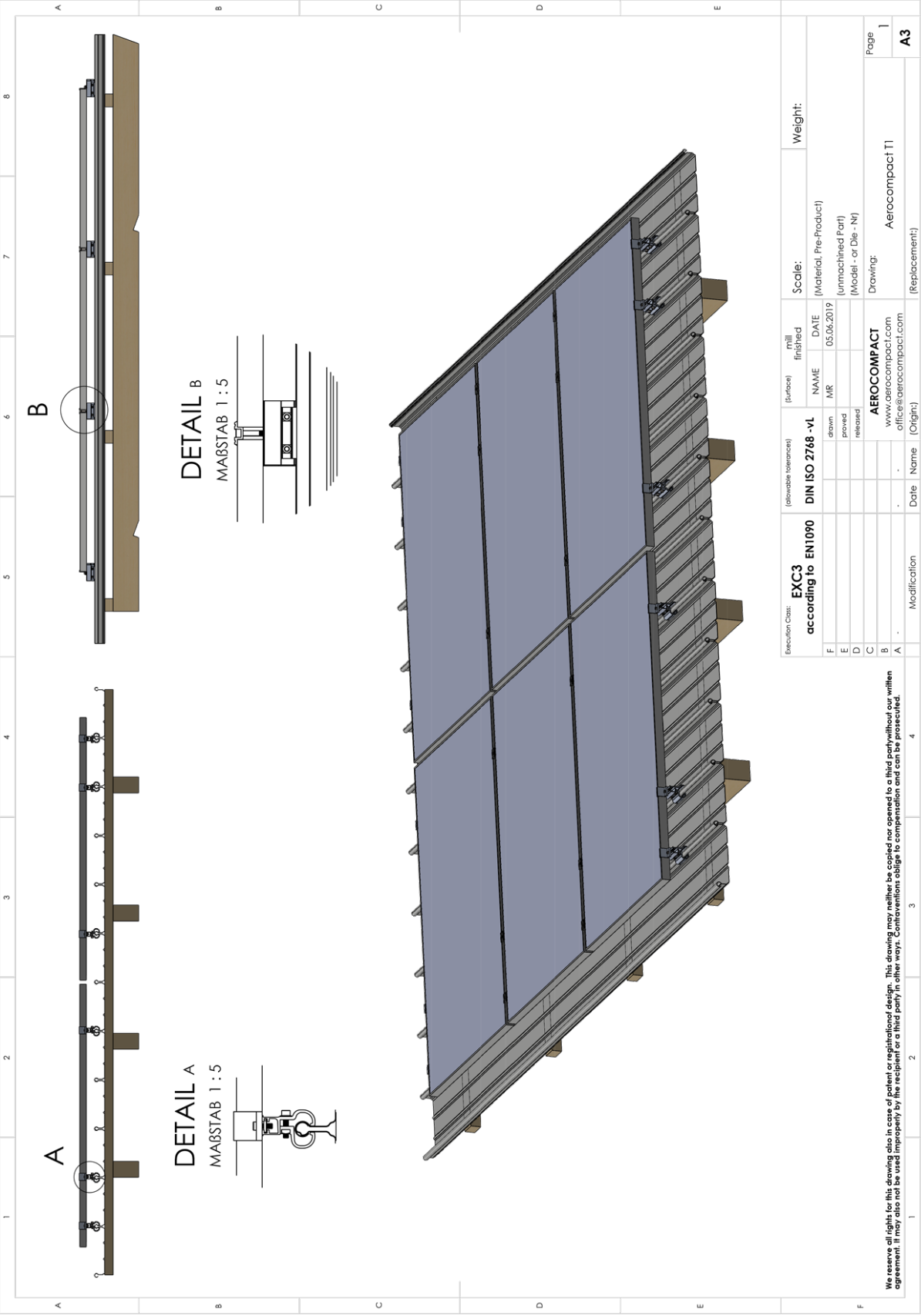
The Aerocompact standing seam clamps are designed to minimize the roof loads. The connection should be made by friction force, and not by deforming the metal sheet through set screws. A controlled tightening torque of 20-25 Nm is required on all screws to contribute to the adequate clamping forces.

Standing seam sheet metal rooftops often use thermal expansion gaps to mitigate the potential tension between the roof structure and the metal sheets. Those metal sheet expansion gaps shouldn't be ignored and blocked to allow for the metal sheets to expand and contract according to the metal sheet manufacturers specifications. Please identify those gaps before starting the installation and avoid those areas with our standing seam clamps.

Conventional PV modules usually span one or more fold distances, so that the thermal expansion of the module frame potentially pushes the standing seam slightly to the side. This slight deformation, should have no impact on the metal sheet if the the standing seam clamp is clamped on the upper part of the standing seam. However, if the standing seam clamps is clamped at the bottom of the standing seam the connection could potentially damage the metal sheet due to the thermal expansion. Therefore, we always recommend to clamp our standing seam clamps at least  $\frac{3}{4}$  inch (20 mm) above the metal sheet base.

A thermal break every 40 ft within a continuous array should be applied.





## Safety Instructions and Warnings

PLEASE FOLLOW THESE INSTRUCTIONS

The AEROCOMPACT® flat-roof system is only designed to hold PV modules. Any other use is considered improper. Proper use also means adhering to the contents of this installation manual.

AEROCOMPACT® accepts no responsibility for damage incurred as a result of noncompliance with the installation instructions or of using the product improperly.

>

- Approval from the module manufacturer is required to use PV modules with the AEROCOMPACT® system.
- AEROCOMPACT® is not responsible for performance degradation or damage to the module of any kind whatsoever. We require the use of a roof insulation with a high load capacity. When any work is done on the PV installation, these instructions should be followed exactly. Installation and maintenance work needs to be done by people who are properly trained and authorized. Please observe the applicable regulations and safety advice.

We require that the used roof insulation can hold the point load of Aerocompact system and recommend the use of a insulation with a high load capacity of the Type DAA-ds according to DIN 4108-10.

When any work is done on the PV installation, these instructions should be followed exactly. The modules may only be installed, started, serviced and repaired by people who are properly trained and authorised.

**Please observe the applicable regulations and safety advice.**

**These safety guidelines must be adhered to the Country specific safety guidelines.**

- BGV A 1 – General rules
- BGV A 2 – Electrical installations and equipment
- BGV C 22 – Construction work (individual protective equipment to prevent falls)
- BGV D36 - Ladders and Steps
- Trade association rules for health and safety at work BGR 203 (working on roofs) and DIN EN 516 (equipment for accessing roofs)
- Work clothes and industrial safety regulations pursuant to the rules of the trade association

### The following DIN norms must be complied with:

- DIN 18299 – General rules for all types of building work
- DIN 18338 – Roof covering and roof sealing work
- DIN 18360 – Steelwork and locksmith work
- DIN 4102 – Fire behavior of building materials and structural elements

Maintenance on the AEROCOMPACT® systems may be carried out by authorized persons. The owner / contractor of the PV System has to fulfill the following safety guidelines:

- Carry out servicing regularly once a year: checking the cables, torque value of the screws, right position and durability of the protection pads, right position of the ballast blocks, the stability and correct situation of all mechanical connections and the correct position of the array regarding movement.
- The Aerocompact system only be installed by people with the appropriate training, skills and knowledge of mechanics.
- The contractor must ensure that contracted persons are able to judge the tasks assigned to them and recognize any potential dangers. > The operator must ensure that the installation manual and project report is available during installation. The installation manual and project report is an integral part of the product.
- The operator must ensure that the installation instructions and particularly the warnings were read and understood by the installation crew prior to installation.
- The local health and safety at work regulations and codes of practice must be observed.
- Suitable lifting equipment and ladders are to be used for installation. No freestanding ladders may be used.
- It is necessary to arrange for a qualified construction engineer to assess the building's existing static loading characteristics with regard to the additional loads of a PV system.
- Any general load reduction measures specified by AEROCOMPACT® (e.g. the need to clear snow, so as to limit the snow load) are to be observed.

## Important Notes

### Warranty / Product Liability (Exclusion)

The information provided in this manual is information from daily practice. We provide binding structural installation and ballasting layout project specific and complimentary with the program AeroTool. It is necessary to have this static report on hand during the installation.

As an installer, you are responsible for the precise execution of the installation. AEROCOMPACT® is not liable for the size information contained in the system offers.

As installer, you are responsible for the mechanical durability of the interface connections mounted on the building's structure. In particular, this includes that these are leaktight. The components of AEROCOMPACT® are designed for the expected loads and they are in compliance with the effective state of the art. For this purpose, you have to specify in writing all general technical framework conditions in the project documentation form (information on the support structure, snow load zone, building heights, wind loads, etc.) when requesting information/ordering from AEROCOMPACT®.

AEROCOMPACT®© is not liable if the installed components are not properly handled.

Any use close to the sea is needs to be requested prior to the installation because of the increased risk of corrosion.

If the components are properly handled, the sizes comply with the structural framework conditions and normal environmental conditions and normal conditions of the surroundings, AEROCOMPACT® grants a 25 year limited product warranty on the service life and durability of the aluminum and stainless steel components and 10 years for the windsheets. Excluded are the building protection pads. This applies within the framework of generally prevalent weather and environmental conditions.

For additional information, please take a look at the Warranty condition as well as the general terms and conditions.

## Notes on electrical installation

Only if you are a qualified electrician, may you perform any electrical work. The applicable DIN standards, VDE regulations, VDEW guidelines, VDN guidelines, accident prevention regulations and the regulations of the local utility company are authoritative in this regard.

DIN VDE 0100 (Installation of high voltage systems with nominal voltages up to 1000 V)

- VDEW Guideline for parallel operation of private power generation systems with the low voltage grid of the utility company
- VDI 6012 sheer 2 guideline for local energy systems in buildings - Photovoltaic
- Leaflet on the VDEW guideline "Private power generation systems in the low-voltage grid"
- VDN-guideline "Private power generation systems in the low-voltage grid"
- DIN/VDE provisions, DIN/VDE 0100 "Building high-voltage systems with operational voltages of up to 1000 V", in particular VDE 0100 part 410 "Protection against direct and indirect contact (DC voltage > 120 V, < 1000 V DC voltage) and the "accident prevention regulation of the industrial trade cooperative associations" VBG4 "Electrical installations and equipment"
- DIN VDE 0100-540 Selection and setup – grounding, protective conductor and potential equalisation conductor
- DIN 57185 VDE 0185 Setting up a lightening protection system and VDS 2010

## Important warnings

Solar modules produce electricity as soon as they are subjected to light and are always energised. Although touch protection is provided in the form of the fully insulated plug contacts, you must take be aware of the following when handling solar modules:

- Do not insert any conductive parts into the sockets and connectors.
- Do not install solar modules and cables with wet sockets and connectors.
- Perform any work on cabling with extreme caution.
- Do not perform any electrical installation work in damp conditions.
- Even if there is only little light, very high direct voltages arise at the series connection of modules, which can be life life-threatening in case of direct contact. Especially the danger of secondary damage in case of electric shocks has to be considered.

## Notes on frame installation

When mounting on a roof, you must adhere to the applicable structural engineering rules, in particular the requirements set out in the DIN norms and in the rules and regulations of the German roofing trade.

- Check to see if all screw connections are tightened correctly.
- Keep to the specified torques. > Regardless of verifiable static calculation, you must ensure before the installation starts, that the product meets the static requirements on site according to DIN EN 1991
- DIN EN 1991 „Actions on structures“ - and all related national applicable documents Part 1-1: Densities, self-weight and imposed loads for buildings Part 1-3: Snow loads Part 1-4: Wind loads
- DIN standard EN 1990: „Principles of Structural Engineering“ - and all associated national application documents
- The design of the mounting frame is based according to DIN EN 1993 „Design and Design of steel structures „and EN 1999“ Design of Aluminum structures”
- Ensure that the substructure, support structure and other affected layers (such as an insulation layer) have adequate load capacity (based on dimensions, condition and suitable material properties).
- Make sure that the runoff of rainwater is not impeded.
- Consider structural aspects (e.g. possible condensation if insulation layers are penetrated).

## Norms and guidelines

All of the norms and guidelines listed here are published for and applicable to Germany. They are to be complied with in their current version. Outside of Germany, please also observe the corresponding national norms and guidelines.

## Product liability

Technical documentation is part of the project to be supplied. AEROCOMPACT®® accepts no responsibility for damage incurred as a result of noncompliance with the installation instructions or of using products improperly. Furthermore, the warranty conditions and general terms and conditions available at [www.aerocompact.com](http://www.aerocompact.com) also apply.



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