

Model No : CK - AR

# **Asphalt Roof System Installation Manual**




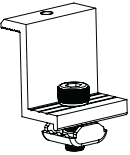

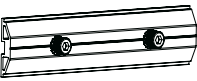
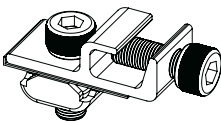


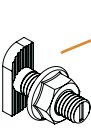
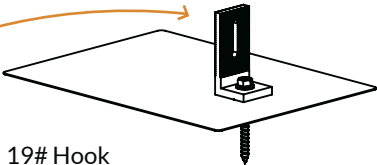


Version No.: CHIKO-20160701-V.01

## I. Installation Rule

Installation of the framing shall comply with relevant local government standards, manufacturer's specifications and good building practice. The roof which the panels to be installed shall comply with the relevant local government standards.

- Follow the risk management process prior to commencing work – including identify hazards, assess risks, eliminate or control them.
- Consult with those involved in the work.
- Develop safe work procedures for installing solar panels, using information from the risk management process, which would include reviewing the following information:
  1. Provide appropriate information and training to those involved in performing the work.
  2. Provide appropriate tools and personal protective equipment (PPE).
  3. Ensure that a system is in place to prevent or arrest falls.
  4. Ensure there are adequate first aid facilities.
  5. Ensure all employees are aware of the emergency procedures.

## II. Installation Tools

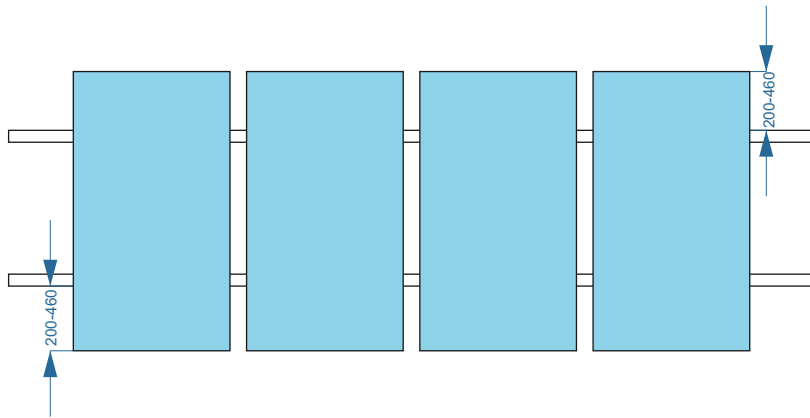
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <input type="checkbox"/> Tape Measure         </div> <div style="text-align: center;"> <p>or</p>  <input type="checkbox"/> Chalk Line         </div> </div>	<div style="text-align: center;">  <input type="checkbox"/> Labor Protection Products         </div>
<div style="display: grid; grid-template-columns: 1fr 1fr; gap: 10px;"> <div style="text-align: center;">  <p>Grounding End Clamp</p> </div> <div style="text-align: center;">  <p>Grounding Mid Clamp</p> </div> <div style="text-align: center;">  <p>Rail Splice Kit</p> </div> <div style="text-align: center;">  <p>Grounding Lug</p> </div> </div>	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <input type="checkbox"/> Allen Key         </div> <div style="text-align: center;">  </div> </div>
<div style="text-align: center;">   <p>19# Hook</p> </div>	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <input type="checkbox"/> Open-end Spanner         </div> <div style="text-align: center;">  </div> </div>

## III. NOTICE

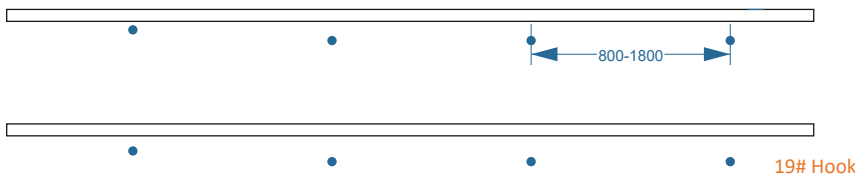
This manual is for a non-integral module or panel, assemble it to be mounted over a fire resistant roof covering rated for application. Re-inspect the installation in case of loose components, loose fasteners or any corrosion, the affected components should be replaced immediately.

### 1. Rail spacings are as following:

- When installing in portrait, rails should keep 200mm to 460mm from the module edge.



- The distance between Chiko 19# hooks on roof could be 800-1800mm.



### 2. Minimum design load for Chiko Asphalt Roof Mounting System:

- Downward Pressures - 10 psf allowable load.
- Upward Pressure - 5 psf allowable load.
- Down-Slope Load - 5 psf allowable load.

### 3. System Fire Class Rating: A

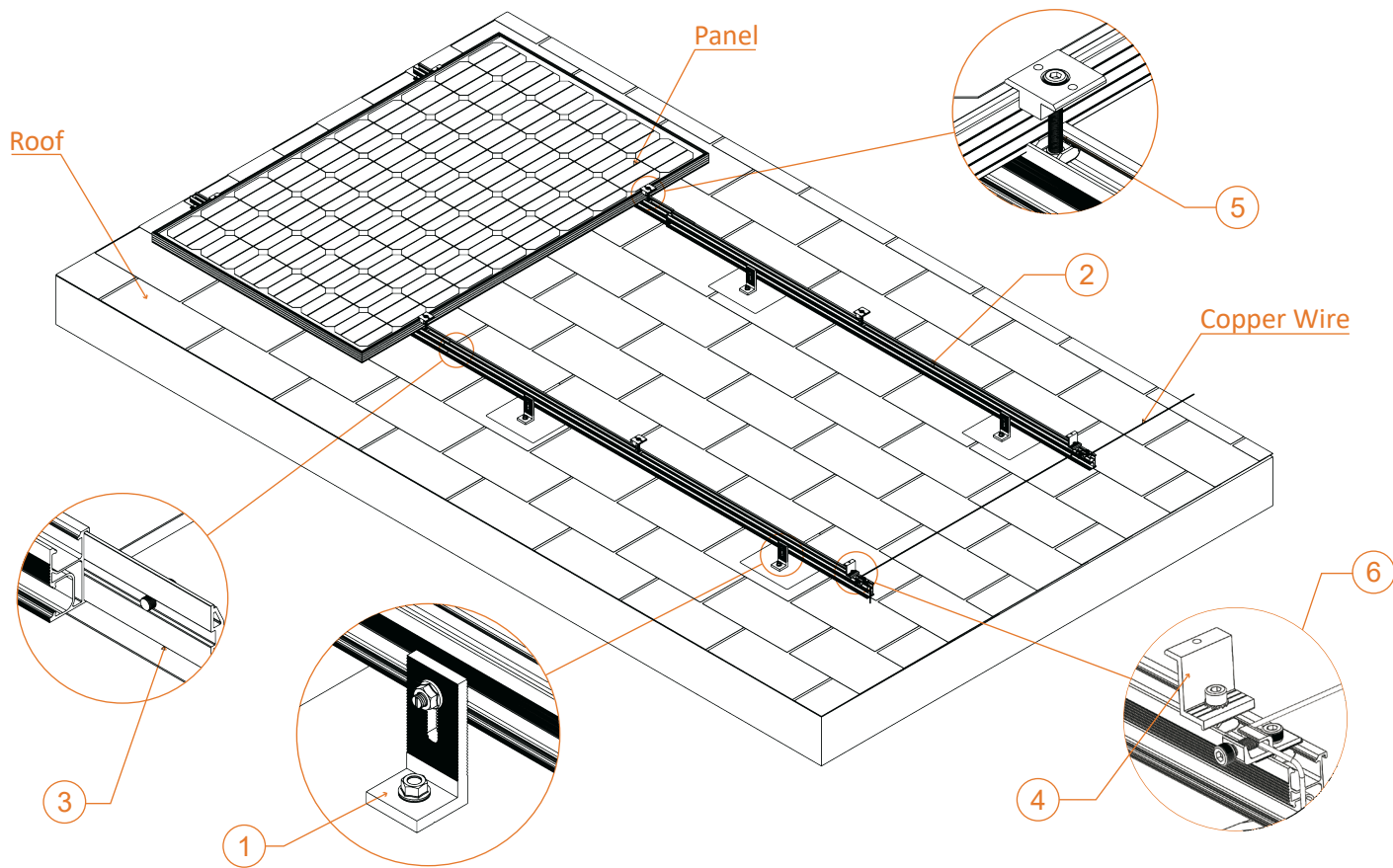
### 4. Max. Rated Current: 30A

### 5. Testing solar panel is UL Listed CHANGZHOU TRINA SOLAR ENERGY CO., LTD: TSM-290PD14, TSM-295PD14, TSM-300PD14, TSM-305PD14, TSM-310PD14, TSM-315PD14, TSM-320PD14, TSM-325PD14, TSM-330PD14, module fire performance type 1.


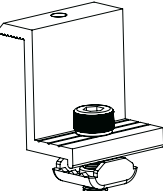
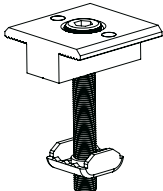
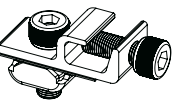
### 6. This racking system may be used to steep-sloped roofs for slopes greater than or equal to 2 in/ft(167mm/m or 9.46°) installed PV module complying with UL 1703 only when the specific module has been evaluated for grounding or installed in compliance with the included instructions.

### 7. The CK-AR System is intended to be mounted to a roof using the components listed in the manual. If add or change any, this may affect the UL listing or the System Fire Class rating.

IV. Components



No.	Item No.	Item Name	Picture	Part No.	Part Name	Part Qty
1.	CK-FTH-019	19# Hook		1.1	AL6005-T5 L foot Ø9	1
				1.2	AL1070-H14 19# flashing	1
				1.3	SS304 T bolt T2 M8*28	1
				1.4	SS304 flange nut M8	1
				1.5	SS304 wooden screw § 8*90	1
2.	CK-FT-7R	7# Rail		CHIKO Solar AL6005-T5 7 Rail length:4200mm; 3200mm 2100mm; 1200mm 1050mm		

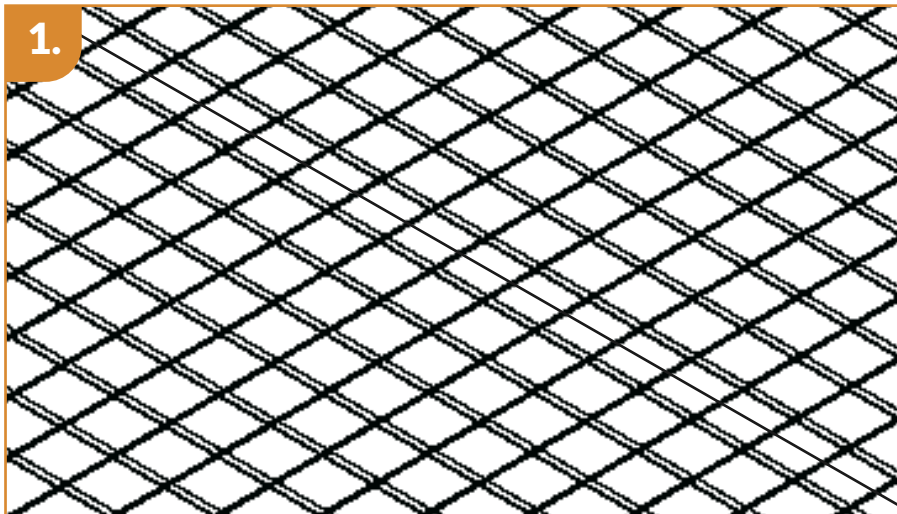
3.	CK-FT-SKA	Rail Splice Kit		3.1	AL 6005-T5 rail splice	1
				3.2	SS304 star washer M8	2
				3.3	SS304 inner hex bolt M8*12	2
4.	CK-FTE-K40	Grounding End clam		4.1	AL6005-T5 end clamp for 40mm	1
				4.2	SS304 star washer M8	1
				4.3	SS304 inner hex bolt M8*12	1
				4.4	AL 6005-T5 rail splice	1
				4.5	SS304 star washer M8	1
				4.6	SS304 inner hex bolt M8*12	1
5.	CK-FTM-K40	Grounding Mid clam		5.1	AL6005-T5 mid clam	1
				5.2	SS304 050 nut	1
				5.3	SS304 star washer M8	1
				5.4	SS304 river	2
				5.5	SS304 inner hex bolt M8*50	1
6.	CK-GTC-R3	Grounding Lug		6.1	Grounding lug - weeb lug 8.0	1
				6.2	SS304 outer hex bolt 1/4" *0.6"	1
				6.3	SS304 inner hex bolt M8*20	1
				6.4	SS304 weeb washer	2
				6.5	SS304 050 nut	1

## V. Hook Spacing Table

No.	Item No.	Description	Hook Qty	Spacing
1	CK-7R-4200	Chiko AL 7# rail -4200mm	3 PCS	1800mm
2	CK-7R-3200	Chiko AL 7# rail -3200mm	3 PCS	1500mm
3	CK-7R-2100	Chiko AL 7# rail -2100mm	2 PCS	1800mm
4	CK-7R-1200	Chiko AL 7# rail -1200mm	2 PCS	1000mm

## VI. Installation Steps

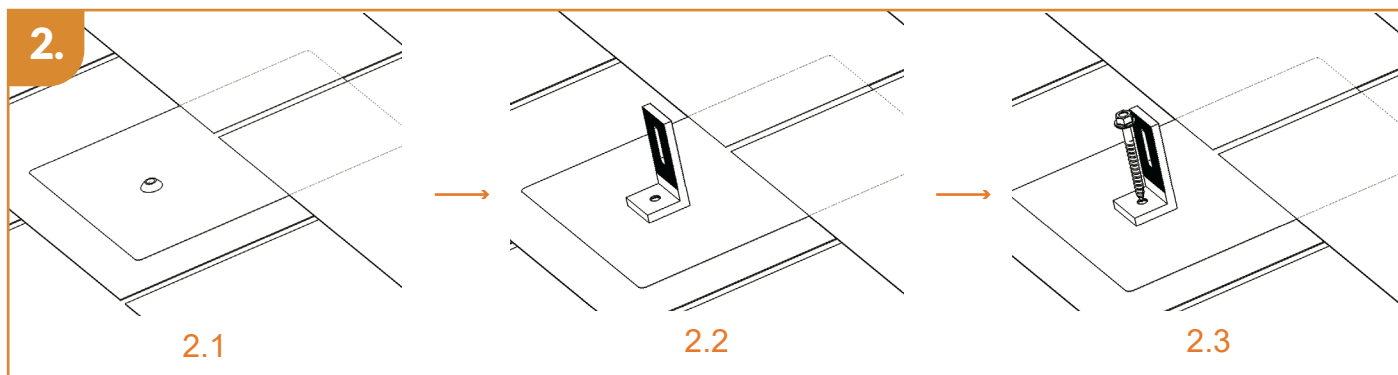
1.



Use a chalk line to mark the roof.

### Installation of Chiko 19# Hook

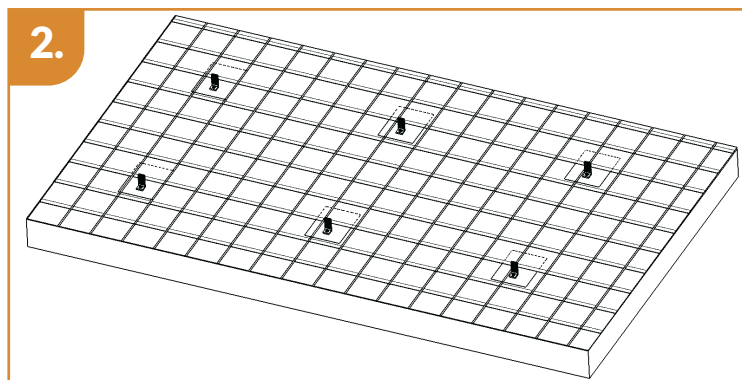
2.



Remove the tile where you are installing the 19# hook by gently pulling and pushing the tile. Place the 19# hook on top of the rafter where it will be installed, then fasten it with three wooden screws M8\*90, finally return the tile to its original position.

M8 Torque: 15~20N.m

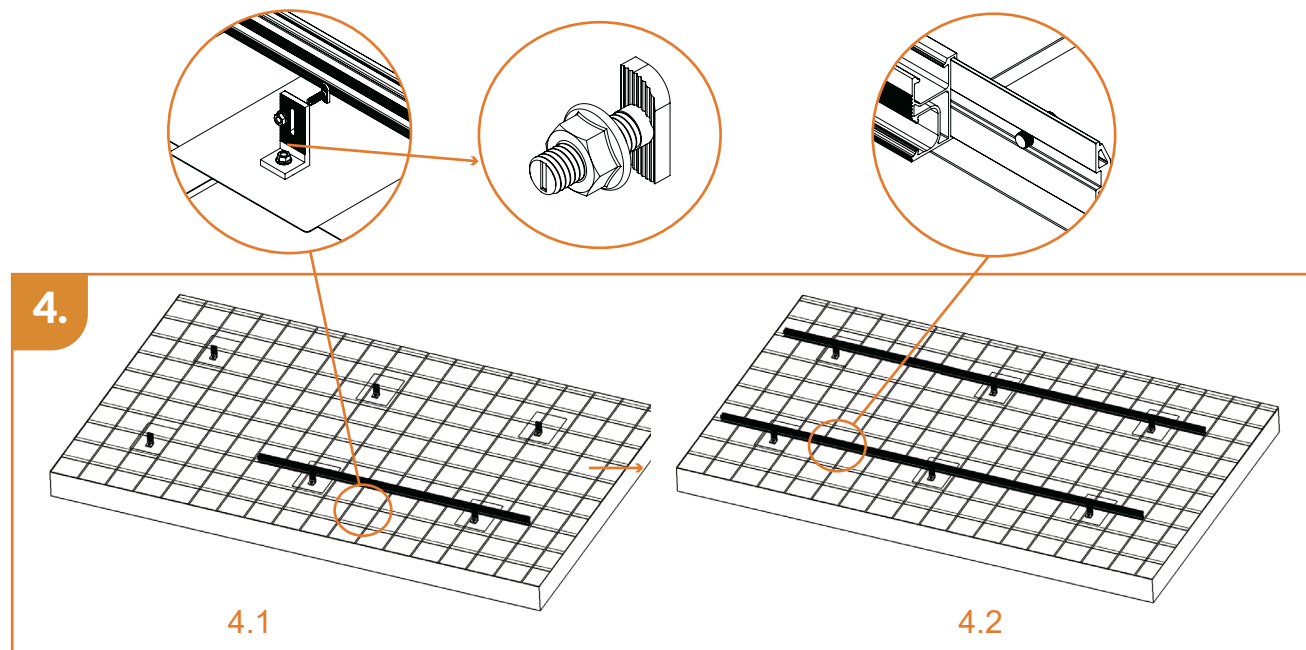
2.



Install all the 19# hooks according to step 2.



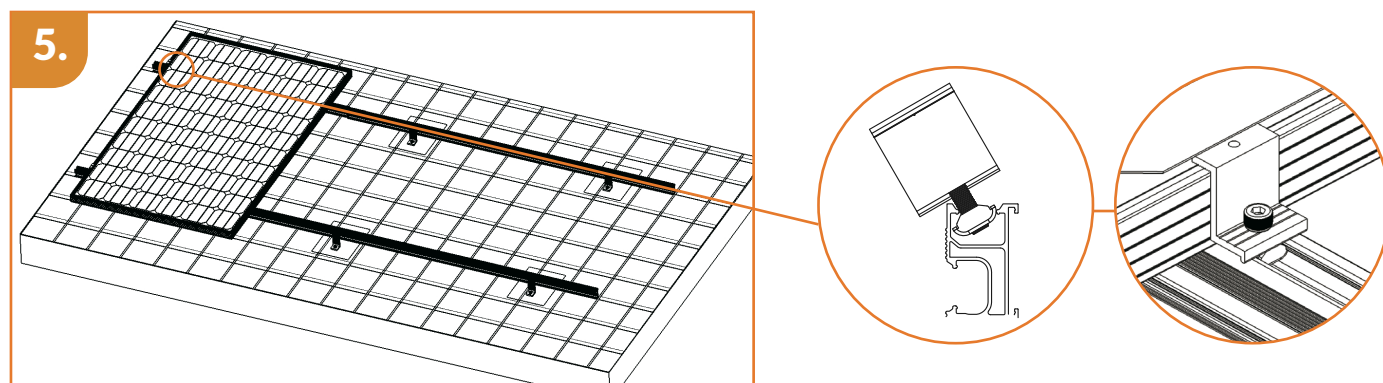
## Installation of Rail



Connect rail to the 19# hooks with T-bolt M8\*28 and a flange nut. Fasten to secure. Use rail splice kit to connect two rails by two M8\*12 inner hex bolts. The ripple surface of T bolt, two bolts and two star washers of the rail splice kits have grounding function when fastened tight.

M8 Torque: 15~20N.m

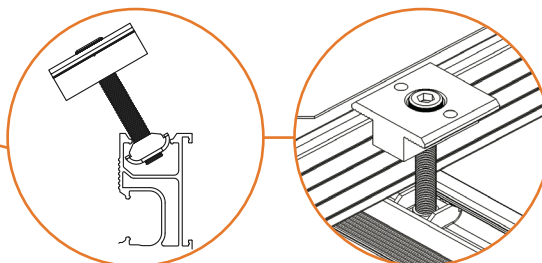
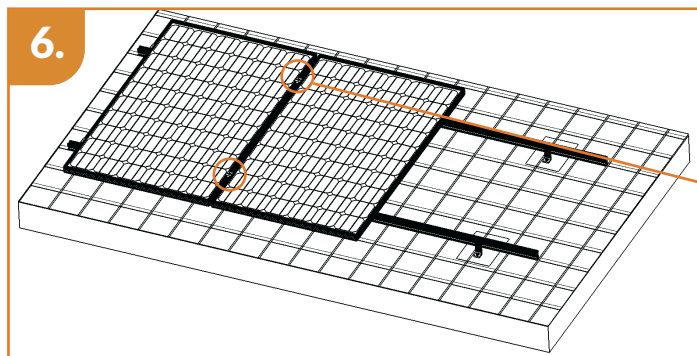
## Installation of End & Mid Clamps



Tilt end clamp nut into the top opening of rail. Put the first PV module on two parallel rails, then fasten the end clamp bolt (inner hex bolt M8) to secure one side of the panel. The SS304 rivet inlaid in the grounding end clamp has grounding function when fastened tight.

(This racking system may be used to ground and/or mount a PV module complying with UL 1703 only when the specific module has been evaluated for grounding and/or mounting in compliance with the included instructions.)

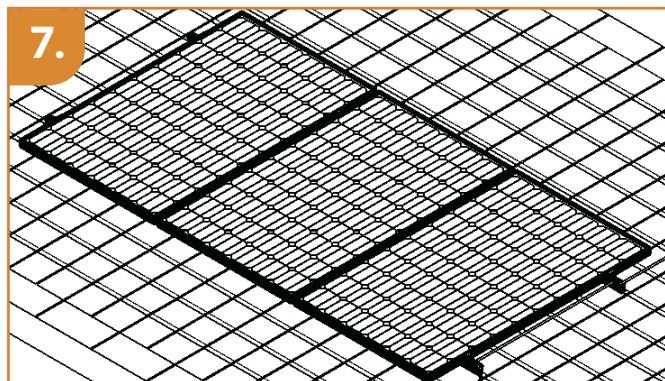
M8 Torque: 15~20N.m



Insert mid clamp nut by tilting it into the top opening of rail, then put the second panel onto rails. Fasten mid clamps with inner hex bolts M8 at all locations where two panels meet. The two SS304 rivets inlaid in the grounding mid clamp have grounding function when fastened tight.

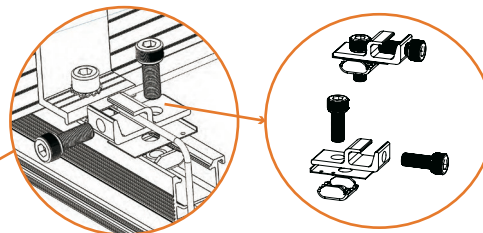
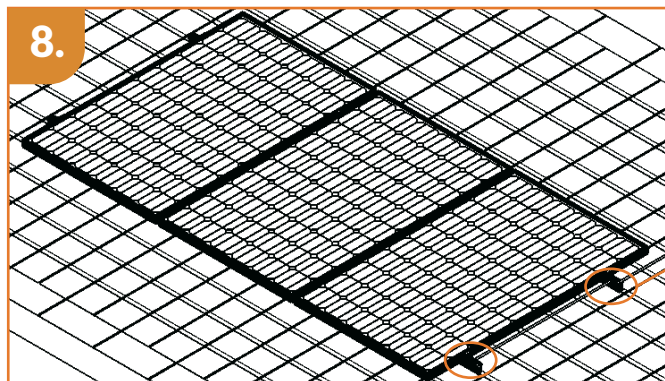
(This racking system may be used to ground and/or mount a PV module complying with UL 1703 only when the specific module has been evaluated for grounding and/or mounting in compliance with the included instructions.)

M8 Torque: 15~20N.m



Asphalt Roof System7Install all the panels and fasten end clamps at the end of each array. The SS304 rivet inlaid in the grounding end clamp has grounding function when fastened tight.

M8 Torque: 15~20N.m

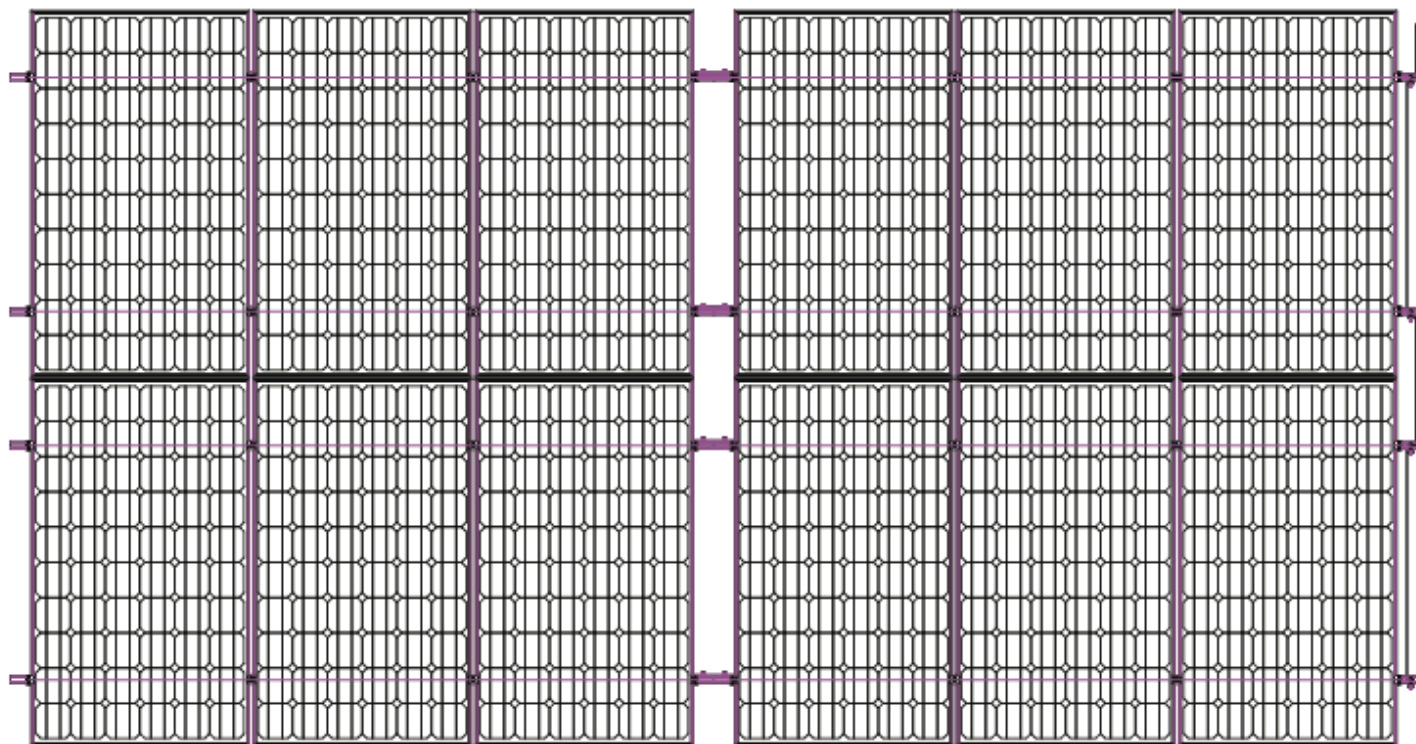


Install a grounding lug (50mm from the rail end) onto each rail line edge with an inner hex bolt M8\*25 and a stainless steel nut, then cross 8.4mm<sup>2</sup> (greater than or equal to 8AWG) copper wire through all the grounding lugs (fixed by M8\*20 inner hex bolt), finally connect copper wire to the ground. The grounding lug has grounding function when fastened tight to connect rail and copper wire.

M8 Torque: 15~20N.m

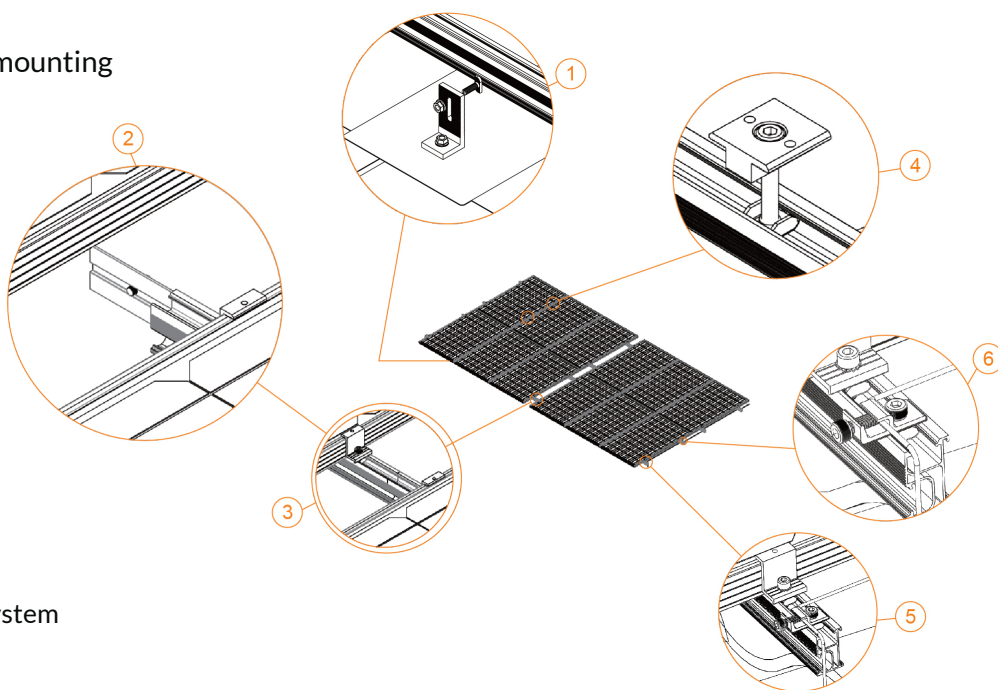


## VII. Grounding System



The grounding function of the whole mounting system connections is achieved by the following devices:

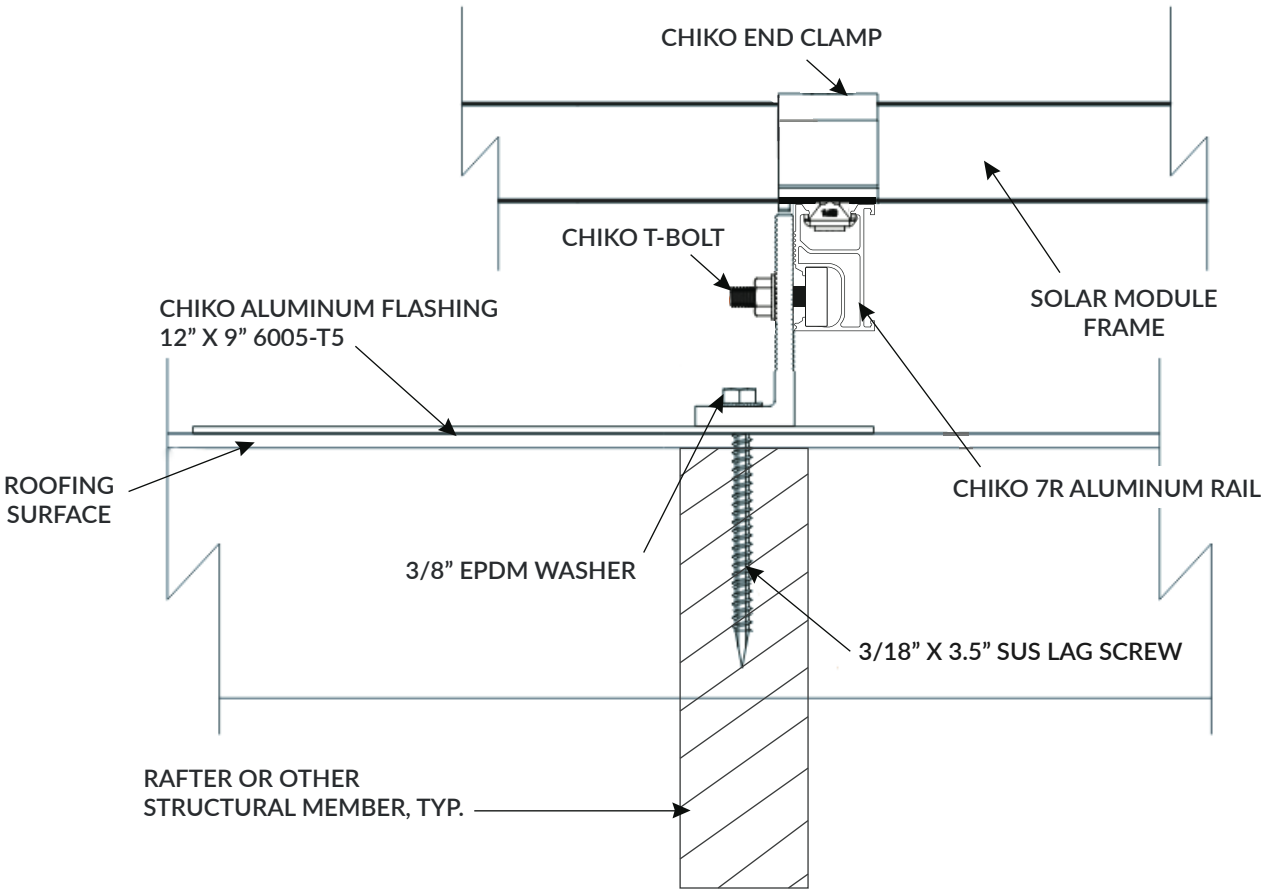
1. T-bolt of the 19# hook: connect 19# hook with rail (see step4)
2. Rail splice kit: connect two rails (see step4)
3. Grounding end clamp: connect panel with rail (see step5 &7)
4. Grounding mid clamp: connect two panels with rail(see step6)
5. Grounding lug: connect rail with copper wire (see step8)
6. Copper wire: connect the mounting system to the ground (see step8)





# CHIKO SECTIONAL DRAWING

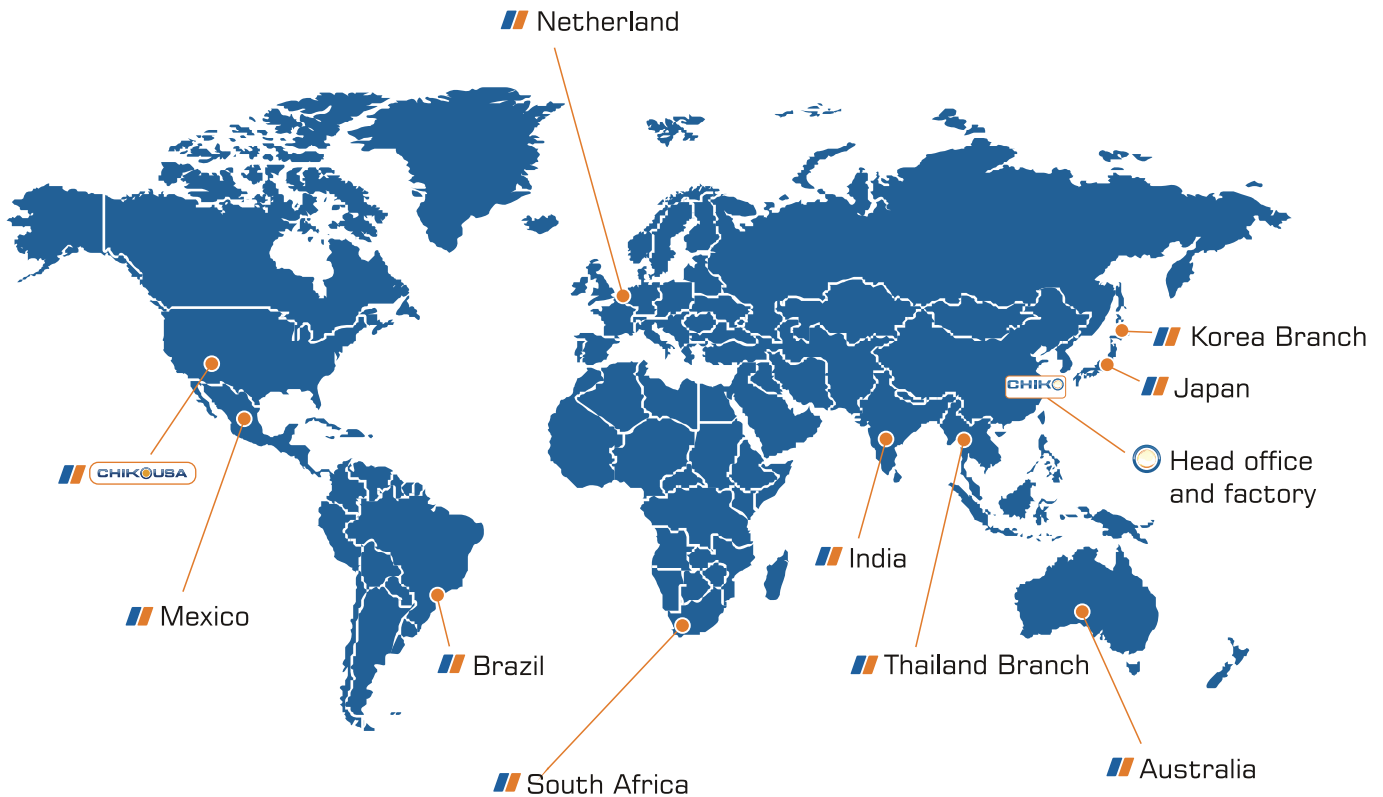
## ASPHALT OR COMPOSITION SHINGLE



# WORLDLEADING

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