SOLA*R*ACK

Adjustable S-Tile
Installation Manual

Contents

Before Installation, Please Review the Following Checklist

- Ensure that SolaRack® is compliant with your module manufacturer.

- Ensure compliance with any clearances required by your local fire department of building & safety code.

- Ensure your work complies with national, state and local requirements - Even those that may supersede this manual.

- All installations must be preformed by licensed contractors & electricians that are bonded and insured.

- Only use system components supplied by SolaRack®

- Make sure your roof is in proper condition prior to installation. Do not install on damaged roofs!

- Use only appropriate, recommended tools and wear safety goggles and gloves during installation

Fire Classification UL 1703

- Any Roof Slope with Module Types 1 and 2

- Testing preformed at 5" from roof surface (worst case). System can be installed at any height.

- Class A rated PV systems can be installed on Class A, B, and C roofs without affecting the roof fire rating.

Grounding & Bonding UL2703

Components tested and listed as a grounding method are:
- Universal Mid Clamp
- Universal End Clamp
- Splice Kit
- Micro Bolt, Listed to ground Solaredge Optimizers

ETL LISTED US
CM

Intertek
5011267
CONFORMS TO
UL STD 2703

SOLA**R**ACK

SolaRack Components
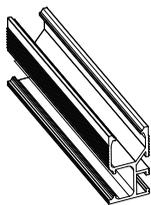
SolaRack MCR 2.0 Rail

Material: Aluminum AL 6000 Series
Finish: Anodized Clear or Black
Item Number: IGB-SR-2.0MCR
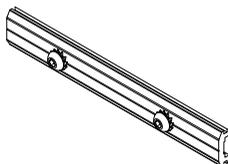
SolaRack MCR 2.0 Splice

Material: Aluminum AL 6000 Series
Finish: Clear Anodized / Black Electrophoresis
Item Number: IGB-SR-SK (B)
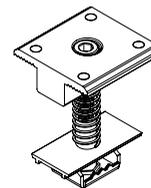
Universal Mid Clamp

Material: Aluminum AL 6000 Series
Finish: Clear Anodized
      Black Electrophoresis
Item Number: IGB-SR-MUNI2846S
      or IGB-SR-MUNI2846B
Frame Size: 28mm-46mm
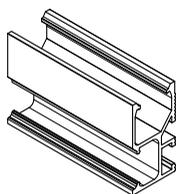
SolaRack ECO Rail

Material: Aluminum AL 6000 Series
Finish: Anodized Clear or Black
Item Number: SR-ECO
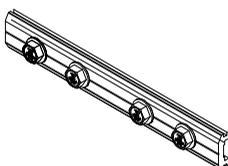
SolaRack ECO Splice

Material: Aluminum AL 6000 Series
Finish: Clear Anodized / Black Electrophoresis
Item Number: SR-ECO-SK (B)
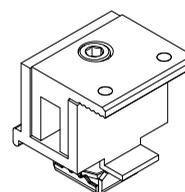
Universal End Clamp

Material: Aluminum AL 6000 Series
Finish: Clear Anodized
      Black Electrophoresis
Item Number: IGB-SR-EUNI2846S
      or IGB-SR-EUNI2846B
Frame Size: 28mm-46mm
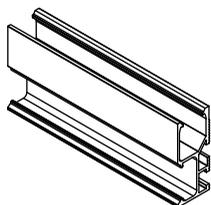
SolaRack STRD Rail

Material: Aluminum AL 6000 Series
Finish: Anodized Clear or Black
Item Number: SR-STRD
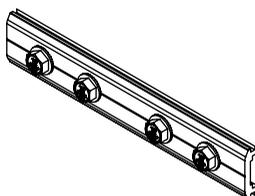
SolaRack STRD Splice

Material: Aluminum AL 6000 Series
Finish: Clear Anodized / Black Electrophoresis
Item Number: SR-STRD-SK (B)
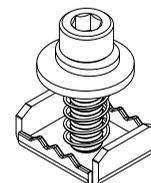
SolaRack Micro Bolt

Material: SUS304
Finish: Stainless Steel
Item Number: IGB-SR-MICRO
Features: UL Listed to ground Solaredge optimizers SE-Pxxx
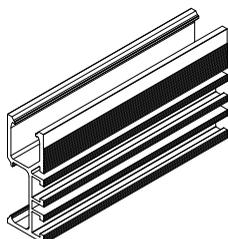
SolaRack HD Rail

Material: Aluminum AL 6000 Series
Finish: Anodized Clear or Black
Item Number: SR-HD
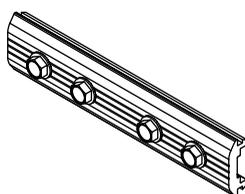
SolaRack HD Splice

Material: Aluminum AL 6000 Series
Finish: Clear Anodized / Black Electrophoresis
Item Number: SR-HDSK (B)
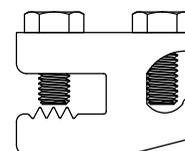
ILSCO Grounding

Material: 6061-T6 Aluminum
Finish: Clear
Item Number: SGB-4
Features: UL Listed 467, "For single-use only"
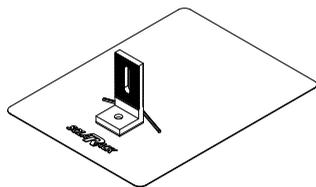
Composition L-Foot Kit

Material: Aluminum 6000 Series /1070
Finish: Clear Anodized
　　　 Black Electrophoresis
Item Number: IGB-SR-CH
　　　 or IGB-SR-CHB
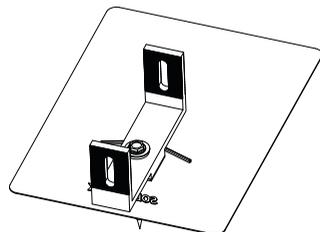
DoubleComposition

Material: Aluminum 6000 Series /1070
Finish: Clear Anodized
　　　 Black Electrophoresis
Item Number: IGB-SR-DCH
　　　 or IGB-SR-DCHB
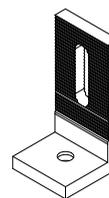
SolaRack L-Foot

Material: Aluminum AL 6000 Series
Finish: Clear Anodized / Black Electrophoresis
Item Number: IGB-SR-LFOOT (B)
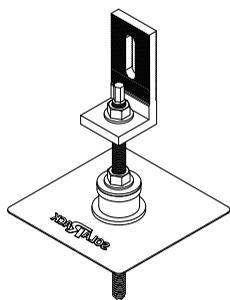
Stone Coated Metal

Material: Aluminum 6000 Series /1070
Finish: Clear Anodized
Item Number: IGB-SR-SCM
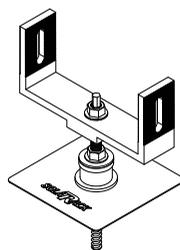
Double Stone Coated Metal

Material: Aluminum 6000 Series /1070
Finish: Clear Anodized
Item Number: IGB-SR-DSCM
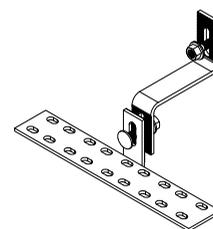
Adjustable S-Tile Hook

Material: SUS304
Item Number: IGB-SR-ADJS
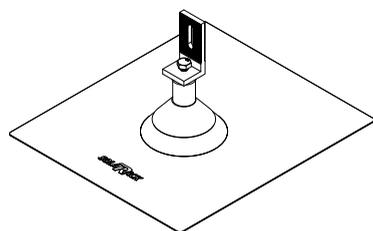
Standoff Kit

Material: Aluminum 6000 Series /1070
Finish: Clear Anodized
　　　 Black Electrophoresis
Item Number: IGB-SR-SF(xxx)
　　　 or IGB-SR-SFB(xxx)
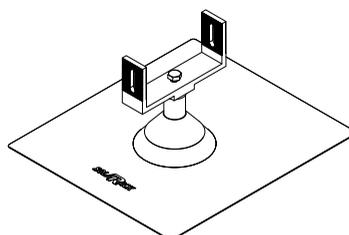
Double Standoff Kit

Material: Aluminum 6000 Series /1070
Finish: Clear Anodized
　　　 Black Electrophoresis
Item Number: IGB-SR-DSFxxx
　　　 or IGB-SR-DSFBxxx
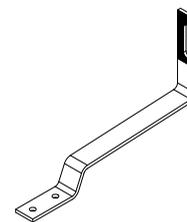
Flat Tile Hook

Material: SUS304
Item Number: IGB-SR-FTH
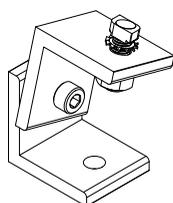
Front Tilt Kit

Material: Aluminum AL 6000 Series
Finish: Anodized Clear
Item Number: IGB-SR-FT
Features: Dual tilt bracket, L-Foot
attachment and rail attachment
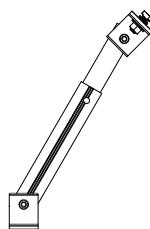
SolaRack Back Tilt Leg

Material: Aluminum 6000 Series
Finish: Clear Anodized
Item Number: IGB-SR-xxx
Features: Available in 3 different
sizes 10°-15° ,15°-30° & 30°-45°

Universal Rail Cap

Material: UV-Rated PVC
Finish: Black

Wire Management

Material: UV Rated PVC
Finish: Black

Markings
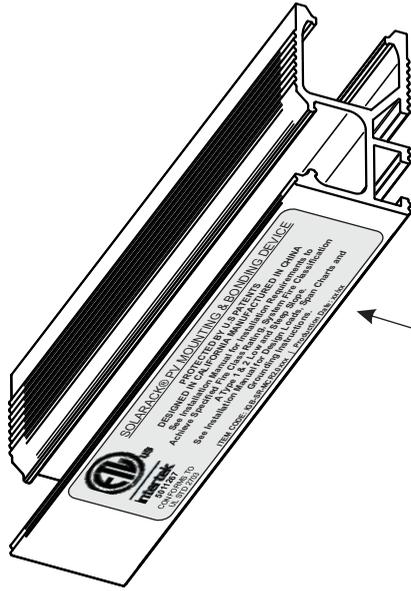
All SolaRack MCR 2.0 Rails are marked by the following label

SOLARACK® PV MOUNTING & BONDING DEVICE

PROTECTED BY U.S PATENTS
DESIGNED IN CALIFORNIA MANUFACTURED IN CHINA
See Installation Manual for Installation Requirements to
Achieve Specified Fire Class Rating, System Fire Classification
A Type 1 & 2 Low and Steep Slope.
See Installation Manual for Design Loads, Span Charts and
Grounding Instructions.

ITEM CODE: IGB-SR-MCR2.0xxx | Production Date: xx/xx

ETL LISTED US

Intertek
5011267
CONFORMS TO
UL STD 2703

UL 2703

Stamped on SolaRack® Micro
attachment bolt channel nut.
Item # IGB-SR-MICRO
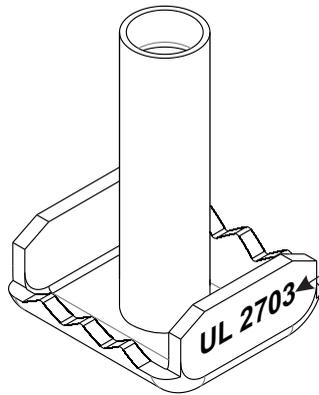
UL 2703

Stamped on SolaRack® Mid & End
Clamps Channel nut.
Item # IGB-SR-MUNI2846 / EUNI2846

ETL LISTED®   UL®
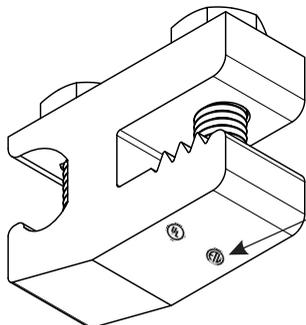
Stamped on ILSCO SGB-4
Grounding Lug

SOLARACK

Recommended Placement & Spacing of Roof Attachments

48"   48"   48"
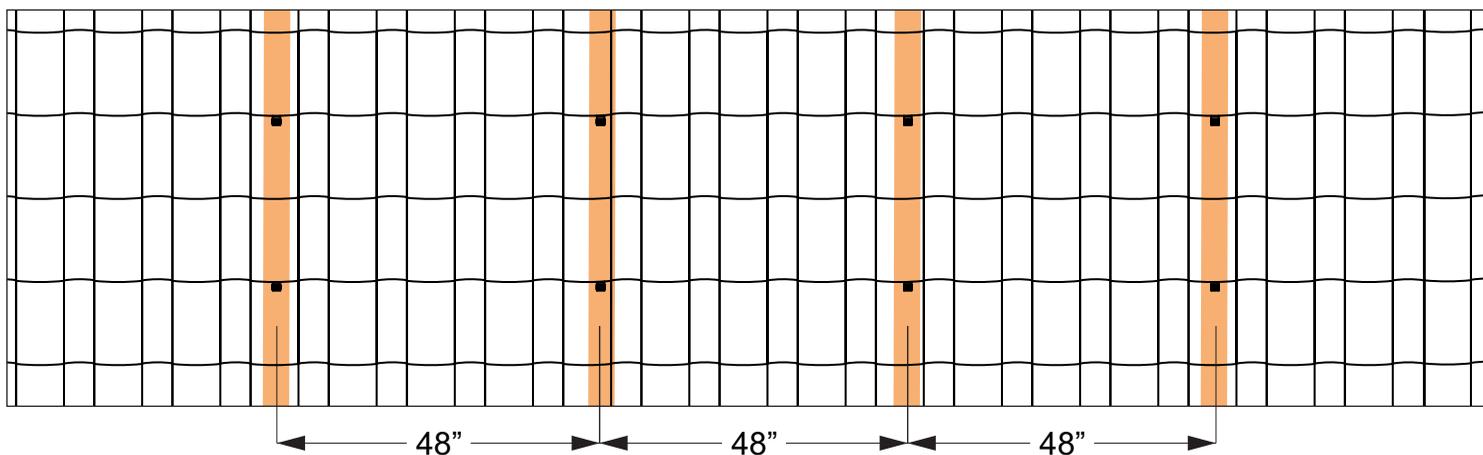
IMPORTANT:
Maximum span allowed is 4 ft
between attachments.

The SolaRack® Adjustable S-Tile Hook is fully adjustable in height to accommodate all curved tiles. For measurements related to clearances and roof setbacks, please refer to your local building and safety office or other authorities having jurisdiction. When using the Adjustable S-Tile with SolaRack® MCR 2.0 Rails, attachments may be spaced up to 48". For proper installation, please refer to the **detailed installation guide on page 11.** Lag screw must be installed in the center of a roof rafter and sealant must be applied during installation. Installation must be preformed by licensed professionals to avoid roof damage. Deforming tiles in any way during installation can and will shorten the lifespan of the roofing. Be sure not to install systems on poor quality or damaged surfaces.

Mounting Instructions: Portrait
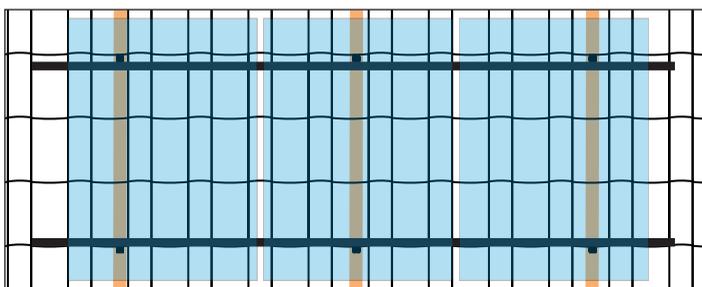
Please follow this instruction graphic when solar modules are mounted in portrait alignment. Rail must be mounted 8"-18" from the top and bottom edge of the solar module.

Some solar module manufacturers may have specific requirements rail placement that differs from these instructions, please check with your module manufacture for compliance regarding mounting requirements.

Rail must not exceed 16" cantilever past the last attachment.

Mounting Instructions: Landscape
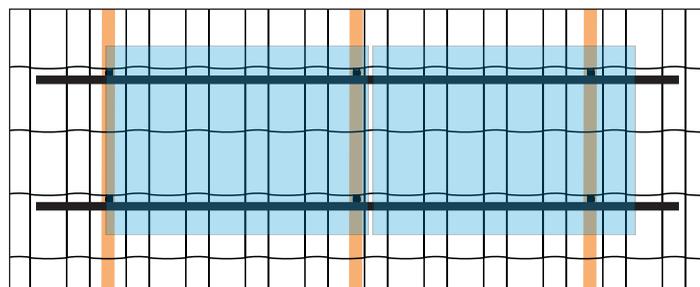
Please follow this instruction graphic when solar modules are mounted in landscape alignment. Rail must be mounted 4"-7" from the top and bottom edge of the solar module.

Some solar module manufacturers may have specific requirements rail placement that differs from these instructions, please check with your module manufacture for compliance regarding mounting requirements.

Rail must not exceed 16" cantilever past the last attachment.

Grounding Component & Electrical Diagram

Universal Mid Clamp Grounding

Fig 1

Fig 4

Universal End Clamp Grounding

Fig 2

Fig 3

Solar Module

Mid Clamp

End Clamp

Fault Current Ground Path

Minimum 10 AWG Copper Wire

Grounded Splice Kit

ILSCO SGB-4 Ground Lug
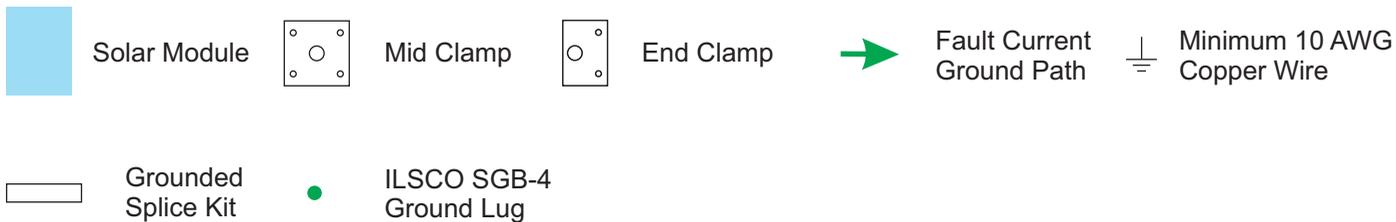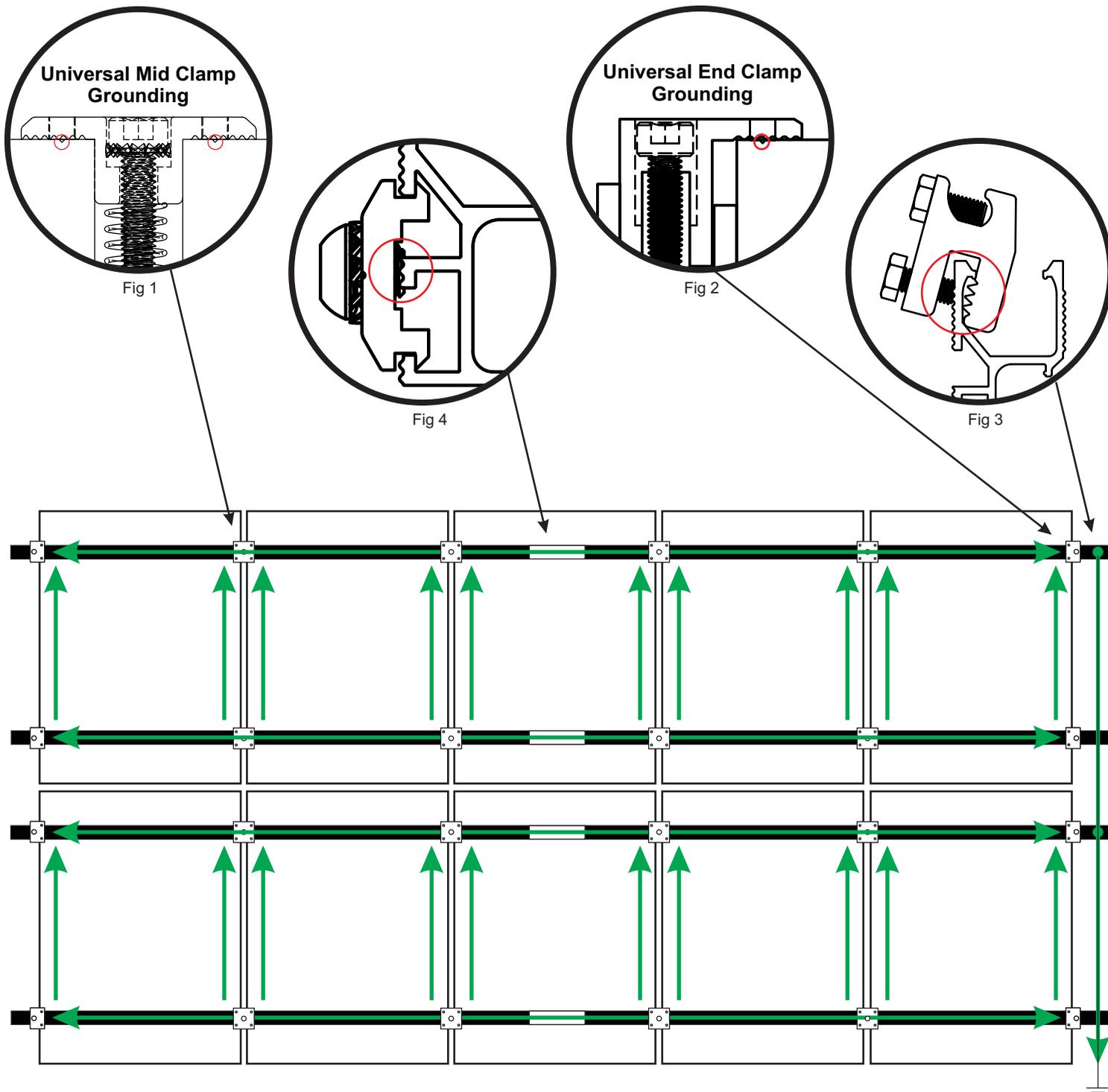
Qualified Solar PV Frames

Manufacturer	Model Numbers
Systems are allowed to mount module frame/ profile height: 28mm - 46mm	
Amerisolar	Modules with 35, 40 and 50mm frames and model identifier ASbYxxxZ; where "b" can be 5 or 6; "Y" can be M, P, M27, P27, M30, or P30; and "Z" can be blank, W or WB
Astronergy	Modules with 35, 40, and 45mm frames and model identifier aaSM66yyPzz-xxx; where "aa" can be CH or A; "yy" can be either 10 or 12; and "zz" can be blank, HV,
Auxin	Modules with 40mm frames and model identifier AXN6y6zAxxx; where "y" can be M or P; "z" can be 08,09, 10, 11, or 12; and "A" can be F or T
Axitec	Modules with 35 or 40mm frames and model identifier AC-xxxY/aa-ZZ; where "Y" is M or P; "aa" is 125 or 156; and "ZZ" is 54S, 60S or 72S.
Boviet	Modules with 40mm frames and model identifier BVM66aaYY-xxx; where "aa" can be 9, 10 or 12; and "YY" is M or P.
Canadian Solar	Modules with 35 and 40mm frames and model identifier CSbY-xxxZ; where "b" can be 1, 3 or 6; "Y" can be H, K, P, U, V, or X; and "Z" can be M, P, MS, PX , M-SD, P-AG, P-SD, MB-AG, PB-AG, MS-AG, or MS-SD.
CSUN	Modules with 35 and 40mm frames and model identifier YYxxx-zzAbb; where "YY" is CSUN or SST; "zz" is blank, 60, or 72; "A" is blank, P or M; and "bb" is blank, BB, BW, or ROOF.
Certainteed	Modules with 35 and 40mm frames and model identifier CTxxxYZZ-AA; where "Y" can be M or P; "ZZ" can be 00,01, 10, or 11; and "AA" can be 01, 02 or 03.
EcoSolargy	Modules with 35 & 40mm frames and model identifier ECOxxxYzzA-bbD; where "Y" can be A, H, S, or T; "zz" can be 125 or 156; "A" can be M or P; "bb" can be 60 or 72; and "D" can be blank or B.
ET Solar	Modules with 35, 40, or 50mm frames and model identifier ET-Y6ZZxxxAA; where "Y" is P, L, or M; "ZZ" is 60 or 72; and "AA" is WB, WW, BB, WBG, WWG, WBAC, WBCO, WWCO, WWBCO or BBAC.
Hanwha Solar	Modules with 40, 45, or 50mm frames and model identifier HSLaaP6-YY-1-xxxZ; where "aa" is either 60 or 72; "YY" is PA or PB; and "Z" is blank or B.
Hanwha Q CELLS	Modules with 32, 35, 40, and 42mm frames and model identifier aaYY-ZZ-xxx; where "aa" can be Q. or B.; "YY" can be PLUS, PRO, PEAK, LINE PRO, LINE PLUS, or PEAK DUO; and "ZZ" can be G3, G3.1,G4, G4.1, L-G2, L-G2.3, L-G3, L-G3.1, L-G3y, L-G4, L-G4.2, L-G4y, LG4.2/TAA, L-G5.2, L-G5.2/H,LG5.3, BFR-G3, BLK-G3, BFR-G3.1, BLK-G3.1, BFR-G4, BFR-G4.1, BFR G4.3, BLK-G4.1, G4/SC,G4.1/SC, G4.1/TAA, G4.1/MAX, BFR G4.1/TAA, BFR G4.1/MAX, BLK G4.1/TAA, BLK G4.1/SC, ECG4.4, G5, BLK-G5, or BLK-G5/SC.
Heliene	Modules with 40mm frames and model identifier YYZZxxx; where "YY" is 36, 60, 72, or 96; and "ZZ" is M, P, or MBLK.
Hyundai	Modules with 35, 40mm frames and model identifier HiS-YxxxZZ; where "Y" can be M or S; and "ZZ" can be KI, MI, MF, MG, SG, RI, RG(BF), RG(BK), TI, or TG
Iteck	Modules with 40mm frames and model identifier IT-xxx-YY; where "YY" is blank, HE, or SE, or Se72.

Manufacturer	Model Numbers
Systems are allowed to mount module frame/ profile height: 28mm - 46mm	
JA Solar	Modules with 35, 40 and 45mm frames and model identifier JAyyzz-bb-xxx/aa; where "yy" can be M, P,M6 or P6; "zz" can be blank, (K), (L), (R), (V), (BK), (FA), (TG), (FA)(R), (L)(BK), (L)(TG), (R)(BK), (R)(TG), (V)(BK), (BK)(TG), or (L)(BK)(TG); "bb" can be 48, 60, 72, 60S01, 60S02, 60S03, 72S
Jinko	Modules with 35 and 40mm frames and model identifier JKMYxxxZZ-aa; where "Y" can either be blank or S; "ZZ" can be P, PP, M; and "aa" can be blank, 60, 60B, 60H, 60-J4, 60B-J4, 60B-EP, 60(Plus), 60-V, 60-MX, 72, 72-V, 72H-V, 72L-V, 72-MX. Frameless modules with model identifier JKMxxxPP-DV.
Kyocera	Modules with 46mm frames and model identifier KYxxxZZ-AA; where "Y" is D or U; "ZZ" is blank, GX, orSX; and "AA" is LPU, LFU, UPU, LPS, LPB, LFB, LFBS, LFB2, LPB2, 3AC, 3BC, 3FC, 4AC, 4BC, 4FC, 4UC, 5AC, 5BC, 5FC, 5UC, 6BC, 6FC, 8BC, 6MCA, or 6MPA
LG	Modules with 35, 40, and 46mm frames and model identifier LGxxxYaZ-bb; where "Y" is A, E, N, Q, S; "a" is 1 or 2; "Z" is C, K, T, or W; and "bb" is A3, A5, B3, G3, G4, or K4.
LONGI	Modules with 40 and 45mm frames and model identifier LR6-YYZZ-xxxM; where "YY" can be 60 or 72; and "ZZ" can be BK, BP, HV, PB, PE, or PH.
Mission Solar	Modules with 40mm frames and model identifier MSExxxZZaa; where "ZZ" can be MM, SE, SO or SQ; and "aa" can be 1J, 4J, 4S, 5K, 5T, 6J, 6S, 6W, 8K, 8T, or 9S.
Mitsubishi	Modules with 46mm frames and model identifier PV-MYYxxxZZ; where "YY" is LE or JE; and "ZZ" is either HD, HD2, or FB.
Panasonic	Modules with 35 and 40mm frames and model identifier VBHNxxxYYzzA; where "YY" can be either SA or KA; "zz" can be either 01, 02, 03, 04, 06, 06B, 11, 11B, 15, 15B, 16, 16B, 17, or 18; and "A" can be blank, E or G
Peimar	Modules with 40mm frames and model identifier SGxxxYzz; where "Y" can be M or P; and "zz" can be blank, (BF), or (FB).
Phono Solar	Modules with 35, 40, or 45mm frames and model identifier PSxxxY-ZZ/A; where "Y" is M or P; "ZZ" is 20 or 24; and "A" is F, T or U.
REC Soalr	Modules with 30, 38 and 45mm frames and model identifier RECxxxYYZZ; where "YY" can be M, NP, PE, TP, TP2, TP2M, TP 2S, TP 2SM, or XP; and "ZZ" can be blank, BLK, BLK2, SLV, or 72.
Renesola	Modules with 35, 40mm frames and model identifier JCxxxY-ZZ; where "Y" is F, M or S; and "ZZ" is Ab, Ab-b, Abh, Abh-b, Abv, Abv-b, Bb, Bb-b, Bbh, Bbh-b, Bbv, Bbv-b, Db, or Db-b
Renogy	Modules with 40 frames and model identifier RNG-xxxY; where "Y" is D or P.
S-Energy	Modules with 40mm frames and model identifier SNxxxY-ZZ; where "Y" is M or P; and "ZZ" is 10, or 15.
Silfab	Modules with 38mm frames and model identifier SYY-Z-xxx; where "YY" is SA or LA; SG or LG; and "Z" is M, P, or X.

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Manufacturer	Model Numbers
Systems are allowed to mount module frame/ profile height: 28mm - 46mm
Solaria	Modules with 40mm frames and model identifier PowerXT xxxY-ZZ; where "Y" can be R or C; and "ZZ" can be AC, BD, BX, BY, PD, PX, PZ, WX or WZ.
SolarWorld	SolarWorld Sunmodule Plus, Protect, Bisun, XL, Bisun XL, may be followed by mono, poly, duo, black, bk, or clear; modules with 31, 33 or 46mm frames and model identifier SW-xxx
Suniva	Modules with 35, 38, 40, 46, or 50mm frames and model identifiers OPTxxx-AA-B-YYY-Z or MVXxxx-AA-B-YYY-Z; where "AA" is either 60 or 72; "B" is either 4 or 5; "YYY" is either 100,101,700,1B0, or 1B1; and "Z" is blank or B
SunPower	Modules with model identifier Ab-xxx-YY and standard (G3) or InvisiMount (G5) 46mm frame; where "A" is either E, P or X; "b" can be 17, 18, 19, 20, 21, or 22; and "YY" can be blank, NE, BLK, COM, C-AC, D-AC, BLK-C-AC, or BLK-D-AC
Sunspark	Modules with 40mm frames and model identifier SYY-xxZ; where "YY" can be MX or ST; and "Z" can be P or W.
Suntech	Vd, Vem, Wdb, Wde, and Wd series modules with 35, 40mm frames.
Telesun	Modules with 35 and 40mm frames and model identifier TP6yyZxxx-A; where "yy" can be 60, 72, H60 or H72; "Z" can be M, or P; and "A" can be blank, B, or T.
Trina	Modules with 35, 40 or 46mm frames and model identifier TSM-xxxYYZZ; where "YY" is Pa05, PC05, PD05, PA14, PC14, PD14, PE14, or DD05; and "ZZ" is blank, A, A.05, A.08, A.10, A.18, .05, .08, .10, .18, .08D, .18D, 0.82, A.082(II), .002, .00S, 05S, 08S, A(II), A.08(II), A.05(II), A.10(II), orA.18(II).
Yingli	Panda, YGE, and YGE-U series modules with 35, 40mm frames.

UL Requirement & Guidelines

Please read carefully and follow the following guidelines and standards set by UL to comply with the ETL certification issued. SolaRack® is certified by ETL for the following listing: UL STD 1703 Fire Rating & UL STD 2703 Grounding and Bonding. The components evaluated for grounding and bonding that has passed received the UL STD 2703 by ETL are as follow:

- **SolaRack® Integrated Grounding & Bonding Series IGB-SR-MUNI2846 Universal Mid Clamp both in clear anodized and black electrophoresis.**
- **SolaRack® Integrated Grounding & Bonding Series IGB-SR-EUNI2846 Universal End Clamp both in clear anodized and black electrophoresis.**
- **SolaRack® Integrated Grounding & Bonding Series IGB-SR-SK Splice Kit both in clear anodized and black electrophoresis.**
- **SolaRack® Integrated Grounding & Bonding Series IGB-SR-MICRO Micro Attachment Bolt Listed to ground Solaredge Optimizers.**

CONFORMS TO UL STD 1703

SolaRack® racking systems have been tested and listed by ETL for system fire classification Class A type 1& 2. Testing was preformed and passed at 5" above the roof, allowing installation without limitation of distance between the roof and solar modules. System assembly to be mounted over a fire resistant roof covering rated for application. Re-inspect the installation for loose components, loose fasteners and any corrosion. If found, the affected components are to be replaced immediately.

CONFORMS TO UL STD 2703

SolaRack® system components were evaluated assuming a 20 Amp maximum series fuse size. SolaRack® mid & end clamps bond and ground the system by penetrating the anodized surface of thesolar module with our stainless steel pointed pins. (Fig 1,2) The system is grounded to the rails by stainless steel channel nut. At the end of every array, an ILSCO SGB-4 ground lug must be used for grounding (Fig 3), ILSCO SGB-4 acceptable wire size is 4-14 SOL-STR and is suitable for use with either copper or aluminum wire,The size of grounding wire will be determined by electrical code. The SolaRack® splice kit was tested as a grounding & bonding method and is also listed under UL 2703 (Fig 4). SolaRack® does not require jumpers! Periodic inspection is required. Re-inspect installation for loose components, loose fasteners and any corrosion, such that if found the affected components are te be replaced immediately.

Important

- All bare copper must be separated from any aluminum surface.
- Check with your local AHJ regarding roof setbacks or any special requirements.
- Some jurisdiction's require visible labels to easily identify UL listed systems.

Universal End Clamp

M6 SUS304
Screw

2 x SUS304
Grounding Pins

Top Portion
Aluminum
End Clamp

Bottom Portion
Aluminum
End Clamp

Module
Supporting
Lip

Channel Nut with
6 Grounding Pins

Universal Mid Clamp

M6 SUS304
Screw

M6 SUS
Lock Washer

M6 SUS
Star Wsher

4 x SUS304
Grounding Pins

6000 Series Anodized
Aluminum Clamp

Stainless
Steel Spring

PVC Spring
Support Base

Channel Nut
with Grounding
Points
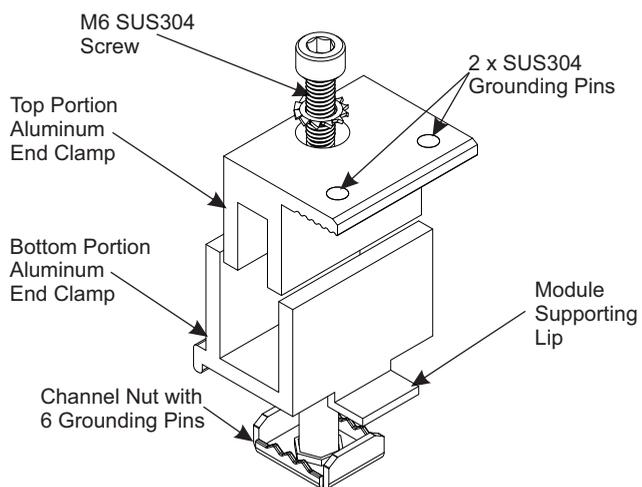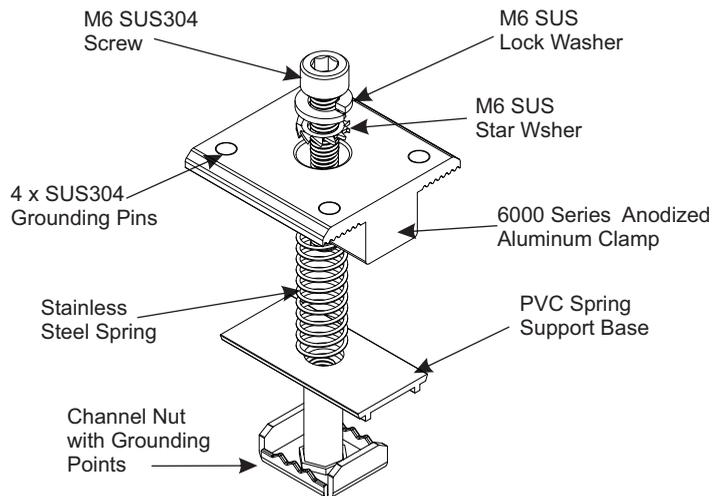
Detail Sectional Drawing

Solar Module

Module Clamp

SUS 304
T-Bolt

SolaRack® MRC 2.0 Rail

SolaRack® Adjustable S-Tile

5/16" x 3"
SUS 304 Lag Screw

Roof Rafter
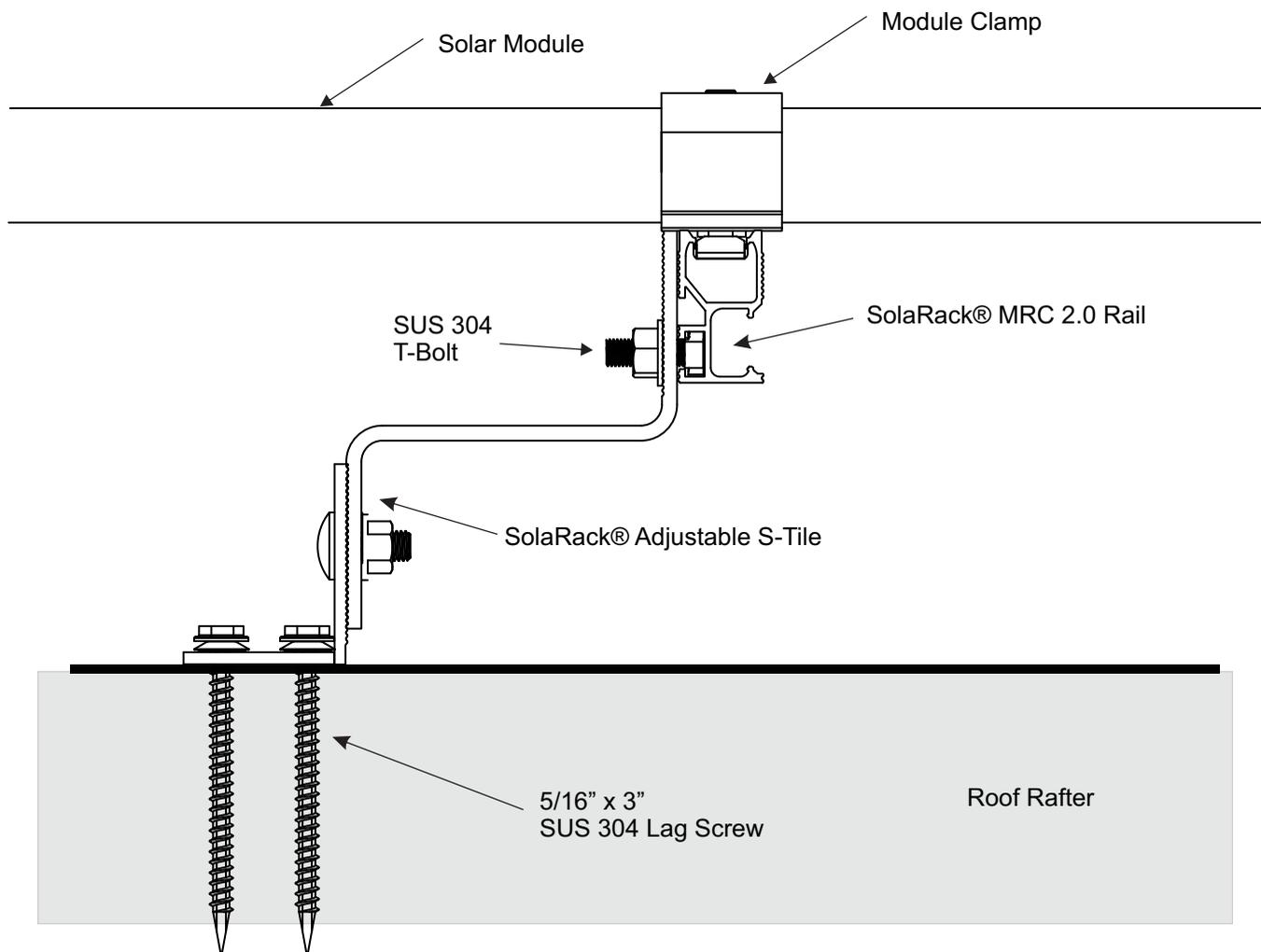
Design Code References

The following engineering references were considered in determining the values of the wing load conditions and material properties of the aluminum railing.

- IBC 2015 / CALIFORNIA BUILDING CODE 2016
- ASCE 7-10(wind loading)
- Aluminum Design: Aluminum Design Manual 2010

Worst Case Loading

Worst case loading conditions were based on the following two load combinations per section 2.4 of ASCE 7-10:

1) 0.6D + 0.6W
2) D + 0.75L + 4W + 0.75S (L=0)

Design Criteria

The following parameters were considered in determining the values of the allowable span charts of the railing.

- Maximum Building Height Considered = 30ft
- Exposure Categories Considered: B & C
- Wind Pressure Based on Section 30.4 (C&C Method 1)
- Gust Factor, G = 0.85
- Topography Factor, Kzt = 1.0
- Directionality Factor, Kd = 0.85
- Importance Factor, I = 1.0
- Zone 2 Pressures Only Considered
- Minimum 2 Rails Per Panel
- Maximum Cantilever of Railing from Anchor 12 Inches
- Tilt Angles Considered: 0 to 30 degrees
- Performance Not Limited to Deflection
- Adequacy of Attachments Based on Evaluation Report

② Adjustable S-Tile
SUS304 Upper Arm

⑤ T Bolt & Nut

③ 5/16" x 3"
SUS Lag Screw

④ Height Adjustment
Bolt & Nut

① Adjustable S-Tile
SUS304 Base
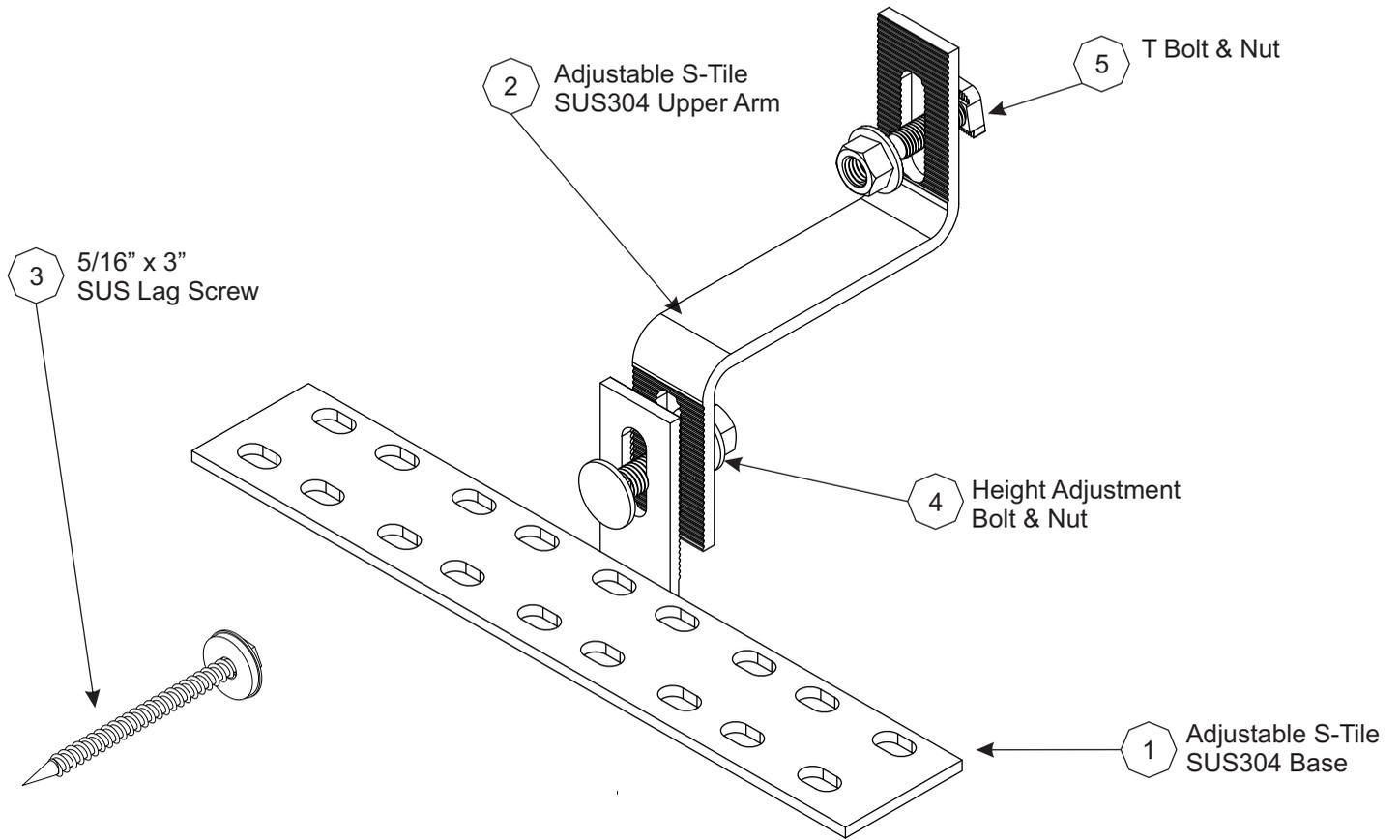
SolaRack® Optional Water Deflector Flahing
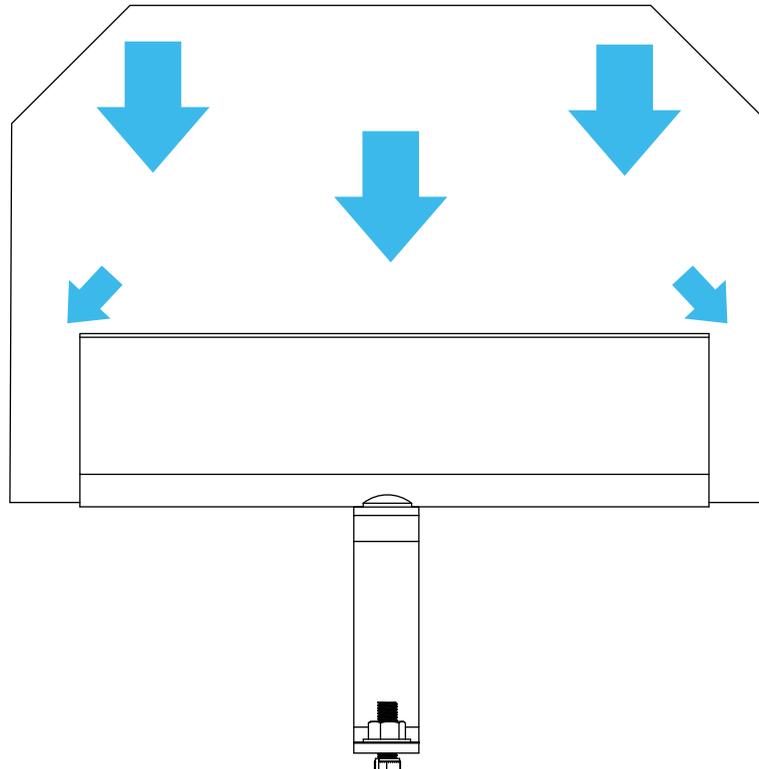
Tools Required

- 𝑅 Cordless Drill (non-impact)
- 𝑅 Impact Driver (for lag screw)
- 𝑅 Torque Wrench (0-250 in-lbs)
- 𝑅 M6 Allen Head
- 𝑅 13mm Socket (for lag screw)
- 𝑅 15mm Socket (for T-Bolts)
- 𝑅 11mm Socket (for SGB-4)

Torque Values

- 𝑅 Adjustable S-Tile Lag Screw (13mm Socket): Fully seat
- 𝑅 T-Bolt to Rail (15mm Socket): 18.5 ft lb
- 𝑅 ILSCO SGB-4 Ground Lag (11mm Socket): 35 in-lbs
- 𝑅 Splice Kit (M5 Allen Head): 10ft lb
- 𝑅 Universal Mid Clamp (M5 Allen Head): 16 ft lb
- 𝑅 Universal End Clamp (M5 Allen Head): 14 ft lb
- 𝑅 Micro Attachment Kit (M5 Allen Head): 20 ft lb

Step by Step Installation Guide for Single Composition

The SolaRack Adjustable S-Tile kit is designed to be installed on S, M, W and Clay roofs. This system has been listed by ETL and conforms to UL STD 2703 for Grounding & Bonding & UL STD 1703 Class A Type 1&2. Installation of the SolaRack®Adjustable S-Tile Hook doesn't require any modification to existing roofing materials and will provide a watertight seal when installed according to the following installation guide. Please follow the steps below to achieve a complete seal and proper installation. The product warranty will be VOIDED if installed differently then specified in this manual or if any alterations or modifications are made to the product. Roof must be in good condition prior to installation.(condition of roof is to be verified and determined by the contractor / installer and SolaRack doesn't take any responsibility of determining the quality of the roof prior installation).

Step 1

Locate the roof penetrations at the rafter locations.

Use a crow or nail bar to lift the roofing material where the Hook is installed, make sure to remove or loosen any nails on the way.

Mark the location of your roof penetrations at the rafter locations as outlined in your plans and engineering documents.

Drill 2 1/4" Pilot hole at the center of the roof rafter. * Check local jurisdiction regarding minimum embedment.

Recommended to use all 3 Leg Screws. The 3rd Lag Screw can be installed without a rafter.

Backfill the pilot hole with sealant.
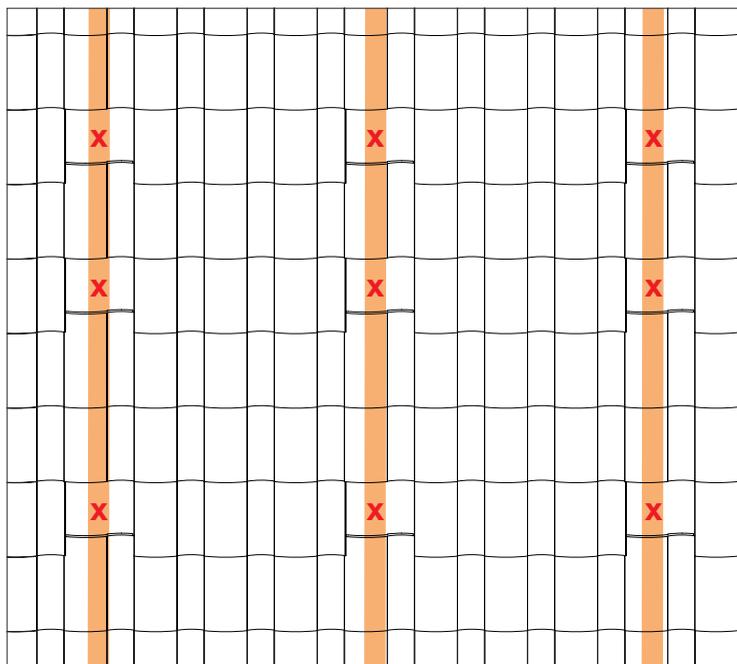
x Roof Penetrations
⋮ Roof Rafter

Step 2

Place the SolaRack® Adjustable S-Tile hook on top of the rafter which it will be installed. Make sure the hook is installed at the ridge point of the tile and secure the connecting bolt to lock in the height.

Drive (3) 5/16x3 Lag Screws to connect the hook to the roof until fully seated. (2 Lag screws must be to the rafter).

Wrong   **Correct**

Installation at the valley

Installation at the ridge
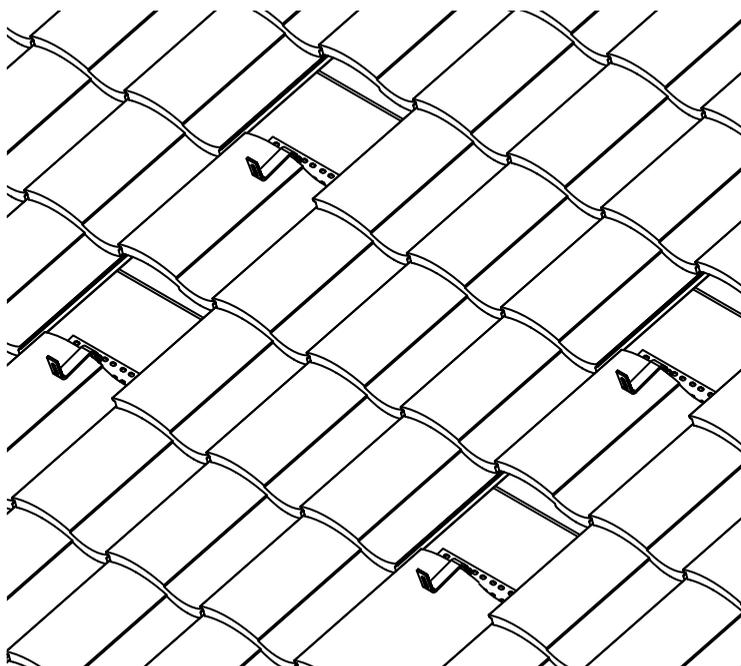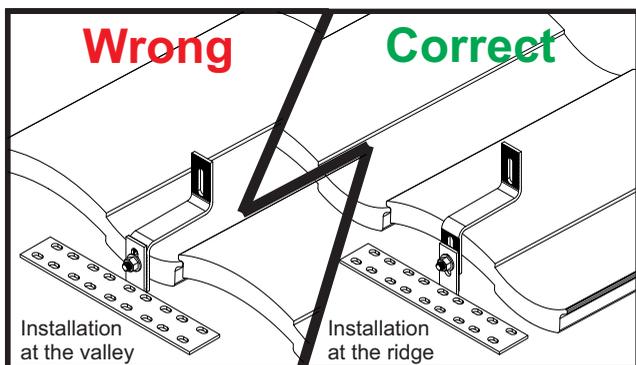
Step 3

Re-install the tile to its original location. Slight alteration to the bottom of the tile may be suggested where the hook protrudes.
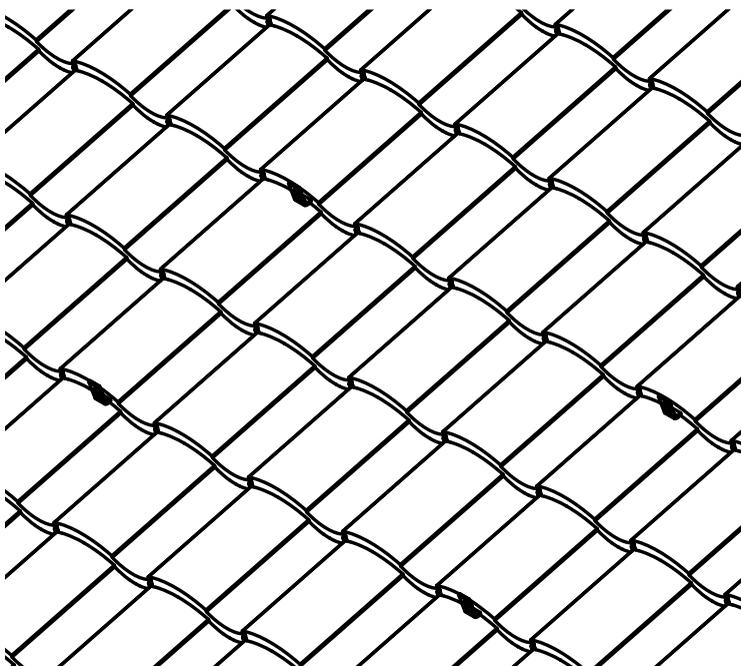
Step 4

Insert SolaRack® T-Bolt through
the Adjustable S -Tile opening into the rail
opening. Torque 18.5 ft lb
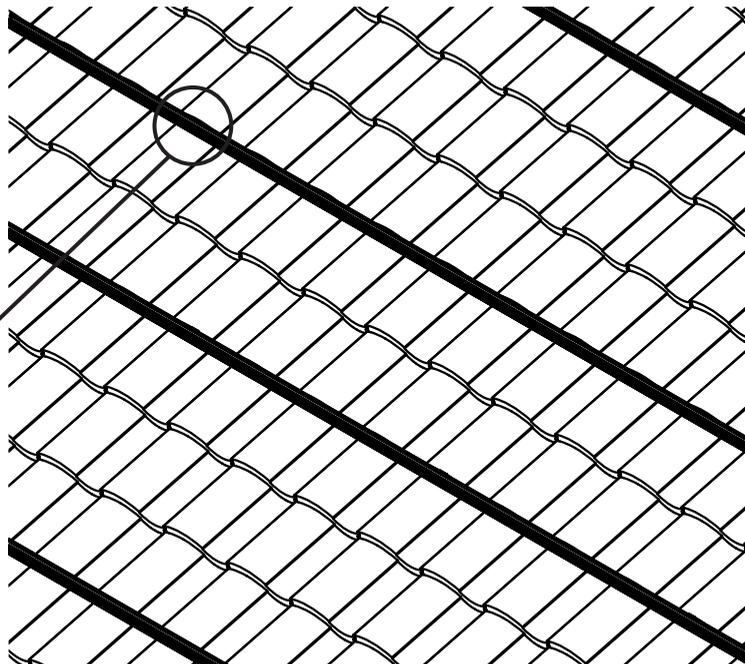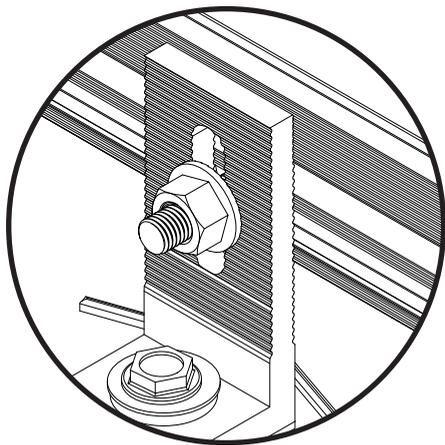
Step 5

Insert SolaRack® Integrated Grounding
Splice Kit at the rail opening. Splice bar must
be installed 50% set in each rail segment.

Use the Integrated Grounding & Bonding
splice kit at all connections between two
rails. Maximum distance from L-Foot is no more
then 36" from each side of the Splice Kit
Torque to 10 ft lb.
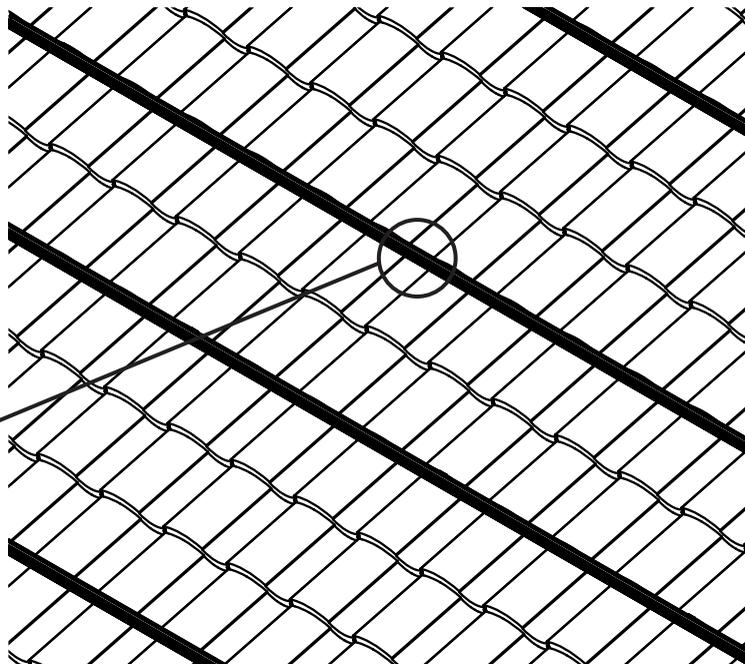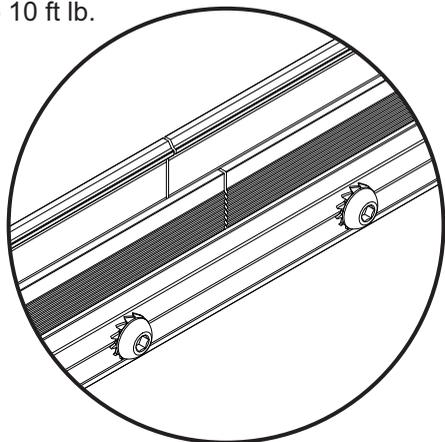
Step 6

Insert SolaRack Integrated Grounding & Bonding Universal Mid Clamp by lifting the Plastic Support Base with two fingers and tilting the Chanel nut into the rails upper opening. Release the Plastic Support Base and the Mid Clamp will stay in the open position.
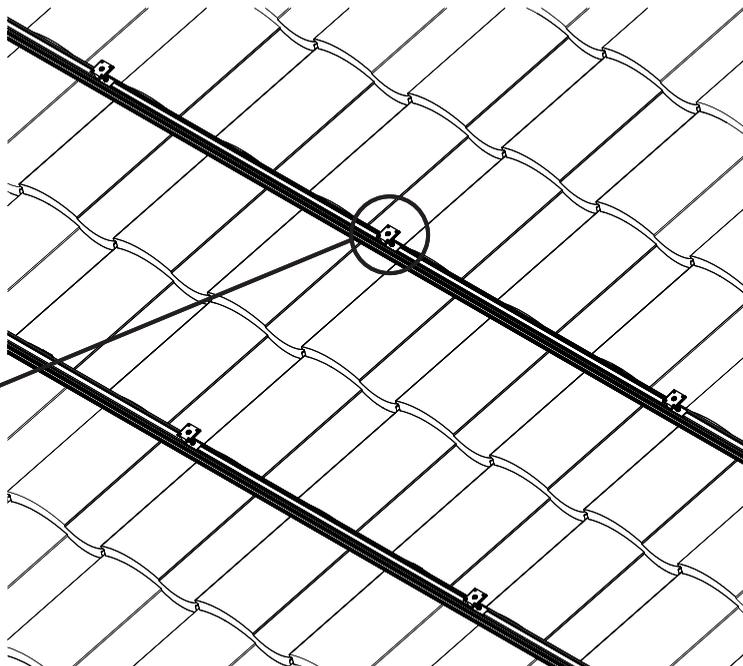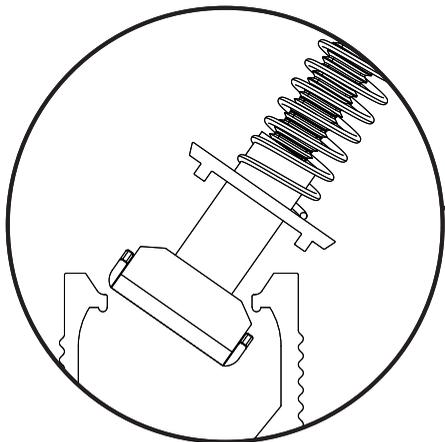
Step 7

Fasten and install at locations where two solar modules meet. Location of mid clamps from rail end should comply with module manufacture guidelines. Torque to 16 ft lb.
Once Mid Clamps are fasten the Stainless Steel Pins will penetrate the anodization coating on the module frame for bonding (red circles below show grounding points).
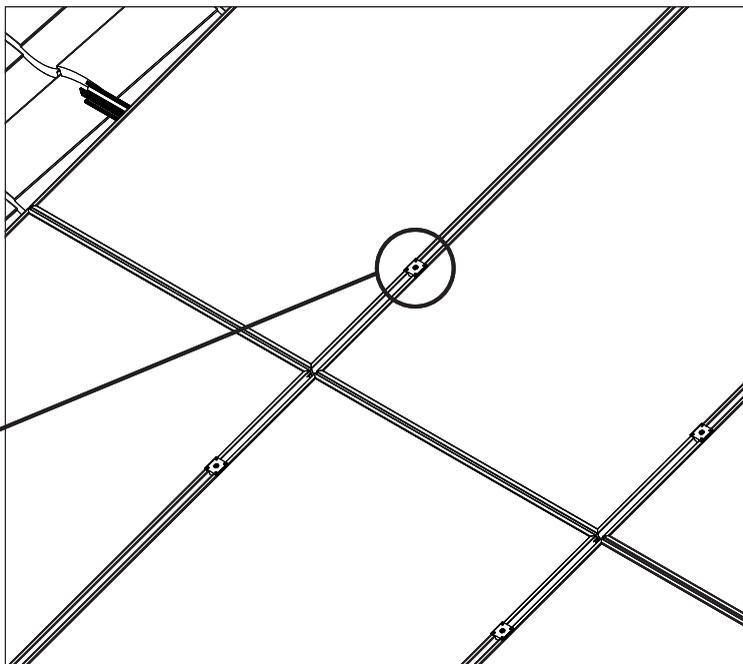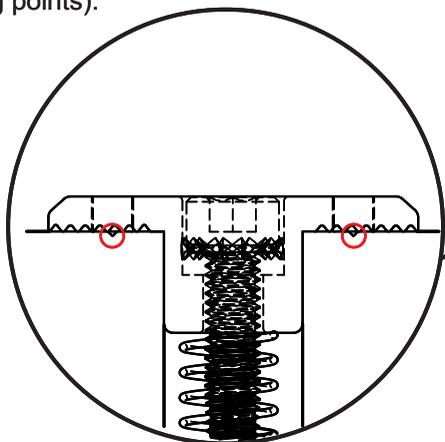
Step 8

Insert SolaRack Integrated Grounding & Bonding
Universal End Clamp by sliding it into the rail
upper opening. Make sure the lip at the front
of the End Clamp is placed below the Module
frame.
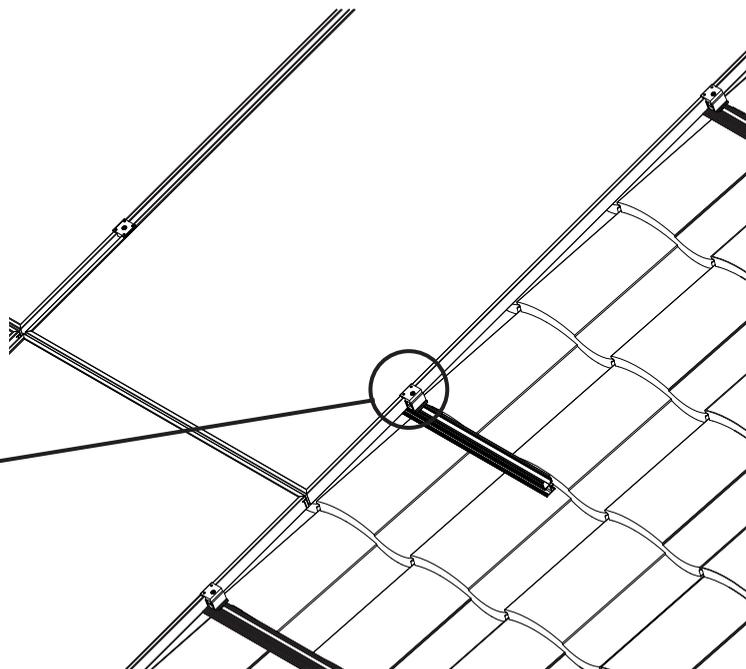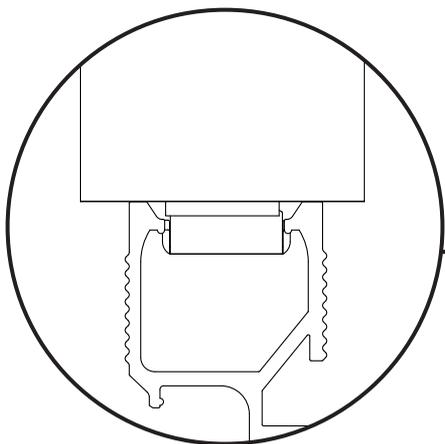
Step 9

Fasten and install at the end of each array
Minimum 2 End Clamps per Module.
Location of End clamps should comply with
module manufacture guidelines. Torque to 14 ft lb.
Once End Clamps are fasten the Stainless Steel
Pins will penetrate the anodization coating on the
module frame for bonding
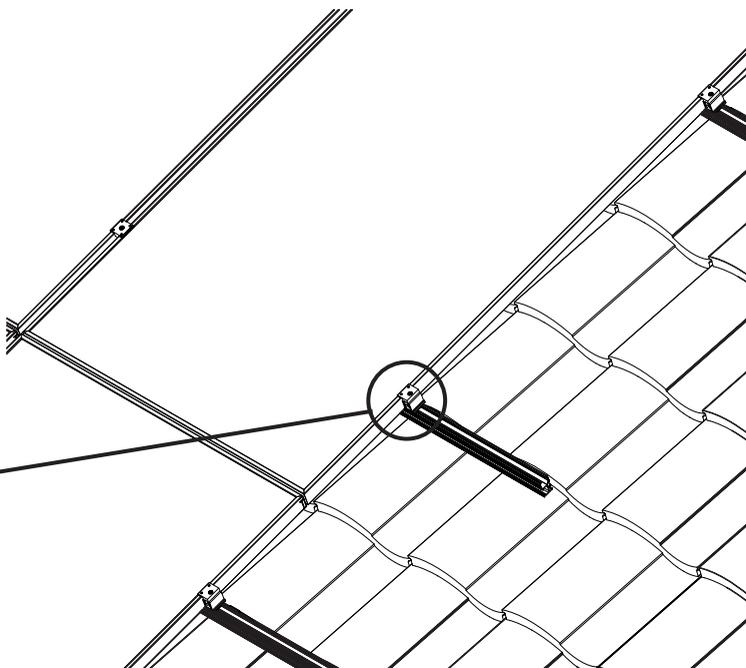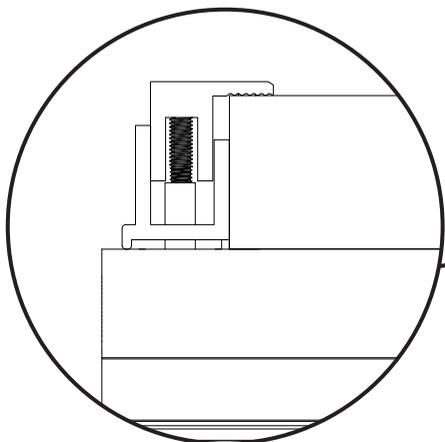
Step 10

Install ILSCO SGB-4 Grounding Lug at the end of a rail (please refer to Grounding Diagram on page 6). Run copper wire to connect all grounding lugs. Copper wire must not touch any aluminum surface. Tighten each bolt to 35 in-lbs as recommended by ILSCO.
Acceptable wire size is 4-14SOL-STR. Suitable for use with either copper or aluminum. Size of grounding wire will be determined by electrical code.
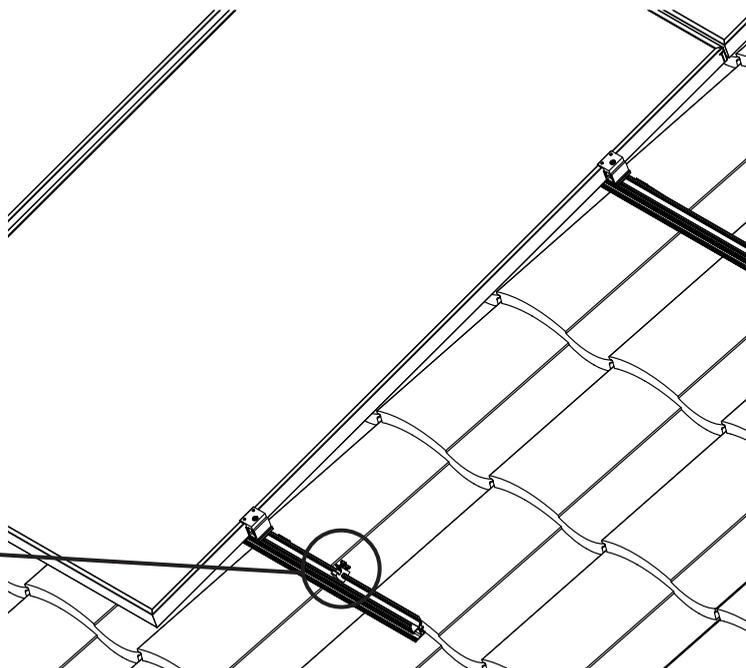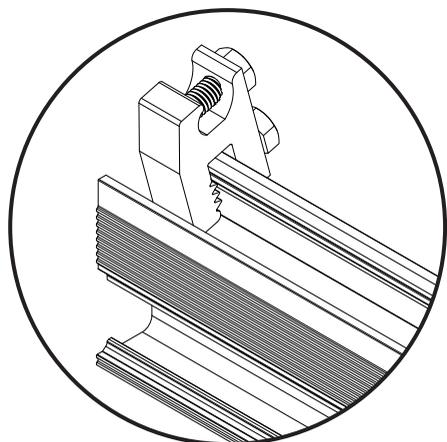
Installing Micro Inverters / Optimizers

Step 1

Insert the Micro Bolt Attachment by tilting it into the upper opening of the rail.
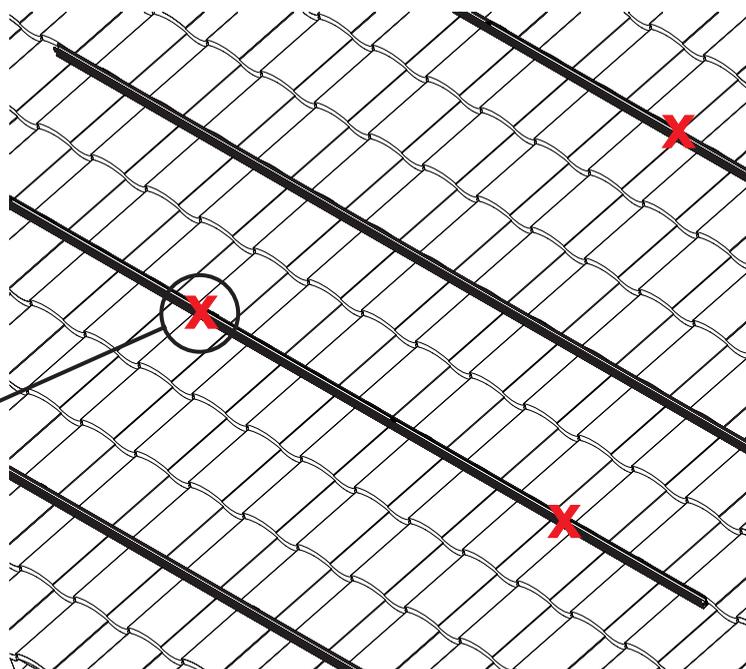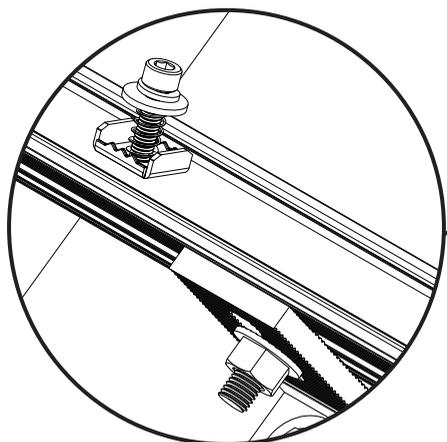
X- Micro Attachment

Step 2

Slide The Micro Inverter / Optimizer into place, make sure the washer is on top of the Micro Inverter / Optimizer Plate.
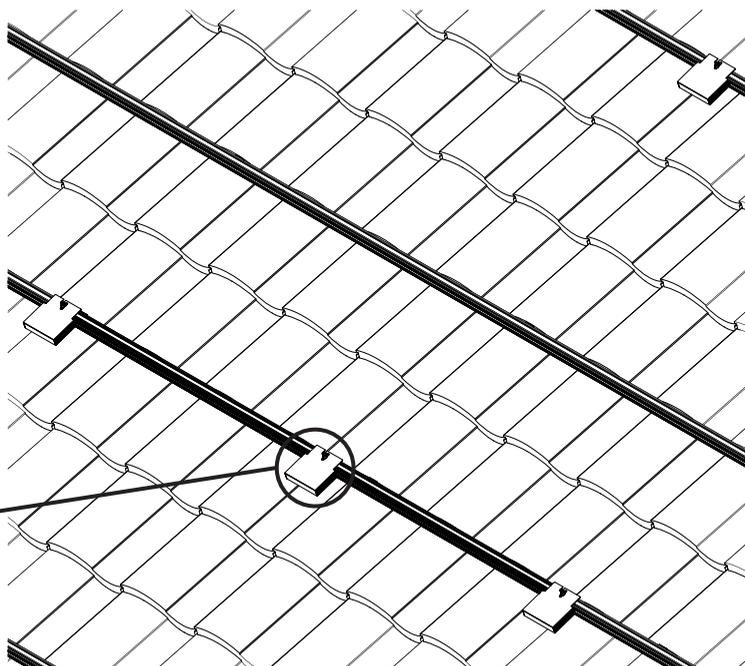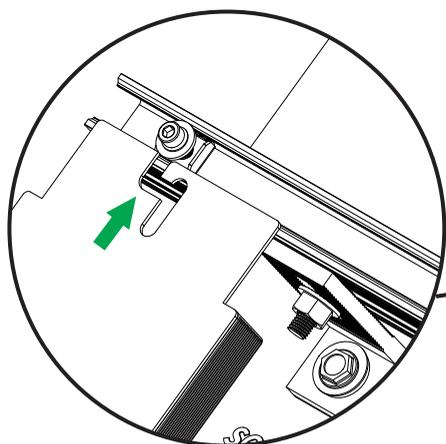
Step 3

Tighte the Micro Bolt to secure the Micro Inverter / Optimizer in place, Torque to 20 ft lb.
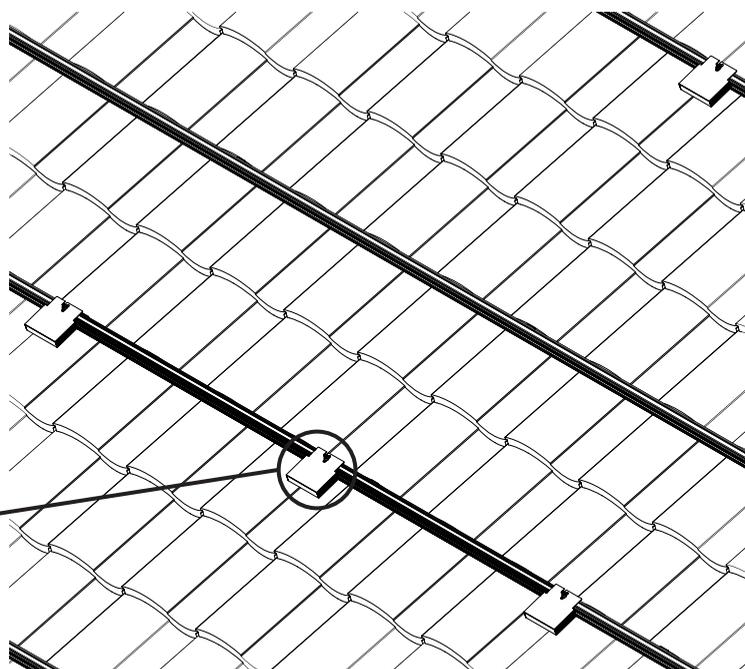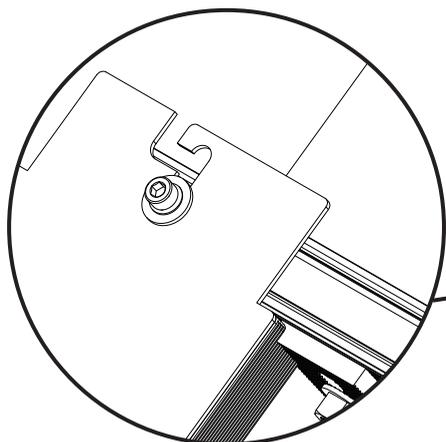
SolaRack Limited Product Warranty

This warranty is for SolaRack "products" manufactured after June of 2018, SolaRack ® provides the following warranties, for the products installed according to our installation manual on the proper roofing structure that the product was designed for: SolaRack Inc. ("SolaRack"), warrants to the buyer (Buyer") at the original installation site, ("product") shall be free from defects in material and workmanship which substantially impair their ability to preform their intended function, for a period of Twenty five (25) years, except for anodized finish ("Finish Warranty"), which finish shall be free from visible peeling, cracking or chalking under normal atmospheric conditions for a period of five (5) years, from the 1) The date the installation of the product at the site is substantially completed, or 2) 60 days after the initial purchase of the products from SolaRack.

This warranty does not cover the following:
1) Any defect that has not been reported to SolaRack in writing within the warranty periods set above and or within 60 days after discovery of such defect.
2) PV modules, electrical components and or wiring used in conjunction with the product or any other materials not provided by solarack.
3) Goods that are sold by SolaRack, which are not designed or manufactured by SolaRack.
4) Damage to the product that occurs during its shipment, storage, installation or majeure acts including fire, flood, earthquake, storm, hurricane or other natural disaster, war, terrorist activities, acts of foreign enemies and criminal acts.
5) Normal wear, or damage, resulting from misuse, overloading, improper installation.
6) Installation of the product is not preformed according with SolaRack® written installation manual (guide), or if the product has been modified, repaired, painted or reworked in a manner not previously authorized by SolaRack in writing, or if the product is consequential, contingent or incidental damages arising out of the use of the product by any circumstances.

The "Finish Warranty" does not apply to surface oxidation or any foreign residue deposited on the finish, or to all installation in corrosive atmospheric conditions (at SolaRack® sole discretion). The "Finsih Warranty" is VOID if the practices specified by AAMA 609 & 610-02 "Cleaning and Maintenance for Architecturally Finished Aluminum", or ASTM A780/A780M-09 "Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coating" as applicable, are not followed.

If within the specified Warranty periods the "Products" shall be reasonably proved to be defective, then SolaRack shall correct the defect by repair, replacement, or credit at SolaRack's sole discretion. Refurbished products may be used to repair or replace the defective components. Transportation, installation, or any other costs associated with product repayment are not covered by these warranties and are not reimbursable. Such repair or replacement shall completely satisfy and discharge all of SolaRack's liability in respect to these warranties.

A formal document providing the purchase location, installation address and purchase date of the "Product" is required with any warranty claim.

Transfer of Warranty

This "Limited Warranty" is transferable with respect to products purchased and manufactured by SolaRack to a new owner of the entire photovoltaic system, in which SolaRack products are originally installed, provided that such product remains intact in it's original placer of installation. Any subsequent owner must agree in writing to be bound by the terms of this SolaRack Limited Warranty document. Change in ownership of the Products or assignment of this Limited Warranty will not cause the warranty periods above to reset.

Except as set forth above, SolaRack® sell products on "AS IS" basis, which may not be free of errors or defects, AND ALL EXPRESS OR IMPLIED REPRESENTATION AND WARRANTIES, INCLUDING WARRANTIES OF MERCHANTABILITY, FITNESS FOR PARTICULAR PURPOSE, QUALITY, WORKMANSHIP, EFFORT, CORRESPONDENCE TO DESCRIPTION, DESIGN, TITLE OR NON- INFRINGEMENT, OR ARISING FROM COURSE OF DEALING, COURSE OF PERFORMANCE OR TRADE PRACTICE, ARE HEREBY DISCLAIMED.