

ModuRack

Bull Clamps

For

First Solar S6 Solar Modules



Installation Manual

Bull Clamps For First Solar S6 Modules



BULL CLAMP & BULL END CLAMP ¹

DISCLAIMER

This manual describes the proper procedures and standards required for installation of clamps on First Solar S6 solar modules. Thorough compliances are required for product liability and warranty. Failure to follow these guidelines may result in property damage, bodily injury or death. This racking system is to be used only in combination with modules that include these specific clamps in their installation manual.

RATINGS (preliminary)

Structural Code Per Asce 7-10

All components in this manual (see specifications)

Integrated Bonding Per UL2703

All components in this manual (see limitations and UL listing)

Fire Certification

These clamps are to be mounted over certified solar rails rated for the application.

Others

It is necessary to periodic re-inspect the installation for loose components, loose fasteners and any corrosion. The affected parts are to be immediately replaced.

These clamps may be used to ground and/or mount a PV module complying with UL1703 only when the specific module has been evaluated for grounding and/or mounting in compliance with the included instructions.²

¹ US Patent Pending #15891417, #15898747

² ModuRack Installation Manual, revision 08 7/18/2018, confidential information
ModuRack Installation Manual, revision 08 7/18/2018, confidential information

ASSEMBLIES AND USE

Bull Clamp

Bull Clamp Kit

Clamp Kit For Solar Modules (First Solar S6)

Components:

Bull Clip, Washer, Bolt, Nut

Manually preset on rail with hand until feeling resistance

Fasten torque on bolt/nut: 132 in-lb

Load rating:

Downward Pressure – N/A

Upward Pressure – 100 psf or 4800 Pa

Down-Slope Load – N/A



Bull End Clamp

Bull End Clamp Kit

End Clamp Kit For Solar Modules (First Solar S6)

Components:

Bull End Clip, Washer, Bolt, Nut

Preset on rail with hand until feeling resistance on fingers

Fasten torque on bolt/nut: 132 in-lb

Load rating:

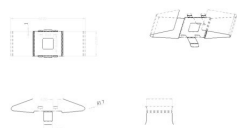
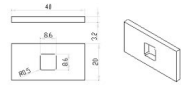
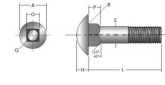
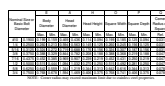
Downward Pressure – N/A

Upward Pressure – 100 psf or 4800 Pa

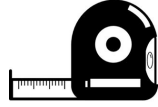
Down-Slope Load – N/A



COMPONENTS – Bull Clamp

Item #	Part #	Description	Qty	Material Finish	Photo
1	Bull Clip	Snap-n-Lock Clip	1	Grade 18-8 Stainless Steel Any Finish	
2	Bull Washer	Clamp	1	Grade 18-8 Stainless Steel Any Finish	
3	Bolt	5/16 -18 X 1 in, Carriage Bolt (Bolt length can vary)	1	Grade 18-8 Stainless Steel Any Finish	  RECORD OF REVISIONS CHANGES TO THIS DOCUMENT ARE LOCATED ON THE LAST PAGE
4	Nut	5/16 -18 Hex Serrated Flange Nuts	1	Grade 18-8 Stainless Steel Any Finish	  RECORD OF REVISIONS CHANGES TO THIS DOCUMENT ARE LOCATED ON THE LAST PAGE

TOOLS

Tape Measure Verify rails and module positions	
5/16 or M8 Torque Wrench (0-240 in-lbs) Tightening the nuts already in position with specified torques	
Cordless Drill With 5/16 or M8 Socket Impact driver for fastening bolts or nuts	
Gloves Protect the hazard of the sharp corners.	

WARNING!

USE ORIGINAL NEW PARTS ONLY



INSTALLATION STEPS – with slot on rails

Confirm the layout and the number of parts

Refer to your project layout drawing. Wear safety gloves and always wear harness on when at height.

Inspect and clean slot if contaminated

Make sure all slots have clean and fresh surface. If contaminated, clean before use.

These clamps are to be mounted over certified solar rails rated for the application and listed with. Slots on rail are 35mm or longer

These clamps are also bonding. Clean contact to lower slot surface is necessary

a. Bull Clamp Kit

Bull Clamp

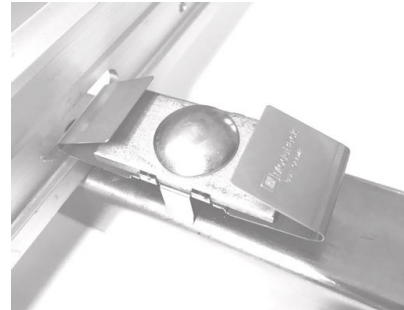
1. Input Washer in the Clip, then insert Bolt

2. Pre-install on the rails manually turn bolt if top-mount, or turn nut if bottom-mount till feeling resistance

Note: Avoid being too tight, allow the clamps easily movable

3. Insert Bull Clamp in the slot of module at marked positions based on layout drawing

For slots on the first or last frames of the modules, use Bull End Clamp instead



4. Take the first or next module, align slots to the Bull Clamps and insert until hearing click. It may require two installers or machine to carry modules due to the weight of modules

5. Align the module slots with the holes on rail, then fasten the clamps with specified torque value 132 in-lb.

Note: the build in adjustability to tolerate with rail misalignment gives installers to complete installation even with misaligned rails.

6. Insert two Bull Clamps on the other side of the module frame slot until hearing clicks

7. Take the second module and repeat Steps 4 through 6

8. After completing Step 6 for the last module, use Bull End Clamp. Insert until hearing click, and then fasten.

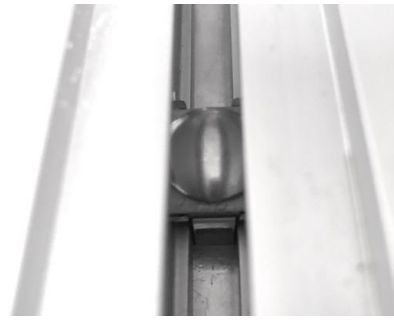
b. Bull End Clamp

End Clamp

1. Use End Clamp for First and last modules

Note:

1. Only use Bull Clamps with new clips
2. For top mounting, use socket head screw as specified for your rail. Please specify during order.
3. When preset Bull Clamps on rails, make sure clamps stand and can freely slide
4. Fasten only after both sides of Bull Clamps inserted in the slots of the frame
5. Use specified torques
6. Inspect and clean slot if contaminated



INSTALLATION STEPS—without slot on rails

Confirm the layout and the number of parts

Refer to your project layout drawing. Wear safety gloves and always wear harness on when at height.

Inspect and clean slot if contaminated

Make sure all slots have clean and fresh surface. If contaminated, clean before use.

These clamps are to be mounted over certified solar rails rated for the application and listed with.

These clamps are also bonding. Clean contact to lower slot surface is necessary

a. Bull Clamp Kit

Bull Clamp

1. Input Washer in the Clip, then insert Bolt



2. Insert Bull Clamp in the slot of the module



3. Drop down the bolt to the rail hole then manually turn the nut till feeling resistance

Note: Avoid being too tight, allow the clamps easily movable



4. Take the next module, align module slots to the Bull Clamps and insert until hearing click. It may require two installers or machine to carry modules due to the weight of modules

5. Align the module slots with the holes on rail, then fasten the clamps with specified torque value 132 in-lb.

Note: the build in adjustability to tolerate with rail misalignment gives installers to complete installation even with misaligned rails.

(Bottom up view)

6. Insert two Bull Clamps on the other side of the module frame slot until hearing clicks

7. Take the second module and repeat Steps 4 through 6

8. After completing Step 6 for the last module, use Bull End Clamp. Insert until hearing click, and then tighten.

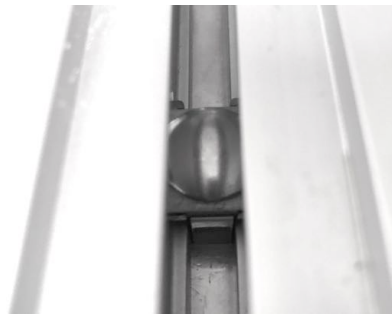
b. Bull End Clamp

End Clamp

1. Use End Clamp for First and last modules

Note:

1. Only use Bull Clamps with new clips
2. For top mounting, use socket head screw as specified for your rail. Please specify during order.
3. When preset Bull Clamps on rails, make sure clamps stand and can freely slide
4. Fasten only after both sides of Bull Clamps inserted in the slots of the frame
5. Use specified torques
6. Inspect and clean slot if contaminated



ModuRack™ LIMITED WARRANTY

10 YEAR LIMITED PRODUCT WARRANTY | 5 YEAR LIMITED FINISH WARRANTY

Limited Warranty. ModuRack, Inc. ("Manufacturer"), the manufacturer of the ModuRack solar module clamping system (the "Product"), warrants to the end-user ("you") of the Product, that while installed as part of the original solar electric system (the "System") at the original installation site, the Product shall be free from defects in materials and workmanship for a period of ten (10) years (the "Limited Product Warranty"), and the Product finish shall be free from visible rusting, peeling, cracking or chalking under normal atmospheric conditions for a period of five (5) years (the "Limited Finish Warranty") (collectively, the "Limited Warranties"). The Limited Warranties shall commence on the date of completion of the installation of the Product as a part of the System.

Warranty Service. If, within the applicable warranty period, the Product is determined by Manufacturer to be defective, based on reasonable evidence of a defect provided by you, Manufacturer will, at its sole option, (a) repair the Product or replace it with an equivalent product, or (b) take back the Product and refund to you the purchase price paid to Manufacturer by the original purchaser of the Product (the "Distributor"). Your sole and exclusive remedy under the Limited Warranties shall be limited to the repair, replacement or refund specified herein. For warranty claims, contact Manufacturer at the address below.

Warranty Conditions. The foregoing warranties are contingent on the proper use of the product in accordance with the instructions and specifications published by manufacturer and shall not apply to any product that has been repaired or modified by persons other than manufacturer.

Warranty Disclaimer. The express warranties set forth in herein are in lieu of all other warranties, express or implied. Manufacturer hereby specifically disclaims any other representations or warranties, express or implied, including without limitation any warranties of title, non-infringement, quiet enjoyment, merchantability, or fitness for a particular purpose.

Damage Waiver. Notwithstanding any other provisions herein, in no event will manufacturer or its suppliers be liable for any special, incidental or consequential damages suffered by you, distributor or any third party which may arise under or in connection with the product or these limited warranties.

Limitation of Liability. Distributor and manufacturer have negotiated risk allocation between themselves and agree that in no event will manufacturer's liability for any claim, whether in contract, tort or under any other theory of liability, exceed the cumulative amounts actually received by manufacturer from distributor for the products sold to distributor during the 12 months period immediately preceding the accrual of the claim.

Address for Warranty Claims:

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