POWER PEAK™ GSHC
ASSEMBLY INSTRUCTIONS
step-by-step assembly and installation
SAFETY CONSIDERATIONS

This application procedure is not intended to supersede any company construction or safety standards. This procedure is offered only to illustrate safe application for the individual. **FAILURE TO FOLLOW THESE PROCEDURES MAY RESULT IN PERSONAL INJURY OR DEATH.**

Do not modify this product under any circumstances, except where noted in this application procedure.

This product is intended for use by trained technicians only. **This product should not be used by anyone who is not familiar with, and not trained to use it.**

When working in the area of energized lines, extra care should be taken to prevent accidental electrical contact. Be sure to wear proper safety equipment per your company protocol.

For proper performance and personal safety, be sure to select the proper size PREFORMED™ product before application.

PREFORMED products are precision devices. To ensure proper performance, they should be stored in cartons under cover and handled carefully.
First Edition: Mounting Systems, Mounting Devices, Clamping/Retention Devices, and
Ground Lugs for Use with Flat-Plate Photovoltaic Modules and Panels.

**Electrical**
Note: Electrical installations must be in accordance with the National Electric
Code ANSI / NFPA 70. Contact your local Authorities Having Jurisdiction (AHJ) for additional details.

Max Overcurrent Protective Device (OCPD)
Rating: 25A

**Equipment Grounding Conductor Sizing**

<table>
<thead>
<tr>
<th>Module Fuse Rating</th>
<th>Copper Wire Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;15 AMPS</td>
<td>#14 AWG 90°C</td>
</tr>
<tr>
<td>&lt;20 AMPS</td>
<td>#12 AWG 90°C</td>
</tr>
<tr>
<td>20-60 AMPS</td>
<td>#10 AWG 90°C</td>
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</table>

**Splice Plates**
Splice Plates have been tested per UL2703 Bonding & Grounding requirements without the use of Bonding Jumpers.
See assembly procedures for proper assembly.

**Module Clamps**
Module clamps have integrated grounding and have been tested to UL 2703.
See Module Compatibility List for list of approved modules.
Module Orientation: Portrait

**Structural Certification**
Mechanical Load Rating: Designed and Certified for Compliance with IBC & ASCE/SEI-7 through separate PE reviews.

**Marking**
Product markings identified per UL2703 are to be located in a location that is readily accessible for inspection.

**Periodic Inspection**
Periodic re-inspection is a recommended system maintenance procedure to check for loose components or corrosion. If any loose components and/or corrosion is found, the affected components are required to be replaced immediately, with the original mounting system manufacturer’s component parts.
POWER PEAK™ GSHC

About the product
The POWER PEAK GSHC is designed to mount on a roll formed C-Channel and pile driven directly into the soil to reduce foundation work and associated labor cost. Additionally, each POWER PEAK GSHC is designed to site-specific conditions, and arrives on the project site ready to assemble. PV modules are mounted in a two-row portrait configuration where the number of modules in each row equals the specified string size for easier wiring and reduction in materials. In addition, the POWER PEAK GS may be designed for continuous row applications where multiple strings may be combined running east/west.

The POWER PEAK GSHC mounting system features bottom access PV module clamping which eliminates the need for ladders during module installations. The module clamps are preassembled with no loose parts for faster installation and provide code-compliant integrated electrical bonding.

The POWER PEAK GSHC system features multiple slots and adjustments, allowing the table tops to be squared easily thus resulting in a professional finish.

Important Installation Considerations
C-Channel size and foundation requirements are based on several factors including the array surface area, maximum design wind speed, exposure category, snow loading, tilt angle, soil type and front edge clearance. Consulting with a local building department and/or professional engineer is recommended. For foundation and C-Channel recommendations on a specific installation, please:
Contact us by Phone: 800-260-3792
Send an Email request: info@plpsolar.com

Grounding Considerations
The POWER PEAK GSHC utilizes integrated module grounding clamps designed to meet UL 2703 grounding standards.

About these instructions:
- They include information on assembling the product and are intended to be used by individuals with sufficient technical skills for the task. Knowledge and use of hand tools, measuring devices and torque values is also required.
- They included various Notes, Cautions, and Warnings that are intended to draw your attention and assist in the assembly process and/or to draw attention to the fact that certain assembly steps may be dangerous and could cause serious physical injury and/or damage to components. Follow the procedures and precautions in these instructions carefully.

Required Tools
- 7/8 inch wrench or socket for 1/2 inch module clamp hardware
- 1/2 inch wrench or socket for 5/16 inch hardware
- Torque wrench
- Ratchet wrench
- Ratchet extension bar
- String
- Framing Square
- Tape Measure
- Inclinometer
POWER PEAK™ is Available in 4 Configurations

POWER PEAK GS
Standard product offering incorporating galvanized steel components and I-Beam pile.

POWER PEAK GSC
Standard “I-Beam” pile replaced with equivalent strength roll formed C-Channel pile.

POWER PEAK GSH
Standard roll formed horizontal Z purlins replaced with aluminium rails to adapt to more severe rolling terrain changes.

POWER PEAK GSHC
Standard “I-Beam” pile replaced with equivalent strength roll formed C-Channel pile. Standard roll formed horizontal Z purlins replaced with aluminium rails to adapt to more severe rolling terrain changes.
There are seven main components and attaching hardware.

- Strongback
- Rail Clan Assembly
- Rail
- UL Marking Label located here
- A suitable grounding/bonding device comparable to the Burndy WEEB LUG-8.0 must be used as part of the system grounding path. Must install per manufactures guidelines (see page 16).
- Strut Attachment
- Reinforcement Bracket
- UL Marking Label located here
- C-Channel
- Factory Assembled AMP Clamp Bonding Clamp
- Factory Assembled (patented) RAD Grounded End Clamp
- Factory Assembled (patented) RAD™ End Clamp

POWER PEAK™ GSHC Main Components
1 Set C-Channel Posts

**CAUTION**
Failure to meet the site specific embedment depths and C-Channel height variance tolerance can lead to structural failure and/or serious injury or death. Additionally, it would void the system warranty.

Note: Shows Northern hemisphere installation.

Set C-Channel into the ground with spacing and embedment depth to match the push-pull test and the site specific drawings.

2 Install the Strut Attachment Plate

Install the Strut Attachment Plate with three sets of hardware: 1/2"-13 x 1-1/2" Hex Bolt, Flat Washers, Lock Washer and Hex Nut. **Torque to 65-70 ft.-lbs.**
3 Attach the Strut to the Strut Bracket

NOTE
Although the Strut Bracket includes three holes for attaching the Strut, it is recommended that the middle hole be used initially. The outer two holes provide an additional ± 2 degrees of tilt adjustment if needed.

Install the Strut with 1/2"-13 x 1-1/2" Hex Bolt, Flat Washers, Lock Washer and Hex Nut. Hand tighten for now.

4 Attach the Strut Reinforcement Bracket to the Strongback

Install the Strut Reinforcement Bracket with one sets of 1/2"-13 x 1-1/2" Hex Bolt, Flat Washers, Lock Washer and Hex Nut installed in the upper slot only. The lower slot/hole is reserved for attaching the Strut. Torque to 65-70 ft.-lbs.
**5 Install Rail Clamp Assemblies**

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**TIP!**
To save time, install the Rail Clamps Assemblies before attaching the Strongbacks to the C-Channels. Use an assembly line method to process and assemble each Strongback.

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*Assemble Rail Clamp in this orientation to facilitate Rail installation. As Rails are installed the Rail Clamp will be rotated 180° to clamp and secure the Rails.

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1. **Rail Clamp**
2. **Rail Base**
3. **Keyed Washer**

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1. **Slide to Full Stop**
2. **Hand Tighten for now**
3. **Tighten and Torque to 15 ft.-lbs.**
4. **Slide to Full Stop**
6 Install and Align the Strongback

NOTE
At this stage the Strongback positioning is considered a temporary position - the intent is to establish a starting position for each Strongback. Further adjustments to align the Strongbacks will take place later.

Install the Strongback with two sets of 1/2"-13 x 1-1/2" Hex Bolt, Flat Washers, Lock Washer and Hex Nut. Adjust position of Strongback so its alignment mark is visible within the small hole of the Strongback Attachment. Tool tighten hardware for now to hold in place.

7 Secure the Strut to the Strongback

Secure the Strut with 1/2"-13 x 1-1/2" Hex Bolt, Flat Washers, Lock Washer and Hex Nut. Hand tighten for now, allowing movement between the Strut and the Strongback in order to align the Strongbacks and also set the tilt angle.
8 Vertically adjust and align the Strongbacks to one another

Alignment must be ±.25"

Shift the Strongback up/down to bring it into alignment with the String

Secure String in holes of two outer Strongbacks
Loosen these two sets of Hardware

Alignment may be needed to compensate for C-Channel misalignment. Use a string between a minimum of three spans. The slotted holes of the Strongback provide for its up/down movement. Tool tighten the two sets hardware leaving them loose enough to adjust the N-S alignment in the next step.

9 Adjust the Strongback N-S alignment to one another

Alignment must be ±.25"

Shift the Strongback N-S to bring it into alignment with the String

Loosen these two sets of Hardware

Alignment may be needed to compensate for C-Channel misalignment. Use a string between a minimum of three spans. The slotted holes of the Strongback provide for its up/down movement. Tool tighten the two sets hardware leaving them loose enough to adjust the tilt angle in the next step.
10 Verify/Set the Final Tilt Angle

CAUTION
This is a two person activity. During the tilt adjustment, one person must hold the southern end of the Strongback while a second loosens the hardware and then re-tightens the hardware after the desired tilt has been achieved.

Inclinometer variance between Strongbacks must be set within a tolerance of ±3°. Hardware must be loose to allow movement within the slots. When desired tilt is achieved, tighten hardware Torque to 65-70 ft.-lbs.

Reposition the Strut to the upper/lower holes of the Strut Bracket for additional ± 2 degrees of tilt adjustment as needed. When desired tilt is achieved, tighten hardware Torque to 65-70 ft.-lbs.

There will likely be deviations from one Strongback to another due to variances in C-Channel alignment. To remedy this, it is recommended that the tilt angle of each Strongback be evaluated and set to a consistent angle. Make sure that the Strut attachment hardware is sufficiently loose to allow movement of the Strongback.

11 Install the Rails

CAUTION
This is a two person activity. Each person must hold an end of the Rail while placing it onto each Rail Base of the Strongback. One person should continue to hold the Rail in place while the second person secures it with the Rail Clamp.

NOTE
The location of the Rail Bases are preset at the factory. If alignment with the Rails is a problem, simply slide the Rail Bases along the Strongback’s to align with the Rails.

Engage Rail lip under catch of Rail Base. Rotate Rail Clamp 180° and tighten Flange Nut. Torque 15 ft.-lbs.

The Rails are secured via the pre-assembled clamping system (Rail Base & Rail Clamp) which are attached to the Strongbacks. Cantilever distance between the outermost Strongback and the Rail end must be set per specifications.
NOTE
If Splice Plates are installed prior to Rail installation, the installation must be a three person activity, taking care not to damage Splice Plates during Rail installation.

If necessary, Rails are spliced using a Splice Plate and self tapping hardware. Splicing can be done either before or after the Rails are installed on the Strongbacks. Install the Splice Plates with 1/4" x 3/4" self drilling screws. Torque to 8 ft.-lbs.

12 Tighten and Torque the Hardware

CAUTION
Exceeding torque values can result in damage to components and/or Hardware.

It’s extremely important to tighten and torque all hardware as specified above.
13 Installing the Modules

TIP!
1. Work sequentially, installing the Modules by columns.
2. Periodically check to ensure that the Modules are square to the Rails.
3. Make a simple Module positioning jig to quickly and accurately center the Modules over the Rails.
4. Always tighten each Module’s Clamps before installing the next-in-line Module.

Offset Modules by 3” from Rail ends

Maintain a 1/2” gap between Modules.

Center Modules over the Rails

Rail

Strongback
CAUTION

This is a two person activity. In addition to the difficulties associated with working on a sloped rack, PV Modules are heavy. One person should hold and align the modules while a second person secures modules with clamping hardware. Failure to do so could lead to serious personal injury and/or damaged components.

CAUTION

Module Clamps must be correctly installed. Failure to follow the correct method could lead to personal injury, structural failure, and/or damaged components.

AMP Clamp Correctly Installed

AMP Clamp Incorrectly Installed

AMP Clamp bonding Mid Clamps must be installed as shown at above left and not as shown to the right. There cannot be any visible gaps between the bonding Mid Clamps and Module Frames.

End Clamp Correctly Installed

End Clamp Incorrectly Installed

Install End Clamps by pushing the End Clamp assembly tightly against the module frame. There should not be any visible gap between the Neoprene Washer and the Module Frame.
13 Installing the Modules (continued)

**NOTE**
The RAD™ bolts used in the AMP Clamps and End Clamps must be locked into the channel by rotating clockwise 90-degrees. Use the indicator slot on the threaded end to identify whether or not the bolt has been locked.

**CAUTION**
If the Flange Nut has been removed from the assembly, add Pentrox-A on threads of RAD Bolt before re-installing Flange Nut.

**CAUTION**
Exceeding torque values can result in damage to Rail and/or Hardware.

AMP Clamp bonding Mid Clamps are inserted into the Rail and positioned between adjacent Modules. Insert the 5/16” RAD Bolt into Rail and rotate 90-degrees clockwise to lock the RAD Bolt within the Rail. Push Modules against AMP Clamp. Tighten 5/16” Flange Nut. **Torque to 15 ft.-lbs.**

RAD™ End Clamps are used on the outer Modules. Insert the 5/16” RAD Bolt into Rail and rotate 90-degrees clockwise to lock the RAD Bolt within the Rail. Secure with 5/16” Flange Nut. **Torque to 15 ft.-lbs.**
Installing a WEEB-LUG 8.0

One of two mounting methods may be used defined here as Methods A and B. Lug is suitable for use with 14-6AWG solid or stranded copper conductor when tightened to 5ft-lbs.

**Mounting Method A**

- Mounting Screw
- Mounting Surface
- WEEB Washer
- Lug
- Flat Washer
- Lock Washer
- Hex Nut

**Mounting Method B**

- Mounting Screw
- Mounting Surface
- WEEB Washer
- Lug
- Serrated Flange Nut

<table>
<thead>
<tr>
<th>Cat No.</th>
<th>Max OCPD (A)</th>
<th>Min Profile (w x l)</th>
<th>Min Thick (in)</th>
<th>Max Thick (in)</th>
<th>Mtl</th>
<th>Surface Prep</th>
<th>Mounting Screw</th>
<th>Mounting Hole Range</th>
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</thead>
<tbody>
<tr>
<td>WEEB-LUG-8.0</td>
<td>200</td>
<td>22mm x 20mm</td>
<td>.06”</td>
<td>.25”</td>
<td>AL</td>
<td>Anodized</td>
<td>5/16” M8</td>
<td>7.85mm - 10mm</td>
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</tbody>
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**Table 1: Mounting Surface Requirements**

**IMPORTANT NOTES**

1. Before installing verify with the lug manufacturer for any updates or revisions to these lug installation instructions. The instructions on this page only address the WEEB-LUG-8.0 as found within the manufacturers (Burndy) document number 50016572 Rev E.
2. The NEC section 690.43 states, “Exposed non-current carrying metal parts of module frames, equipment, and conductor enclosures shall be grounded in accordance with 250.134 or 250.136 (A) regardless of voltage.”
3. For Proper Equipment Grounding Conductor (EGC) and Overcurrent Protection Device (OCPD) sizing, refer to NEC sections 250.66, 250.122 and 250.166.
POWER PEAK™ Compatible Modules - these modules meet the UL2703 standard

Please reference application procedure SP3561 for POWER PEAK Compatible Modules.