# Table of Contents

- Introduction & Safety Overview .................................................. 2
- System Components .................................................................. 3
- Tools, Torque, Construction Aid & Accessories ......................... 4
- Construction Aid Setup ............................................................. 5
- Build Assemblies ..................................................................... 6
- Build North Array Row ............................................................. 7
- Build Remaining Rows ............................................................. 8
- Place Ballast ............................................................................ 9
- Install Module Low Side ............................................................ 10
- Install Module High Side ......................................................... 11
- Continue Installing Modules ..................................................... 12
- Install Deflectors .................................................................... 13
- Cam & Lock Claw Inspection ..................................................... 14
- Electrical Grounding ............................................................... 15
- Appendix A-G ......................................................................... 16-25

---

**clawFR 5 Degree**

**Installation Manual**

---

**ANSI/UL 2703**

System Fire Class Rating: Class A for low slope roofs with Type I & Type II Modules

Mechanical Load Rating: See Appendix B: UL 2703 Grounding
Introduction

The clawFR 5 Degree flat roof mounting system is comprised of four major components that intuitively assemble into a support structure for photovoltaic (PV) modules.

This installation manual explains how to build a PV array using clawFR 5 Degree.

Mechanical Attachments

THIS INSTALLATION MANUAL DOES NOT COVER THE SELECTION OR INSTALLATION OF MECHANICAL ATTACHMENTS INCLUDING MATERIALS AND FASTENERS USED TO SECURE AND/OR SEAL MECHANICAL ATTACHMENTS TO THE ROOF. PLEASE SEE OEM PROVIDER INSTALLATION MANUALS AND RELATED LITERATURE. A LIST OF OEM PROVIDERS IS SHOWN BELOW.

OEM MECHANICAL ATTACHMENT PROVIDERS:

- Anchor Products: www.anchorp.com
- OMG Roofing Products: www.omgroofing.com
- Facet: www.sustainabletechnologiesllc.com

Safety Overview

Safety is an essential part of every PV installation and every construction site. It is imperative to plan ahead for any safety concerns and hazards to promote safe work practices during installation. This section does not claim to address or support all safety concerns that may arise during the installation of PanelClaw mounting systems or any other aspect of the work being performed. Before beginning work, installers should refer to all local and federal safety, health, and regulatory requirements to assure compliance. Refer to OSHA Part 1926 and its related Subparts for federal construction related regulations and standards.

Appendix A: Safety outlines some of the major hazards to be aware of during the installation of PanelClaw products.

Prior to installation, read the safety provisions attached in Appendix A: Safety and review this installation manual in its entirety.

A corrosion inspection one year after installation and once every three years thereafter is required to maintain the product warranty. Visible surface red rust on Zam® coated steel components must be locally coated with a commercially available galvanized paint or coating to maintain product warranty.

Except for deflectors, all racking components in each subarray and their connections, ballast, and mechanical attachments (if any in design) must be installed before mounting modules. When forecasted wind gusts exceed 25% of the wind speed listed in the site criteria table of the racking construction set, deflectors must be installed on all mounted modules to avoid possible system damage.
**System Components**

**Ballast Block:** Solid cap concrete roof paver, conforms to ASTM C1491 standard and manufactured for freeze-thaw resistance where applicable. See Appendix E for more details.
Optional Accessories

Optimizer Attachment 5000509
Base Pad 2000678
Shim Pad 5000228
Wire Router 500022501
Wire Clip 5000226

Note: Use of non-UL listed accessories, including non-metallic components, does not affect the system ANSI/UL 2703 certification.

Construction Aids

Tools
Drill with torque limiter or Torque Wrench
10 mm Magnetic Socket

ALERT: NO IMPACT DRIVER

<table>
<thead>
<tr>
<th>Torque Setting*</th>
<th>Fastening Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 ft-lb (8.1 Nm)</td>
<td>All System connections except Special Cases</td>
</tr>
<tr>
<td>4 ft-lb (5.4 Nm)</td>
<td>Special Cases, See Appendix F</td>
</tr>
</tbody>
</table>

* +/-4% allowable during installation

Bolts which are installed into a pre-installed nut are tightened to 6 ft-lb.
Bolts which are installed into a pilot hole are tightened to 4 ft-lb, See Appendix F.

1. Construction Aid Setup

**Tip:** L, S, and Cam Spacer dimensions are found in the Racking Construction Set

1.1 Assemble the Spacer Stick and adjust to L & S dimensions. All dimensions are measured from the Base centerlines.

**Tip:** To stiffen the Spacer Stick, place one Rail 2000695 on the assembly as shown, shift the Rail to find a location which allows for attachment with the specified bolts. Tighten the bolts.

1.2 Insert the bolt and adjust the Cam Spacer to the Cam Spacing dimension.

Typical Cam Spacer Usage
2. Build Assemblies

2.1 Position components as required per assembly type and loosely assemble the Cam, Module Connector and Base.

**ALERT:** Note location of orientation marker on Base “.”

**Tip:** Base length may vary depending on the row spacing option.

**Tip:** Immediately tighten bolts to 6 ft-lb which are at the Tilt Arm end of the assembly.

2.2 Use the Cam Spacer tool to correctly locate the module connector. Tighten bolt to 6 ft-lb.
3. Build North Row

3.1

See Racking Construction Set for AEBE dimension. If not shown, then: AEBE = R - \frac{1}{4} in

Snap North Edge, Base Edge, and Array Edge lines.

Tip: Snap Array Edge lines on one or both array edges (row ends) and snap Base Edge line on the edge where module mounting will begin.

3.2

Tip: Base Edge is in line with Base Pad

Place North Assemblies with the Base Pads along the North Edge line. The first and last North Assemblies should be placed with the edge of the Base Pads on the Base Edge line.

Tip: Raise Tilt Arms after securement of assembly.

3.3

Place a Rail on all “S” spacings (module centered). Rails at ends of rows must be flush with array edge.

Place a Rail on all “L” spacings (between modules) on top of and overlapping the Rails on the S spacing. Install bolt and tighten to 6 ft-lb.

Alert: Rail on “L” Spacing is ALWAYS on top of Rail on “S” Spacing. This installation sequence is critical to system performance.

Tip: Rail has two holes. Consult the Racking Construction Set for appropriate hole use.
4. Build Remaining Rows

4.1 Middle or South Assembly

Choose correct hole

Place Middle or South assemblies onto Assemblies from previous row and bolt to 6 ft-lb.

Tip: Racking Construction Set clearly indicates hole selection. Using the wrong hole will result in an array which does not match site plan.

4.2 Install Rails throughout the array using the same steps described on the previous page. Alternating between “S” and “L” Spacings. Install bolt and tighten to 6 ft-lb.

Alert: To ensure system alignment, use the Spacer Stick to align Module Connectors before securing Rails.

Alert: See Appendix F for instructions on installing Rails on array edges with breaks.

Alert: Southern Edge Rails face the opposite direction; bolts securing these rails are tightened to 6 ft-lb.
5. Place Ballast

**Tip:** The Racking Construction Set identifies where Ballast is to be installed. Mark the roof with chalk to speed up installation.

5.1 Install a Rail(s) onto array in locations where Ballast is required. Bolt Rail to Module Connector and tighten to 6 ft-lb. Rail is installed to preinstalled nut in Module connector closest to the Tilt Arm.

**ALERT:** Every Rail must be fastened to two Module Connector assemblies.

**Tip:** Ballast and Rails are only placed on “S” spacings. Center them on the “S” spacing for equal ballast distribution.

5.2 Place Ballast onto Rails. If rapid cyclic movement of system is expected e.g. due to seismic activity or building vibration from activities within or nearby the structure, bend the Rail tabs to secure Ballast.

**ALERT:** Install Mechanical Attachments before going to next step. See: 9910047 - Accessories Installation Manual

When **1-4 Ballast blocks** are required only a **single** Rail centered under the module is required.

When **5 Ballast Blocks** are required there are **two Rails** needed. Each rail is offset in opposite directions to accommodate 5 Ballast Blocks.

Rails are placed one on top of the other and bolted to the module connector.

**Tip:** Installing the north row Ballast Blocks helps keep the racking structure from moving as the rest of the array is built.

**ALERT:** Do not step on ballast blocks.

When **1-4 Ballast blocks** are required only a **single** Rail centered under the module is required.

When **5 Ballast Blocks** are required there are **two Rails** needed. Each rail is offset in opposite directions to accommodate 5 Ballast Blocks.

Rails are placed one on top of the other and bolted to the module connector.
6. Install Module Low Side

**ALERT:** Install Mechanical Attachments before installing modules.

### 6.1 Cam Seat

Place module on Cam Seat and align with Array Edge.

**Tip:** Ensure the module is vertical and flush with Seat.

### 6.2 Cam Claw

Place Cam Claw over module flange.

**Tip:** Ensure the module is vertical and flush with Seat.

**Tip:** Installing modules starting at the south array edge provides more working room and speeds installation.

**ALERT:** Do not leave modules in vertical position, go immediately to next installation step (high side install).
7. Install Module High Side

7.1 Rotate module down and rest the module frame on the top of the Tilt Arms. **Tip:** Make sure the Tilt Arms are fully raised.

7.2 Support module while carefully rotating the Tilt Arm just enough to rest the module frame on the Lock Claw tongue.

7.3 Pull the Tilt Arm forward until the Lock Claw is fully engaged onto the module frame flange.

**Tip:** Use two hands when engaging Lock Claw to ensure correct installation.

**Tip:** See Appendix G for Lock Claw reset method.
7. Continue Installing Modules

**ALERT:** Check the R dimension every 5th module and adjust spacing between adjacent modules as needed.

Use Cam Claw as spacer to set spacing between adjacent modules.

**Tip:** R dimension is found in the Racking Construction Set.
8. Install Deflectors*

**ALERT:** When forecasted wind gusts exceed 25% of the wind speed listed in the site criteria table of the Racking Construction Set, Deflectors must be installed on all mounted modules to avoid possible system damage.

8.1 Place the bottom edge of the Deflector in the Deflector Seat near the bottom of the Tilt Arm.

Fasten to Tilt Arm with bolt and tighten to 6 ft-lb.

* Tip: Adjacent Deflectors will overlap (adjacent deflector not shown).

* Tip: On array edge Deflectors can be installed flush to module/array edge.

* Tip: Center Deflector on module for all non edge modules.

* Consult the Racking Construction Set for deflector requirement. Each Array will specify required Deflectors per array.
9. Cam & Lock Claw Inspection

Inspect Cam side module connection

Cam installation can be quickly visually inspected (no gauge is available or required) by comparing a known good installation with all other installations.

Some gap between Module and Cam is permissible.

**ALERT:** Verify correct installation by lifting up on the module near the Cam and making sure no movement occurs.

Select a Lock Claw which has been confirmed to be installed correctly through visual inspection.

The Tilt Arm and Lock Claw should be aligned with the module frame and the Lock Claw fully engaged on the frame.

Place gauge against Lock Claw and underside of module.

Mark line on gauge to finish setup. Use gauge to confirm full Lock Claw engagement-line must be visible.

Module and Cam have a large non-uniform gap.

Module and Cam are near flush.
Electrical Grounding

Please consult with national and local building code(s) for complete grounding requirements for your installation. The clawFR grounding method conforms to ANSI/UL 2703 and is certified by SolarPTL for use with approved photovoltaic modules listed under ANSI/UL 1703 and/or ANSI/UL 61730. Installers can quickly and easily establish ANSI/UL 2703 certified electric bonds between all connected array components, including modules and mounting system components, without the use of additional grounding devices, e.g. ground lugs and copper wire. At least one ground lug must be used to ground all strings within a physical sub-array provided the fuse rating for each string does not exceed 30 amps. Installers may opt to use multiple lugs per sub-array for redundancy. When grounding devices are installed according with the approved methodology and capacity below, the connections described above meet all the requirements outlined in NEC 690.43.

Grounding Instructions

For modules that have been evaluated for use with clawFR 5 Degree, please follow the instructions below in Appendix B: UL 2703 Grounding. Additional information regarding ANSI/UL 2703 and the specific list of evaluated modules included in PanelClaw’s UL listing can be found in the “clawFR UL Overview and Module Listing” document (available at www.panelclaw.com).

For modules that have not been evaluated for use with clawFR, please follow the instructions below in Appendix D: Electrical Grounding (Non 2703 PV Module).

**ALERT**: During grounding and bonding ensure there is separation between bare copper and aluminum or ZAM coated steel components.
Appendix A: Safety

The subsections below outline some of the obvious / major hazards that could exist during the installation of PanelClaw products and are divided to bring a level of clarity to such hazards. Some sections do not apply to all PanelClaw product lines and such exclusions are noted within each section.

**Electrical Hazards:** PanelClaw products are purely mechanical and do not contain any electrically live parts. When a photovoltaic module is exposed to sunlight it is electrically live and cannot be turned off. As soon as modules are installed using a PanelClaw system, an electrical shock hazard is present. All personnel on site should coordinate to ensure that such electrical hazards are clearly communicated. It is advised, at a minimum, that all personnel utilize caution and proper Personal Protective Equipment as outlined in that section. Only electrically qualified personnel should perform PV module installation. Refer to OSHA Part 1926 Subpart K – Electrical and NFPA 70E for additional information.

**Fall Hazards:** This section only applies to clawFR® products installed on locations six feet or higher above grade. Proper fall protection should be in place at all work sites. There are many fall protection solutions readily available to help reduce exposure to fall hazards. These may include personal fall arrest systems, safety nets, guardrails, and flagged setbacks from all roof edges as outlined in OSHA Part 1926 Subpart M – Fall Protection.

**Trip Hazards:** All PanelClaw arrays have elevated components that are installed above grade or above a roof surface. Such hazards should be identified and caution should be taken to avoid tripping over such components. Refer to the Fall Hazards section specifically if working with the clawFR product line. Make sure to pick up and not drag your feet when working on site, and always pay attention to your path of movement to note any obstructions that could create a trip hazard.

**Lifting Hazards:** The PanelClaw installation process involves lifting of heavy items that could lead to personal injury and damage to property. All personnel should be trained in the proper procedures for manually lifting. Evaluate an object’s size and weight prior to lifting, and follow these general guidelines for lifting:

1. Assess the lift and know the object weight.
2. Bend at the knees and get a good grip.
3. Keep back straight and lift straight up with legs without twisting. It is important to lift with the legs and not the back.
4. If an object is too large or heavy, ask for help and do not attempt to lift by yourself. In the case that mechanical assistance (e.g. crane, forklift, etc.) is required to complete the lifting operations, all machine operators of such devices should be licensed and trained.
Appendix A: Safety (Contd.)

Material Handling: All PanelClaw parts and components are made of aluminum and steel alloys and utilize stainless steel and steel alloy assembly hardware. These materials are considered non-toxic and require no special handling procedures. Metal components may have sharp edges, so be sure to handle with care and utilize proper personal protection equipment, especially gloves, during handling. Refer to OSHA Part 1926 Subpart H – Materials Handling, Storage, Use, and Disposal for additional information.

Personal Protective Equipment (PPE): All personnel should utilize and implement proper PPE per OSHA requirements. Refer to OSHA requirements for proper use and implementation of PPE. The following items are suggested as a minimum to avoid injury based on the installation procedure outlined in this manual:

1. Appropriate work clothing
2. Electrically insulated hard hat
3. Protective eyewear
4. EH rated safety boots
5. Gloves
6. High-visibility safety vest
7. Hearing protection

If any PPE appears to be defective, stop the use of such equipment immediately, and ensure it is replaced before work continues. Refer to OSHA Part 1926 Subpart E – Personal Protective and Life Saving Equipment for additional information.

Hand and Power Tools: Access to all hand and power tools should be regulated and controlled at all times on site to prevent improper use and related injuries. When not in use, all equipment should be stored in a secured location. Only personnel who have been properly trained in the safe operation of any potentially dangerous tool should be allowed access. All required tools to perform the installation of PanelClaw racking are outlined in the installation procedure. All tools should be inspected daily and before use by the operator. If any tool appears to be defective, stop the use of such equipment immediately, and ensure it is replaced before work continues. Electrical power tools should follow proper lock-out tag-out procedures per OSHA requirements. Refer to OSHA Part 1926 Subpart I – Tools – Hand and Power for additional information.
Appendix B: UL 2703 Grounding

The clawFR 5 Degree flat roof system may be used to ground and/or mount a PV module complying with ANSI/UL 1703 or ANSI/UL 61730 only when the specific module has been evaluated for grounding and/or mounting in compliance with the included instructions. For a list of modules which have been evaluated see PanelClaw’s “clawFR UL Overview and Module Listing” (see www.panelclaw.com).

A periodic re-inspection of the system shall be performed for loose components, loose fasteners, and any corrosion. If found, they should be immediately replaced or remedied in accordance with the system installation instructions.

System Ground Path

The system ground path “grid” is established throughout the array by the interconnection of system components. Specifically, in the column direction via the Base and Module Connector connections and in the row direction via the Rail connections. A Tyco lug connected to the Rail establishes a point of connection for the EGC at one location with a contiguous array. All modules are grounded to the system through their Cam to Module connection.

Note: The presence of a PV module does not affect the bonding ability of the clawFR system components. More precisely, the grid provides a means to ground PV Modules which have been evaluated for ANSI/UL 2703 grounding with clawFR.
Appendix B: UL 2703 Grounding (Contd.)

**Grounding Instructions:**
PanelClaw components within the array are required to be electrically bonded to other DC grounding paths via the use of appropriately sized Cu wire and a UL 467 listed Tyco Solarlok grounding assembly, part number 2106831-1, manufactured by Tyco Electronics Corporation. The conductor size should be selected in accordance with NEC 690.45 and NEC 250.122.1.

To ground the array, first determine the groupings of strings whose power output wiring is grounded together at an equipotential grounding conductor location. This could be all the strings within a physical sub-array, or all the strings grouped by a single combiner box. Once the groupings of strings at equipotential have been determined, a Tyco solid wire grounding assembly must be attached to one Rail within each group of strings. PanelClaw’s clawFR Rails have a hole to which this grounding device/lug can be attached. In an array that requires multiple bonding jumpers to satisfy the equipotential requirements, each bonding jumper should be located and installed on a Rail within the group of strings which will be grounded by that jumper.

**ALERT:** Every sub-array must include at least one grounding device/lug.

**Tyco Grounding lug attachment:**
To attach the Tyco grounding device/lug to the Rail, the mounting hex washer and threaded post end should be installed to the specified hole in the Rail and torqued to 2.08 ft-lb (25 in-lb). Once the grounding device/lug has been attached to the Rail, a copper bonding jumper from an acceptable DC grounded location outside of the array must be installed to the wire slot end and torqued to 3.75 ft-lb (45 in-lb). For additional instruction regarding the installation of the Tyco solid wire grounding assembly, please refer to the Tyco Electronics instructions sheet (document number 408-10262) via their website www.te.com.
Appendix C: UL 2703 Fire Classification

The system has a Fire Class A rating for low slope roofs with **Type I** modules when the following requirements are met:
- System is installed over a fire resistant roof covering rated for the application (UL2703, 26.3B)
- Roof slope is less than 2” per ft
- Wind Deflector is required on the Northern perimeter of the array.

The system has a Fire Class A rating for low slope roofs with **Type II** modules when the following requirements are met:
- System is installed over a fire resistant roof covering rated for the application (UL2703, 26.3B)
- Roof slope is less than 2” per ft
- Wind Deflector is required on the Northern perimeter of the array.
Appendix D: Electrical Grounding (Non 2703 PV Module)

The clawFR 5 Degree flat roof system may be used to ground a PV module only when the specific module grounding instructions are followed. A separate bonding jumper must be used between the PV Module and the clawFR 5D system.

A periodic re-inspection of the system shall be performed for loose components, loose fasteners, and any corrosion. If found, they should be immediately replaced or remedied in accordance with the system installation instructions.

**ALERT:** PV Module connection to Cam has not been evaluated to be in compliance with ANSI/UL 2703.

**System Ground Path**

The system ground path “grid” is established throughout the array by the interconnection of system components. Specifically, in the column direction via the Base and Module Connector connections and in the row direction via the Rail connections. A Tyco lug connected to the Rail establishes a point of connection for the EGC at one location with a contiguous array. PV modules will require a jumper to be connected between modules and the “grid”.

**Note:** The presence of a PV module does not affect the bonding ability of the clawFR system components.
Appendix D: Electrical Grounding (ANSI/UL 2703 Not Applicable) (Contd.)

Grounding Instructions:
PanelClaw components within the array are required to be electrically bonded to other DC grounding paths via the use of appropriately sized Cu wire and a UL 467 listed Tyco Solarlok grounding assembly, part number 2106831-1, manufactured by Tyco Electronics Corporation. The conductor size should be selected in accordance with NEC 690.45 and NEC 250.122.1.

To ground the grid, first determine the groupings of strings whose power output wiring is grounded together at an equipotential grounding conductor location. This could be all the strings within a physical sub-array, or all the strings grouped by a single combiner box. Once the groupings of strings at equipotential have been determined, a Tyco solid wire grounding assembly must be attached to one Rail within each group of strings. PanelClaw’s clawFR Rails have a hole to which this grounding device/lug can be attached. In an array that requires multiple bonding jumpers to satisfy the equipotential requirements, each bonding jumper should be located and installed on a Rail within the group of strings which will be grounded by that jumper.

Follow PV Module manufacturer instructions to establish an approved ground connection between the module and an appropriately sized bonding jumper. The bonding Jumper can then be connected to a UL 467 listed Tyco Solarlok grounding assembly, part number 2106831-1, manufactured by Tyco Electronics Corporation, which may be installed on a Rail to establish the ground connection to the “grid”.

Tyco Grounding lug attachment:
To attach the Tyco grounding device/lug to the Rail, the mounting hex washer and threaded post end should be installed to the specified hole in the Rail and torqued to 2.08 ft-lb (25 in-lb). Once the grounding device/lug has been attached to the Rail, a copper bonding jumper from an acceptable DC grounded location outside of the array must be installed to the wire slot end and torqued to 3.75 ft-lb (45 in-lb). For additional instruction regarding the installation of the Tyco solid wire grounding assembly, please refer to the Tyco Electronics instructions sheet (document number 408-10262) via their website www.te.com.

Alert: Every sub-array must include at least one grounding device/lug.
Appendix E: Ballast Blocks

PanelClaw does not provide the ballast blocks required to construct the system in accordance with PanelClaw’s Racking Construction Set drawings. However, PanelClaw maintains a list of potential block suppliers across the country and this list is available upon request.

BALLAST BLOCKS FOR ANY BALLASTED ROOFTOP SYSTEM MUST BE MANUFACTURED TO RESIST FREEZE-THAW AS REQUIRED BY LOCAL CONDITIONS AND TO MAINTAIN THEIR WEIGHT OVER THE LIFE OF THE SYSTEM. IT IS STRONGLY RECOMMENDED THAT INSTALLERS WEIGH SEVERAL BLOCKS ON-SITE TO ENSURE BLOCK WEIGHTS MATCH THE WEIGHT OF THE BLOCKS SPECIFIED IN PANELCLAW’S RACKING CONSTRUCTION SET DRAWINGS. BLOCK WEIGHT VARIANCES LISTED IN THE CHART BELOW ARE ACCEPTABLE.

<table>
<thead>
<tr>
<th>Ballast Block Description</th>
<th>Nominal Weight [kg lb]</th>
<th>Allowable Weight Variance (+ or -) [Kg lb]</th>
</tr>
</thead>
<tbody>
<tr>
<td>BLOCK, CONCRETE, 2&quot;X 8&quot;X 16&quot;</td>
<td>6.6 [14.6]</td>
<td>0.45 [1.00]</td>
</tr>
<tr>
<td>BLOCK, CONCRETE, 3&quot;X 8&quot;X 16&quot;</td>
<td>10.7 [23.6]</td>
<td>0.57 [1.25]</td>
</tr>
<tr>
<td>BLOCK, CONCRETE, 4&quot;X 8&quot;X 16&quot;</td>
<td>14.8 [32.6]</td>
<td>0.68 [1.50]</td>
</tr>
</tbody>
</table>

BLOCKS WITH A WEIGHT VARIANCE GREATER THAN WHAT IS SHOWN IN THE CHART ABOVE MUST NOT BE USED. FAILURE TO FOLLOW THESE PRACTICES MAY RESULT IN SYSTEM PERFORMANCE BELOW DESIGN CRITERIA AND/OR MAY CAUSE STRUCTURAL DAMAGE TO THE BUILDING AND/OR ARRAY.
Appendix F: Rail Configurations

In cases where a contiguous array has module omissions, the Rails must be installed to connect that edge with the adjacent modules.

- **Rails are installed across the edge to connect row**
- **Torque to 4 ft-lb**
- **Bolts which are installed into a pre-installed nut are tightened to 6 ft-lb.**
- **Bolts which are installed into a pilot hole are tightened to 4 ft-lb.**
- **Module(s) omitted**
- **Roof obstruction**
Appendix G: Lock Claw Reset Method

In rare cases, Lock Claw performance can be degraded by damage from improper handling or excessive cycling.

If the Lock Claw angle relative to the Tilt Arm is outside the specified range of 8 to 10 degrees, follow the steps below to reset the Lock Claw.

Place a finger or a suitable tool between the Lock Claw and Tilt Arm then slowly open the gap.

Adjust the gap angle to about **8 to 10 degrees**.

**ALERT**: Do not bend the lock claw more than 20 degrees. Doing so may cause permanent damage.