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Installation Manual

Universal Top-of-Pole Mount

UNI-TP/12LL



Solar Mounting Solutions

Introduction

The Universal Top-of-Pole Mount UNI-TP/12LL is a very sturdy and straightforward pole mounting solution for small area solar photo voltaic (PV) needs. With its user-adjustable angle settings, it can support installations in a wide range of locations.

In addition, the UNI-TP/12LL supports:

- ◆ Up to 12 PV panels (six panels in each of the two channels, with a combined width of up to 140 inches per channel).
- ◆ A pole diameter of 6.0 inches (requires a properly anchored schedule 40 pipe).

1. Installer Responsibility

The installer is solely responsible for:

- ◆ Complying with all applicable local or national building codes, including any that may supersede this manual
- ◆ Ensuring that IronRidge and other products are appropriate for the particular installation and the installation environment
- ◆ Ensuring that the selected mount can support the array under live load conditions
- ◆ Using only IronRidge parts and installer-supplied parts as specified by IronRidge. Substitution parts may void the warranty
- ◆ Ensuring safe installation of all electrical aspects of the PV array.

2. Customer Support

IronRidge makes every effort to ensure your mounting kit is easy to install. If you need assistance at any point with your installation or have suggestions on how we can improve your experience, call IronRidge customer support: (800) 227-9523

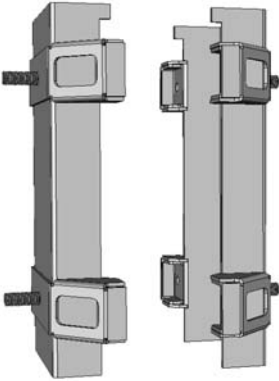
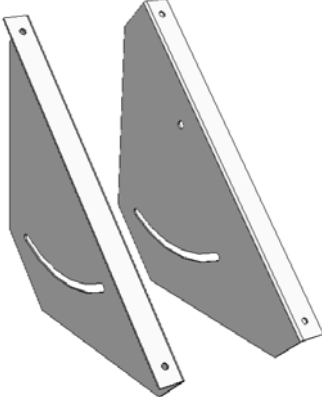


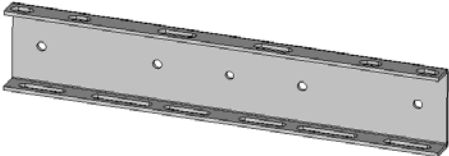

3. Tools Required For Assembly

The following tools are required to assemble the Universal Top-of-Pole Mount:

Tool	Use for
Wrenches Open-end wrench, Box-end wrench, or 3/8" or greater socket drive with sockets to support the following size hex heads: <ul style="list-style-type: none"> ◆ 3/8" ◆ 5/16" ◆ 1/4" 	<ul style="list-style-type: none"> ◆ 3/8 cap-end screws, 3/8 bolts ◆ 5/16 cap-end screws, 5/16 bolts ◆ 1/4 cap-end screws, 1/4 bolts

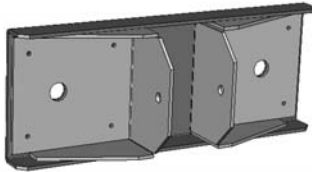
4. Component List

The Universal Top-of-Pole Mount UNI-TP/12LL kit contains the following parts:

<p>Brace Assembly (51-0626-400) x2 Attaches to the top of the 6-inch pole, providing the foundation for the mount</p> 	<p>Tilt Plate, left (51-0627-027) and right (51-0627-027A) Attaches to the brace, providing tilt adjustment for the panel assembly</p> 
<p>Cross Rail (51-0627-100) x2 Attaches to the tilt plates and support the channel rails</p> 	<p>Channel rail (51-0570-001) x8 Attaches directly to the back of the PV modules</p> 
<p>Connector (51-0627-021) x4 Connects the channel rails together, extending their usable length</p> 	<p>U Bolt (23-0100-060) Attaches to the pole, supporting the knee brace</p> 

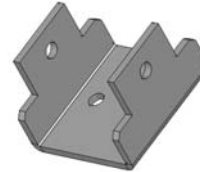
Lower Knee Brace (51-0610-150)

Supports the knee brace at the pole end, supporting the knee brace channel rails



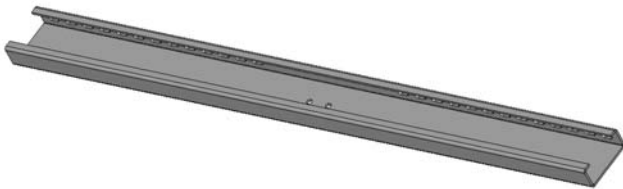
Upper Knee Brace Bracket (51-0610-050)

Connects the upper end of the knee brace channel rails to the PV module assembly



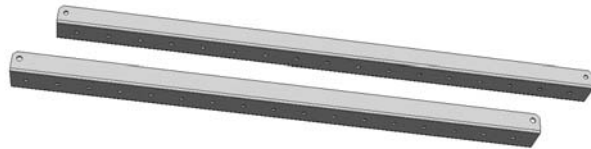
Upper Knee Brace Rail (51-0610-200)

Connects the PV module assembly to the knee brace



Knee Brace Channel Inner (51-0534-000) and Outer (51-0534-001)

Supports the PV module's lower end



Part	Qty	Part Number
5/16 x 1" Kit	1	29-5006-005
5/16-18 x 1" SS hex-cap bolt	8	23-3118-021
5/16 flat washer, SS	16	25-3102-000
5/16 split lock washer, SS	8	25-3101-000
5/16 hex nut, SS	8	25-3118-440
Large Pole Bracket Kit	1	29-5008-001
Stud, 3/8-16 x 5.5" Zinc	4	27-1037-016
3/8 flat washer, Zinc	8	27-3702-001
3/8 split lock washer, Zinc	8	27-3701-001
3/8 hex nut, Zinc	8	24-3716-441
Large Tilt Plate Kit	1	29-5007-000
3/8 flat washer, Zinc	4	27-3702-001
3/8 split lock washer, Zinc	4	27-3701-001
3/8 hex nut, Zinc	4	24-3716-441

Component List continued...

Part	Qty	Part Number
Cross Rail Kit	1	29-5010-000
5/16-18 x 2.50" hex-cap bolt, Zinc	4	23-3118-901
5/16 flat washer, Zinc	4	25-3102-001
5/16 med split lock washer, Zinc	4	25-3101-001
5/16-18 fin hex nut, Zinc	4	24-3118-441
Connector Kit	1	29-5000-000
1/4-20 x 3/4" SS hex-cap bolt	8	23-2520-050
1/4 flat washer, SS	16	25-2502-000
1/4 split lock washer, SS	8	24-2501-000
1/4-20 fin hex nut, SS	8	24-2520-440
Knee Brace Assembly Kit	1	29-5000-000
1/4-20 x 3/4" SS hex-cap bolt	4	23-2520-050
1/4 flat washer, SS	8	25-2502-000
1/4 split lock washer, SS	4	24-2501-000
1/4-20 fin hex nut, SS	4	24-5013-440
1/2 flat washer, Zinc	2	25-5002-200
1/2 split lock washer	2	24-5001-000
1/2-13 fin hex nut, Zinc	2	24-2520-440
5/16-18 x 1" SS hex-cap bolt	2	23-3118-021
5/16 flat washer, SS	5	25-3102-000
5/16 split lock washer, SS	3	25-3101-000
5/16 hex nut, SS	3	25-3118-440
5/16-18 x 3" SS hex-cap bolt	1	23-3118-021
3/8-16 x 1" bolt, Zinc	2	27-3716-101
3/8 flat washer, Zinc	4	27-3702-001
3/8 split lock washer, Zinc	2	27-3701-001
3/8 hex nut, Zinc	2	24-3716-441
1/4 x 3/4" Kit	12	29-5000-000
1/4-20 x 3/4" SS hex-cap bolt	48	23-2520-050
1/4 flat washer, SS	48	25-2502-000
1/4 split lock washer, SS	48	24-2501-000
1/4-20 fin hex nut, SS	48	24-2520-440
Spares Kit	1	29-5002-100

5. Assembly

Step 1 -connecting the channel rails together

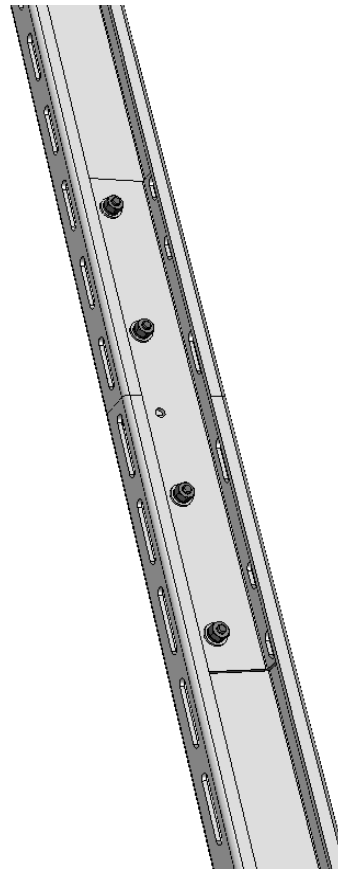
Parts Required	Qty	Part Number
Connector	4	51-0627-021
Channel Rail	8	51-0570-001
1/4-20 x 3/4" SS hex-cap bolt	8	23-2520-050
1/4 flat washer, SS	16	25-2502-000
1/4 split lock washer, SS	8	24-2501-000
1/4-20 fin hex nut, SS	8	24-2520-440

1. Lay two channel rails end to end.

2. Using a connector, bolt the channel rails together.

Tighten the bolts to 7 ft-lbs.

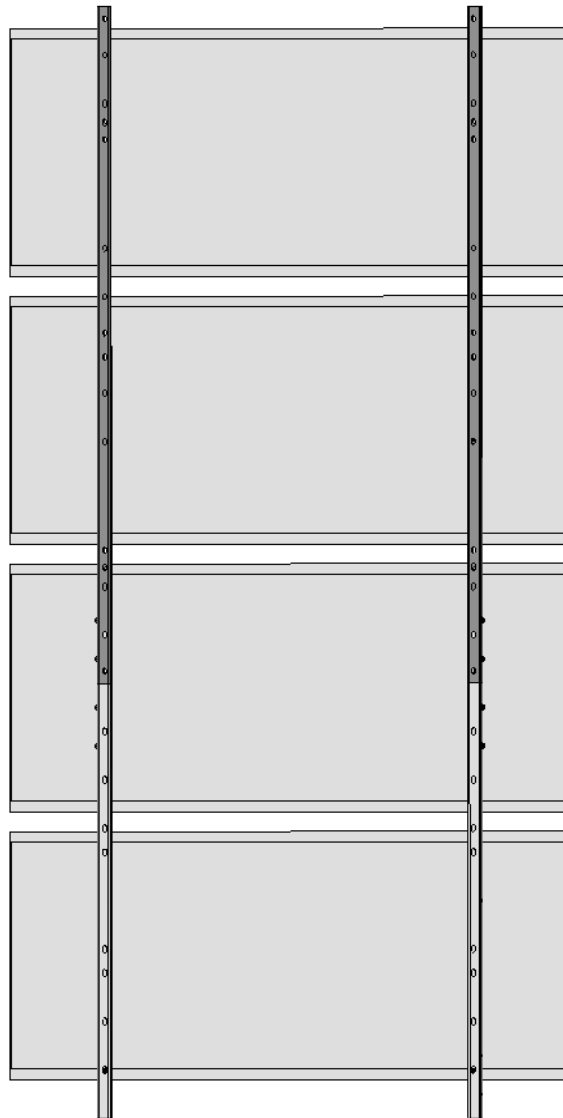
3. Repeat with the remaining set of channel rails.



Step 2 -attaching the channel rails to the PV modules

Parts Required	Qty	Part Number
PV Module	up to 10	User-supplied
1/4-20 x 3/4" SS hex-cap bolt	40	23-2520-050
1/4 flat washer, SS	40	25-2502-000
1/4 split lock washer, SS	40	24-2501-000
1/4-20 fin hex nut, SS	40	24-2520-440

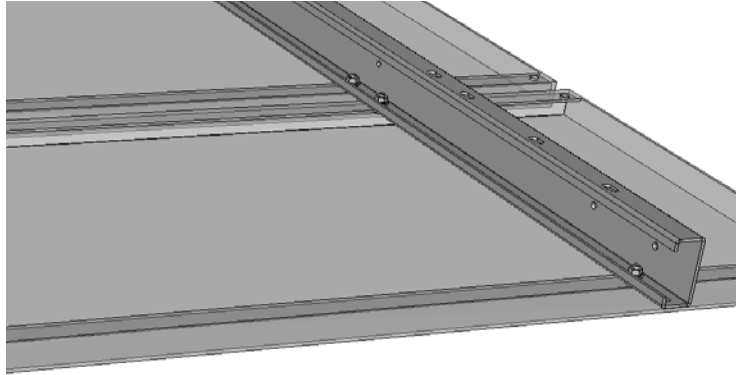
1. Lay the modules face down on a protected surface in the appropriate orientation - up to five modules per set of rails. Leave an inch or two between the panels.
2. Lay the channel rails on the back of the modules with the evenly-spaced holes down, so the flat side of the rails are facing towards the outside edges of the panels.



- Secure the rails with a bolt, lock washer and hex nut in each of the PV mounting holes.

Tighten the bolts to 7 ft-lbs.

- Repeat, attaching the remaining PV modules to the two remaining channel rails.

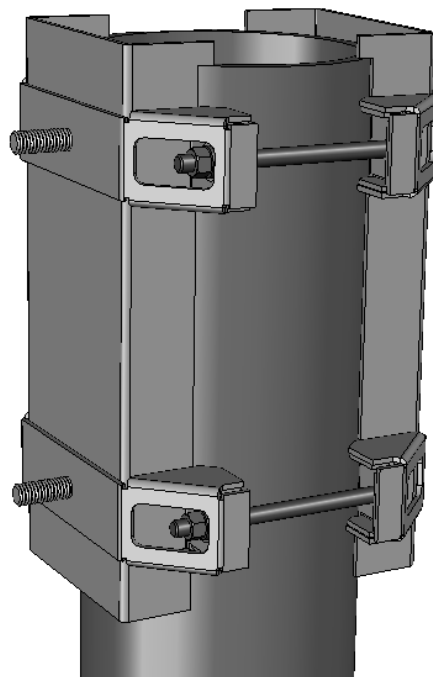


Step 3 - attaching the brace assembly to the pole

Parts Required	Qty	Part Number
Brace Assembly	2	51-0626-400
Stud, 3/8-16 x 5.5" Zinc	4	27-1037-016
3/8 flat washer, Zinc	8	27-3702-001
3/8 split lock washer, Zinc	8	27-3701-001
3/8 hex nut, Zinc	8	24-3716-441

- Place the brace assembly onto the pole so the "lip" catches the top of the pole.
- Install the studs and hardware as shown, using a washer and lock washer under each nut.
- Tighten the stud nuts evenly, making sure that all studs are tightened the same amount so the distance between braces is the same on the front and the back.

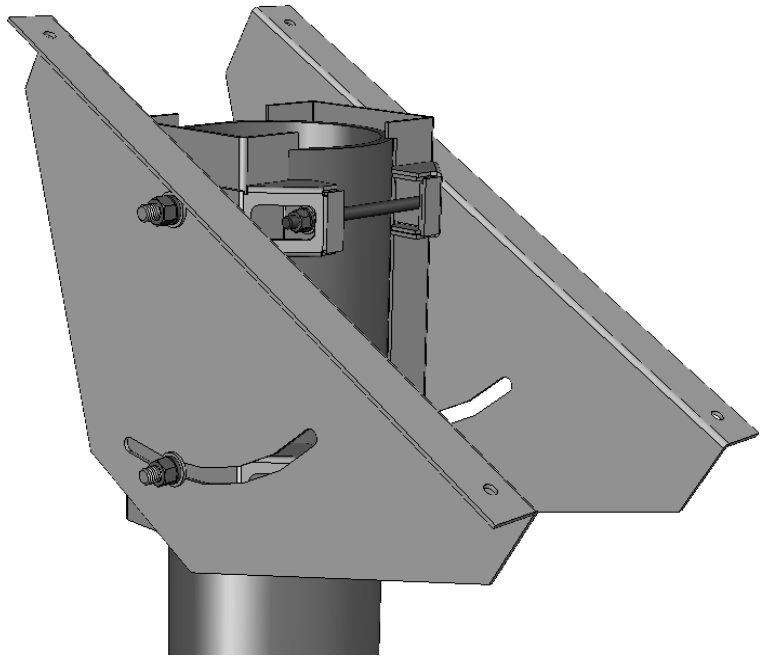
Tighten the studs to 12 ft-lbs.



Step 4 - attaching the tilt plates to the brace

Parts Required	Qty	Part Number
Tilt Plate, left	1	51-0627-027
Tilt Plate, right	1	51-0627-027A
3/8 flat washer, Zinc	4	27-3702-001
3/8 split lock washer, Zinc	4	27-3701-001
3/8 hex nut, Zinc	4	24-3716-441

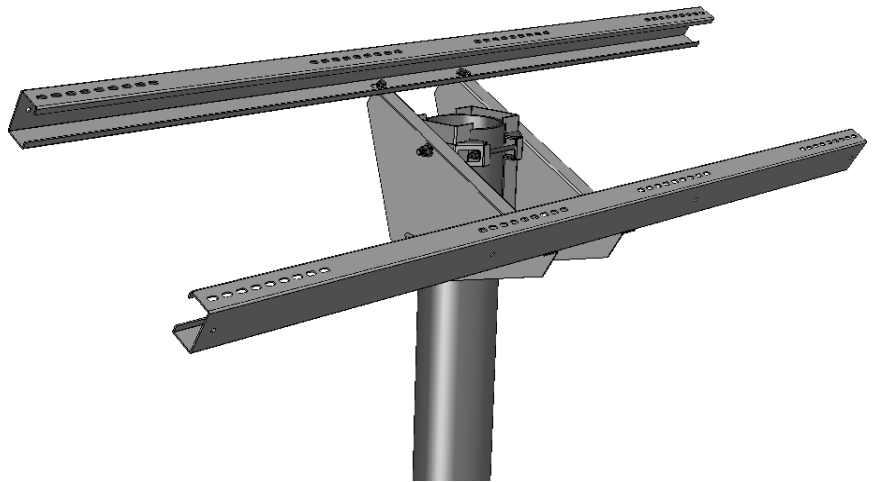
1. Place the tilt plates on the brace assembly as shown.
2. Use a washer, lock washer and nut on each screw, and finger-tighten.



Step 5 - attaching the cross rails to the tilt plates

Parts Required	Qty	Part Number
Cross Rail	2	27-0627-100
5/16-18 x 2.50" hex-cap bolt, Zinc	4	23-3118-901
5/16 flat washer, Zinc	8	25-3102-001
5/16 med split lock washer, Zinc	4	25-3101-001
5/16-18 fin hex nut, Zinc	4	24-3118-441

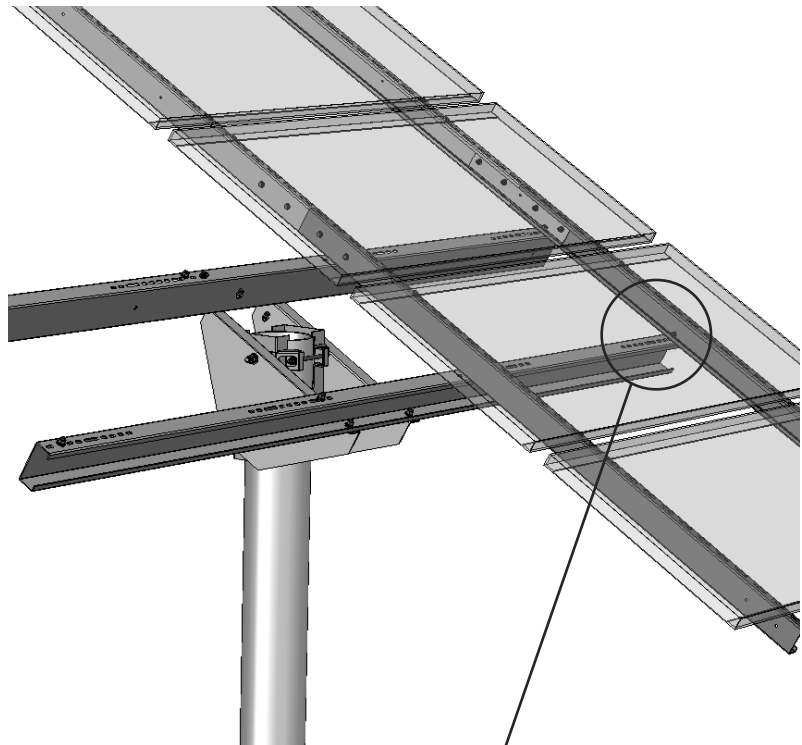
1. Place the cross rails on the tilt plates with the open sides facing towards each other and attach using the specified hardware.
2. Tighten the bolts to 12 ft-lbs.



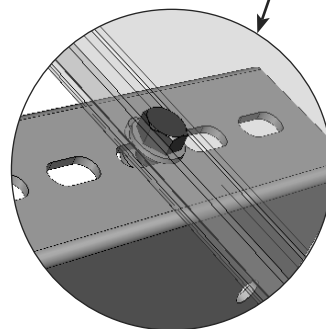
Step 6 - mounting the PV assemblies

Parts Required	Qty	Part Number
5/16-18 x 1" SS hex-cap bolt	8	23-3118-021
5/16 flat washer, SS	16	25-3102-000
5/16 split lock washer, SS	8	25-3101-000
5/16 hex nut, SS	8	25-3118-440

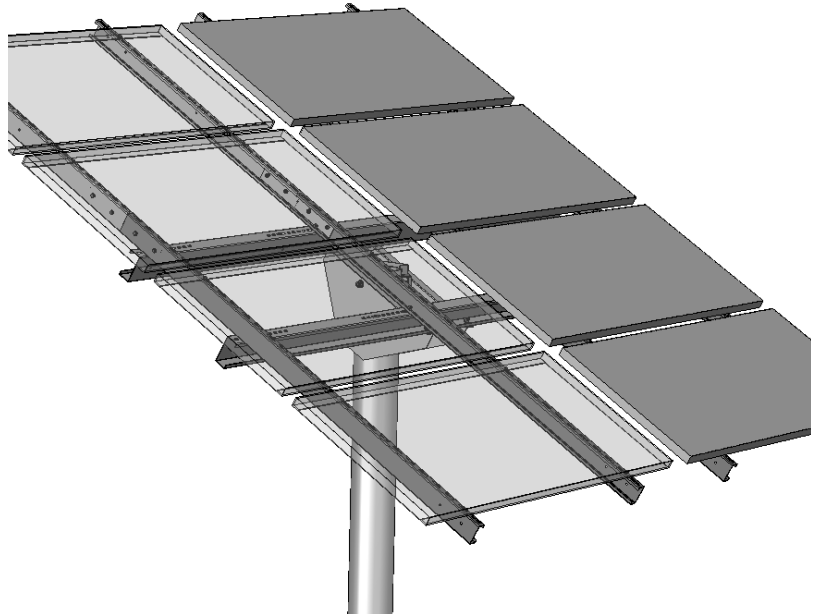
1. Lift one of the the PV array assemblies onto the cross rails and attach using the supplied hardware.



2. Tighten the bolts to 12 ft-lbs.



1. Lift the second PV array assembly onto the cross rails and attach using the supplied hardware.



2. Adjust the tilt of the panel, then tighten the tilt plate nuts to 12 ft-lbs.

Step 7 - mounting the knee brace

Parts Required	Qty	Part Number
U Bolt	1	23-0100-160
Lower Knee Brace	1	51-0610-150
Upper Knee Brace Bracket	1	51-0610-050
Upper Knee Brace Rail	1	51-0610-200
Knee Brace Channel Inner	1	51-0534-000
Knee Brace Channel Outer	1	51-0534-001
1/4-20 x 3/4" SS hex-cap bolt	4	23-2520-050
1/4 flat washer, SS	8	25-2502-000
1/4 split lock washer, SS	4	24-2501-000
1/4-20 fin hex nut, SS	4	24-5013-440
1/2 flat washer, Zinc	2	25-5002-200
1/2 split lock washer	2	24-5001-000
1/2-13 fin hex nut, Zinc	2	24-2520-440
5/16-18 x 1" SS hex-cap bolt	2	23-3118-021
5/16 flat washer, SS	5	25-3102-000
5/16 split lock washer, SS	3	25-3101-000

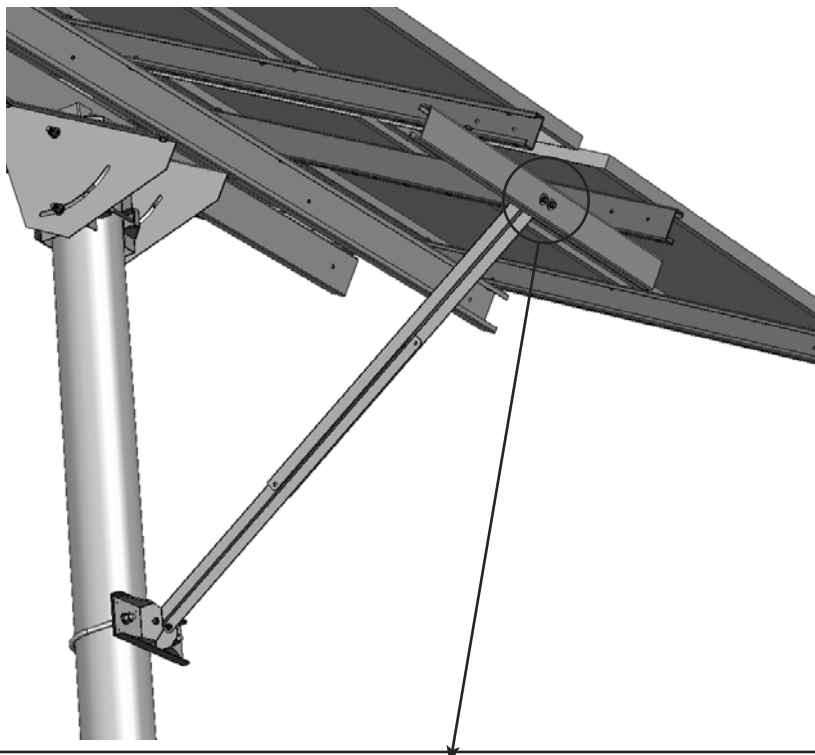
Parts Required	Qty	Part Number
5/16 hex nut, SS	3	25-3118-440
5/16-18 x 3" SS hex-cap bolt	1	23-3118-021
3/8-16 x 1" bolt, Zinc	2	27-3716-101
3/8 flat washer, Zinc	4	27-3702-001
3/8 split lock washer, Zinc	2	27-3701-001
3/8 hex nut, Zinc	2	24-3716-441

1. Attach the lower knee brace to the pole with the U bolt. Place it about 36 inches below the main brace assembly.

Tighten to 12 ft-lbs.

2. Attach the upper knee brace rail to the ends of the PV module channel rails using 3/8" hardware.

Tighten to 12 ft-lbs.



3. Bolt the knee brace bracket to upper knee brace rail using 5/16" hardware.
4. Bolt the inner (narrower) knee brace channel to the lower knee brace using 1/4" hardware.
5. Bolt the outer (thicker) knee brace channel to the upper knee brace bracket, using the supplied 5/16 x 3" bolt.

Tighten these to 12 ft-lbs.

