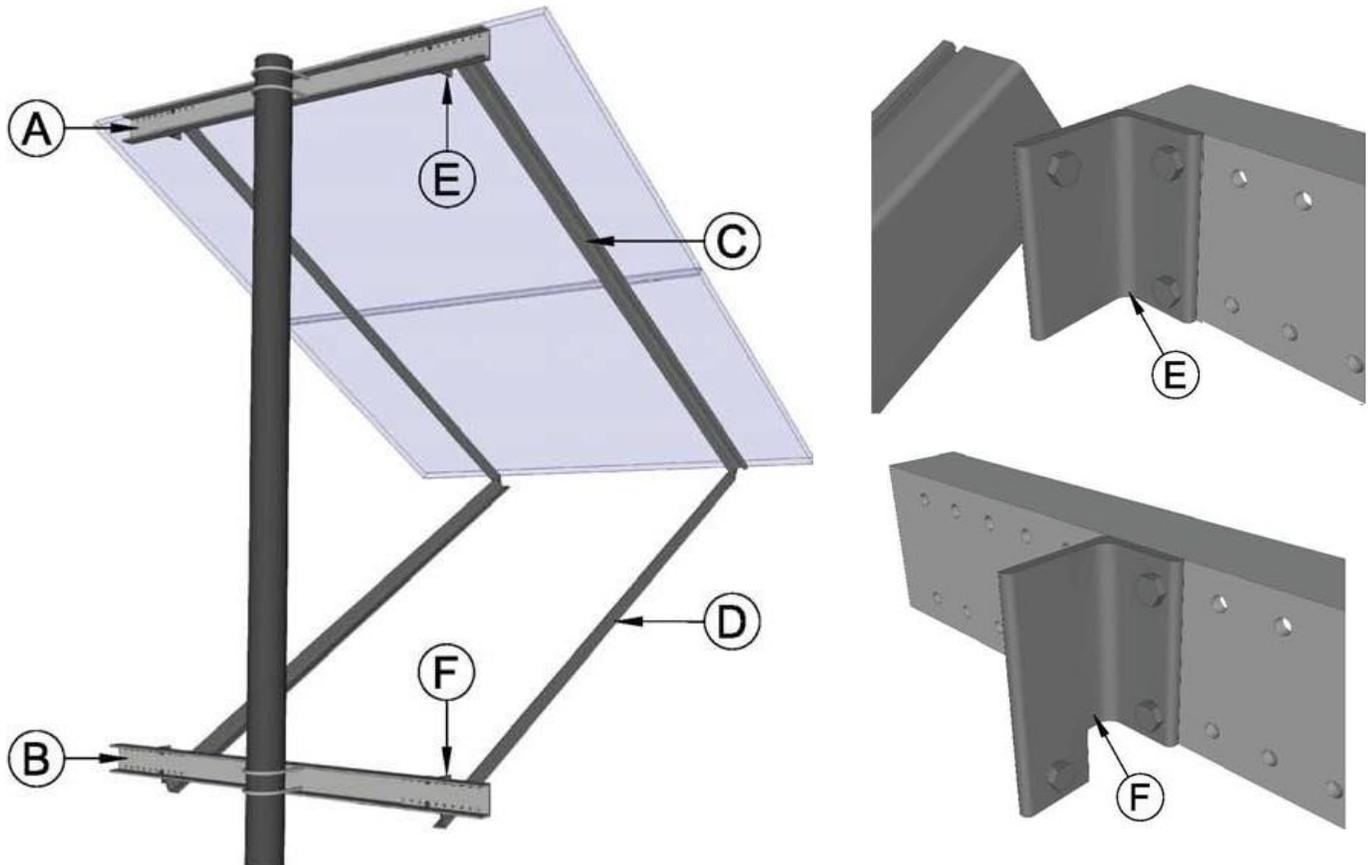




## Side of Pole Mount Assembly Instructions



### Universal Side of Pole Mount

Standard design for 3" or 4" schedule 40 or 80 pipe

- A. TOP CHANNEL
- B. BOTTOM CHANNEL
- C. PANEL RAILS: MAY EITHER BE ALUMINUM ANGLE WITH HOLES PUNCHED FOR MOUNTING YOUR PANEL, OR T-SLOT UNIVERSAL ALUMINUM EXTRUSIONS FOR SLIDING YOUR PANEL MOUNTING BOLTS IN, DEPENDING ON THE MODEL YOU ORDERED.
- D. BRACES: ALUMINUM ANGLE
- E. TOP BRACKET
- F. BOTTOM BRACKET

**Note:** Rail and brace dimensions may vary depending on the model of SOP you order. Custom attachment systems for larger pipes also available. Number of panels may vary.

Rev. 12/17



## HARDWARE PACKAGES

### SOP-S for 2 "A" Panels

### SOP-K for 1 "A" or "B" Panel

### SOP-X for 1 "C" or "D" Panel

#### For Attaching Cross Channels to Post

4 – 3/8" Round U-bolts  
8 – 3/8" Whiz Nuts

#### For Rail/Brace/Bracket Connections

6 – 1/4" x 5/8" SS Bolts  
6 – 1/4" SS Flange Nuts

#### For Attaching Brackets to Cross Channels

8 – 1/4" x 5/8" SS Bolts  
8 – 1/4" SS Flange Nuts

#### For Attaching Panels to Rails

1/4" x 5/8" SS Bolts  
1/4" SS Flange Nuts  
Quantity dependent on number of panels.

### SOP-Y for 2 "B" or "C" Panels

#### For Attaching Cross Channels to Post For

4 – 1/2" Round U-bolts  
8 – 1/2" Washers  
8 – 1/2" Locknuts

#### For Rail/Brace/Bracket Connections

6 – 1/4" x 5/8" SS Bolts  
6 – 1/4" SS Flange Nuts

#### For Attaching Brackets to Cross Channels

8 – 1/4" x 5/8" SS Bolts  
8 – 1/4" SS Flange Nuts

#### For Attaching Panels to Rails

8 – 1/4" x 5/8" SS Bolts  
8 – 1/4" SS Flange Nuts

### SOP-Y for 2 "D" with Pipe Clamp Attachment System

#### For Attaching Cross Channels to Post

8 – 1/2" Bolts  
16 – 1/2" Washers  
8 – 1/2" Locknuts  
4 – Pipe Clamp Halves

#### For Rail/Brace/Bracket Connections

6 – 3/8" x 1" Bolts  
6 – 3/8" Flange Nuts

#### For Attaching Brackets to Cross Channels

8 – 1/4" x 5/8" SS Bolts  
8 – 1/4" SS Flange Nuts

#### For Attaching Panels to Rails

8 – 1/4" x 5/8" SS Bolts  
8 – 1/4" SS Flange Nuts

#### **NOTE:**

SOP-X, SOP-S, and SOP-K mounts are for 3" Schedule 40 or 80 pipe (3" inside diameter/ 3.5" outside diameter) unless otherwise specified.

SOP-Y mounts are for a 4" Schedule 40 or 80 pipe (4" inside diameter/ 4.5" outside diameter) unless otherwise specified.

Any SOP mount can be special ordered to fit a 4" or larger pipe for an additional charge.

**RECOMMENDATIONS FOR DIMENSIONS OF POST HOLE FOR STANDARD INSTALLATION OF  
GENERAL SPECIALTIES MANUFACTURING SOP**

<b>SOP Model</b>	<b>Pipe Size</b>	<b>Depth of Hole</b>	<b>Width of Square Hole</b>	<b>Diameter of Round Hole</b>
SOP - K	3" 4"	60" 72"	12" 12"	14" 14"
SOP -X	3" 4"	48" 72"	12" 12"	14" 14"
SOP - S	3" 4"	48" 72"	12" 12"	16" 16"
SOP – Y For 2 "B" or "C" size modules	4"	60"	16"	20"
SOP – Y For 2 "D" size modules	4" 5" 6"	60" 72" 72"	16" 16" 18"	20" 20" 24"

Your building department may require the foundation for a PV array post mount to be designed by a structural engineer licensed in the state where the PV array is to be erected. This is required because failure of a post mount foundation may be a threat to the safety of people and property in its proximity. At a minimum, failure will result in costly damage to the PV modules. The foundation described here is suitable for most soil types, but no warranty of its suitability for your particular soil or wind conditions is offered or implied.

**RECOMMENDATIONS FOR POLE HEIGHT FOR  
GENERAL SPECIALTIES MANUFACTURING SOP**

We cannot guarantee a standard 1.67 safety factor if these recommendations are not observed. Since we cannot assess each customer's individual site and conditions, a professional installer and the local building department should be consulted for the safest and most effective installation.

<b>SOP Model and Panel Size (Letters in " " refer to panel size. See Capacity Chart)</b>	<b>Post Size (sch = schedule, or thickness of pipe wall)</b>	<b>Max Pole Height above concrete Base w/array @ 45° tilt</b>	<b>Approximate Clearance between top of concrete and lowest point on array @ 45° tilt</b>	<b>Max Pole Height above concrete base w/array @ 60° tilt</b>	<b>Approximate Clearance between top of concrete and lowest point on array @ 60° tilt</b>	<b>Max Pole Height above concrete base w/array @ 90° tilt</b>	<b>Approximate Clearance between top of concrete and lowest point on array @ 90° tilt</b>
<b>SOP – K "A" or "B"</b> For 1 module size "A" and "B" up to 14.10 sq. ft. max	Standard post size: 3" sch 40 3" sch 80 Special order: 4" sch 40 4" sch 80	12' 6" 16' 6" 20' 20'	10' 2" 14' 2" 17' 8" 17' 8"	11' 13' 6" 20' 20'	8' 4" 10' 10" 17' 4" 17' 4"	9' 6" 12' 20' 20'	6' 6" 9' 17' 17'

<b>SOP Model and Panel Size (Letters in " " refer to panel size. See Capacity Chart)</b>	<b>Post Size (sch = schedule, or thickness of pipe wall)</b>	<b>Max Pole Height above concrete Base w/array @ 45° tilt</b>	<b>Approximate Clearance between top of concrete and lowest point on array @ 45° tilt</b>	<b>Max Pole Height above concrete base w/array @ 60° tilt</b>	<b>Approximate Clearance between top of concrete and lowest point on array @ 60° tilt</b>	<b>Max Pole Height above concrete base w/array @ 90° tilt</b>	<b>Approximate Clearance between top of concrete and lowest point on array @ 90° tilt</b>
<b>SOP – X "C" or "D"</b> For 1 module size "C" and "D" up to 22 sq. ft. max	Standard post size: 3" sch 40 3" sch 80 Special order: 4" sch 40 4" sch 80	8' 11' 16' 20'	5' 2" 8' 2" 13' 2" 17' 2"	6' 6" 8' 6" 12' 6" 17'	3' 4" 5' 4" 9' 4" 13' 10"	5' 9" 7' 3" 10' 9" 14' 6"	1' 3" 3' 7" 7' 1" 10' 10"
<b>SOP – S "A"</b> For 2 modules size "A" ONLY up to 22 sq. ft. max	Standard post size: 3" sch 40 3" sch 80 Special order: 4" sch 40 4" sch 80	8' 10' 6" 15' 6" 20'	4' 6" 7' 12' 16' 6"	6' 6" 8' 6" 12' 6" 16' 6"	2' 3" 4' 3" 8' 3" 12' 3"	5' 6" 7' 3" 10' 6" 14' 6"	0' 8" 2' 5" 5' 8" 9' 8"
<b>SOP – Y "B"</b> For 2 modules size "B" ONLY up to 28.2 sq. ft. max	Standard post size: 4" sch 40 4" sch 80	11' 6" 15' 6"	7' 10" 11' 10"	9' 6" 13'	4' 3" 8' 9"	8' 3" 11'	3' 5" 6' 2"
<b>SOP – Y "C"</b> For 2 modules size "C" ONLY up to 36 sq. ft. max	Standard post size: 4" sch 40 4" sch 80	9' 3" 12' 6"	4' 3" 7' 6"	7' 6" 10'	1' 8" 4' 2"	Footnote 1 8' 6"	Footnote 1 1' 10"
<b>SOP – Y "D"</b> For 2 modules size "D" ONLY up to 42 sq. ft. max	Standard post size: 4" sch 40 4" sch 80 Special order: 5" sch 40 5" sch 80 6" sch 40	5' 9" 10' 6" 13' 9" 18' 9" 20'	0' 9" 5' 6" 8' 9" 13' 9" 15"	Footnote 1 8' 6" 11' 15' 17' 6"	Footnote 1 2' 8" 5' 2" 9' 2" 11' 8"	Footnote 1 7' 4" 9' 6" 13' 3" 15'	Footnote 1 0' 8" 1' 10" 6' 7" 8' 4"

**Footnote 1:** There is not adequate clearance for these arrays with this size pipe. Use heavier schedule pipe or larger pipe diameter.

## ASSEMBLY INSTRUCTIONS

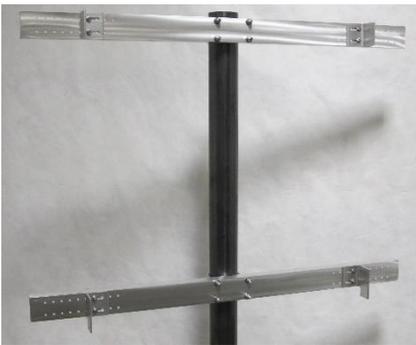
These instructions are for either a one panel SOP mount or a two panel SOP mount. The assembly details are the same. Where instructions refer to a single panel, remember that if your mount has two panels, the process is the same. Keep approximately 1/4" space between panels. Also, note that rail and brace dimensions may vary depending on the model of SOP you ordered.



Lightly clamp two channels to your post with the four U-Bolts provided. To determine the approximate spacing between the two channels, use a panel rail to gauge the distance from the top of the top channel to the bottom of the bottom channel.



Hold a level on centerline as shown. Note bubble. Now move level to outer end of channel next to brackets. The bubble on the level must read the same; this will ensure that the panels are in plane. Now tighten the U-Bolts. If the channels are not in plane then you will have a twist to your panel(s).



Before you lightly bolt the brackets on to the channels, use your panel to figure out the measurements from the OUTSIDE of one bracket to the OUTSIDE of the other bracket on each channel to be sure the distance is the same. The smaller brackets go on top and the larger brackets with the "dog-leg" go on the bottom channel.

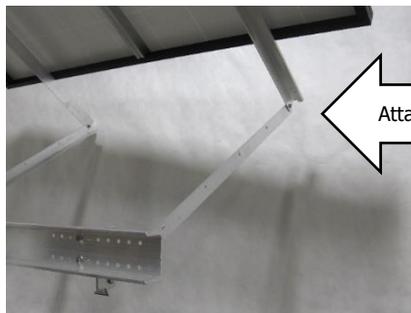
**NOTE:** If you have extremely small panels you may need to invert the brackets and/or the rails to face the opposite direction from that listed here for your panels to fit.



Attach braces to the bottom channel brackets as shown.

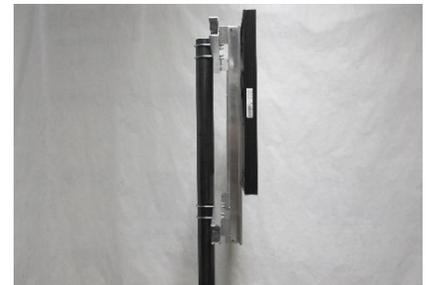


Attach panel rail assembly to the outside of the top channel brackets as shown below.



Attach braces to bottom of panel rails as shown at left.

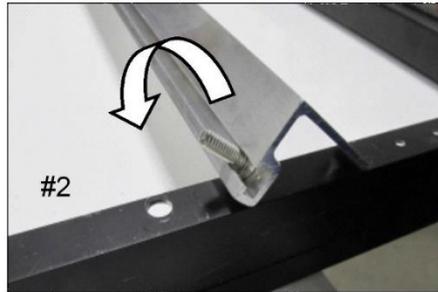
To adjust the panel to a more vertical orientation, refasten braces to bottom channel brackets in holes provided. If you want to adjust your panel dead vertical, remove braces entirely and position bottom channel so holes in bottom channel bracket line up with holes in the bottom of the rail.



The bottom channel can be moved up the post, closer to the top channel, to achieve a more horizontal adjustment for the panel.



## INSTRUCTIONS FOR ATTACHING SOLAR PANEL TO MOUNTING RAILS



For T-Slot Rails: Lay T-Slot rails across the short axis of the panel as shown in Photo #1.

Slide stainless bolts into T-slot of rail and position so they are opposite to the mounting holes on the frame of the panel as shown in Photo #2.

Then roll the rails over so the bolts slip into the holes on the panel frame. Place the flange nut on your finger with the flange UP and thread onto the bolt from underneath as shown in Photo #3. Finger tighten.

For Pre-Punched Angle Rails: Attach panel rails to solar module across the width of the panel as in Photo #4. Make sure the part of the rail with the punched slots "toes-out" toward the ends of the panel. Insert



the bolts in the holes provided from underneath facing out (Photo #5) and tighten on the flange nut. It is important that the flange nut bears against the rail and not the panel frame, Photo #6.



