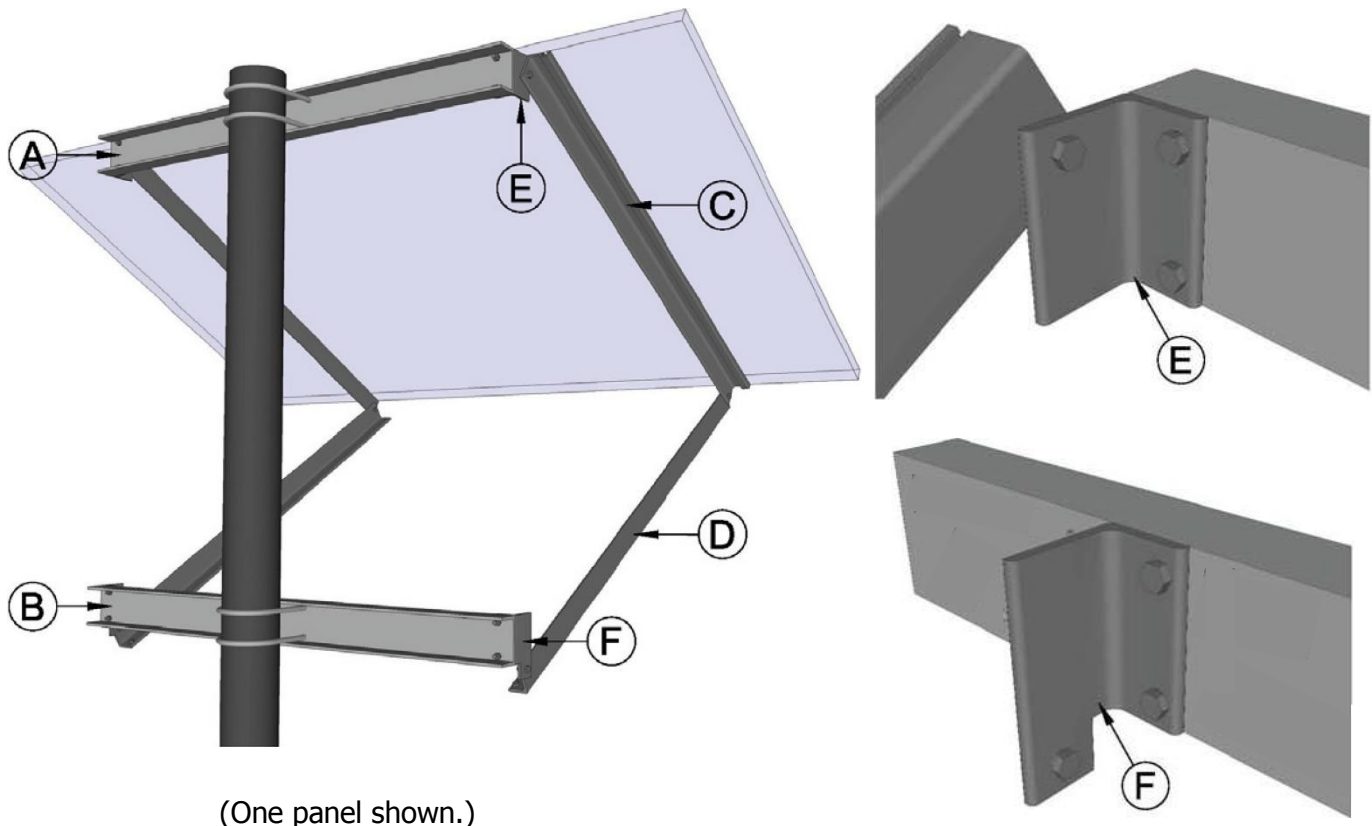


## Custom Side of Pole Mount



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 posts also available. Number of panels may vary.

### **SIDE OF POLE MOUNT FOR 1 or 2 PV PANELS**

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

		Revision
Not to Scale		05.01.15

## Hardware Package for SOP Mounts

<u>Components</u>	<u>Included Hardware</u> SOP-X, SOP-K for 1 - Panel size "B", "C", "D" AND SOP-S for 2 - Panel size "A"	<u>Included Hardware</u> SOP-Y - "B"&"C" for 2 - Panel size "B" & "C"	<u>Included Hardware</u> SOP-Y - "D" for 2 - Panel size "D" with steel pipe clamp attachment system
For Attaching Cross Channels to Post	4 - 3/8" round U-bolts 8 - 3/8" whiz nuts	4 - 1/2" round U-bolts 8 - 1/2" washers 8 - 1/2" locknuts	8 - 1/2" bolts 16 - 1/2" washers 8 - 1/2" locknuts 4 - pipe clamp halves
For Rail / Brace / Bracket Connections	6 - 1/4" X 5/8" stainless steel bolts 6 - 1/4" stainless steel whiz flange nuts	6 - 1/4" X 5/8" stainless steel bolts 6 - 1/4" stainless steel whiz flange nuts	6 - 3/8" X 1" bolts 6 - 3/8" whiz flange nuts
For Attaching Brackets to Cross Channels	8 - 1/4" X 5/8" stainless steel bolts 8 - 1/4" stainless steel whiz flange nuts	8 - 1/4" X 5/8" stainless steel bolts 8 - 1/4" stainless steel whiz flange nuts	8 - 1/4" X 5/8" stainless steel bolts 8 - 1/4" stainless steel whiz flange nuts
For Attaching Panels to Rails	1/4" X 5/8" stainless steel bolts 1/4" stainless steel whiz flange nuts (Quantity dependent on how many panels will be used. 4 - nuts and bolts per panel)	9 - 1/4" X 5/8" stainless steel bolts 9 - 1/4" stainless steel whiz flange nuts  (4 per panel plus one extra)	9 - 1/4" X 5/8" stainless steel bolts 9 - 1/4" stainless steel whiz flange nuts  (4 per panel plus one extra)

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 post for an additional charge.

Panel Size "A" Panels up to 140 watts OR Dimensions 26.5" X 59.5" 10.94 Sq.Ft. MAX	Panel Size "B" Panels 145-205 watts OR Dimensions 32.5" X 62.5" 14.10 Sq.Ft. MAX	Panel Size "C" Panels 225 - 260 watts 60 cell OR Dimensions 39.5" X 65.5" 17.96 Sq.Ft. MAX	Panel Size "D" Panels 265+ watts 72 cell OR Dimensions 39.2" X 77.1" 20.98 Sq.Ft. MAX
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## General Specialties Recommendations for Pole Height and Dimension for Side of Pole Mounts

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 – 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"

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

### **Dimension of Post Hole for Standard SOP Installation**

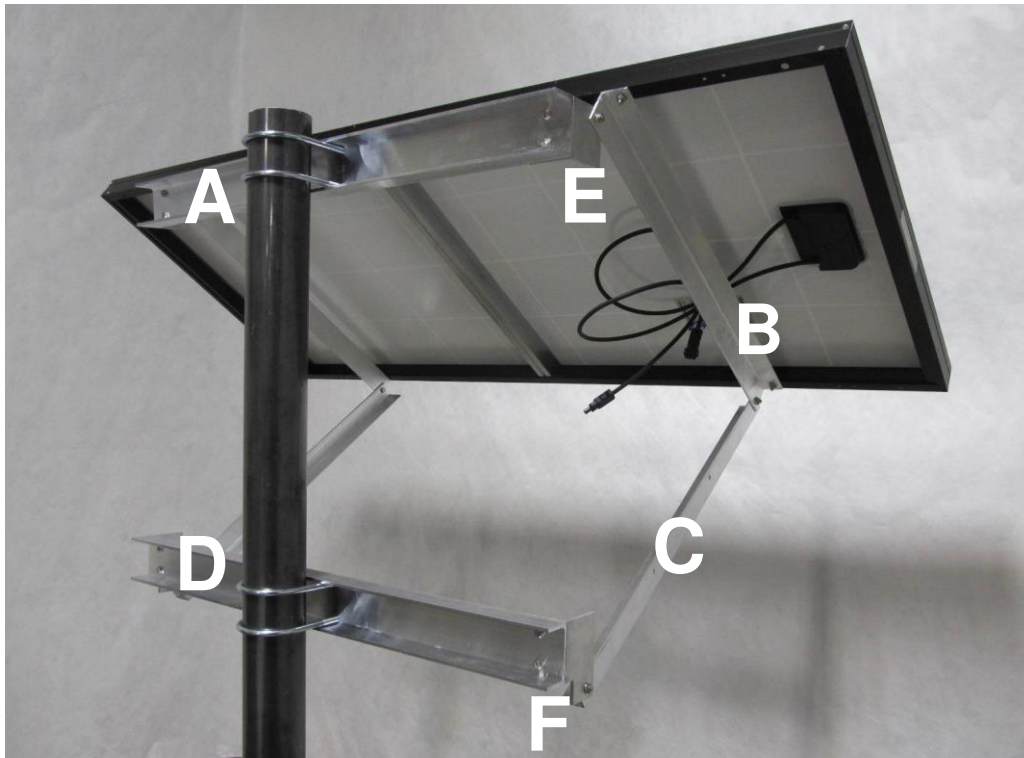
SOP Model	Pipe Size	Depth of Hole	Width of Square Hole	Diameter of Round Hole
SOP - K	3"	60"	12"	14"
	4"	72"	12"	14"
SOP -X	3"	48"	12"	14"
	4"	72"	12"	14"
SOP - S	3"	48"	12"	16"
	4"	72"	12"	16"
SOP – Y For 2 "B" or "C" size modules	4"	60"	16"	20"
SOP – Y For 2 "D" size modules	4"	60"	16"	20"
	5"	72"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

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

### **WARNING:**

Your building department may require the concrete foundation for the post for a PV array to be designed by a structural engineer licensed in the state where the PV array is to be erected. This is required because failure will result in costly damage to the PV modules. The specs for a foundation described here, is suitable for most soil types, but no warranty of it's suitability for your soil or wind conditions is offered or implied.

## Custom Side of Pole Mount for 1 or 2 PV Panels (single panel mount shown here)



A. TOP CHANNEL

B. PANEL RAILS: (MAY EITHER BE ALUMINUM ANGLE WITH HOLES PUNCHED FOR MOUNTING YOUR PANEL OR T-SLOT ALUMINUM EXTRUSIONS FOR SLIDING YOUR PANEL MOUNTING BOLTS IN, DEPENDING ON MODEL YOU ORDERED)

C. BRACES

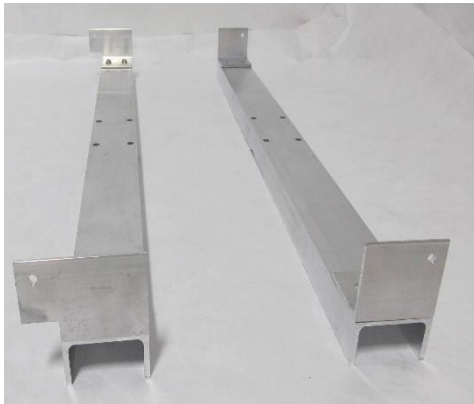
D. BOTTOM CHANNEL

E. TOP BRACKET

F. BOTTOM BRACKET



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 ¼" space between panels. Also, note that rail and brace dimensions may vary depending on the model of SOP you ordered.



Place 2 channels on a flat surface. Attach 4 brackets as shown using provided bolts. Leave bolts finger tight for now.

Then bolt top channel with smaller brackets to the top of the post using U-bolts with washers and nuts. Make sure the holes in the small brackets on the top channel are UP.

To determine spacing between the 2 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. If the channels are not in plane then you will have a twist to your panel(s).



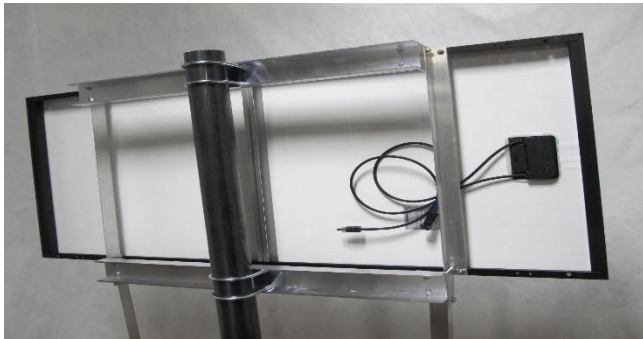
Attach panel rails to solar panel across the width of the panel as shown. Make sure slotted part of rail "toes-out" toward ends of panel. It is important that whiz flange nut bears against the rail. Insert the bolt from bottom facing out.

(Note: These instructions refer to angle rails with punched mounting holes. If you have T- slot rails, slide bolt heads into T-slot then insert shaft of bolt into holes in back of the panel frame and tighten with flange nut)



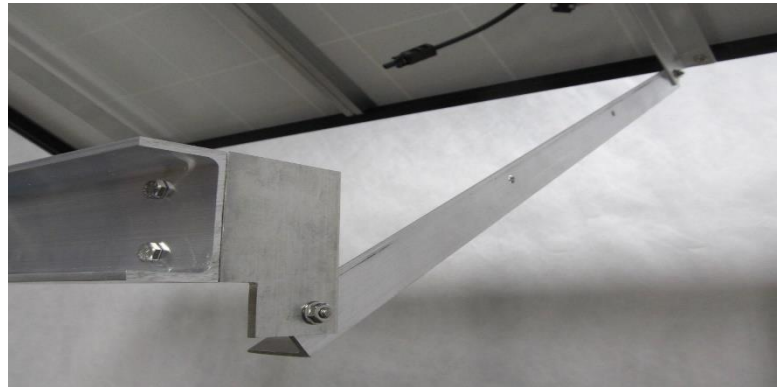
Attach braces to bottom channel brackets as shown.





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

Attach braces to bottom of panel rails as shown.



**Fig. A**

Note in Fig. B, the bottom channel has been moved farther up the post than in Fig. A to achieve a more horizontal adjustment for the panel.

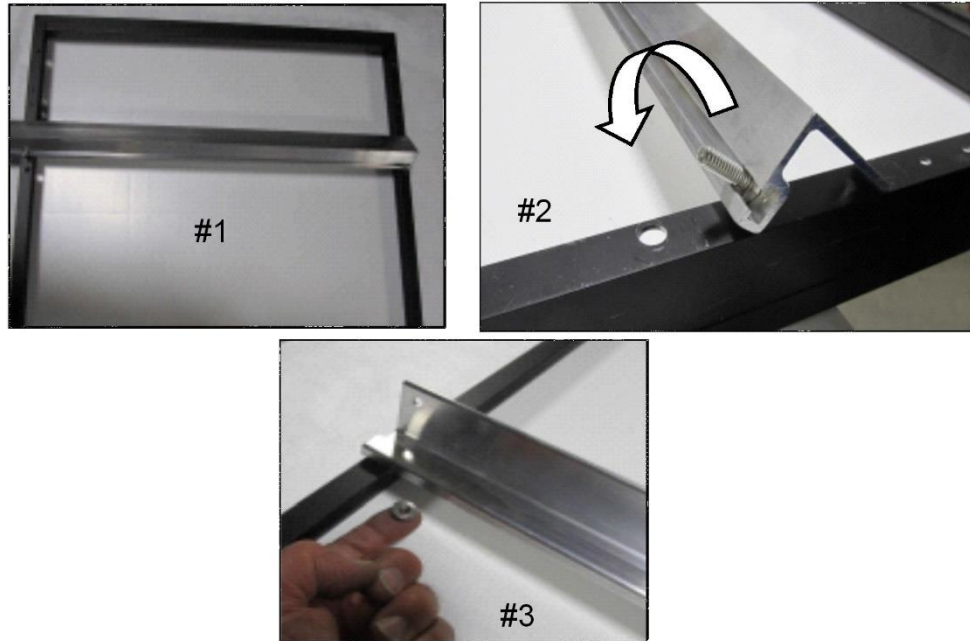


**Fig. B**



In order to adjust the panel to a more vertical orientation, refasten braces to bottom channel brackets as desired. And 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.

## 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.

