

Landscape Rack



SUNEARTH INC.

SunEarth Landscape Rack Installation Manual



***SunEarth Landscape Rack
Flat Roof Installation***

Thank you for purchasing SunEarth's Landscape Racking System. The use of all stainless steel hardware and 6063-T6 structural aluminum make SunEarth's Landscape Rack a simple, strong and durable solution for your landscape, saw-tooth and East/West sloped roof racking needs. It accommodates tilt angles from 20° to 60° from horizontal and is compatible with all SunEarth solar collectors.

The landscape rack components consist of 6063-T6 anodized aluminum mounting feet, support strut, rear leg as well as collectors clips and stainless steel fasteners that can withstand the harshest weather conditions. The components have factory machined holes to expedite field installation.

SunEarth's landscape rack has been designed to allow installation on all roof types. Always maintain a tilt angle greater than 10° from horizontal.

The landscape rack should not be used in areas that experience positive panel loading (snow) greater than 60 psf or negative panel loading (wind) greater than 60 psf. If expected loading exceeds these values please contact SunEarth for other mounting options.

The use of mounting systems that do not conform to the materials and methods detailed in this or any of SunEarth's other published installation manuals, guidelines, and technical bulletins is not recommended and may void your collector warranty.

Landscape Rack – Location

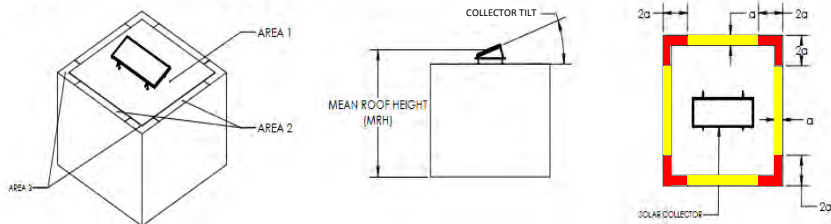


The optimal siting of the solar collector is facing true south. If this is not possible the annual performance will suffer very little if the collector is oriented no more than 45° east or west of true south.

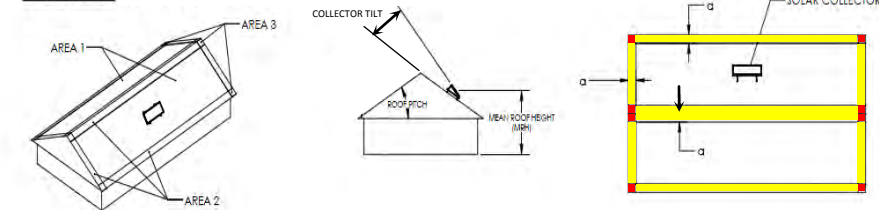
The solar collector should be placed on the roof in an area and orientation that minimizes wind and snow loading. Wind loads are highest near the edges and ridge of the roof. It is not advisable to install solar collectors in locations 2 (yellow) and 3 (red).

Note: Roof area (a) : Dimension "a" is 10% of the least horizontal dimension "LHD" or 40% of the mean roof height "MRH" whichever is smaller, but not less than either 4% of the least horizontal dimension or 3 feet of the building as stated in Minimum Design Loads for Buildings and Other Structures, American Society of Civil Engineers (ASCE) 7-05.

FLAT ROOF $20^\circ < \text{COLLECTOR TILT} < 60^\circ$



GABLE ROOF $20^\circ < \text{COLLECTOR TILT} < 60^\circ$



Example: If the installation site has a roof that is 35 feet wide, 60 feet long and has a mean roof height of 30 feet.

$$10\% \text{ of "LHD"} = 0.10 \times 35 = 3.5$$

$$4\% \text{ of "LHD"} = 0.04 \times 35 = 1.4$$

$$40\% \text{ of "MRH"} = 0.40 \times 30 = 12$$

a = 3.5 feet since $1.4 < 3 < 3.5 < 12$

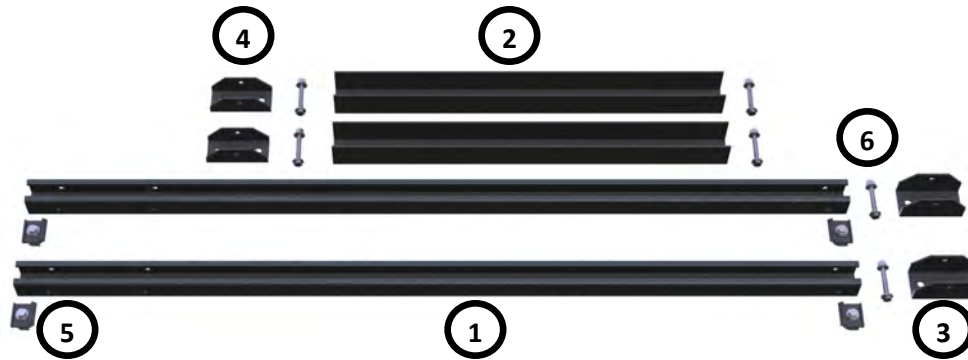
Therefore collectors should not be installed less than 3.5 feet from any roof ridge or edge.

Landscape Rack – Components

Landscape Rack

SunEarth Part # MTG-LSR-52(42)-(19/25.5/40)

Includes



	<i>Qty.</i>	<i>Description</i>
1	2 ea.	Support strut, 42" or 52" Length (Black Anodized Shown)
2	2 ea.	Rear leg, 19"/25.5"/40" Length (Black Anodized Shown)
3	2 ea.	Front Foot (Black Anodized Shown)
4	2 ea.	Rear Foot (Black Anodized Shown)
5	4 ea.	C-SSN, Collector Mounting Assembly
6	6 ea.	Fastener Assemblies

Table 1

The Collector Clip Assembly (C-SSN) attaches the collector to the landscape rack.

Verify that all components shown to the left have been received before proceeding with installation.

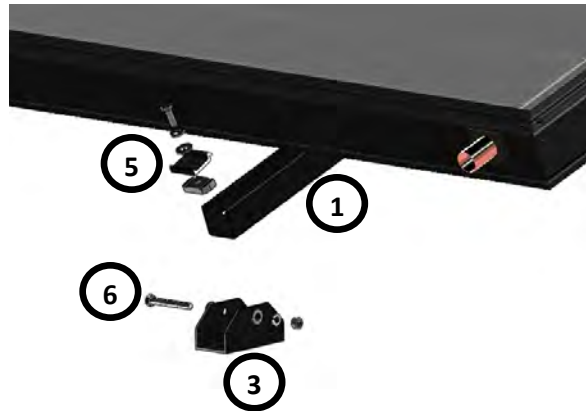
Note: Mounting Feet should never be attached directly to the roof surface without best practice flashing methods. Utilizing standoffs, hanger bolts or a similar method, to allow proper flashing, is recommended.

Landscape Rack – Assembly Details

Landscape Rack

SunEarth Part # MTG-LSR-42(52)-(19/25.5/40)

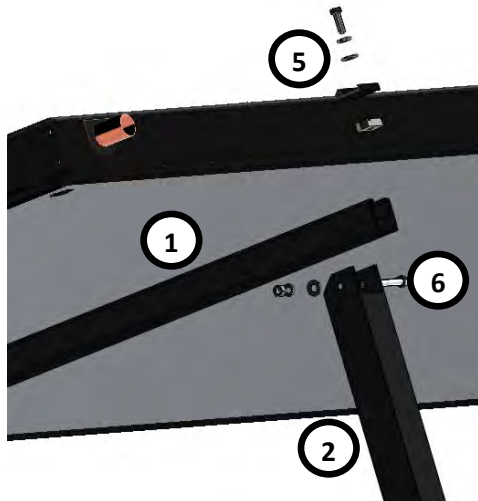
Front Foot



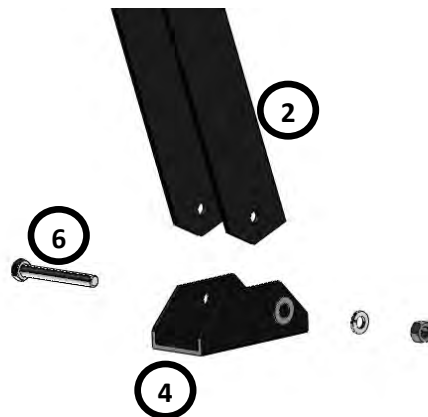
Front foot sub-assembly consists of the support strut nesting in the front foot and attachment with one (1) fastener assembly per front foot.

Rear foot sub-assembly consists of the rear foot being nested in the rear leg and attachment with one (1) fastener assembly per rear foot.

Leg Attachment



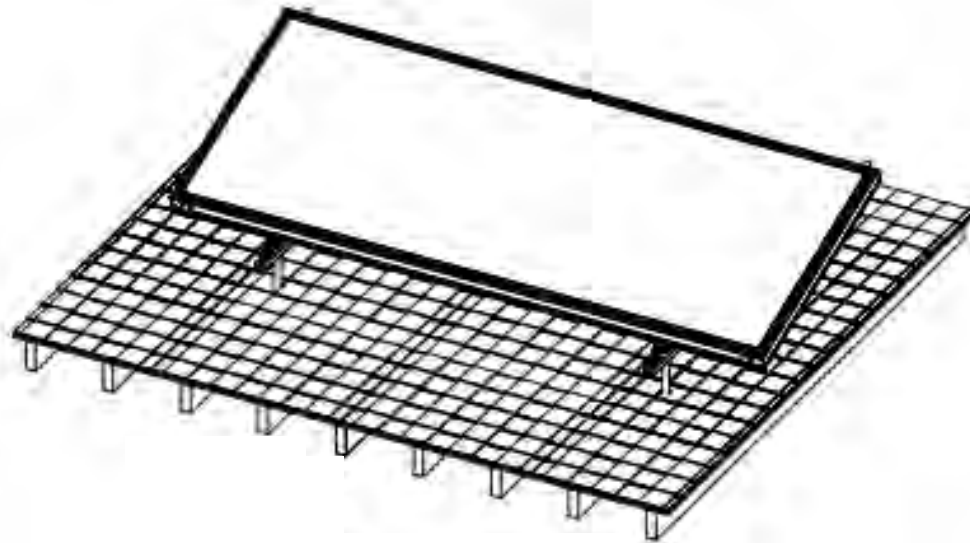
Rear Foot



Leg attachment sub-assembly consists of the support strut nesting in the rear leg and attachment with one (1) fastener assembly per rear leg.

Landscape Rack — Layout

Landscape Configuration Only



SunEarth's landscape rack layout is outlined for the different landscape rack models dependent on collector and desired landscape rack tilt. Please reference appropriate sheet for your application.

SunEarth's Landscape Rack is not an appropriate mounting solution for locations that experience positive panel loading (snow) greater than 60 psf or negative panel loading (wind) greater than 60 psf. If expected loading exceeds these values please contact SunEarth for other mounting options.

Landscape Rack – MTG-LSR-42(52)-19 Layout

Landscape Rack

SunEarth Part # MTG-LSR-42(52)-19

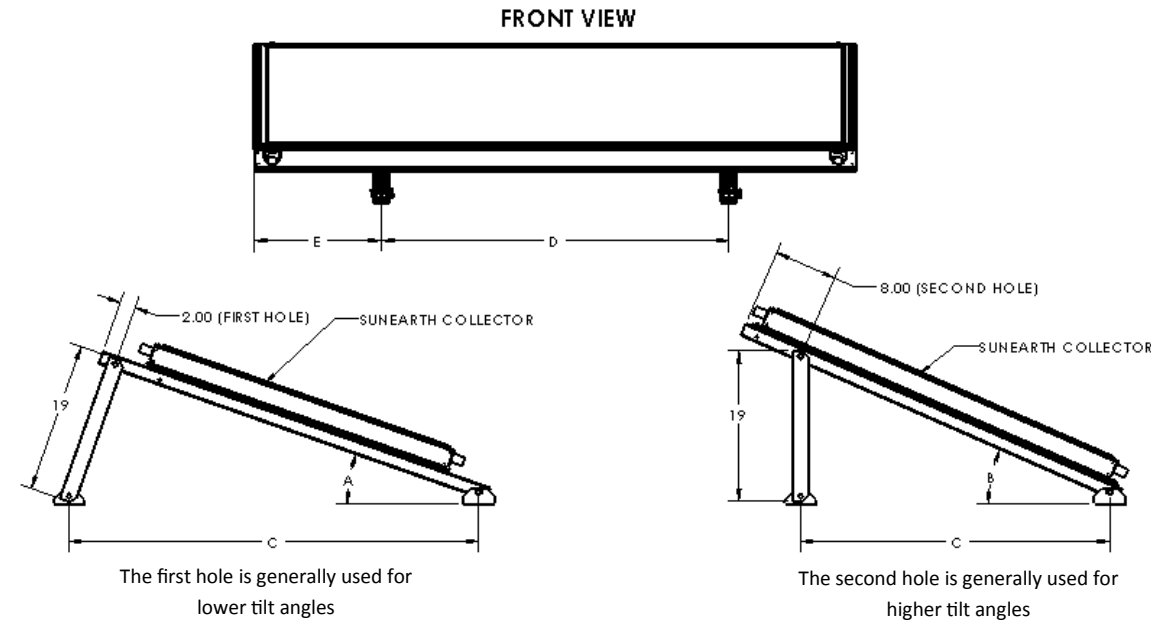


Table 2 & 3 provides detail on the proper placement of the landscape rack feet for SunEarth Collector(s).

If the rafter spacing is not 16" or 24" on center, position the landscape rack feet such that the "overhang" (Dimension "E") is plus or minus 1" of the shown in Table 3.

Note: All values are taken for the racking only, from horizontal, roof pitch must be added or subtracted as appropriate to calculate the installed tilt. A general rule of thumb is installed tilt should be equal to local latitude plus 10°.

Landscape Layout Dimensions

MTG-LSR-42-19 (EP/EC-24, SB-24)			MTG-LSR-52-19 (EP/EC-40/32/21, SB-40/32)		
ANGLE FROM HORIZONTAL		LENGTH BETWEEN FEET	ANGLE FROM HORIZONTAL		LENGTH BETWEEN FEET
A	B	C	A	B	C
24°	-	42.5"	20°	-	51.75"
26°	-	34.75"	-	22°	46.25"
-	28°	37.6"	-	24°	39.15"
-	30°	35"	-	-	-
-	32°	27.75"	-	-	-

Table 2

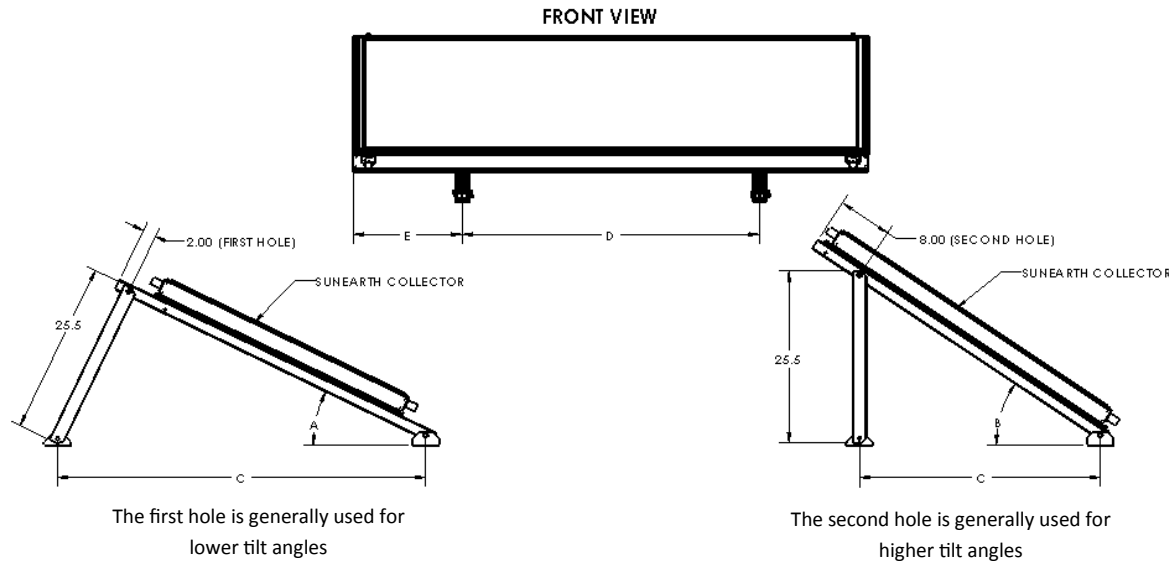
Collector Model	Rafter Spacing Layout			
	D		E	
Collector Model	16"	24"	16"	24"
EP/EC 21	65.75"	49.75"	5.125"	13.125"
EP/EC 24 & 32	65.75"	73.75"	16.25"	12.25"
EP/EC 40	97.75"	97.75"	12.25"	12.25"

Table 3

Landscape Rack – MTG-LSR-42(52)-25.5 Layout

Landscape Rack

SunEarth Part # MTG-LSR-42(52)-25.5



Landscape Layout Dimensions

MTG-LSR-42-25.5 (EP/EC-24, SB-24)			MTG-LSR-52-25.5 (EP/EC-40/32/21, SB-40/32)		
ANGLE FROM HORIZONTAL		LENGTH BETWEEN FEET	ANGLE FROM HORIZONTAL		LENGTH BETWEEN FEET
A	B	C	A	B	C
32°	-	45.6"	26°	-	54.4"
34°	-	43.6"	28°	-	50.8"
36°	-	39.5"	30°	-	42.3"
-	38°	39.1"	-	32°	44.7"
-	40°	37.0"	-	34°	39.1"
-	42°	34.5"	-	-	-
-	44°	31.75"	-	-	-

Table 4

Table 4 & 5 provides detail on the proper placement of the landscape rack feet for SunEarth Collector(s).

If the rafter spacing is not 16" or 24" on center, position the landscape rack feet such that the "overhang" (Dimension "E") is plus or minus 1" of the shown in Table 5.

Note: All values are taken for the racking only, from horizontal, roof pitch must be added or subtracted as appropriate to calculate the installed tilt. A general rule of thumb is installed tilt should be equal to local latitude plus 10°.

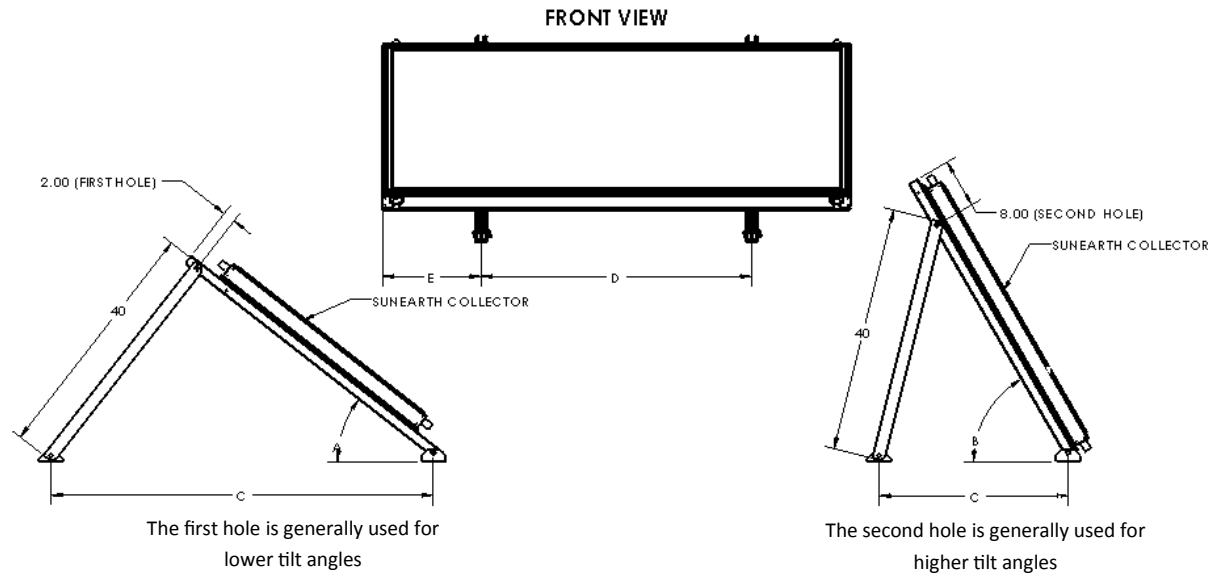
Collector Model	Rafter Spacing Layout			
	D		E	
	16"	24"	16"	24"
EP/EC 21	65.75"	49.75"	5.125"	13.125"
EP/EC 24 & 32	65.75"	73.75"	16.25"	12.25"
EP/EC 40	97.75"	97.75"	12.25"	12.25"

Table 5

Landscape Rack – MTG-LSR-42(52)-40 Layout

Landscape Rack

SunEarth Part # MTG-LSR-42(52)-40



Landscape Layout Dimensions

MTG-LSR-42-40 (EP/EC-24, SB-24)			MTG-LSR-52-40 (EP/EC-40/32/21, SB-40/32)		
ANGLE FROM HORIZONTAL		LENGTH BETWEEN FEET	ANGLE FROM HORIZONTAL		LENGTH BETWEEN FEET
A	B	C	A	B	C
46°	-	53.7"	38°	-	62.8"
48°	-	51.8"	40°	-	60.0"
50°	-	49.7"	42°	-	57.0"
52°	-	47.6"	44°	-	53.75"
54°	-	45.4"	46°	-	50.2"
56°	-	43.2"	48°	-	46.2"
58°	-	40.9"	50°	-	41.4"
60°	-	38.6"	-	52°	45.3"
-	-	-	-	54°	42.5"
-	-	-	-	56°	39.4"
-	-	-	-	58°	36.1"
-	-	-	-	60°	32.6"

Table 6

Table 6 & 7 provides detail on the proper placement of the landscape rack feet for SunEarth Collector(s).

If the rafter spacing is not 16" or 24" on center, position the landscape rack feet such that the "overhang" (Dimension "E") is plus or minus 1" of the shown in Table 7.

Note: All values are taken for the racking only, from horizontal, roof pitch must be added or subtracted as appropriate to calculate the installed tilt. A general rule of thumb is installed tilt should be equal to local latitude plus 10°.

Collector Model	Rafter Spacing Layout			
	D		E	
	16"	24"	16"	24"
EP/EC 21	65.75"	49.75"	5.125"	13.125"
EP/EC 24 & 32	65.75"	73.75"	16.25"	12.25"
EP/EC 40	97.75"	97.75"	12.25"	12.25"

Table 7

Landscape Rack — Front Foot Installation



Figure 1



Figure 2

1. Mark the location of the two (2) front feet on the main mounting surface as outlined on tables 2-7
2. Securely fasten the front feet to the main mounting surface using acceptable fastening methods for the mounting surface as well as local codes and conditions.
3. Insert the support strut into the front foot with the opening of the channel facing away from the mounting surface. Insert mounting hardware thru front foot and support strut. As shown in *Figure 1*.
4. Lay the support strut flat on mounting surface. As shown in *Figure 2*.

Warning: Always follow all local building codes, ordinances and regulations when creating roof penetrations as well as standard roofing trade practices.

Landscape Rack – Rear Foot Installation

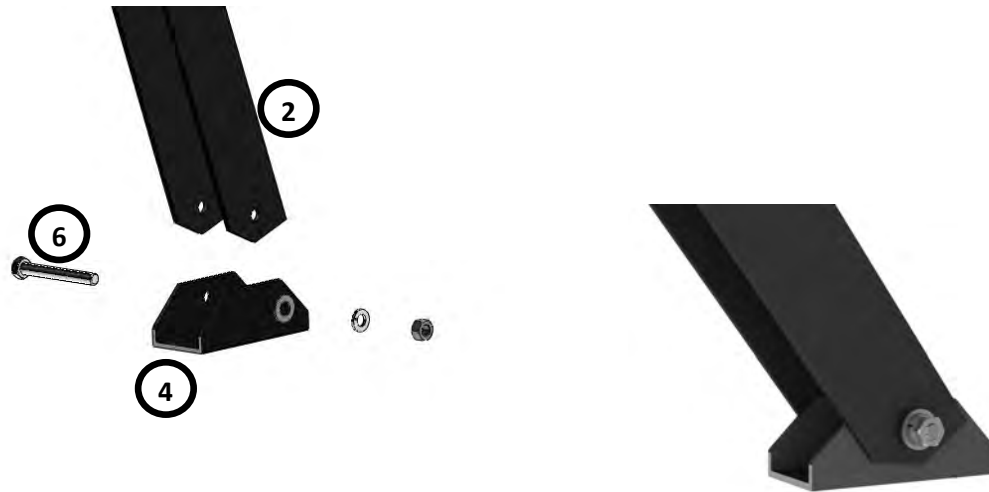


Figure 3

1. Mark the location of the two (2) rear feet on the main mounting surface as outlined on tables 2-7
2. Securely fasten the rear feet to the main mounting surface using acceptable fastening methods for the mounting surface as well as local codes and conditions.
3. Position the rear leg on the rear foot with the opening of the channel facing the front foot. Insert fastener assembly thru rear foot and rear leg. As shown in Figure 3.
4. Lay the rear leg flat on mounting surface. As shown in Figure 4.



Figure 4

	Qty.	Description
1	2 ea.	Support strut, 42" or 52" Length (Black Anodized Shown)
2	2 ea.	Rear leg, 19"/25.5"/40" Length (Black Anodized Shown)
3	2 ea.	Front Foot (Black Anodized Shown)
4	2 ea.	Rear Foot (Black Anodized Shown)
5	4 ea.	C-SSN, Collector Mounting Assembly
6	6 ea.	Fastener Assemblies

Warning: Always follow all local building codes, ordinances and regulations when creating roof penetrations as well as standard roofing trade practices.

Landscape Rack – Collector Placement

Top View

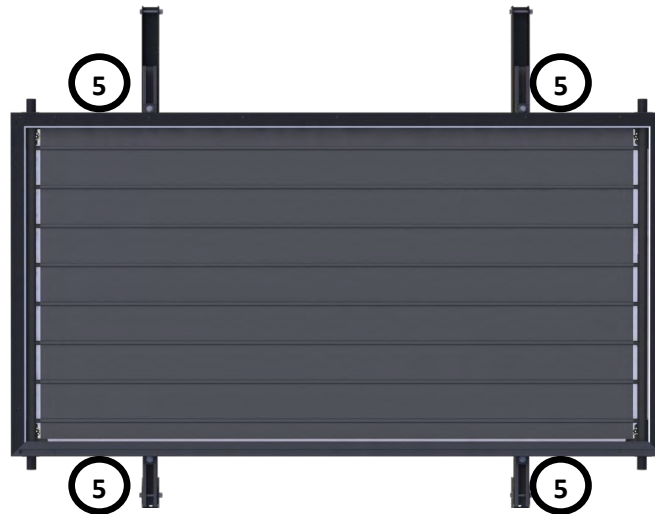


Figure 5

Side View



1. Place the Collector face up on the support strut equidistant from all edges. As shown in *Figure 5*.
2. Install four (4) C-SSN collector mounting assemblies and torque to 19 ft*lbs (26 N*m).

	Qty.	Description
1	2 ea.	Support strut, 42" or 52" Length (Black Anodized Shown)
2	2 ea.	Rear leg, 19"/25.5"/40" Length (Black Anodized Shown)
3	2 ea.	Front Foot (Black Anodized Shown)
4	2 ea.	Rear Foot (Black Anodized Shown)
5	4 ea.	C-SSN, Collector Mounting Assembly
6	6 ea.	Fastener Assemblies

Warning: Always follow all local building codes, ordinances and regulations when creating roof penetrations as well as standard roofing trade practices.

Landscape Rack — Final Assembly

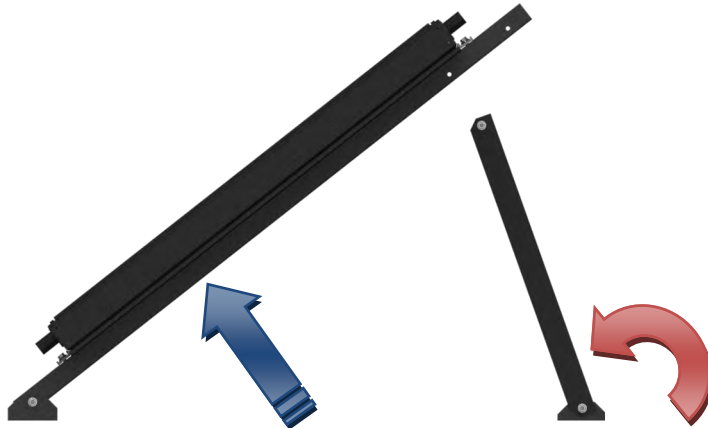


Figure 6

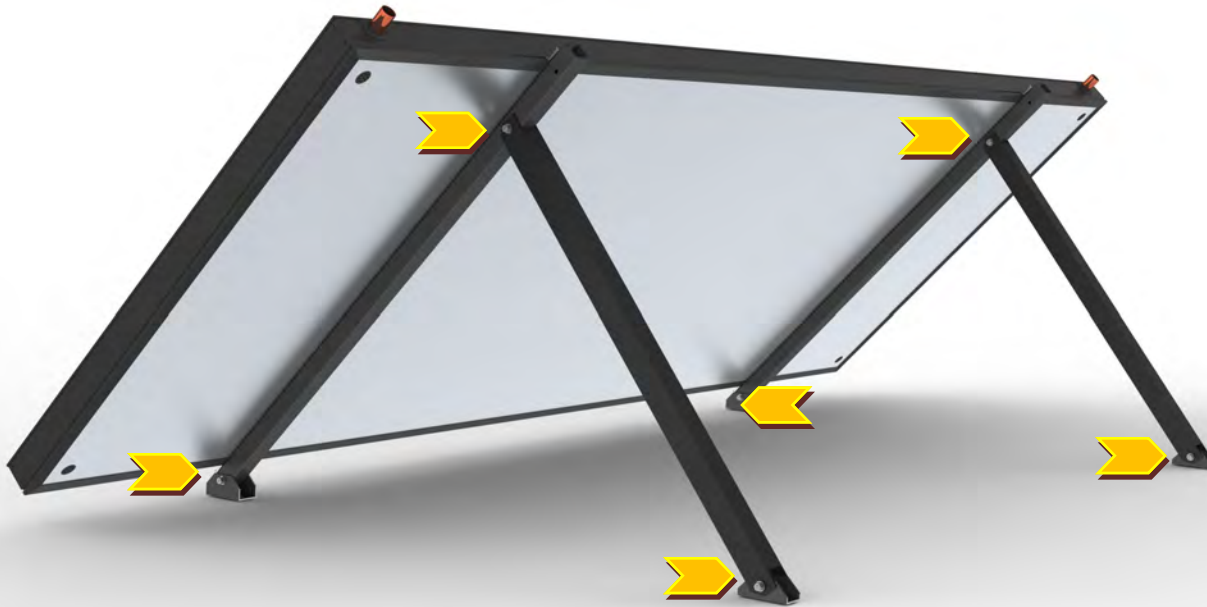


Figure 7

1. Tilt the Collector up and swing rear legs into position aligning the appropriate hole (first/ second) as selected from *Table 2, 4 or 6*. As shown in *Figure 6*.
2. Insert the mounting hardware.
3. Torque all six (6) mounting hardware assemblies to 12 ft*lbs (16 N*m). As shown in *Figure 7*

Note: In situations where SunEarth's landscape is to be utilized to mount collectors other than parallel to the roof ridge, cross bracing may be necessary.

Warning: Always follow all local building codes, ordinances and regulations when creating roof penetrations as well as standard roofing trade practices.

If you have any questions or feedback, please email

sales&support@sunearthinc.com