

Single Panel Tracker (SPT-1010)

Installation Instructions

The installer is solely responsible for complying with all applicable building and electrical codes.

To help prevent stainless steel hardware from seizing together (1) apply anti-seize lubricant to bolts, (2) keep hardware shaded prior to installation, and (3) slowly fasten nuts during installation.

www.atrsolartech.com
www.solarpoletrackers.com

1.1 SPT-1010-MO – Single Panel Tracker – Mount Only Assembly

1. Unpack all components from the SPT shipping container. The box will contain a Tracker Frame Assembly, Tracking Gear with Solar Panel Mounting Channels, and the Mount Hardware Package. See Figure 1.

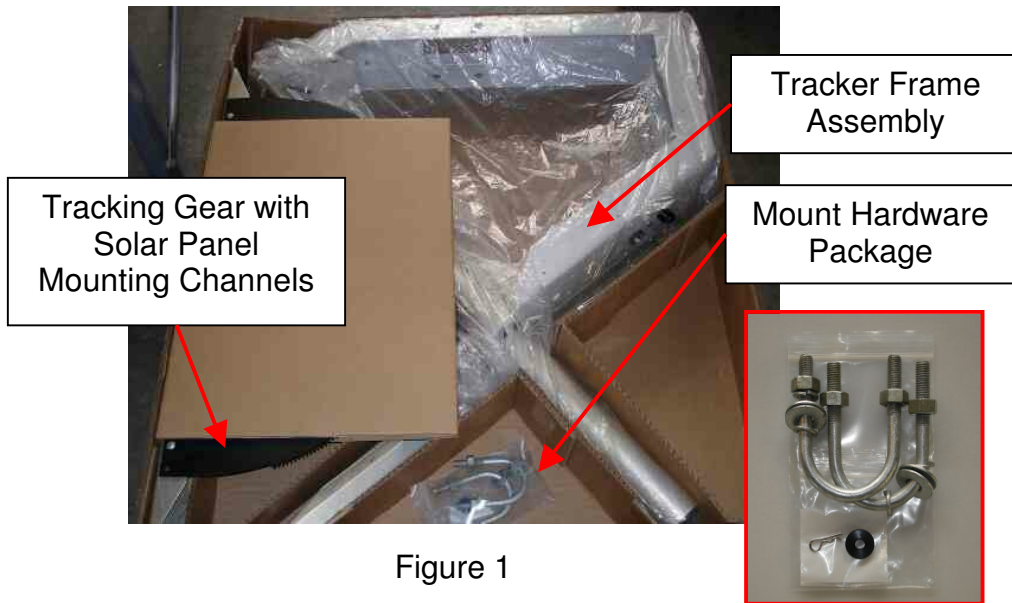


Figure 1

2. Remove twist-tie and black gear cap from main tracker structure. See Figure 2. CAUTION: Waterproof grease is applied to the motor gear under the cap. Save cap with residual grease for use later in the installation.

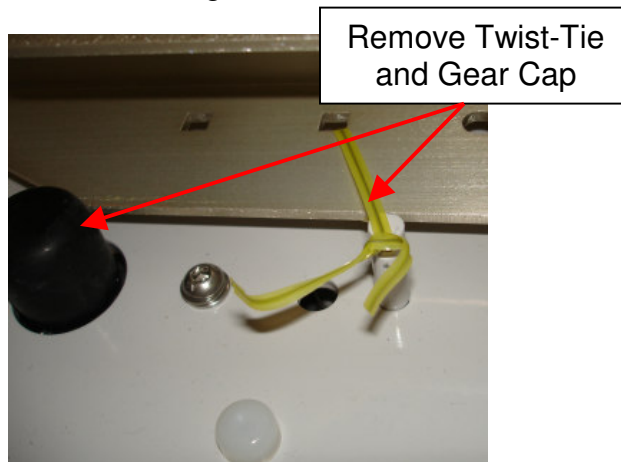


Figure 2

3. Orient Tracker Frame Assembly as shown in Figure 3. Ensure Axle Tube Support Channel is approximately 90° to the Tracker Frame.

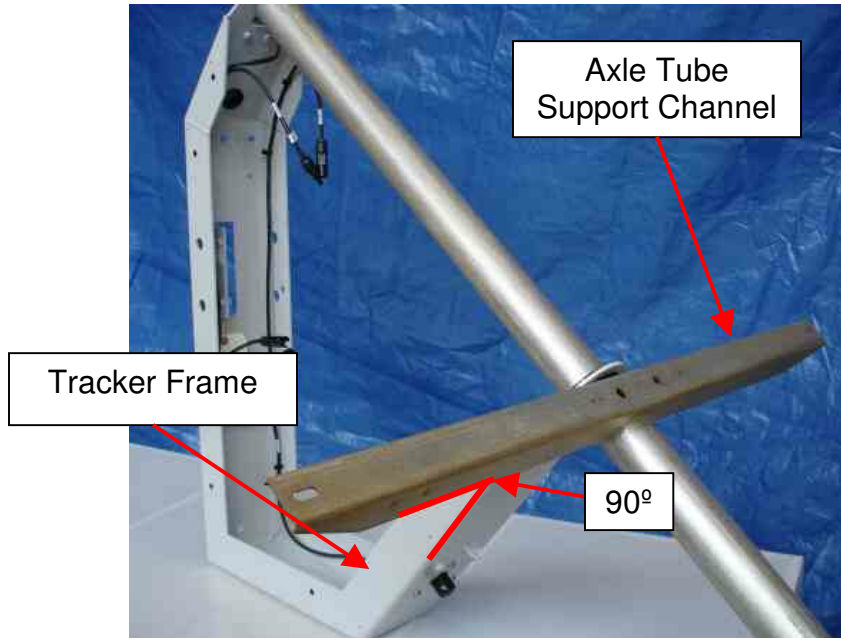


Figure 3

4. Remove the Tracking Gear from the two Solar Panel Mounting Channels (keep the hardware for later use). See Figure 4.

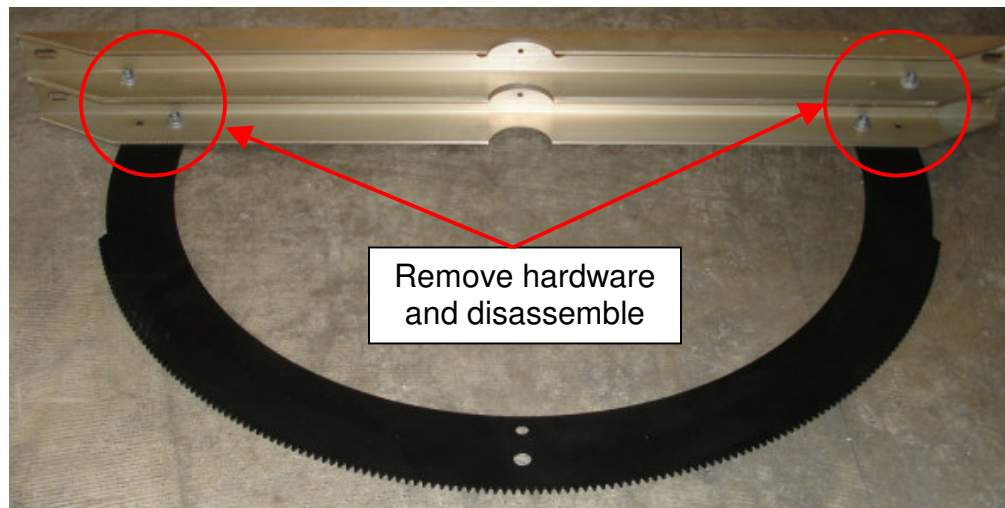


Figure 4

5. Attach the Tracking Gear to the Axle Tube Support Channel using the galvanized hardware from the previous step (1/4"-20 X 3/4" carriage bolts, lock washers, flat washers, nuts). See Figure 5.

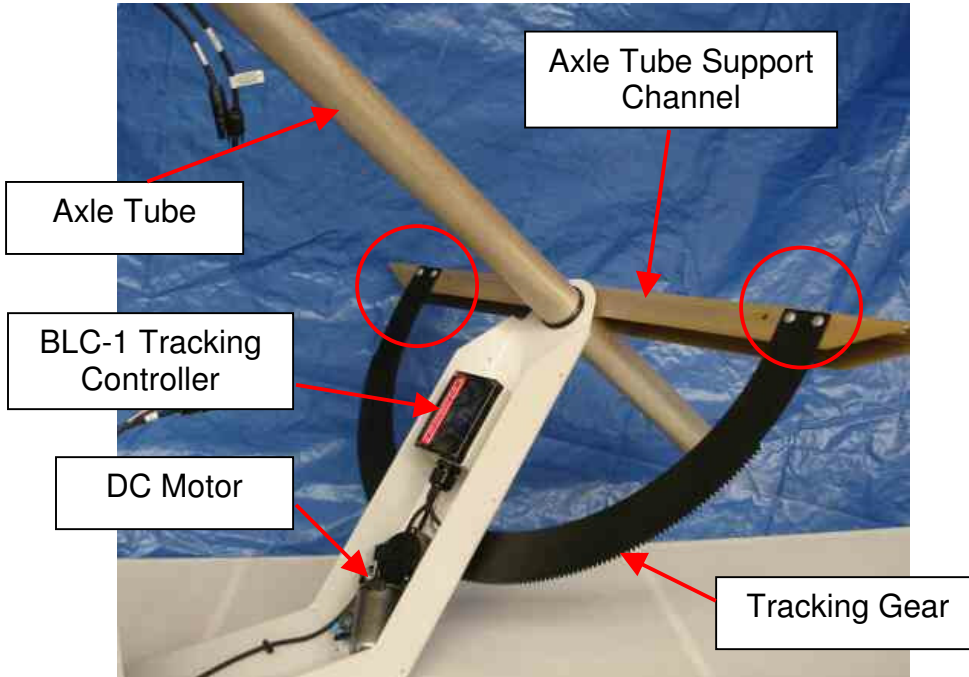


Figure 5

6. Install gear guide washer and cotter pin (from Mount Hardware Package) on frame clevis pin. See Figure 6.

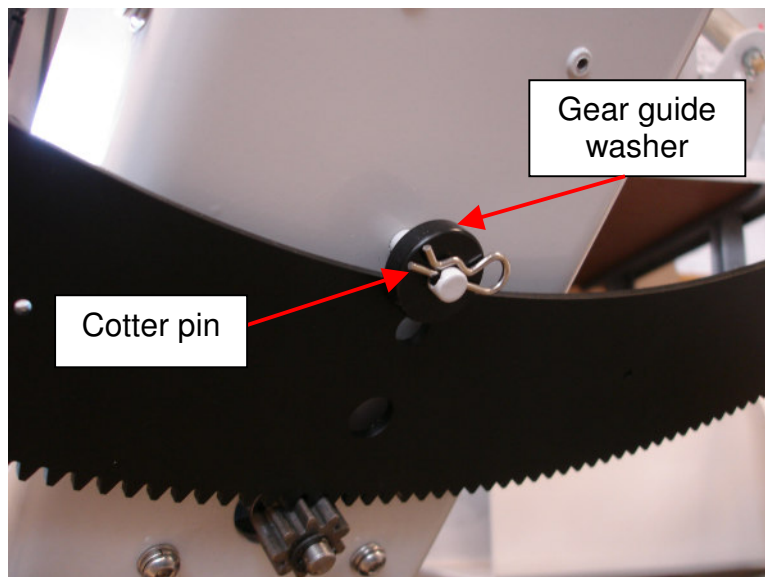


Figure 6

- The Angle Sensor and bracket is temporarily mounted inside the frame to help protect it during shipment. To mount the sensor for operation on the outside of the frame, (A) remove the tag and the two bolts that mount the sensor bracket to the frame. (B) Route the sensor and bracket around the outside and feed the excess cable back through the frame hole. Orient the angle sensor slot to match the axle tube key as shown in Figure 7. (C) Mount the bracket on the outside of the frame using the same hardware. Ensure the axle tube key is completely seated in the angle sensor slot.

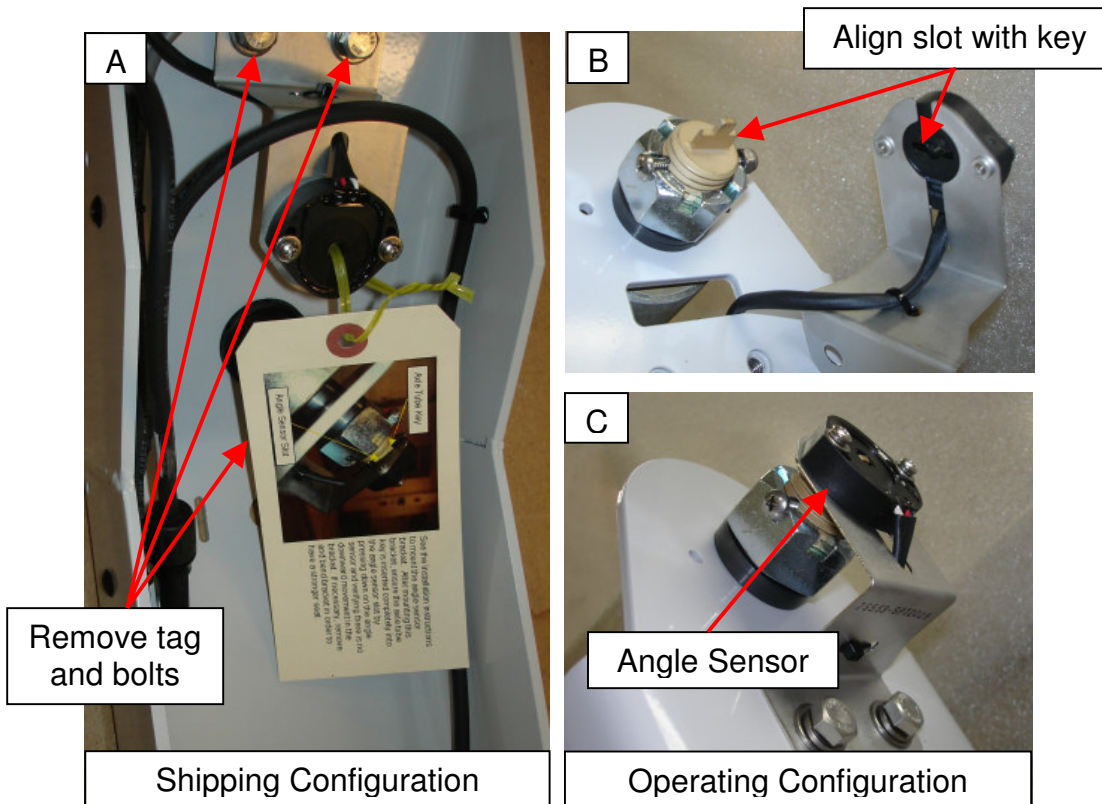


Figure 7

8. Install the two Solar Panel Mounting Channels to the Axle Tube with ½” diameter galvanized U-Bolts provided in Mount Hardware Package. Dimensions shown in Figure 8 are for MOTECH 235W Solar Panel (37.1”W X 33.9”L).
If using solar panels with different mounting hole dimensions, adjust the channels and mounting holes accordingly. SHARP 235W Solar Panel dimensions are 37.7”W X 35.8”L.

NOTE: Each U-Bolt includes 2 each – nut, flat washer, lock washer.

VERIFY LOCKWASHERS ARE FULLY COMPRESSED.



Figure 8

Assembly of the Solar Panel Tracker – Mount Only (SPT-1010-MO) is now complete. See the following sections to continue the installation process:

- Section 1.2.1 – Micro Inverter Mounting
- Section 1.2.2 – Ground Kit Installation
- Section 1.2.3 – Solar Panel Mounting
- Section 1.3 – Pole Mounting Options
- Section 1.4 – Final Connections
- Section 1.5 – Side Cover Options

1.2 Single Panel Tracker Options

The following options are purchased separately from the SPT-1010-MO.
NOTE: Items listed in A, B, C and D are included in the complete Single Panel Tracker - SPT-1010-235GT.

- A) Single Panel Tracker Hardware Kits include the following (Figure 9):
- Inverter mounting hardware (SPT2170)
 - Solar panel mounting/grounding hardware (SPT2160)
 - Ground kit (ground cable and mounting hardware) (SPT2180)



Figure 9

- B) Micro-Inverter
- C) Micro-Inverter AC Connection Kit (Cable and End Cap)
- D) Solar Panel (Motech 235W)
- E) Pole Mounting options:
- Through-bolt
 - Round pole
 - Square pole

1.2.1 Micro-Inverter Mounting (Enphase M190 shown)

1. Attach the micro-inverter (purchased separately) to the frame using Inverter Mounting Hardware from SPT2170 kit. Orient as shown in Figure 10.
2. Connect the BLC-1 Tracker Controller DC Cables (labeled “TO INVERTER”) to the inverter DC pigtails. See Figure 10.

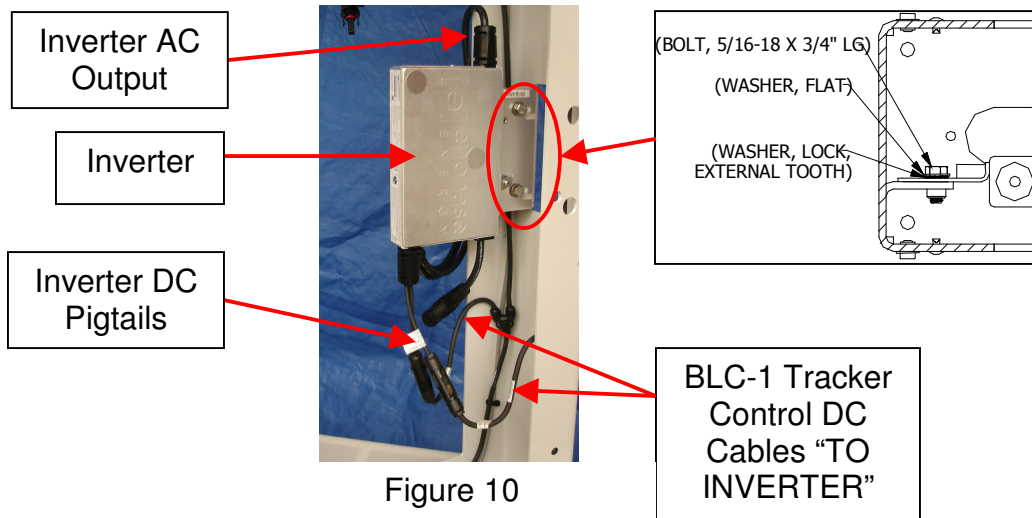


Figure 10

NOTE: The BLC-1 Tracker Controller DC Cables are supplied with MC4 or Tyco connectors to match customer requirements for the micro-inverter and solar panel.

3. Install the Inverter AC Cap (purchased separately with the AC Connection kit – M190) onto the Enphase Micro-Inverter. See Figure 11.
4. Connect the Inverter AC output to the AC Interconnect Cable (purchased separately with the AC Connection kit – M190) as shown in Figure 11.

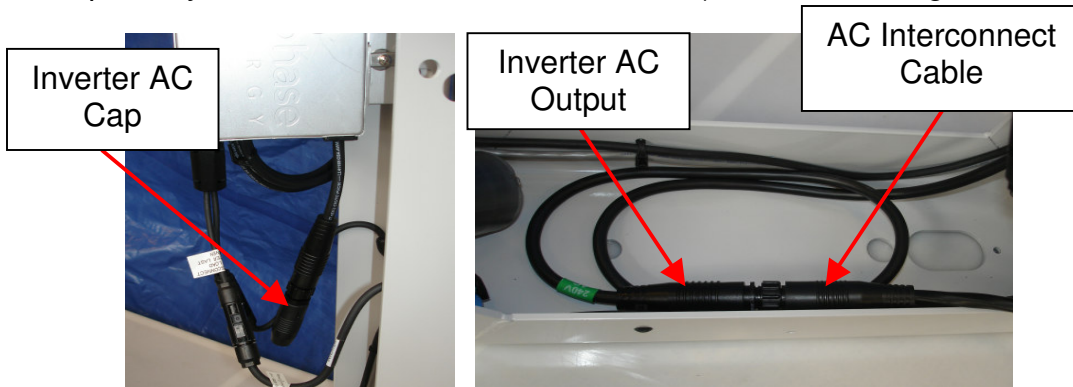


Figure 11

1.2.2 Ground Kit Installation (SPT2180)

1. Install the Ground Lug to the frame as shown in Figure 12.



Figure 12

2. Connect the end ring lug on the Ground Cable (#6 AWG) to the Upper Solar Panel Channel as shown in Figure 13.

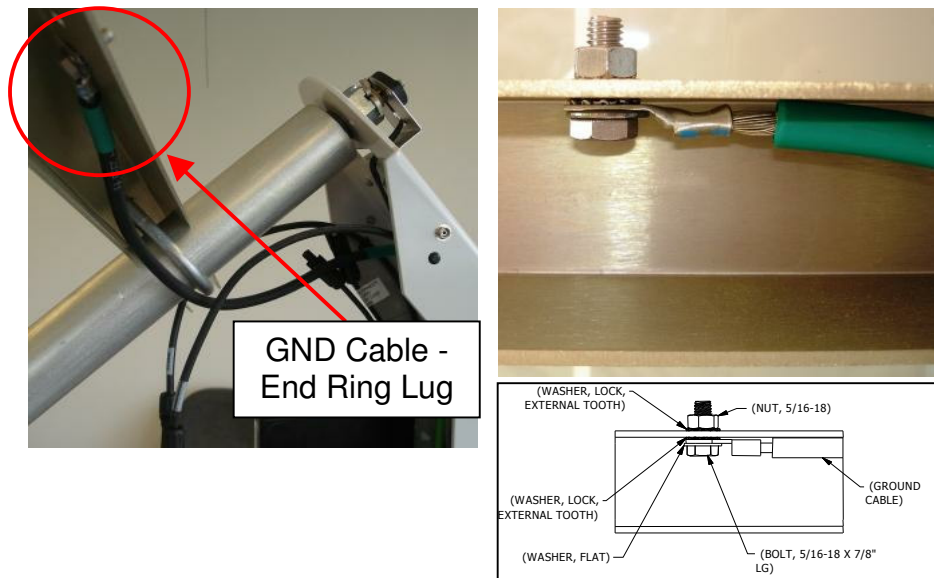


Figure 13

3. Route the Ground cable (#6 AWG), as shown, through the frame Ground lug and the Inverter Ground lug and fasten securely. See Figure 14.

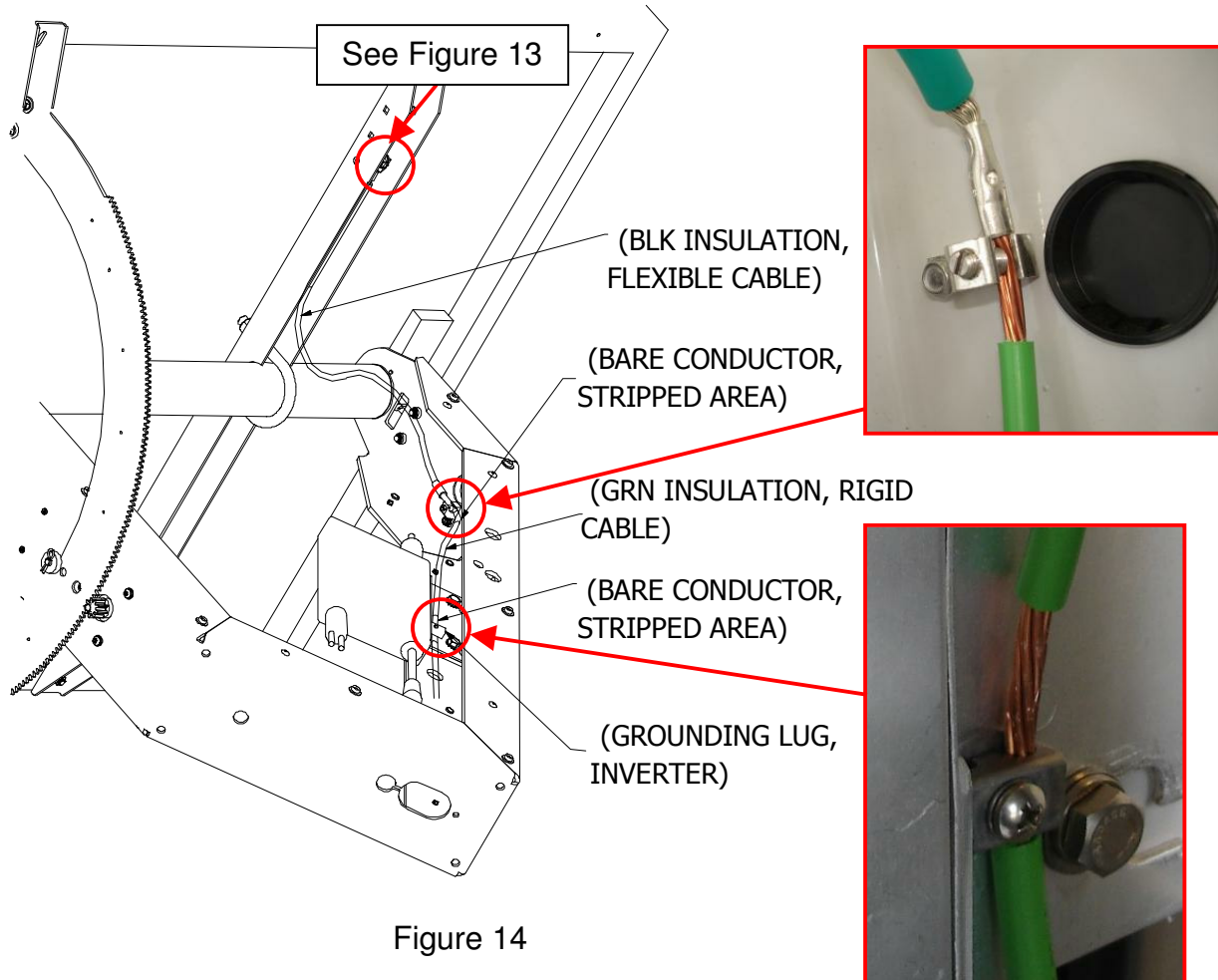


Figure 14

The ground hardware kit contains a 2-hole $\frac{3}{4}$ " NPT strain relief to accommodate both the #6 AWG Ground cable and the Inverter AC Interconnect Cable.



Figure 15

NOTE: The following two sections (1.2.3 and 1.2.4) can be performed in reverse order depending on the installer’s preference.

1.2.3 Solar Panel Mounting

1. Orient the solar panel with its cable Junction Box up. Mount the Solar Panel to the upper and lower channels using the Solar Panel Installation Hardware from SPT2160 kit. Two mounting locations per mounting channel. Be sure to use the two provided WEEB Grounding washers between the upper “Ground” channel and the Solar Panel frame. See Figure 16.

NOTE: Cover the solar panel to ensure it is not producing power until after the cable connections have been completed.

2. Route the Solar Panel cables as shown and secure with cable ties. Connect Solar Panel cables to the Tracker Controller Cables (labeled “TO SOLAR PANELS”). See Figure 16.

NOTE: The micro-inverter DC pigtailed must be connected to the BLC-1 Tracker Controller DC cables (labeled “TO INVERTER”) prior to connecting the solar panels to the Tracker Controller cables.

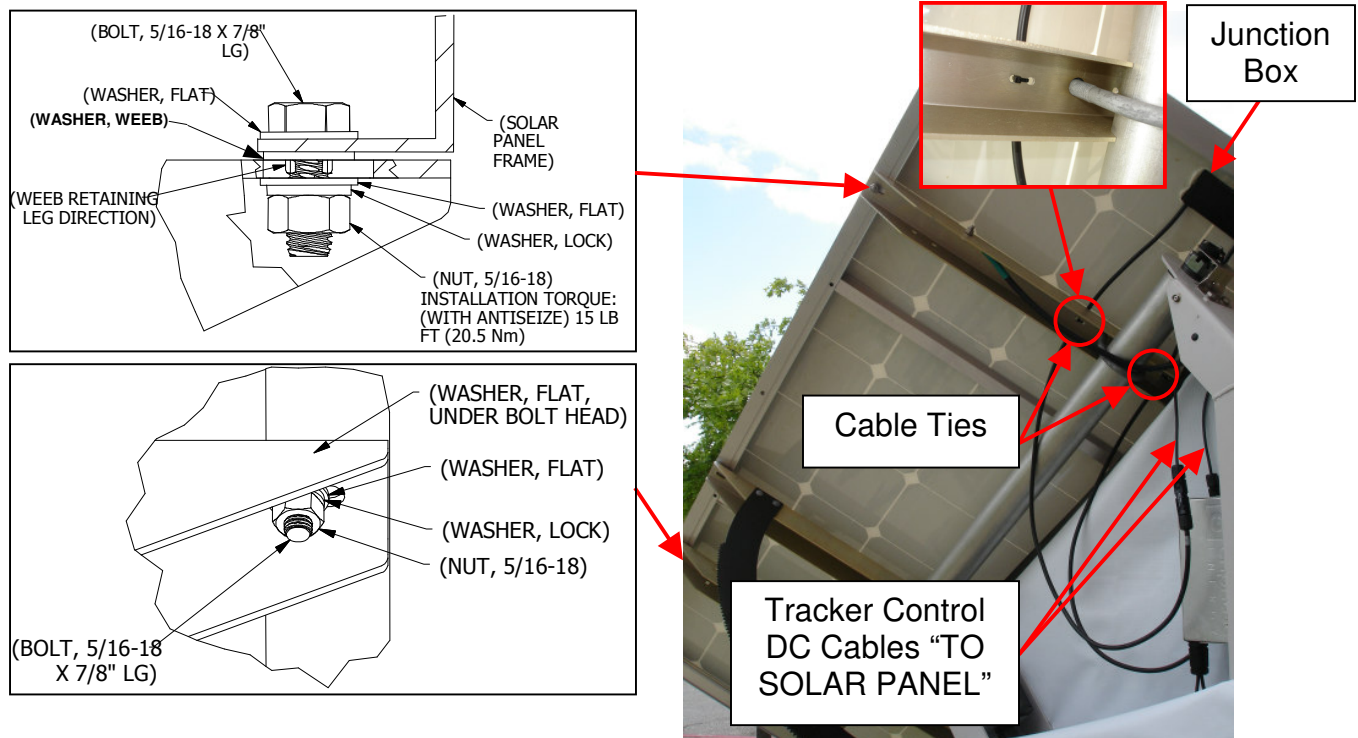


Figure 16

1.2.4 Pole Mounting Options

To optimize power production, the SPT-1010 frame should be mounted to point to true South (NOT magnetic South).



Figure 17

1.2.4.1 Square Pole - Wood

This mounting option is used when mounting the SPT-1010 to a square wooden pole with one of the surfaces of the pole facing true South.

1. Attach the frame to the pole at the desired height using galvanized (or stainless) hardware (2 each – ½” bolt, flat washer, lock washer, nut). See Figure 17.

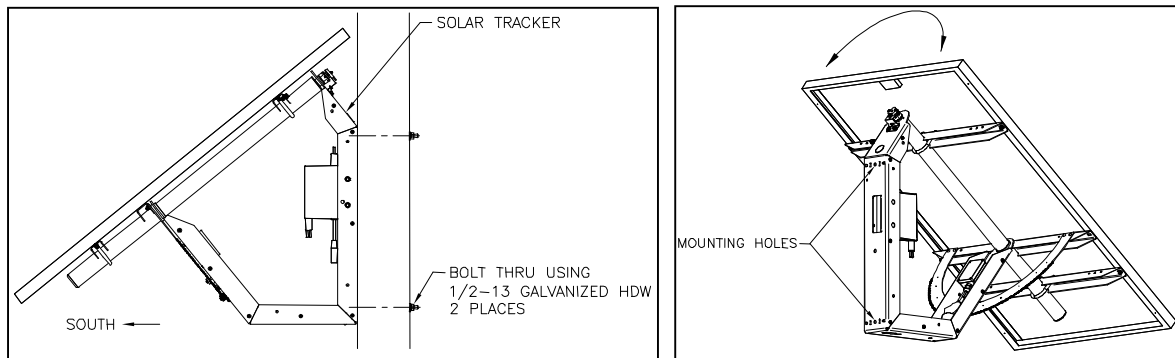


Figure 17

1.2.4.2 Round Pole – 4” Diameter

This mounting option is used when mounting the SPT-1010 to a metal 4” diameter round pole.

1. Use two U-bolts to mount the SPT-1010 frame to the round pole at the desired height. Ensure that the frame is pointing true South prior to tightening.



Figure 18

1.2.4.3 Round Pole – Custom Diameter

This mounting option is used when mounting the SPT-1010 to a round metal pole at a diameter other than 4". These mounting brackets are available by special order.

1. Use the two round Pole Mounting brackets to mount the frame to the pole at the desired height. First attach the brackets to the tracker frame using the carriage bolts, flat washers, lock washers and nuts.
2. Raise the tracker assembly to the desired height on the pole and install the U-bolts around the pole and through the two brackets. Ensure that the frame is pointing true South prior to tightening. See Figure 19.



Figure 19

1.2.4.4 Square Pole – 4”

This mounting option is used when mounting the SPT-1010 to a square metal pole that does not have a face oriented to true South. Other sizes are available by special order.

1. Use the two Square Pole Mounting brackets to mount the frame to the pole at the desired height. Rotate the bracket and find the notch that allows the SPT-1010 frame to point as close to true South as possible.

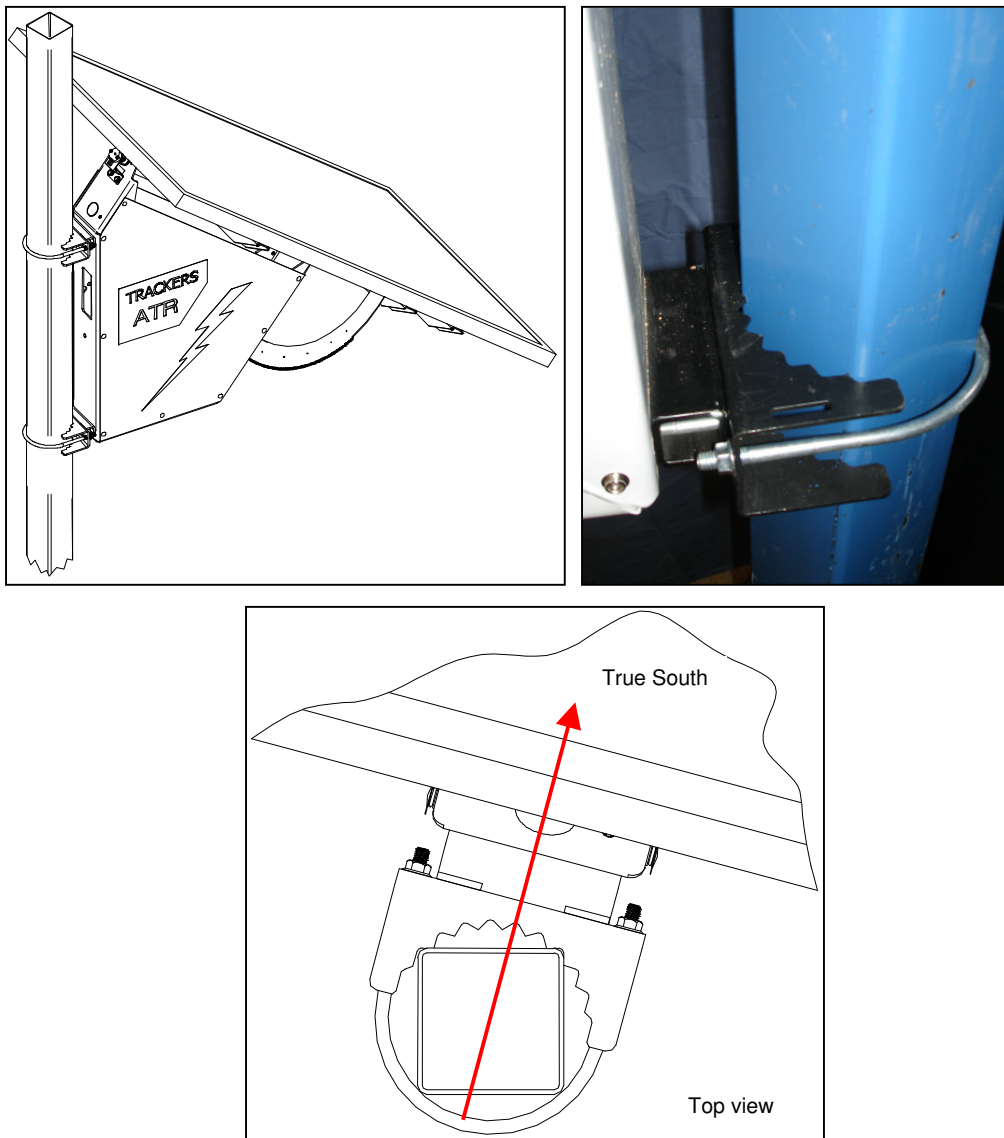


Figure 20

1.3 Final Connections

1. Route the two cables (GND and AC Interconnect cables) through the large hole in the bottom of the SPT frame, then through the $\frac{3}{4}$ " NPT strain relief provided in the Ground Kit Option (Use cable lubricant for easier installation). NOTE: A hole at the top of the frame is also available (See Figure 11). Depending on the pole being used, the cables can be run through a junction box mounted to the side of the pole, or through the inside of a metal pole. A hole will need to be drilled and tapped for the $\frac{3}{4}$ " NPT strain relief in order for the cables to enter the pole. See Figure 21.



Figure 21

- Using the residual grease from the cap that was removed earlier in the installation procedure, coat the teeth of the tracking gear prior to plugging the motor in. Confirm the Angle Sensor is securely seated on Axle Tube Key.

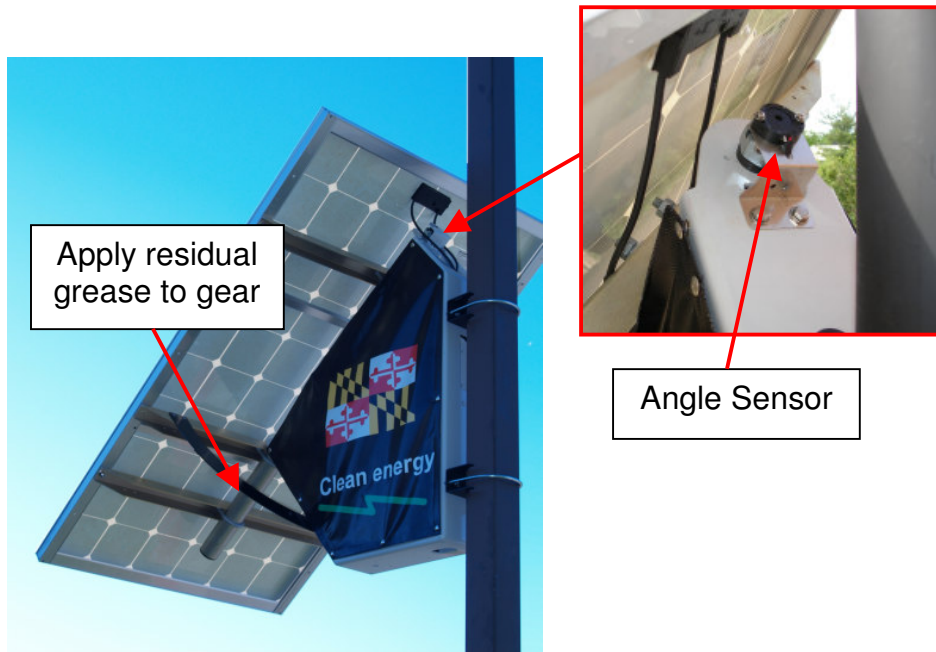


Figure 22

3. After solar panels and micro-inverters are installed and SPT is mounted to the pole, remove the tag and plug the motor into BLC-1 tracker controller. See Figure 23. Uncover the solar panel.

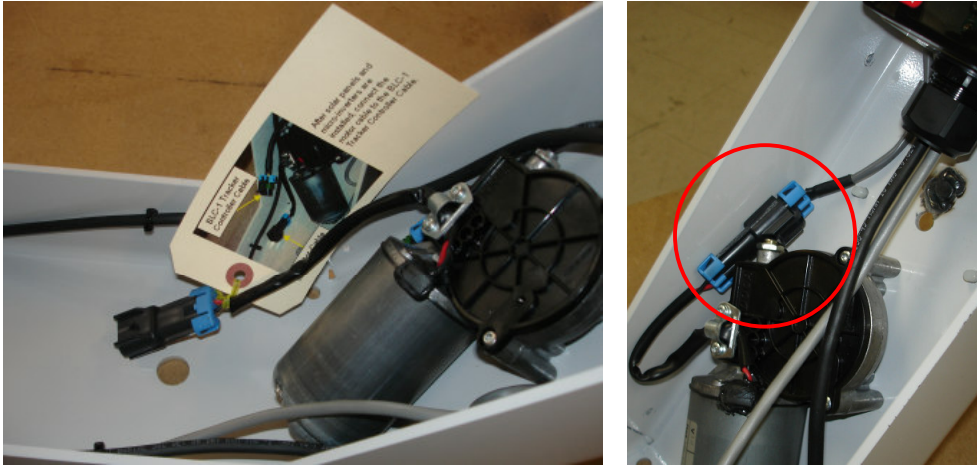


Figure 23

The controller super-capacitors will charge up. After the controller acquires a GPS signal, the tracker calculates the sun position, and tracking will begin. Tracking motion occurs on the 10-minute mark. (The tracker will return to South at low power conditions. (AC does not have to be connected to power the tracker controller).

4. Complete AC and ground connections per local code.

1.4 Side Cover Options

Custom promotional banners (Figure 24) and side covers (Figure 25) are also available.



Figure 24



Figure 25