

Dual Panel Tracker (DPT-470)

Installation Instructions

Please read all instructions prior to installation.

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 DPT-MO - Dual Panel Tracker – Mount Only Assembly

1. Unpack all components from the two DPT shipping boxes. The boxes will include the following: Box 1 - Tracker Frame Assembly, Tracking Gear, Mount Hardware; Box 2 – (4) Solar Panel Mounting Channels, DPT Middle Trim, Gear Guard, 6"X6" Wood Post Mount Hardware, and DPT Rail Hardware.

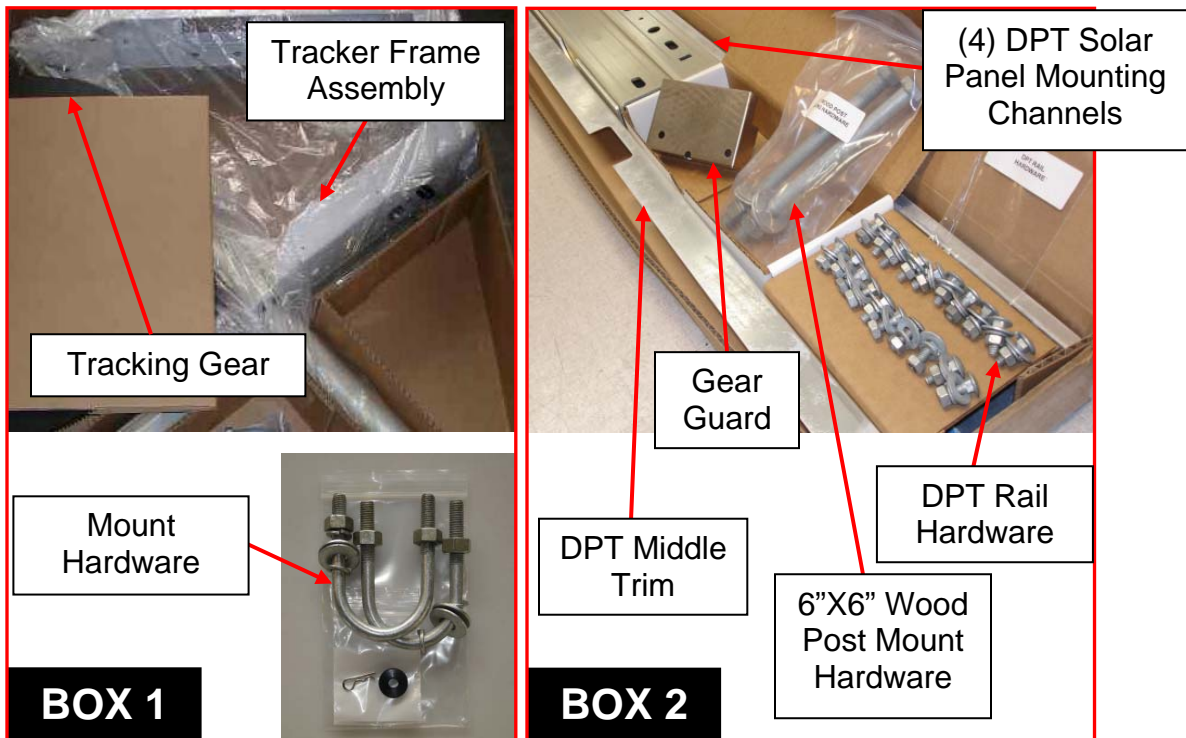


Figure 1

2. Remove twist-tie and black gear cap from Tracker Frame Assembly. 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

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

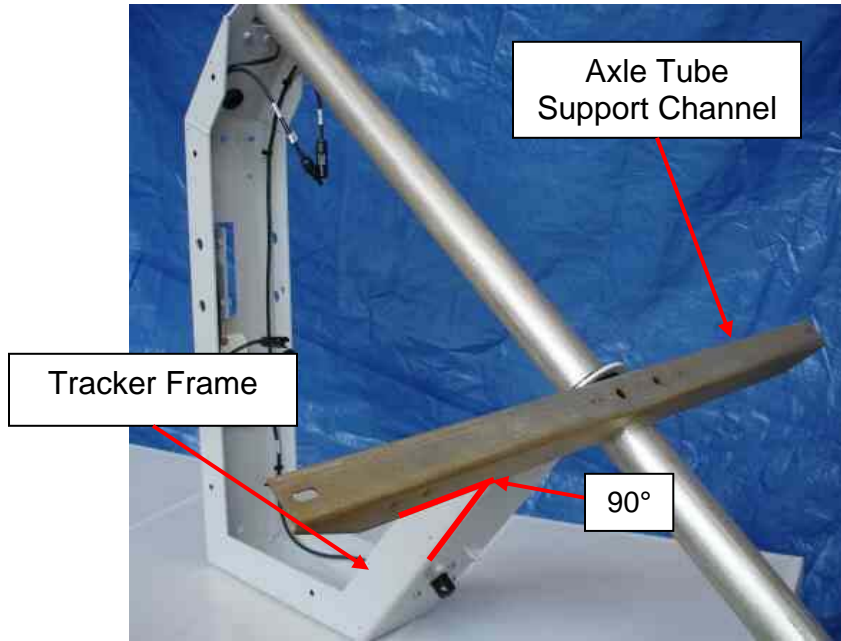


Figure 3

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

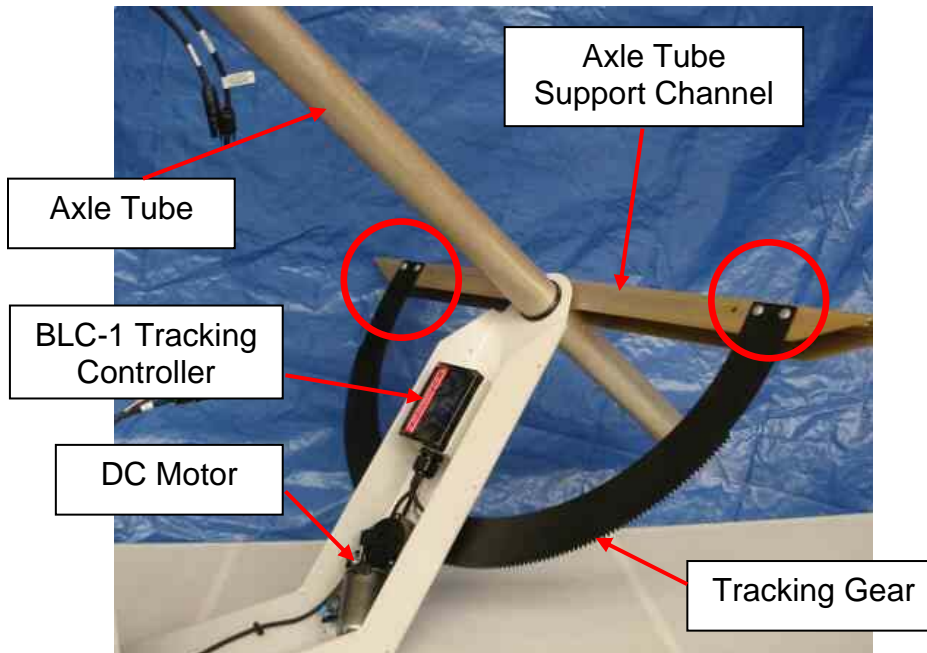


Figure 4

5. Install gear guide washer and cotter pin (from Mount Hardware package) on frame clevis pin. See Figure 5.

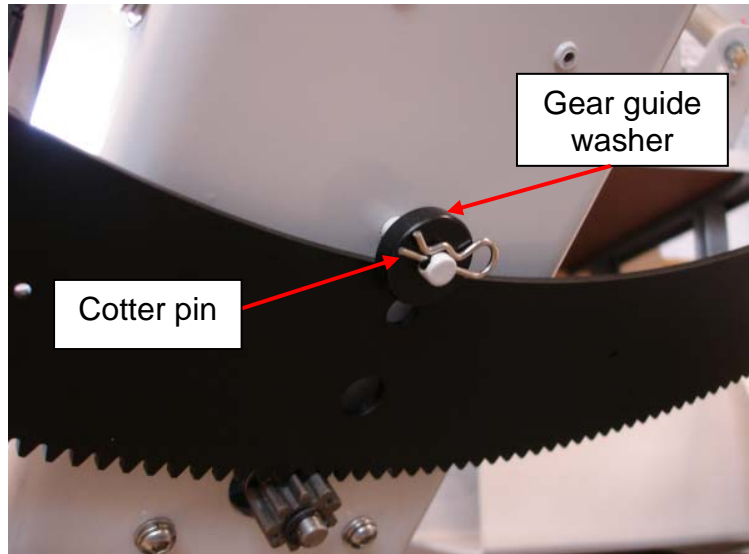


Figure 5

6. Install the Gear Guard by loosening the two motor mounting screws using a 4 mm Allen wrench, and sliding the Gear Guard to cover the motor gear. Re-tighten screws, ensuring lock washers are fully compressed. See Figure 6.

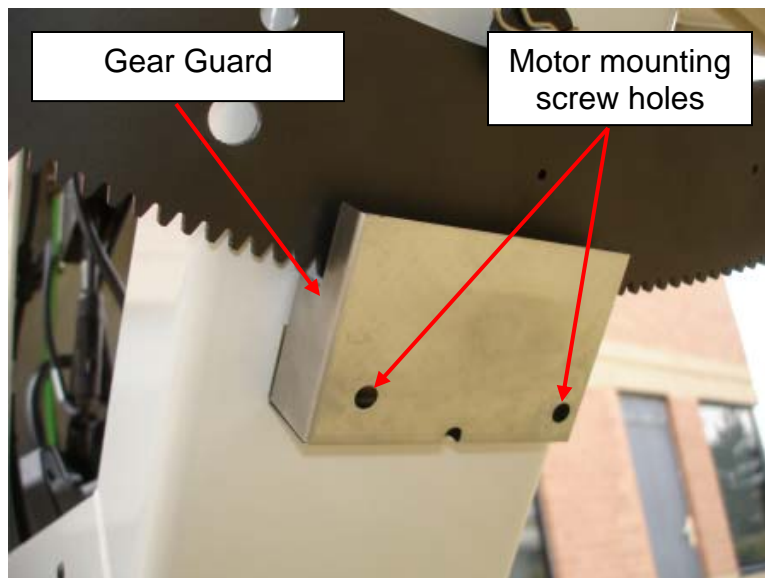


Figure 6

- The Angle Sensor and bracket is temporarily mounted inside the frame to 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) Insert the two bolts back into the threaded inserts on the frame, and 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) Place the bracket on the outside of the frame onto the bolt threads. Use a flat washer, lock washer, and nut on each bolt to fasten the bracket. Ensure the axle tube key is completely seated in the angle sensor slot. (D) Install the sensor cover and fasten using the remaining two nuts as shown.

CAUTION: Angle sensor only has 180° of travel. Do not force.

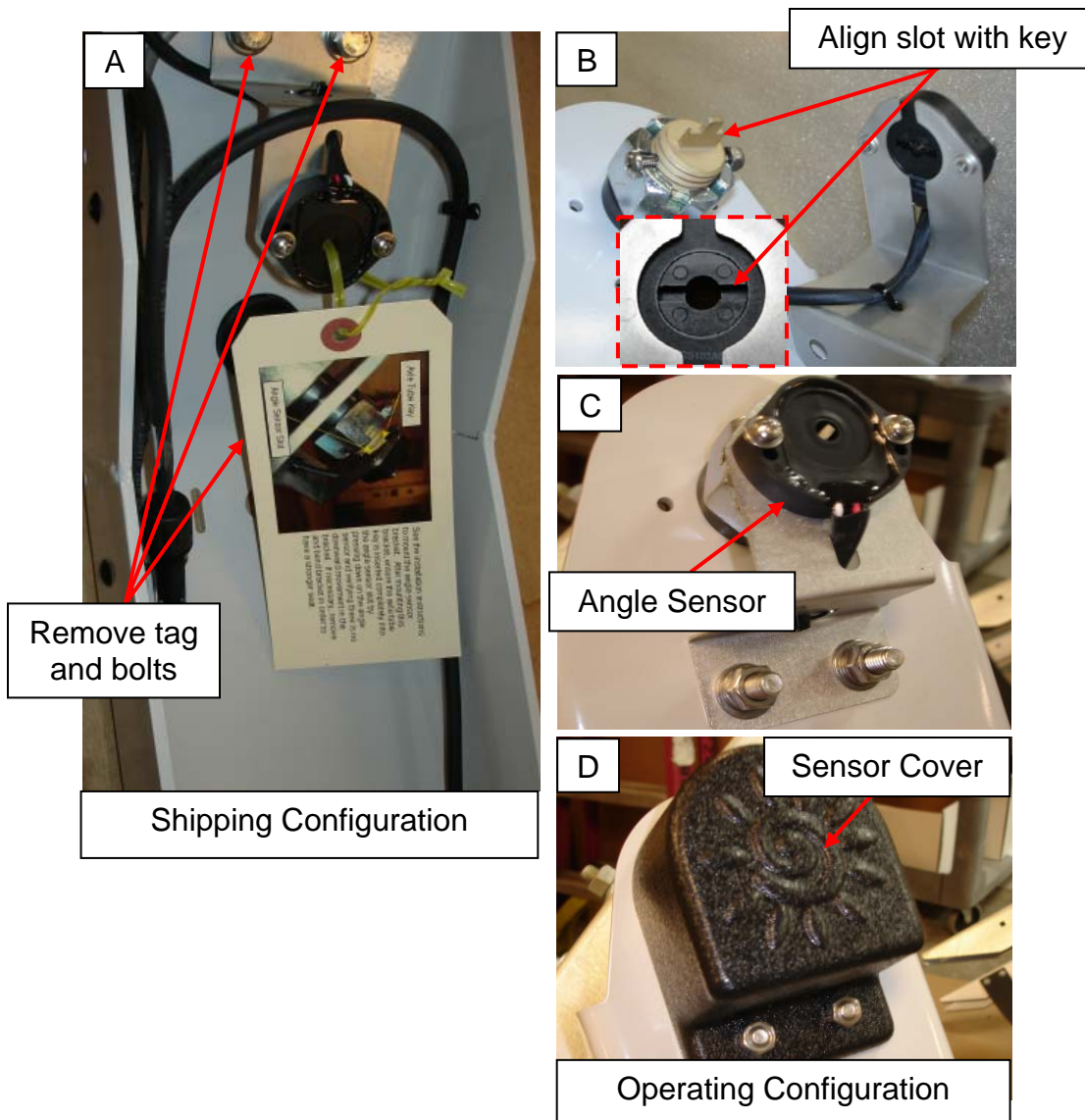


Figure 7

8. Attach the Solar Panel Mounting Channels to the Axle Tube using the galvanized hardware from the Mount Hardware and DPT Rail Hardware:
 - DPT Rail Hardware - QTY 20 EA: ¼"-20 X ¾" carriage bolts; NOTE: Each carriage bolt includes 1 each – nut, flat washer, lock washer
 - Mount Hardware - QTY 2 EA: ½" U-Bolts; NOTE: Each U-Bolt includes 2 each – nut, flat washer, lock washer

Pre-assemble the upper and lower channels using the ¼" hardware. Attach the assembled channels to the Axle Tube with the U-Bolts. Be sure to mount as shown in Figure 6 (Note the overlap of the channels).

Mounting hole dimensions shown 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 mounting hole dimensions are 37.7"W X 35.8"L.

CAUTION: VERIFY LOCKWASHERS ARE FULLY COMPRESSED.

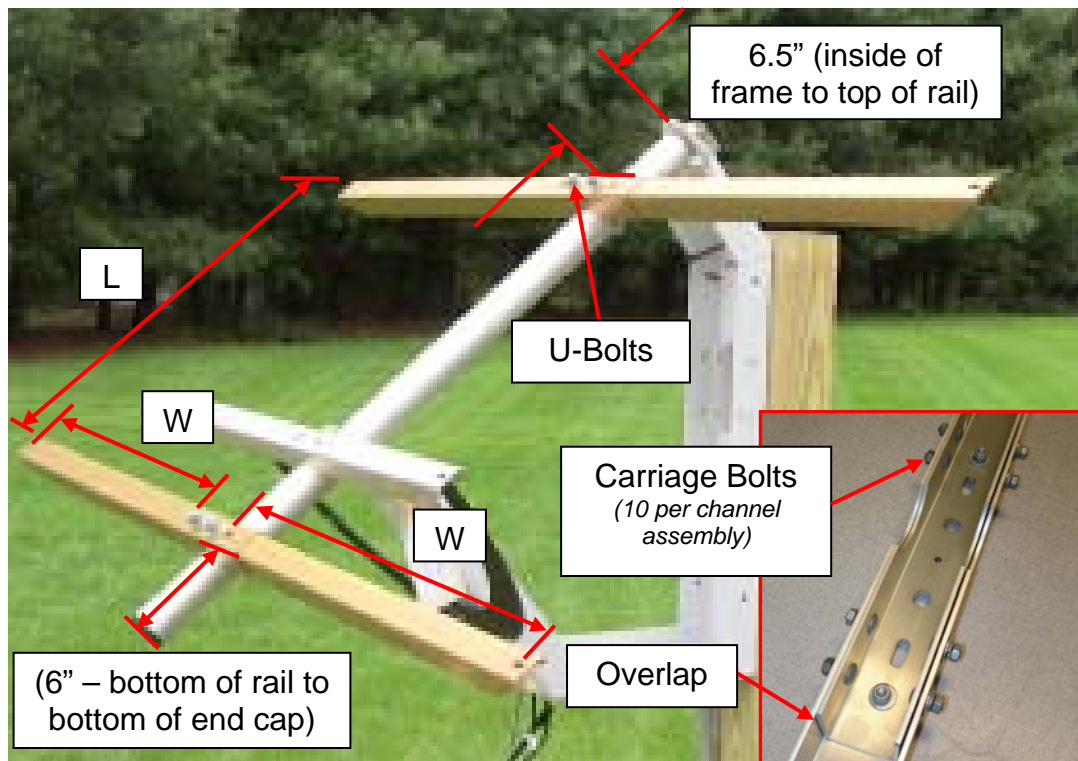


Figure 6

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

- Section 1.2 – Dual Panel Tracker Options
 - Section 1.2.1 – Micro-Inverter Mounting
 - Section 1.2.2 – Ground Kit Installation
 - Section 1.2.3 – Solar Panel Mounting
 - Section 1.2.4 – Post Mounting
- Section 1.3 – Final Connections
- Section 1.4 – Side Cover Options

1.2 Dual Panel Tracker Options

The following options are purchased separately from the DPT-MO (See Figure 7).

NOTE: Items listed in A, B, C and D are included in the complete Dual Panel Tracker – DPT-470.

- A) Dual Panel Tracker Hardware Kits include the following:
 - I. Inverter mounting hardware (SPT2215) – QTY 2
 - II. Solar panel mounting hardware (SPT2160) – QTY 2
 - III. Ground kit (M215 GND cable and mounting hardware) (DPT2181)
- B) Micro-Inverters (Enphase M215) – QTY 2
- C) Micro-Inverter AC Connection Cable (DPT6002)
- D) Solar Panel (Motech 235W) – QTY 2

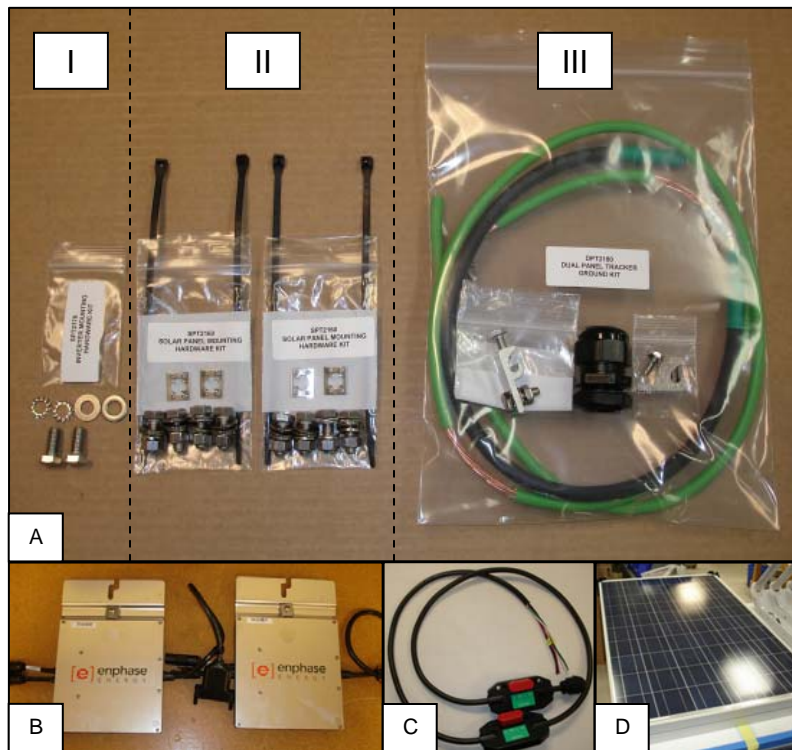


Figure 7

1.2.1 Micro-Inverter Mounting (Enphase M215 shown)

1. Attach the micro-inverters to the frame using the Inverter Mounting Hardware from the SPT2215 kits. Orient as shown in Figure 8.
2. Connect the BLC-1 Tracker Controller DC Cables (labeled “TO INVERTER”) to the inverter DC pigtails on the bottom of the lower micro-inverter.

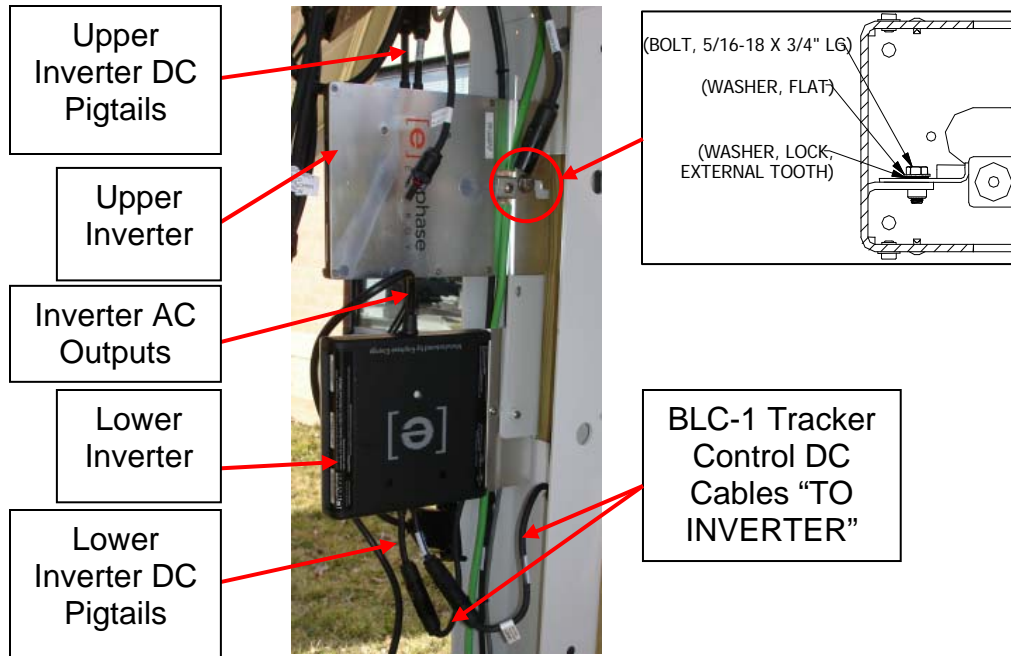


Figure 8

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

3. Connect the AC output from both inverters to the AC Interconnect Cable. Route the AC Interconnect cable through the bottom hole in the frame. See Figure 9.



Figure 9

1.2.2 Ground Kit Installation

1. Install the small Ground Lug to the Frame Assembly as shown in Figure 10.



Figure 10

2. Install the WEEBL 6.7 Ground Lug to the Upper Solar Panel Mounting Channels as shown in Figure 11. Tighten the nut to 10 ft-lb/13.5N-m.

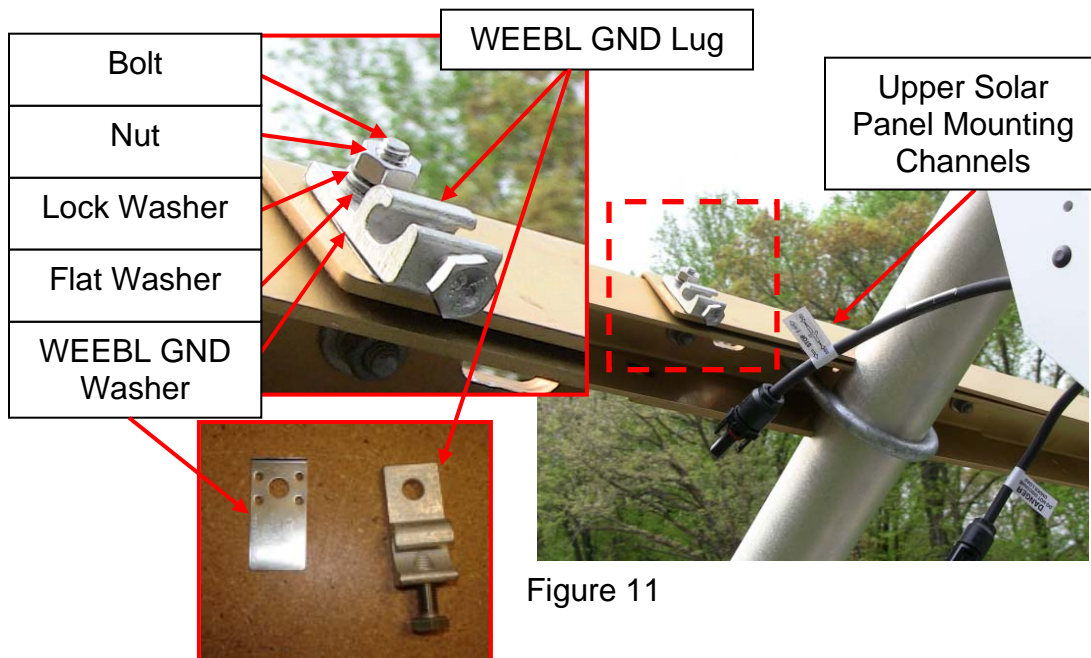


Figure 11

3. Connect the end ring lug on the Ground Cable (#6 AWG) to the Upper Solar Panel Mounting Channel. Tighten WEEBL Ground Lug onto bare wire as shown in Figure 12.

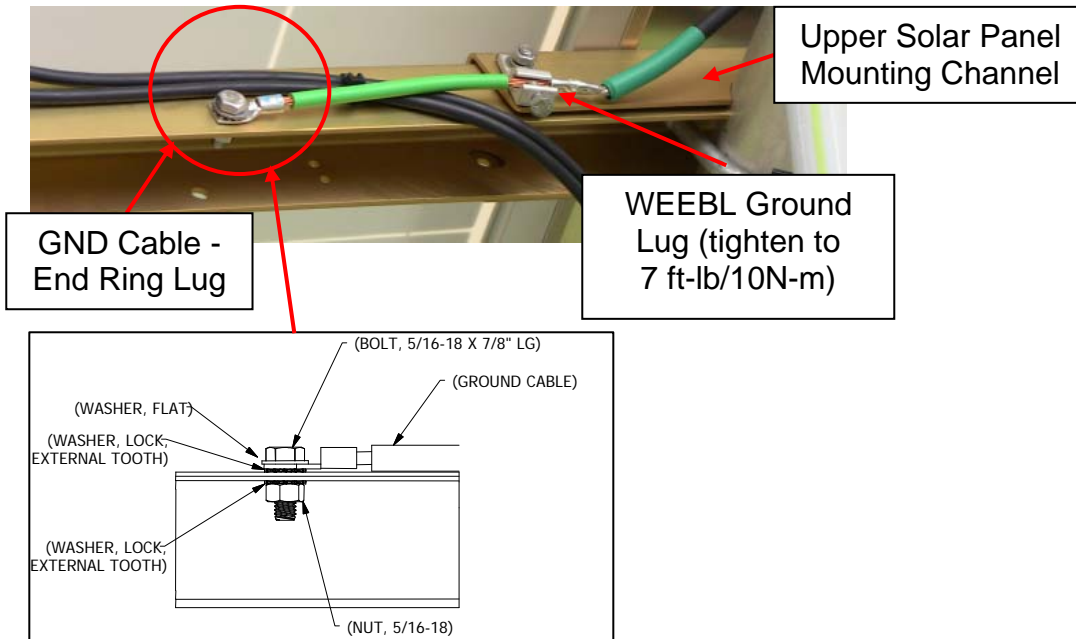


Figure 12

- Route the Ground cable (#6 AWG), as shown, through the frame Ground lug and the Inverter Ground lugs. Fasten securely using cable tie and mount. See Figure 13.

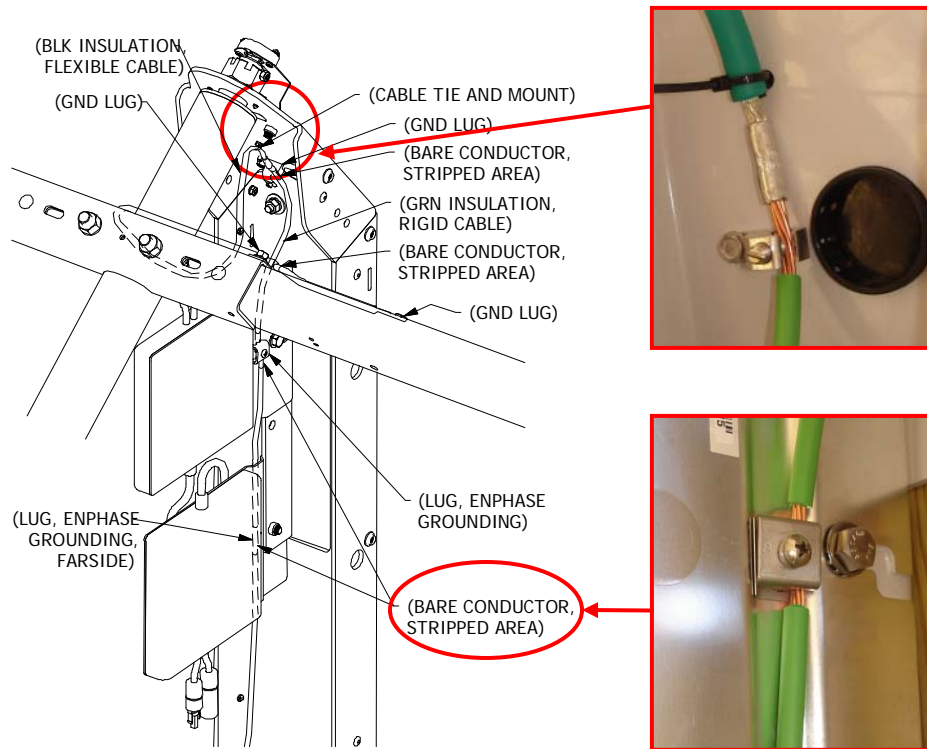


Figure 13

- Continue routing the Ground cable through the bottom hole in the frame. See Figure 14.

The ground hardware kit contains a 2-hole strain relief to accommodate both the #6 AWG Ground cable and the Micro-Inverter AC Interconnect Cable



Figure 14

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 panels with the cable Junction Boxes up. With the DPT Middle Trim laid in place, mount one Solar Panel at a time to the upper and lower channels using the Solar Panel Installation Hardware. Each panel has two mounting locations per mounting channel. Be sure to use the two provided WEEB Grounding washers for each panel between the upper “Ground” channel and the Solar Panel frames. See Figure 15.

CAUTION: Cover the solar panels to ensure they are not producing power until after the cable connections have been completed.

NOTE: The lower 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.

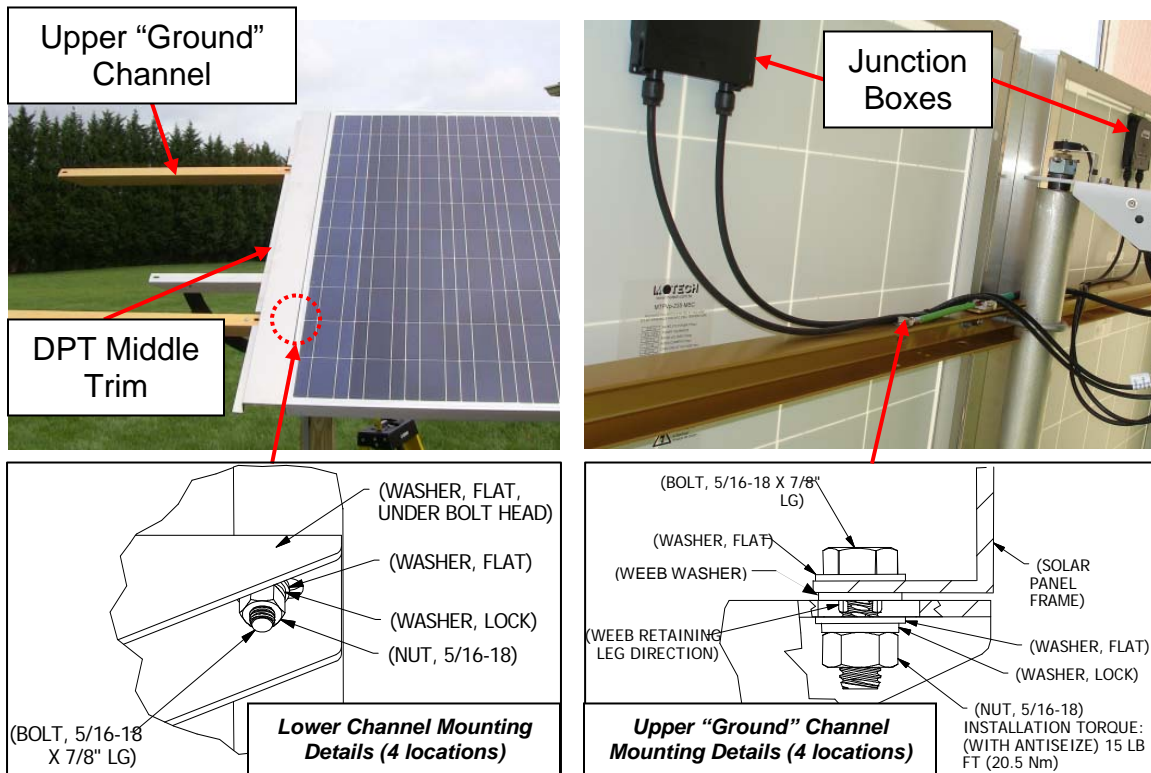


Figure 15

2. Route the Solar Panel cables as shown and secure with cable ties as shown in Figure 16.

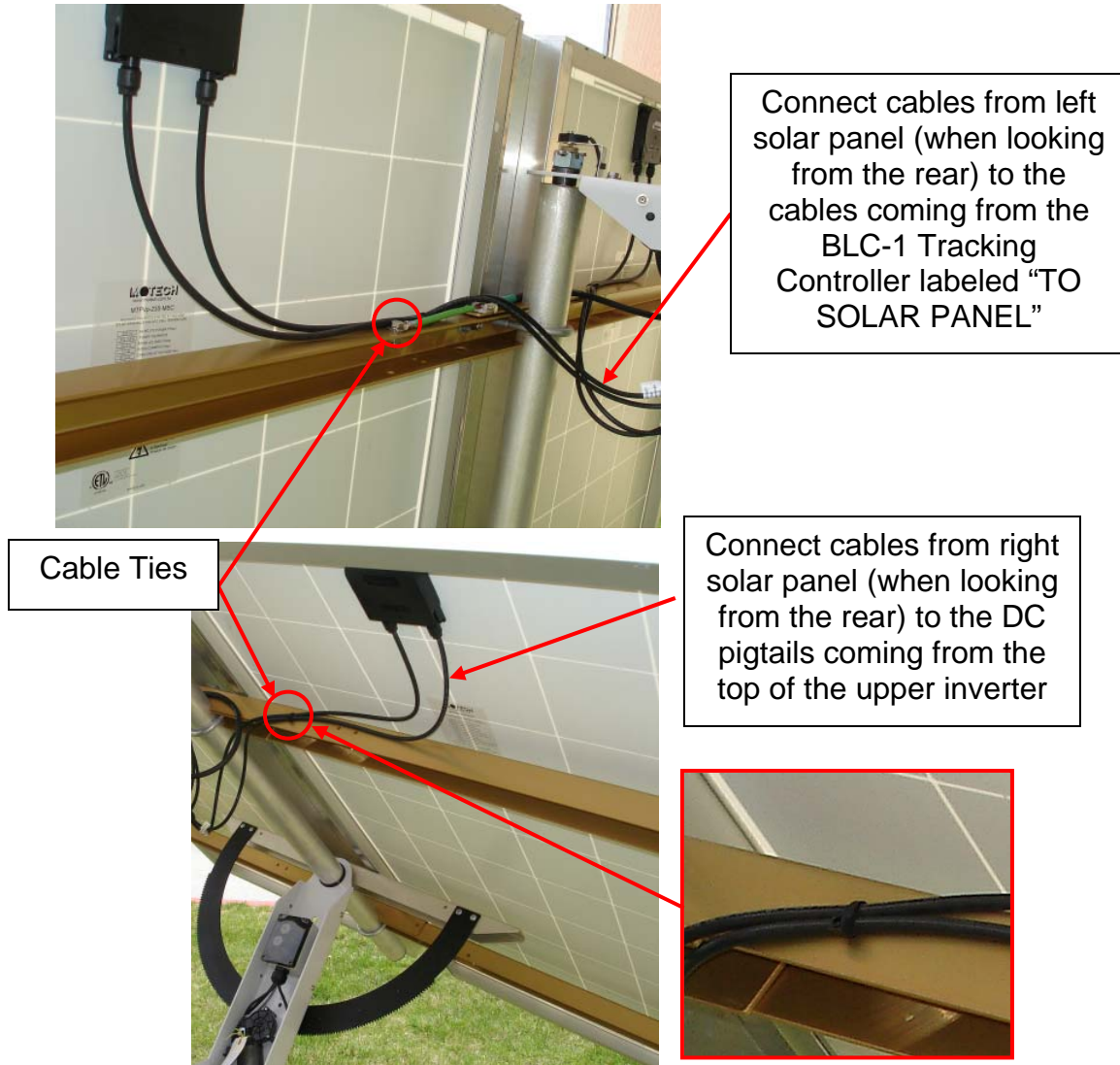


Figure 16

1.2.4 Post Mounting

To optimize power production, the DPT-470 frame should be mounted to point to true South (NOT magnetic South) when located north of the equator. If mounted South of the equator, the frame should be mounted to point true North. See Section 2 of this instruction manual for detailed instructions to find true North and true South. Ensure that one of the faces of the 6 X 6 post (not included) is facing the appropriate direction. See Figures 18 & 19 for post installation.

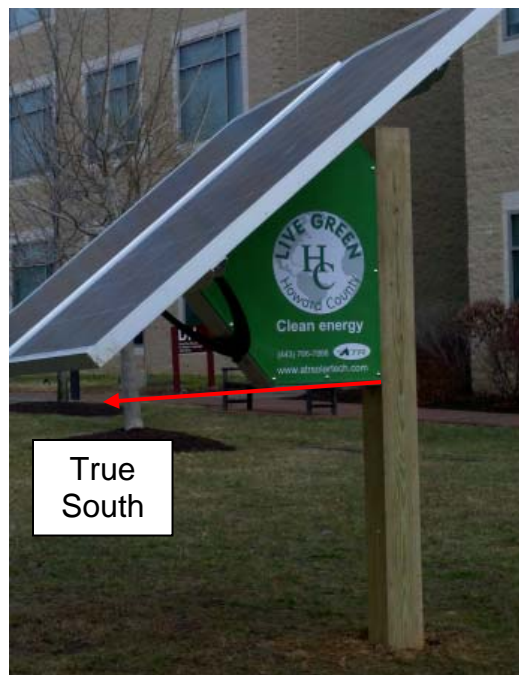


Figure 17

Attach the frame to the pole using galvanized hardware (2 each – ½” bolt, flat washer (2X), lock washer, nut). Drill through the pole for ½” bolts.

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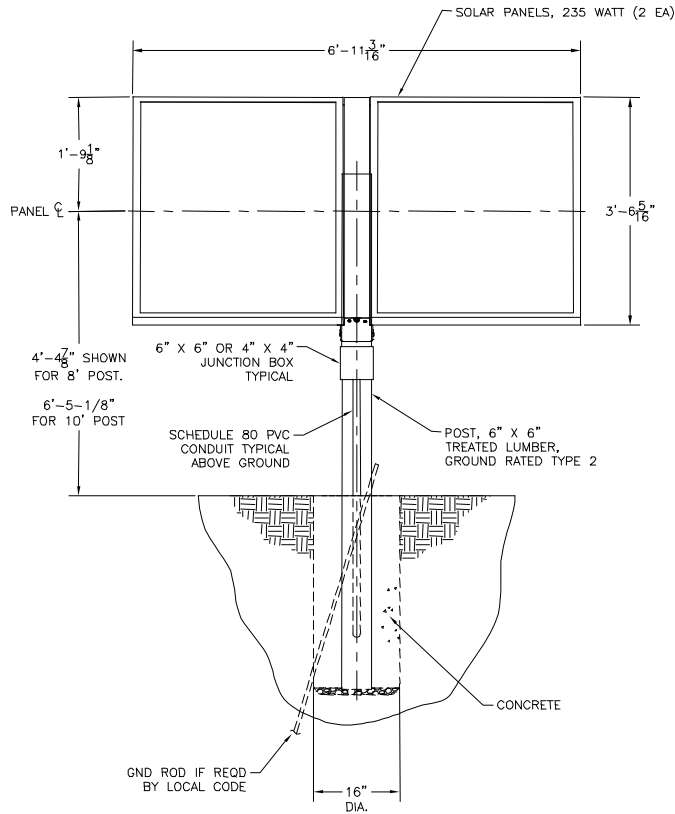


Figure 18

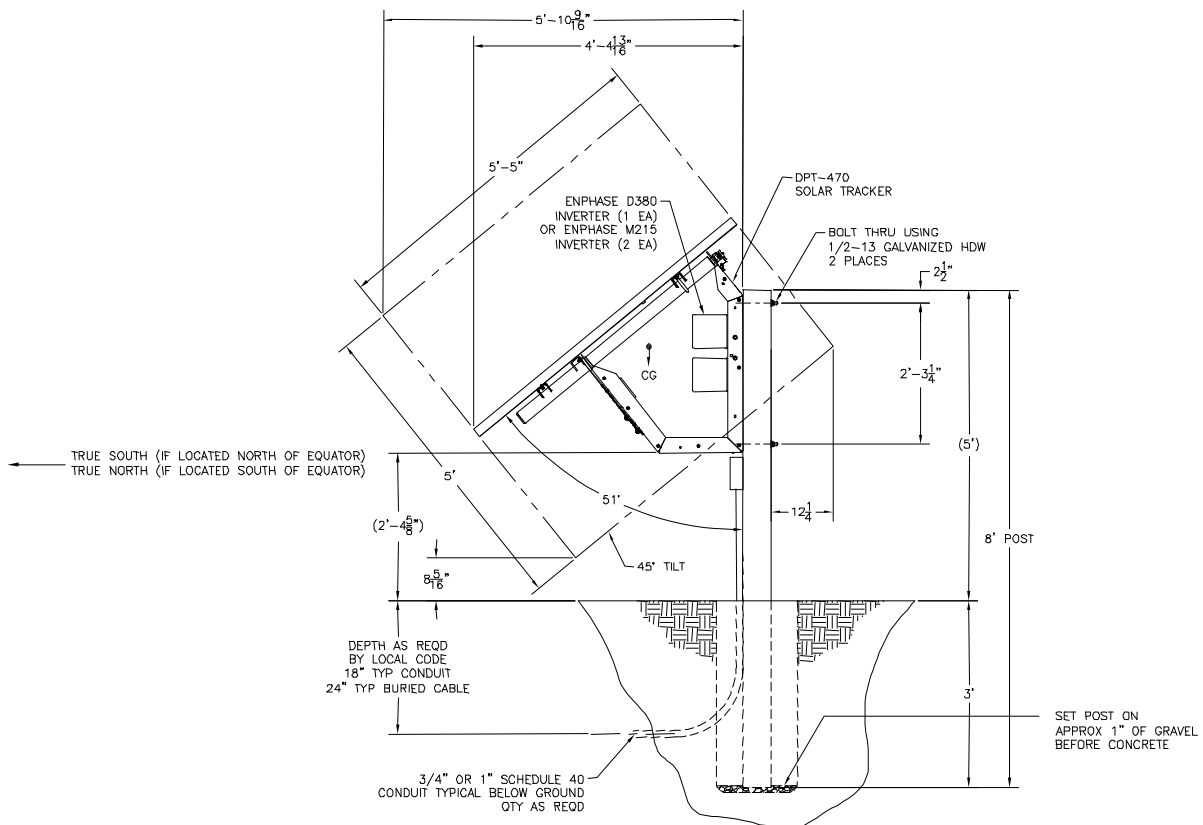


Figure 19

1.3 Final Connections

1. Route the two cables (GND and AC Interconnect cables) coming through the large hole in the bottom of the SPT frame, through the 3/4" NPT strain relief provided in the Ground Kit (Use cable lubricant for easier installation). See Figure 20.

NOTE: A 6"X6" deep or 4"X4" deep junction box is recommended for connecting to AC wiring.



Figure 20

2. Using the residual grease from the gear 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.

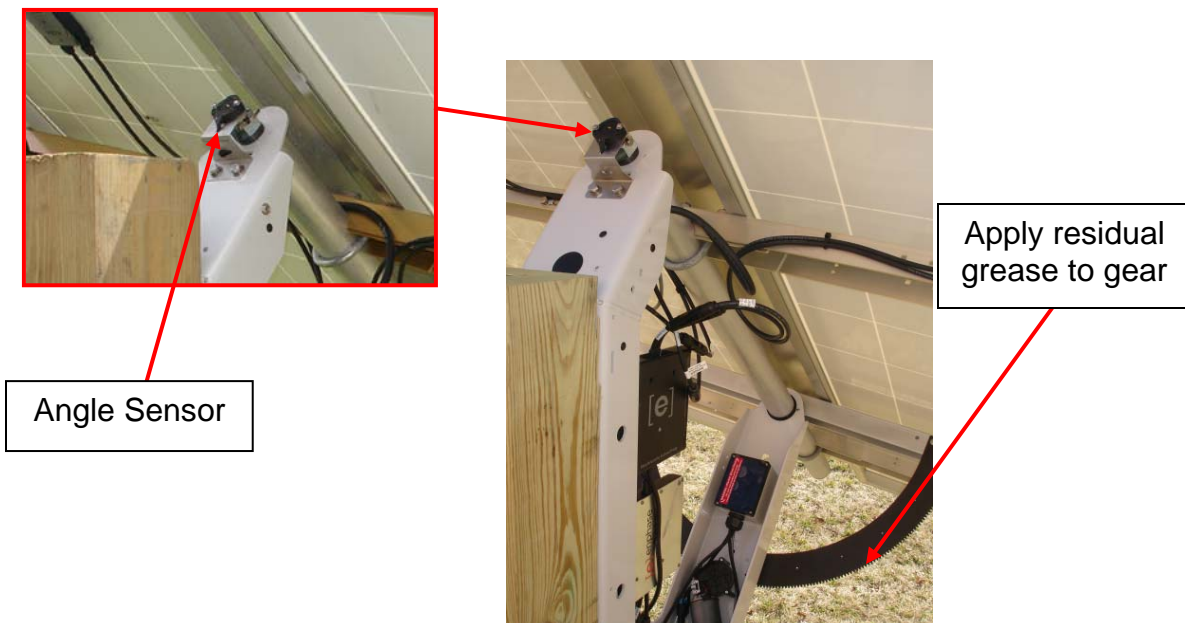


Figure 21

3. After solar cables are connected and DPT is mounted to the pole, plug the motor into BLC-1 tracker controller. See Figure 22. Uncover the solar panels.



Figure 22

CAUTION – MOTION: 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 (for north of the Equator installations) at low power conditions. (AC does not have to be connected for tracker operation).

4. Install the rain cover as shown in Figure 23 using the two Phillips head screws provided.



Rain cover
mounting screws
(both sides)

Figure 23

5. Complete AC and ground connections per local code.

1.4 Side Cover Options

Custom promotional banners (Figure 24) and side covers (Figure 25) are available. Consult www.atrsolartech.com for ordering information.



Figure 24

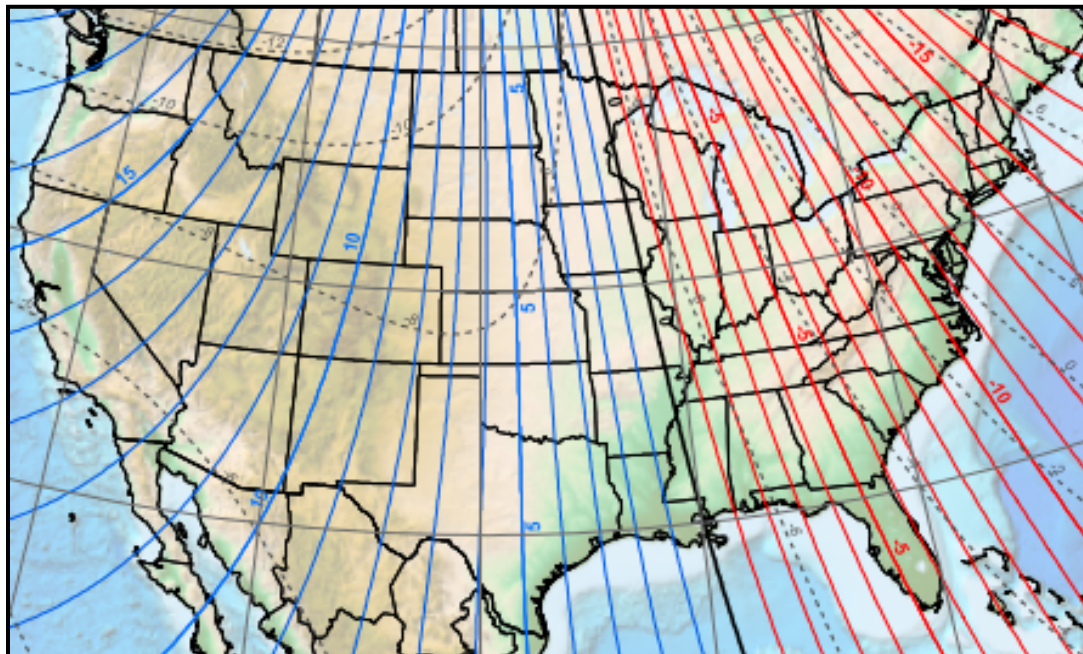


Figure 25

2 Alignment to true North or true South

1. In order to optimize the power output, the solar panels must be facing true South if in the Northern Hemisphere (true North if in the Southern Hemisphere). True South differs from magnetic South. In order to find true South, the Magnetic Declination for the installation location must be found. The Magnetic Declination Value represents the error between magnetic North and True North for a specific location. This value can be represented as an Easterly (positive (+)) declination, or a Westerly (negative (-)) declination. There are two ways to find the Magnetic Declination:

1. Go to: <http://www.ngdc.noaa.gov/geomagmodels/Declination.jsp>, enter the zip code for the installation location and click “Get Location.” Then click “Compute Declination” and find the declination in the lower box.
2. Looking at the following chart, use the blue and red lines to find the approximate Magnetic Declination for the installation location. These values vary slightly from year to year, but this chart is sufficient for an approximate value.



MAGNETIC DECLINATION FOR THE U.S. - 2010

Contour Interval: 1 Degree (Positive declinations in blue, negative in red)

- Using a compass, find magnetic North. Adjust the compass by the Magnetic Declination Value (while the needle stays at magnetic North, rotate the compass counter-clockwise for Easterly (+) declinations, and clockwise for Westerly (-) declinations. See Figure 26.

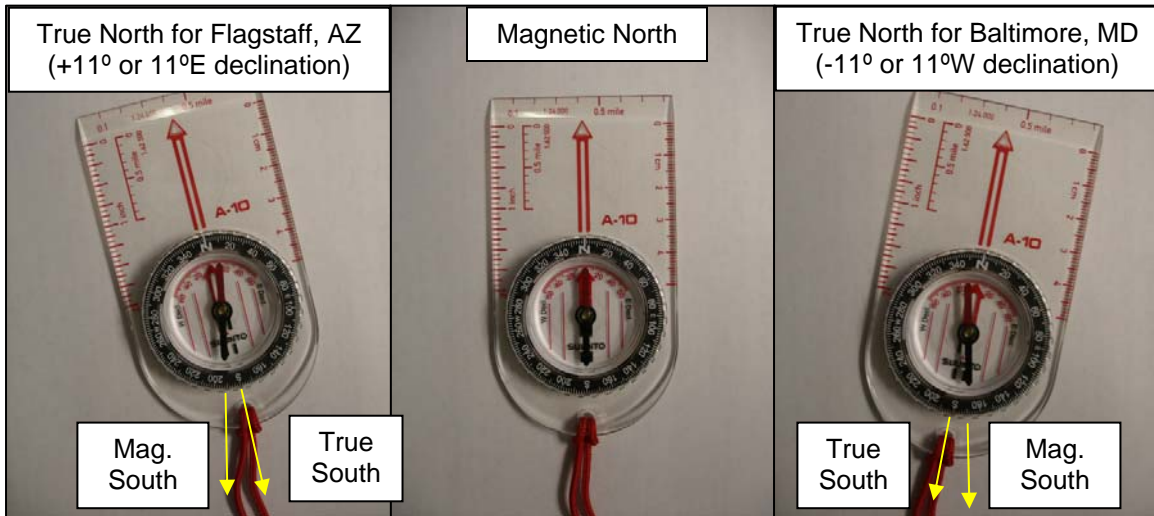


Figure 26

- Ensure the mounting surface of the 6" X 6" post for the tracker assembly is facing the appropriate direction.