Document: 81902_MANUAL_SOL_EverGen_RevC

IMPORTANT

Keep your product order information. You will need it during setup.

The EverGen lighting system must be activated after assembly and installation using the EverGen Setup App. Otherwise, the light will not turn on and an additional site visit will be required.

To complete activation:

1. Download the EverGen Setup App from the iOS App Store or Google Play store and ensure you have a compatible mobile device.

2. Contact Sol for a username and password.

3. Go to the location of the EverGen lighting system and use the setup app to activate.

NOTE If you do not have wireless internet access onsite, use the app to scan the product order number while within wireless internet range to allow the app to download product information. Activation can then take place onsite without a wireless signal.

This installation and instruction manual provides installation instructions for the Sol EverGen Series solar LED lighting systems. The entire contents of this manual should be thoroughly reviewed and understood prior to installing this equipment. Do not discard this manual, as it contains complete installation instructions.

To ensure proper operation of this equipment, it is important that the equipment be used only for its intended purpose. Any use of this equipment for purposes other than those intended will void all warranties.

Warnings and Precautions

The following symbols indicate important safety warnings and precautions throughout this manual. They are defined as follows:

NOTE suggests optimal conditions under which the equipment will operate effectively and safely, or provides additional information to the reader.

CAUTION indicates that damage to equipment may result if the instructions are not followed.

WARNING indicates that serious bodily harm or death may result from failure to adhere to the precautions.

Warranty Disclaimer

This manual will familiarize you with the features, operation standards, and installation of Sol's EverGen M Series. Failure to comply with the use, storage, maintenance, installation or placement instructions detailed in this manual could void the warranty.

Standards

Perform all installation, wiring, and maintenance in conformance with local building and electrical codes. Adherence to the National Electrical Code (NEC) is mandatory. Non-adherence to code may void the warranty.

Safety and Usage Precautions

Batteries are shipped fully charged. Use extreme caution when handling the batteries as they are capable of generating hazardous short-circuit currents. Remove all jewelry (bracelets, metal-strap watches, etc.) before attempting to handle the batteries.

Solar modules produce DC electricity when exposed to light and can, therefore, produce an electrical shock or burn. To render solar modules inoperative, remove them from sunlight, or fully cover their front surface with an opaque material.

Before lifting any heavy or bulky equipment, ensure the load is secured so moving parts do not shift, and that it can be lifted as far as needed without back strain or loss of grip. Installation may require more than one person.

Until the system is ready for startup, keep the battery fuse out of the fuse holder. Ensure the equipment is not powered during installation and wiring of the system.

Recheck all completed wiring for proper polarity prior to energizing the system.
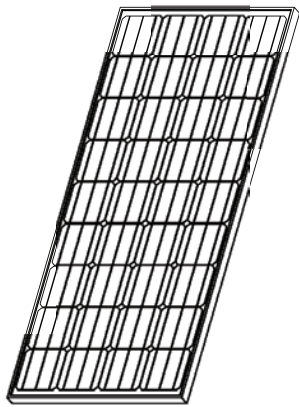
Changes or modifications to Sol equipment not expressly approved by Sol could void the user's authority to operate the equipment.
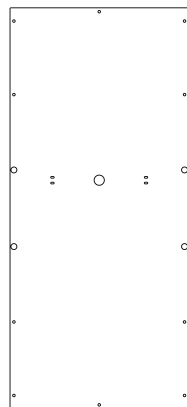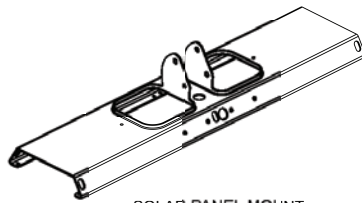
Table of Contents

Introduction

Components

SOLAR PANEL
1 OR 2
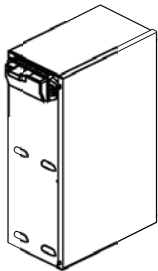
PANEL PAN (OPTIONAL)
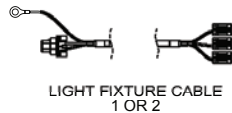1 OR 2

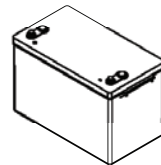SOLAR PANEL MOUNT
1 OR 2 PANEL
(2 PANEL SHOWN)

TENON ADAPTER

HARDWARE KIT

BATTERY BOX WITH EMS
SMALL, MEDIUM OR LARGE

LIGHT FIXTURE CABLE
1 OR 2

BATTERY CABLE KIT
FOR 1 TO 4 BATTERIES
(MAIN CABLE SHOWN)

FUSES

BATTERY
1 TO 4

LIGHT FIXTURE
1 OR 2

System

There are several options available for the EverGen M Series. Pictured below are examples of one and two panel systems with integrated fixture arms.
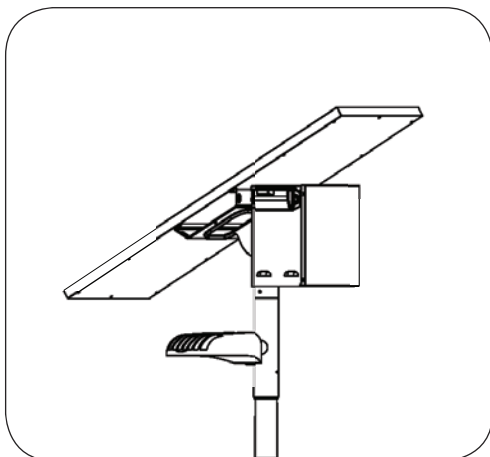

One panel, small battery box system
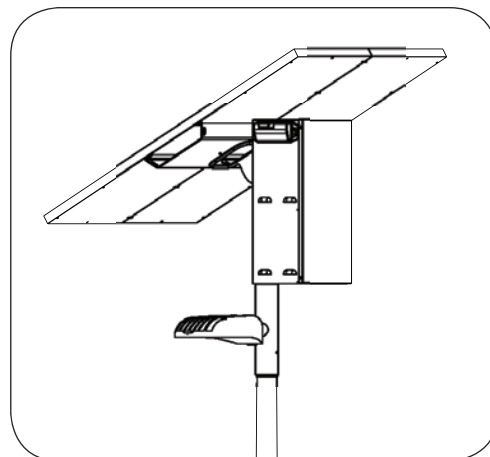
Two panel, medium battery box system

Positioning the Light

1. Make sure that the installation location for the product has an unobstructed view of the sun's path.

2. Also, note that the position of the sun will vary throughout the year, being at its lowest point relative to the horizon in winter months.

3. Orient the solar panel(s) towards the equator (towards South in the Northern Hemisphere, towards North in the Southern Hemisphere).

4. If using a magnetic compass, be sure to take into account the installed location's magnetic declination (the difference between true north and the direction a compass needle points in a given location).

Point panels South if in Northern Hemisphere

Point panels North if in Southern Hemisphere
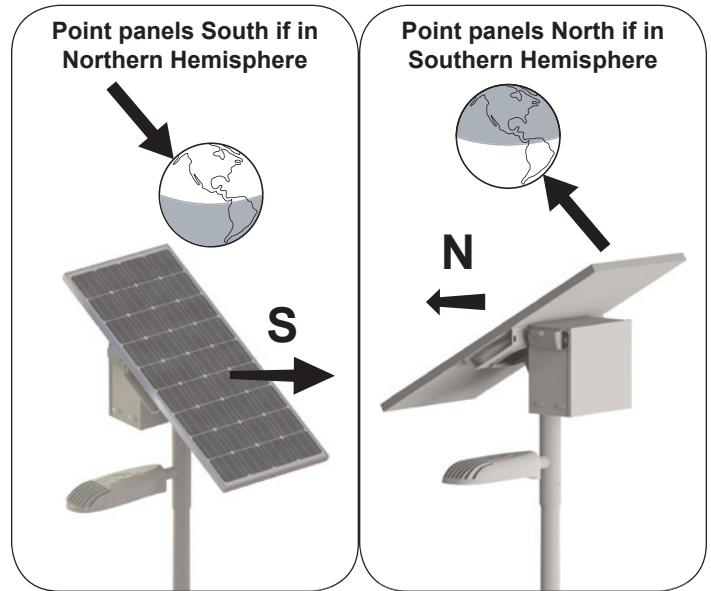
Tools and Equipment

Tools Required

a. 3/8" Ratchet
b. 6" Extension for 3/8" Ratchet
c. Sockets: 3/8", 7/16", 9/16", 15/16" Deep Socket, 3/16" Hex Bit
d. 15/16" Wrench
e. Flush Cut Pliers
f. Torque Wrench capable of 0-100ft-lbs
g. Cordless Drill with ¼" Drill Bit
h. Ear Protection
i. Bucket Truck and/or Crane Truck
j. Saw Horses or elevated working surfaces

Recommended Equipment

a. EverGen Installation Kit (82644RevA):
   • Three (3) Lifting Straps
   • MC4 Disconnect Tool

Quick Reference for Fastener Torques (all values for lubricated threads)

Bolt/Screw Size	Torque (in-lbs)	Torque (ft-lbs)
1/4"	64	5
3/8"	201	17
5/8"	936	78
Battery Bolt	50	4

Assembly

The product should be assembled on the ground before being installed on a pole.
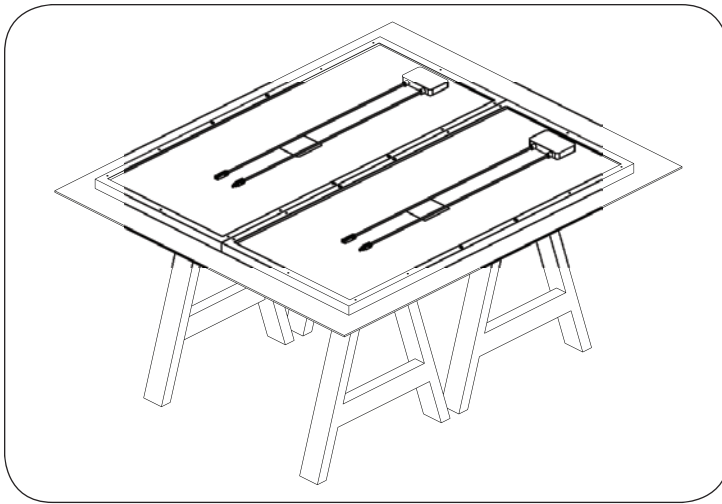
⚠ **CAUTION** — **TAKE CARE NOT TO DROP ANY MATERIALS ONTO THE BACK OF THE SOLAR PANELS DURING THE PRODUCT ASSEMBLY AS THE SOLAR PANELS CAN BE DAMAGED BY ACCIDENTAL IMPACT.**
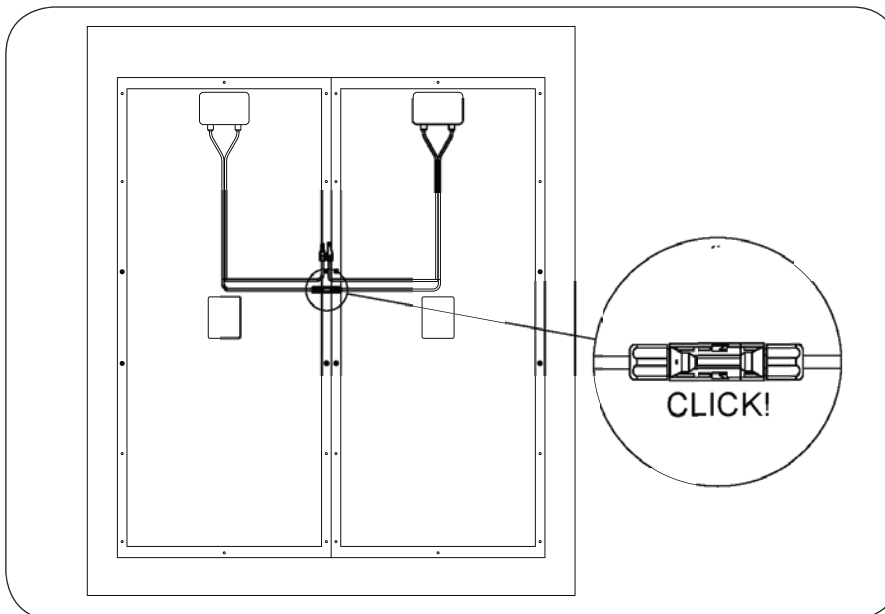
1. Assemble Solar Panel(s)

1 Place solar panel(s) glass side down on to clean cardboard (solar panel packaging) on a flat, stable surface.

2 For systems with two (2) solar panels, connect one (1) cable from each of the panels so that they are in series. Upon successful connection, there will be an audible click.

CLICK!

2. Assemble Solar Panel Mount

1 Place solar panel mount onto frame(s) of solar panel(s). Ensure that the solar panel mount grommet hole is facing the solar panel junction box(es).

2 Align mount holes with threaded holes in solar panel frame(s).

THREADED HOLE IN SOLAR PANEL FRAME
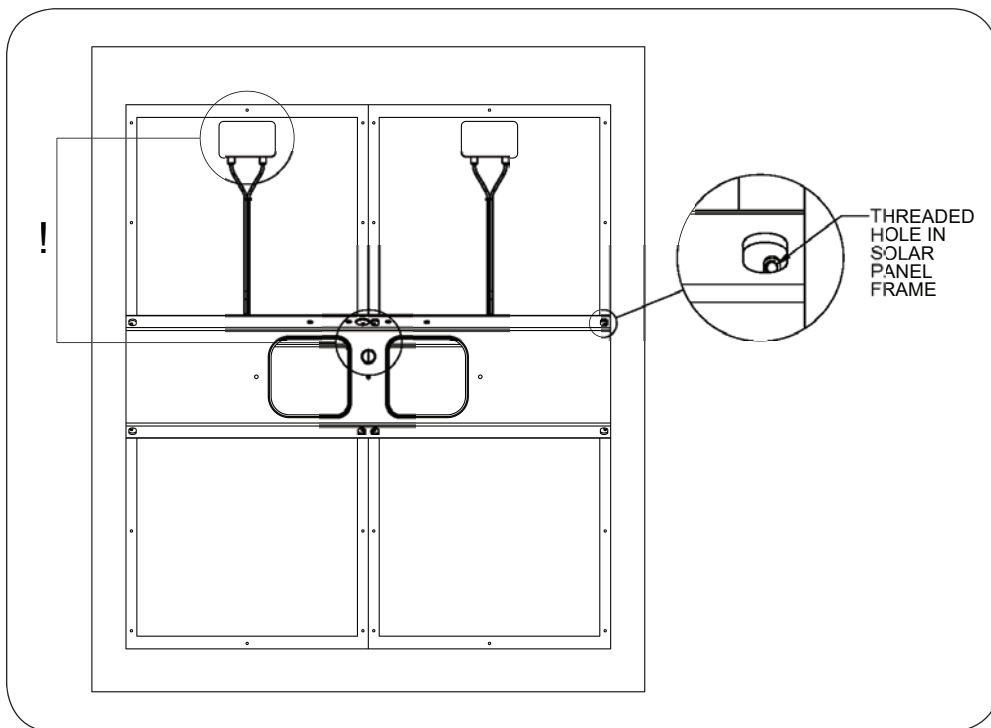
3. Attach Solar Panel to Solar Panel Frame

1 For two panel systems, ensure panels are pushed together and flush prior to, during, and after bolt tightening.
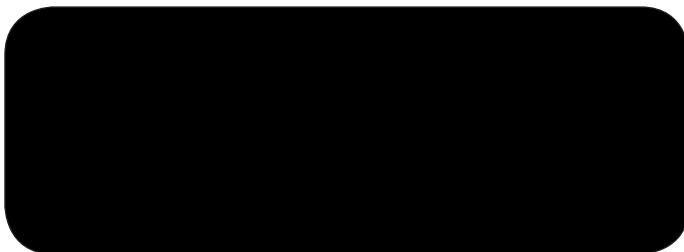
2   Apply grease to solar panel mount bolt threads.

3   Install four (4) (single solar panel) or eight (8) (two solar panels) supplied 1/4"-20 bolts through solar panel
     mount slots and into threaded holes in solar panel frame(s) and tighten to 5ft-lbs (64 in-lbs.).

!GREASE!
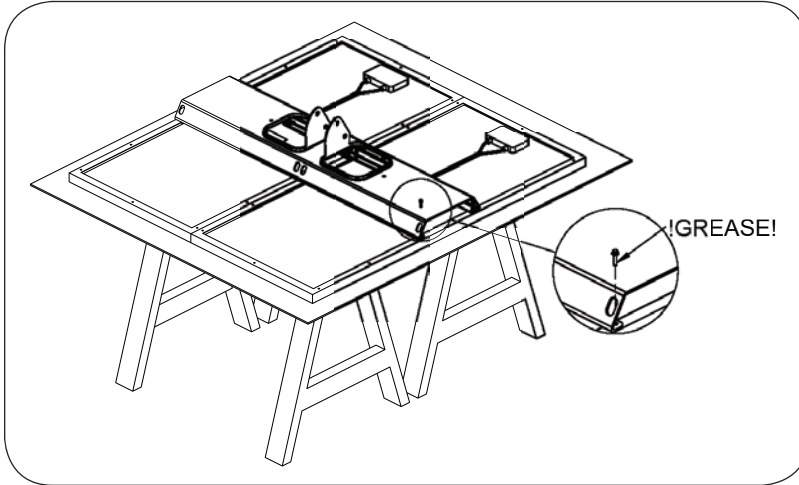
4   Once bolts are torqued, install grommets as shown below.
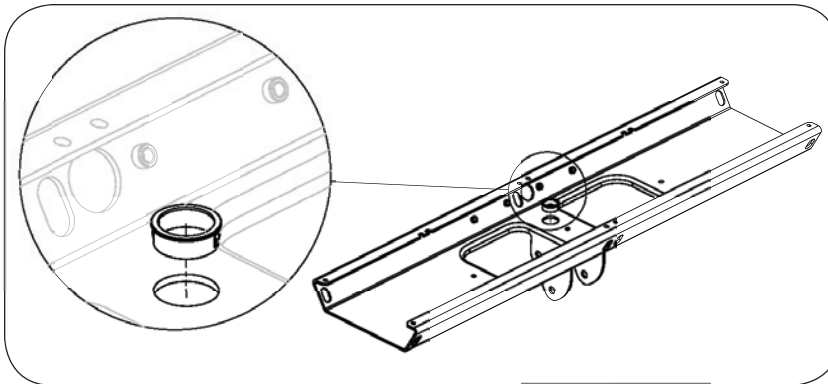
5 Strain relieve the solar panel cables to the solar panel mount frame feature(s) and near the junction box(es) using the provided cable ties.
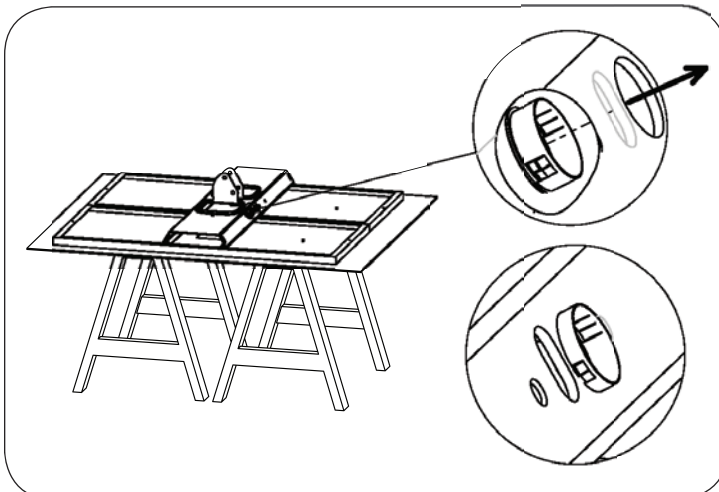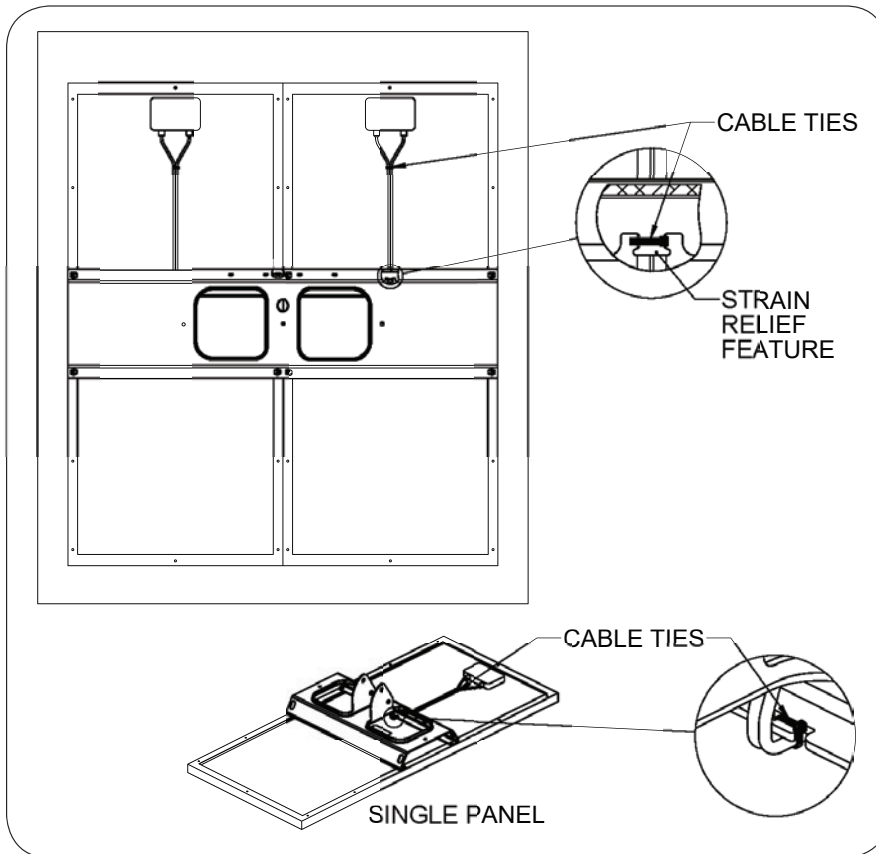

4. Connect Tenon Adapter to Solar Panel Mount

1 Identify top of tenon adapter. There are two larger clearance holes through the tenon adapter near the top. Orient the two (2) 3/8"-16 threaded holes in the tenon adapter as shown.

2 Note orientation and rotation of tenon adapter once more. Ensure the two (2) 3/8"-16 threaded holes are facing outwards as indicated.

3 Place tenon adapter between panel mount flanges as shown.

4 Align tenon adapter to holes in solar panel mount flanges.

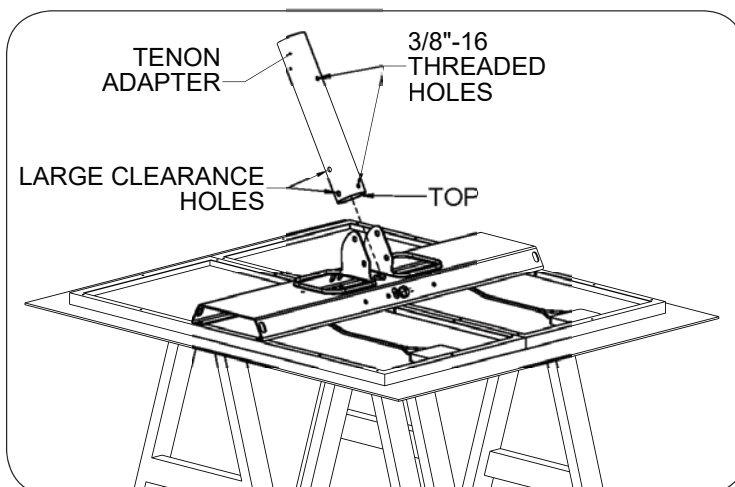**5** Insert two (2) 5/8"-11 bolts with flat washers through clearance holes.

6 Apply grease to threads of two 5/8"-11 bolts.

⚠ CAUTION **THIS IS CRITICAL TO PREVENT IRREVERSIBLE DAMAGE TO BOLT THREADS.**

7 Install supplied flat washers and lock washers to connect the tenon adapter and solar panel mount flanges. Finger tighten supplied nuts.

8 Confirm correct orientation of tenon adapter.
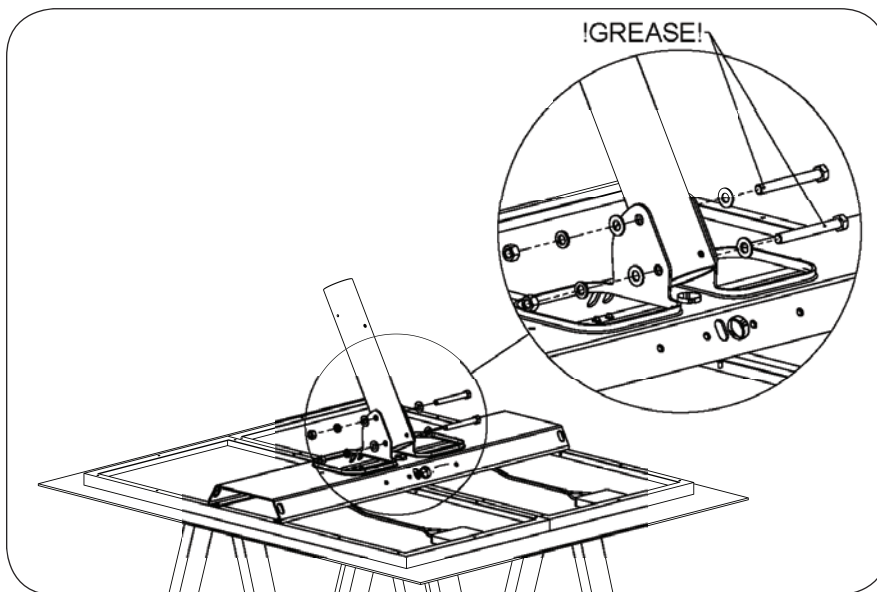
5. Assemble Battery Box

1   Take off battery box door by loosening the top two (2) 1/4"-20 bolts and removing the bottom two (2) 1/4"-20 bolts.
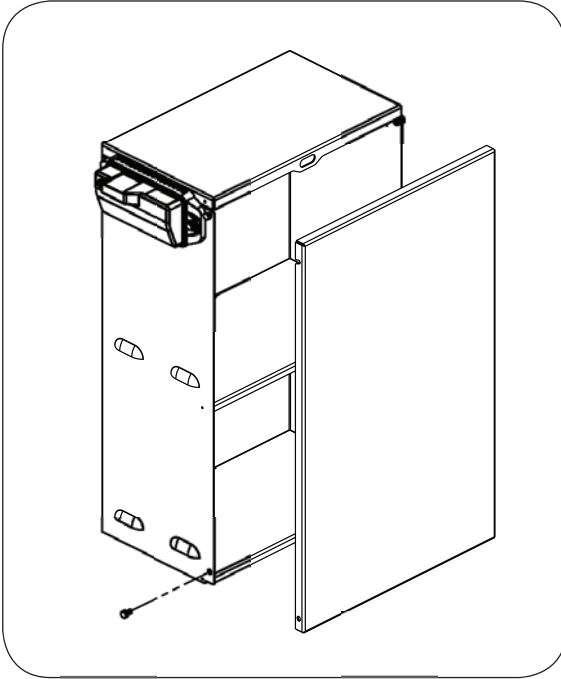
2   Orient the battery box so that the face with the six (6) holes lines up with the six (6) threaded holes of the solar panel mount and tenon adapter.
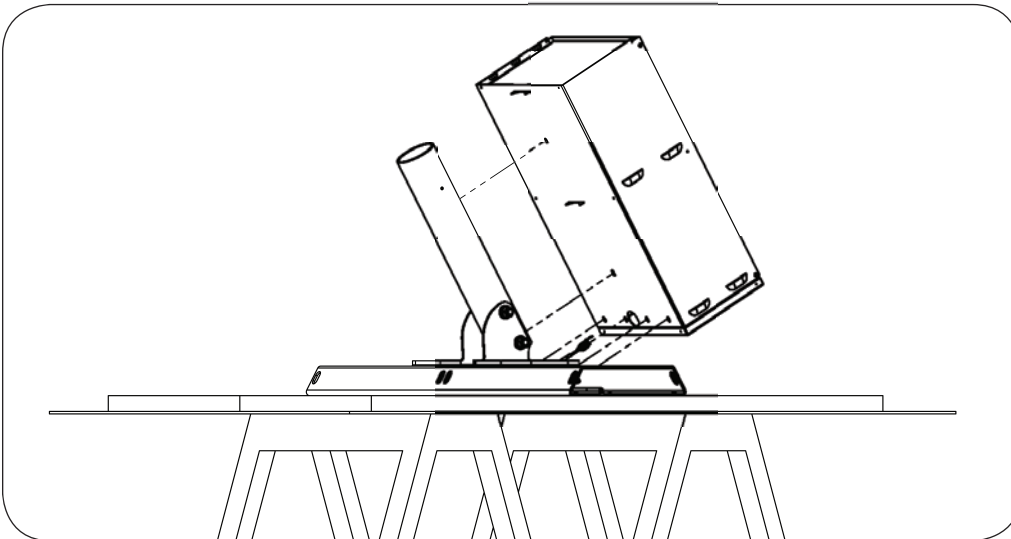
3 Using one (1) of the supplied 3/8"-16 bolts with greased threads, secure the battery box into place on the tenon adapter by threading bolt through the battery box into corresponding hole in the tenon adapter.

3/8"-16 BOLT

!GREASE!
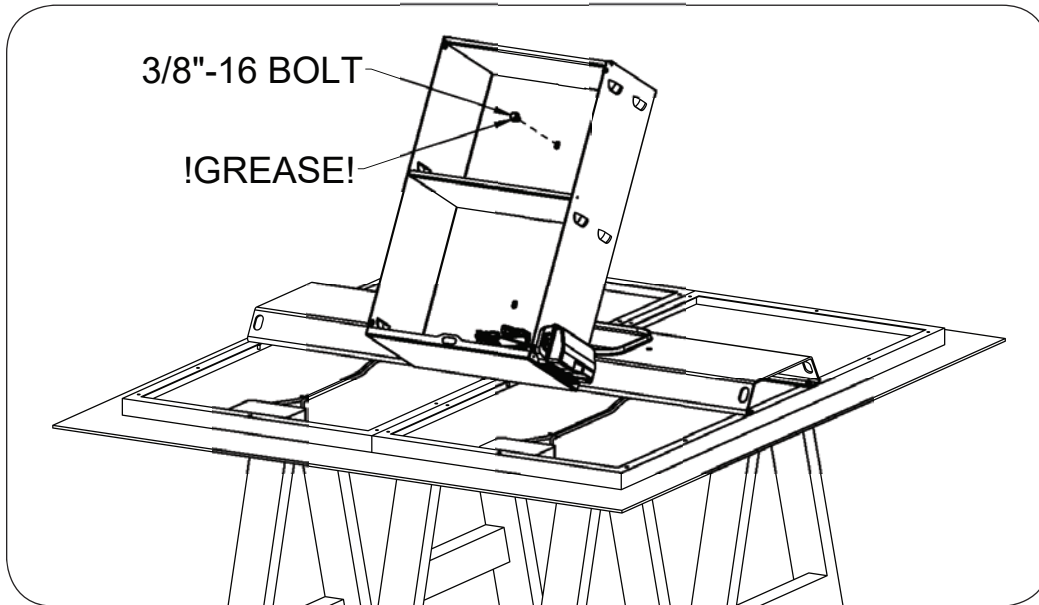
4 Install five (5) remaining 3/8"-16 bolts to complete attaching the battery box to the tenon adapter and solar panel mount.

5 Torque all 3/8"-16 bolts to 17 ft-lbs (201 in-lbs) taking care not to strip the threads in the tenon adapter.

6 Then torque tenon adapter 5/8"-11 bolts to secure tenon adapter to solar panel mount and solar panel assembly to 78 ft-lbs.

!GREASE!
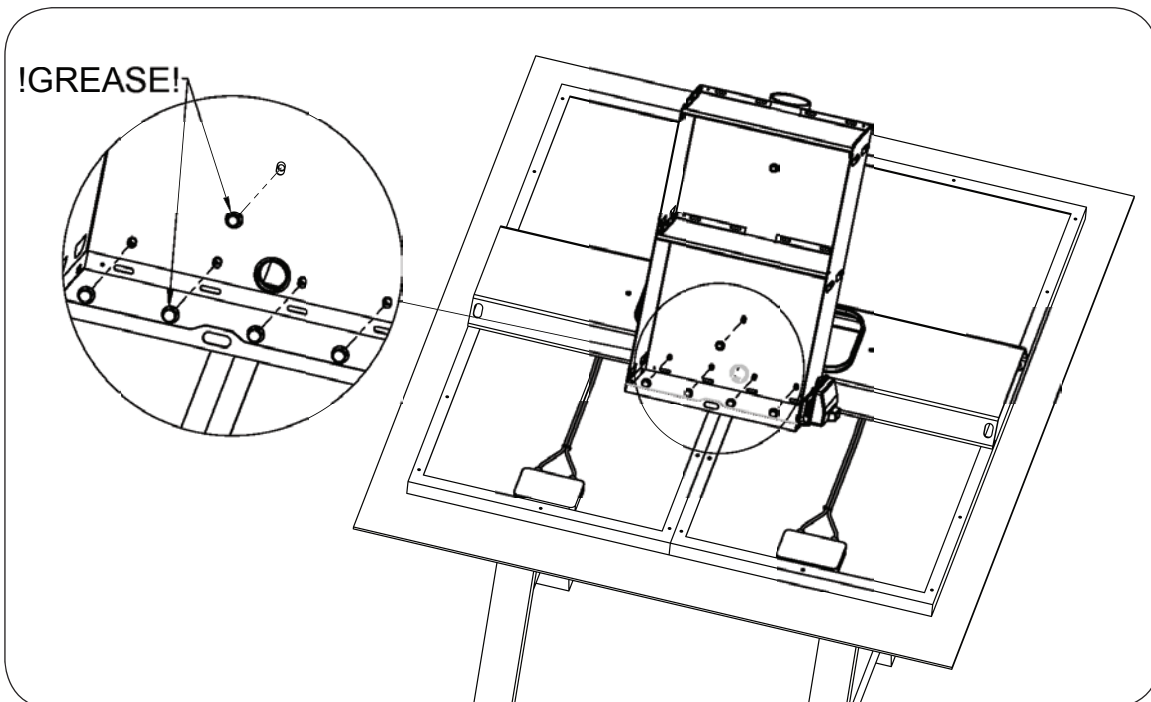
6. Connect Solar Panel and Fixture Cables to the EMS

1 Route the two (2) unconnected solar panel cables into battery box with enough slack to easily connect to the EMS.
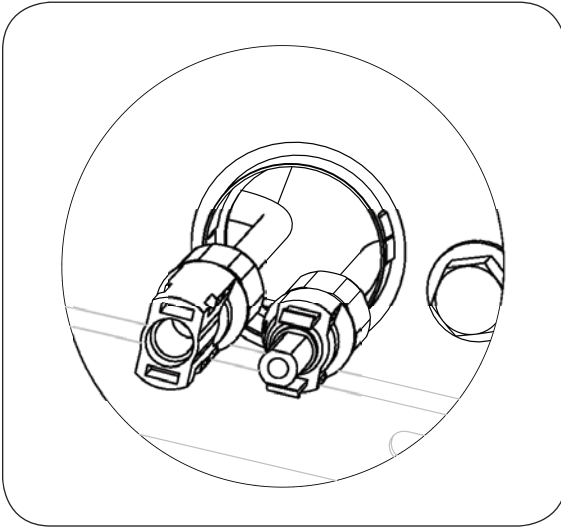
2 Route the end of the fixture cable that has a two (2) position connector and ring terminal into the battery box with enough slack to easily connect to the EMS. For systems with two fixtures, repeat for the second fixture cable while using the fixture splitter adapter.

3 Take the ground wire from the EMS and place it onto the grounding lug followed by the ground wire from the fixture cable.

4 Thread supplied 1/4"-20 nut onto ground lug grease and tighten to 5 ft-lbs (64 in-lbs).

EMS GROUND WIRE

GROUND LUG

!GREASE!

FIXTURE GROUND WIRE

2-POSITION CONNECTOR
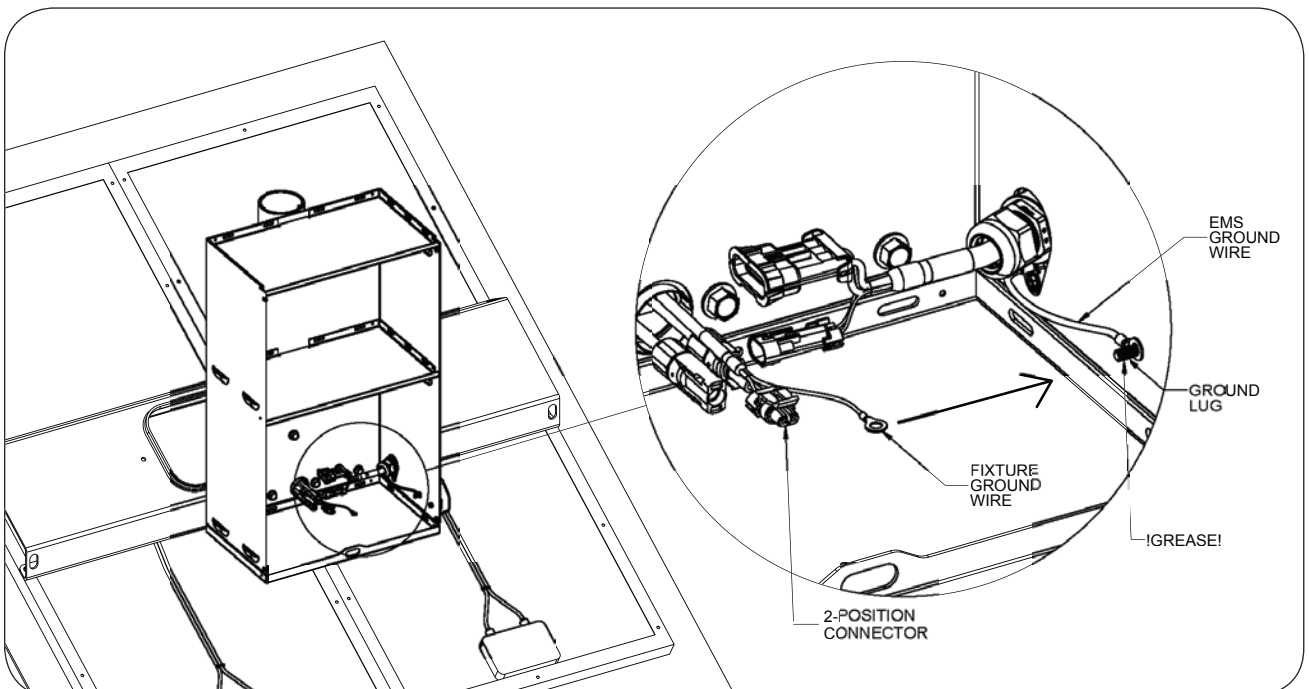
5   Connect fixture cable connector to EMS connector observing the keying feature. There will be an audible "click" upon successful connection.

FIXTURE CABLE

EMS CABLE
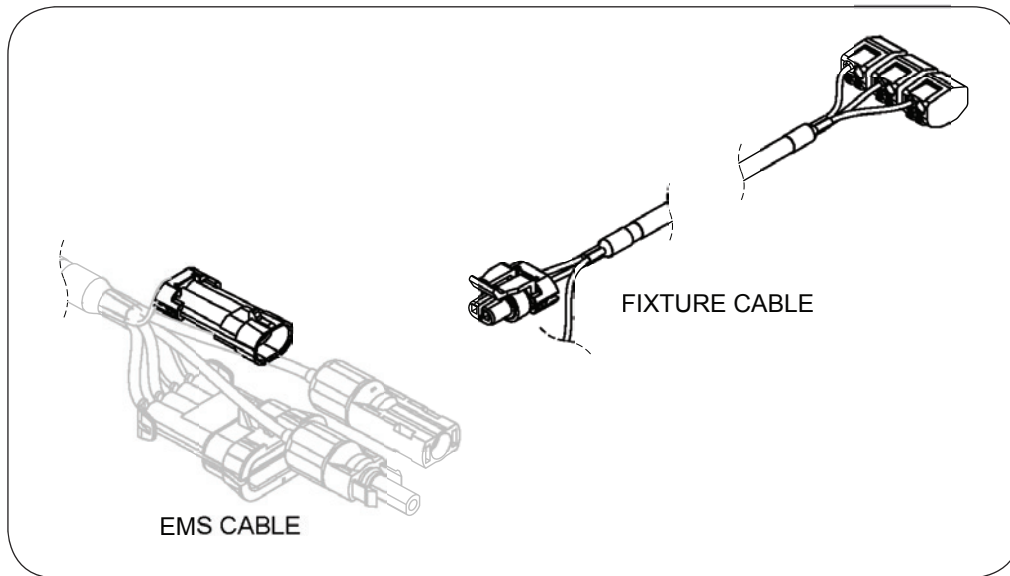
6   Where the cables enter the battery box, install a cable tie around all the cables on the inside of the box and tighten.

GROMMET

CABLE TIE
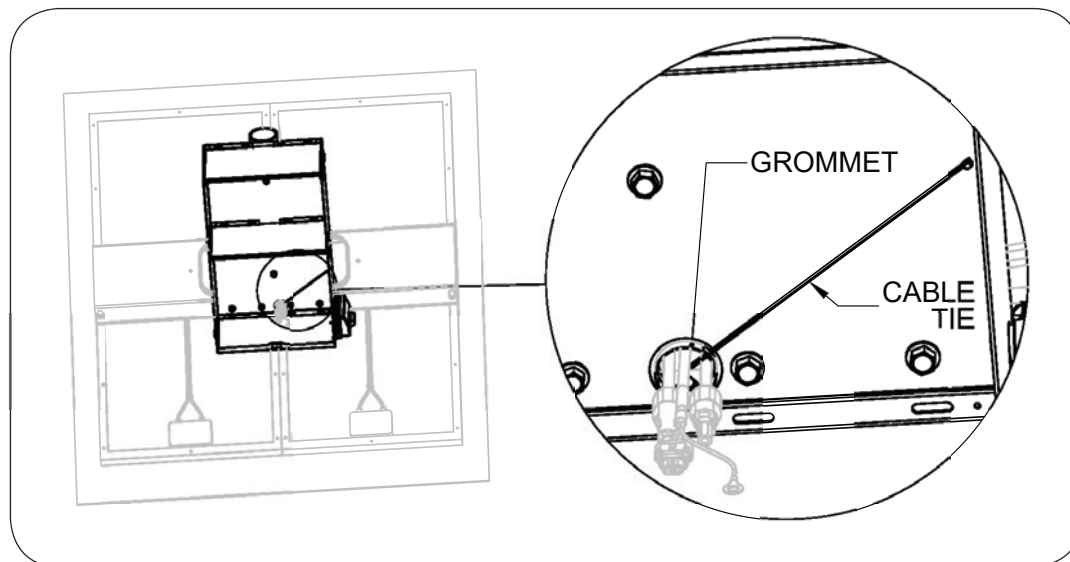
7   Coil remainder of fixture cable wire outside of the battery box and secure temporarily to solar panel mount until product has been installed onto the pole.

7. Assemble Integrated Arm (OPTIONAL)

1 Route fixture cable(s) through tenon adapter.

2 Insert fixture cable(s) into the integrated arm as indicated by the arrows.

FIXTURE CABLE ROUTING
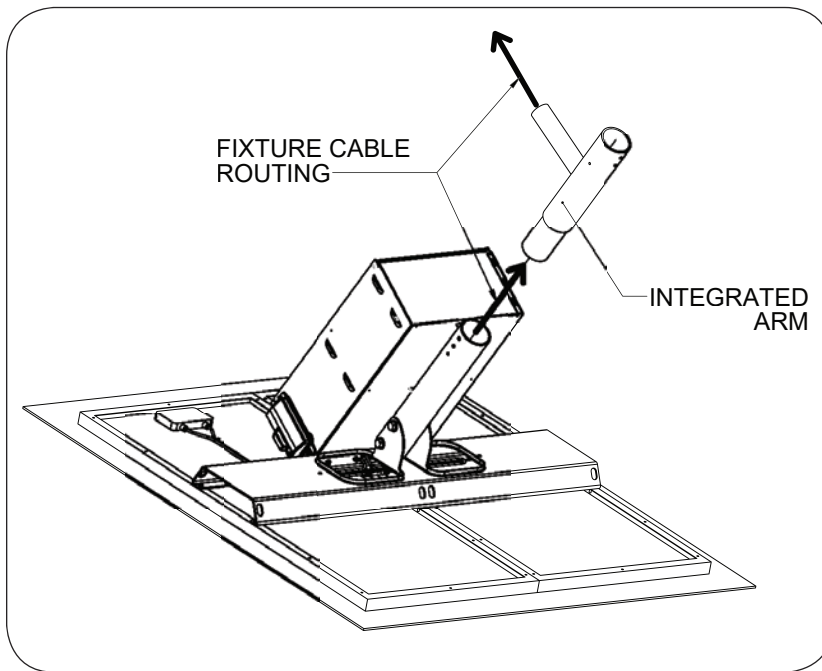
INTEGRATED ARM

3 Place integrated arm into the tenon adapter taking care not to pinch the fixture cable.
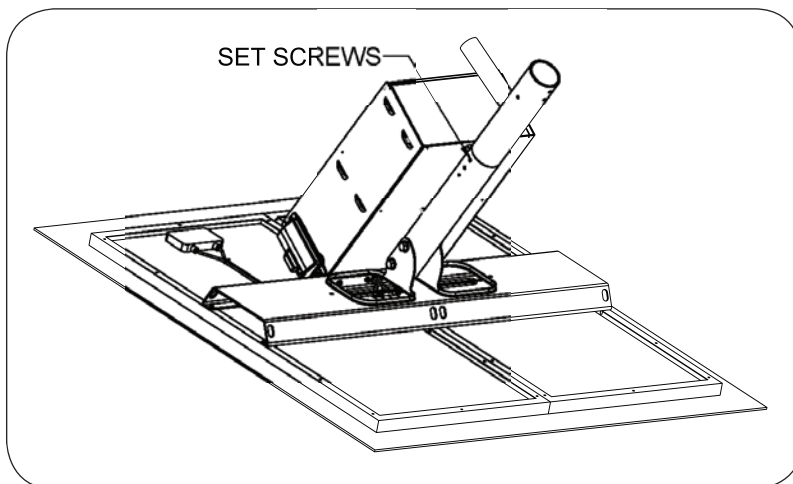
SET SCREWS

4 Tighten set screws on the tenon adapter to keep the integrated arm in place while lifting.

5 · Rotate the assembly so that it rests on the bottom edge(s) of the solar panel(s) and the edge of the tenon adapter. Avoid scratching these surfaces by placing the assembly on cardboard.
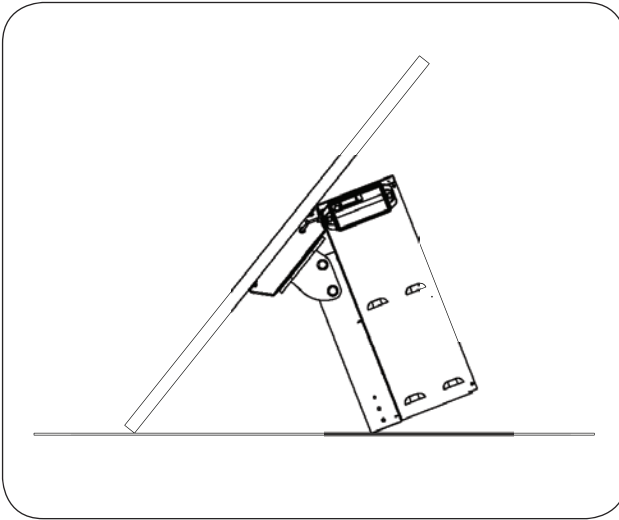
EverGen with Tenon Adapter
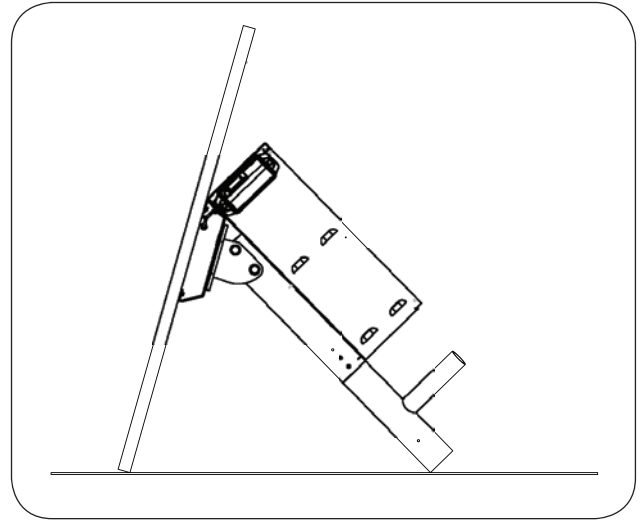
EverGen with Integrated Arm

8. Assemble Battery Cables

NOTE **CABLE CONNECTIONS VARY DEPENDING ON SYSTEM CONFIGURATION.**

WARNING **RISK OF ELECTRIC SHOCK.**

1   While at ground level, install battery cable(s) to battery terminals following the color coordinated terminal ends.

2   If installed, remove fuse from fuseholder.

3   Place the negative (-) wire (BLACK) ring terminal onto the negative (-) terminal of the battery.

4   Apply grease and thread supplied bolts, washers, and lock washers into battery terminal then torque to 50 in-lbs.

5   Place the positive (+) wire (RED) ring terminal onto the positive (+) terminal of the battery.

6   Apply grease and thread supplied bolts, washers, and lock washers into battery terminal then torque to 50 in-lbs.

7   Install terminal covers.

NOTE **In highly corrosive environments, coat all fasteners and ring terminals with dielectric grease.**

MAIN BATTERY HARNESS
(2-BATTERY VERSION SHOWN)
!GREASE!
FUSEHOLDER
RED
BLACK
!CAUTION!
RISK OF ELECTRICAL SHOCK
IF CONTACTS ARE SHORTED
PROTECTIVE CAP
COVERING CONNECTOR
FOR SECOND BATTERY
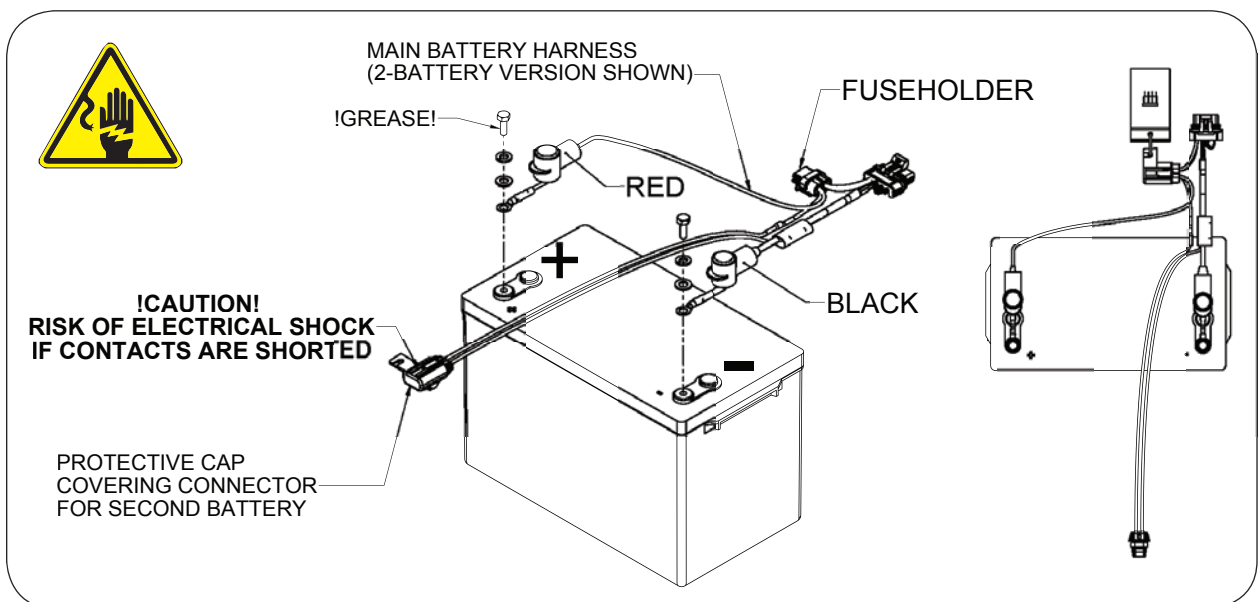
Installation

1. Attach Lifting Straps

1   Install three (3) 4 ft long straps as guided below through each lifting point.

LOWER SOLAR PANEL MOUNT
BOTH SIDES

BATTERY BOX
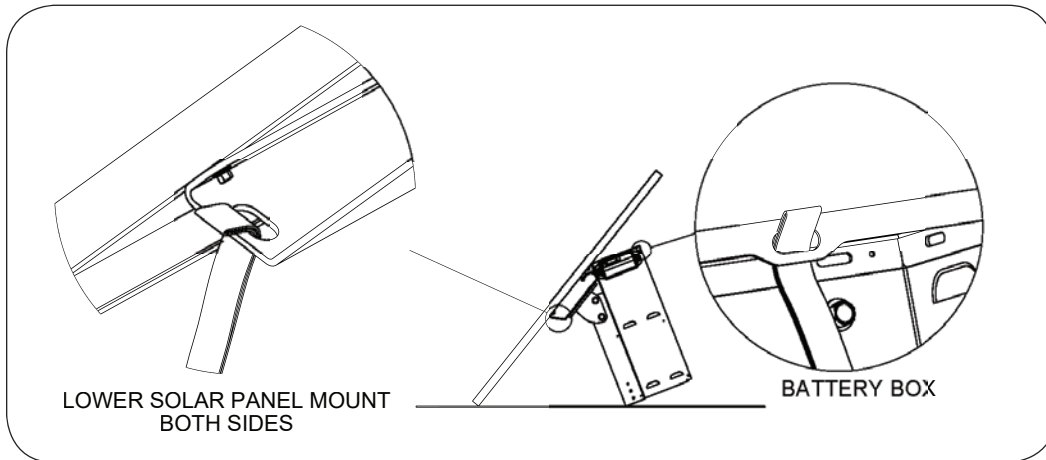
2   Attach three (3) lifting straps to crane hook and lift product into place, **OR** lift single solar panel systems by hand in bucket truck and place on pole tenon.

⚠ CAUTION   **FOLLOW ALL SAFETY GUIDELINES WHEN OPERATING A CRANE, INCLUDING BUT NOT LIMITED TO NOT SUSPENDING OBJECTS OVER BYSTANDERS.**

NOTE   **DO NOT DROP ANYTHING ONTO THE SOLAR PANELS.**

NOTE   **Installation kit available for order.**
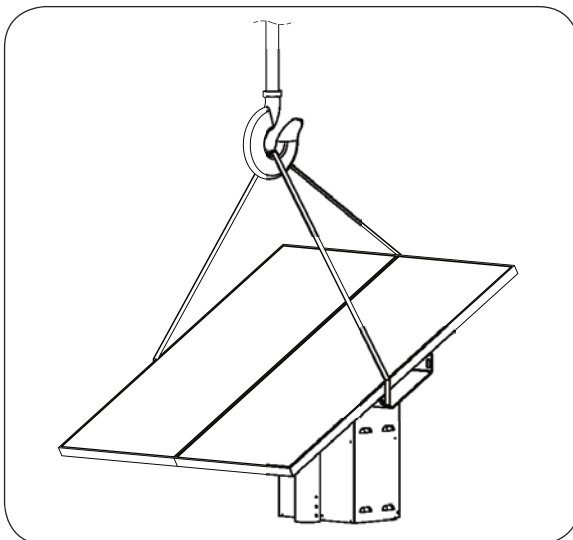
2. Orient and Install System

1. Once product is placed onto pole, orient solar panel(s) towards the equator (south in Northern Hemisphere).

2. Make sure that the area between the solar panel(s) and direct sunlight is unobstructed.

⚠ **CAUTION** **THIS IS CRITICAL TO ENSURE PRODUCT PERFORMANCE.**

3. Tighten two (2) installed 3/8"-16 set screws in tenon adapter to pole tenon and torque to 17 ft-lbs (201 in-lbs.). Do not exceed the specified torque to avoid stripping the threads in the tenon adapter.
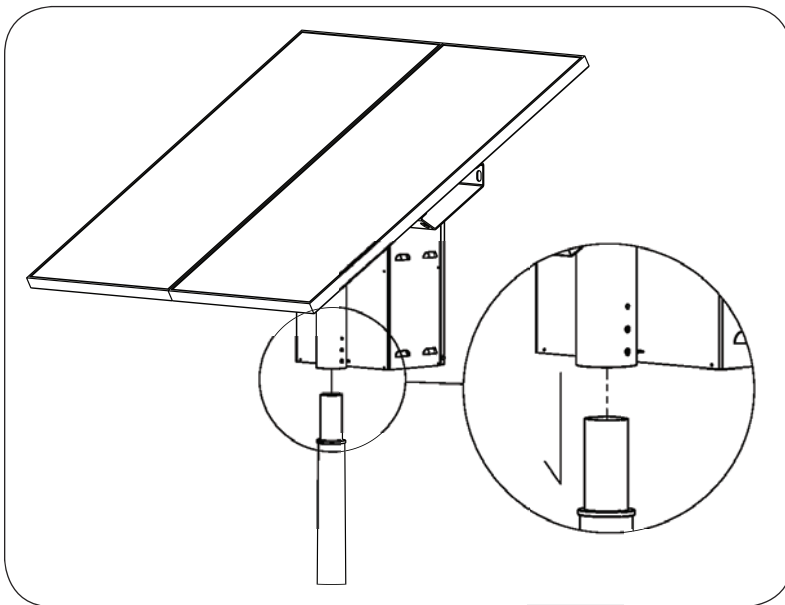
4 Drill two (2) 1/4" holes for tenon thru bolt from either side to ensure hole alignment, using the tenon adapter holes as a template.

NOTE **USE CAUTION TO AVOID DRILLING INTO THE FIXTURE CABLE IF PRESENT.**

5 Install supplied 1/4"-20 thru bolt with flat washers and nut then torque to 5 ft-lbs (64 in-lbs).

Orientation in Northern Hemisphere

3. Installing Systems with Integrated Arm (OPTIONAL)

1 Once product is placed onto pole, position light fixture as required.
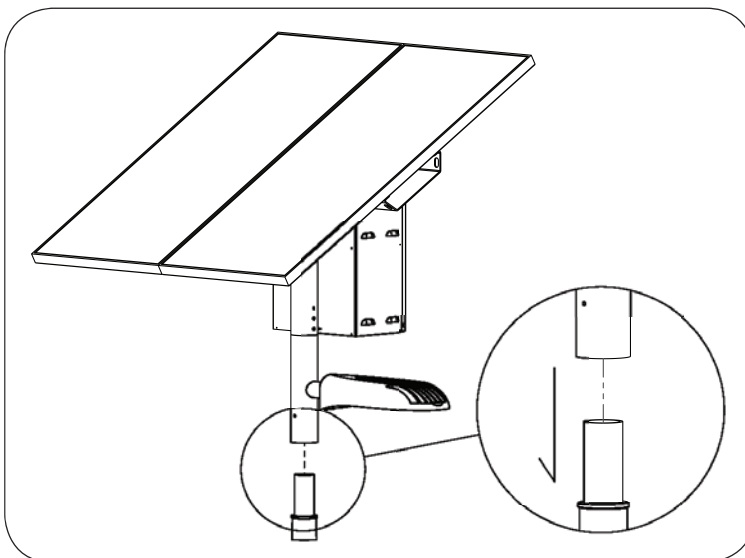
2 Tighten installed 3/8"-16 set screws on integrated arm and torque to 17 ft-lbs (201 in-lbs.). Do not exceed the specified torque to avoid stripping the threads in the tenon adapter.

SET SCREWS
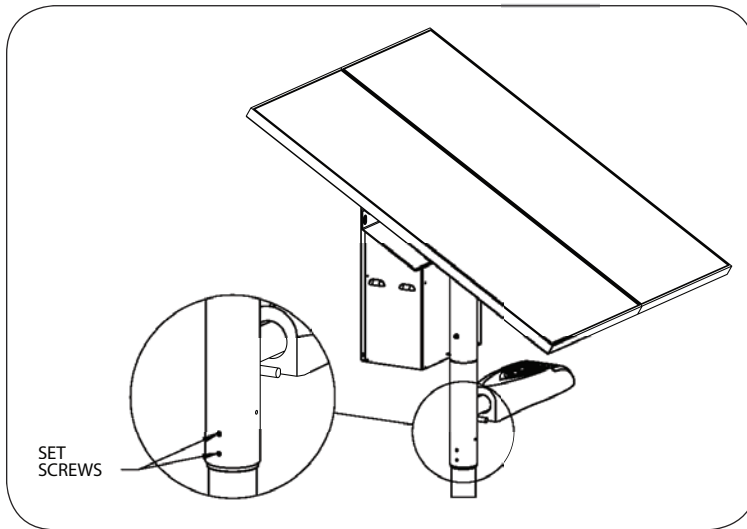
**3** Then orient solar panel(s) towards the equator (south in Northern Hemisphere).

4 Make sure that the area between the solar panel(s) and direct sunlight is unobstructed.
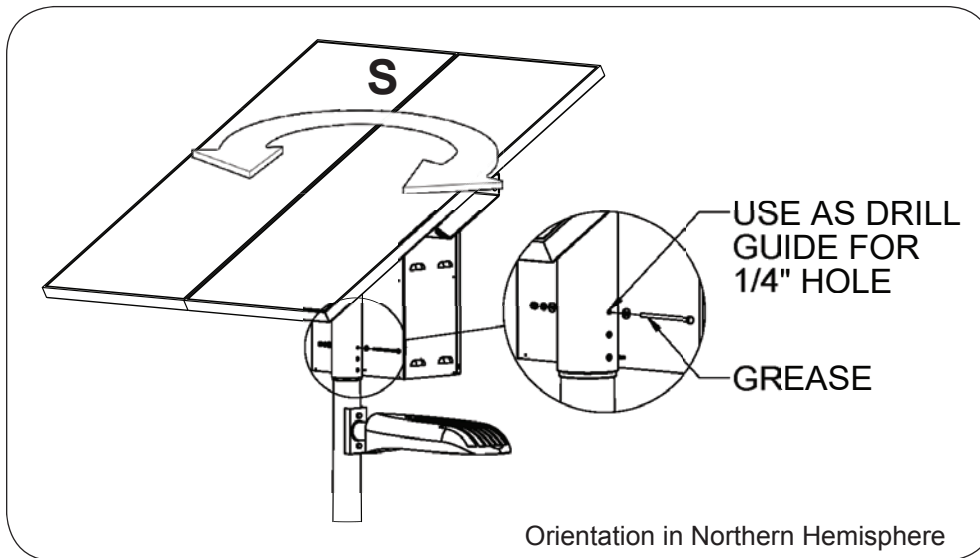
⚠ **CAUTION** **THIS IS CRITICAL TO ENSURE PRODUCT PERFORMANCE.**

5 Tighten two (2) installed 3/8"-16 set screws in tenon adapter and torque to 17 ft-lbs (201 in-lbs.). Do not exceed the specified torque to avoid stripping the threads in the tenon adapter

6 Drill two (2) 1/4" holes for tenon thru bolt from either side to ensure hole alignment, using the integrated arm as a template.

NOTE **USE CAUTION TO AVOID DRILLING INTO THE FIXTURE CABLE IF PRESENT.**

**7** Install supplied 1/4"-20 thru bolt with washers and nut then torque to 5 ft-lbs (64 in-lbs).

USE AS DRILL GUIDE
SET SCREWS
!GREASE!
USE AS DRILL GUIDE
Orientation in Northern Hemisphere
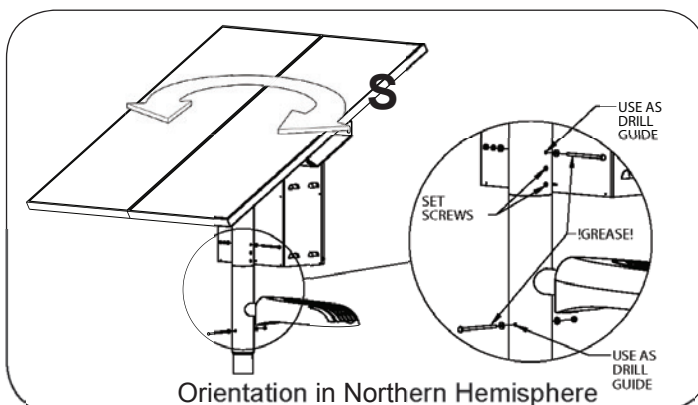
4. Install Fixture

NOTE **FIXTURE CABLE ROUTING AND MOUNTING INSTRUCTIONS VARY DEPENDING ON SYSTEM CONFIGURATION.**

1　Route the fixture cable through the grommet in the solar panel mount, then into the top of the tenon adapter, through the pole, and out of the fixture arm exit hole in pole.

2　Route the fixture cable through the fixture arm.

3　Attach the fixture arm to the pole.

4　Mount the fixture on the fixture arm as per the manufacturer's instructions.

5　Route the fixture cable into the fixture and mount the fixture on the fixture arm.

6　Connect each of the fixture cable wires to the corresponding fixture wires using the supplied wire connectors.
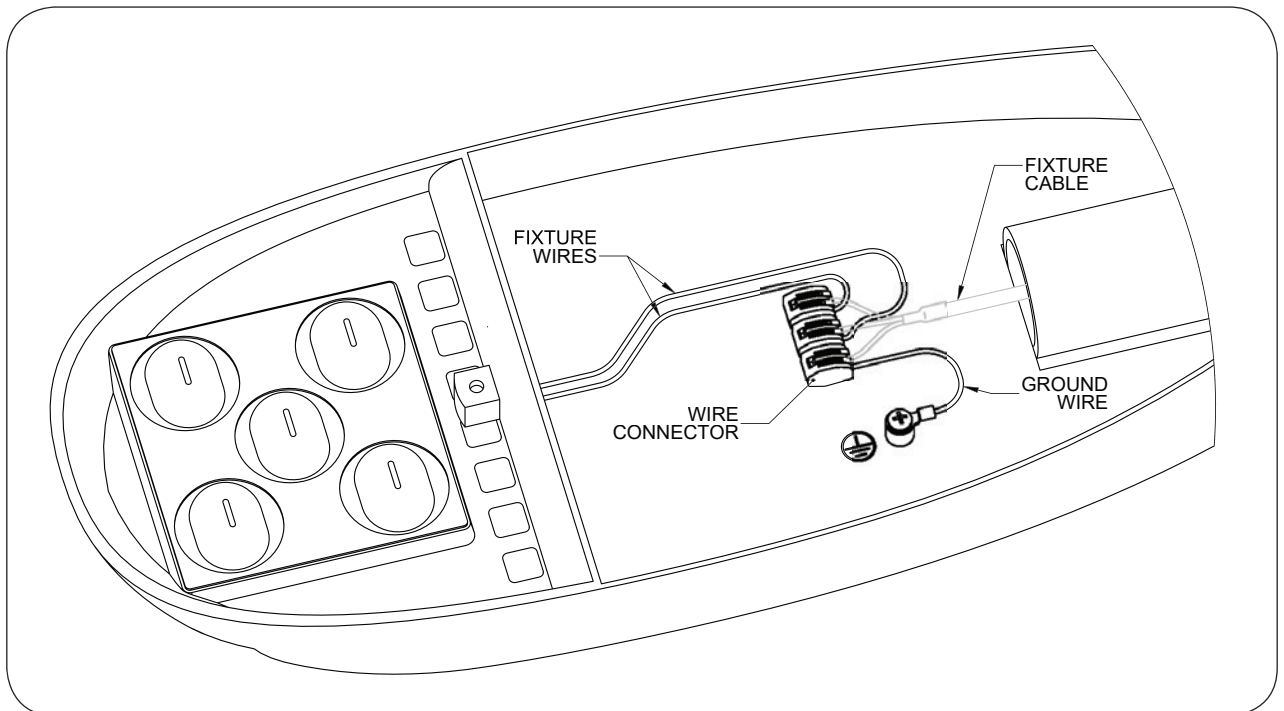
5.   Direct Arm Installation

For systems with a Direct Arm fixture mount, refer to the following instructions.

(1)   Use the lighting layout to obtain the recommended height (X) above the ground at which the fixture will be mounted.

(2)   Once the location, and orientation of the fixture has been established as per the lighting layout, mark the position on the pole.

3 To locate drill holes for mounting the Direct Arm, refer to the diagram below:

$\left[\begin{array}{c}10mm\end{array}\right]$
$\varnothing$ .40in
THRU

FIXTURE
CABLE
HOLE

$\left[\begin{array}{c}25mm\end{array}\right]$
$\varnothing$ 1.0in
FIXTURE SIDE ONLY

$\left[\begin{array}{c}101.6mm\end{array}\right]$
4.00in

$\left[\begin{array}{c}50.8mm\end{array}\right]$
2.00in

$\left[\begin{array}{c}10mm\end{array}\right]$
$\varnothing$ .40in
THRU

X

4 Drill mounting holes through the pole.

5 Drill the fixture cable hole through the side of the pole that the arm will mount to as shown.

!

6 Be sure to break all sharp edges that will come into contact with the harness wiring.

7   Route fixture cable as shown and install Direct Arm accordingly.
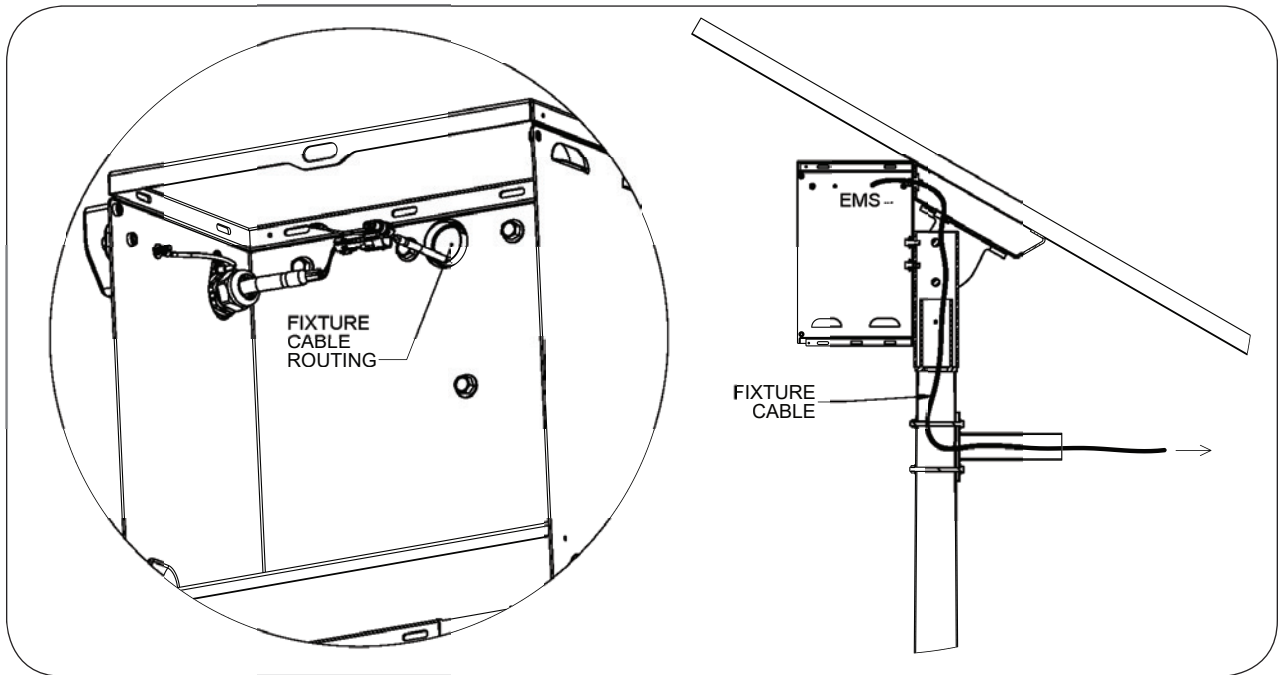
8   Torque Direct Arm fasteners to 201 in-lbs.

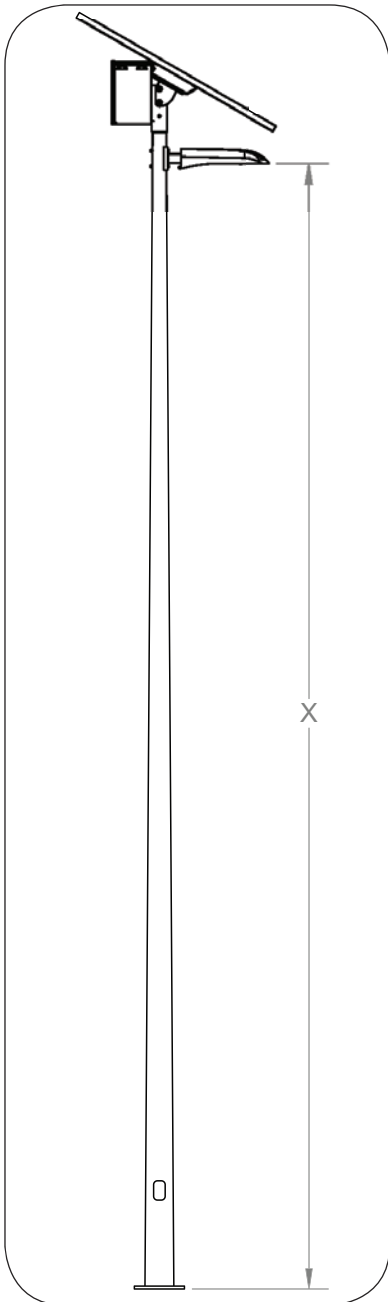**9**   Install and wire fixture as per the related section in this manual.

6. Davit Arm Installation

For systems with a Davit Arm fixture mount, refer to the following instructions.
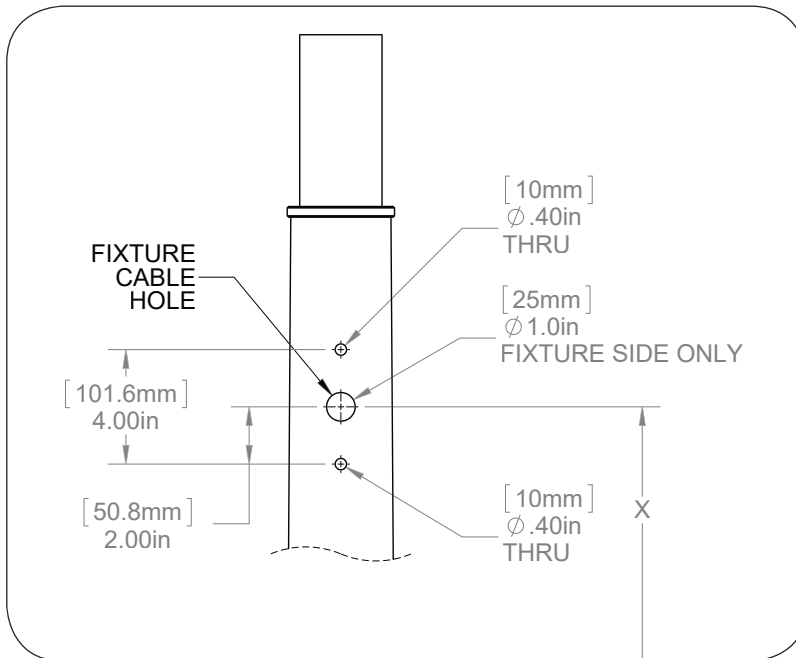
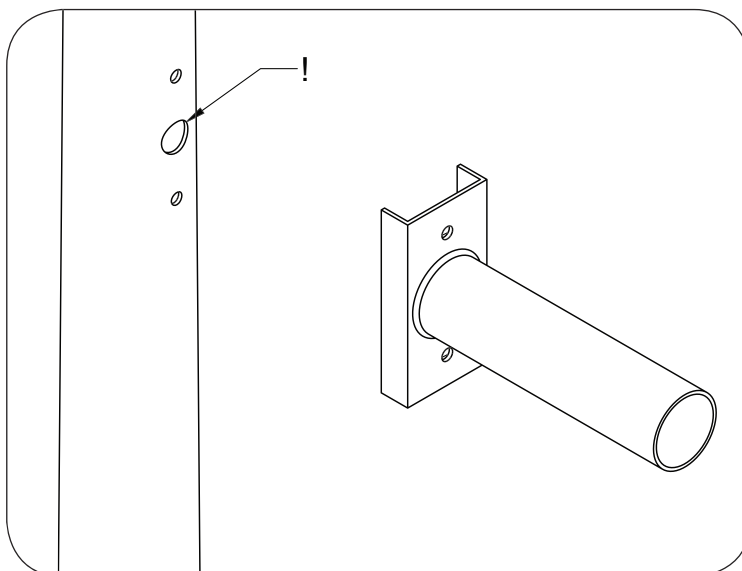1. Use the lighting layout to obtain the recommended height (X) above the ground at which the fixture will be mounted.

RISE OF ARM

X

2. Once the location, and orientation of the fixture has been established as per the lighting layout, mark the position on the pole taking the rise of the Davit Arm into consideration.

3   To locate drill holes for mounting the Davit Arm, refer to the diagram below:
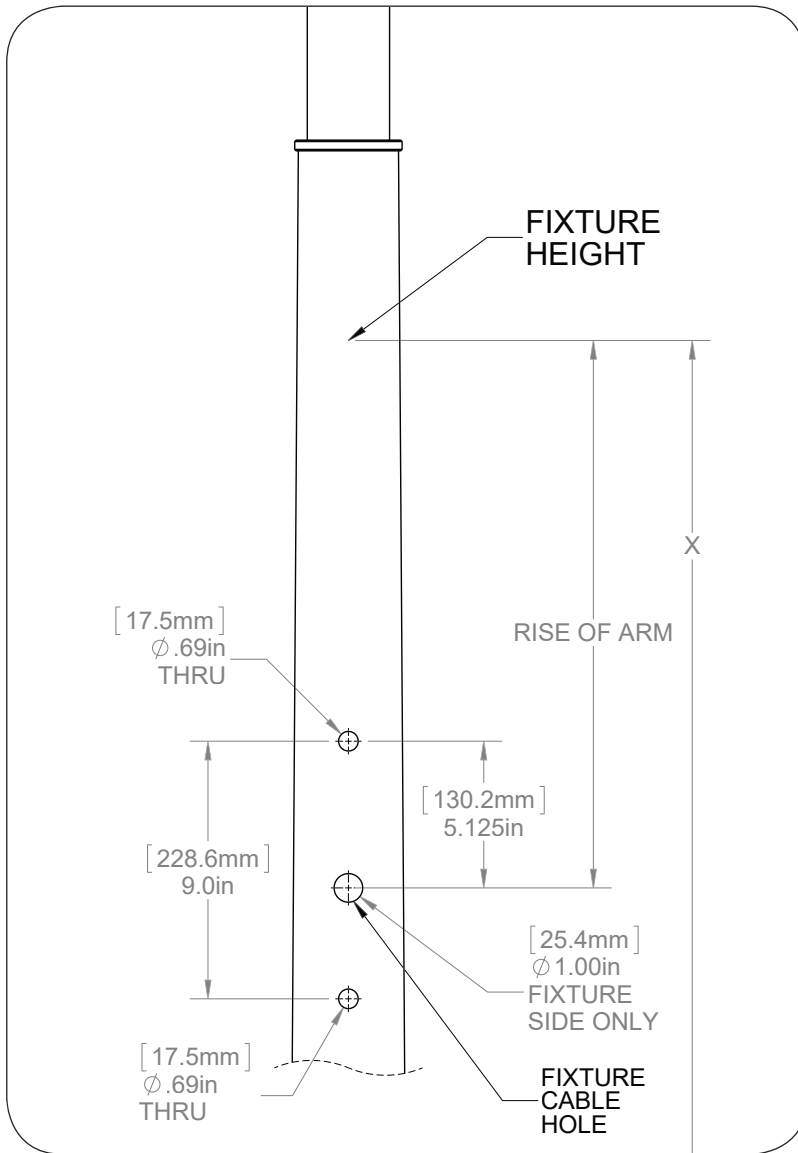
FIXTURE
HEIGHT

X

$\left[17.5mm \right]$
$\varnothing$ .69in
THRU

RISE OF ARM

$\left[130.2mm \right]$
5.125in

$\left[228.6mm \right]$
9.0in

$\left[25.4mm \right]$
$\varnothing$ 1.00in
FIXTURE
SIDE ONLY

$\left[17.5mm \right]$
$\varnothing$ .69in
THRU

FIXTURE
CABLE
HOLE

4   Drill mounting holes through the pole.

5   Drill the fixture cable hole through the side of the pole that the arm will mount to as shown.
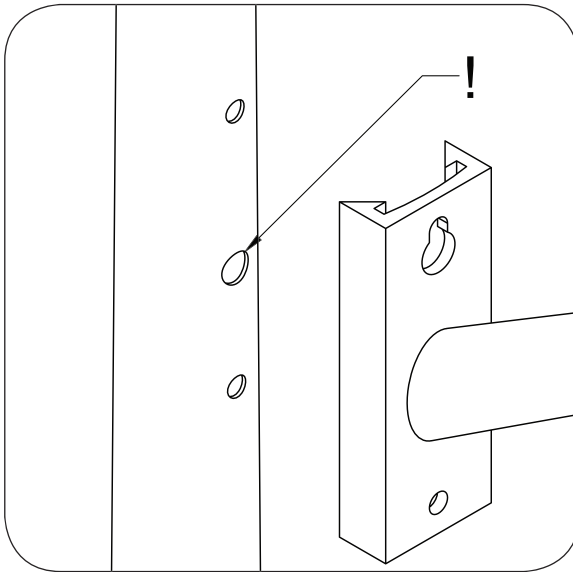
6   Be sure to break all sharp edges that will come into contact with the harness wiring.

7   Route fixture cable as shown and install Davit Arm accordingly.
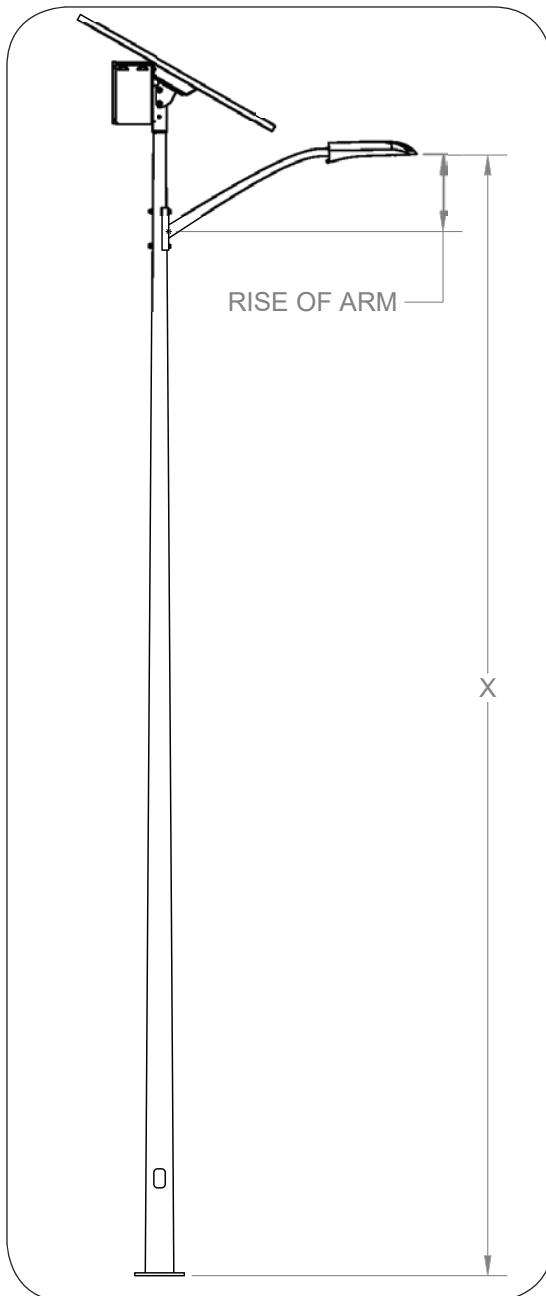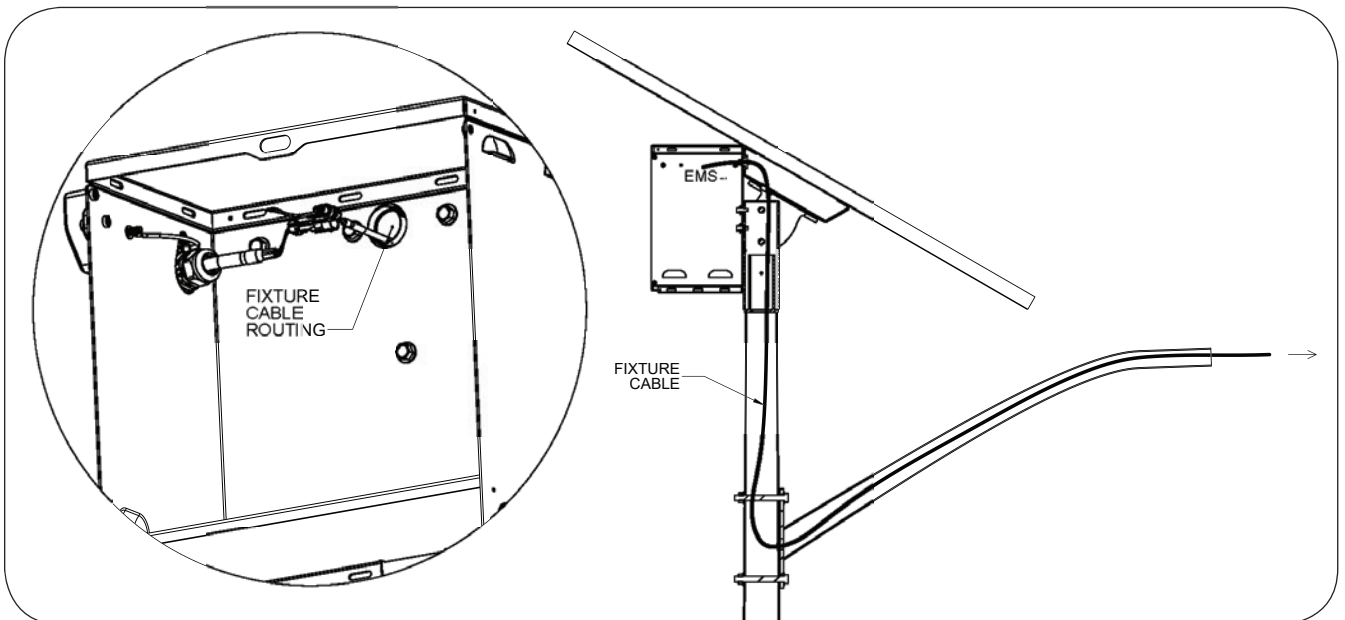

8   Torque Davit Arm fasteners to manufacturers specifications.

9   Install and wire fixture as per the related section in this manual.

7. Battery Installation

⚠️ **WARNING** **DO NOT INSTALL SYSTEM WITH BATTERIES IN BATTERY BOX.**

1   Once system is installed on pole, place battery(s) into battery box.

2   For systems with multiple batteries, install the battery with the main battery harness (that has a fuseholder) closest to the EMS. Connect the main battery harness connector to the EMS connector.

3   For systems with multiple batteries, install the other batteries into the battery box. Remove the protective cap(s) from the main battery harness and make the remaining battery connections.

4   Reinstall the fuse into the fuseholder on the main battery harness.

8. Final Assembly

1   Connect the solar panel connectors to the EMS harness connectors. There will be an audible "click" upon successful connection.

"CLICK"
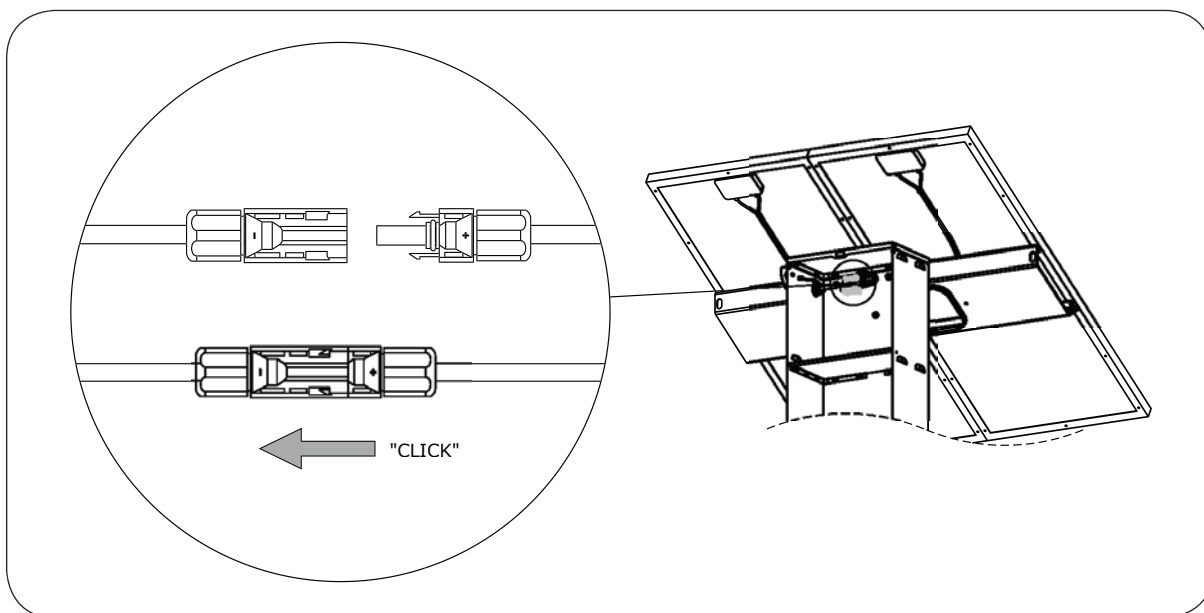
2   Replace battery box door. Reattach 1/4"-20 bolts and tighten to 6 ft-lbs (75 in-lbs.).

3   Activate the system using the "EverGen Setup App" on a compatible mobile device.

Wiring Diagram

One Panel System

SOLAR PANEL

SOLAR PANEL

EMS

BATTERY BOX

LIGHT FIXTURE

(+) POSITIVE (RED)
(-) NEGATIVE (BLACK)
GROUND (GREEN)

LIGHT FIXTURE

EMS

GROUND

FUSE

12V PARALLEL BATTERY CONFIGURATION

Two Panel System

SOLAR PANELS

SOLAR PANEL

EMS

BATTERY BOX

LIGHT FIXTURE

(+) POSITIVE (RED)
(-) NEGATIVE (BLACK)
GROUND (GREEN)

LIGHT FIXTURE

EMS

GROUND

FUSE

12V PARALLEL BATTERY CONFIGURATION
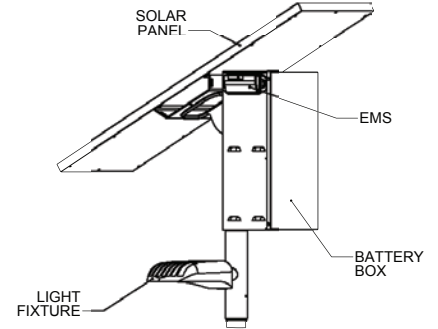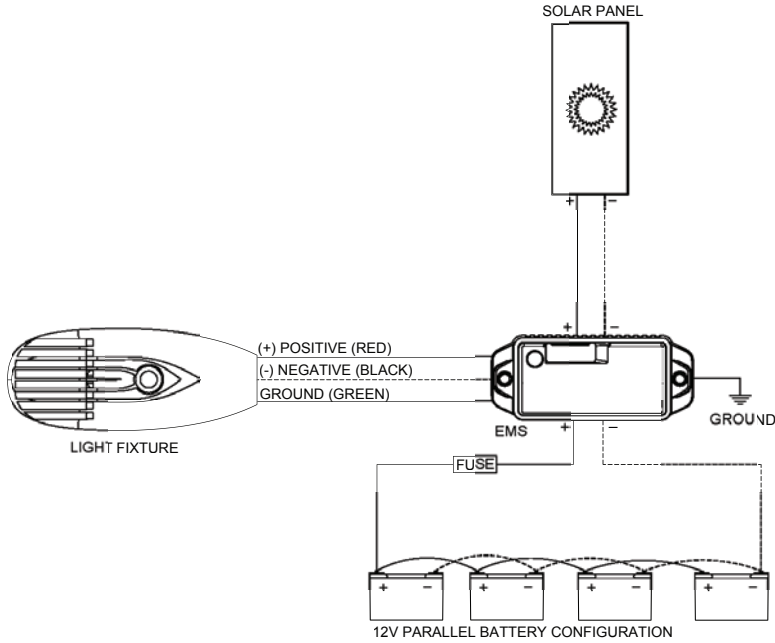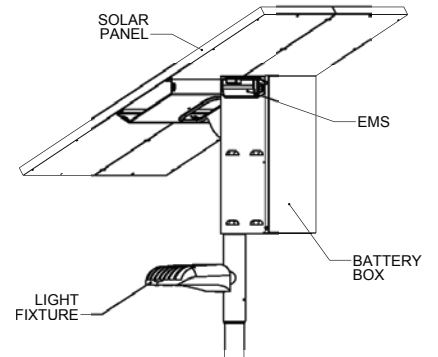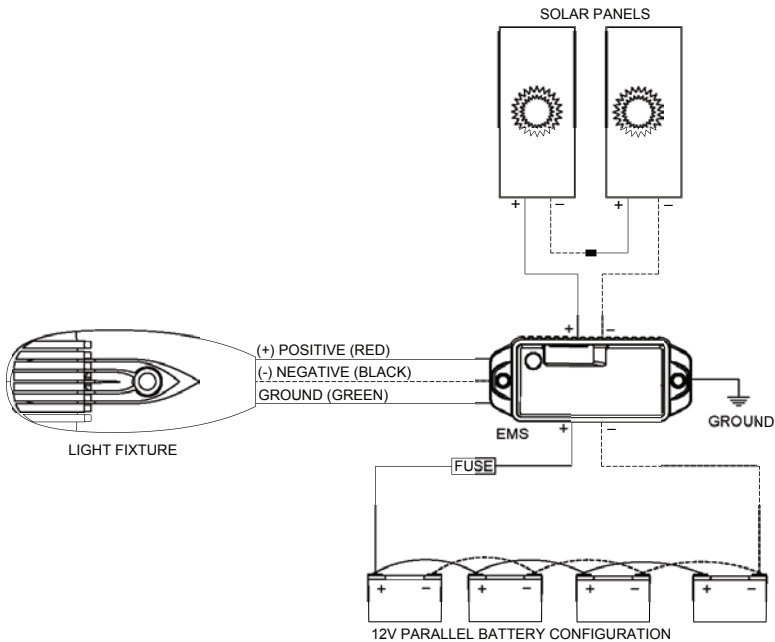
Maintenance & Product Care

The EverGen is designed to operate reliably for years with virtually no need for maintenance. Sol recommends routine inspections of the solar panels to ensure that they are unobstructed by anything that may prevent effective solar charging, including:

- dirt and dust
- snow
- leaves
- debris
- bird droppings
- shade that may have developed after installation due to adjacent plant growth

The frequency of the inspections depends on location and local weather patterns. A yearly visual inspection of the EverGen is typically sufficient. The EverGen is designed to be maintenance free, however maximum system performance will be achieved when the LED fixture lenses and solar panels are clean.

In areas with a highly corrosive environment, the application of dielectric grease on all metal electrical conducting components is critical to ensuring system performance. Please refer to the Sol Maintenance Guide for an outline of product maintenance in severe environments.

Fuse Replacement

A wiring fault during installation, commissioning or maintenance can sometimes cause the battery fuse to blow. Each EverGen is shipped with one extra battery fuse in a small bag tie-wrapped to the battery fuseholder.

To replace the fuse:

1. Disconnect the solar panel cables at the EverGen EMS.

2. Make sure you're not wearing any metal jewelry, or holding any tools or other conductive objects.

3. Check all wiring for any faults that may have caused the fuse to blow.

4. Pull the cover off the fuseholder that is located on the main battery harness and check the fuse.

5. Replace the blown fuse with the spare fuse supplied.

Troubleshooting

The EverGen App is able to perform basic troubleshooting, below are also some guidelines to resolve product performance issues.

Symptom	Circumstances	Possible Cause (solution)
Fixture won't turn on...	...at night time	Blown battery fuse (check wiring, replace battery fuse)
		Solar panel shaded, causing drained batteries & low-voltage disconnect (prune trees, move pole)
		Solar panel wiring problem caused drained batteries & low-voltage disconnect (check SOLAR PANEL wiring)
		Fixture wiring problem (check fixture wiring for short/open circuit)
Fixture turns off...	...in the middle of the night	EMS programmed to run for specific time after dusk. This may be correct operation. Please check with your Carmanah distributor.
		Solar panel shaded, causing drained batteries & low-voltage disconnect (prune trees, move pole)
Fixture turns on...	...during the day	Solar panel wiring open circuit causing system to think it is night. Check Solar panel wires & connectors.
Fixture dims...	...during the night	Solar panel shaded, causing drained batteries & low voltage disconnect (prune trees, move pole)

Warranty

This product is covered by the Sol warranty. Visit www.solarlighting.com for additional information or contact the customer service department.

Before contacting Sol's customer service department, please have the serial number of your system available, a brief description of the problem, as well as all details of the installation.

To contact Sol's customer service department:

Mail: Sol Inc.
2637 E Atlantic Blvd #40620
Pompano Beach, FL 33062, USA

Phone: 1.772.286.9461
1.800.959.1329 (Toll Free in U.S. and Canada)

Fax: 1.250.380.0062

Email: customerservice@carmanah.com

Website: solarlighting.com

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