www.wecaresolar.org
SC3-100 V3 Solar Suitcase

We Care Solar Suitcase® Installation Guide

REF-020 REV C

WE CARE SOLAR

We Care Solar® promotes safe motherhood and reduces maternal mortality in energy poor regions by providing healthcare workers with reliable lighting, mobile communication, and medical devices using solar electricity.

The We Care Solar Suitcase® provides highly efficient solar energy systems to health facilities in areas without reliable electricity. Our durable, easy-to-use Solar Suitcases power medical lighting, mobile communication, and essential medical devices.

Inside This Guide

Installation Planning

Before Installation Day

Identify installation team
2-3 technicians + 1 driver

Location planning
Call the clinic at least one day in advance

- Ensure the in-charge and midwives will be present on installation day
- Check if the facility still needs a Solar Suitcase; it is possible the facility may have recently received alternate solar power or been connected to the grid

Prepare and load tools
Review preparation checklist

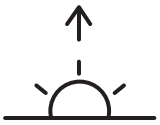
- When possible, bring an extra solar panel and Solar Suitcase for backup and teaching
- Bring food and water in case there is little available at the site

Preparation Checklist

	✓
1 **Solar Suitcase(s) + 1 extra** for teaching healthcare facility staff and as a backup	
2 **Solar Panel(s) + 1 extra** in case of breakage	
3 **Toolkit including drills and ladder** Make sure the drill batteries are charged and you bring the charger	
4 **Mobile device already logged into Taroworks and synced** and/or printed forms if applicable	
5 **Camera/mobile device for taking photos at installation**	

Installation Planning

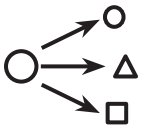
Installation Day



Leave early
Avoid working in the hot afternoon sun. Leave time for unexpected delays.

Arrive and introduce yourselves to the person in charge of the clinic
Take a tour of the clinic with the medical team

Plan the installation
Ask healthcare workers to show you where they do procedures to determine the best place to install the lights and Solar Suitcase



Organize team
Assign responsibilities to roof lead, ground lead, and teaching lead

Complete installation
Review installation checklist for solar panel, Solar Suitcase, lights, and last steps

After Installation

Teach healthcare workers
Train healthcare staff on how to use and maintain the Solar Suitcase

Complete paperwork
Please take the time to fill in the Suitcase sticker and complete the necessary forms

Review final installation checklist
Checklists reduce errors – use them!

Clean up the site
Take away debris and re-organize any furniture moved

Take photos
Take photos of installation. Show us your good work!

Depart prior to dark
Re-organize tools and load vehicle

Installation Overview

Map the Installation

Ask the healthcare worker to show you where they do procedures to determine the best locations to install the lights and Solar Suitcase. Involving the healthcare staff on decision making creates a feeling of ownership and ensures the components are installed where the staff need them.

You will need to be able to answer ALL of the following questions to successfully "map" or plan your installation, and you must do so before you begin the installation. Refer to **Page 7** for exact cable lengths and refer to the mentioned pages for important considerations about each component:

Where will all four **lights** be installed? **Page 29**

Where will the **expansion box** be mounted? **Page 33**

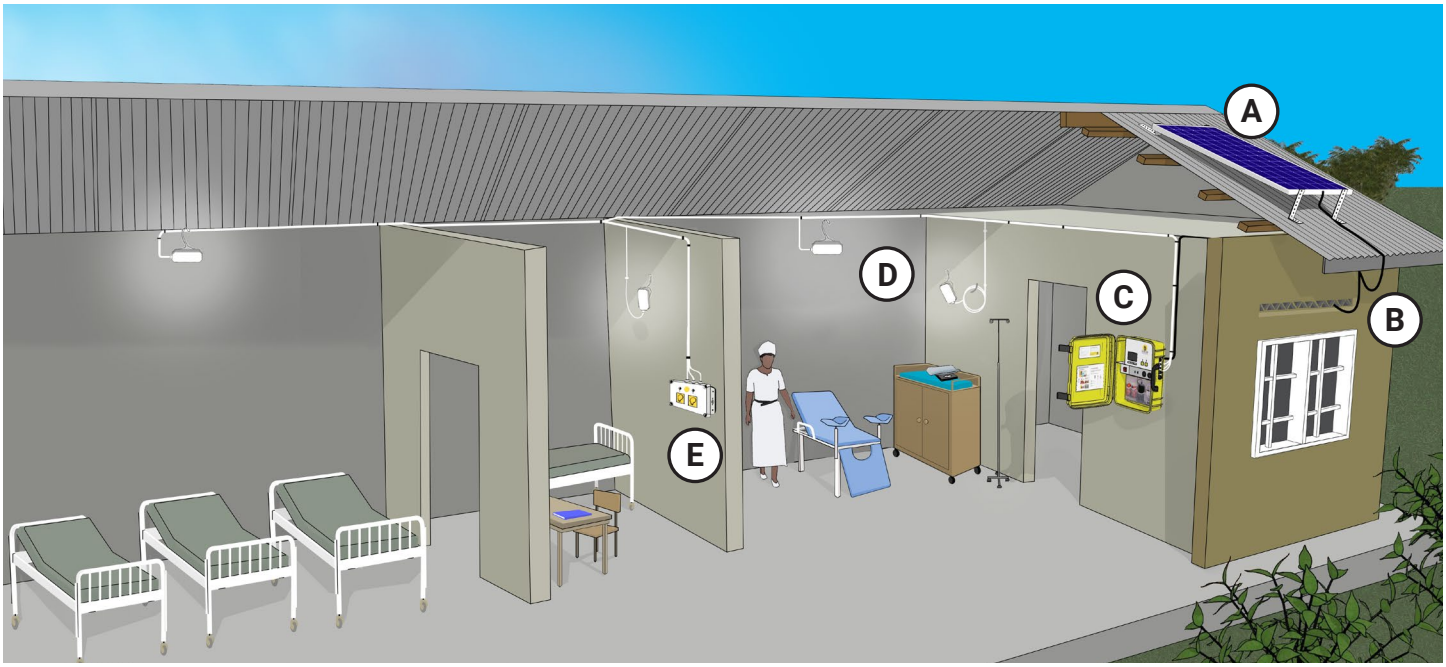
Where will the **solar panel** be mounted? **Pages 9** and **11**

How will the **homerun cable pass** from the roof into the building? **Page 13**

Where will the **Solar Suitcase** be mounted? **Page 23**

Before making a final decision where a component will be installed, ensure all cable lengths will be enough. You may need to choose a new location for the expansion box, shift the solar panel, or find a different location for the Solar Suitcase. Consult the healthcare worker for their final approval.

When making difficult decisions, the top priority is *lighting the main labor bed.*



A **The Solar Panel** must be installed where it will get sun all day long

B **The Homerun Cable** is **40 feet (12.2 meters)** and must reach from the solar panel to the Solar Suitcase

C **The Solar Suitcase** should be mounted in a secure and dry area of the facility and at a height where **all** healthcare workers can easily turn on lights and charge appliances

D **The Lights** must be placed where they are most needed at the facility. Talk with the midwife to determine the best location for each light. Light cables are **33 feet (10m)** in length.

Primary locations:

- Delivery bed
- Resuscitation table
- Pre or post delivery room

Secondary locations:

- Entrance
- Waiting area
- Hallway
- Office

E **Light Expansion Box** should be mounted in a convenient location such as the building entrance, hallway, or delivery room. The Light Expansion Box cable is **40 feet (12.2m)** in length.

Solar Panel Installation

Parts & Tools Required

From the Solar Suitcase

Homerun Cable

Cable Guard

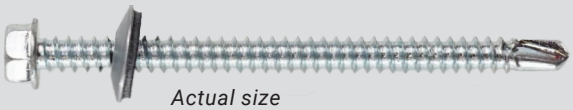
Marker

1/4" & 5/16” Nut Drivers

(4) L Brackets

Zip Ties

Silicone



Actual size

#12 x 3" Roof Screws

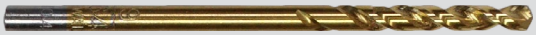
Actual size

#8 x 1-1/4"
Self-Tapping Screws

Actual size

1/4" Nuts
and Bolts

1/4“ Standard Drill Bit *Actual size*



1/8” Standard Drill Bit *Actual size*

Electrical
Tape

From the Large Tool Bag

Cordless Drill Driver

Wire Stripper

Wrench

Safety Glasses

Slip Joint Plier

Screw Driver

Spirit Level

Inclinometer

Step Drill Bit

Tape Measure

Hammer

Hacksaw

Safety First

Look
Identify any potential dangers. This includes power lines, skylights, wasps, bats, holes in the roof, or rusty spots on the roof.

Plan
Work safely — make a plan with your team on how to work safely and communicate with your team

Be Aware

Do not touch electricity lines with your body or ladder

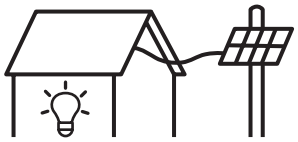
Do not walk near or over skylights

Avoid wasp nests, attics with bats or rodents. They may harm you during installation and can also eat through cables.

If roof is too steep or too weak for you to work on safely you can:

- Mount the solar panel on the eave of the roof while standing on the ladder. We do NOT want you to risk getting hurt.

- Mount the solar panel on a post or build a structure near the clinic to mount the solar panel and then route the homerun cable into the clinic



Ladder Safety

- When you use a ladder, be careful and make sure it is stable before you climb
- When standing at the base of the ladder, your outstretched arms should be able to reach the ladder

- Only one person should be on the ladder at a time
- Climb with your eyes facing the ladder
- Have someone hold the ladder
- When getting off the ladder onto the roof, step around the ladder and not over the top of the ladder

Using the Drill

Torque Adjustment Ring
(Screw drive mode only)

When attaching screws in screw drive mode, use lower number settings. This prevents the screw from going too far into the wall.

Increase as needed to drive the screw to the correct depth.

Speed

Use speed #1 (slow) for attaching screws and for drilling into concrete

Use speed #2 (fast) and light pressure for drilling the solar panel frames, walls and ceilings

Make sure to point the drill straight

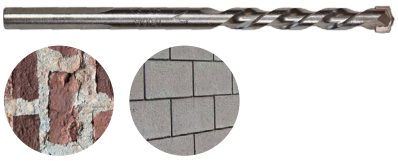
Quick Mode Adjustment

Chuck Adjustment

Unlock

Lock

T : Hammer mode for masonry and concrete



Trigger

: Screw drive mode for attaching screws

Rechargeable Battery

Direction Mode

Forward/Lock /Reverse

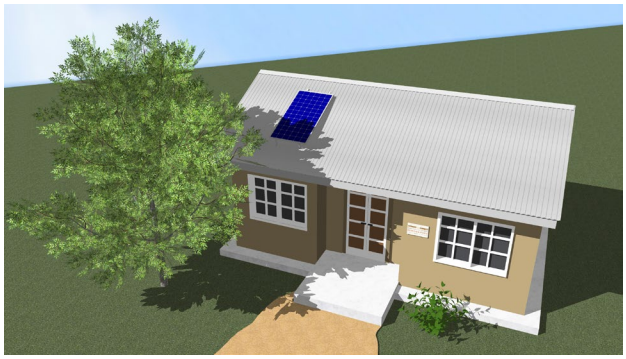
Drill mode for drilling holes

Wear safety glasses when you are drilling

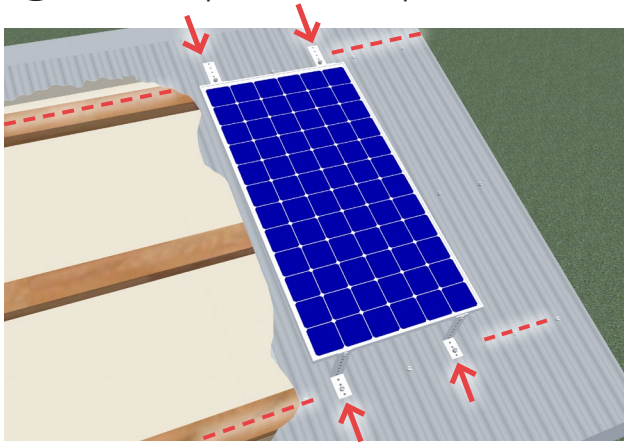
Where to Place the Solar Panel

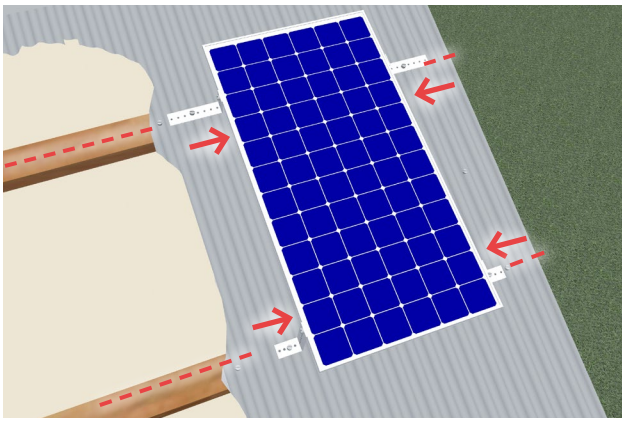
The solar panel must be placed where it will receive the most direct sun all day long

Do not place the solar panel where it will be shaded by a tree or another building

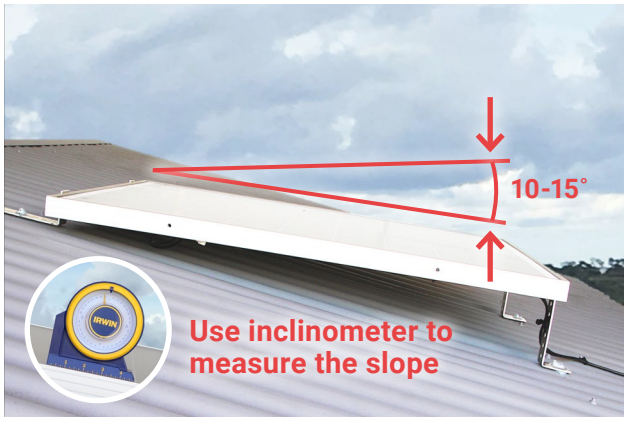


The L brackets can be attached to the top and bottom of the solar panel or the sides of the solar panel. The solar panel must be mounted to the wood frame to the roof below.

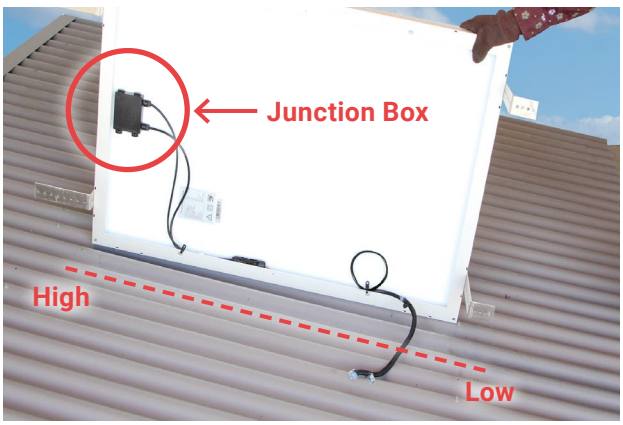




The solar panel must be mounted on a slope of 10 to 15 degrees from horizon to allow for rain to run off

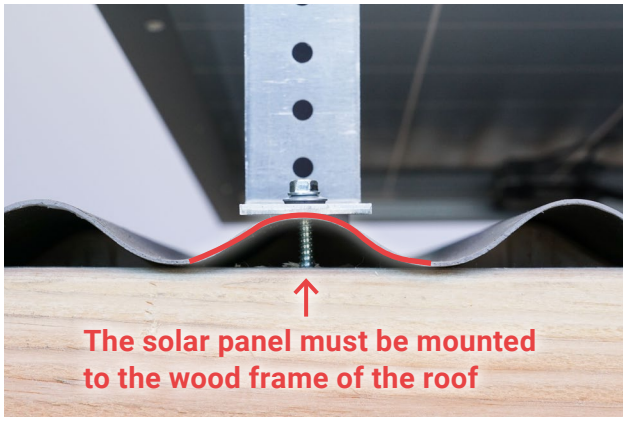


Install the junction box close to the ridge/high part of the roof

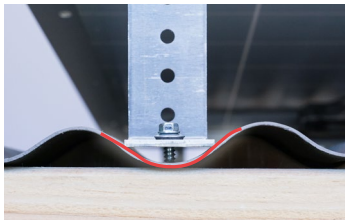


Important Considerations for Quality Installations

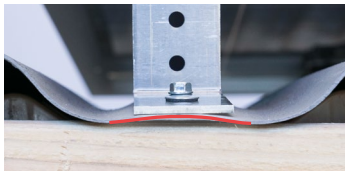
All roof penetrations must be done at the top of the corrugated ridge. The solar panel L brackets must attach to the wood frame of the roof.



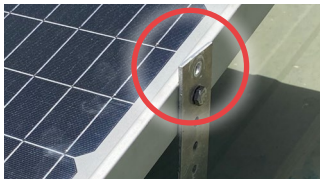
Do not make penetrations at the bottom of the corrugated ridge



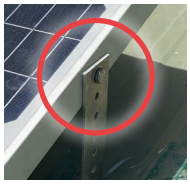
Do not bend or crush the corrugated ridge



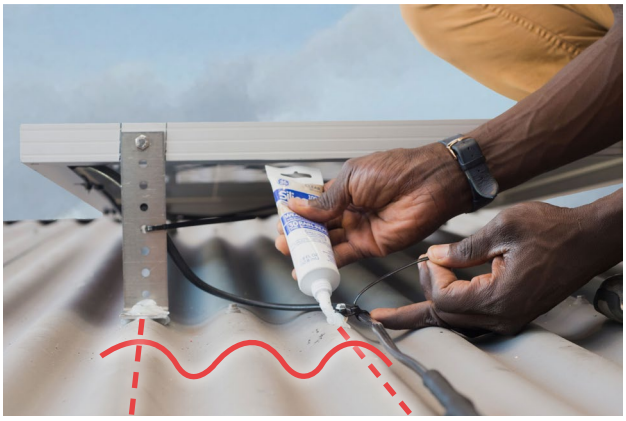
Do not allow L brackets to stick above the solar panel.



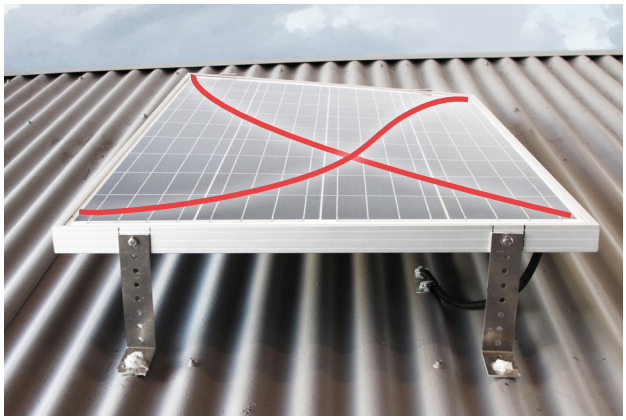
Cut off excess L bracket with hacksaw



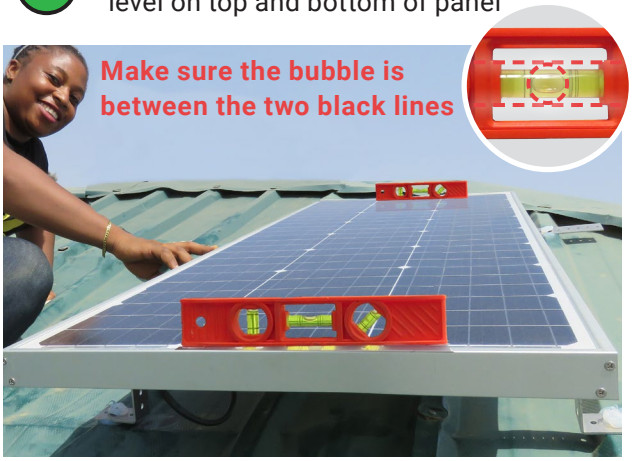
All penetrations must be sealed with silicone



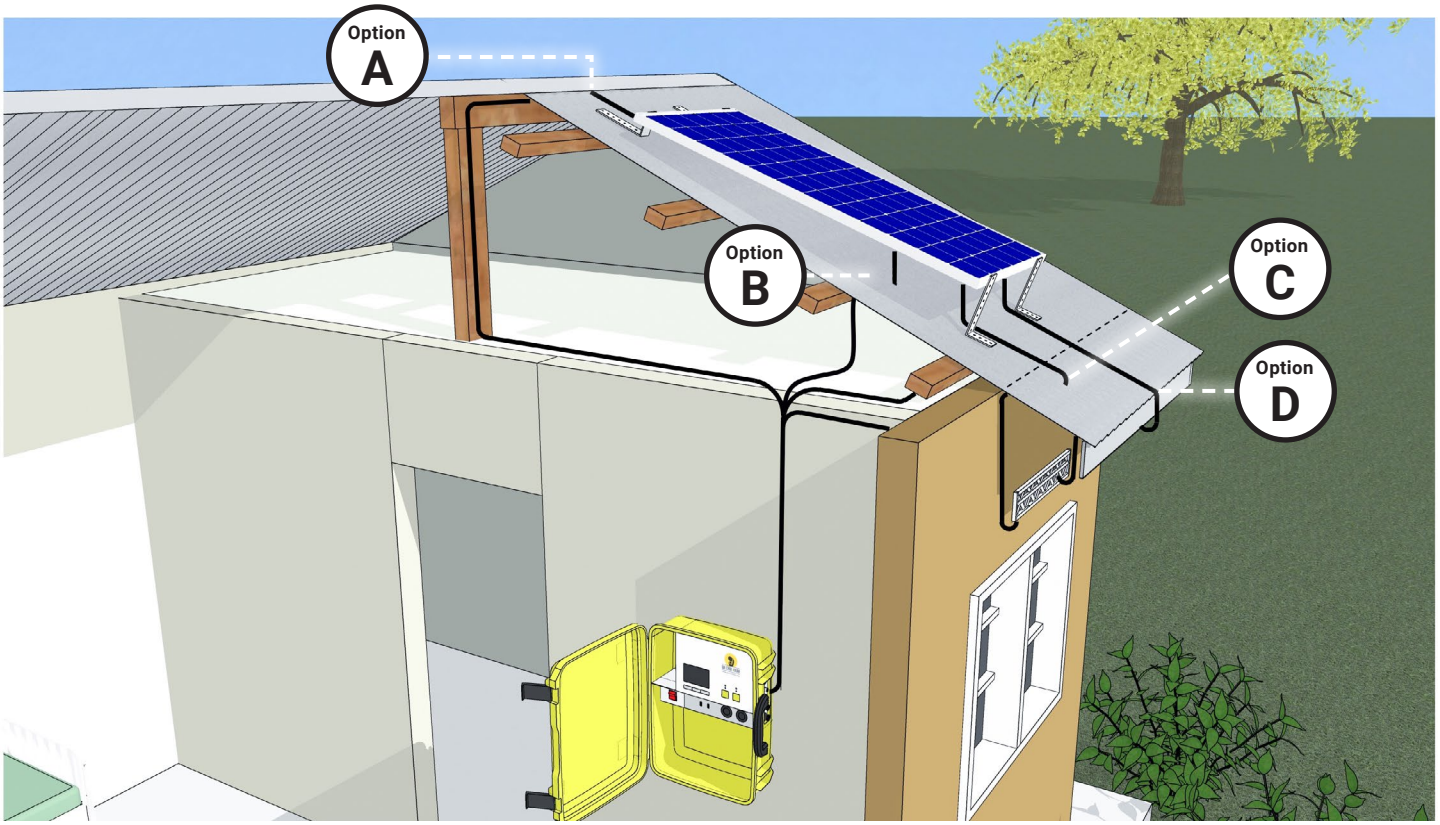
The solar panel should not be stressed, warped, or twisted when mounted to the roof



Verify the solar panel is level with a spirit level on top and bottom of panel



How to Run the Homerun Cable



Option A **Under the ridge vent**

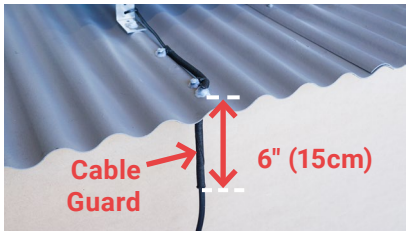
Option B **Through the roof**

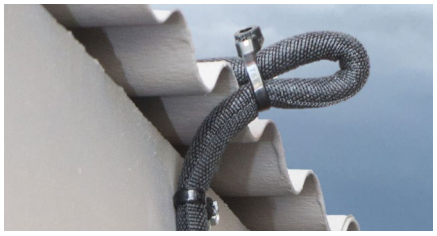
Option C **Through the eave**

Option D **Over the edge**

! If needed, you can remove and reassemble the homerun cable connector to make it easier to run through the roof and walls. See P.16 for instructions.

! Always use the cable guard where the homerun cable goes through the roof or around the edge of the roof. The cable guard should extend at least 6" inches (15cm) through the roof panel.

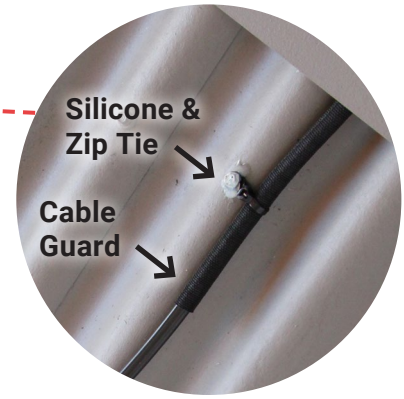




Homerun Cable Options

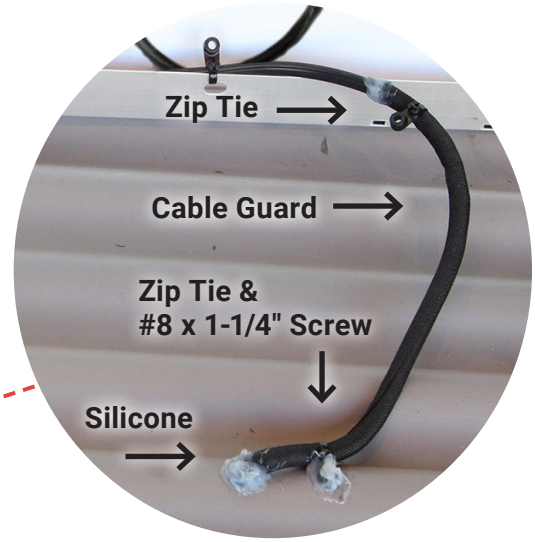
Option A

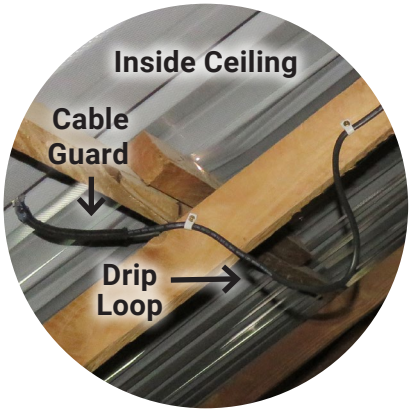
Under the ridge vent



Option B

Through the roof



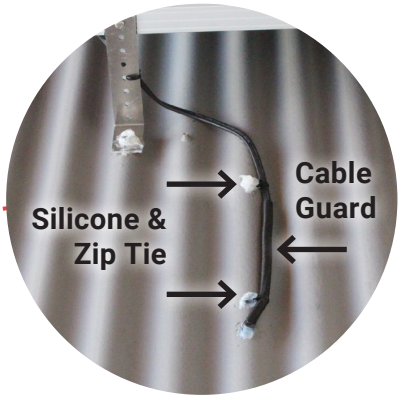


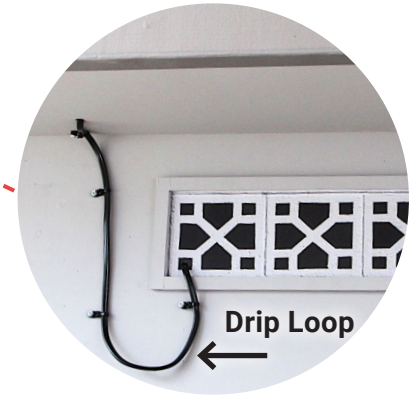
See P.41 for details on managing the ceiling cables

Homerun Cable Options

Option C

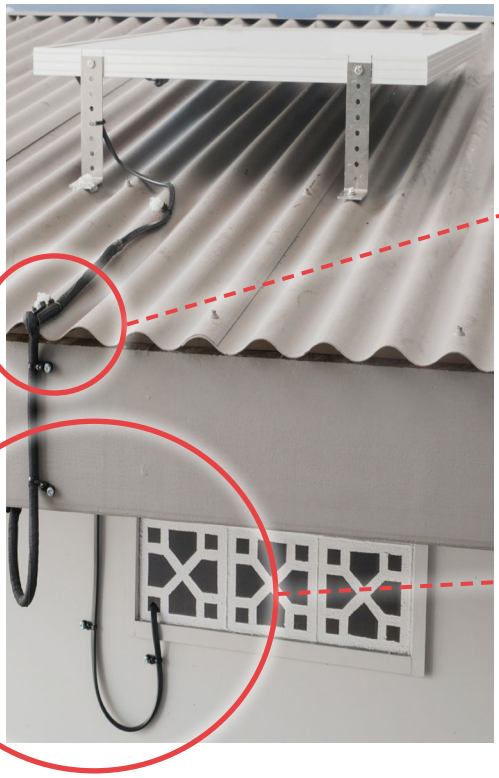
Through the eave

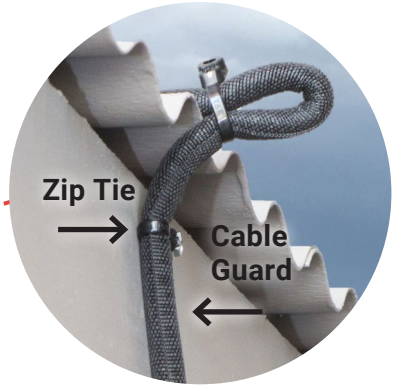


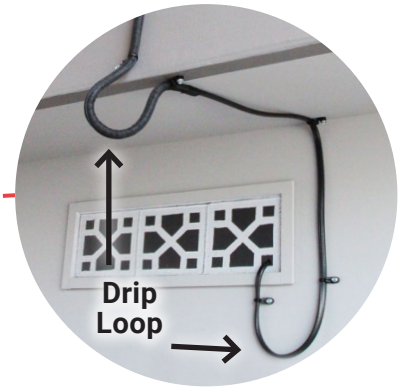


Option D

Over the edge







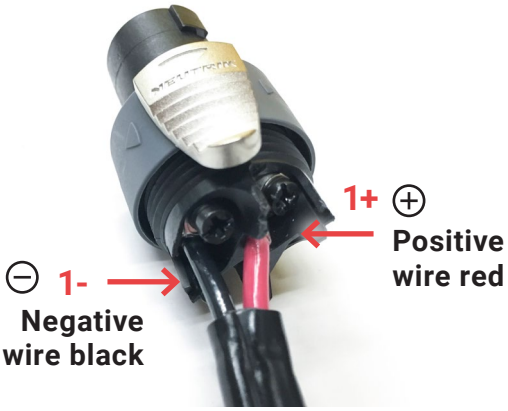
! Make a "Drip Loop" in the cable to allow water to drip off the cable, preventing the water from entering the health facility and Solar Suitcase

How to Remove and Reassemble the Homerun Cable Connector

This will make it easier to run the homerun cable through the roof and walls

1. Twist blue shroud to disassemble

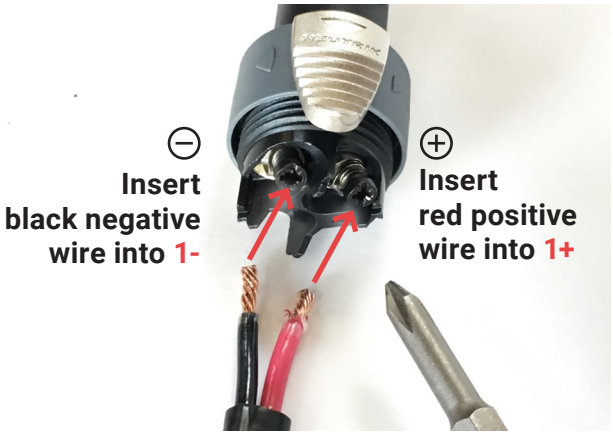
2. Loosen the terminals



3. Leave screws attached to the connector

4. To run the homerun cable through the roof and walls, tape each wire individually and then tape the two wires together

5. To rewire the connector, tighten screws firmly onto wire. When finished, you should not be able to pull the wires from the connector.



6. Twist the blue shroud firmly to complete assembly

Solar Panel Installation Steps

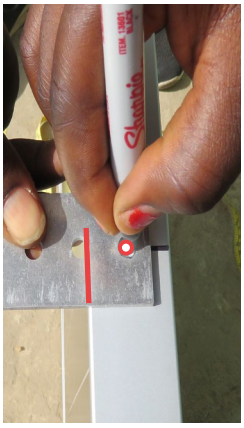
The slope and quality of rooftops vary from location to location. It is up to the installer to decide the safest and most efficient installation method. We demonstrate two options for getting the measurement of where to attach the L brackets. Option 1 can work on all rooftops, while Option 2 is only safe on roofs with a low slope angle.
Option 1: Take measurements with measuring tape on the roof, mark and drill the panel on the ground.
Option 2: Use the panel and L brackets to measure directly on the roof, and drill the panel on the roof.

Option 1

1. Measure the length and width of the solar panel on the ground. On the roof, measure from beam to beam on both sides of where the solar panel will be attached.

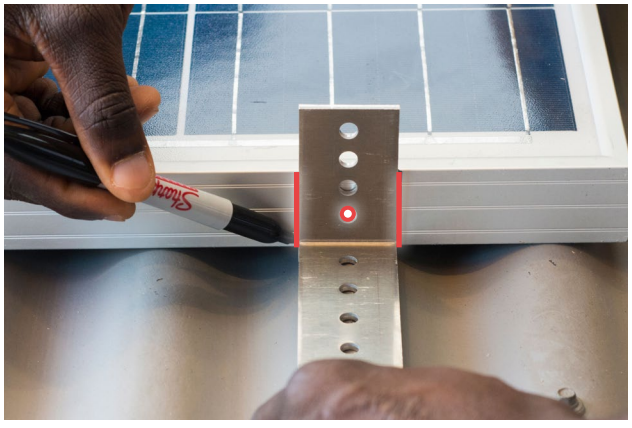
! Walk where you see the rows of nails

2. Mark on the solar panel where you will attach the L brackets. Use an L bracket to measure for consistent hole placement.



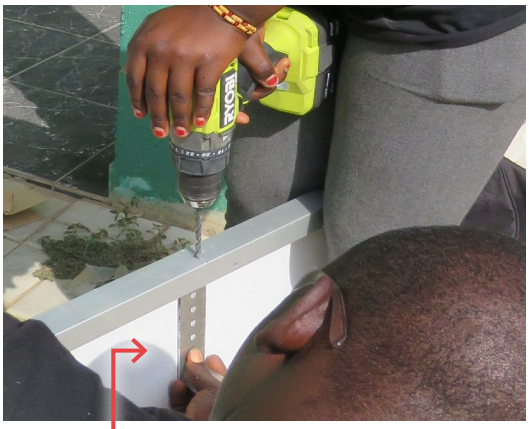
Option 2

1. Take the solar panel, installation hardware, and tools up on the roof. Align the panel where you will attach the L brackets.



Solar Panel Installation Steps

3 Using speed #2, drill 1/4" holes in the frame of the solar panel where the L brackets will be attached. Drill an extra hole on the panel where you will secure the homerun cable.

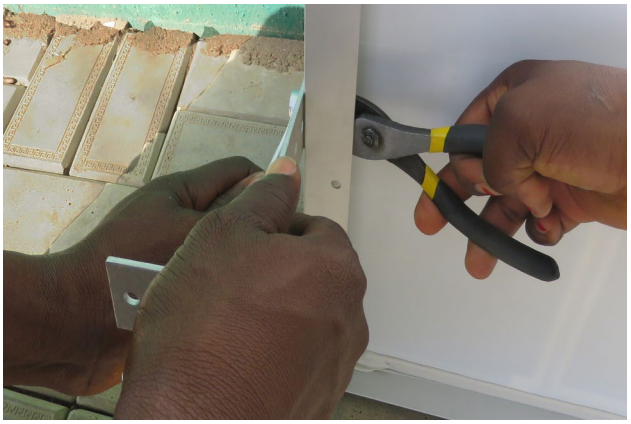


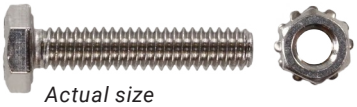
! **Use one of the L brackets to protect the solar panel**

! **Extra hole for securing homerun cable**

1/4“ Standard Drill Bit *Actual size*

4 Attach all four L brackets to the solar panel using 1/4" bolts and locking nuts.



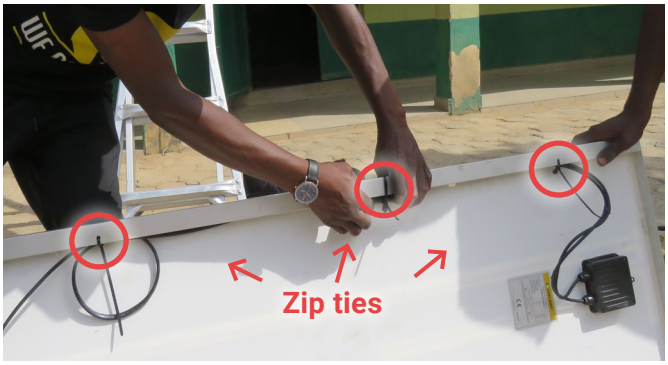


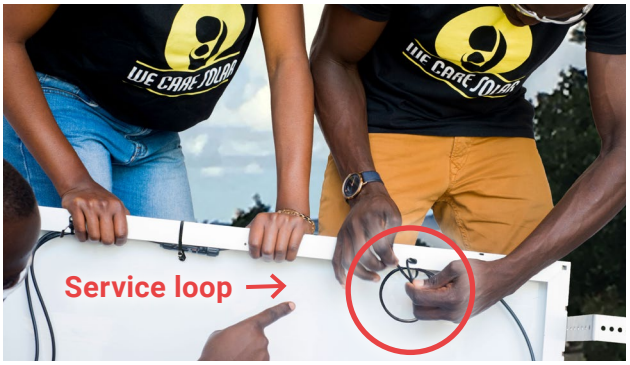
Actual size

1/4" Bolt
and Locking Nut

Solar Panel Installation Steps

5 Manage the homerun cable: Remove the homerun cable connector, connect the homerun cable to the solar panel, fasten the solar panel connectors and the homerun cable to the frame with zip ties, and make a small service loop (for future maintenance purposes). This is called strain relief and will prevent pull on the delicate parts of the panel.





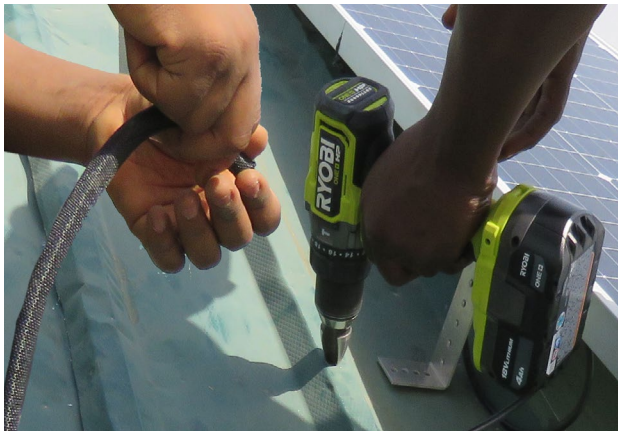
! See P.16 for details on removing homerun cable connector

6 If you followed Option 1, take the solar panel, installation hardware and all the tools you will need on to the roof.

! **If the roof is too steep to stand on, you can install from a ladder**

7 If you will be passing the homerun cable through the ceiling, using the step bit, underneath where you will attach the solar panel, make an appropriate-size hole for the homerun cable with cable guard to pass through.

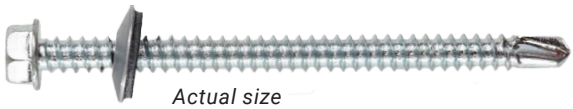
Attach an additional screw and ziptie near the homerun cable entrance to prevent it from moving.



! See P.13 for details on securing cable guard
See P.41 for details on cable management inside the ceiling

Solar Panel Installation Steps

8 Using drill speed #1, use #12 X 3" screws with rubber washer to mount the L brackets to the roof and drill the screws down 50% of the way. If necessary, use the 1/8" standard drill bit to make a pilot hole before attaching roof screws.



Actual size

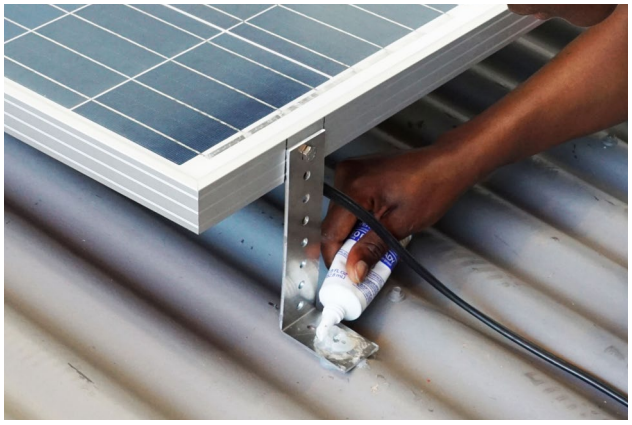
#12 x 3" Roof Screws with Rubber Washer

1/8” Standard Drill Bit *Actual size*

9 Use silicone to seal the area below the L brackets around the screw penetrating through the roof.

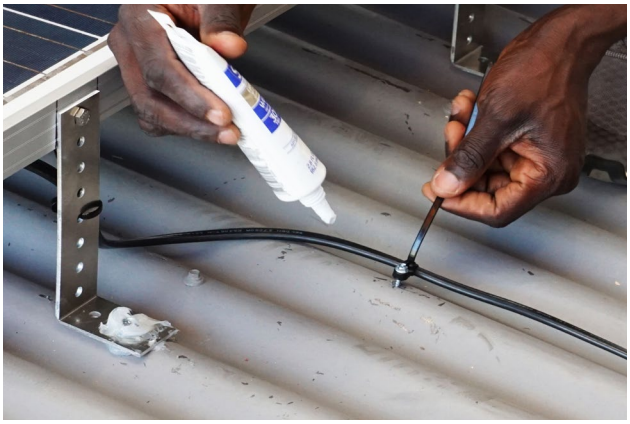
10 Using speed #1, drill the screws down so that the solar panel is firmly attached to the roof but not so tight that it flattens the metal corrugations of the roof.

11 Use silicone to seal the area on top of the L brackets.



Solar Panel Installation Steps

12 If you are NOT passing the cable through the roof underneath the panel (options A, C, or D on P. 13), secure the homerun cable to one of the L brackets and to the roof. Use silicone to seal all holes.



13 Attach the cable guard where homerun cable goes over the edge of the roof or through the roof. Secure the cable guard with zip ties & silicone.

! **Make a Drip Loop to prevent water from entering into the Solar Suitcase**

! See P.13-15 for details on securing cable guard

14 Great job! Remember to do the Solar Panel Installation Checklist.

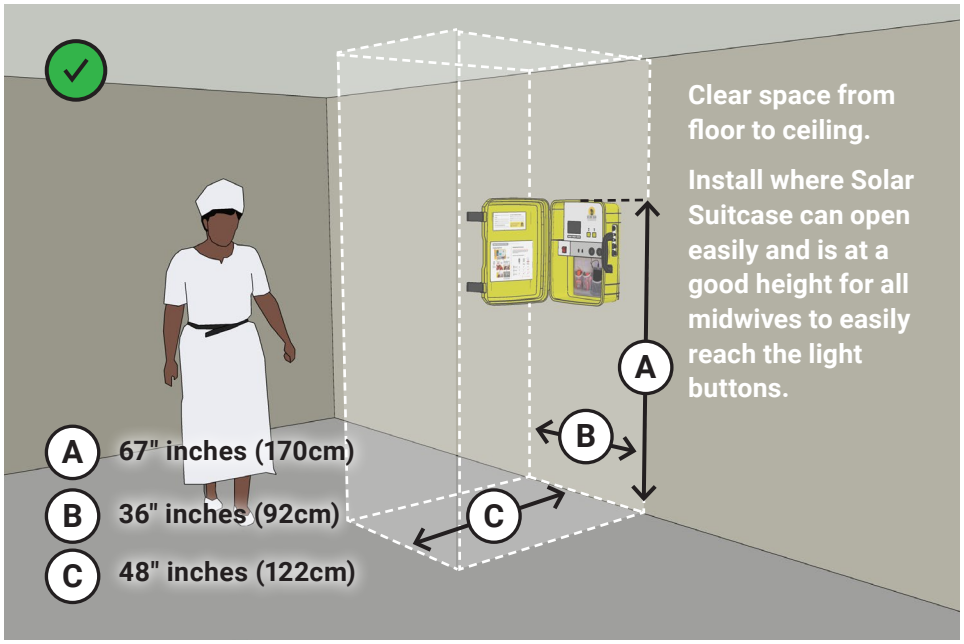
Solar Panel Installation Checklist

		✓
1	Solar panels will not be shaded at any time of the day	
2	Solar panels are firmly attached to roof beams at peak of the corrugation	
3	Solar panels are installed at a 10 to 15° angle; they should not be flat	
4	Solar panel frame is straight, not warped, or twisted	
5	Homerun cable is wrapped with cable guard for extra protection where it might be damaged such as sharp edges and doorways	
6	Homerun cable has a drip loop immediately before entering building or room	
7	All roof holes are sealed with silicone	
8	Cables on the back of the solar panel have a service loop and strain relief	
9	Ends of L brackets are not sticking up above the panel	

Solar Suitcase Installation

Where to Place the Solar Suitcase

Before you install the Solar Suitcase, you need to make sure you have a good location that meets the needs of the healthcare staff. **The Solar Suitcase powers the medical lights. The Solar Suitcase has important appliances that should be easily accessed and also stored properly.**



- Install the Solar Suitcase where the lights can reach the delivery room
- Consider how the homerun cable from the solar panel on the roof will reach the Solar Suitcase
- Install in a room that is easy to access and secure

Do not place the Solar Suitcase next to a cabinet

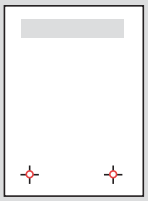
Do not place the Solar Suitcase over a patient bed

Do not place the Solar Suitcase over water

(!) The Solar Suitcase is designed to be attached to a strong wall. However, sometimes another solution is needed: If the wall is too soft and the wall crumbles when drilling, install the Solar Suitcase on a table to protect it from theft.

Parts & Tools Required

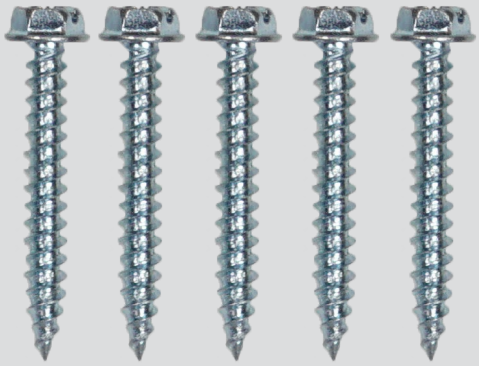
From the Solar Suitcase



Solar Suitcase Mounting Template

(2) Rubber Backed Washers

Bracket with Level Indicator

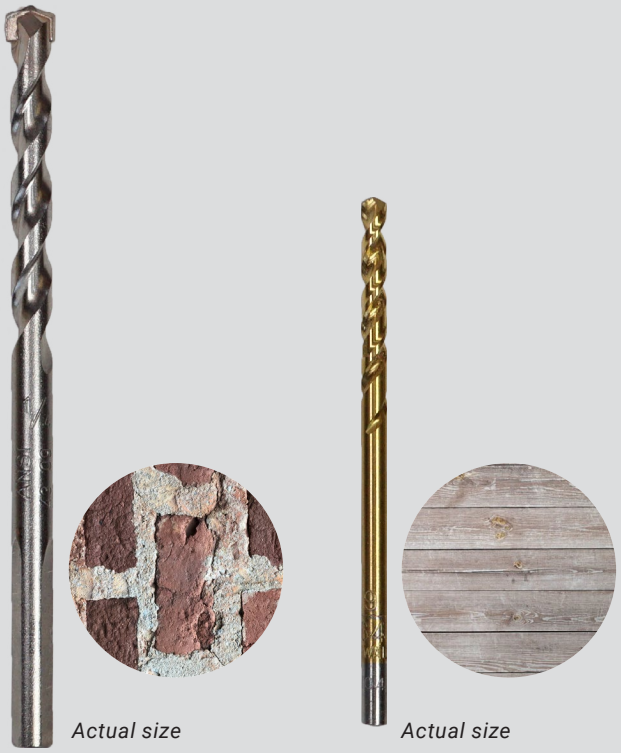


(5) #12 X 1-3/4" Self-Tapping Screws

Actual size

(5) Plastic Anchors

Actual size



Actual size *Actual size* *Actual size*

1/4“ Masonry Drill Bit for masonry or cement walls or 1/8” Standard Drill Bit for wood walls

5/16” Nut Driver

Marker

From the Large Tool Bag

Cordless Drill Driver

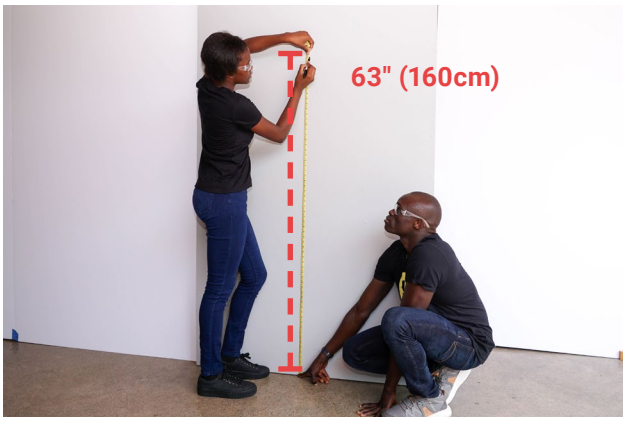
Safety Glasses

Tape Measure

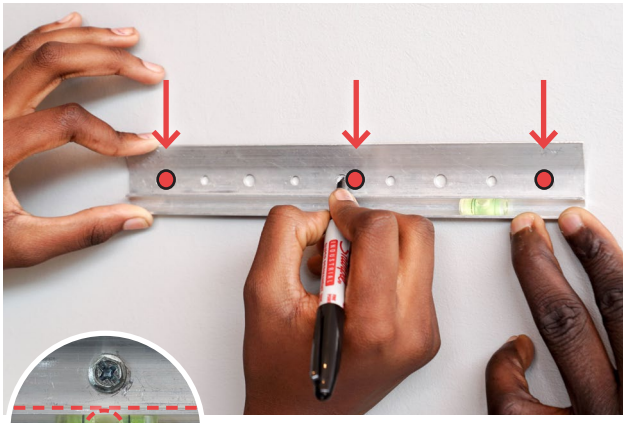
Hammer

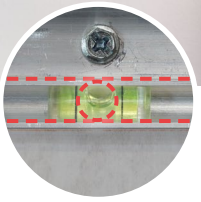
Solar Suitcase Installation Steps

1 Mark 63" inches (160cm) to floor



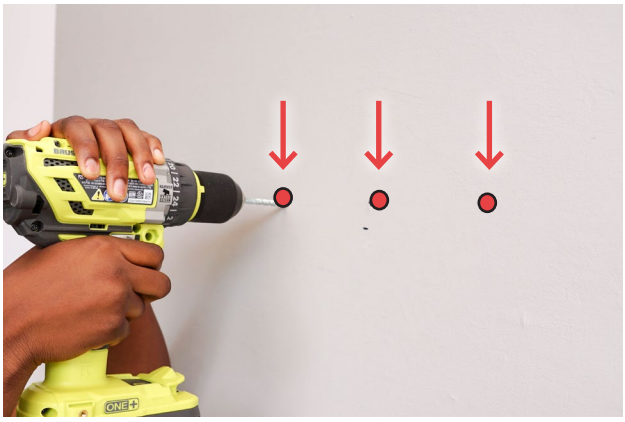
2 Place the level and make 3 marks to drill



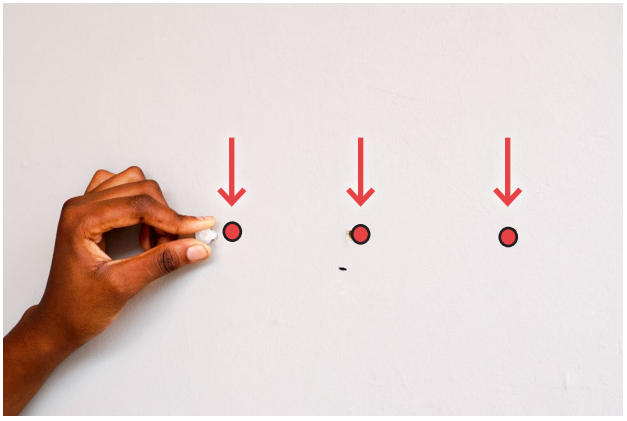


Make sure the bubble in the level indicator is between the two black lines

3 Drill 3 holes



4 Insert 3 plastic anchors



Actual size

1/4" Masonry Drill Bit for masonry or cement walls or 1/8" Standard Drill Bit for wood walls

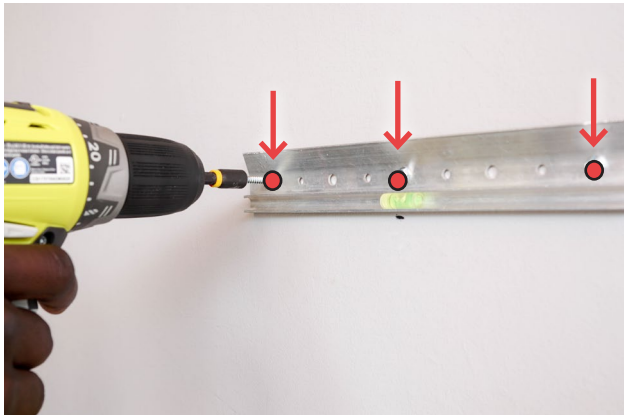
Plastic Anchors

Actual size

Use the hammer to tap the plastic anchors into the masonry/cement walls.

Solar Suitcase Installation Steps

5 Attach the bracket to the wall

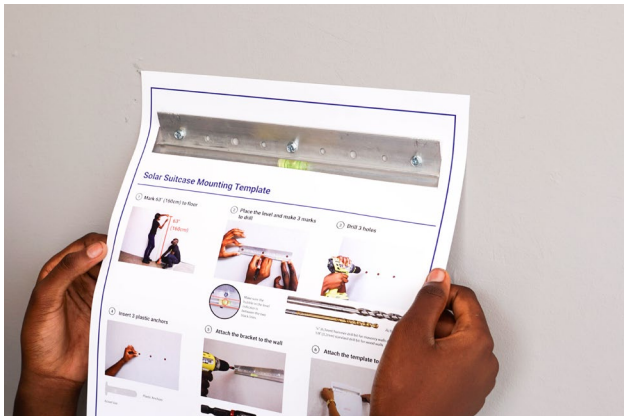


Actual size

#12 X 1-3/4"
Self-Tapping Screws

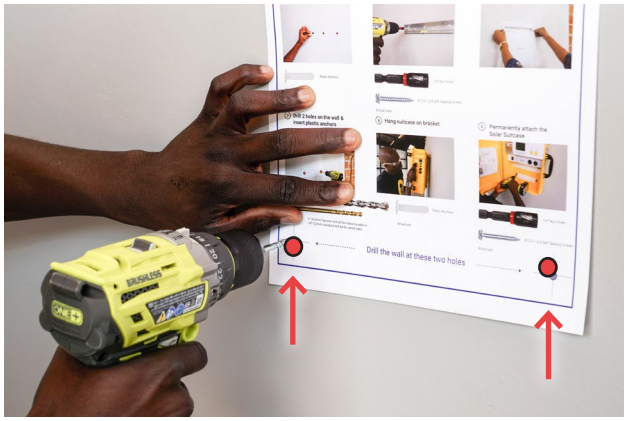
5/16” Nut Driver

6 Hang template on bracket



You may also use the Solar Suitcase to measure the bottom holes:
1) Hang the Solar Suitcase on the bracket
2) Mark the bottom two holes with a marker
3) Remove the Solar Suitcase
4) Continue with step 7, drilling where you have marked

7 Use template to drill 2 holes in the wall and insert plastic anchors



Actual size

1/4" Masonry Drill Bit for masonry or cement walls or 1/8” Standard Drill Bit for wood walls

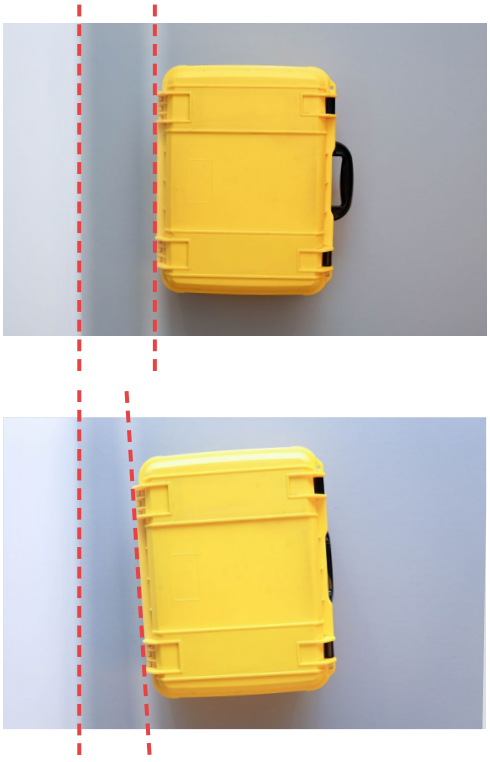
Plastic Anchors

Actual size

Solar Suitcase Installation Steps

8 Hang the Solar Suitcase on bracket

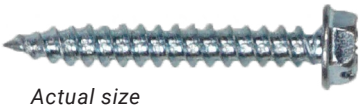
Make sure the Solar Suitcase is firmly attached on the bracket and level



9 Permanently attach the Solar Suitcase. The Solar Suitcase comes with 2 holes for installation.

5/16" Nut Driver

Rubber Backed Washer



Actual size

#12 X 1-3/4" Self-Tapping Screws

Actual size

Attach Rubber Backed Washer to #12 X 1-3/4" Self-Tapping Screws

10 Review Solar Suitcase Installation Checklist

Solar Suitcase Installation Checklist

		✓
1	Midwives can easily reach and see the display screen on the Solar Suitcase	
2	The Solar Suitcase is firmly attached to the wall. If you pull on it, it does not move.	
3	The Solar Suitcase is straight and not crooked on the wall	
4	Large (#12) screws (without washers) used to attach bracket to wall and large (#12) screws (with washers) used to permanently attach Solar Suitcase to wall	

Lights Installation

Where to Place the Lights

To determine essential medical activities that need light, ask the midwife the following 3 questions:

1. **Where do you stand when conducting deliveries?**
2. **Where do you care for the baby after delivery?**
3. **Where does the mother rest after giving birth?**

Most essential locations for lighting:

Delivery bed

Resuscitation table

Pre or post delivery room for patient observation

Other locations to consider (only after the above three are lit):

- Nursing station
- Receiving room
- Any other rooms that are related to maternal and newborn care
- Hallway

Location Factors to Consider:

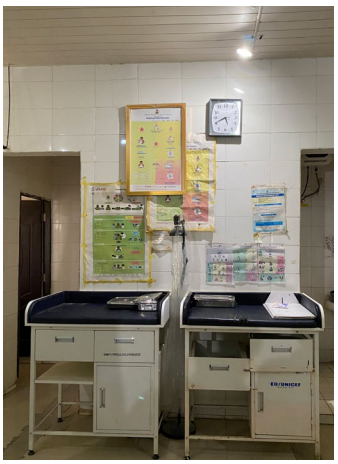
- Light gets dimmer with distance
  1. If you need a bright and focused light, place it directly in line with the area and as close as possible. You can make it a mobile light so it can be brought closer to procedure areas.
  2. If you are trying to illuminate a whole room, place the light in the center and as high as possible so the light reaches further
- Remember the cable length is 33 feet (10 meters) and the Light Expansion Box cable is 40 feet (12.2 meters)
- They may use more than one labor bed; ask about frequency of double delivery.
- Ask about their movements around the labor ward to understand where else they may need light and how the mobile light can move around the space.
- Make sure the location for the light buttons on the light expansion box are convenient for healthcare workers
- Place lights to avoid the shadows. Remember medical staff may create shadows where they work.

Lights Installation

Examples of Light Placement

Labor Room - Delivery bed and resuscitation table



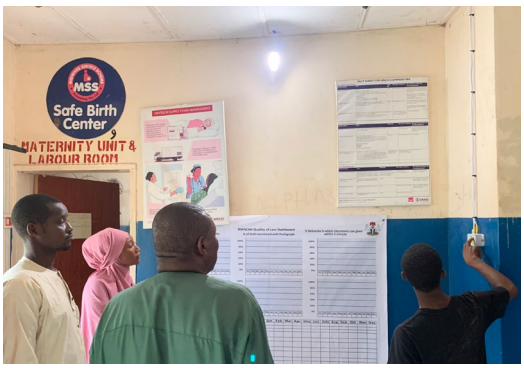
Postnatal and Prenatal Rooms


Other locations to consider

(only after delivery bed, resuscitation table, and pre or post delivery rooms are lit)

Nursing station

Sluice room / bathroom



Receiving / Waiting room / Hallway

Lights Installation

Parts & Tools Required

From the Solar Suitcase

Lights

Actual size

#8 x 1-1/4" Self-Tapping Screws

Actual size

#12 x 1-3/4" Self-Tapping Screws

Actual size

Plastic Anchors

Flex Clips

Light Expansion Box

1/4" & 5/16" Nut Drivers

Electrical Tape

Rubber Backed Washer

Actual size

Cable Guard

1/4“ Masonry Drill Bit for masonry or cement walls or 1/8” Standard Drill Bit for wood walls

Silicone

Zip Ties

Large & Small Hooks

From the Large Tool Bag

Cordless Drill Driver

Safety Glasses

Spirit Level

Tape Measure

Velcro

Screw Driver

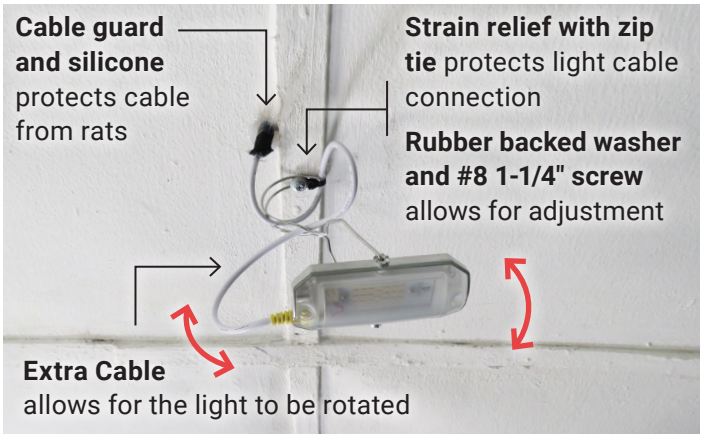
Hammer

How to Install the Lights

Lights can be fixed or mobile

Option 1

Fixed installation on a ceiling or wall

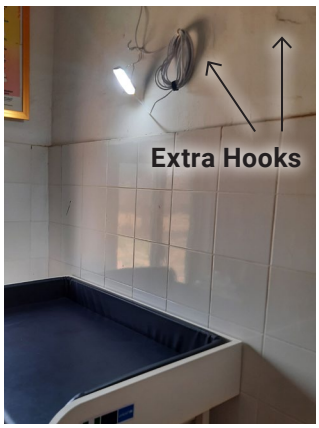


Light on a ceiling

Light on a wall

Option 2

Movable light attached to the wall



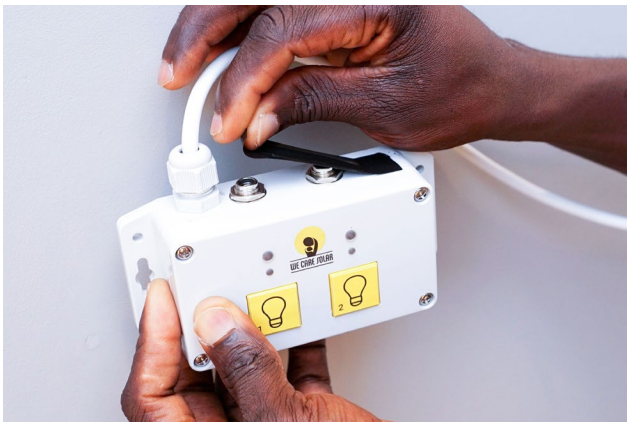
Option 3

Movable light hung on an IV pole or other fixture

How to Install the Light Expansion Box

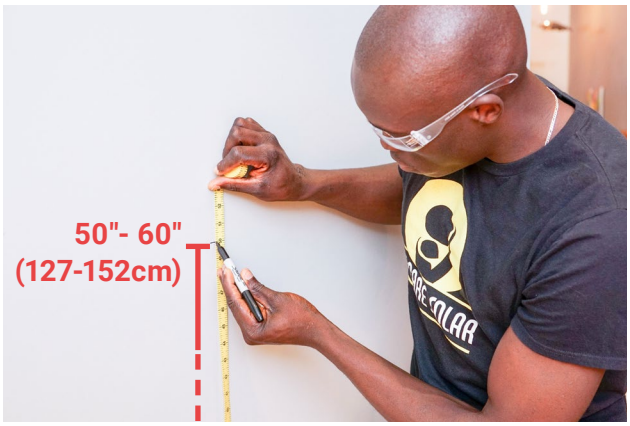
1. Work with the healthcare care staff to determine the best location for the light expansion box

2. Place tape over the light sockets to avoid dust from entering

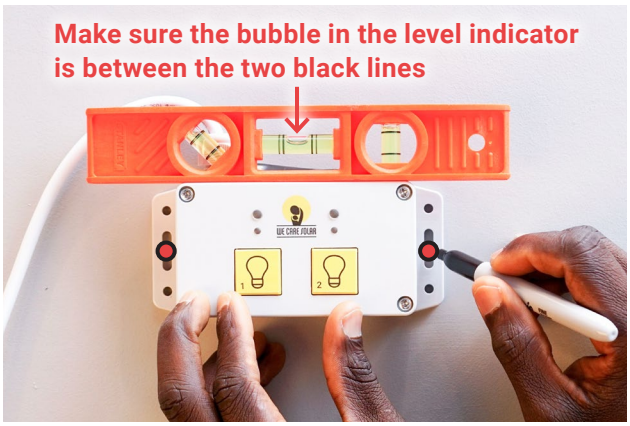


Electrical tape

3. Measure up 50"- 60" inches (127-152cm) from the floor and mark where to locate the top of the light expansion box. Install at a height preferred by the facility staff.

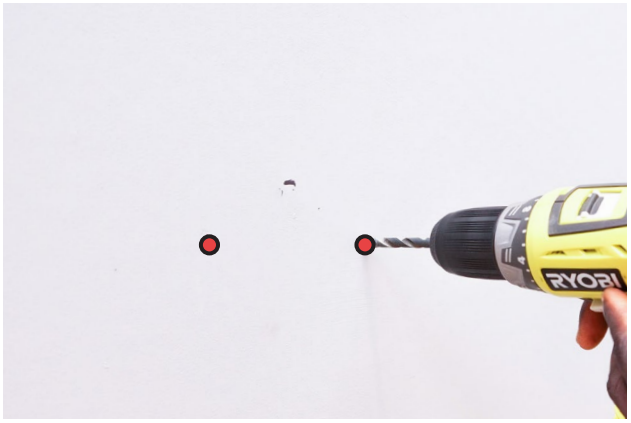


4. Make two marks on the wall where you will drill the holes

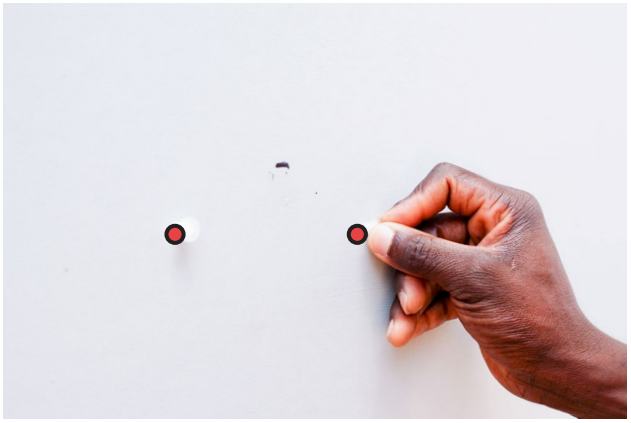


How to Install the Light Expansion Box

5 Drill the two holes where you made the mark



6 Insert plastic anchors



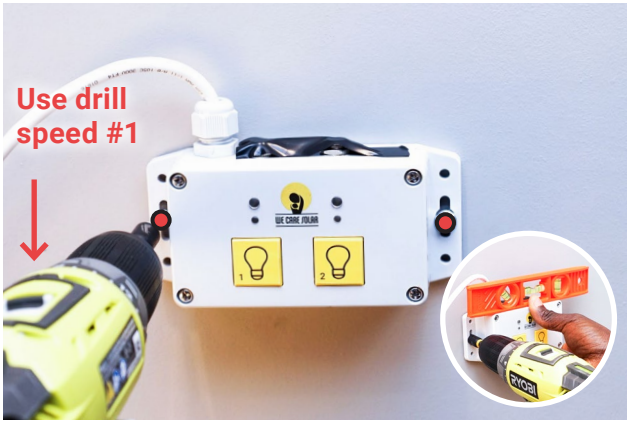
Actual size

1/4“ Masonry Drill Bit for masonry or cement walls or 1/8” Standard Drill Bit for wood walls

Actual size

Plastic Anchors

7 Attach the light expansion box. Make sure it is level and tighten screws firmly.

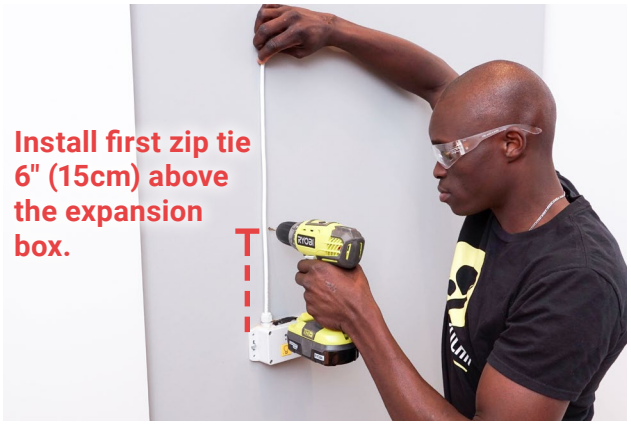


Actual size

#12 X 1-3/4" Self-Tapping Screws

5/16” Nut Driver

8 Drill the holes for where you will attach the light expansion box cable and the light cables to the wall above.

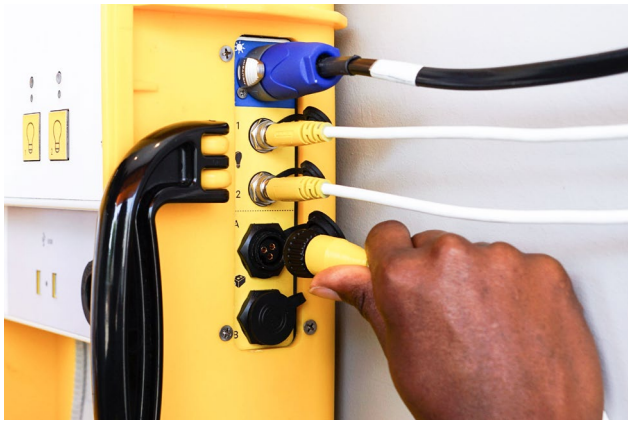


Actual size

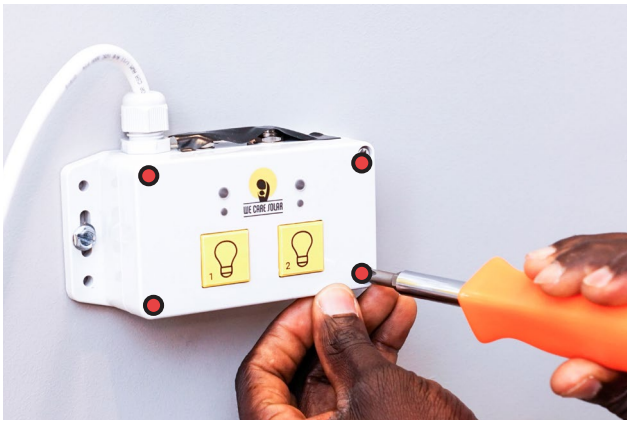
1/4“ Masonry Drill Bit for masonry or cement walls or 1/8” Standard Drill Bit for wood walls

How to Install the Light Expansion Box

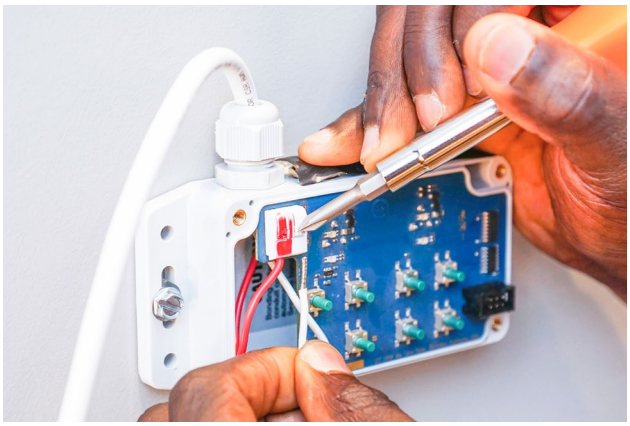
9 The light expansion box cable can be removed to make it easier to run the cable from the Solar Suitcase. To remove the cable follow these steps:



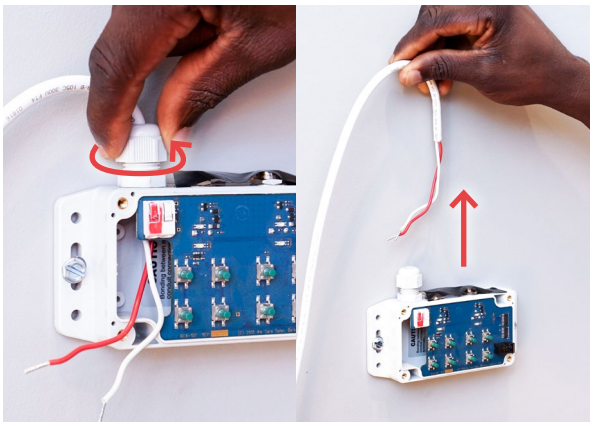
Make sure the light expansion box is disconnected from the Solar Suitcase



Remove the cover plate (4 screws) and put in a safe place

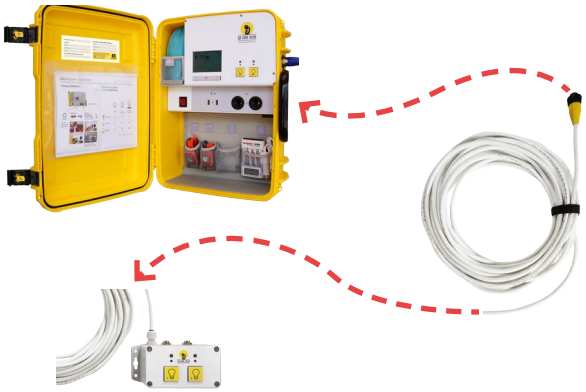


Using a screw driver, gently press the wire terminal release lever to pull out the red and white wires. Take care not to damage the vulnerable circuit board and electronics.



Loosen the cord locking nut and gently pull the wires out

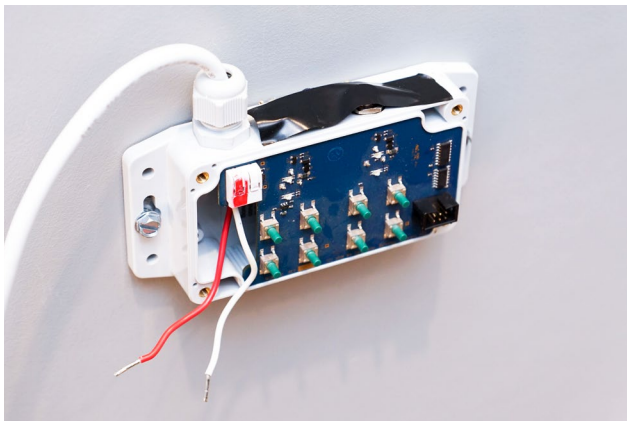
Wrap the ends of the wires separately with electrical tape to protect the wires



Route the cable from the Solar Suitcase to the light expansion box

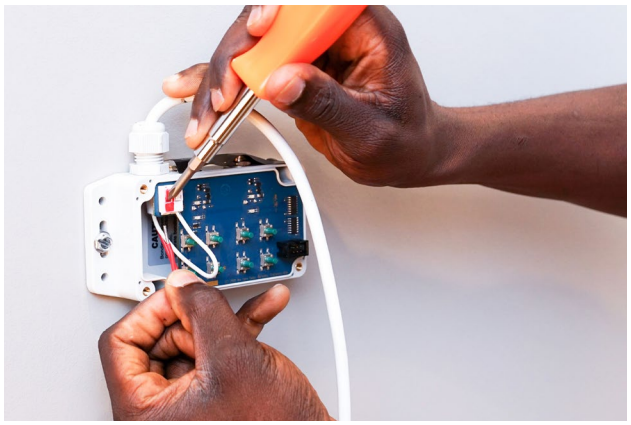
How to Install the Light Expansion Box

10 To reconnect the cable to the light expansion box follow these steps:



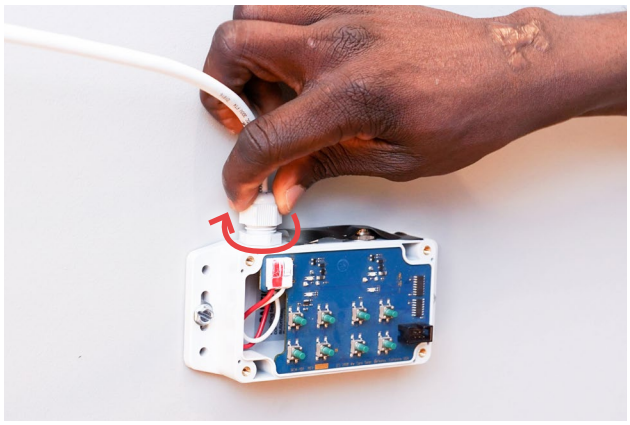
Insert the wires through the cord locking nut and back into the light expansion box and remove the tape from the end of the wires

! Ensure wire ends are straight and not frayed



Gently push the wire ends back into the terminal. Match red to red and white to white. Ensure the wire ends are inserted completely and no bare metal is exposed. Pull on the wires gently to ensure they are firmly attached to the terminals.

Tuck the wires into the space next to the circuit board



Tighten the cord locking nut

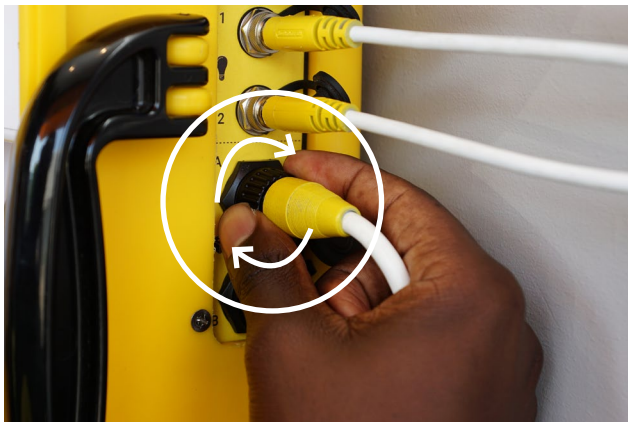
Replace the light expansion box cover and tighten the 4 screws

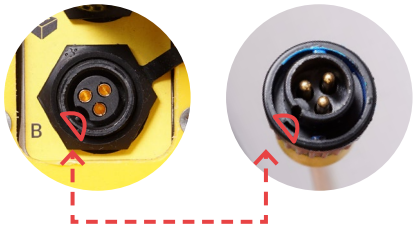
How to Install the Light Expansion Box

11 Run the light cables to the light expansion box and remove the tape

12 Connect the light cables to the light expansion box

13 Reconnect light expansion box to the Solar Suitcase





Light expansion box connector requires precise alignment

14 Secure the light cables and the light expansion box cables to the wall.

Attach the zip ties at consistent intervals between 10"-18" (25-45cms)

Lights Checklist

		✓
1	Check that all light and light expansion box cables are firmly connected and locking rings are tight	
2	Make sure all lights work on both normal and brighter settings	
3	The lights are placed in an ideal location for midwives	
4	The light expansion box is firmly attached to the wall	
5	Fixed lights are securely mounted to the wall or ceiling	
6	Mobile lights have a hook for hanging the light and for cable storage, and additional hooks attached to the wall to keep cables organized and off of the ground	
7	All cable entrances to the ceiling are protected with cable guard and sealed with silicone	
8	First strain relief point is 6" (15cm) from top of expansion box	
9	There is no tension on the light cable connectors	

Last Steps for Completing Installation

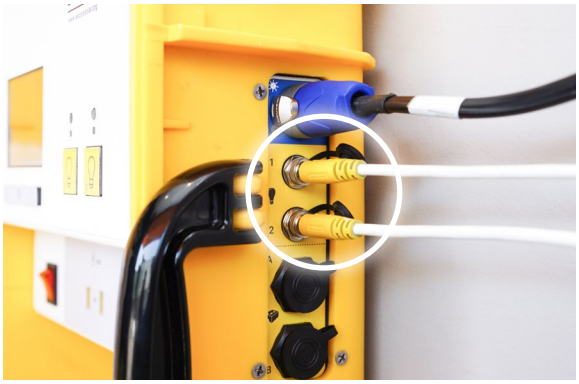
Step 1

Make sure the homerun cable is securely attached to the Solar Suitcase

! The cable is properly connected when the silver tab clicks into place

Step 2

Make sure two lights are securely attached to the Solar Suitcase

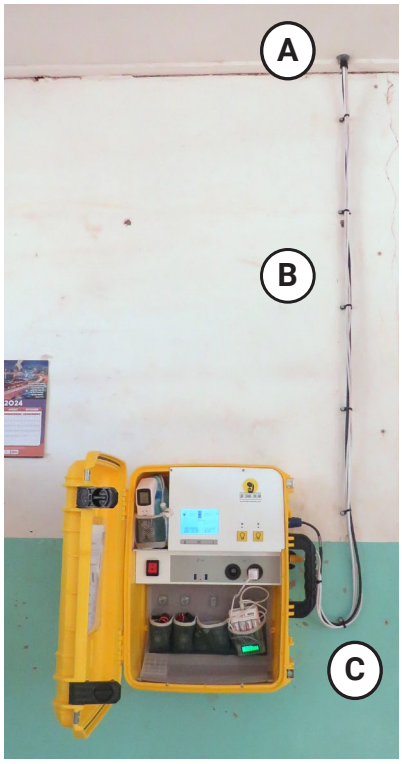


Step 3

Make sure the Light Expansion Box is securely attached to the Solar Suitcase

Step 4

Organize and secure cables in the health facility



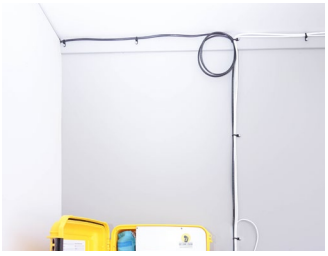
A If passing cables through the ceiling, coil extra cable inside the ceiling and seal the holes with cable guard and silicone. Coil extra cables as detailed below.

B Install zip ties every 10-18" (25-45cm) to keep cables neat, out of the way of staff, and off the floor.

C Install zip ties to create a drip loop and provide strain relief for all cables attaching to the Solar Suitcase.

The first point of attachment is below the handle and 6" (15cm) from the edge of the Solar Suitcase.

Coil Extra Cable



If the *Homerun cable is not passing through the ceiling*, neatly coil and attach the extra cable above the Solar Suitcase.

Wall Mount: coil any extra light cable at the top of the wall above the light. This allows future relocation of the light if necessary.

Ceiling Mount: coil any extra light cable at the wall near the light. This allows future relocation of the light if necessary.

Light expansion box: coil any extra cable at the top of the wall above the light expansion box.

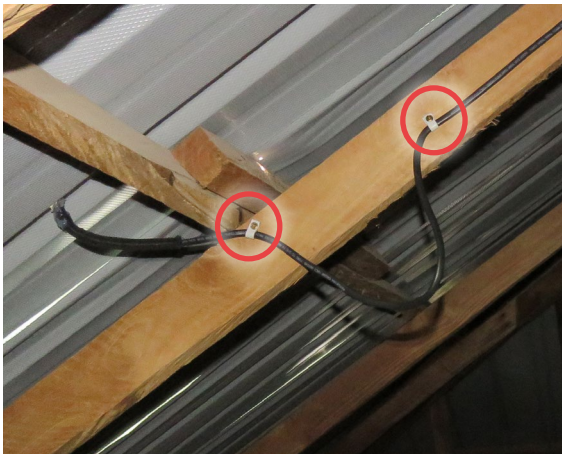
Step 5

Organize and secure cables that are going through the ceiling

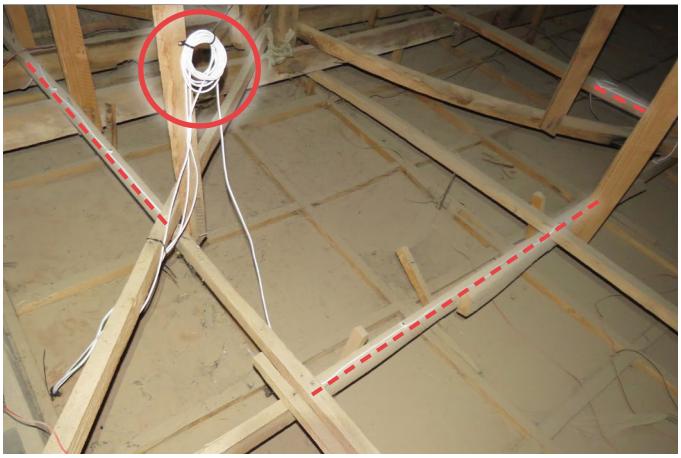
! Do not run cables through the ceiling if it is dangerous to your health

Avoid wasp nests, attics with bats or rodents. They may harm you during installation and can eat through cables. Speak with the healthcare worker to learn about their specific situation.

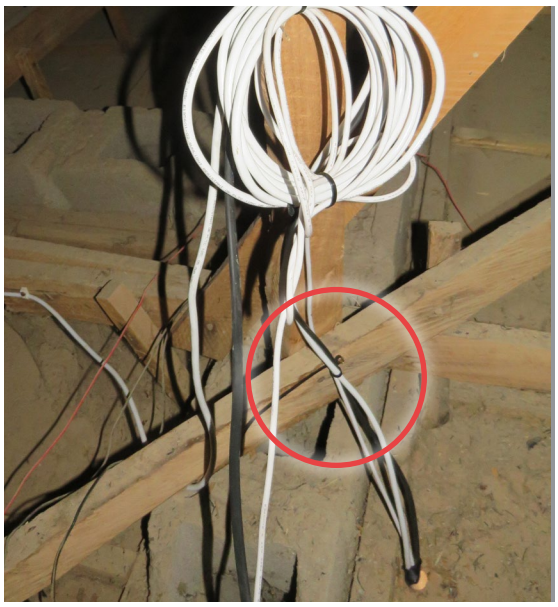
A Make a drip loop on the homerun cable inside the roof.



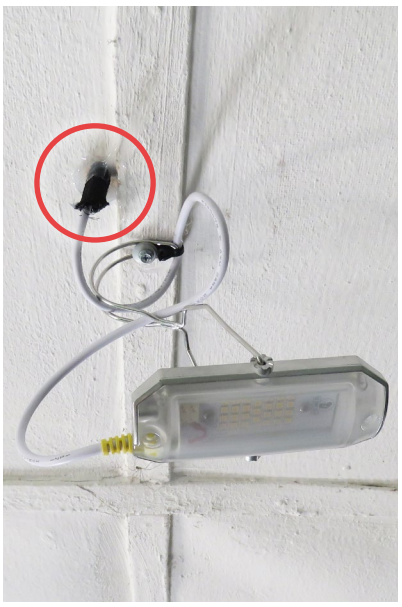
B Coil and attach extra cable to roof beams. Secure loose cable to boards.

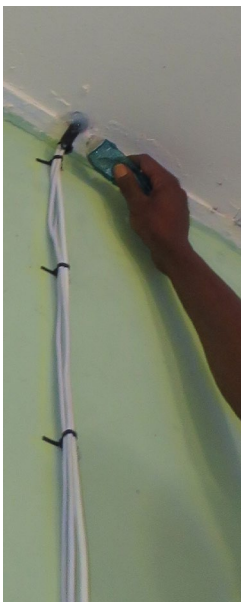


C Provide strain relief for all cables entering the building at every entry point.



D Ensure all cables when entering the ceiling are protected with cable guard and the holes are sealed with silicone.

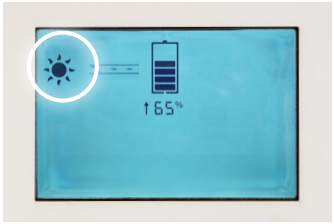




Last Steps for Completing Installation

Step 6

Turn on Solar Suitcase



After you turn on the Solar Suitcase, the sun icon on the display screen is visible when the solar panel is connected to the Solar Suitcase and the solar panel is in sunlight.

Step 7

Ensure all lights and appliances are operational

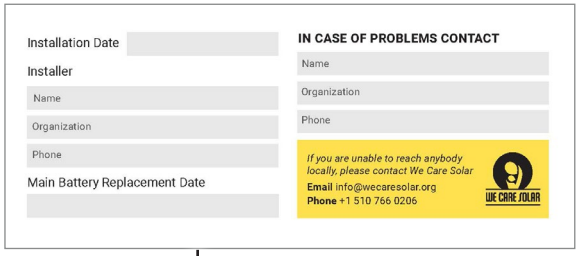
Last Steps for Completing Installation Checklist

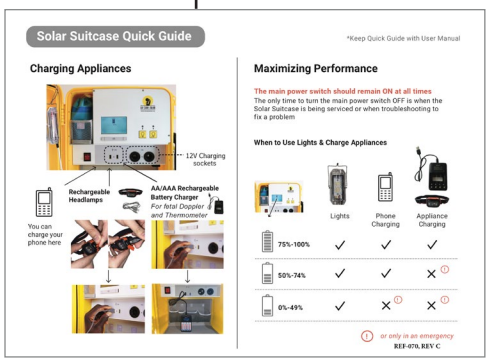
		✓
1	After you turn on the Solar Suitcase, the sun icon on the display screen is visible	
2	Cables are fixed to the wall and have strain relief	
3	The homerun cable is firmly clicked into place with the silver tab facing forward	
4	The cables are neatly attached to the wall with zip ties and flex clips and are safe from damage	
5	Zip ties and flex clips provide strain relief for cables at the Solar Suitcase and light expansion box	
6	Turn on the Solar Suitcase	
7	Ensure all lights and appliances are operational	

Installation Documentation

Fill out the Sticker and Place Quick Guide in the Plastic Folder

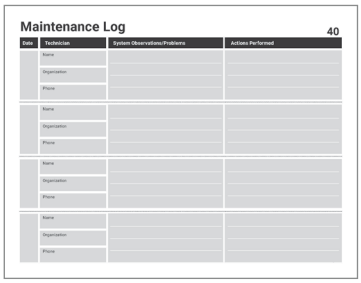
Installation & Service Info Sticker





Quick Guide

User Manual



Maintenance Log

Installation & Service Info Sticker

The sticker informs the health clinic who to contact when they are experiencing a problem with their Solar Suitcase, and also gives the technician an idea of when the Solar Suitcase is likely to need a battery replacement.

On the sticker, fill in the installation date, expected battery replacement date (5 years from the date of installation), and contact information for the person responsible for maintaining equipment at the health facility. Often this is the technician from the local government health office. If you are unsure who to put here, please contact WCS or the in-country organization in charge of this program.

Review Quick Guide and User Manual with Staff

Quick Guide

The Solar Suitcase Quick Guide comes inside the Solar Suitcase. It is a Quick Guide for the health facility staff. It should be placed in the plastic folder on the inside of the Solar Suitcase door.

User Manual and Maintenance Log

The User Manual has useful information on how to use, maintain, and troubleshoot problems that may occur with the Solar Suitcase.

In the back of the User Manual is the maintenance log. Encourage the health worker to ensure that technicians record maintenance performed on the Solar Suitcase in the maintenance log.

The User Manual should be placed in the plastic folder behind the Quick Guide.

Installation Tracking

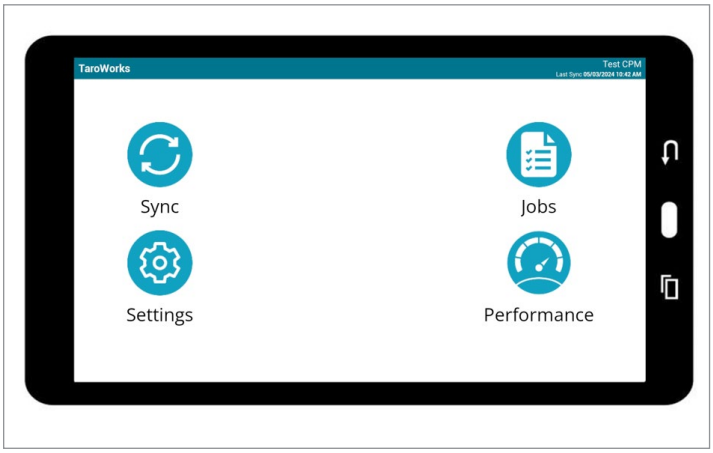
We Care Solar keeps a database of all facilities that have received Solar Suitcases. ***It is very important that you record facility and installation information before you leave the health facility.***

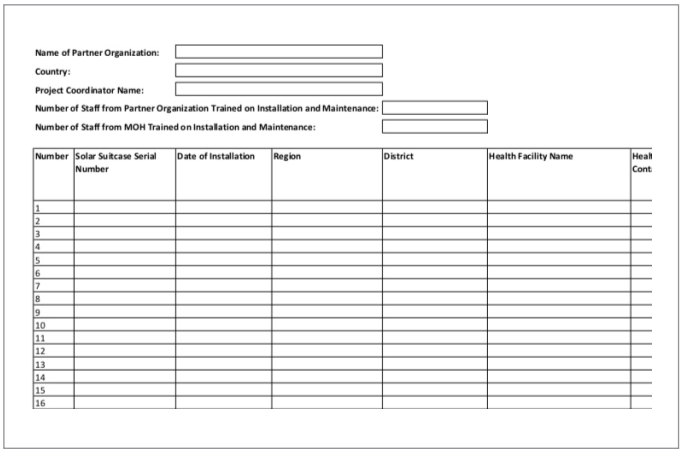
We collect a variety of information on the health facility, including baseline electricity status, maternal and child health activities, facility type, and geolocation. It is also important to record the serial number of the Solar Suitcase(s) installed and the installation date, which will aid us with troubleshooting and maintenance.

There are two ways to record this information:

1. Taroworks Mobile Application – All installers in Light Every Birth countries will be required to use Taroworks to record health facility and installation information. Before leaving the health facility, be sure to complete the *Install Solar Suitcase Job* in Taroworks to record all the necessary information.

2. We Care Solar Excel Installation Tracking Sheet – Installers in all other countries will be asked to fill out an Installation Tracking Sheet in Excel (template provided by We Care Solar).





Name of Partner Organization:
Country:
Project Coordinator Name:
Number of Staff from Partner Organization Trained on Installation and Maintenance:
Number of Staff from MOH Trained on Installation and Maintenance:

Number	Solar Suitcase Serial Number	Date of Installation	Region	District	Health Facility Name	Heal Cont
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						

Other Documents

You may need to fill out other documents such as a baseline survey or clinic certificate. If so, you will have already discussed with We Care Solar prior to installation and been given the required documents. Make sure to complete them before leaving the health facility.

Documentation Checklist

		✓
1	**Fill out information on the Solar Suitcase sticker on the inside door of the Solar Suitcase**	
2	**Place User Manual and Quick Guide in the plastic folder**	
3	**Take photos of the installation and healthcare workers training**	
4	**Complete installation tracking information** Complete the *Install Solar Suitcase* job in Taroworks or fill in the necessary information on the Installation Tracking spreadsheet	
5	**Complete other documents such as baseline survey if required**	

Teaching Healthcare Workers

Teaching Preparation

- Get the right people in the room – all maternity staff, security, and staff in charge of the facility
- Pick a time that is convenient for them and tell them it will take about an hour
- Have everything prepared – set up the Solar Suitcase and appliances in advance

Teaching Tips

- Use the Solar Suitcase User Manual as a teaching tool when teaching the healthcare workers
- Speak slowly and clearly
- All healthcare workers should know how to interact with the Solar Suitcase and appliances. Don't do it for them! Make sure they get to practice using the Solar Suitcase and appliances.
- Repeat key messages
- Check healthcare workers understand by asking them to show you or explain what you just taught before moving on to next topic
- Reinforce reasons for training – proper usage will ensure midwives have light when they most need it

User Manual

What to Teach Healthcare Workers

1. Introductions

2. Overview of the Solar Suitcase *(refer to P.06 "Solar Suitcase Overview" and P.07 "Main Battery and Solar Panel" in the User Manual)*

a. How does the Solar Suitcase get power?
From the sun

b. Where is the power stored?
Solar Suitcase/ main battery

3. Main Switch is always on

a. Where is the main switch?
Red button on left side of Solar Suitcase

b. When do you turn it off?
It stays on all the time unless the Solar Suitcase is being serviced or when troubleshooting to fix a problem

c. What do you do if the main switch is accidentally turned off?
Turn it back on

4. Understanding the Display Screen *(refer to P.10 "Display Screen" in the User Manual)*

a. How do you know if the battery is being charged?
Look at the display screen. The arrow next to the battery symbol is pointing up.

b. How do you know if you are using more power than the Solar Suitcase is receiving from the sun?
Look at the display screen. The arrow next to the battery symbol is pointing down.

c. How full is your battery?
Look at the display screen. The battery percentage is directly below the battery symbol.

d. How do you know which loads are using power?
Look at the display screen. The symbols on the right of the screen show which lights, sockets, and appliances are using power.

5. Using the Solar Suitcase *(refer to P.23 "Maximizing Performance" in the User Manual)*

a. When is it a good time to use lights?
When you need them

b. When is it a good time to charge my phone?
During a sunny day when the battery is at least 50% full

c. When is it a good time to charge the headlamps, thermometer, and fetal Doppler?
During a sunny day when the battery is at least 75% full

d. When is not a good time to charge my phone, headlamps, thermometer, or fetal Doppler?
At nighttime unless it's an emergency

6. Using the Lights *(refer to P.08 "Lights" in the User Manual)*

a. Where are the light buttons?
To the right of the display screen and on the light expansion box

b. Show me how to use the two settings on the light

c. When should you use the lights?
When you need them

d. When do you not want to use the brighter light setting?
When you need to conserve energy. Use the normal light setting.

7. Appliances Overview *(refer to P.14 "Appliances" in the User Manual)*

8. Using the Rechargeable Headlamps *(refer to P.16 "Rechargeable Headlamps" in the User Manual)*

a. Show me how to use the rechargeable headlamp

b. Show me how to make the rechargeable headlamp light brighter

9. Charging the Rechargeable Headlamps *(refer to P.16 "Rechargeable Headlamps" in the User Manual)*

a. How do you know when you need to charge the rechargeable headlamp?
Light is dim; side light shows one or no indicator lights

b. How do you charge the rechargeable headlamp?
With a USB charger

c. How do you know if it's charging?
Side light is blinking

d. Show me how to charge the rechargeable headlamp

10. Using the Infrared Thermometer *(refer to P.17 "Infrared Thermometer" in the User Manual)*

a. When should you use the infrared thermometer?
To screen every patient that comes to the facility

b. Show me how to use the infrared thermometer

Teaching Health Workers

11. Using the fetal Doppler *(refer to P.19 "Fetal Doppler" in the User Manual)*

a. **Show me how to use the fetal Doppler**

b. **Should you turn it off when it is not in use?**
Yes

c. **What kinds of lubricants can you use with the fetal Doppler?**
Lubricant gel, clean vegetable oil, or KY jelly

d. **If you can't find the fetal heart beat what can you do?**
Slowly change the position and/or angle of the probe; check the batteries are inserted correctly and fully charged; make sure you are using enough gel or KY jelly.

12. Using the AA/AAA Rechargeable Battery Charger *(refer to P.21 "AA/AAA Rechargeable Battery Charger" in the User Manual)*

a. **Show me how to use the battery charger**

b. **How do you know if the batteries are charging?**
Rechargeable battery indicator is moving and says CHARGE on the top

c. **What kinds of batteries can you charge in the battery charger?**
Rechargeable only, not single use (alkaline batteries)

13. Charging Your Phone *(refer to P.22 "Charging Your Phone" in the User Manual)*

a. **Show me how to charge your phone**

b. **When is the best time to charge your phone?**
During the day when the battery is 50% or more full

14. Troubleshooting *(refer to P.25 "Troubleshooting" in the User Manual)*

a. **Show me where you can get information on troubleshooting**
P.25-P.44 from the User Manual

b. **Who do you contact if you have a problem with the Solar Suitcase?**
Look at Solar Suitcase sticker under section "In Case of Problems Contact"

c. **When does the main battery need to be replaced?**
Look at "Main Battery Replacement Date" on Solar Suitcase sticker

15. Where to Get Information on the Solar Suitcase and Training New Healthcare Staff

a. **If you can't remember how to use something or need to teach a new healthcare worker, where can you find out information?**
The User Manual which is inside the plastic folder or online at:
https://wecaresolar.org/resources/product-info/

b. **Whose responsibility is it to train new healthcare workers?**
Yours; the health facility

We Care Solar

+1-510-766-0206

service@wecaresolar.org

www.wecaresolar.org

Online Resources

For more information, including training videos on Solar Suitcase installation, use, maintenance, and repair, please visit **https://wecaresolar.org/solar-suitcase/**

Designed by Institute for Creative Integration

https://www.creative-integration.com/