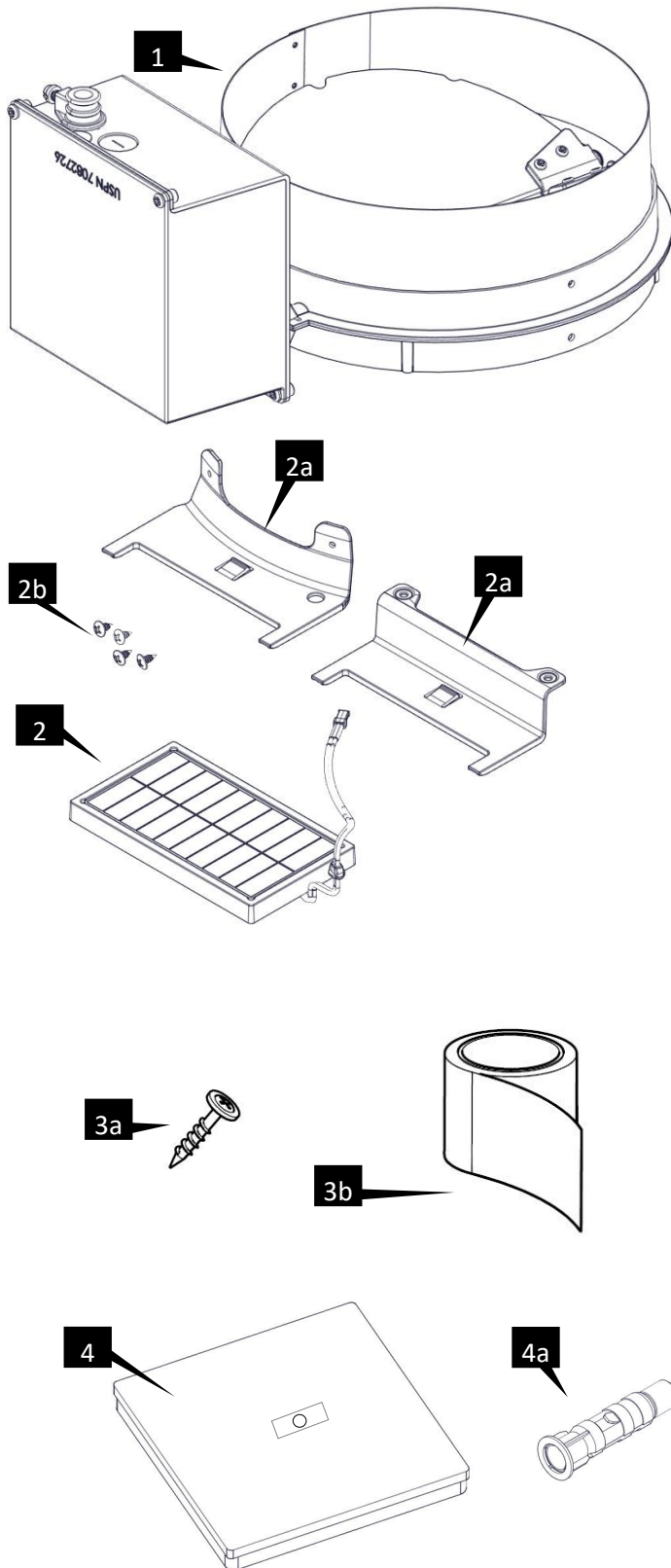




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Solatube® Brighten Up® Series

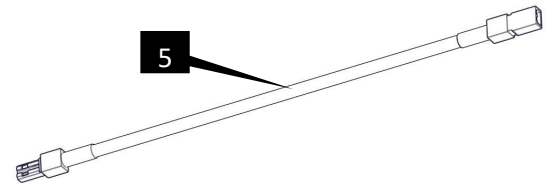
Solatube® 160 DS / 290 DS Solar-Powered Daylight Dimmer Installation Instructions



Parts List		Quantity
1	Daylight Dimmer Assembly	(1)
2	Solar Panel	(1)
2a	Solar Panel Mount (160 DS / 290 DS)	(1)
2a	Solar Panel Mount (290 DS Low Profile)	(1)
2b	4 X 10mm Truss Head Screw	(4)
Seal and Fasteners		
3	a. Tube Screws - #8 X 9/16 in (14 mm)	(2)
	b. Foil Tape - 2 in (51 mm) X 6 ft (2 m) roll	(1)
4	Remote Control	(1)
4a	Wall Anchor	(2)
4b	Drywall Screw	(2)
5	Extension Cable 6 ft (1.8 m) With Cable Clamps and Screws (Order Separately)	(1)

Required Tools:

Keyhole Saw	Caulking Gun
Saber or Reciprocating Saw	Screw Gun with Phillips Head
Hammer	Lumber Crayon
Flat Bar	Magnetic Compass
Utility Knife	Required Safety Equipment
Tape Measure	Battery 9V
Drill Bit 1/8 in. (3mm)	Drill Bit 3/8 in. (9.5mm)

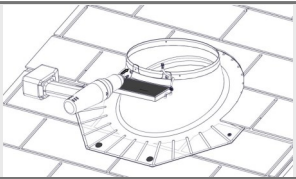
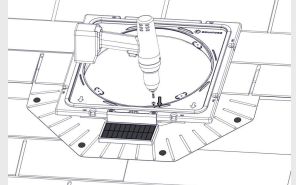
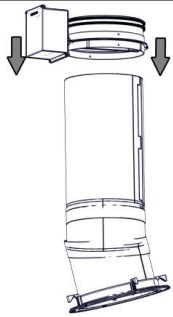
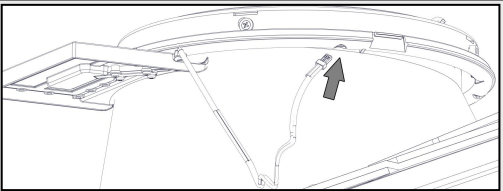
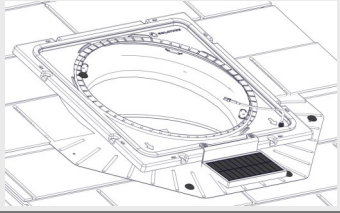

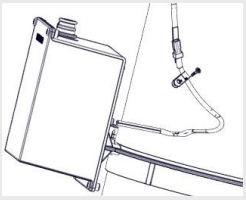


Scan The Code And Watch Our Installation Video.




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WARNING

 **Do not proceed with the installation until you have read the entire instructions, including these warnings. (Use of materials or methods not authorized by Solatube International will result in an invalid warranty.)**

Solatube International, Inc. (seller) assumes no responsibility or obligation whatsoever for the failure of an architect, contractor, installer, or building owner to comply with all applicable laws, ordinances, building codes, electrical codes, energy codes, fire and safety codes and requirements, roof warranties and adequate safety precautions. Installation of this product should be attempted only by individuals skilled in the use of the tools and equipment necessary for installation. Protect yourself and all persons and property during installation. If you have any doubt concerning your competence or expertise, consult a qualified expert before proceeding.

Install at your own risk!

Solatube product installations may be dangerous and include the potential for death, personal injury and property damage. The hazardous conditions include but are not limited to the following:

- **During installation, the Solatube Daylighting System's reflective tubes may focus sunlight, causing intense heat or fire. Remove protective film only after the parts have been installed. Prior to and during installation, do not leave tubes in contact with combustible materials or unattended, especially near direct sunlight. Avoid skin burns.**
- **Do not leave debris from installation process unattended. Scrap from tubing and foil tape are highly reflective and if left unattended can focus sunlight and can cause intense heat or fire. Clean up all unused material and trash and store or discard in proper covered locations.**
- Solatube Daylighting System and Solar Star products may have sharp edges. Always wear leather or canvas gloves while handling and installing products.
- Solatube product installations require climbing and working at dangerous heights, including on ladders, scaffolding, roofs and in attic spaces. Risk of death, personal injury and property damage may result from a fall, or from falling objects. Use extreme caution to minimize risk of accidental injury, including, but not limited to the following procedures:
 - Clear area below your work space of all people, animals and other items.
 - Avoid working on surfaces that are slippery or wet.
 - Use foot-wear with excellent traction.
 - Use only strong, well supported ladders.
 - Work only in calm dry weather.
 - When in the attic, ensure that your weight is supported at all times with structurally sound framing; drywall material is not designed to carry a person's weight.
- To reduce the risk of fire, electric shock, and personal injury, basic safety precautions should always be followed when using electric tools, including always wearing safety goggles or other suitable eye protection, and ensuring work area is clear of all electrical wires, gas pipes, water pipes, and other obstacles.
- When working in the attic or other dusty areas, use of a mask or respirator is recommended to avoid lung irritation. Attic spaces may be dark, confined, and subject to extreme temperatures. Beware of sharp protruding objects. Do not attempt installation without having someone within range of your voice or close enough to come to your aid if necessary.
- Solatube products are not designed to withstand the weight of a person, tools or other objects. Walking or placing objects on the system could cause personal injury and property damage. If the product is damaged, the structural capacity may be weakened; therefore the system should be repaired immediately. For safe installation and use, do not deviate from these installation instructions.
- Additional support is recommended for long vertical and all horizontal tube runs. Review local building requirements and consult with appropriate building code official for proper material and placement of additional support. Avoid galvanic reaction (corrosion) if dissimilar metals are used.

Electrical Components

- Before installing, servicing, or cleaning unit, switch power off at service panel and lock service panel to prevent power from becoming switched on accidentally. When the service disconnecting means cannot be locked, securely fasten a prominent warning device such as a tag to the service panel.

Re-Roofing

- Solatube products require special care if removed for re-roofing. In order to ensure proper removal and re-installation, please contact your Solatube International representative.

Please refer to the installation tips for the appropriate product below:

Daylighting Systems Installation Tips

These instructions are a step-by-step guide for the installation of a Solatube Daylighting System in the following conditions. For other roof types, please contact your Solatube International representative for additional information.

Built Up Flat Roof - Single Ply/Membrane - Asphalt Shingle - Low/No Pitched - Pitched - Prefabricated Curbs - Metal Roof Panels

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Daylighting Systems Installation Tips (Continued)

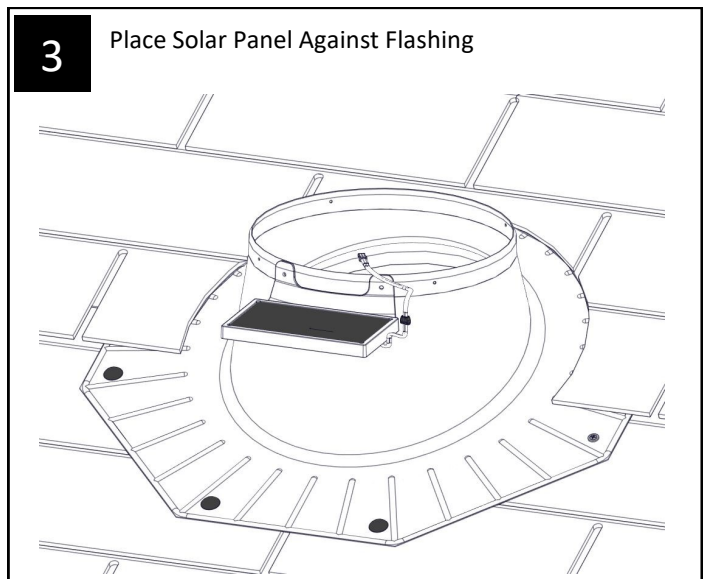
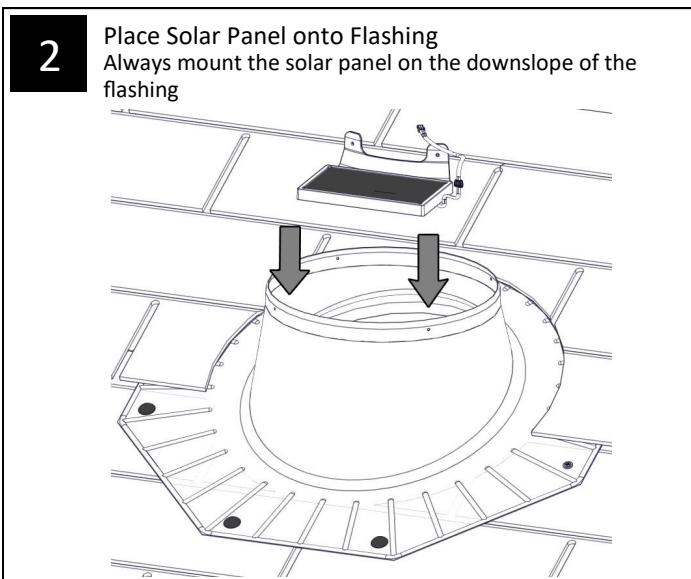
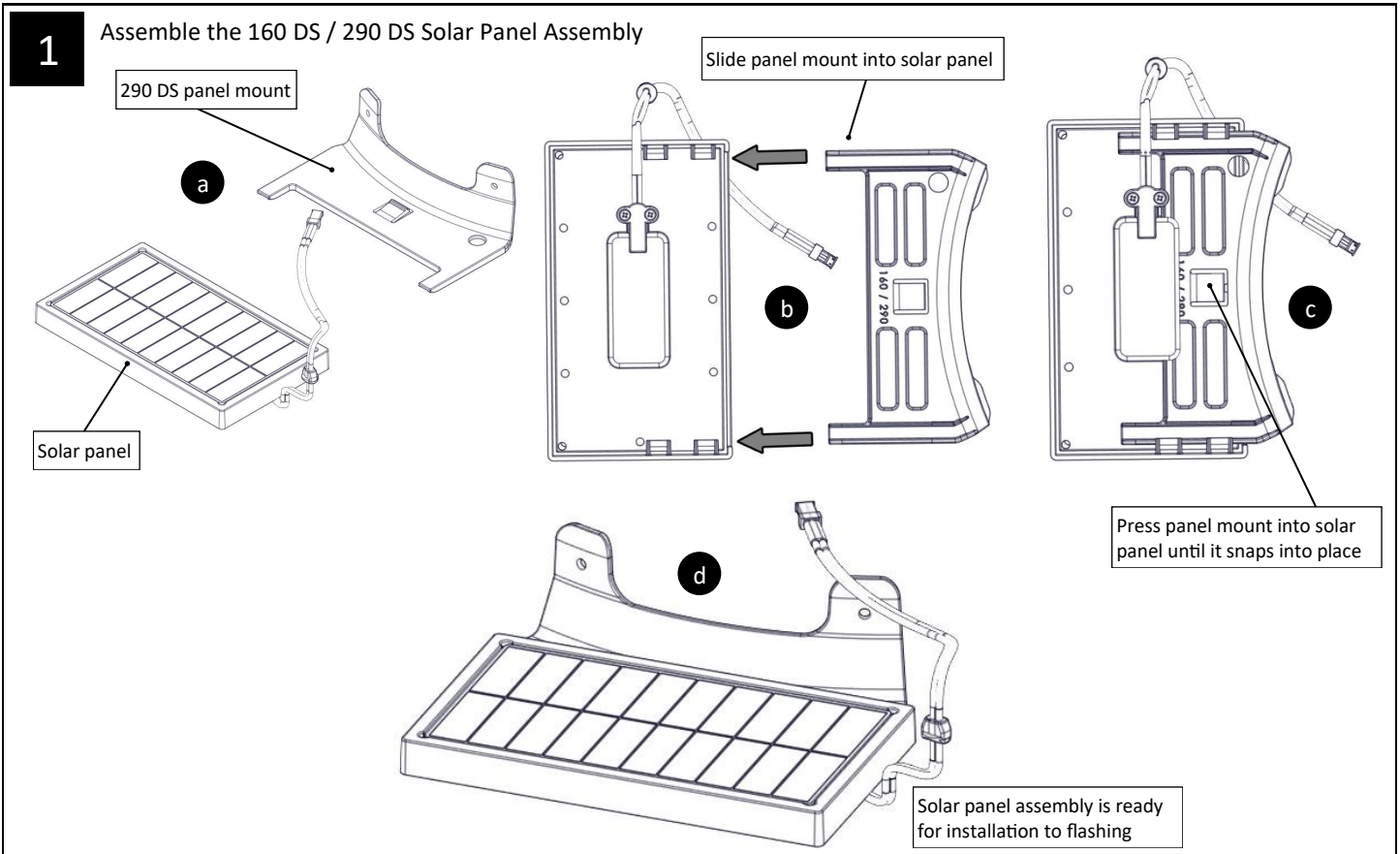
- Allow at least 2-3 hours for the installation, particularly if this is your first installation.
- During the day, turn off all the lights in the room to see how much natural light comes in through the windows, and determine the best position for the Solatube Daylighting System. To light a specific area, place the system over the area, not in the center of the room. This will prevent the desired area from being shaded by tall objects in the room.
- Measure the distance between the roof and the ceiling. If you don't have enough tubing, contact your Solatube International representative for additional tubing.
- Avoid roof locations shaded by trees, ridges and chimneys, or near water channels or valleys. Also avoid roof areas with obstructions such as fire sprinklers, HVAC equipment, gas, water or drain pipes, air ducts or flues and make sure that the roof is adequate to endure an installation without damaging its waterproofing properties or weakening the building structure.
- All adhesives, seals and tapes are recommended to be applied to a clean and dry surface at a minimum of 70°F (21°C) for maximum performance.
- Foil tape contains a pressure sensitive adhesive and pressure must be applied at all seams for proper bonding. Foil tape is not intended for use as structural support of the extension tubes. For structural integrity use manufacturer supplied fasteners on all overlapping extension tube joints.
- Uninstalled product that is stored and exposed to excessive heat and or humidity can experience damage. Store product prior to installation in a cool dry place.



Solar-Powered Daylight Dimmer Installation Tips

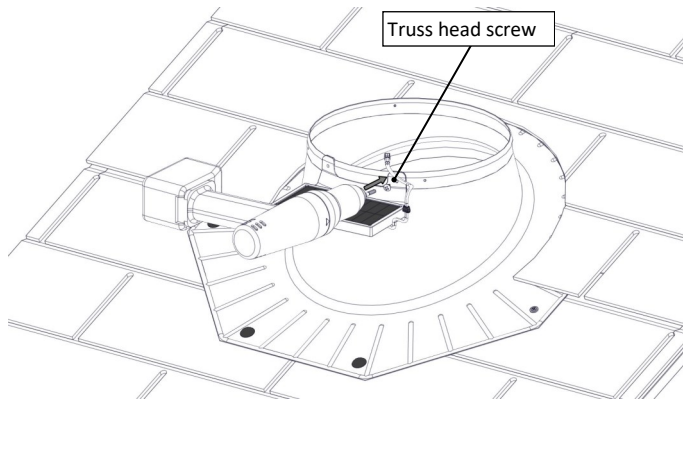
- Install Solatube Solar-Powered Daylight Dimmer only on a properly aligned Solatube Daylighting System.
- Always mount the solar panel on the downslope of the flashing.
- If the remote is not working, check the batteries to see if they have slipped out of the proper alignment or if the batteries need to be replaced.
- Replace batteries with CR2032 Coin Cell batteries.
- **Note— The Solar-Powered Daylight will only operate when there is enough daylight to produce energy. The Solar-Powered Daylight Dimmer will not operate in the evening when there is no daylight to produce energy production.**

The following instructions are for installation of the solar panel on the Solatube 160 DS and 290 DS models only. Please see Solatube® Brighten Up® Series Installation Instructions (P/N: 951780)



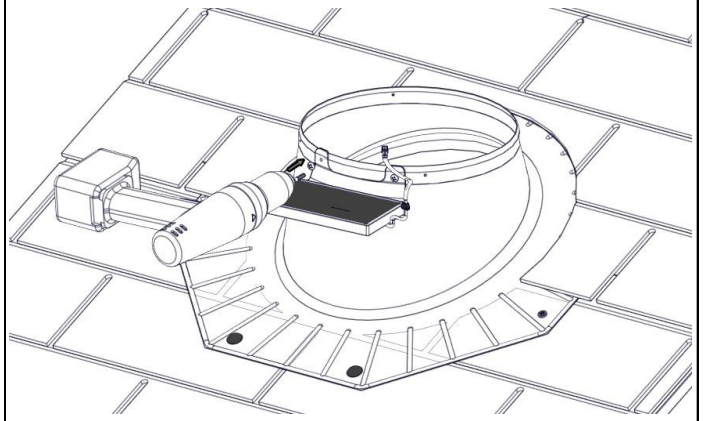
4

Hold Panel in Place and Fasten Through Opening



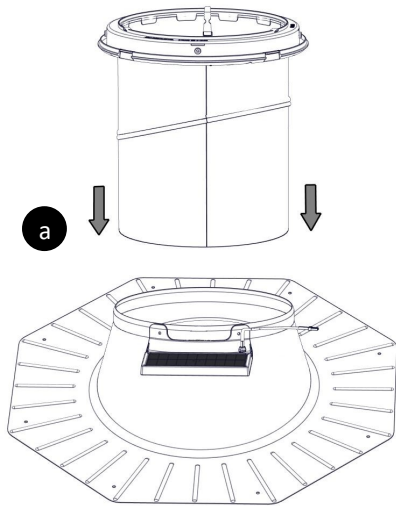
5

Fasten Remaining Opening



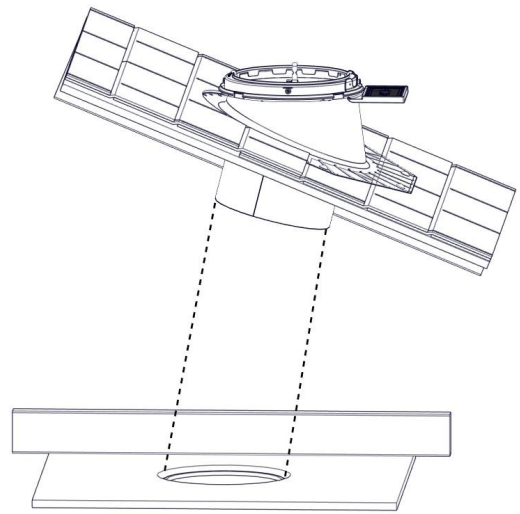
6

Place Top Tube into Flashing



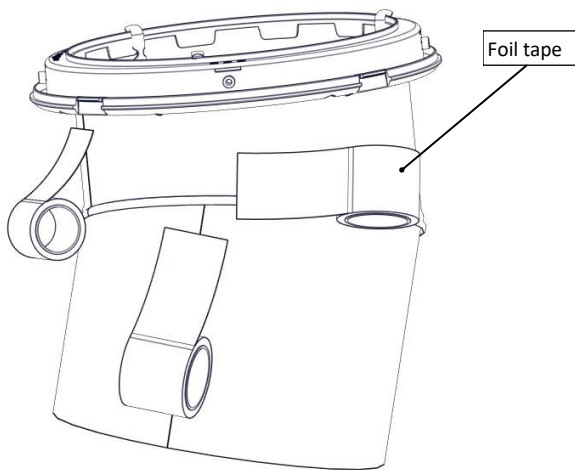
7

Align Top Tube Angle with Ceiling Opening



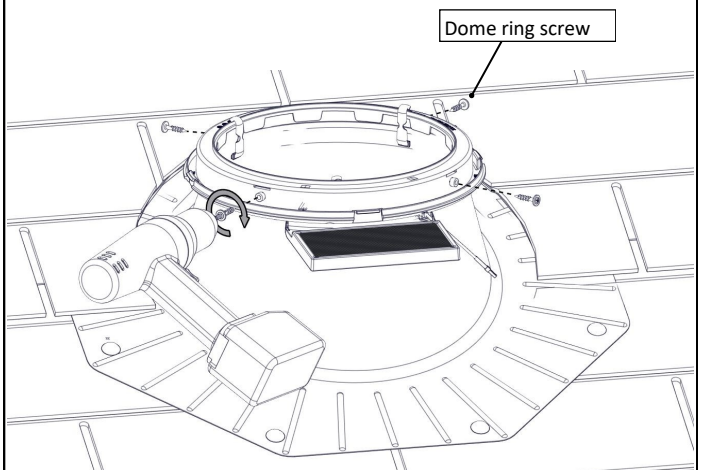
8

Remove and Tape Top Tube
Tape all seams.



9

Fasten Top Tube to Flashing



Note: Return to ground floor to continue the installation process. See page 11.

For the most current Installation Instructions, please visit www.solatube.com/instructions

The following instructions are for installation of the solar panel on the Solatube 290 DS Low Profile only.
Solatube® 290 DS Low Profile Installation Instructions (P/N: 951883) for complete flashing and top assembly instructions.

10 Assemble the 290 DS Low Profile Solar Panel Assembly

290 DS Low Profile panel mount

Solar panel

Slide panel mount into solar panel

Press panel mount into solar panel until it snaps into place

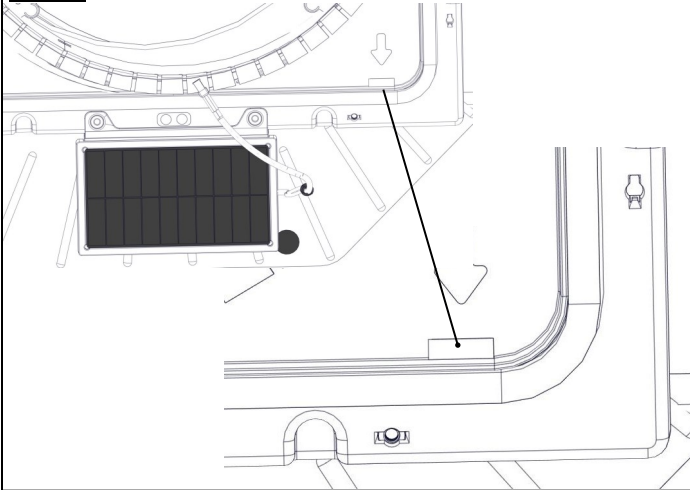
Solar panel assembly is ready for installation to flashing

11 Place Solar Panel onto Frame Assembly
Always mount the solar panel on the downslope of the connector flange

12 Fasten Solar Panel to Frame Assembly

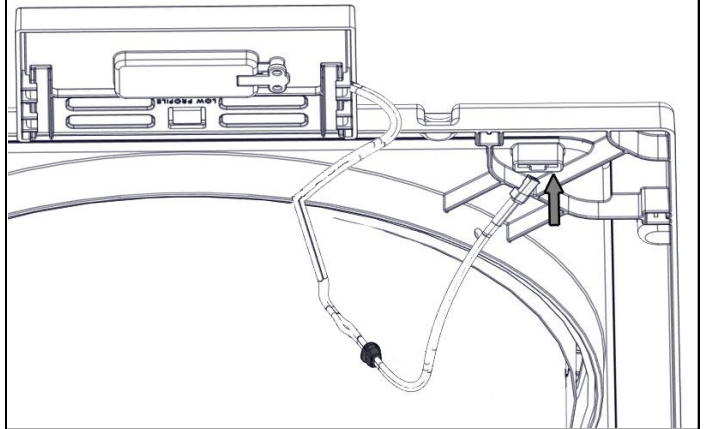
13

Remove Foam from Weep Hole
Keep foam for later step



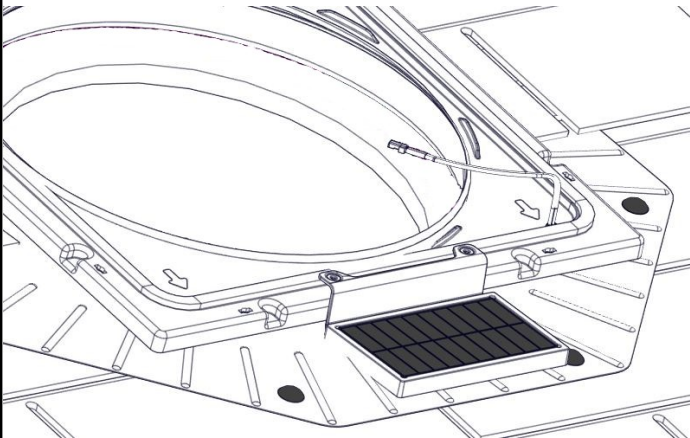
14

Insert Solar Panel Through Weep Hole



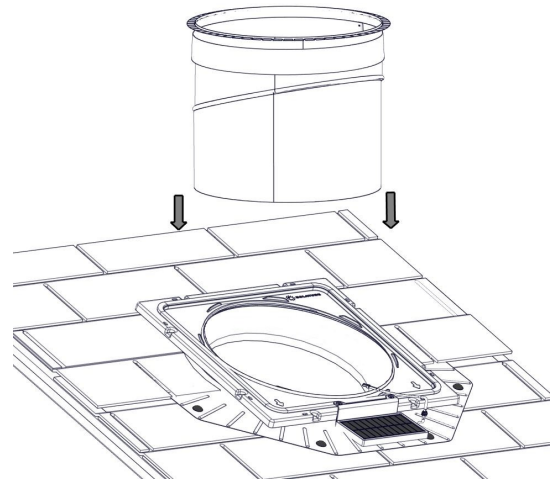
15

Pull Cable Through Top of Frame Assembly
Secure wire in weep hole with attached rubber grommet.



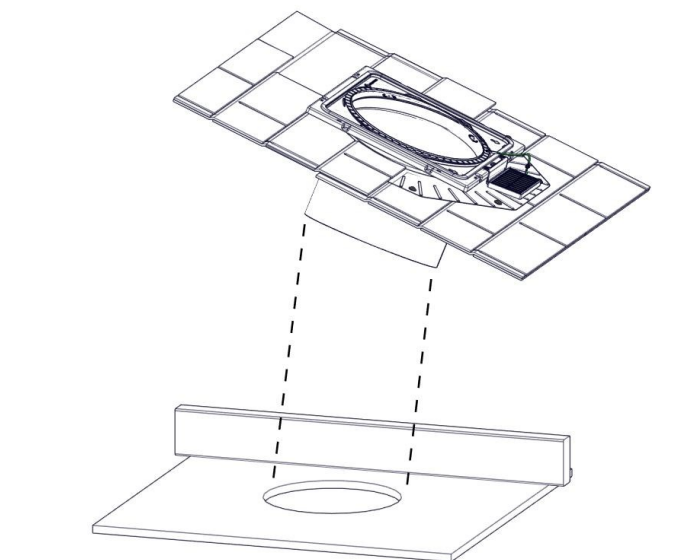
16

Insert Top Tube



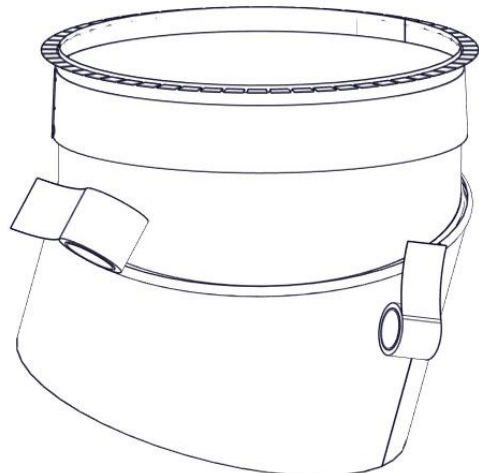
17

Align Top Angle with Ceiling Opening



18

Remove and Tape Top Tube
Tape all seams.

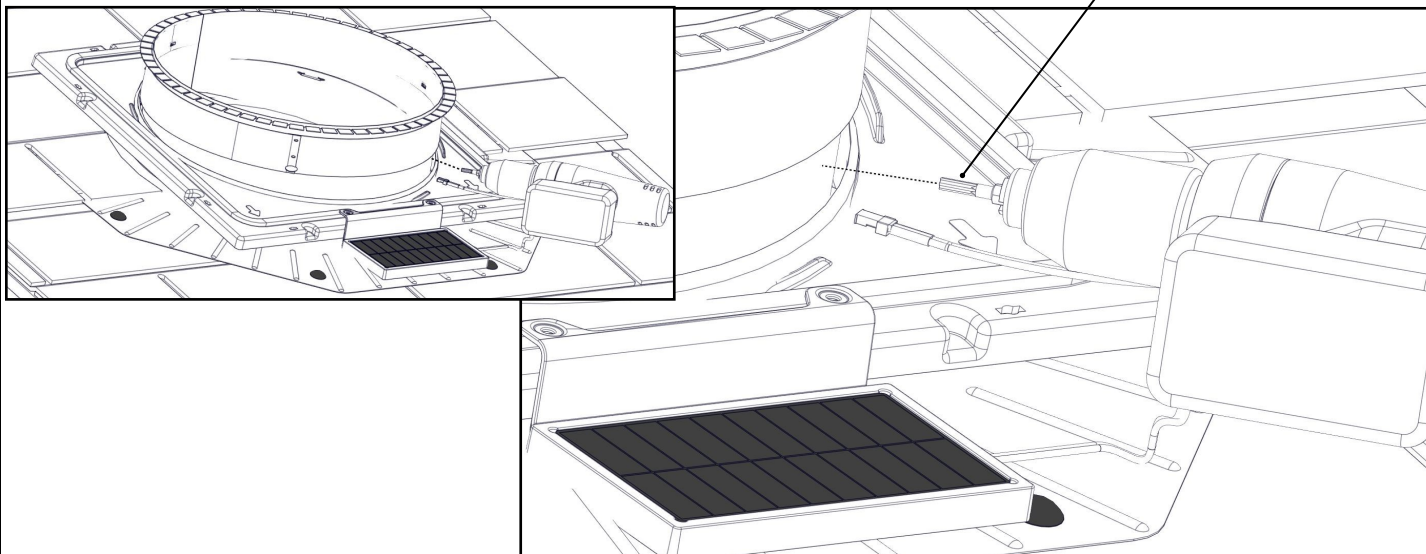


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19

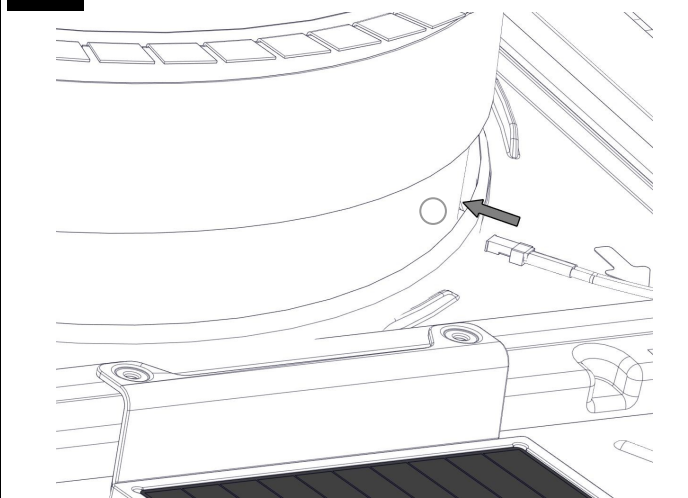
Insert Top Tube and Drill Hole for Solar Panel Cable
Drill hole in tube using 3/8" drill bit just below tube belt

3/8" drill bit



20

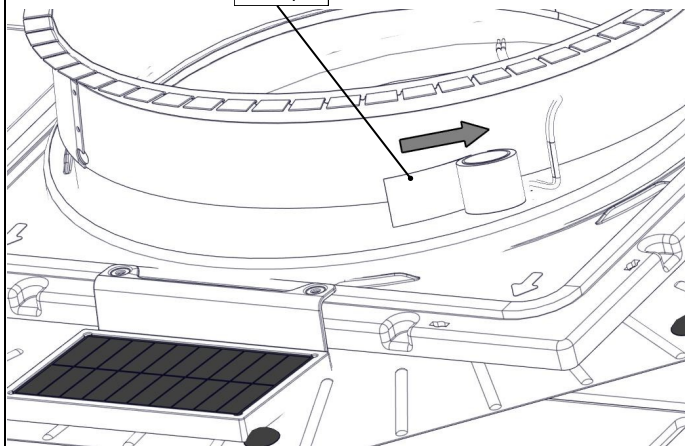
Insert Cable into Hole



21

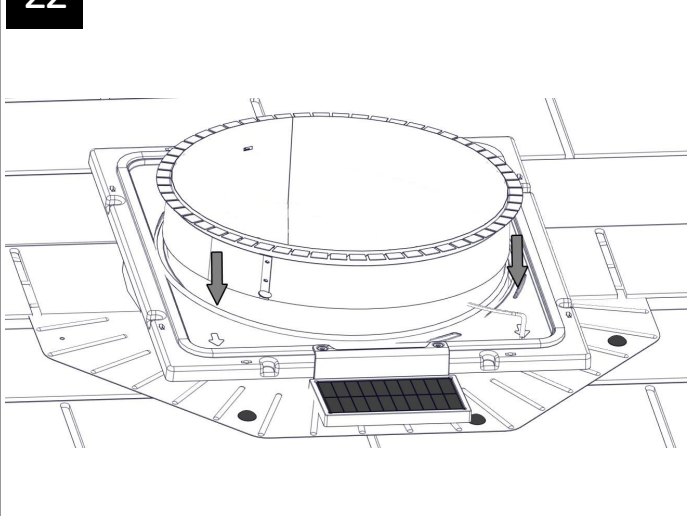
Secure Cable to Outside of Tube with Foil Tape
Cover remaining opening of hole with foil tape.

Foil tape



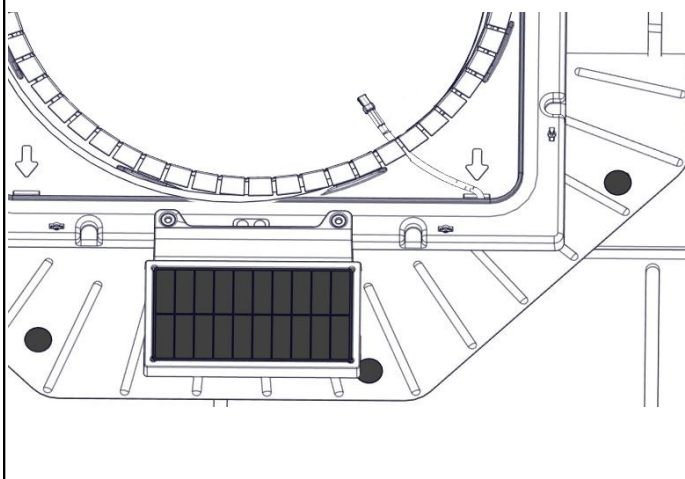
22

Insert Top Tube into Frame Assembly



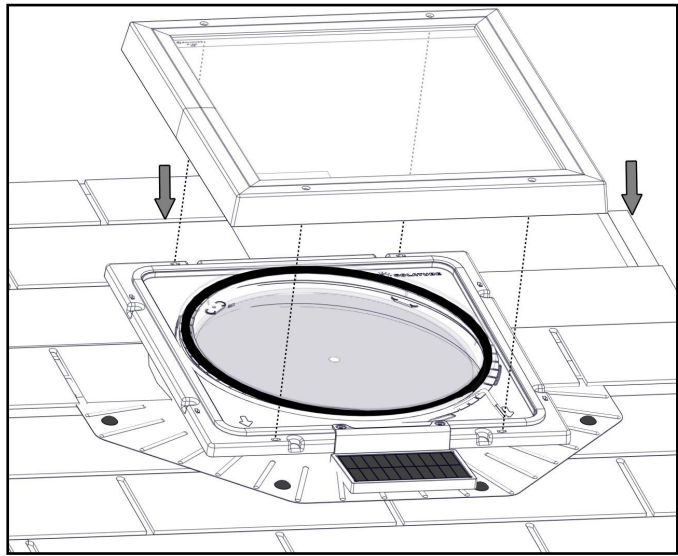
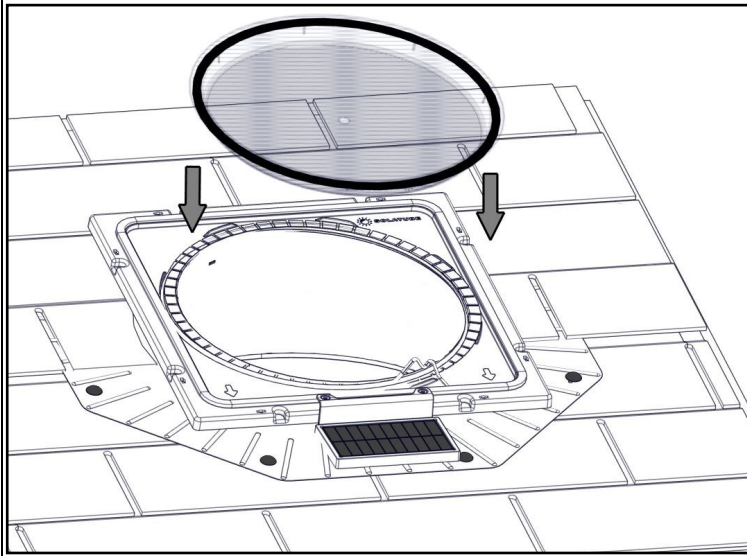
23

Align Cable to Fit Between Tabs of Tube Belt
Re-Insert foam into weep hole



24

Install Raybender Slim and Place Sash to Frame Assembly

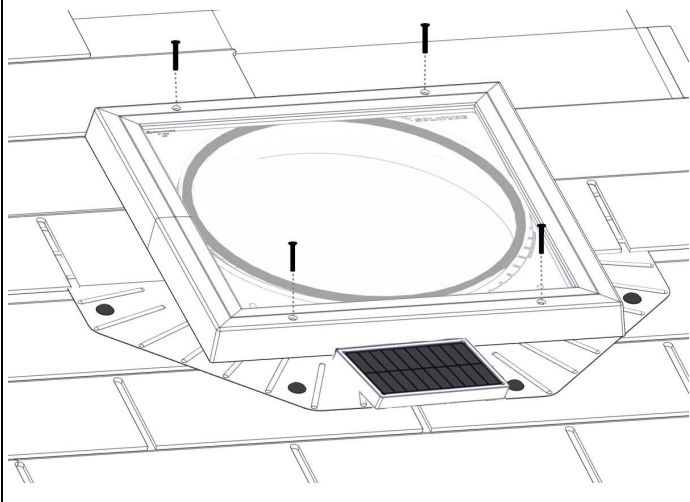


25

Fasten Sash to Frame Assembly

Start screws by hand.

Caution: Do not overtighten sash screws.



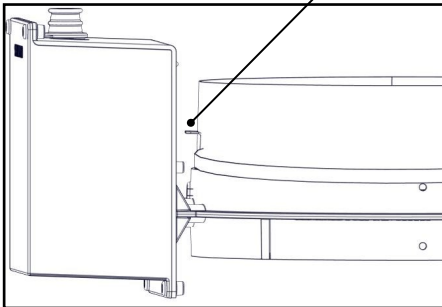
Note: Return to ground floor to continue the installation process. See page 11.

NOTE: Return to the Ground Floor and Complete the Following Steps
The following steps are for all models. 160/290 DS shown.

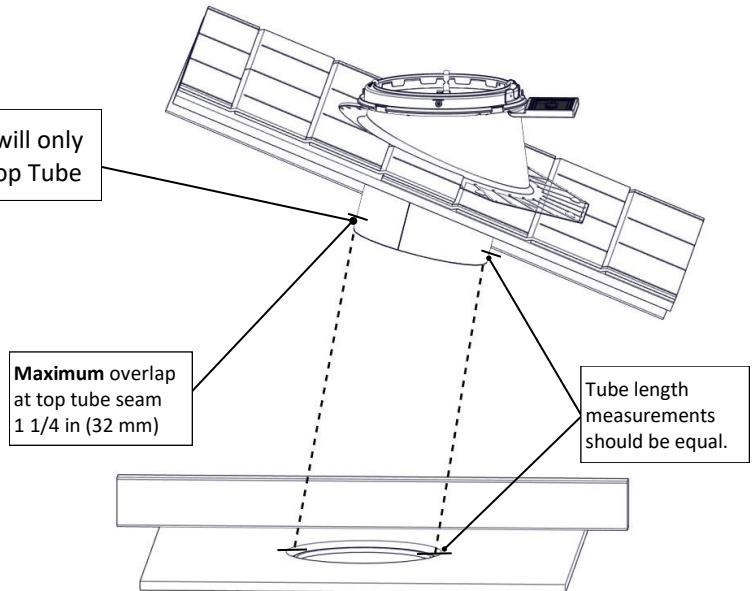
26 Measure tube run
Measure distance from ceiling to top tube. Add additional 1 1/4 in.
(32mm) overlap into top tube to total length.

Note: The Solar-Powered Daylight Dimmer has a stop that will only allow for a maximum overlap of 1 1/4 in. (32mm) into the Top Tube

Solar-Powered Daylight Dimmer Stop

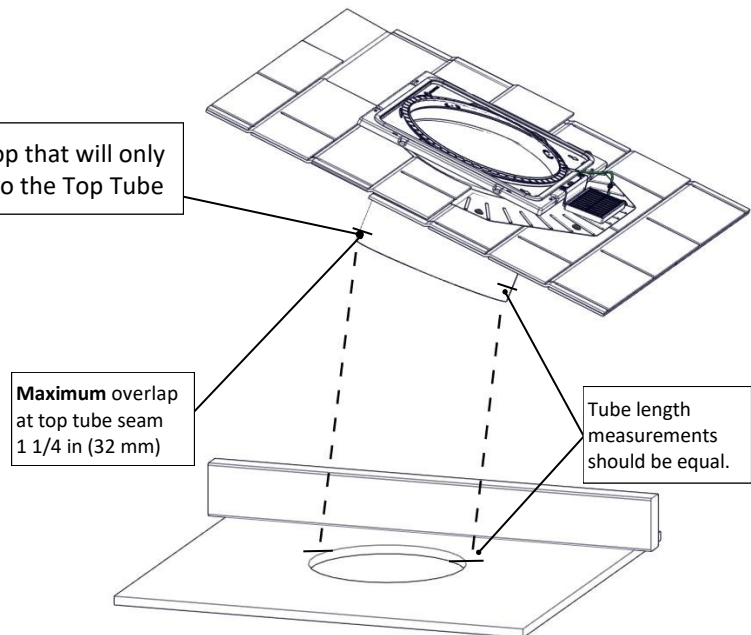


160 DS and 290 DS



290 DS Low Profile


Note: The Solar-Powered Daylight Dimmer has a stop that will only allow for a maximum overlap of 1 1/4 in. (32mm) into the Top Tube

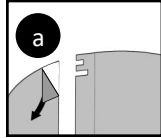


27

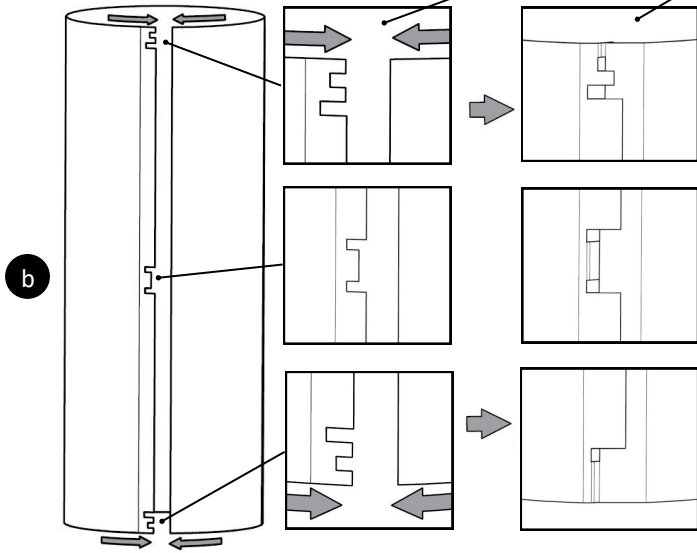
Assemble Tube Run

Include 1 1/4 in. (32mm) overlap into top tube.

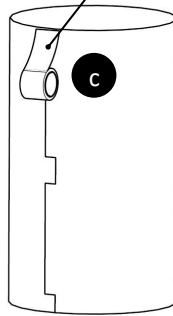
 Remove protective liner



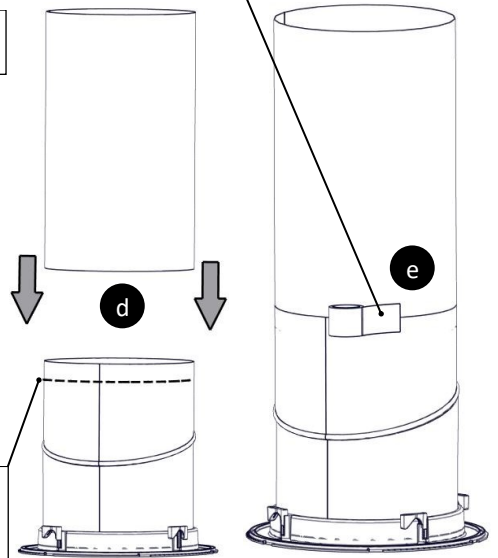
Use notches to create a tapered tube.



Apply pressure to tape for proper bonding



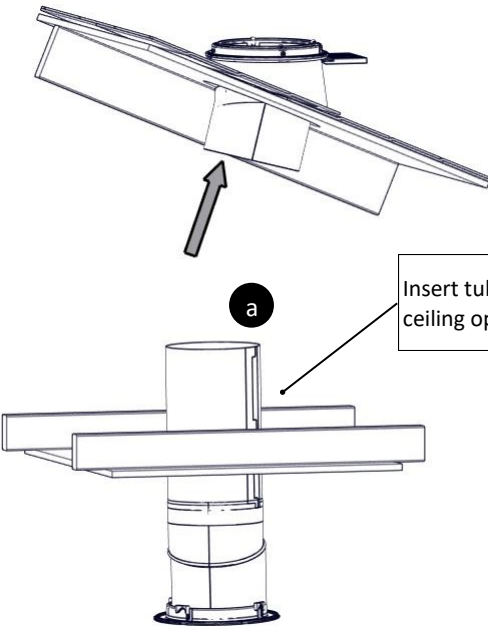
Apply foil tape to temporarily secure tube assembly



Minimum overlap at each tube seams 1 1/2 in (38 mm)

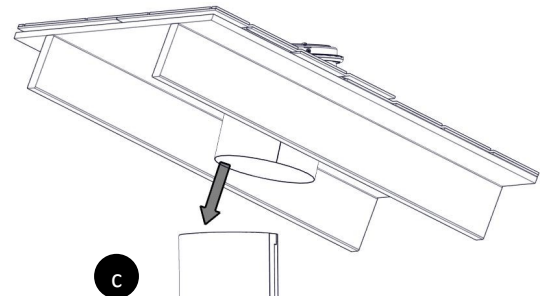
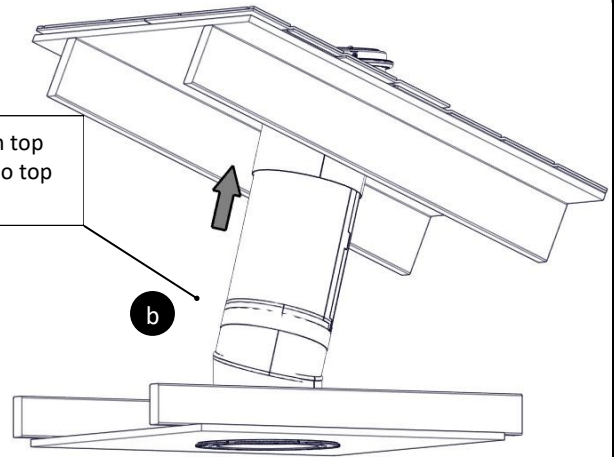
28

Insert Assembly into Ceiling and Adjust Angle



Insert tube assembly into ceiling opening

Adjust tube angle to align with top tube and insert completely into top tube to ensure proper fitment

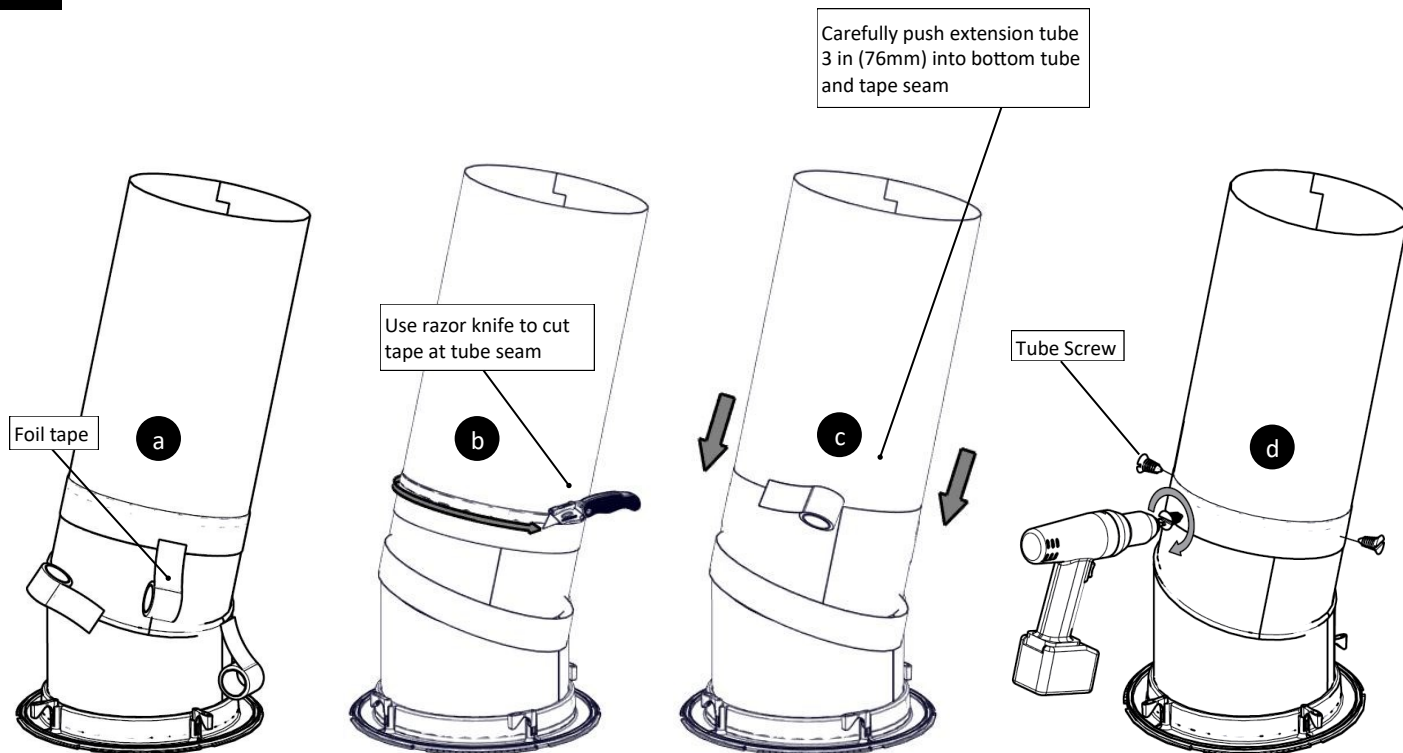


Remove assembly being careful to not change angle of tube

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29

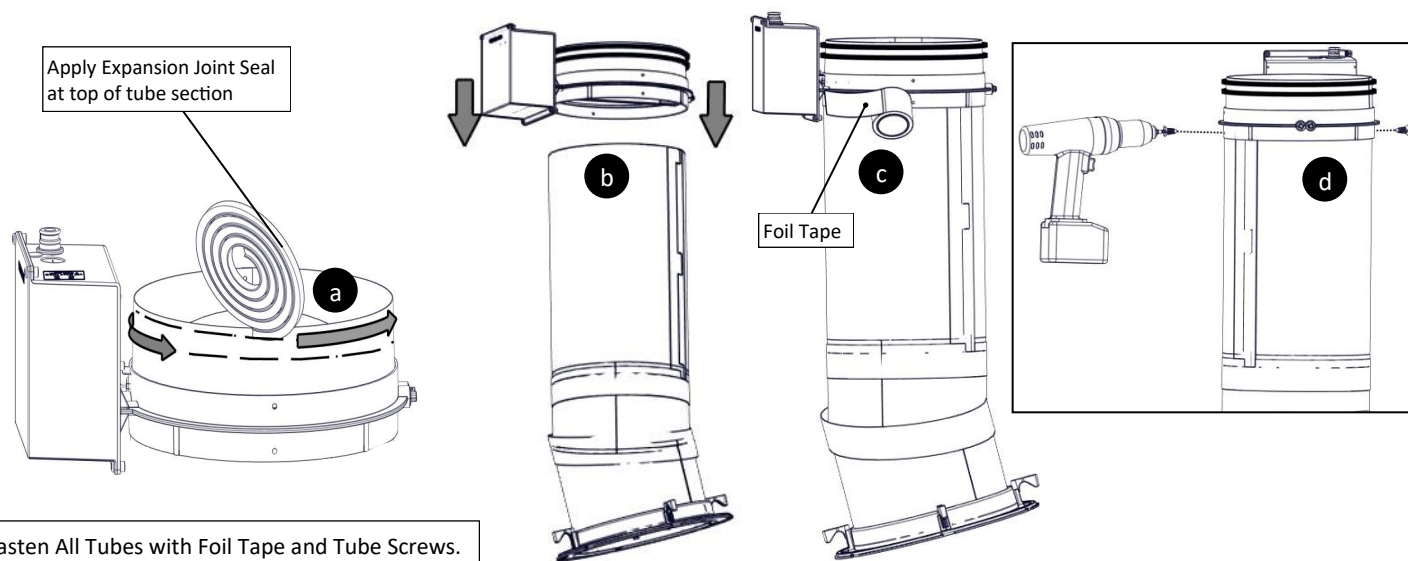
Tape Bottom Tube Angle and Adjust Length of Assembly



Fasten all tubes with Foil Tape and Tube Screws

30

Apply Expansion Joint Seal to Top Section of Daylight Dimmer and Fasten Daylight Dimmer to Top of Tube Assembly



Fasten All Tubes with Foil Tape and Tube Screws.

NOTE: For ease of installation align and position junction box so that it will face away from rafters and face upslope of roof deck.

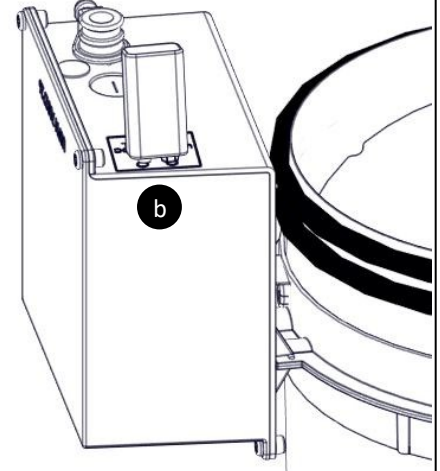
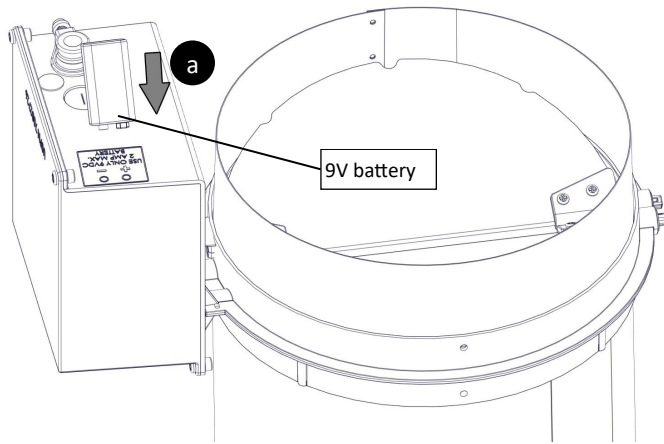
31

Use a 9V Battery (Not Provided) to Power the Daylight Dimmer

Ensure to place positive (+) and negative (-) terminals to like terminals on junction box.

NOTE: Hold battery on terminals for 30 seconds to place Daylight Dimmer into installation mode.

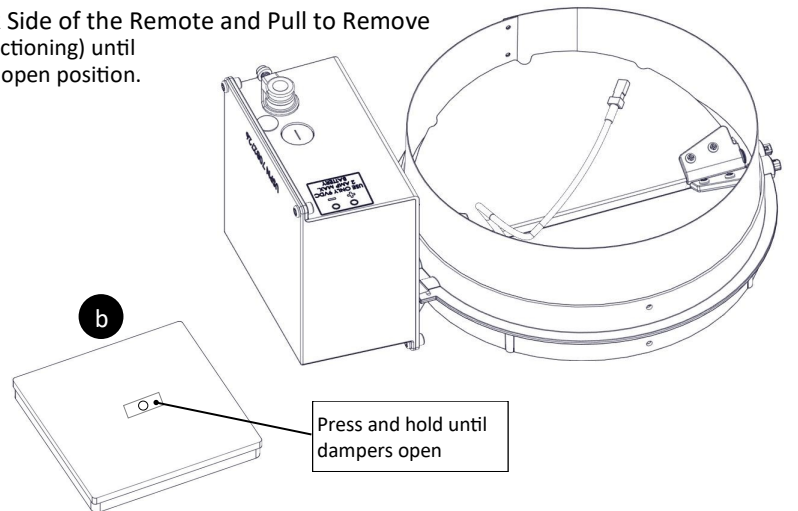
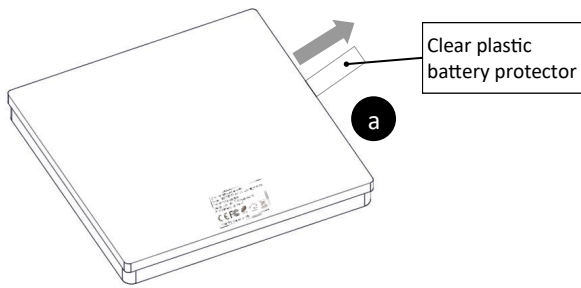
The Daylight Dimmer will stay in installation mode for two (2) hours.



32

Locate Clear Plastic Battery Protector on the Back Side of the Remote and Pull to Remove

Press and hold remote (blue light will appear when functioning) until the dampers of the Daylight Dimmer have reached full open position.

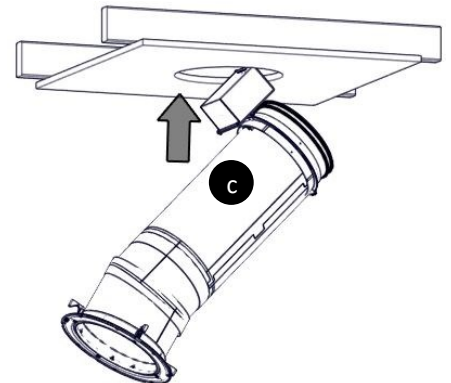
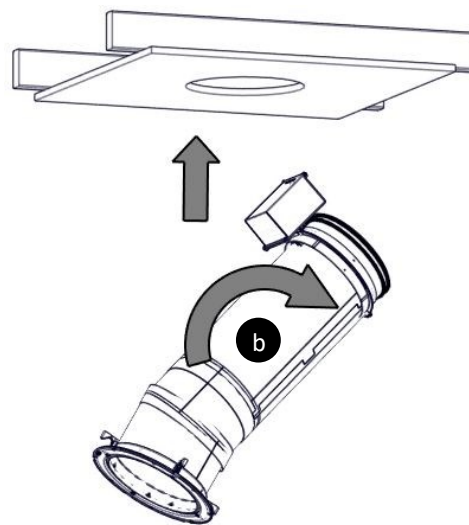
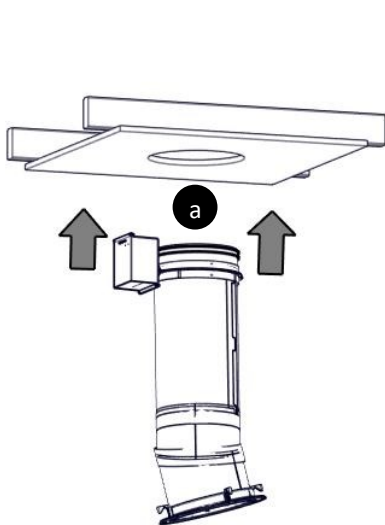


Note: If installing multiple Daylight Dimmers with one remote, skip to steps 46 and 47 before moving to step 33.

33

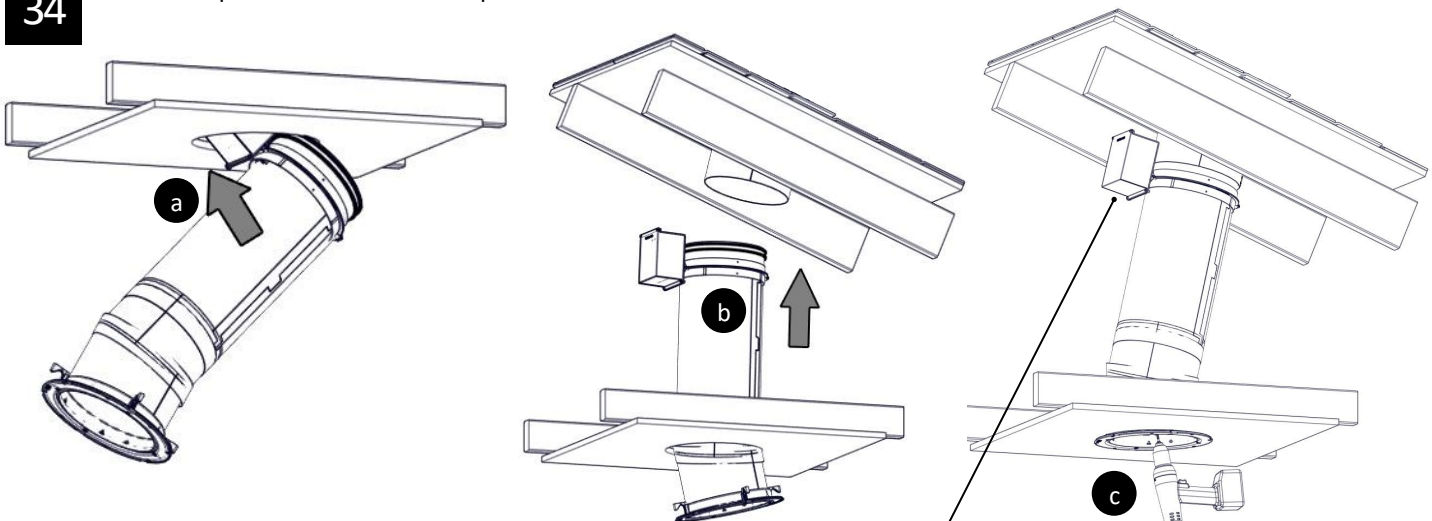
Install Completed Tube Run Into Ceiling

If Daylight Dimmer cannot be installed through the ceiling see step 48 for alternate installation method



34

Install Completed Tube Run Into Top Tube



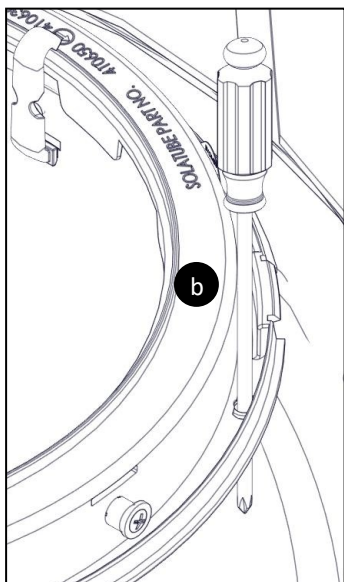
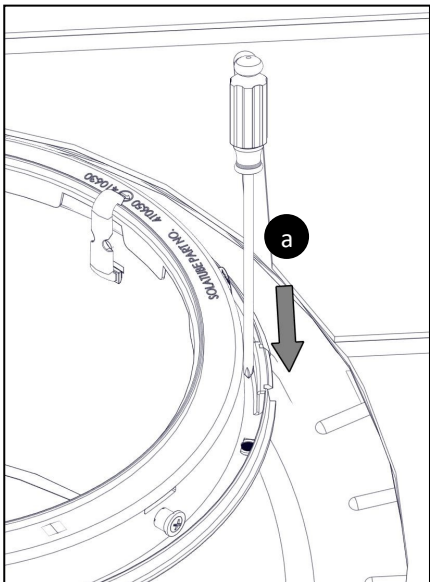
NOTE: For ease of installation align and position junction box so that it is facing away from rafters and facing upslope of roof deck.

The following steps are for 160/290 DS rooftop wire connection.

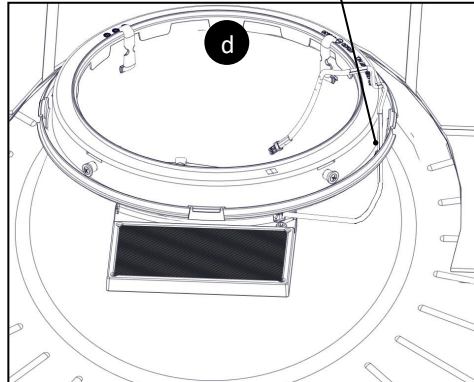
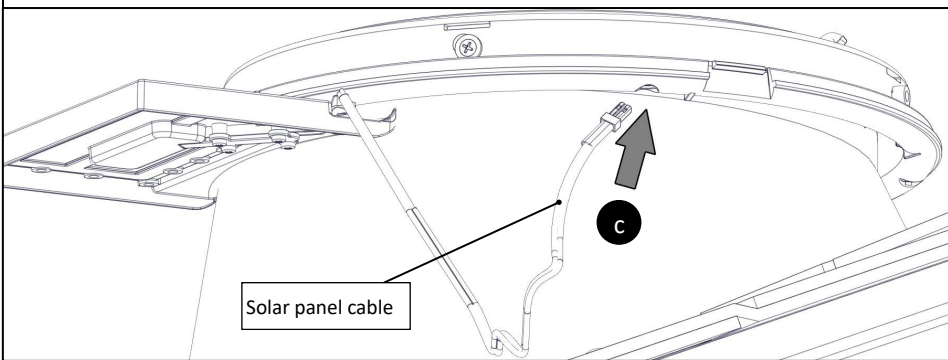
NOTE: Return to the roof to complete wire connection

35

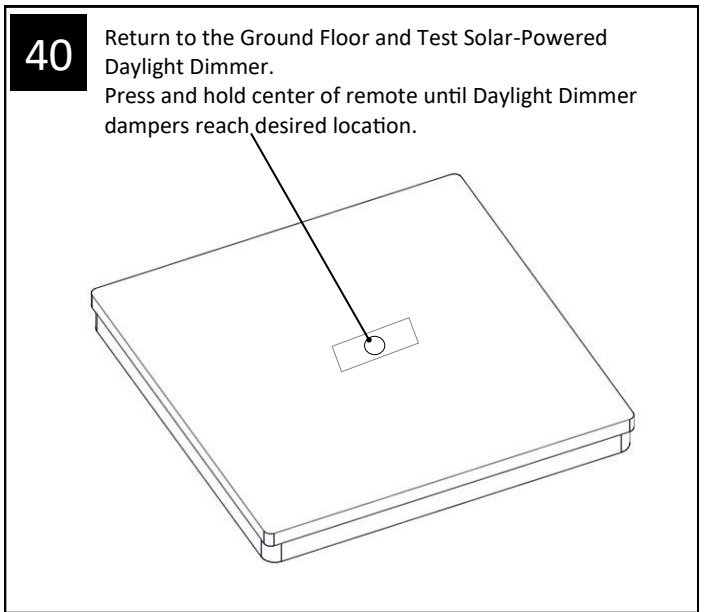
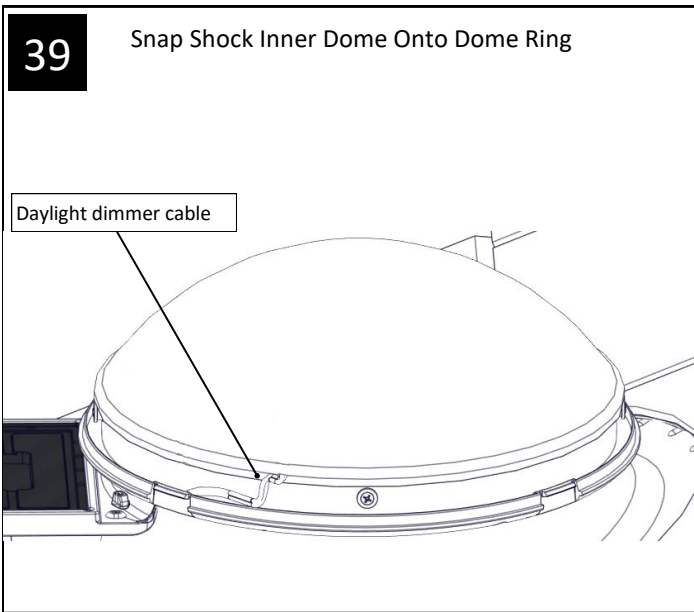
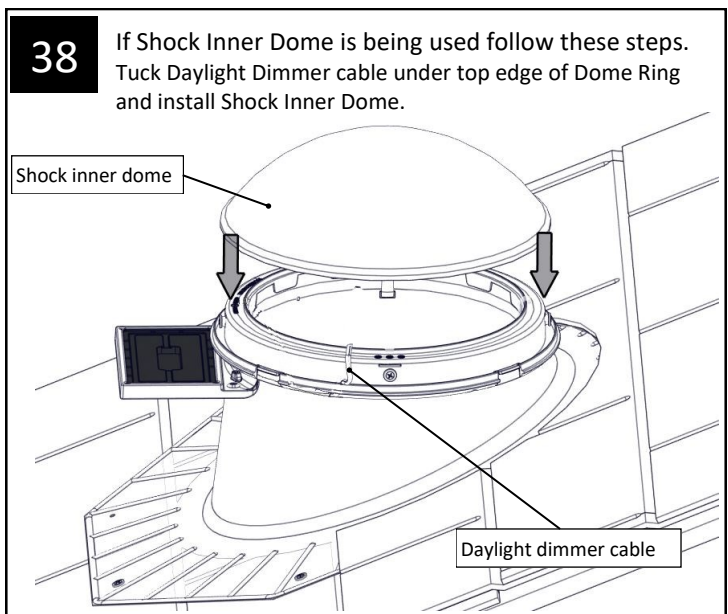
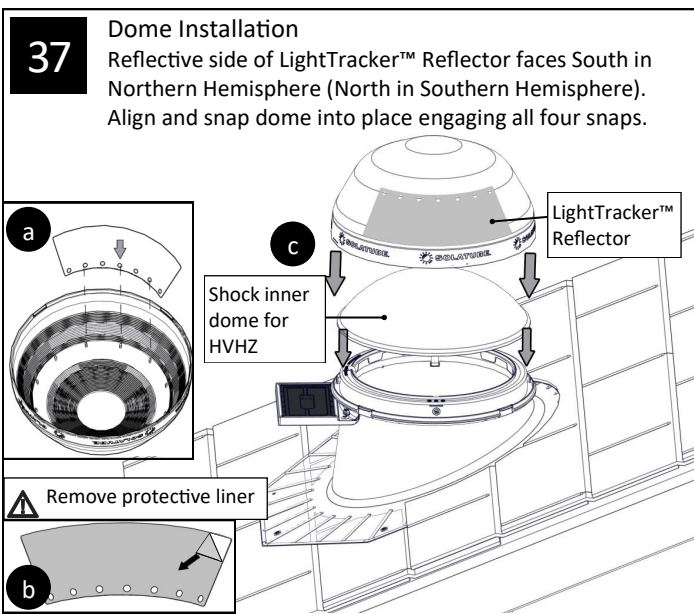
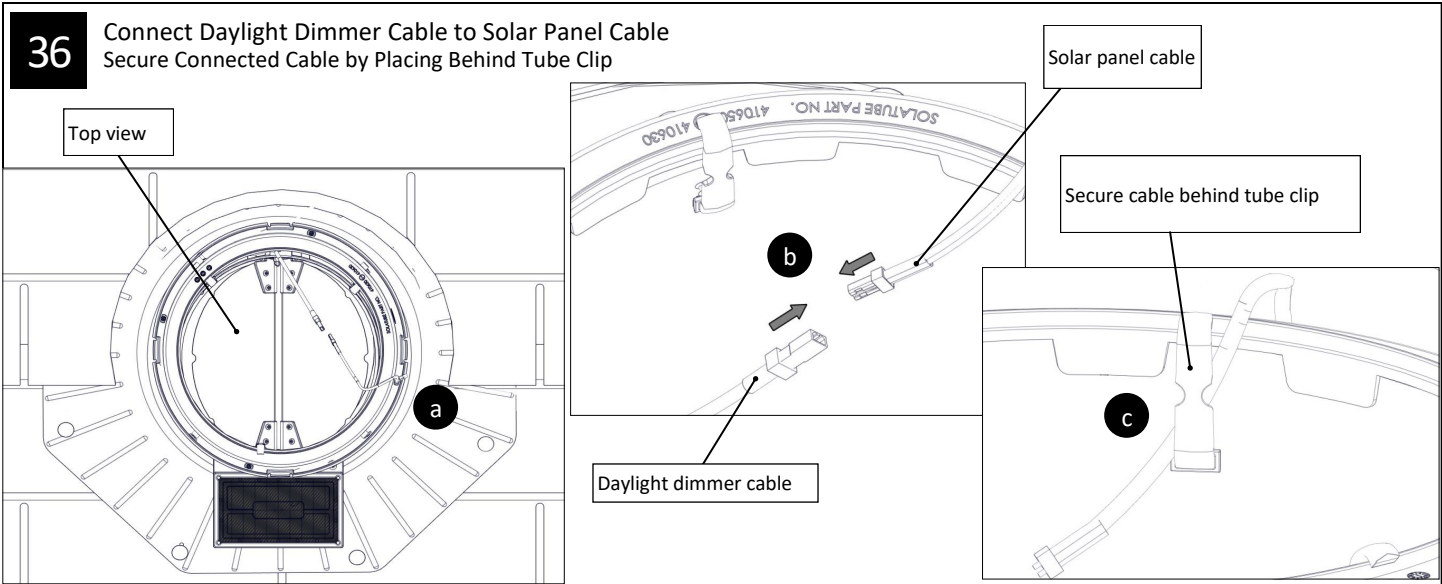
Use Small Screw Driver to Push Out One of the Weep Hole Screens and Insert Solar Panel Cable Through Weep Opening



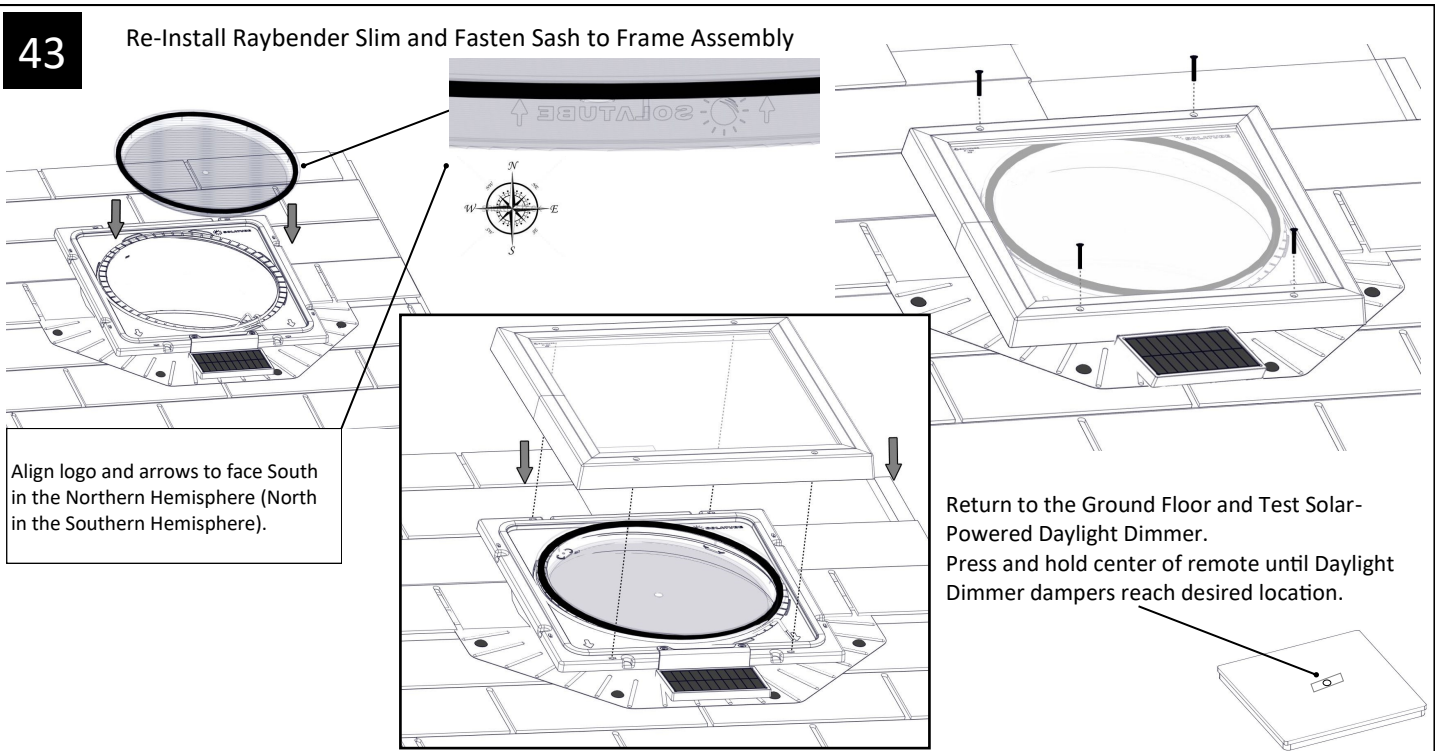
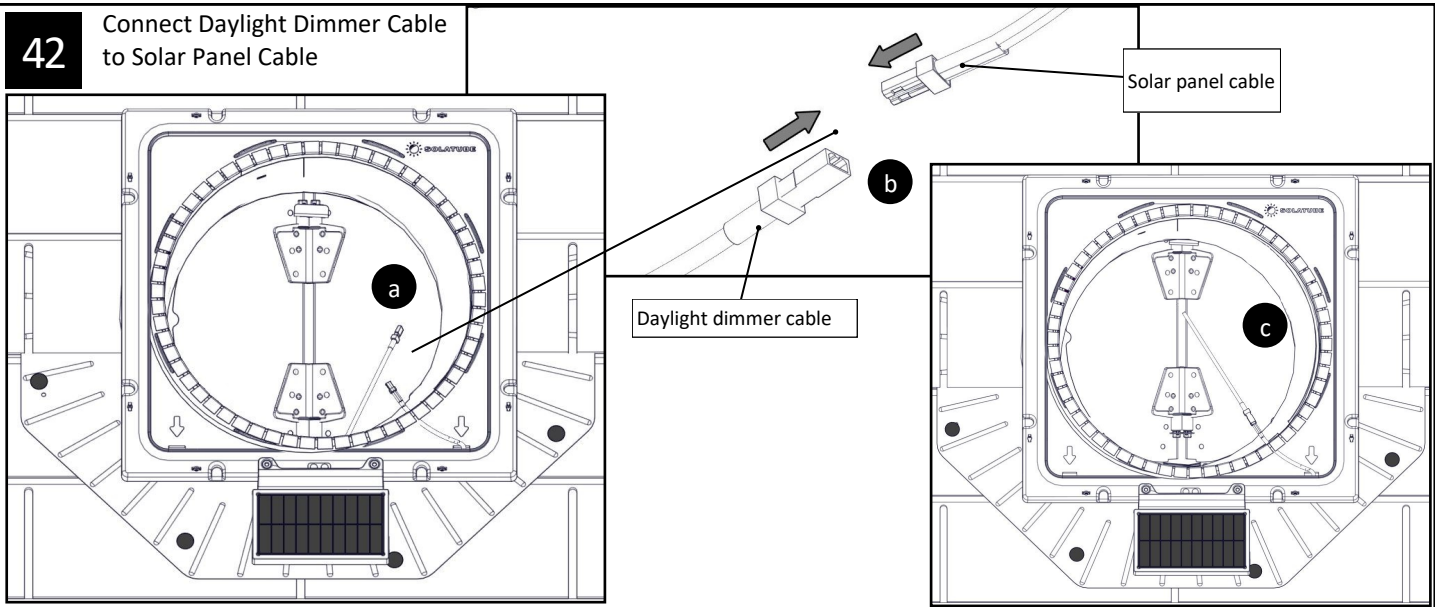
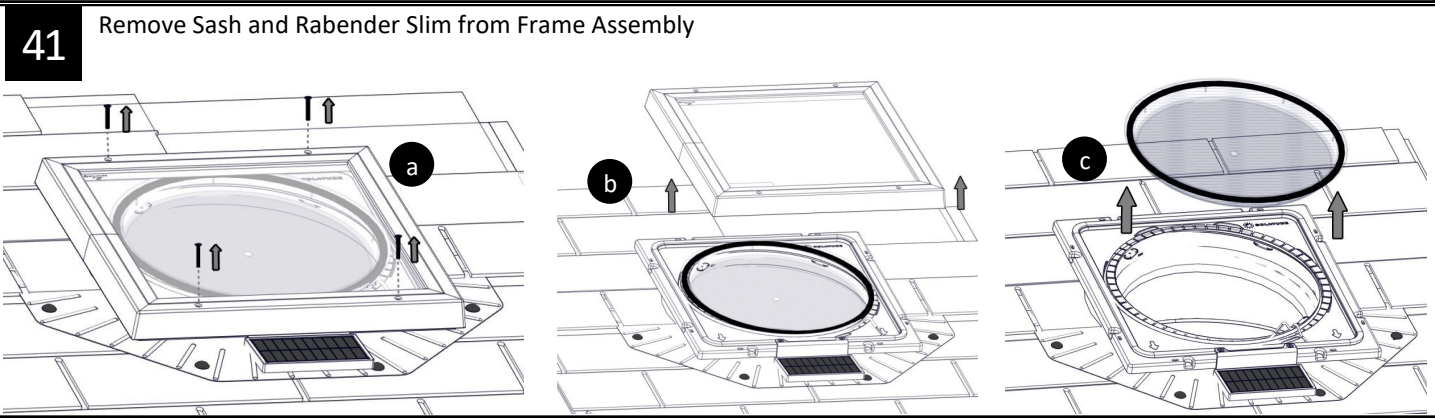
Pull solar panel cable through open weep hole and ensure rubber grommet is firmly inserted into the weep hole.



For the most current Installation Instructions, please visit www.solatube.com/instructions
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The following steps are for the 290 DS Low Profile Rooftop wire connection.
Note: Return to the roof to complete wire connection.



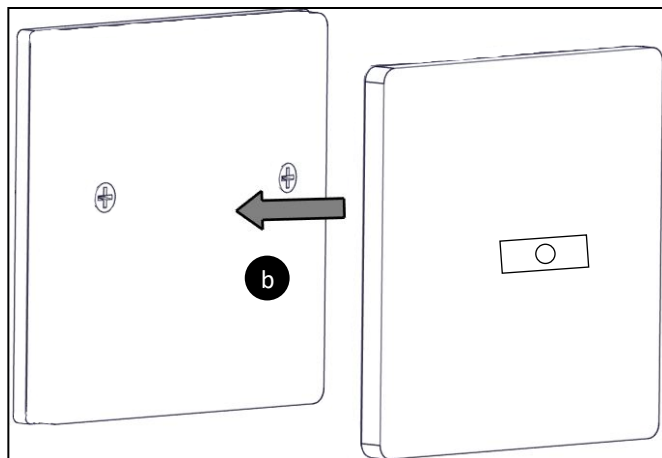
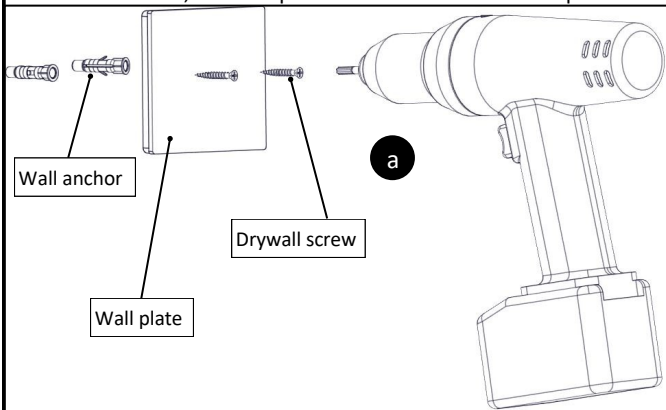
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Please return to Solatube® Brighten Up® Series Installation Instructions (P/N: 951780) to complete the installation for 160/290 DS. Please return to Solatube® 290 DS Low Profile Installation Instructions (P/N: 951883) to complete the installation for 290 DS Low Profile.

Optional Instructions

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If Desired, the Remote can be Attached to the Wall
Remove back plate from remote and fasten plate to desired wall location, then snap remote onto mounted wall plate

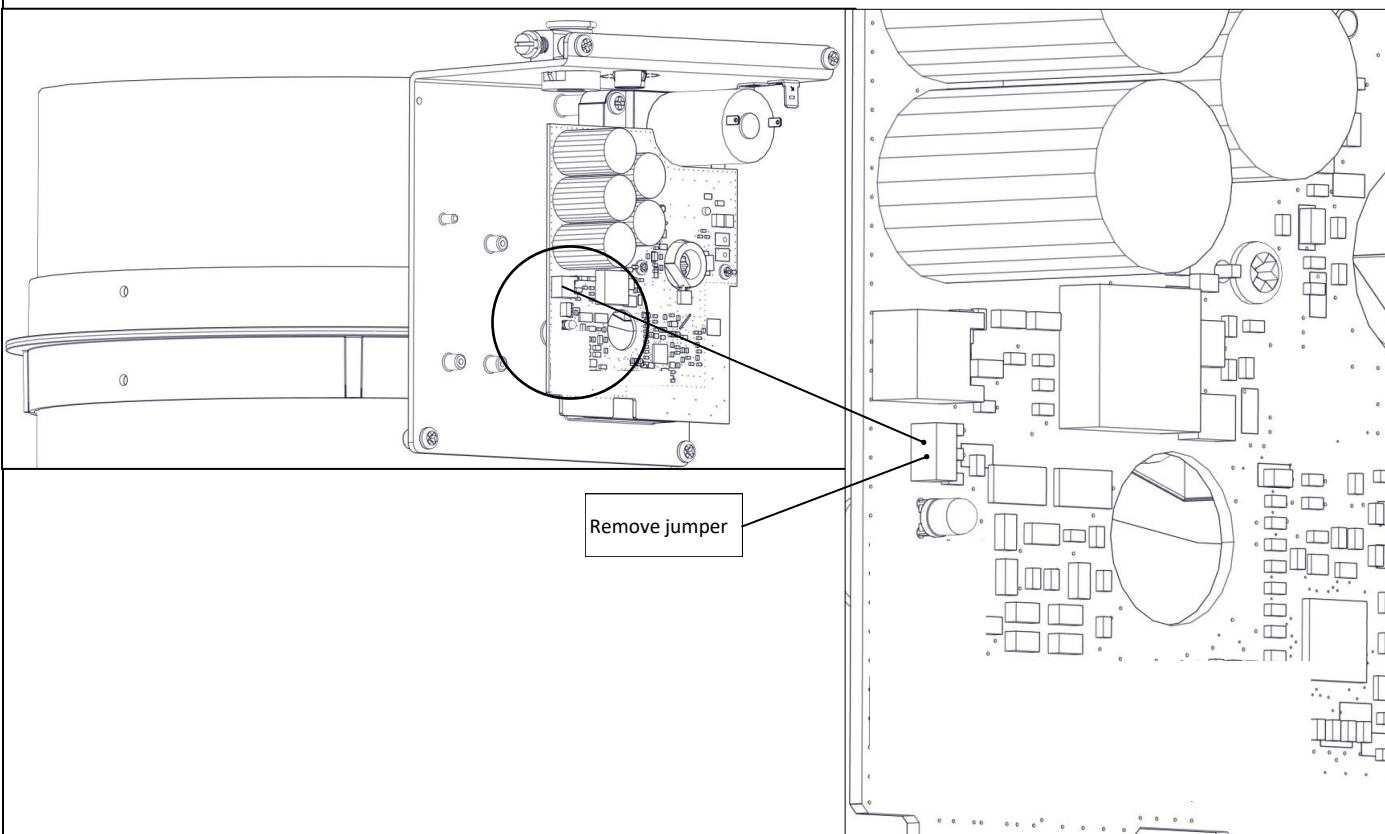


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Optional Step
The Solar-Powered Daylight Dimmer has an optional feature to close the dampers automatically at night. If this feature is desired, remove the junction box cover and then remove the jumper as shown below. This will activate the auto close feature.

Please note that this feature will only close the Daylight Dimmer at night. You must reopen the Daylight Dimmer using the remote during sunlight hours when desired.

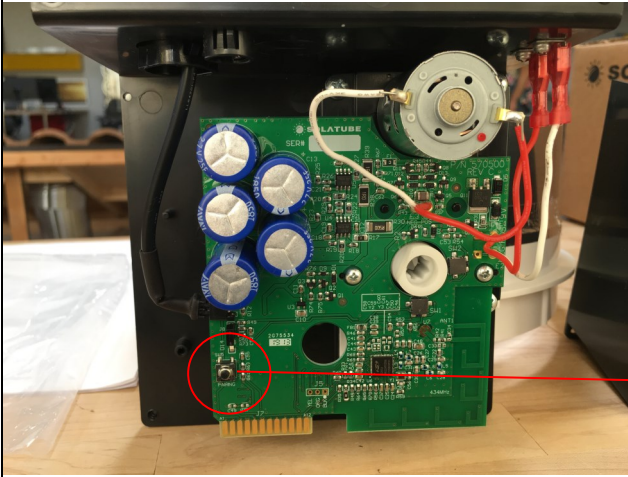
Please also note that the Solar-Powered Daylight Dimmer will not operate at night.
The Solar-Powered Daylight Dimmer will only operate when there is enough daylight to produce energy. The Solar-Powered Daylight Dimmer will not operate in the evening when there is no daylight to produce energy production.



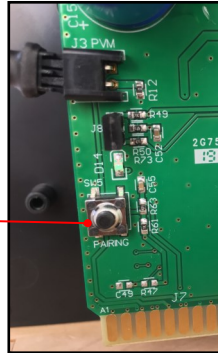
46

Optional Steps

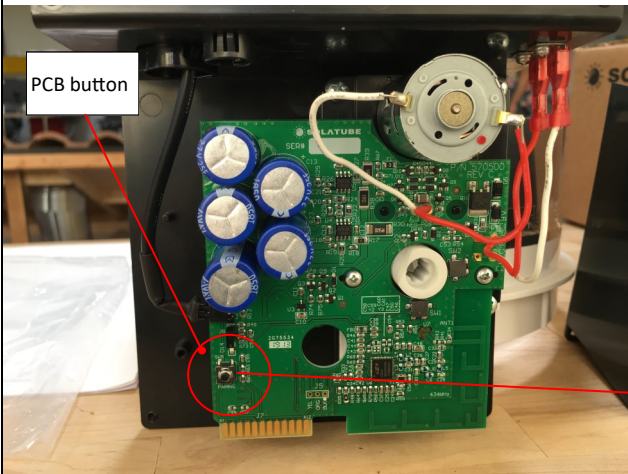
These instructions are intended to be used to pair a new remote with the Solar-Powered Daylight Dimmer if the remote has been damaged or lost.



To unpair/erase saved remotes press and hold the button on the PCB board. Release button when the LED light above the button turns solid green. Unpairing is successful once the LED starts to blink.

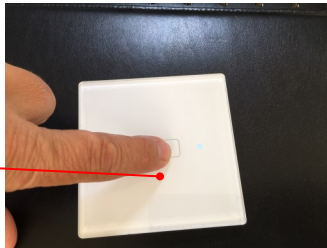


PCB button



Pair a new remote

1. Press button on PCB board once quickly.
2. The LED will blink rapidly.
3. Press center of new remote and the blue light will illuminate.
4. Press button on PCB board once to remove from pairing mode.
5. New remote is now paired



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Multiple Solar-Powered Daylight Dimmer Applications

Multiple Solar-Powered Daylight Dimmers, up to 10, can be operated by one remote. Use above instructions to unpair all remotes and pair all Daylight Dimmers with one (1) remote.

Multiple Daylight Dimmers operated by one (1) remote can become out of sync and open and close at separate times.

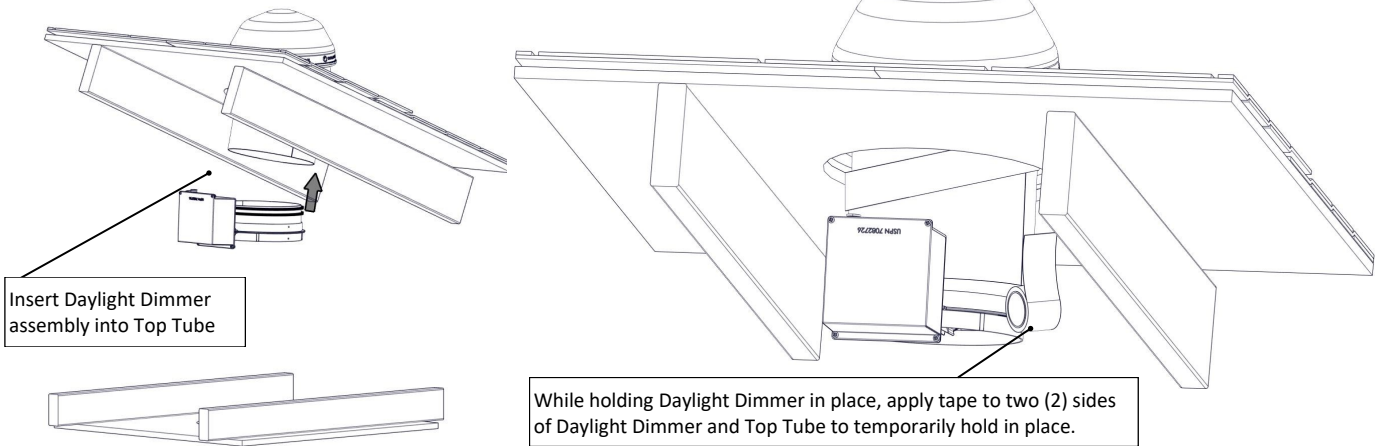
- The Daylight Dimmers can easily be re-synced by pressing and holding the remote until one of the dimmers reaches the full closed position.
- Continue to hold the remote until all of the Daylight Dimmers reach the full closed position. Release finger and dimmers will now be in sync.

Note: The Solar-Powered Daylight Dimmer has a 10 minute delay at the full closed position when the remote is pressed and held. This feature is designed to re-sync the Daylight Dimmers. The delay will reset once your finger has released from the remote and the remote can be used to open and close the Daylight Dimmers immediately.

48

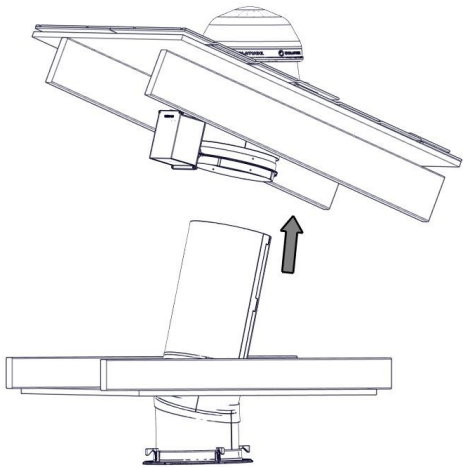
Alternate Installation (for 160/290 DS and 290 DS Low Profile) (160/290 DS shown)

If Daylight Dimmer cannot be installed through the ceiling it will be necessary to complete the installation from inside the attic space.



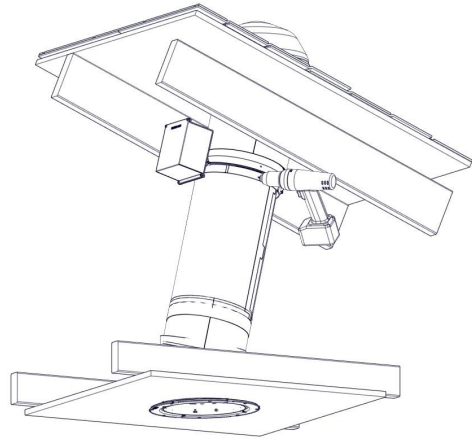
49

Insert Remaining Tube Run into bottom of Daylight Dimmer



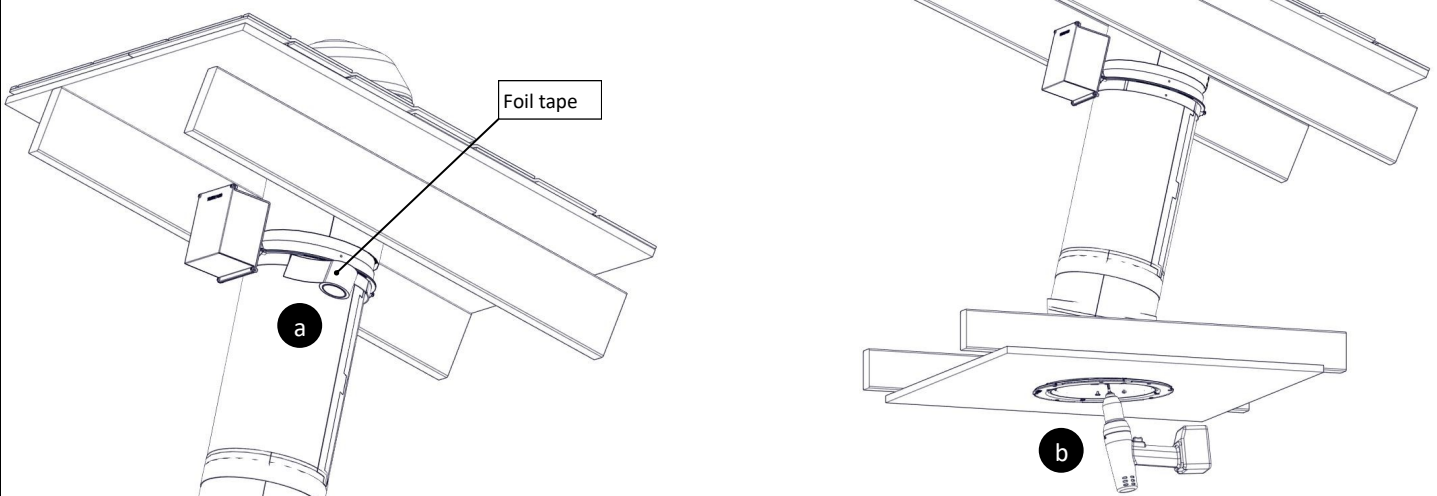
50

Fasten Tube Run to Daylight Dimmer
Once fastened remove the Two (2) temporary strips of tape



51

Tape bottom half of Daylight Dimmer to Tube Assembly
From ground floor fasten assembly to ceiling



Alternate Installation (for 160/290 DS and 290 DS Low Profile) (160/290 DS shown)
 For long tube runs, it may be necessary to install the Daylight Dimmer further down in the tube run.

52 Install Daylight Dimmer in Desired Location of Tube Run
 Note: Multiple extension cables can be connected together.

Note: Do not install extension tube into Solar-Powered Daylight Dimmer Adapter Tube further than 1/2" to avoid interference with dimmer baffles.

53 Attach Extension Cable
 Attach extension cable at roof level and secure with cable clamp just below connection.

Fasten with provided screw

Cable Clamp

290 DS Low Profile

54 Allow Extension Cable to Hang Down Through Top Tube

Extension Cable

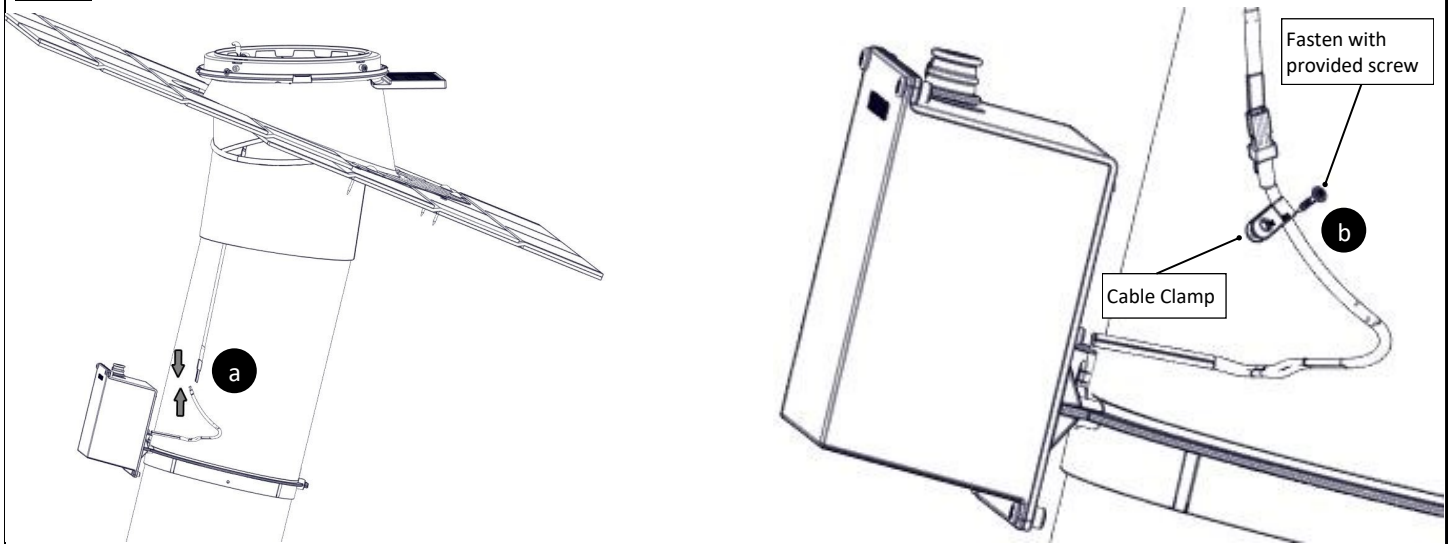
55 Install Completed Tube Run into Top Tube
 Allow Extension Cable to hang outside of tube.

Extension Cable

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Attach Extension Cable to Daylight Dimmer From Inside Attic

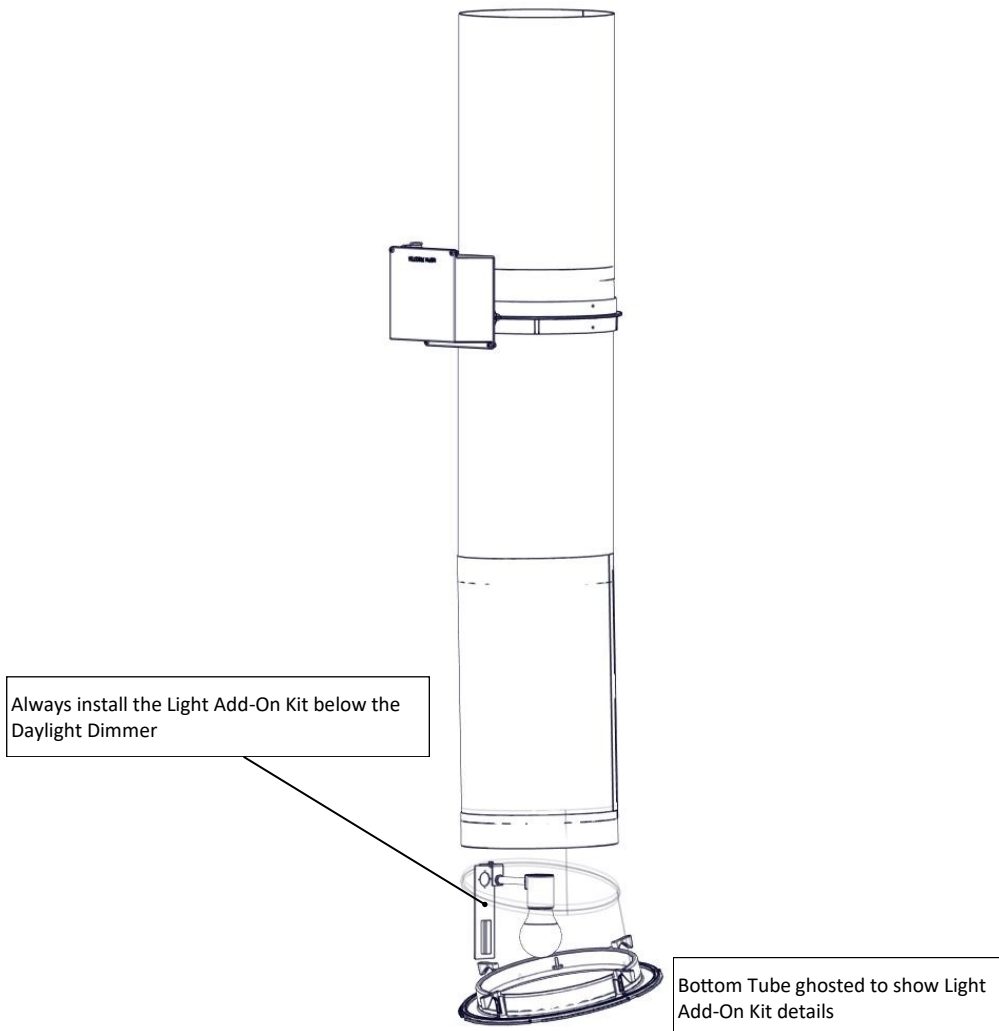
Connect cables and secure cables to outside of tube with cable clamp just below connection.



Note

For all installation that include the Light Add-On Kit:

Ensure the Light Add-On Kit is installed into the bottom tube and always below the Solar-Powered Daylight Dimmer.



Notes



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