Installation Guide

Solar Heat Extractor
(Standard)

For Buildings with a Roof Cavity



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Caution

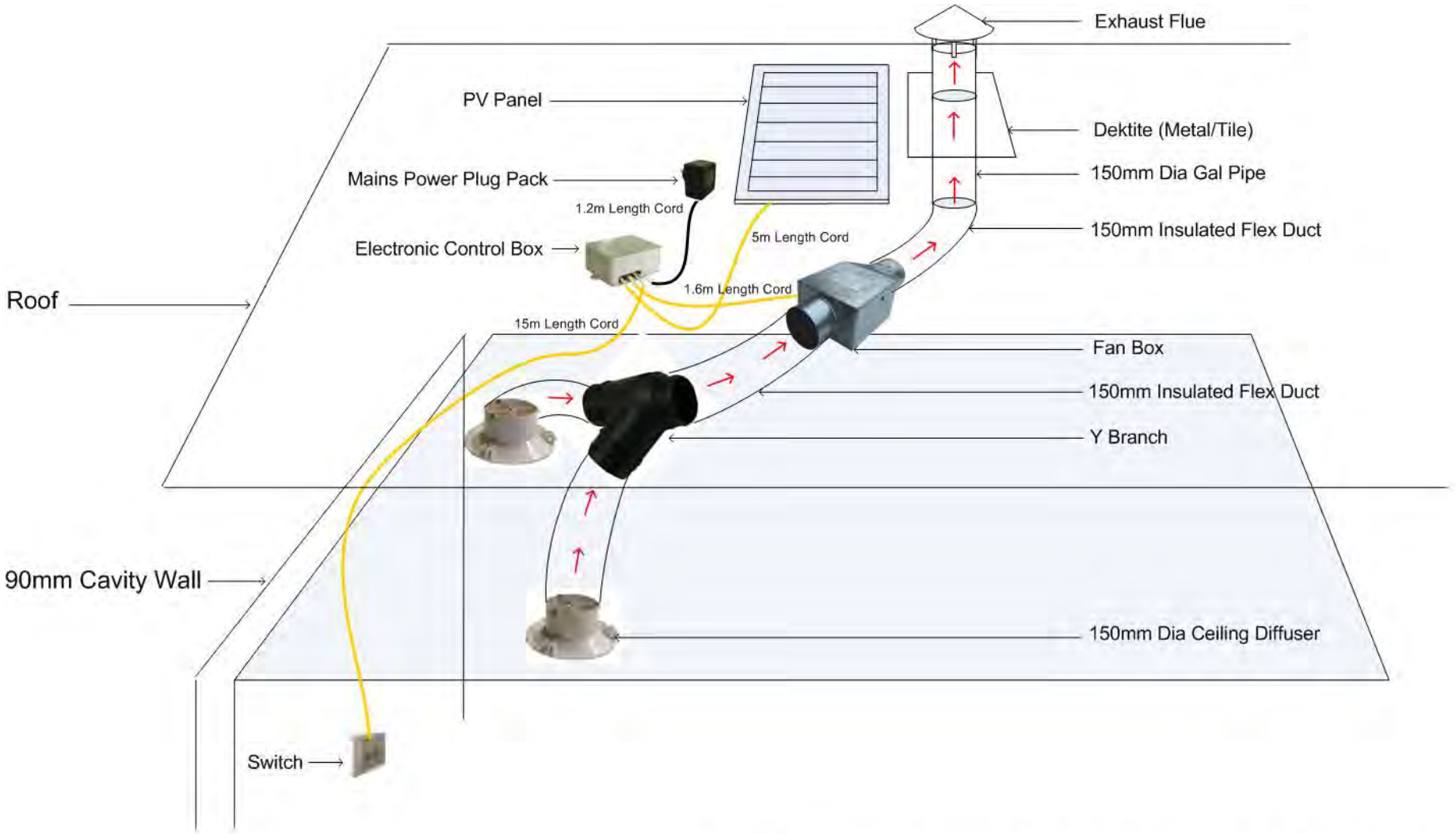
No Liability is assumed for any damage caused by improper installation.

Notice

The information in this manual is subject to change without notification. Additional pages may be inserted in future editions. The user is asked to excuse any technical inaccuracies or typographical errors in the present edition.

No responsibility is assumed if accidents occur while the user is following the instructions in this manual.

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INSTALLATION OF SOLAR HEAT EXTRACTOR (STANDARD)

FOR BUILDINGS WITH ROOF CAVITIES

1. Introduction

Congratulations on your purchase of a Sun Lizard Heat Extractor and reducing your contribution to Australia's greenhouse gas emission.

The Sun Lizard has been designed to install quickly and easily to most buildings. Prior to commencing the installation of the Sun Lizard, please read the following installation guide carefully and if in doubt, contact your local distributor or installer.

For an overview of the installation please see the previous page.

2. Handling & Unpacking

Carefully remove the items from the boxes. Please take note of these general precautions.

- When handling the Photovoltaic Panel, take extreme care, as the glass is fragile.
- Do not twist or bend the Photovoltaic Panel; always lay the panel on a flat surface.
- When moving the Photovoltaic Panel, ensure that it is lifted by its side and not by the corners.
- Do not place tools or other heavy objects on the glass even with the protective cover in place. Glass breakage during installation or through negligence will not be covered under warranty.

Throughout the installation of the Sun Lizard, the installer should ensure that the Product Specifications are not compromised.

3. Inventory Checklist

Check the following items are included in the package:

- ☐ 1 x PV Panel
- ☐ 1 x Fan Box
- ☐ 1 x Electronic Control System
- ☐ 1 x Switch
- ☐ 1 x Switch Cable
- ☐ 1 x Exhaust Pipe
- ☐ 1 x Exhaust Cowl
- ☐ 1 x Dektite (For Metal / Tiled Roof)
- ☐ 2 x Ceiling Diffuser
- ☐ 1 x Y Branch
- ☐ 2 x Insulated Flexible Ducting
- ☐ 1 x PV Frame

Optional components supplied with Sun Lizard if ordered include

- ☐ Filtered cooling vents (Floor Register, Boot & Filter)

What You Will Need

- ☐ Duct Tape
- ☐ Silicon Sealer
- ☐ Screw Driver
- ☐ Adjustable Spanner
- ☐ Scissors
- ☐ Tekscrews
- ☐ 15mm Drill Bit and Drill
- ☐ Plasterboard Screws
- ☐ Conduit (for solid walls only)
- ☐ Razor Blade / Stanley Knife
- ☐ Roofing Screws (for metal roof only)
- ☐ Hoop Iron or Metal Strapping (for tiled roof only)

If items are missing please contact AFE on (03) 9722 9596.

4. Important Notes before Installing a Sun Lizard

It is recommended that a qualified tradesman be used to install the Sun Lizard Heat Extractor and to:

- Complete the installation and ensure that the Sun Lizard is correctly mounted to withstand any extreme local conditions.
- Complete all roof penetrations to meet any local regulations.

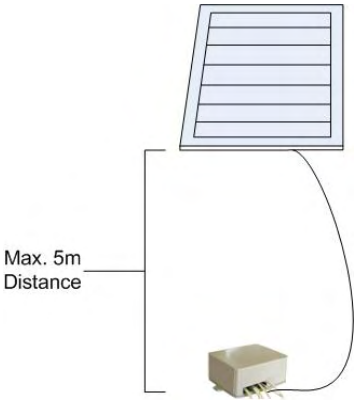
While it is possible for a home handyman to do the installation, local regulatory requirements may necessitate the use of a qualified

tradesman. While no warranty will be void if a qualified tradesman is not used, no responsibility for roof leaks or other possible damage through incorrect installation will be entertained.

To avoid damaging any of the components, it is recommended to assemble the Sun Lizard on the roof as part of the installation procedure. If assembly is impossible on the roof of the building, then assembly should occur prior to installation.

We recommend laying out all the components in a dummy assembly to ensure you are familiar with how they will all fit together. Do this on the ground first and then on and in the roof. This is also useful to ensure you keep ducting to a minimum and have all the components required prior to commencing installation.

5. Selecting a Location for the PV Panel



The Sun Lizard PV Panel should be installed on the roof of your building as close as possible to the following conditions:

(a) The most effective direction to install the PV Panel is between 5 degrees East to 10 West of due North. Installation outside of this orientation will degrade performance to some degree. Local conditions may require minor changes to this ideal.

(b) If no roof surface faces North, then the PV Mounting Frame may need to be used to achieve the optimum performance.

(c) The Sun Lizard requires the sun to work. If trees shade your roof during the day, the Sun Lizard will not be as effective, or in extreme cases, it may not work at all. Ensure that minimal shading occurs on the roof (where the proposed location of the Sun Lizard is to be) during the day.

(d) The PV Panel will need to be mounted at an angle that is suited for your location to ensure the PV Panel obtains the maximum solar gain. Please refer to the map and table on the right to determine the optimum tilt angle (elevation from horizontal).

(e) PV Panel should be located within a 5m distance from the electronic control system as cable included in the package is 5m in length.

If you are unsure, please talk to your local distributor or contact us direct.



Latitudinal Range	PV Panel		Examples of Major Centres
	Optimum Elevation	Elevation Range	
15°-20°	5°N - 10°N	0°N-20°N	Cairns
20°-25°	10°N - 15°N	5°N-25°N	Mackay Rockhampton
25°-30°	15°N-20°N	10°N-30°N	Brisbane, Gold Coast, Geraldton
30°-35°	20°N-25°N	15°N-35°N	Port Macquarie, Newcastle, Gosford, Sydney, Adelaide, Perth
35°-40°	25°N-30°N	20N-40°N	ACT, Melbourne, Ballarat, Bendigo, Geelong
40°-45 °	30°N-35 °N	25°N-45°N	Devonport, Launceston, Hobart

HANDY TIPS

- The fan box should not be connected too close to the ceiling diffuser to avoid fan noise coming into the room via the ducting.
- It should be located at the furthest point from the ceiling diffuser, just before it goes through the roof.

6. Selecting a location for the Fan Box

Locate the Fan Box inside the ceiling cavity in between the ceiling diffuser(s) and the exhaust gal pipe.

7. Selecting a location for the Electronic Control System

(a) Locate the Electronic control system either inside the ceiling cavity or inside a cupboard away from dampness and excessive heat close the fan box.
(b) Ensure that when connecting any cables that moisture and condensation will not run down the cables into the control box.

Please note that the cable from the Electronic Control System to the Fan Box is limited to 1.5m in length and the Electronic Control System from the Power Point is 1.2m.

8. Selecting a location for the Ceiling Diffuser(s) (Inlet Return)

Locate the ceiling diffuser(s) in one or two areas which you wish to exhaust the hot air out of the building. Recommendations for:

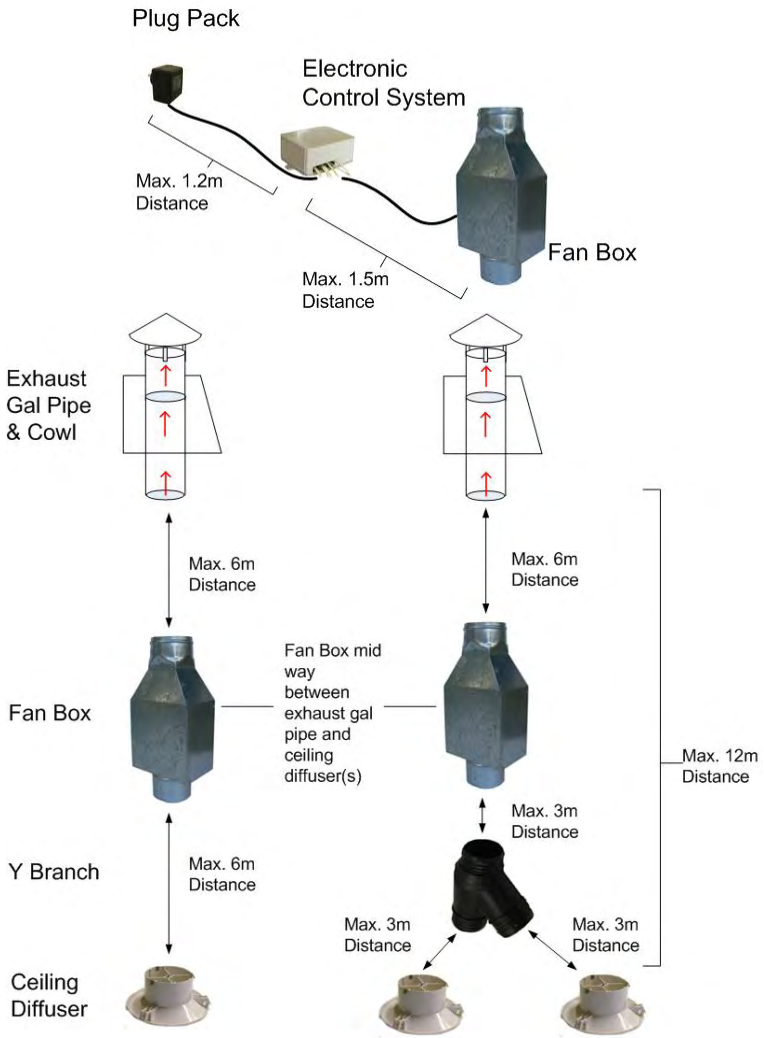
(a) A sloped ceiling: the diffuser should be located at its highest point.
(b) A flat ceiling: the diffuser should be located close to the northern side of the room.

In two story buildings, the diffuser should be located in the upper story.

The ceiling diffuser should not be located further than 6m away from the fan box if installing one diffuser or 3m from the Y Branch if installing two diffusers.

9. Selecting a location for the Exhaust Flue

Locate the exhaust flue (comprising of a Gal Pipe, Cowl Hat and Dektite) as close to Fan Box. The exhaust flue should be not exceed a distance of 6m from the Fan Box.

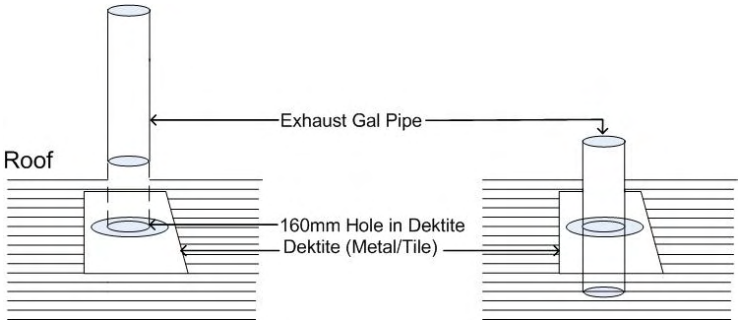


Maximum distances between each component

10. Penetrating the Roof

After selecting the location of the exhaust flue:

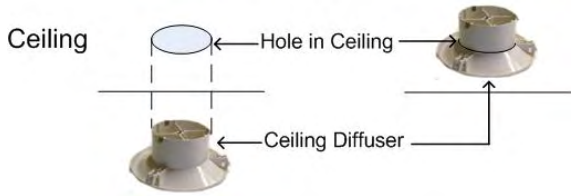
(a) Remove tiles if it is a tiled roof) or cut a 160mm hole in the metal roof.
(b) Cut rubber off Dektite or Aquaseal to suit 150mm pipe and tightly fit pipe into rubber.
(c) Place into hole in roof. Do not seal or screw the Dektite or pipe to roof at this stage.



11. Fitting ceiling diffuser

After selecting the location for ceiling diffuser(s)

a) Check inside the ceiling cavity for where timber structures are located.
b) Marking and cutting plaster for an exact location.
c) Mark and cut the hole(s) for the ceiling diffuser using the template on the diffuser box. This diffuser will draw warm air from the ceiling into the Fan Box.
d) Fit ceiling diffuser into plaster ceiling and lock.



12. Connecting ducting

(a) Connect one end of the insulated flexible ducting to ceiling diffuser using duct tape and make sure it is well taped and sealed.
(b) Stretch the insulated flexible duct to the fan box or Y branch and cut duct to length (**NOTE**: the shorter the duct the less resistance in airflow, the more effective the system will perform)
(c) Continue connecting the insulated flexible duct from the Y Branch to fan box (for two ceiling diffusers) and from fan box to exhaust gal pipe at the top of the roof, making sure that ducting is kept to a minimum.

HANDY TIPS

- Labels on the Fan Box indicate the air direction.



- Ducting should be secure and airtight.
- You can use metal gal pipe instead of the supplied insulated flexible ducting as it has even less resistance in air flow.

13. Connecting the Electronic Control System (ECS), to Cable and Switch

Please note Make sure the cable and switch are installed before connecting the PV panel on the roof.

For walls with a 90mm wall cavity:

(a) Locate the wall mounted switch in an appropriate, accessible location.
(b) Locate the top plate directly above the desired position of the wall mounted switch
(c) Drill a 15mm diameter hole into the top plate
(d) Connect one end of the 15m cable to the socket labelled *'Control Panel'* on the ECS
(e) Feed the 15m cable down the 15mm diameter hole
(f) Create a small hole in the plasterboard to where you want to fit the switch
(g) Draw the suspended cable inside the cavity through the hole in the plasterboard
(h) Clip the other end of the 15m cable to the back of the switch
(i) Remove top cover of the switch
(j) Place the switch against the wall
(k) Using plasterboard screws (not supplied), screw the switch into position. (If gang plate is behind plasterboard (usually for new homes) use the screws supplied in the switch)
(l) Reposition the top cover of the switch.

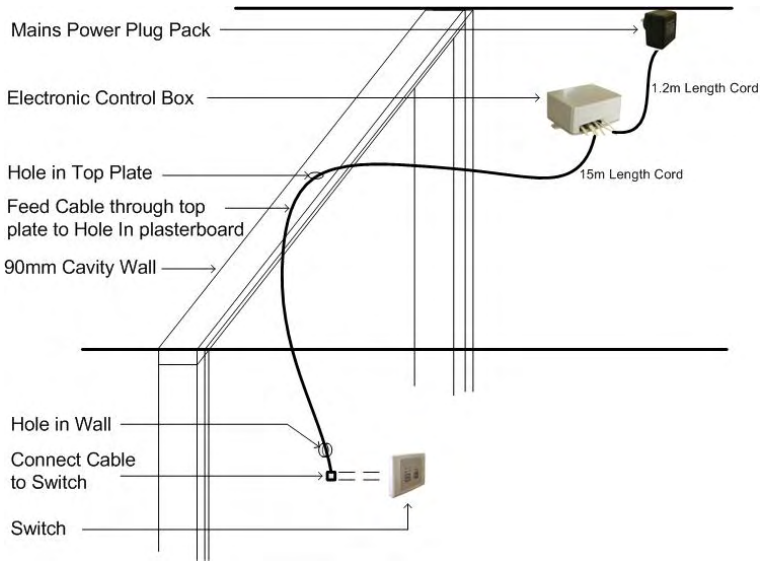
For solid walls:

(a) Use a convenient cupboard or wardrobe to run the cable in to your desired location

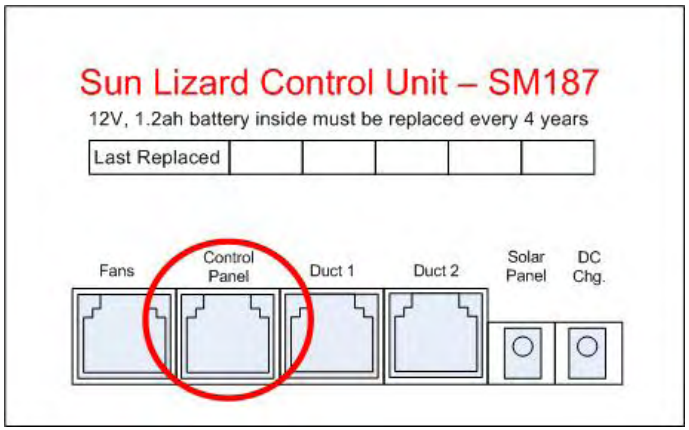
or

Use conduit and screw/stick conduit to the desired location on the wall and run cable to the desired location.

(b) Then follow steps (h) – (l) in the above instructions for a 90mm wall cavity.

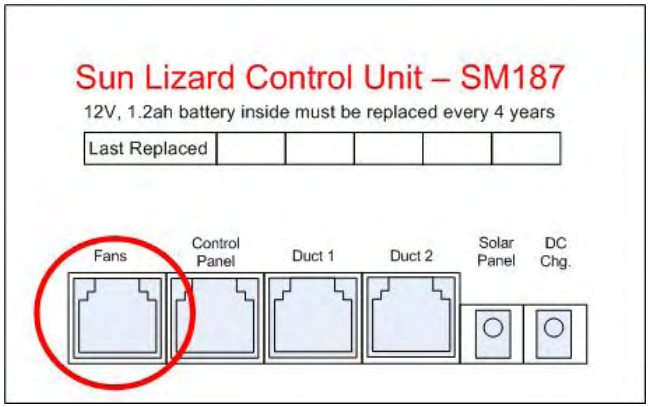


For walls with 90mm wall cavity



14. Connecting the Electronic Control System (ECS), to Fan Box

(a) Using the cable attached to the Fan Box, connect the cable to the socket labelled *'Fans'* on the ECS.



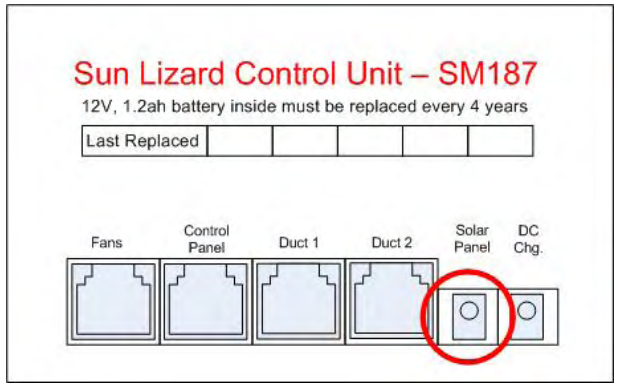
15. Connecting the Electronic Control System (ECS), to PV Panel

NOTE PV panel should be the last device connected to complete the Sun Lizard assembly on the roof!

IMPORTANT
We strongly advise placing a cover (the box it came in or a towel) over the face of the panel until after it has been connected to the power cable to stop it from generating electricity and causing any shorts or electrical faults.

(a) Place the **PV Panel face down** on the roof inside the packing box it came in.
(b) Unscrew the cover off the junction box on the PV panel
(c) Use a razor blade or Stanley knife to carefully puncture a small hole in the rubber grommet at the end of the terminal box.
(d) Feed the end of the cable with two terminators through the slot into the junction box.
(e) Unscrew the positive and negative screws and hook the terminators into the appropriate terminal. One terminal labelled 'neg' for Negative, other unlabelled is positive. Replace the cover and screw shut.
(f) Feed the power cable (labelled PV Power) for the PV Panel through the dektite.
(g) Screw back on the cover for the junction box.
(h) Continue to leave **PV Panel face down** to avoid electricity generation.
(i) Run the cable down the dektite to the ECS
(j) Connect the end of the cable to the socket labled *'Solar Panel'* on the ECS.
(k) Turn the PV panel over and when it is turned over the fans should immediately start operating if there is any sunshine.



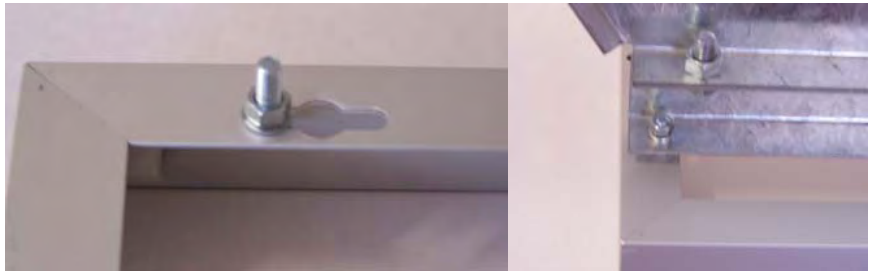


16. Fitting PV Panel on Roof

(a) Attach PV Panel to adjustable mounting frame. There are three types:
Use Combo 1: if roof is of correct solar angle for your location (see Step 5, Selecting a location for the PV panel)
Use Combo 2: if roof is flat or is east or west facing and want a low profile.
Use Combo 3: if roof is flat or is east or west facing and want allow leaves or debris to easily escape.

(b) Assemble frames as shown in diagrams to the left.

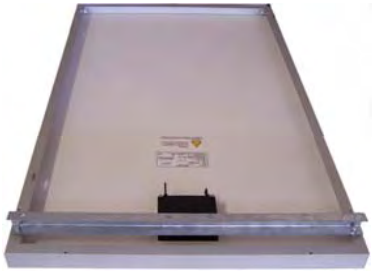
(c) Securely attach PV Panel to mounting frame using nuts and bolts supplied. Use bolt washer and one nut to lock the bolt to the PV frame before fixing to the mounting frame. See detail below:



(d) Fix the supplied mounting frame with PV panel to the roof using roofing screws for metal roof or hoop iron.

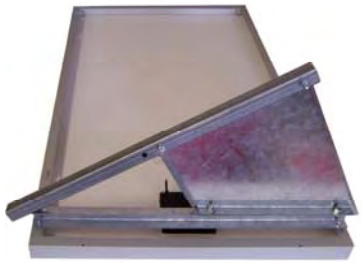
Frame Combo 1: For Roofs not needing Frame

Bolt flat on roof for roofs with correct solar angle



Frame Combo 2: For Roofs needing a frame

Lower Profile



Frame Combo 3: For Roofs needing a frame

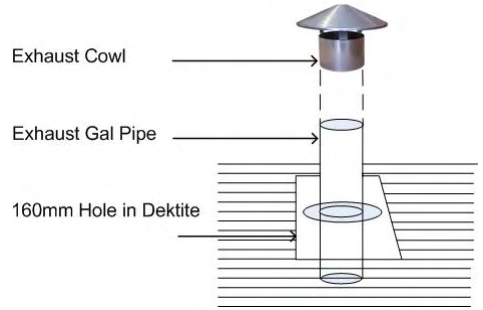
Allow air gap for leaves and other debris to fall through

Higher Profile



17. Connecting Exhaust Cowl

(a) Fit the cowl on the exhaust pipe
(b) Use two tekscrews to fix exhaust cowl to pipe



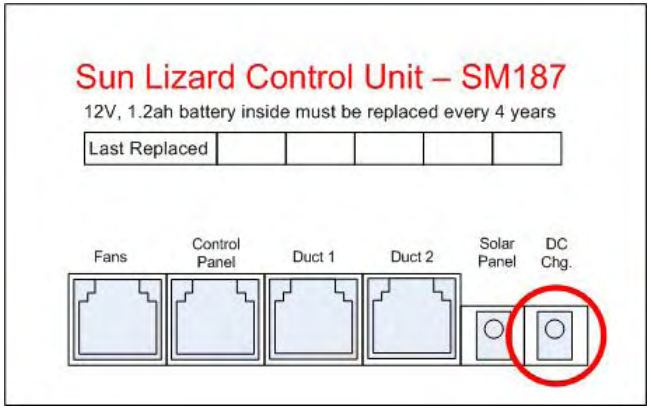
18. Connecting the Electronic Control System (ECS), to Mains Power

(OPTIONAL)

If you wish to have the system available to allow for night time functionality and you have access to a power point inside the roof cavity:

(a) Connect the 240/12 volt plug pack to the socket labelled *'DC Chg.'* on the ECS.
(b) Connect the 240/12 Volt plug pack to the 240 volt power source.

If there is no accessible power point, you will need to contact your local electrician to install a power point.



19. Testing the System

(a) Check that all the functions are working by changing modes on the high/low button on the Control Switch. The system has high or low speed and can be switched off. The heat/cool button must be left at cool mode. The heating function is only used if you upgrade to the our Climate Control System and the system will
(b) Make sure it is left in the correct mode for the weather conditions.
(c)Once all the components are connected and tested, the dektite, Exhaust Cowl, and any other roof penetrations needs to be sealed and checked.

20. Finishing the Job

It is extremely important to ensure that water cannot enter any of the electronic components. They should be mounted so that in the event of severe storms that no backing up of water due to leaves or debris on the roof will allow water to enter any of the boxes. Leave the electronic components accessible in the event of failure.