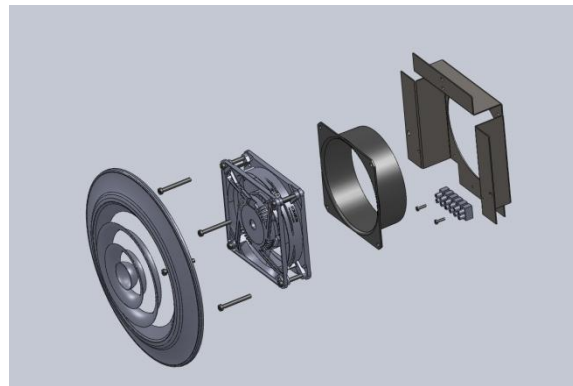




SolarSheat Wall Installation Manual



Version 1.5

April 23, 2013

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SolarSheat products must be installed in accordance to all local building, plumbing, electrical, and safety codes. Your Solar Home (YSH) does not warranty any installations that are not performed by an authorized YSH dealer/installer. YSH does not warranty any installations that do not use the recommended mounting hardware and mounting guidelines contained in this technical manual.

1.0 INTRODUCTION TO SOLAR^{Heat} AND SOLAR AIR HEATING

The Solar^{Heat} 1000GS & 1500GS solar collectors are designed to provide supplemental room heating through forced hot air exchange. Solar^{Heat} thermal collectors are fully modular and allow for series or parallel connection as required by large spaces or multi-room heating requirements. The Solar^{Heat} uses energy from the sun to heat household air by circulating it through the collector, refer to the figure 1.1 below for a typical single-panel wall mounted configuration.

The “GS” series collectors are modular and can be connected together (up to three units), while the GS does not include a PV module or fan and is intended for use with a DC fan assembly unit, DC or AC inline fan or AC blower in larger installations.

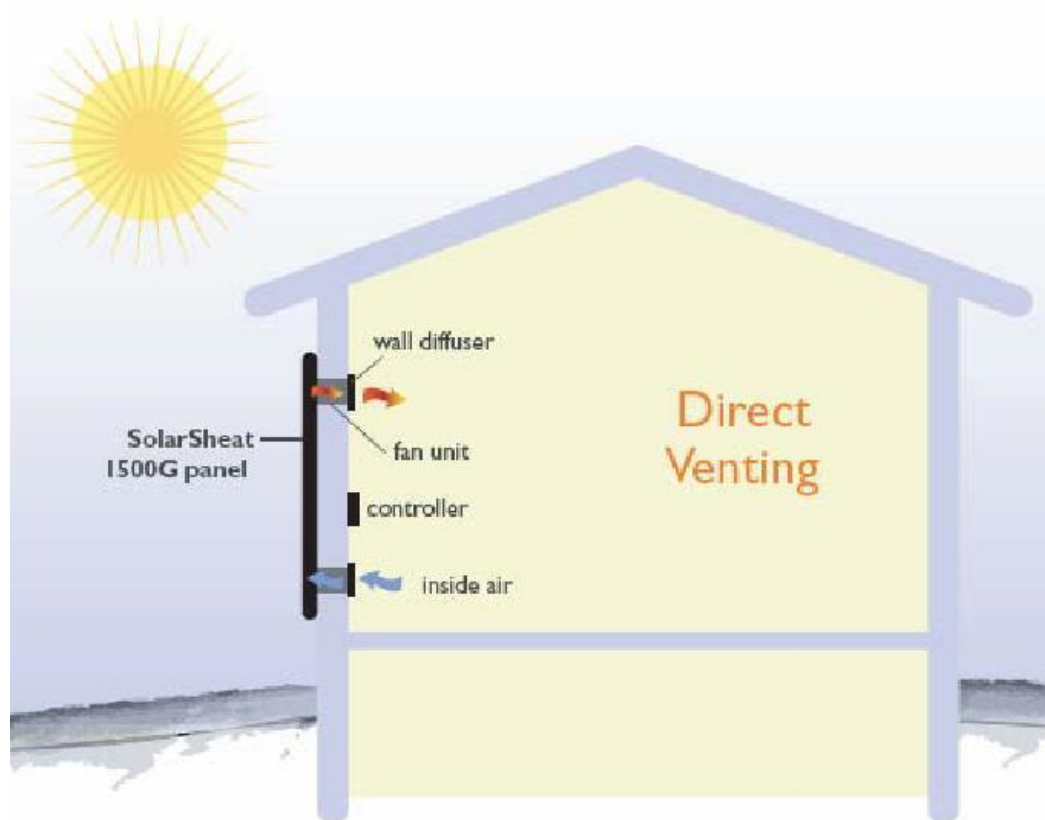


Figure 1.1: Typical wall for Solar^{Heat}

Every Solar^{Heat} model is SRCC OG 100 Certified and features an All-aluminum construction, designed to withstand harsh weather exposure. The Solar^{Heat} is designed to withstand typical snow and wind loading in Accordance to CSA-F378.



The SolarSheat can achieve thermal conversion efficiencies in upwards of 50%, meaning that for every square meter of collector area, the SolarSheat can produce roughly 500W of thermal energy on a clear and sunny day:

1 m² of COLLECTOR AREA* = 500W of HEAT
 11 ft² of COLLECTOR AREA* = 1750 Btu of HEAT

* Measured for single collector setup, results may vary depending on collector arrangement and fan choice

Refer to Figures 1.2 to 1.5 for collector performance data at 0 deg Celsius:

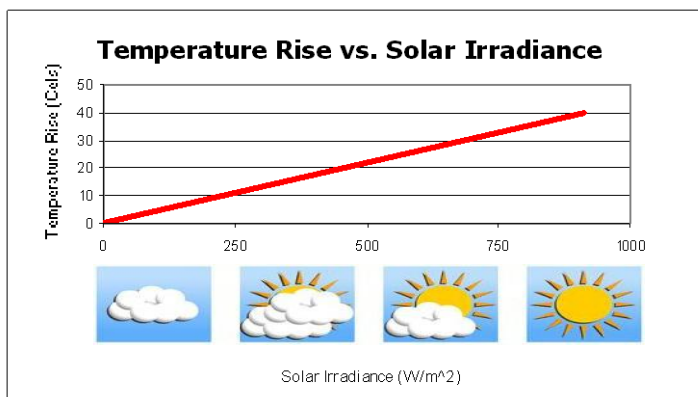


Figure 1.2: Delta Temperature @ 0 Cels

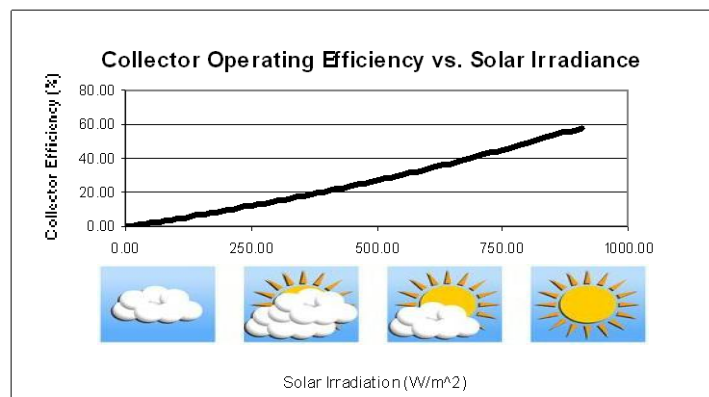


Figure 1.3: Collector Efficiency

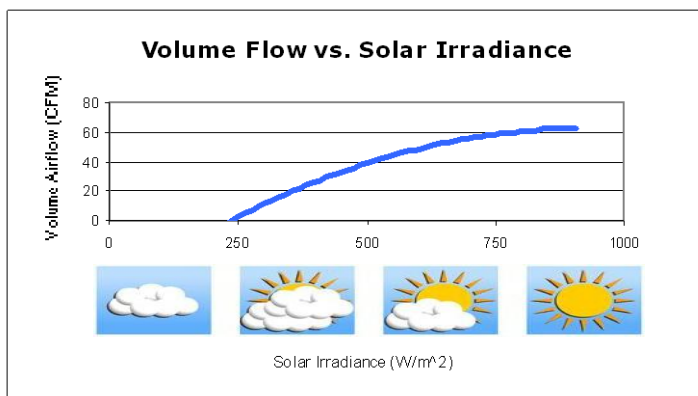


Figure 1.4: "GS" Series Airflow (CFM)

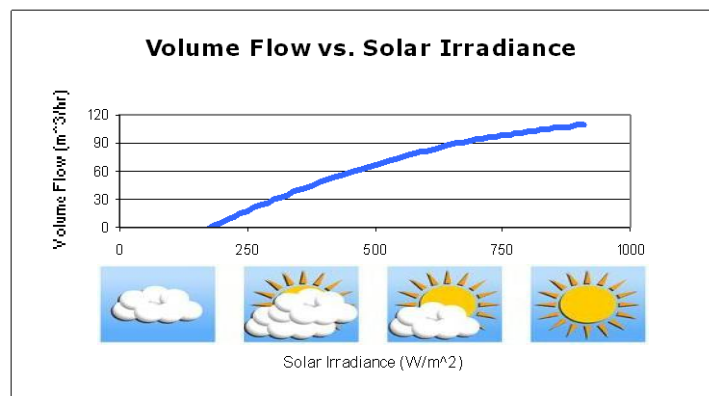
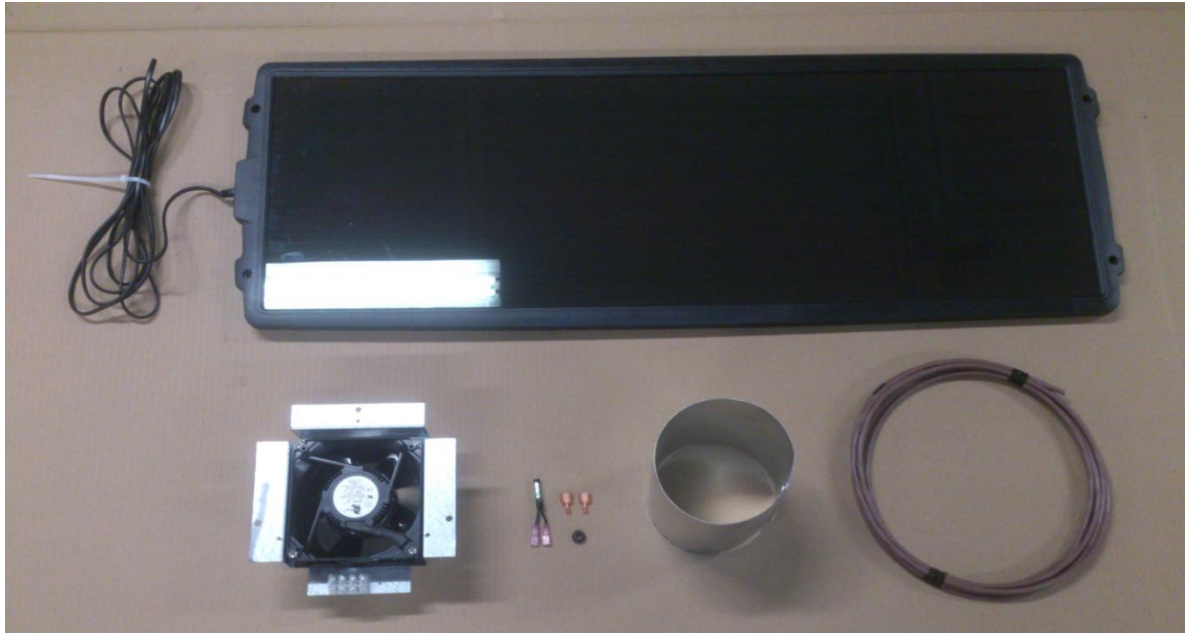


Figure 1.5: "GS" Series Airflow (m³/hr)



The SolarSheat wall installation system ships with a framed 12 V - 15W PV amorphous module with 11.5 ft wiring harness, fan plate with 12 volt – 15 W DC brushless fan attached, wiring harness, sensor, 5” round snap lock duct, grommet, two terminal connectors, hardware for assembling and power adapter attached. These components also ship inside the new SolarSheat Fan Duct Kit.



You will need to unpack the separate Sun Force PV cell. Mounting hardware is provided for attaching the PV cell to a wall or roof.

About this manual

There are three steps to successful installation of the SolarSheat.

They are:

Step 1 – Drilling the holes and preparing for the wall for installation of the SolarSheat

Step 2 – Installation of the fan assembly

Step 3 – Installing the SolarSheat collector.



Tools Required for Installation

You will require the following tools to complete the SolarSheat and fan assembly installation.

Safety Glasses

Drill

Hole Saw 5” or Jig Saw

Measuring Tape

Level

Wire Cutters

Fish Tape

Pliers for crimping

Robertson #2 screw bit

3/16” hex head driver for attaching the Tek screws to the mount

¼” hex head driver for securing the white head screws to the diffuser plate

21/64” ” Drill bit (for drilling the grommet hole)

1/4” Drill bit (for seating the plugs in the fan assembly)

Hammer or rubber mallet

Silicon (not essential)

Drill with hexhead socket driver

Ladder

Vaccum



Step 1

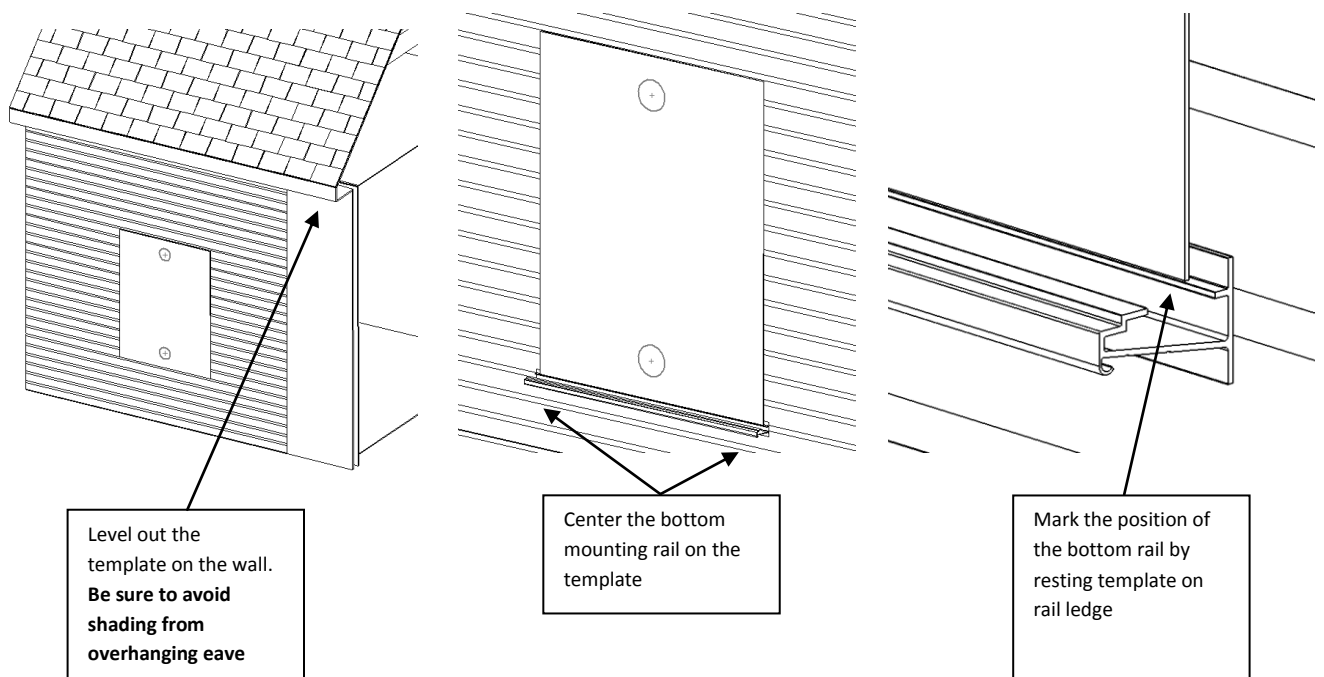
Drilling the holes for the SolarSheat collector

WALL MOUNT INSTALLATION INSTRUCTIONS

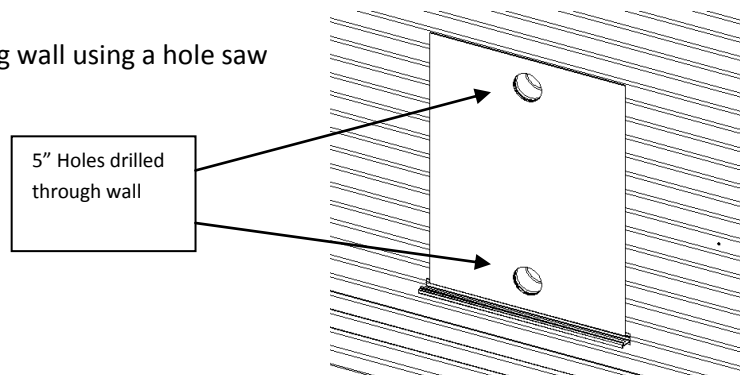
(For roof mount, please refer to SolarSheat Roof Mount Installation Manual)

Note: Make sure the distance of the overhang or eave is 1.5 X the distance to the top of the collector.

1. Locate un-shaded portion of the building for collector placement
2. Using a level and the included template, mark the location of the bottom mounting rail and intake & exhaust duct locations. Be sure to avoid wall studs and electrical wire



3. Cut 5" holes through the building wall using a hole saw or jig saw.



Step 2

Installation of the Fan Assembly

Note: The holes for the collector must be drilled(Step 1) first before you can install the fan assembly. Use the template that ships with the collector and refer to the Collector Installation at the top of the manual.

The next step is to install the fan assembly plate on the inside wall of where you want the exhaust and heat. *The fan assembly can be installed on any outside wall. For roof or ceiling mounts, continue to use our DC inline fan (part #1015), AC inline fan (Part #1021) or Fan Box (Part #1174).*

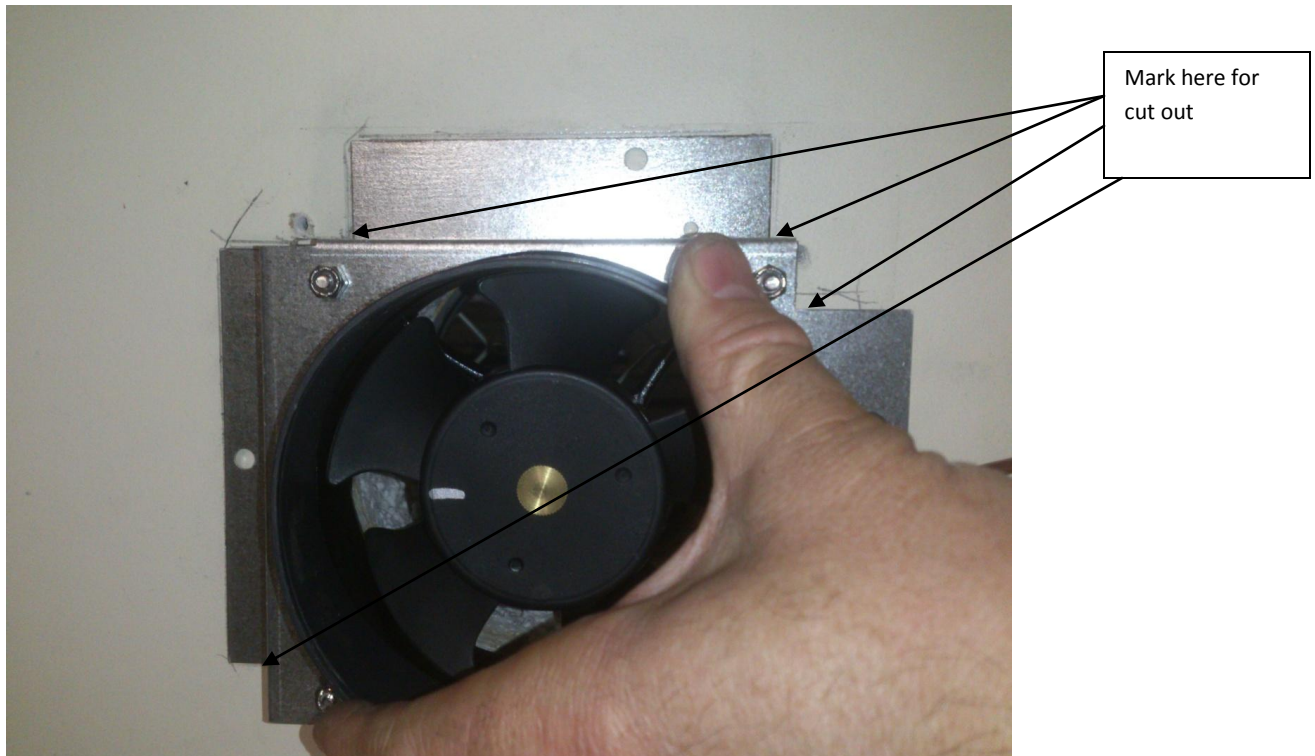


The fan assembly comes with a two harnesses attached(above). One has as a piece of thermostat wire that you will need to attach the sensor. The second harness is for the power source (PV panel) that is run around the outside of the snap lock duct and in behind the plastic 5 inch collar on the outside of the wall.



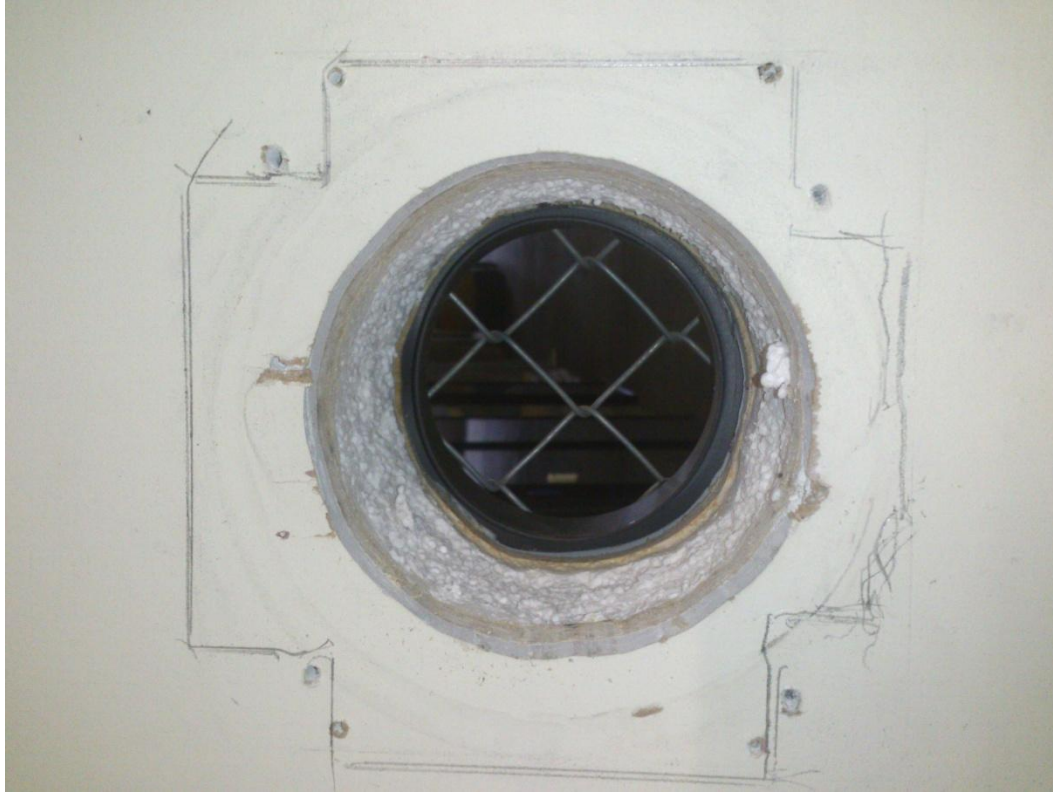
1. Cutting the inside wall for the fan plate

Use the back side of the metal fan assembly and trace the outside. (you can also measure the inside flange. Make sure you mark the inside of each tab. **(Do not cut the outside template of the tab or else you won't have any wall to mount the plate.)** That is going to be where the plate ends and the tab is inserted in the wall.



2. **Use a pencil to mark each tab and where the bend is located.** You will need a jig saw, sawzall or small hand saw to cut the wall. Use a 3/8 drill to start the hole before you cut. Mark the holes for the plate where the plugs and screws to hold in place as well. You will need a 1/4 inch drill bit for the plugs.





The photo below illustrates cutting the template out of the wall before the holes were drilled in the wall.

Remember the plate will cover the rough edges of the hole and cutout so you won't see any of the edges. Use a vacuum to remove the debris from the wall. **Note:** (the foam inside the wall in this picture is a SIP (structural insulated panel) and is a non standard wall (used for demonstration)).



3. Drilling the snap lock duct

You will be required to drill the piece of snap lock duct that comes with the kit so that a grommet can be inserted. Measure the piece of the snap lock that will fit your inside wall. Cut with shears. There is a 10 inch piece provided.



4. **Trim the snap lock and insert the grommet** to the desired size and drill a hole with a 21/64" drill bit or something close to the size to allow for the grommet.

Insert the grommet into the snap lock material.



5. **Close the snap lock** and position over the collar on the fan assembly. Insert the sensor wire through the outside middle of the snap lock material and pull through the centre. See below.





Push the sensor wire through the grommet hole and pull through the middle of the snap lock.

6. Attaching the terminal connectors and sensor

Attach the two terminal connectors using a crimping tool or pair of pliers. Make sure you pull the terminal connector with your fingers once you crimp it to test to see if it is properly connected. This proves you have a proper connection.



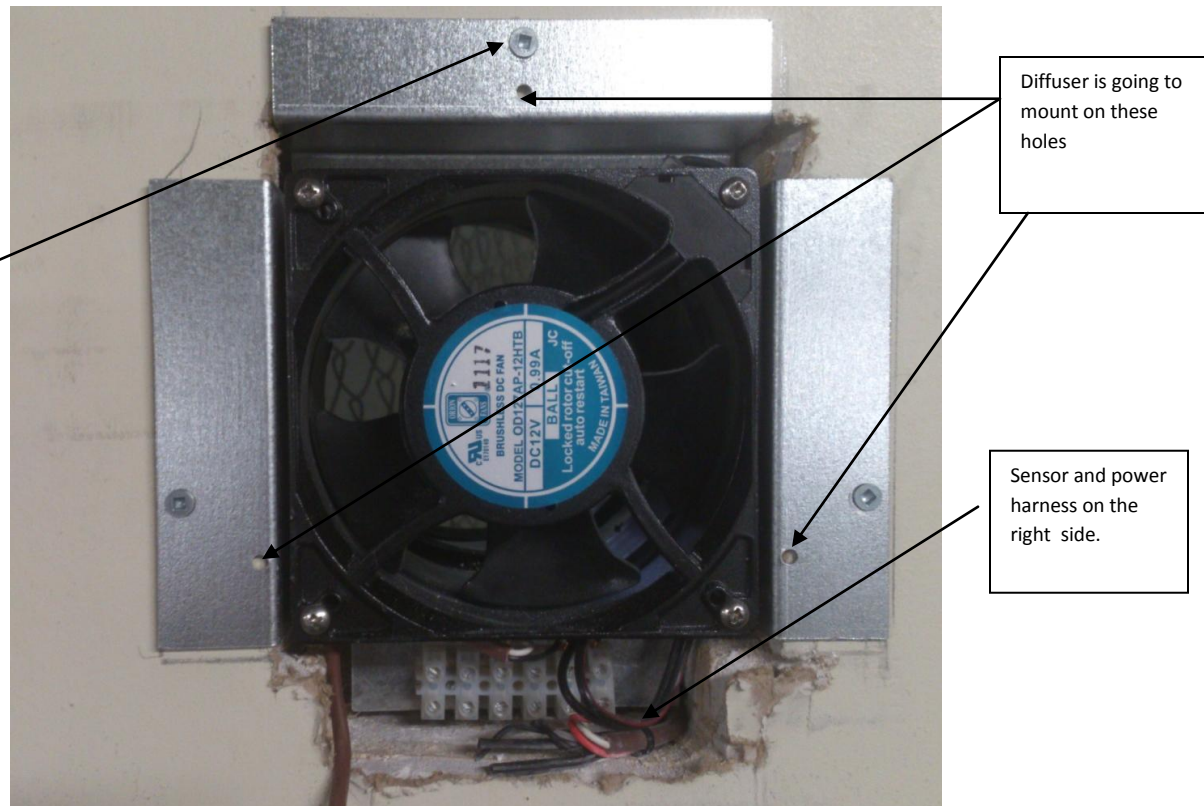
Connect the sensor by pushing on the two terminal strips together.

7. Inserting the Fan Assembly Into the Wall

Position the fan assembly into the wall. Some positioning will be required and additional material may need to be removed so the plate fits properly into the wall. Make sure the thermostat wire is on the left or right of the terminal block so you can snake it down the inside wall.



The sensor harness and power harness need to be on the right of the terminal block. The power harness should be located on the outside of the snap lock duct. The sensor harness should be placed on the inside of the duct. Secure the fan assembly with the screws provided.



Make sure you have a clean 5” hole on the opposite side of the wall. In this case siding is the actual wall. (See below)

8. **Attaching the collar**

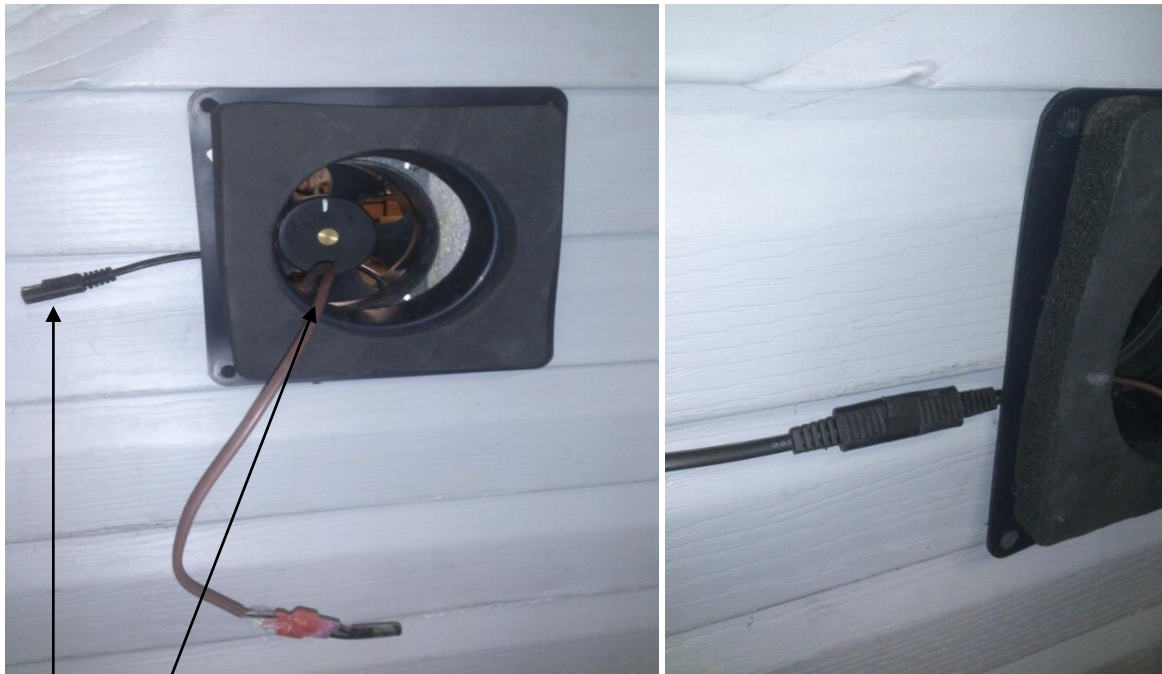
Attach the 5 inch collar to the wall and secure with screws or silicone. Keep the power harness behind the collar and the sensor harness in the middle of the collar. (See below)





Add the 5 inch soft gasket with adhesive back to the collar. You can see the power harness on the left side and the sensor harness in the middle of the duct. If required the snap lock can also be positioned from the outside wall to fit correctly over the plastic collar attached to the fan assembly.

9. Connect the PV power harnesses together.



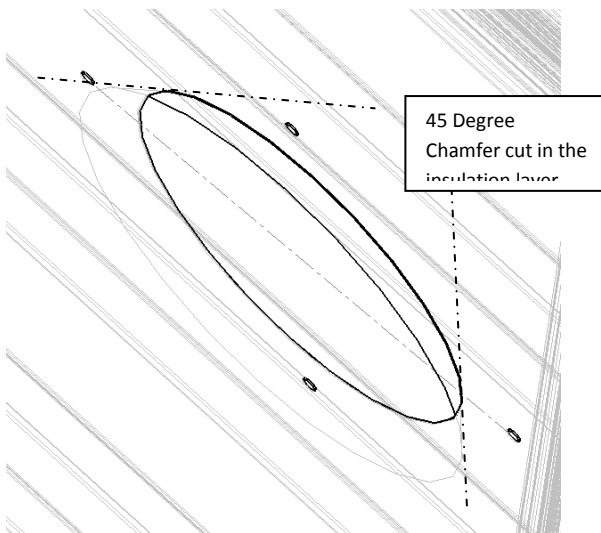
Sensor and power harnesses



Step 3

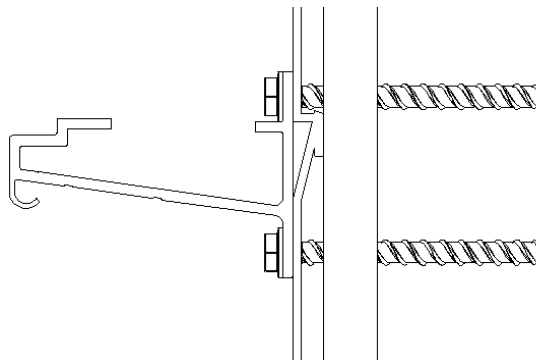
Installing the SolarSheat Collector

1. Cut holes in insulation layer on the back of the collector/s. Be sure to chamfer (45 degrees with a blade) the insulation for improved airflow to and from the collector



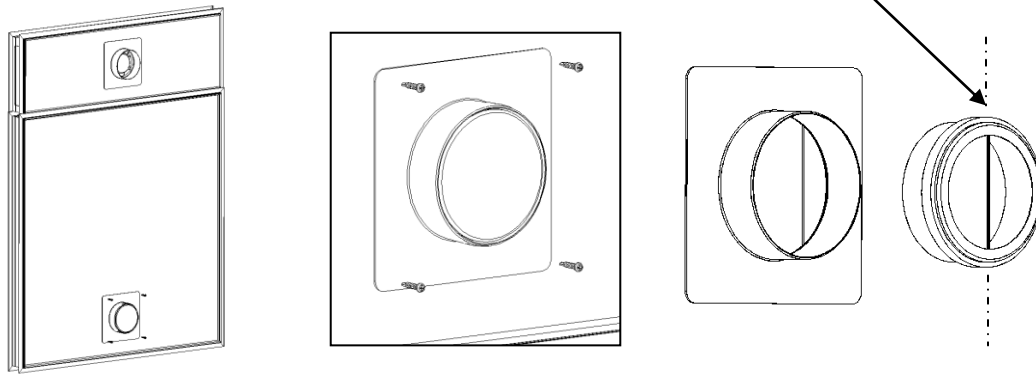
2. Secure the bottom support rail to the wall (screws not provided); ensure all wall penetrations are well sealed to prevent leaks. Be sure to use the correct fastener type and size to match the wall construction and to carry the weight of the collector. Where possible, secure mounting rails directly to wall studs.

Important: The template should still be used to determine the bottom mount position or you will need to take a measurement so the collector and holes line up.

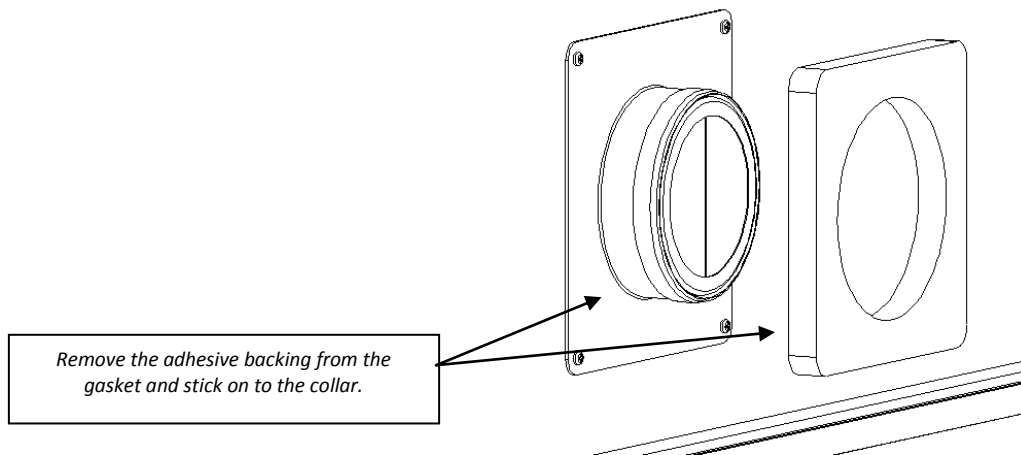


3. Installing the backdraft damper.

Insert backdraft damper into lower (air intake) duct. The backdraft damper should be installed with the seam vertical so one of the spring flaps doesn't fall down due to gravity.



Use a crimping tool or pliers and crimp the outside edges of the backdraft damper so it can fit into the **collar**.



Fit the collar with backdraft damper inside on the bottom intake.

Note: The backdraft damper can also be inserted on the inside of the room inside the snap lock duct. This is case you need to adjust or access the damper. Make sure the spring opens in the right direction when the fan turns on or else you won't have air flow.

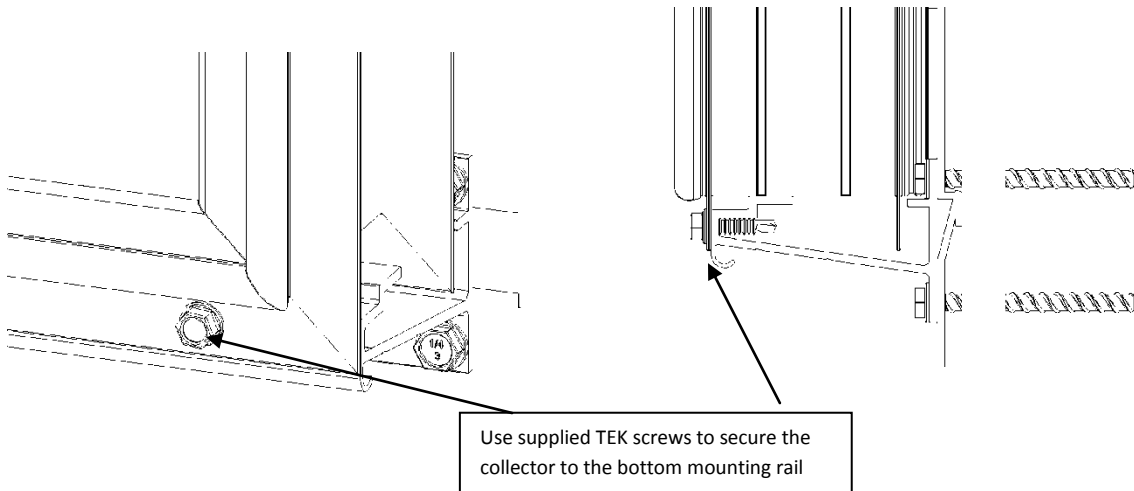




Attaching the collector to the mount.

4. Secure the collector to the bottom rail one at a time and secure the collectors to each other if installing a 2 PAK or multiple collectors. Run bead of silicone between the collar gasket and the wall to ensure a good seal. Do not secure until you have pulled the sensor and power harness through. See below.





Place the collector on the lower mount and before you bring it to 90 degrees, place the sensor inside the top portion of the collector. Make sure you slope or slide the sensor just inside the top portion of the collector. **Do not push it all the way towards the back of the metal plate of the back inside of the collector.** This will allow the sensor to work properly.

***Important:** The Installation of the Fan Assembly (Step 2) will need to be completed before you install the collector on the mounts so that you can attach the power harness (PV panel) and sensor harness). If the collector is installed before you install the fan assembly you will not be able to pull the power harness through the outside of the collar.



Sensor harness pulled through the middle of the snap lock duct and placed in the collector top hole.

The collector can now be tilted back on to the top gasket.



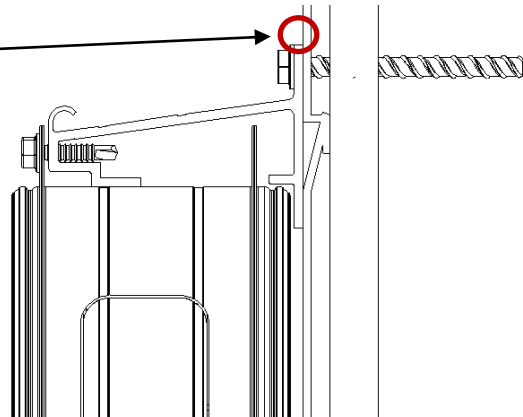


PV Power harness

The PV panel can be placed beside the collector or on the eve of the roof above. **Make sure there is complete sunlight on the PV panel.**

5. Assemble the top rail to the collector/s and then secure the top rail to the wall, again ensuring that all fastener penetrations are well sealed. Run a bead of silicone on the upper edge of the top mounting rail to prevent water running down the back side of the collector

Run bead of silicone to prevent water leakage behind the collector and



Run bead of silicone around perimeter of all unused knockouts to seal against water leakage



Using the mount as a flashing cap

Note: The mount can also act as an end cap or flashing. You can have the option of placing the collector on the inside of the mount or outside. If you place the collector on the inside it will act as a cap. It is snug fit when used this way. See below.

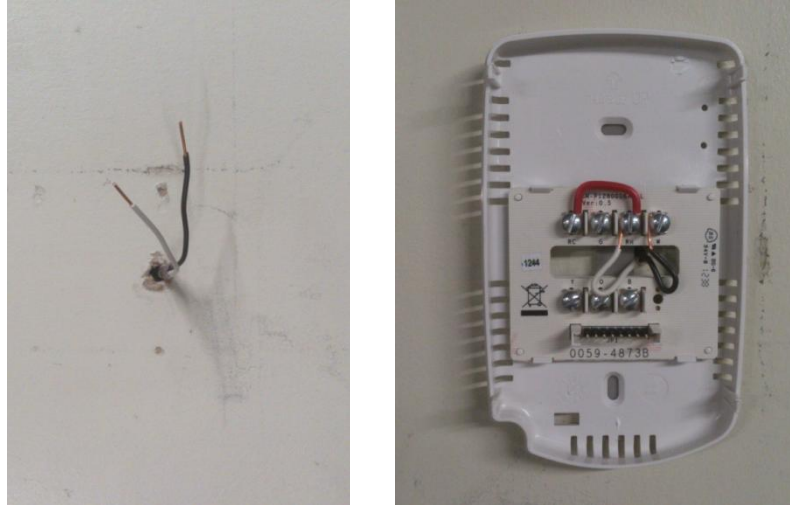


6. Installing the thermostat to the inside wall.

Drill a small 1/4" hole to provide a location for the thermostat wire.

Use a fish tape to install the thermostat wire down the inside wall to the left of right of the exhaust of the fan assembly.





Install the thermostat back half plate to the wall and attach the two wires to RH and W on the plate. Do not cut or disconnect the jumper wire. **Note:** The thermostat is in Fahrenheit and the jumper W904 on the inside of the thermostat can be clipped for Celsius display (see thermostat manual).

Put the batteries inside the thermostat and gently snap the unit (two pieces together). Turn on the thermostat and set your temperature. Turn to off in the summer time or when not in use.

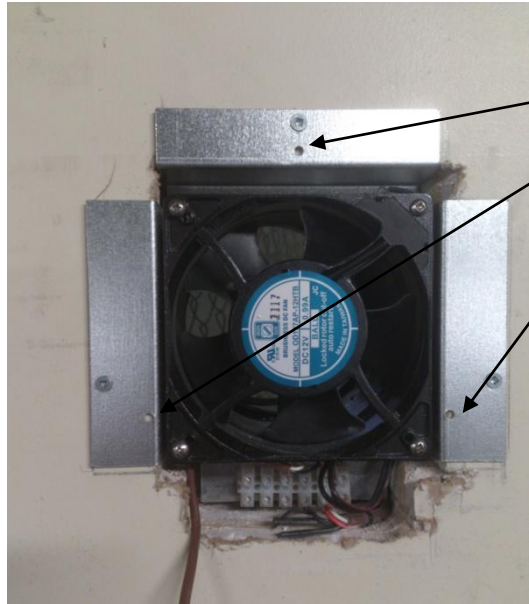


7. Installation of the outside diffusers.

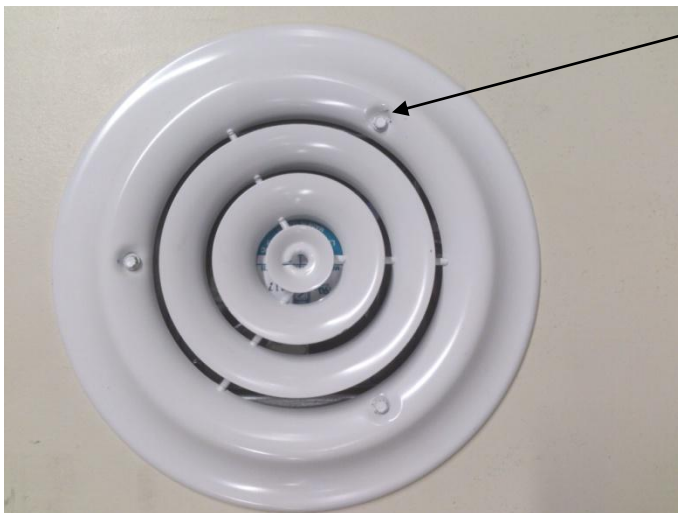
Position the white aluminum diffuser over the metal fan assembly plate and line up the holes with the diffuser holes. Use the white powder coated screws supplied to



secure the diffuser to the metal fan assembly. **Note: Drill a 1/4" hole in each hole on the plate into the wall and insert the wall plugs.**



Line up the diffuser plate with the three holes on the fan assembly plate.



Use the white hex head supplied 1/4 inch screws to attach the diffuser plate.

8. **Install the bottom metal diffuser plate.** **Note:** There will not be a fan assembly plate to secure the bottom diffuser to the wall. You will need to mark the holes and then install the white hex screws and wall plugs (provided) to secure the diffuser. **(Do not use the very long large screws that are in the inside package with the diffusers.)**





You have now completed the installation of the SolarSheat and interior wall fan assembly.

Congratulations on years of free heat with solar heating!

