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# KOZI Solar Hot Air Collector

## Installation Manual

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Read all instructions carefully before starting the installation. Save this manual for future reference.

Revised Mar 2011  
Made in Canada

## CONGRATULATIONS

We would like to thank you for purchasing a **KOZI** Solar Hot Air Collector system. The **KOZI** Solar Hot Air Collector will provide you with many years of supplementary heat. This Installation Manual will guide you with a step by step installation of a **KOZI** Solar Hot Air Collector. If you have any questions or concerns regarding the product or installation, contact us by phone at (204) 452-9907.

## SAFETY FIRST

Installing a **KOZI** Solar Hot Air Collector will use various tools and equipment. We want this installation to be as safe as possible. Please use safety equipment (i.e. safety glasses, ear plugs, gloves, steel toed shoes/boots, etc.) when installing a **KOZI** Solar Hot Air Collector to help prevent any injuries or bodily harm.

## EQUIPMENT NEEDED

Below is the following equipment you will need to successfully install your **KOZI** Solar Hot Air Collector:

- Electric/Cordless power drill.
- Measuring tape.
- Level.
- Industrial grade silicone.
- Step ladder.
- Utility knife.
- Stud finder.
- Bits and sockets for power drill.
- Pencil/marker.
- Ruler/straight edge.
- Jigsaw/reciprocating saw.
- Aluminum tape.

## PARTS INCLUDED

Below is a full list of components that are included with the **KOZI** Solar Hot Air Collector Kit:

- Hot Air Collector.
- 4" Draft Damper and screws (4).
- 7" Square Ductwork (2) and screws (10).
- Ductwork Mounting Lag Screws (16)
- Collector Mounting Brackets (2) and lag screws (10).
- Air Vents/Grilles (2) with screws.
- Insulating Foam Strips ( Four 9" strips and Four 10 1/2" strips).
- Cardboard Template (Printed on packaging box).

# Table Of Contents

	<b>PAGE</b>
1. Stove Dimensions	4
2. How it Works?	4
3. Installation	5
i Pre-Assembly Installation	5
ii Solar Hot Air Collector Installation	7
4. Fan Assembly	14
5. Maintenance	14
6. Warranty	14

## 1. Panel Dimensions

Figure 1 shows the overall dimensions of the **KOZI** Solar Hot Air Collector.

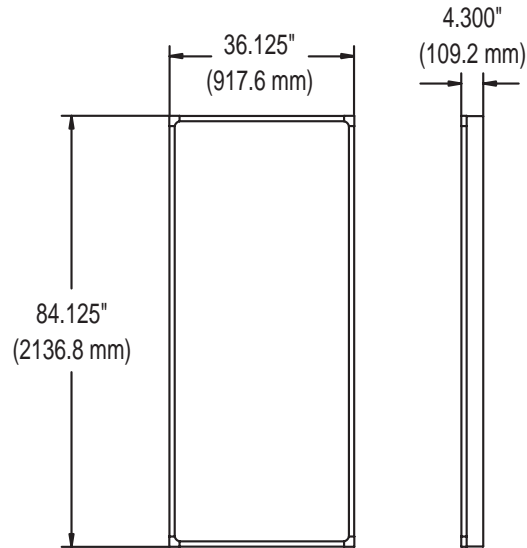


Figure 1. **KOZI** Solar Hot Air Collector Dimensions

## 2. How it Works?

The **KOZI** Solar Hot Air Collector takes cool air from your house and heats it using the energy from the sun. Figure 2 is a great example of how the **KOZI** Solar Hot Air Collector can provide you with free heat.

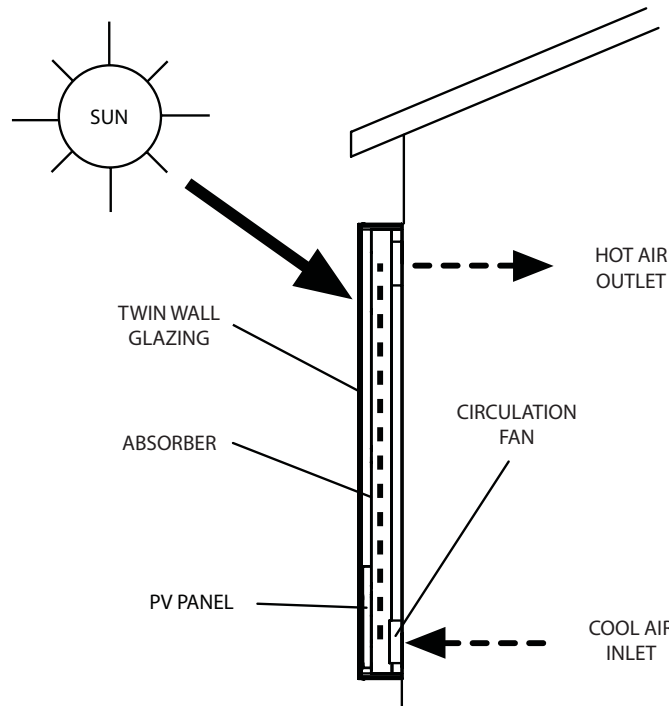


Figure 2. **KOZI** Solar Hot Air Collector

As the sun strikes the solar panel, it heats the absorber plate as well as provide energy for a photo-voltaic (PV) panel to generate electricity to operate a circulation fan. The circulation fan draws the cool room air into the base of the solar hot air collector. As the sun is heating the black absorber material, heat is being transferred from the absorber plate to the air. The air will pass through channels on the back side of the absorber, gathering heat. Once the air reaches the top of the collector, this air becomes hot and is pushed through an outlet duct and into the room. Figure 3 shows a typical, vertical installation for a **KOZI** Solar Hot Air Collector.

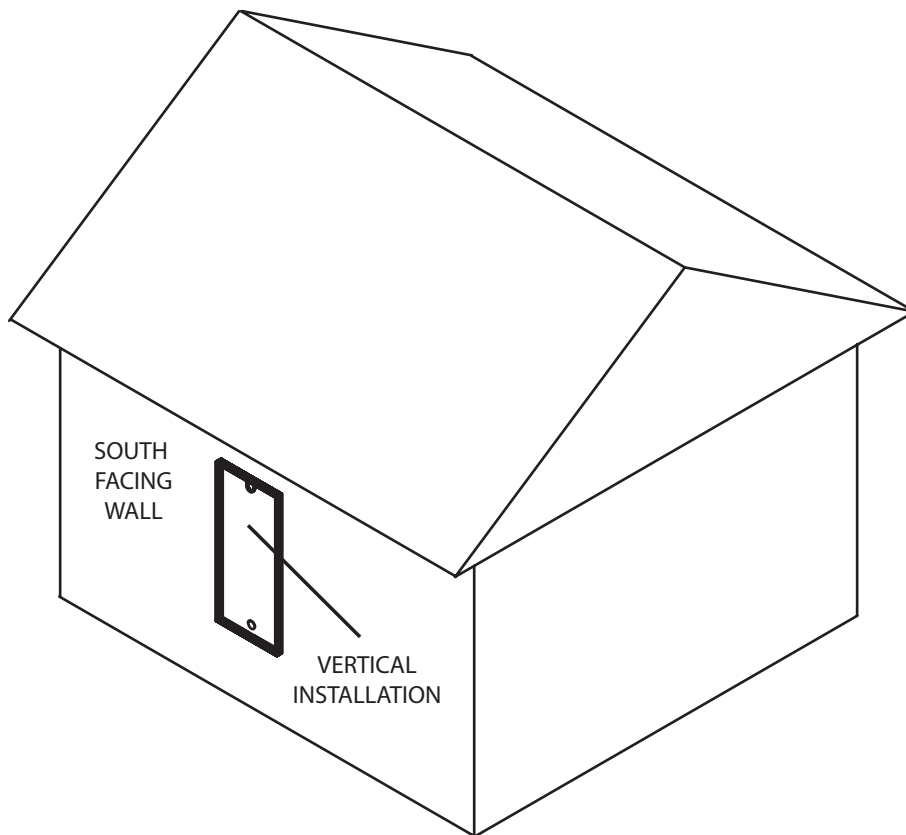


Figure 3. KOZI Solar Hot Air Collector Installation Configurations.

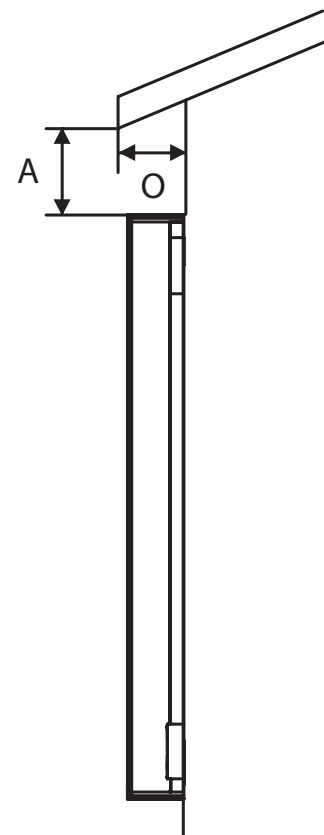


Figure 4. Overhang clearances.

### 3. Installation

#### i Pre-Assembly Installation

Before you start your installation, you must determine where you want to install it. In order to get the optimal performance out of your KOZI Solar Hot Air Collector, you should install it on a **south facing wall**. This will allow your hot air collector to get the most sun during the day. Ensure that the location has no wires, plumbing, studs or duct work which may interfere with your installation. Any schematics or drawings of your home will help you determine the best location for your panel.

When mounting on the wall, ensure to provide sufficient room from the ground to prevent snow from building up in front of the collector. Base the height on prior winter snow falls. If this is your first winter at this home or if you are unsure, mount the collector a minimum of 24" above the ground. If needed, remove any build up of snow that may block the front of the collector, which will prevent the absorber and photovoltaic panel from receiving sunlight. Also, ensure that you have sufficient clearance from the overhang of the roof. This will help prevent any shadows from the overhang that may affect the performance of the collector. Measure out the amount of overhang from the outside wall (O). The distance A in Figure 4, should be greater than the measured distance O.

Before starting the installation process, some pre-work is needed. Follow these instructions carefully:

- a. Place the backdraft damper on the outlet hole of the collector and secure with 4 screws as shown in Figure 5.
- b. Using a utility knife cut out the installation template from the bottom of the packaging box as shown in Figure 6. Figure 7 shows the detailed dimensions for the installation template.

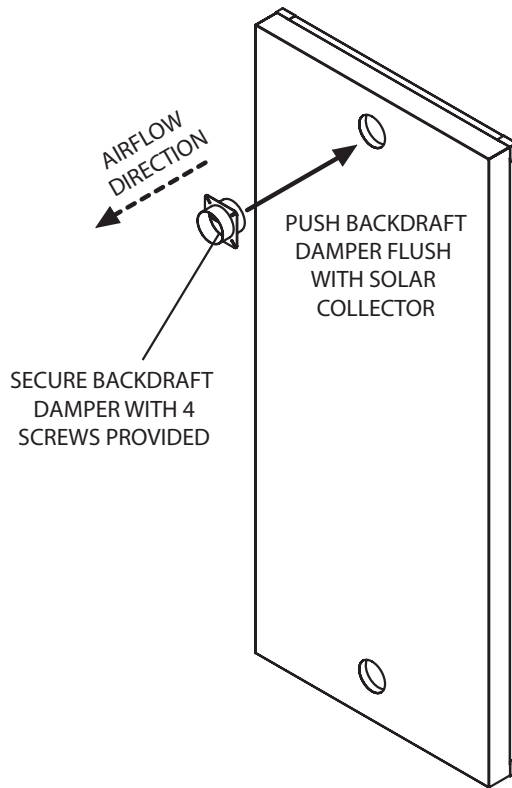


Figure 5. Installing the backdraft damper on the outlet of the solar collector.

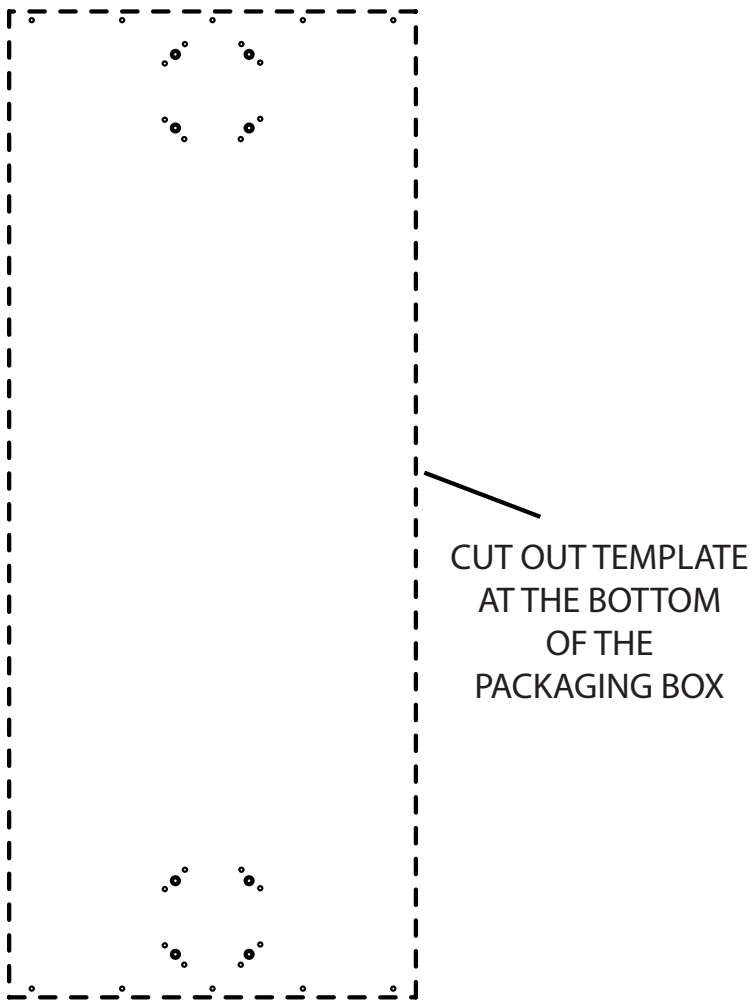


Figure 6. Cutting out the installation template from the packaging box.

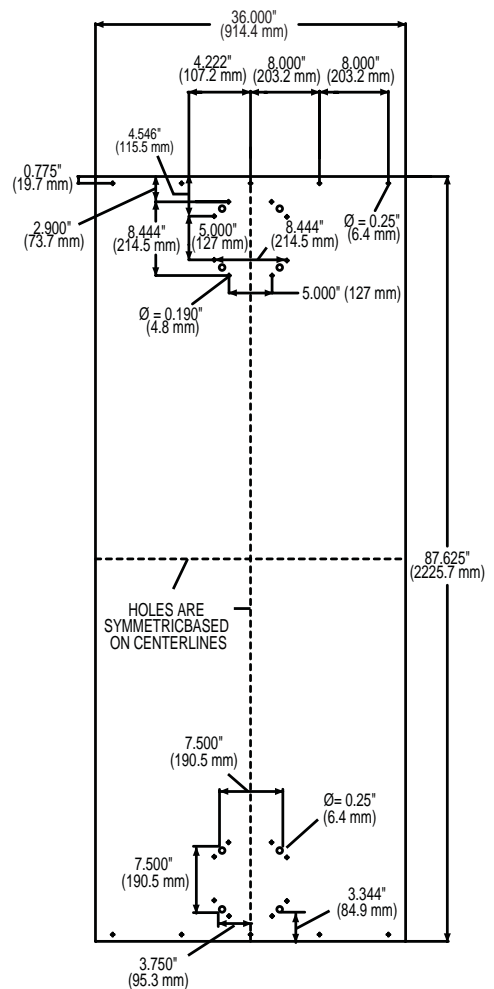


Figure 7. Dimensions of the installation template.

## ii Solar Hot Air Collector Installation

The following steps and diagrams will guide you through a standard, wall mounting installation:

- a. Mount the installation template provided as shown in Figure 8. Secure the template to the wall using staples or tape. Use a level to ensure that the template is level. Using a 3/16" drill bit, drill the holes (through the exterior wall only) as shown in Figure 8.

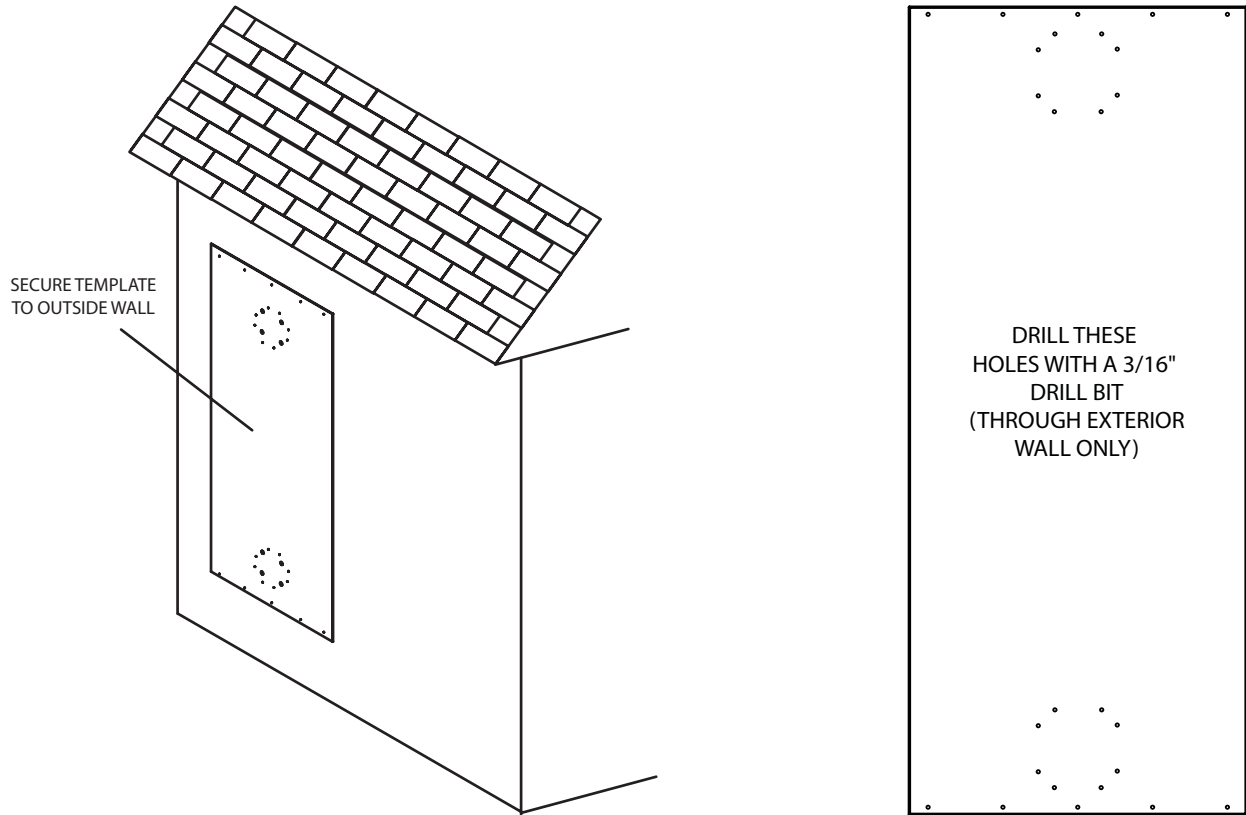


Figure 8. Securing template to south facing wall.

- b. Using a 1/4" drill bit, drill the corners of the inlet and outlet openings as well as a hole for a ON/OFF switch/thermostat wire as shown in Figure 9. Make sure you drill all the way through both the exterior and interior walls.

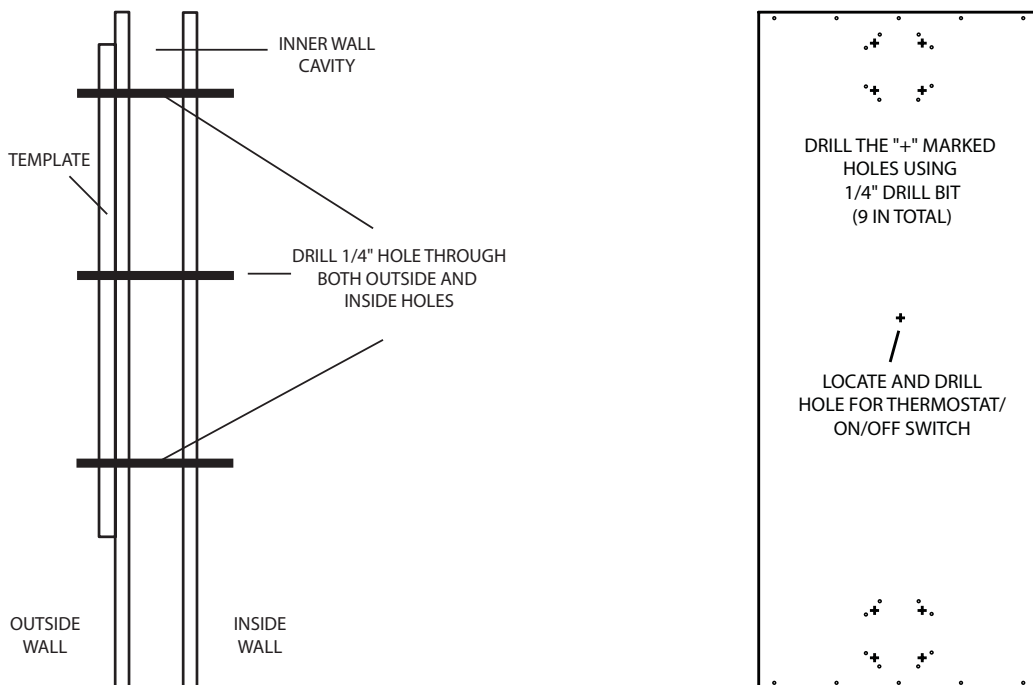


Figure 9. Drill holes through both outside and inside walls.

c. Once all of the holes have been drilled, remove the template. Using a pencil/marker and a ruler/straight edge, draw straight lines connecting the outer edges of the holes as shown in Figure 10.

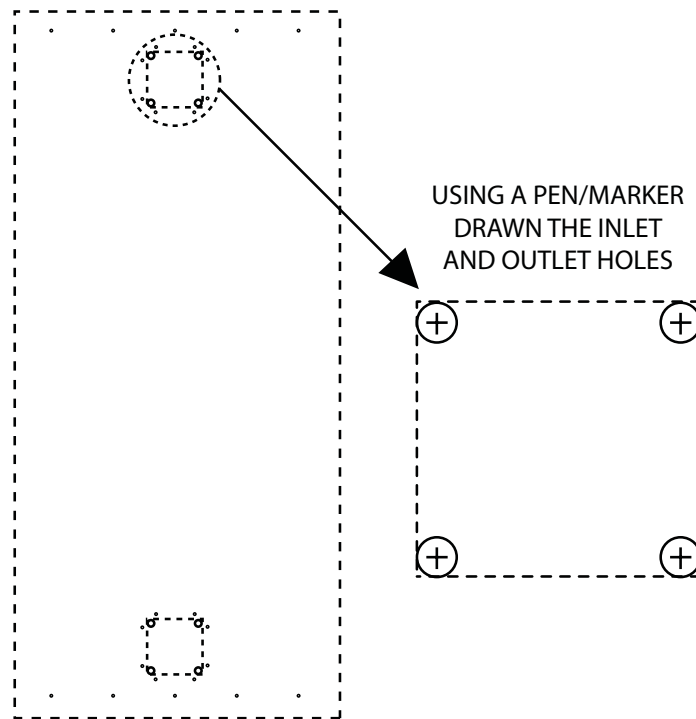


Figure 10. Pre-marking your inlet and outlet holes.

d. Using a saw (jig saw, reciprocating saw, etc.), cut out the inlet and outlet holes [pre-marked from step (c)] for your air passages.

e. Measure the distance between the interior and exterior walls. Trim the ductwork to the distance between the interior and exterior walls as shown in Figure 11. Once the ductwork is trimmed, assemble it as shown in Figures 12 and 13. Seal the ductwork joint/edge with silicone or aluminum tape.

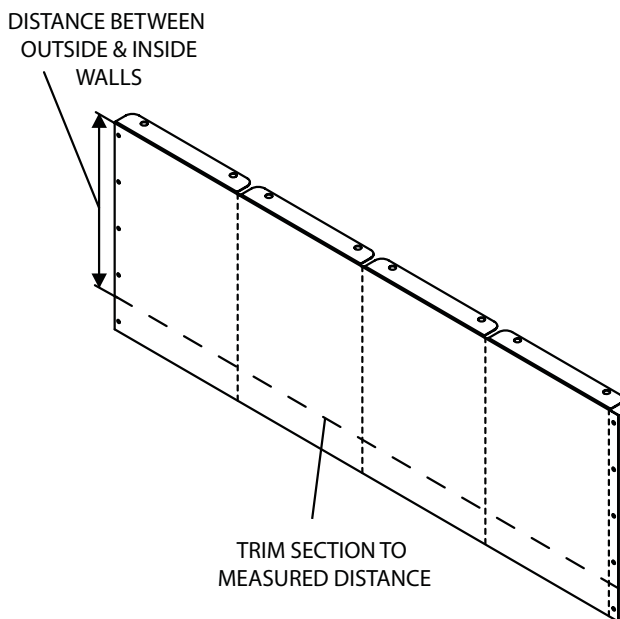


Figure 11. Trimming the ductwork to the correct length.

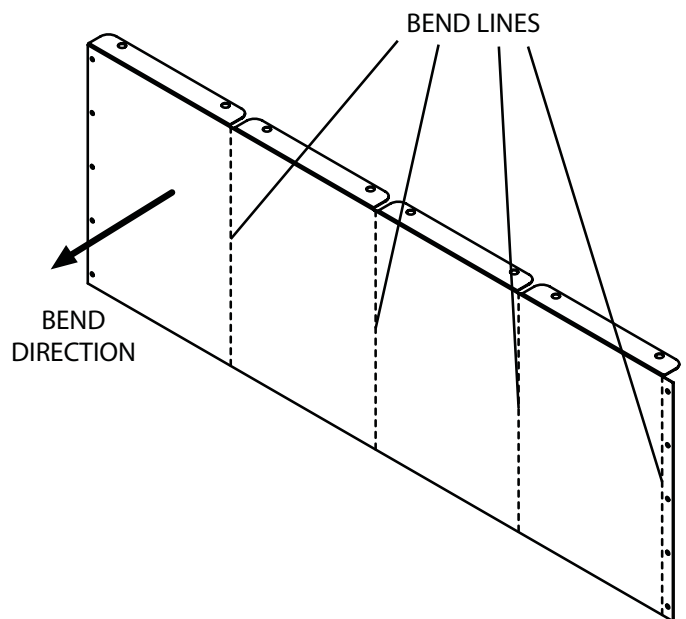


Figure 12. Bend lines and bend direction.



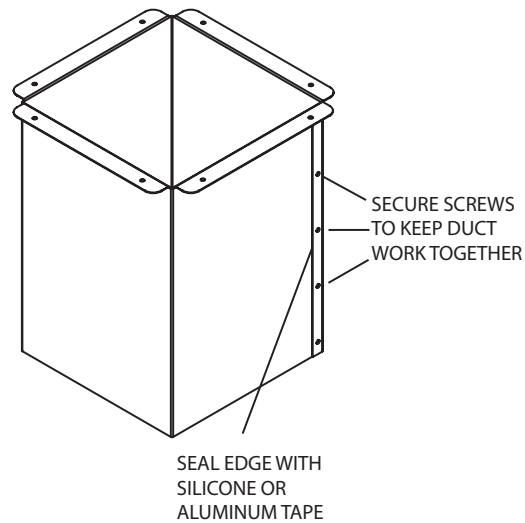


Figure 13. Complete ductwork assembly.

f. Place one of the assembled square duct work into the bottom, inlet passage as shown in Figure 14.

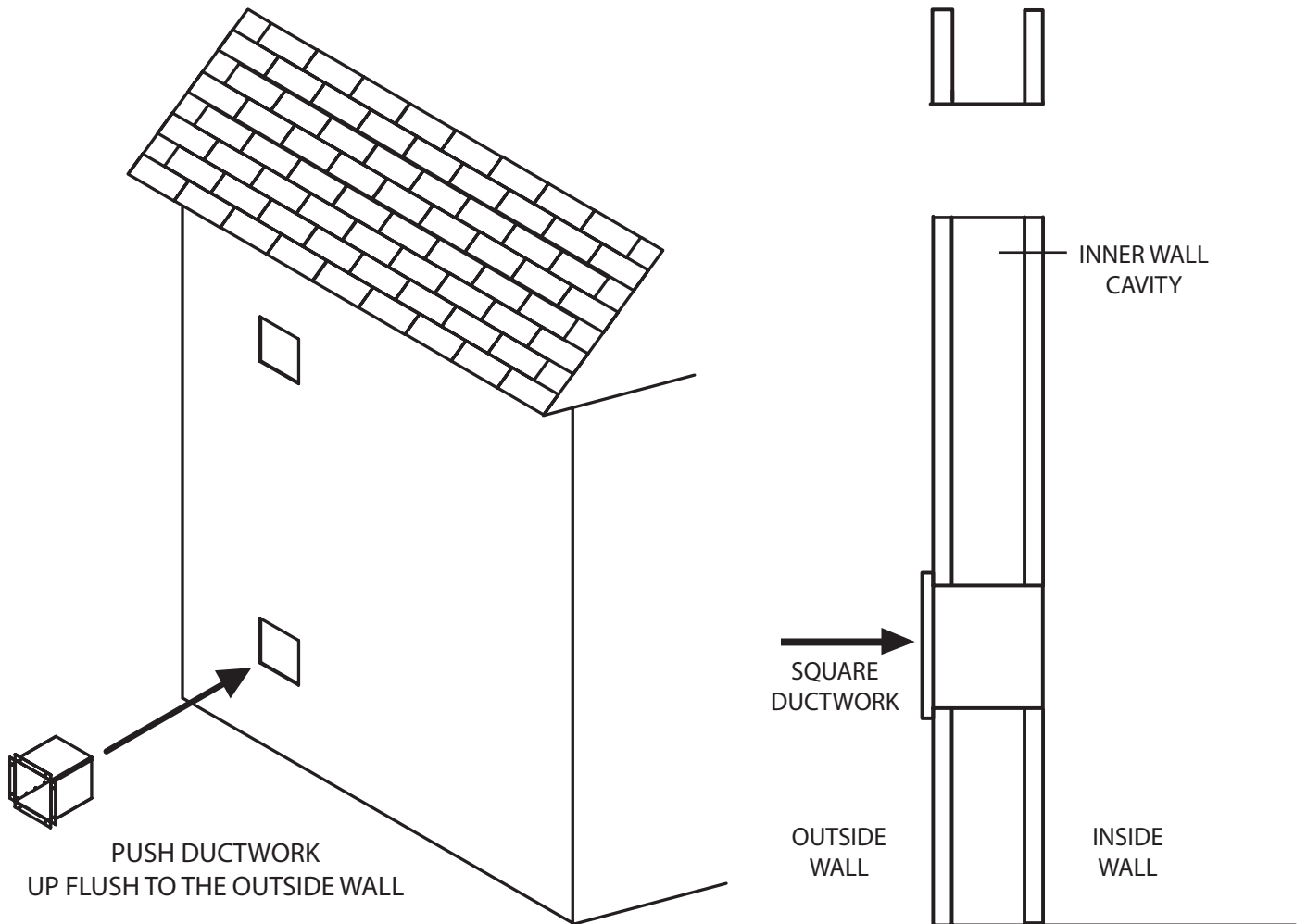


Figure 14. Inlet ductwork installation.

g. Secure ductwork with the 8 lag screws provided. Place the insulating foam around the ductwork as shown in Figure 15. This will ensure that you get a tight seal between the house and the KOZI Solar Hot Air Collector.

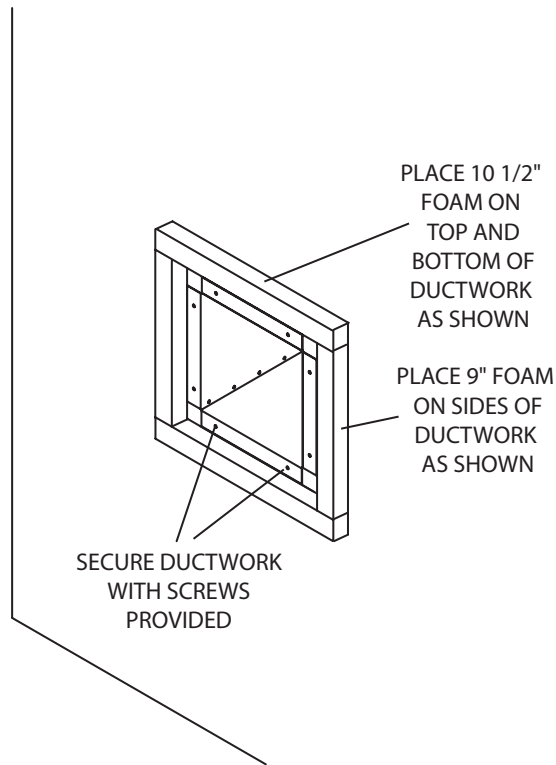


Figure 15. Placing insulating foam around square ductwork.

h. Place the remaining square ductwork into the upper, outlet passage as shown in Figure 16.

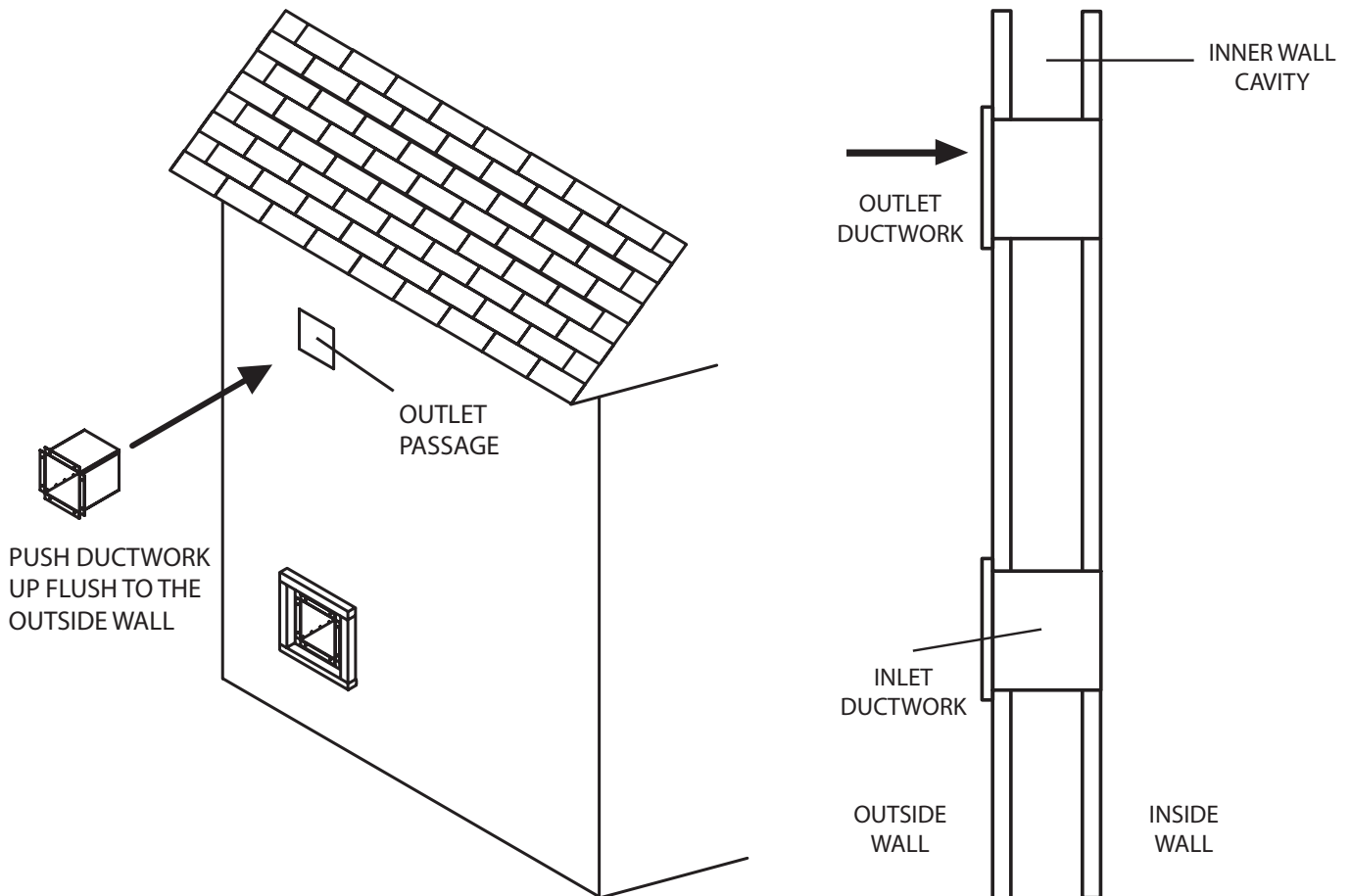


Figure 16. Outlet ductwork installation.

i. Secure ductwork with the 8 lag screws provided. Place the insulating foam around the ductwork as shown in Figure 17.

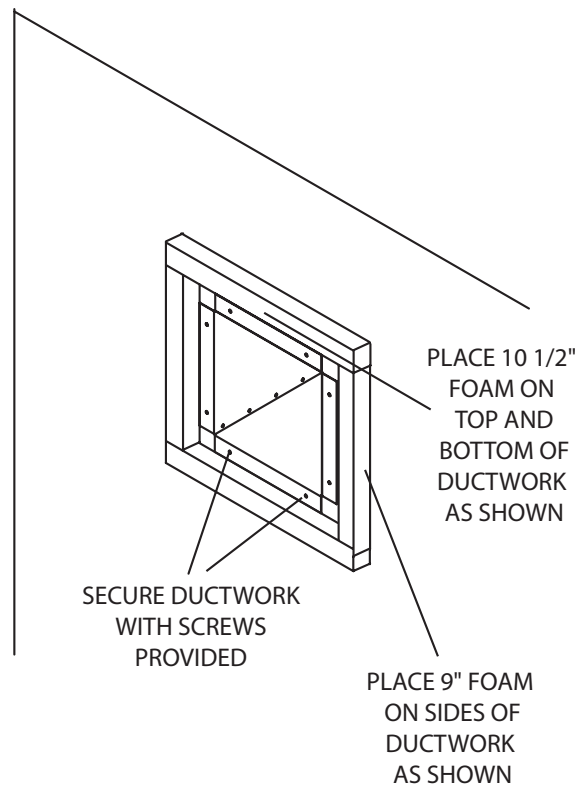


Figure 17. Placing insulating foam around square ductwork.

j. Install the upper and lower wall mounting brackets on the exterior wall for the collector. Secure the bracket with the lag screws provided as shown in Figure 18. Silicone around the outer edges of the foam to ensure that joints the inlet and outlet holes are sealed when the collector is mounted in place.

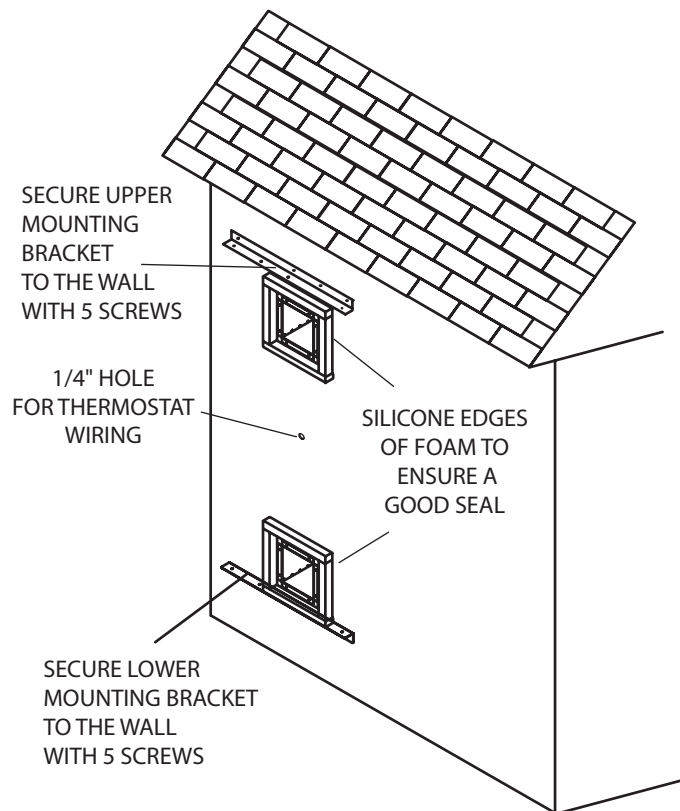


Figure 18. Securing upper and lower mounting brackets and siliconing the edges of the foam.

k. Once the mounting brackets are secure, pass the thermostat wires through the 1/4" hole on the outside wall as show in Figure 19. Ensure that the bottom of the collector is flush with the lower bracket. Ensure that the back draft damper collar fits into the top outlet hole of the solar collector and push the panel in place.

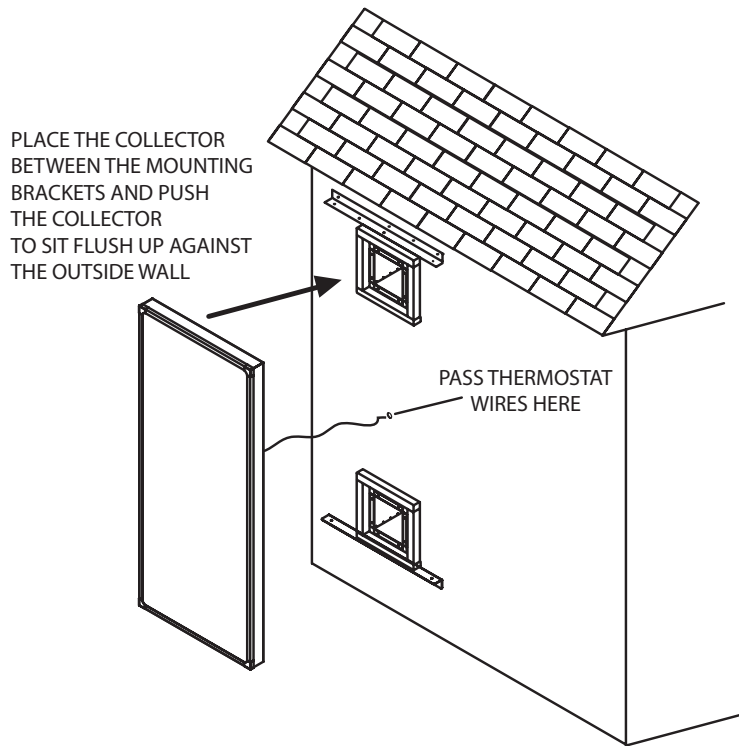


Figure 19. Mounting the collector in place.

l. Line up the edges of the collector flush with the edges of the mounting brackets and secure the collector as shown in Figure 20.

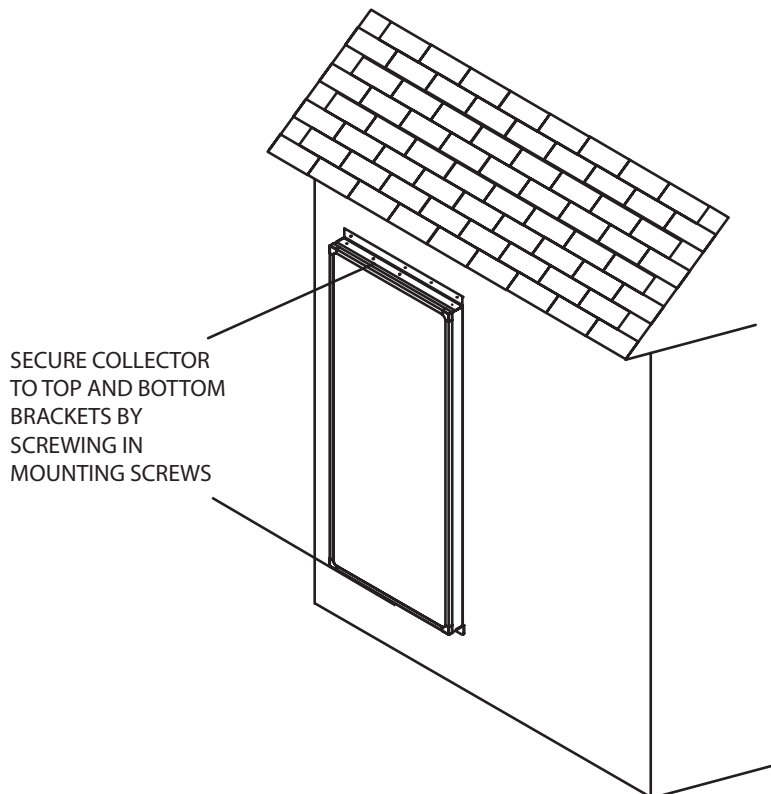


Figure 20. Solar collector secured with top bracket.

m. Seal the outer edges of the collector with an industrial grade silicone as shown in Figure 21. This will help seal the collector to the outside wall and prevent any air leaks.

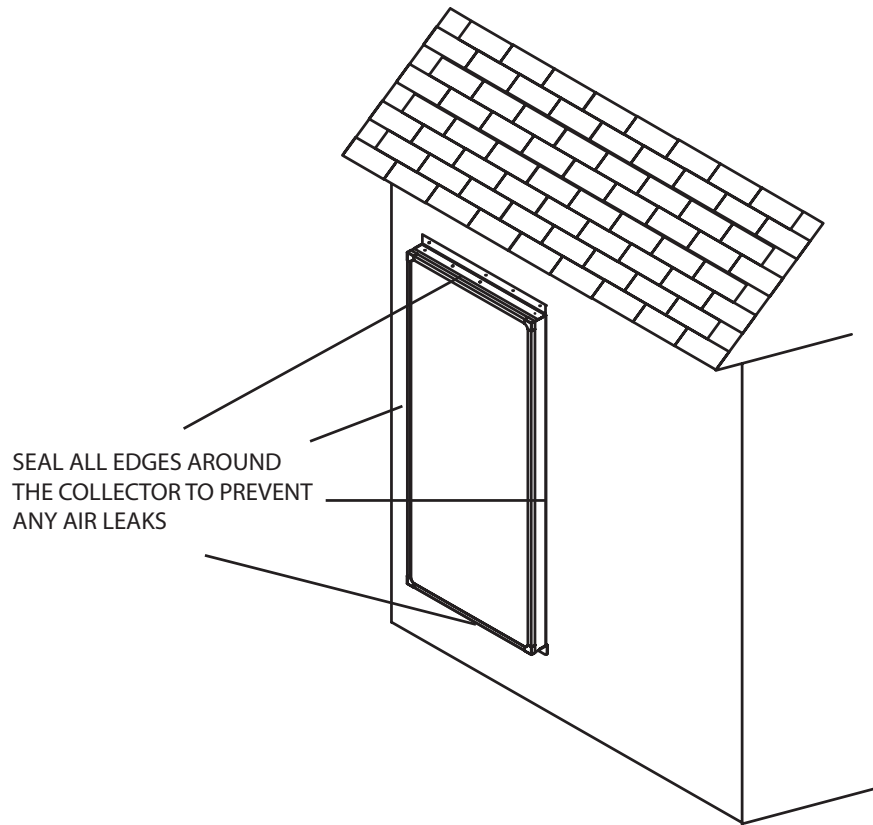


Figure 21. Sealing the outside of the collector.

n. Attach the indoor vent grills with the screws provided as shown in Figure 22.

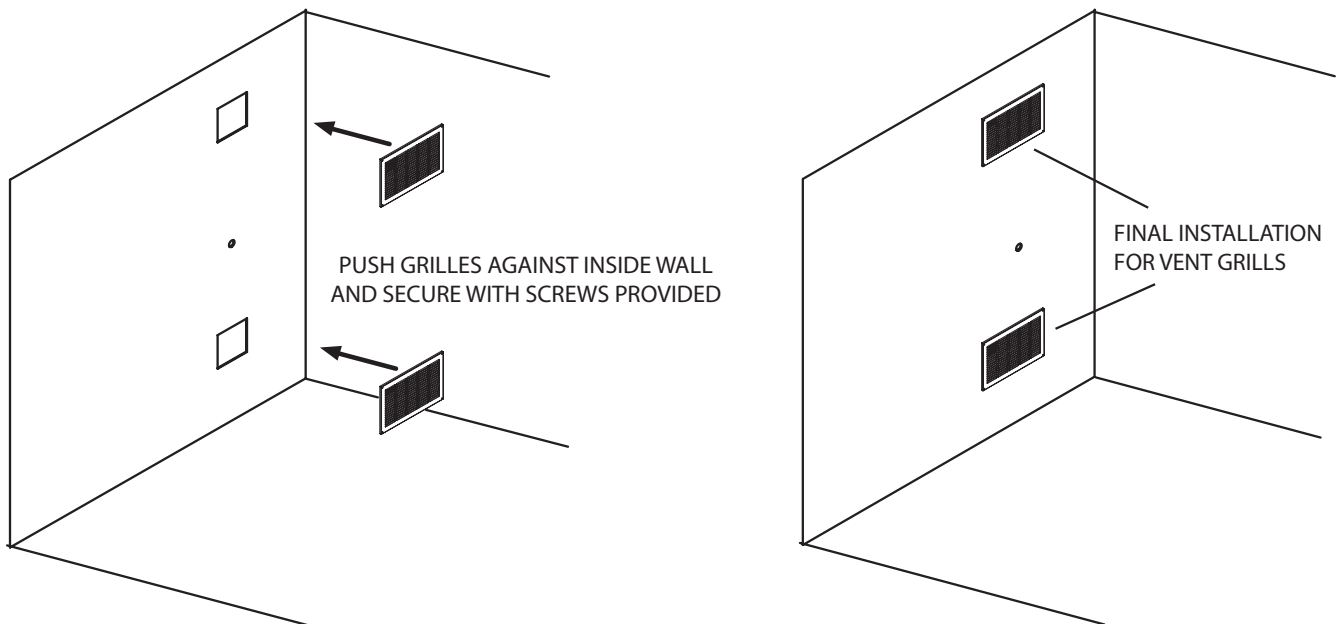


Figure 22. Vent grill installation

#### 4. Fan Assembly

The **KOZI** Solar Hot Air Collector is equipped with a circulation fan assembly. The fan assembly includes the following components:

- Circulation Fan
- Photovoltaic (PV) Panel

Figure 23 is a circuit diagram for your fan assembly.

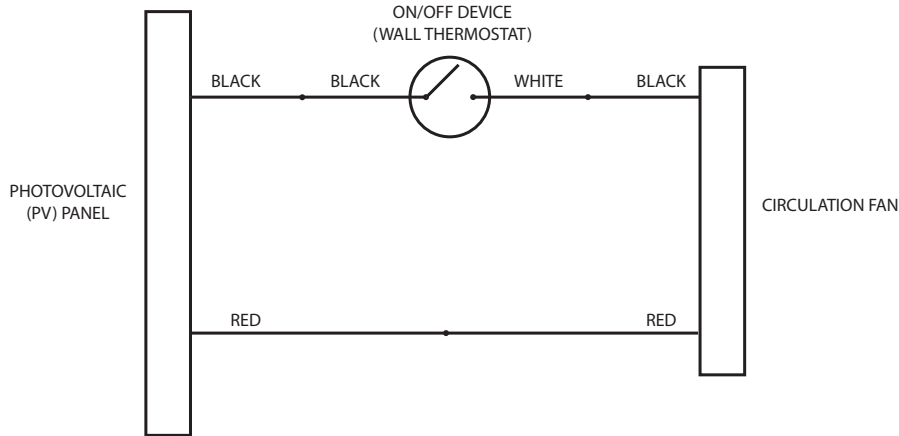


Figure 23. Fan assembly circuit diagram.

**NOTE:** ON/OFF device/Wall Thermostat is not included with the **KOZI** Solar Hot Air Collector

#### 5. Maintenance

The **KOZI** Solar Hot Air Collector is virtually maintenance free. Ensure that the glazing on your collector is clean. Do NOT use any harsh chemicals to clean the glazing or the collector. The chemicals may damage the paint and glazing on your collector. Use water and soap to clean the glazing and collector.

On a yearly basis, check the sealant around the collector. Ensure that there are no leaks, cracks or breaks in the sealant. If the seal has cracked, re-seal that area with more silicone.

#### 6. Warranty

APR Industries Ltd. honors a one-year warranty for all fabricated and electrical parts. The warranty will cover parts only. However, APR Industries Ltd. will not be liable for removal, inspection, re-installation or any other labor charges. This warranty is valid only if the collector has been installed in accordance with the instruction manual.

This warranty does not cover the following:

- Accidental damages.
- Misuse and/or neglect of the collector.
- Changes or modifications to the collector.
- Damages that occur due to circumstances or situations that are beyond APR Industries Ltd. control (e.g. earthquakes, floods, lightning, wind, etc.)

Please cut and fill out the warranty card provided on the next page and mail it to:

**APR Industries Ltd. C/O Warranty Department**  
**1354 Waverley Street**  
**Winnipeg, MB, Canada**  
**R3T 0P5**

**KOZI SOLAR HOT AIR COLLECTOR WARRANTY CARD**

CUSTOMER

NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

POSTAL CODE/ZIP CODE: \_\_\_\_\_ COUNTRY: \_\_\_\_\_

TELEPHONE NUMBER: \_\_\_\_\_

DEALER:

NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

TELEPHONE NUMBER: \_\_\_\_\_

MODEL: \_\_\_\_\_ SERIAL NUMBER: \_\_\_\_\_

DATE OF PURCHASE: \_\_\_\_\_



