



26' GROWING DOME UNDERSOIL VENTILATION SYSTEM

INSTALLING THE UNDERSOIL DUCT

This system is installed after growing beds are built. The main function of the undersoil system is to help control the temperature of the largest perimeter bed since they are more exposed to the outside temperature. The duct starts at one of the two corner edges of the pond and follows the inside of the foundation wall to the south point of the dome. Install the system in the largest of the two perimeter beds, so that it covers as much of the perimeter as possible. This arrangement applies when the door is installed in the southeast or southwest pentagon. If the door is installed in the south pentagon, install the undersoil system inside either the east or west perimeter bed. The duct curves up out of the soil at the one end next to the pond and at the other end where duct connects to the undersoil box (storm drain with catch basin) at the southernmost point. See “Undersoil Duct Layout” Diagram 23-D1 for specifics on layout. If you are planning on raised beds, simply lay the duct on grade level and put your soil on top of the pipe. If you place “fill” in the bottom of your beds, place the pipe on top of the fill. If you are not planning on raised beds, you will need to dig trenches for the duct to fit into. Where the undersoil duct comes out of the soil at the pond, leave approximately 30” of the pipe above finished soil level (*figure 3*) so that you have enough duct to connect the coupler (*figure 1*) and the blower fan (*figure 2*). At the southernmost end, the duct will connect directly to the undersoil box (*figure 4*). (You can put nylon screen over the ends of the fan and undersoil box to prevent dirt and debris from falling into them.)



Figure 1



Figure 2



Figure 3



Figure 4

INSTALLING THE BOX



Figure 5

Cut the end of the southernmost duct so that there is enough length to install the undersoil box so that it rests about 3" above finished soil level (*figure 5*). Press fit the southernmost end of the duct into the undersoil box. Air should blow out of the undersoil box while the fan is running. This is the exhaust for the undersoil system (*Figure 6*).



Figure 6

INSTALLING THE FAN

Press fit the coupler (nested inside the undersoil box during shipment), onto the duct end near the pond (*figure 8*). Slide the blower fan onto the coupler, making sure that the arrow indicating the air flow direction is into the duct, or downward (*figure 7*). Tighten the pipe clamp on the coupler with a screwdriver to secure the fan to the ductwork (*figure 9*). This is the intake for the undersoil system.



Figure 7



Figure 8



Figure 9

INSTALLING THE SOLAR PANEL

The solar panel is installed on the south side of the dome, so that it slopes at approximately 45 degrees to the horizon (or $15^\circ + \text{latitude}$) to get maximum solar input, especially in the winter months. See "Solar Panel(s) Installation" Video 23-V2 for visual on mounting the solar panel. The panel is held in place by three 2" roofing screws with washer screwed through the mounting brackets of the panel, through the glazing, and into the dome struts that are underneath. Only three of the brackets will be used. Having a fourth bracket gives you more flexibility of attaching locations.

Drill a 1/4" hole through the glazing next to a strut for the wire to go inside the dome. Seal around this hole on the outside with silicone. With auxiliary wire, the grooved wire is positive, and the smooth is negative. The white wire from the panel is usually used for the positive (+ve) pole and this wire is connected directly to the grooved wire,

and the black wire is usually used for the negative (-ve) pole and this wire is connected directly to the smooth wire. Strip the ends of the auxiliary wire and use the provided twist on wire connectors to connect the solar panel wires with one end of the auxiliary wires. Run the electrical wire in such a way that it runs down the side of the struts that can be used to make the shortest pathway from the panel to the switch. Use the wire staples to secure the wire along the sides of the struts.

MOUNTING THE ELECTRICAL GANG BOX

Punch out one of the tabs in the bottom back of the electrical gang box, then feed the wires from the solar panel and the fan through the “tapped” hole in the gang box. Find an appropriate location on a strut near the side of the pond where the duct is located and fasten the gang box to the strut. **Important:** make sure that the gang box is located close enough to the final location of the blower fan so that you have enough wiring to work with while attaching the switch. As seen in *Figure 10*, the gang box was mounted too high and the wire from the fan is too taut. The gang box may be mounted using the attached nails (*Figure 11*).



Figure 10



Figure 11



Figure 12

WIRING THE SWITCH

After feeding the wires through the box, cut the auxiliary wire so that you have enough wiring to work with, then strip the wire ends to expose about 3/8” bare wire. Connect the black wire from the fan (-ve) with the smooth wire from the solar panel and secure it with a twist on wire connector (*figure 12 & 13*).

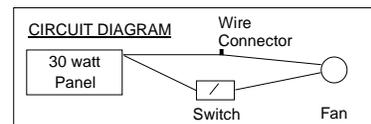


Figure 13

The remaining wires will connect to the switch. The solar panel wire will attach to the top screw of the switch (orient the switch so that the words “ON & OFF” are not upside down!). The remaining brown wire from the fan (+ve) will attach to the bottom screw of the switch. Turn on the switch to ensure correct installation. If it does not work, check the connections. If it still does not work, you may have to reverse the two fan wires or reverse the two solar panel wires.

After making sure the fan works, fasten the switch to the gang box and then fasten the switch plate to the switch with the provided screws.