

## INSTRUCTIONS FOR INSTALLATION OF REPLACEMENT VORTEX SOLAR PANEL

Please read the following instructions carefully before beginning.

**Tools Required:** Ladder; Cordless or Electric Driller with a 5/16” Nut Driver Bit, Flat-Head Screwdriver, or 5/16” Nut Driver

### **Step 1 Receiving, storing and unpacking the replacement panel(s):**

**Receiving:** PhD normally ships replacement solar panels rolled and strapped tightly in a 51”x17”x17” box (two panels maximum per box) using FedEx Ground. Immediately upon receipt, examine the outside carton(s) to make sure there is no evidence of shipping damage; if so, notify the delivery driver – if possible open the package before they leave to determine if there is shipping damage to the panel (or lost parts if ordered in the same shipment). If the panel(s) is unacceptably damaged, PLEASE refuse the shipment and contact our office immediately. If damage is discovered after receipt, contact our office within 7 days – any delay beyond this period will void coverage from FedEx.

**Storing:** Store the carton(s) in a safe place where damage is unlikely to occur until you un-package the panel(s). If you plan on waiting for more than a week to install your replacement panel(s), please note that a tightly rolled panel kept under tension for an extended period of time can greatly affect the structure of the panel and will make it much more difficult to flatten the panel when you are ready to install it. We recommend that the panel(s) is un-packed and un-rolled, then stored flat in a safe place where damage is unlikely to occur.

**Unpacking:** Before un-packing, please read the warning information (on the outside of the shipping box and below):

The box contains a solar panel(s) tightly rolled up under tension. When removing, place box on side and remove one panel at a time. Use caution when removing, the panel may attempt to spring open into an un-rolled position and could cause injury if you or any item is struck by the panel. Two people should carefully cut the banding and unwind panel to release tension.

Once the panel is removed from the box, it will likely remain in a slightly rolled position. To return the panel to a flat shape, place the panel in full sunlight. Begin to unroll panel and use a heavy weight (without sharp edges) in several spots to hold the panel flat or mostly flat. As the sun heats up the panel, its memory will return to a flat configuration. This process typically takes 30 to 60 minutes depending on how long the panel was boxed and the intensity of the sun. Exercise the warning above when unrolling the panel, until it has completely returned to a flat position. Carefully remove weights.

NOTE: The panels are assembled in four 1-foot strips, which are connected together with a tack weld. This is to hold the individual panels in place during shipping and handling until they are placed on the roof. In some cases, the tack weld will break apart during rolling, shipping or un-rolling of the panel. This is normal and does not in any way affect the integrity or performance of the panel.

**WARNING:** Do not attempt to install the replacement panel(s) during high winds and or rainy days. Choose a day when the sun is shining, little to no wind and a dry roof surface.

### **Step 2 Removing the 2 bypass pipes (51”x1½” schedule 40 PVC pipe):**

Make sure the solar 3-way valve is in the off position. Turn the pool pump off. Remove the 2 Bypass PVC pipes by loosening the hose clamps on the rubber couplings that are connected to the bypass pipes, including the clamps attached to the header clips fastened to the roof at the top header. Make sure to leave the 4 loosened hose clamps on the rubber couplings so that they are ready to receive the replacement panel installation. Next lift one side of the each bypass pipe until the header pulls out of the rubber couplings. Pull the other ends of each bypass pipe out of the other two rubber couplings. Remove the bypass pipes from roof and store.

### **Step 3 Installing the replacement solar panel:**

First loosen the straps at the end of the row and remove the straps from the strap clips back to the location where the replacement panel is to be installed. Make sure the 4 hose clamps are installed on the rubber couplings on each of the corners of the 2 existing panels so that they are ready to receive the replacement panel headers. Before bringing the replacement panel up onto the roof first position the panel on the ladder with the sticker side facing the ladder. Carefully climb on the ladder and hold the top header with one hand while climbing up the ladder with the other hand, sliding the panel up the ladder behind you. As you climb onto the roof pulling the panel up with you make sure the panel stays as close to the roof surface as possible so that no big gusts of wind can get underneath it. Be careful when sliding the panel on the roof not to strike any sharp objects. From the top of the systems array line up the 4 corners of the replacement panel with the 4 rubber couplings the replacement panel headers will connect to. Gently lift one side of the top panel header while pushing the opposite side of the top header into the receiving rubber coupling. Let the panel rest on the roof and tighten down the hose clamp being careful not to over-tighten and strip. Next lift the corner of the top header that is not yet connected to the rubber coupling, simultaneously lifting the top header of the existing panel beside it. Slide the replacement panel header into the receiving rubber coupling, gently let the panel rest on the roof and tighten down the hose clamp. Install the header clamps that attach to the butterfly clips fastened to the roof. Connect both corners of the bottom header to the receiving rubber couplings and tighten down the hose clamps. Re-Install the panel straps. Turn the pool pump back on and turn on the solar.