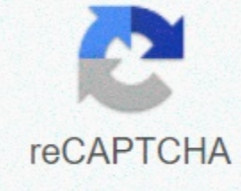




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## Diy solar pool heater flow rate

Last year I decided to make a solar pool heater. The basic idea came from reading various forums, old Article Mother Earth News, and checking out some old newsgroups. It seemed that others had some success creating solar heaters in a variety of techniques, from something as sophisticated as a custom built metal heat cleaner to something as simple as a bale of irrigation hose sitting on a slope. I decided to aim a few between these extremes and came up with a solar panel consisting of a plywood sheet 4'x4' on the frame with as much irrigation hose as I could reel on the surface I added a diagram to show the piping clear, and added a little more description at the end of the article... Basically, it consists of about 200' irrigation hose, queered 3/4, 4x4 sheet plywood with tubular braces screwed. All of this propped up with my feet at a more or less optimal angle for my location, and pointing more or less south. The inside of the frame was painted flat black, and the copper braces were painted flat black after the thing was together. I put it on the patio bricks this year to make it easier to mow around tap any of the small images for full size in the new window. Here's the 'T' from the pump. This after the chlorinator, we hope to keep the nastiness build-up in the hose away. I also added a ball valve to the line, which is super useful in keeping the flow through the heater for the trickle. This allows the water to heat up in the pipe, and maintain some heat mass. Rear. Notice the beautiful folding feet for easy winter storage... And always illegitimate, wrapped in a tie socket hose. I keep making sense to make a nice contour pipe that can come up the side, around the lid and point down the inside on the wall so the water never gets on the solar blanket, but just doesn't seem to get around it. Finally, a few close-ups of the coil itself. The first shows the last elbow that passes through the plywood and out. I couldn't get the irrigation hose spiraling less without it starting to kink, so that's where I left off. When I started I was holding every pipe clamp with my screws. Manually, and my wireless drill tends to tighten the screw, and I was afraid I'd damage the pipe with a metal bracket. By the time I went around two or three times I realized that I could share the screw between the two pipe clips. Another option would be to use a metal strapping. Under the midday sun, the water comes out about 2C warmer than the entrance with the flow I valve up to. After one day of sunshine he pulled the pool from 18C to 22C (it was 30C that day) and three days later I had a pool at 28C. I was still looking for a 4x4 plexiglass to cover the coil as I know a lot of heat is lost if there is any wind blowing through them. All. People asked for a better chart showing how it's related, so now now I played with Inkscape a little more, I drew the following: Normal pump flow follows the blue line. Water is sucked out of the skimmer by the pump, pushed through the filter, through the car chlorator, then into the pool. Ball valve T I added after the chlorinator. When bypassing, all the water flows as if there was no heater. I turn the ball valve enough to allow some of the water to flow through the heater. I don't push it all through the heater because it puts too much stress on the pump. I just keep tweaking it while viewing the pressure sensor on the filter, and stop if it starts to move up. I hope the additional explanation was helpful. If you are looking to add a solar heating system to the pool and have questions about how to install solar panels, read on. From simple, single ground panels for Intex pools to multi-platform rooftop systems in ground pools, I'll explain the differences and how to get them and heat your pool at the weekend! To quickly qualify, I have four 2' x 20' panels on the garage roof and have installed dozens of solar pools on local residential pools. In addition, I work at InTheSwim - enough said. What are solar heaters and how do they work? Pool solar panels are built from rows of small, hollow pipes made of black polypropylene (super strong plastic) or rubber that seams together to create a large surface area called a panel. The sun heats the black mat and as the water passes through, the heat is transferred into the water and returned to the pool. Solar panels are an environmentally friendly way to heat your pool at 10-20 degrees warmer, with do-it-yourself installations, zero emissions - and with zero operating costs. With no gas or electric lines to run, they favor pool owners everywhere! Solar heaters come in many shapes and sizes, but the mechanics are basically the same. You can use an existing pump to circulate water through a black tube that naturally absorbs heat from the sun and sends that heated water back into the pool. The larger the surface area of the solar heater, the more BTU heat is generated. And the more BTU you generate, the more volume of water you can heat. Since the pool is open to the air, the heat can be quickly lost. To combat heat loss, it is recommended to use an excessive solar pool heater. One or more panels can be connected to create a larger surface area. The panels can be installed above the ground and in ground pools, arranged in a variety of ways, and controlled manually, turning the valve or automatically, with a solar controller. Above the ground pool of solar heaters small pools: If you have one of all the popular pools like pop-up or metal frame pools from creators like Intex, there are some quality do-it-yourself solar heaters from the game and Smartpool that are easy to install and occupy a very small yard yard By twisting the black tubes and covering it with a convex dome, SunCoil solar heaters can be plumbed into your filter system by simply adding one more section of the hose after your existing pool and filter pump. To install, all you have to do is turn off the pump and isolate your system by blocking your skimmer and returning or closing the disconnected valves. Next, turn off the hose to return and plumb it onto the solar consumption heater, then add another hose, installation, and clamp from the solar heater exit to the return installation on the pool wall. Unlock the skimmer and go back and turn the system back on and you're ready to enjoy the free heat! SunCoil's solar heater is shown right sitting on the ground and can be tipped at 2 feet to maximize the best angle to the sun. The by-pass valve kit is enabled to shut down the solar system during nights or rainy days. The bypass kit also slows the flow of water, allowing the solar panel to maintain the optimum heating temperature. Large pools: For large, steel overhead pools, there are a number of manufacturers of much larger solar panels. They're long and flat, hard but bendable, and usually 2'W x 20'L or 4'W x 20'L - so you need a long space to put them. Oval above ground pools lend themselves well to these systems as you can place them along the length of the pool, on a small rack attached to braces or kickers. For round pools you need to be a little more creative. The panels can be stacked flat on the ground, mounted on a fence, or you can build your own solar cabinet panel from an iron corner, 2 x 4, PVC, or other frame materials. Attach plywood and assemble solar panels on top of this triangular frame. Ground pool solar heaters are packed in rolls inside the box. Once you unpack them you cut out ensuring the strap is carefully and unwrapped and lay them in the sun so they smooth out. It helps to have two people for this and put a thick towel with weight as the cinder block at each end will help hold it otherwise they can spring back into the roll. Depending on how sunny it is, they will align quickly and stay flat. Once they are flat and warm they will be soft, so handle them carefully to avoid damaging the panels. For terrestrial solar heaters you can connect these panels just as compact, adding just one hose, fitting, hose clamp. The panels connect after your pump and filter and feed in your backline. If you want to find them further away from the filter, you just need more hose or pipe. You can use a pool vacuum hose, but without a rotating cuff that will leak water. If you bind Panels, beware that some marks above ground panels are separated in the middle so the water goes down and back in each panel so look for stickers to detect the entrance and socket. As you add more panels you will want to line these up so water water streams back and forth and then out. For other brands, the water runs from one end to the other, so there is no direction to worry about, making it even easier to plumb. The water comes at one end and from the other. Ends that are not connected to the water supply or the adjacent panel get limited. All solar panel systems in the pool are easy to use with instructions. The panels are most effective if they are at an angle of 35-45 degrees to the sun to maximize heat collection. Best of all is the southern cladding. Multiple straps or clips are all you need to secure them on the solar panel rack. Again, a pass system is recommended for these panels, so you can dial in flow speed or send water around the solar panels at night or on a cloudy or rainy day. For wintering the solar system, simply turn off the solar panels, blow out any remaining water with a wet/dry vacuum, roll them up and store them in free space like a basement or garage. If you leave them all winter, cover them completely with a tarp to block the ultraviolet rays, which (ironically) weakens the material and can cause condensation inside the panels. Above the ground pool solar panel installation: There are two types of solar systems for above-ground pools, shown below - SunCoil Solar Dome, and EcoSaver solar panels. Both are very easy to install; You can create your own above ground solar panels in less than an hour. Turn off the pump and plug in the skimmer and backliner in the pool to stop the flow of water. Choose a place for a panel (s) where they will receive at least 6 hours of sun a day. Best of all on the south side, not fallen by trees. SunCoil heaters should not be installed on the roof, but EcoSaver panels can be installed on the roof (see below). A versatile solar panel pool can be set flat on the ground, but if you can build a small rack of wood to mount them at an angle, your solar panel (s) will absorb more sunlight. Connect the reverse hose from the pump into the solar panel entrance to bring cold water to the solar heater. Connect the reverse hose from the solar panel socket to the return pool wall to bring warm water to the pool. Both solar systems are modular, that is - you can connect the extra panels to each other. From one solar panel to another. They can even be installed in different places, or you can pipe water in a remote location, it should not be against the pool, as shown in the photos. Solar heaters for underground pools there are solar panel kits available for in terrestrial pools in many sizes; 4'W X 10'L or 4'W X 20'L. A good rule of thumb is to have about half the surface area The pools are equal in square feet. Example: The 20x40 pool has 800 square feet of floor space, so a 400-square-foot solar panel would be a good target. This equates to 5 of the 4'x20 panels, or 10 of the 4'x10 panels. See our solar pool pool heater diagrams for pool size. For so many solar panels you need a lot of space. However, you can always start with one or two and add more later; just remember to plan the space. Even one panel will add a little heat. Ground pools tend to have much stronger pumps, so panels can be installed on a nearby roof, even 2 floors high. A garage or roof of a pool house or side of a hill is a good place, or you might consider building a frame of processed lumber and plywood near the pump and filter area. Installation kits include roof-mounted straps and equipment to provide them. All you need is a drill, plug, and assistant to keep them in place while you work. Not to know where your belts are going to go. You want one at each end and then space out the rest equally. Drill into the roof or plywood on each side of the panels through the strap, plug, and screw in a lag bolt or providing equipment (manufacturers have different hardware kits, but drilling is the same - although you don't always have to drill through the strap). You want the straps to overlap each panel and hold it. Keep the holes a few inches from the edge of the panel. Insert the connecting fittings and caps between the panels and connect the panels one by one. Once the panels are safe, you are ready to plumb. Plumbing them in and out of your pool can be achieved with PVC, flexible pipe, corrugated hose, or even a garden hose. All the plumbing fittings you need are available in most hardware stores. The basic panel kits include fittings and control valves to keep the panels primed so when the pump turns on and off the water flows easily without air traps and without the need to re-prime the panels each time. To install snow cover, it is recommended to install an array of solar panels with a small step or angle to facilitate drainage, for the purpose of wintering. In Ground Pool Solar Panel Installation: Installing a ground solar pool heater will take longer than overhead blocks because you need to do a little plumbing and you will have more panels to connect together. Consult our solar panel chart to order the proposed number of solar panels, which should be at least 50% of the surface area of your pool. As shown in the photos at the top of the page, you don't have to mount these solar panels on the roof of your home unless you have a suitable roof location that gets at least 6 hours a day of direct sun. You can build a rack somewhere in the yard, or even on the back of the fence. It doesn't have to be near the pool pump, although the farther from the pump, the more you'll spend on water pipes and from the panels. Perhaps the patio is a pergola, providing shady places to relax and out of the way a place to install solar panels. Unpack the panels and put them together. The panels have a separation to allow you to wrap around the roof roof Protect the rooftop panels with the equipment on. Attach the cross straps to hold the panels in high winds. Cut out the return pipe after the filter and glue on the check valve to one side and a 3-way distracter valve included in the solar controller package. Plug in another pipe on the opposite corner of the solar panel. Run this output pipe parallel to the top of the panels. Run the exit pipe from the roof or rack to the back line, which has been cut in step 3. Before connecting the exit back to the back line, glue on one direction check the valve to prevent water from entering the panel in the opposite direction. After checking the valve, connect the exit pipe back to the return line. Pool Solar Panel Connections Depending on the brand, connections can vary, but when you buy a set of 2 or more panels they will include plumbing and equipment to connect the panels to each other. Smart Pool solar panels have 1.5 threaded women's holes at both ends, which you can attach to 1.5 men's thread, while Fafco panels have spiky ends that protrude at each angle or end that have size for a radiator hose and standard stainless hose clamps. If you're installing on the roof, be sure to pick up enough fittings to make the transition to the eave roof, and down to the ground and some pipe straps to ensure the plumbing escape to the roof and wall. For masonry walls, use crane-con screws to ensure pipe clamps from there you can find appropriate parts of the connector for PVC, flex, or above-ground pump and filter hose at your local hardware store. Connect the gong of the line to the panels to the bypass valve after the water filter and link the bypass line and return the solar water hotline to your return line with a tee fitting. Now you can turn on the pump, open the walk-through valve and send water to the solar panels. If you haven't worked until past dark, place your hand on the return pool and you'll start to feel the heat right away! Solar Controller Installation: The solar controller allows you to set the temperature dial, and includes temperature sensors, a 3-way Valve and Valve Actuator (automatic valve turner) to send water to solar panels only when conditions are optimal for getting solar heat. When the clouds pass, the rain begins to fall or at dusk every night, the drive will turn again, bypassing the solar panels. For best results with a terrestrial solar pool heating system, I highly recommend installing an additional solar controller. Mount a solar box controller on a wall or a sturdy post. Connect the power by connecting the cord to a grounded socket. Drill a hole in the pipe 3rd valve, insert the water temperature sensor and clamp it into the pipe. The clamp or silicone is the second sensor next to the solar panels to monitor the temperature of the panel. Connect the wires from both into the solar controller box. Remove the handle from the 3rd valve to mount the drive on the valve. Connect the wire from the valve drive into the solar controller box. Set the temperature dial and check the system. Solar Automation Pool - Install it, and forget about it! You can automate the solar pool heater by installing a wall controller, valve drive and water and air temperature sensor. Some popular goldline models are solar controller Hayward and Sun Touch Pentair. Solar controllers allow you to set the desired temperature. Sensors measure the temperature of air and water. If the air temperature exceeds the water temperature, he says drive the valve to open the valve and send water to the panel to raise the water temperature. Similarly, if the hot sun is not available, the controller closes the valve so you don't cool the pool down. Controllers can also have freezing protection and circulate water in case it is cold enough to freeze in the panels and potentially damage them. Some controllers are also designed to control other functions of your pool or spa like their pumps, heaters, lighting, etc., so you can automate when they are turned on or off. Controllers can control valves to move from solar panels to gas heater or electric heat pump, so you only use them when you need them - which maximizes energy consumption and saves you money! Frequently asked questions about solar pool heating: B: Will I need to size my pool pump to push water up to the roof? A: I installed dozens of solar systems and never had to upgrade the pump. As long as you have a 1 hp pump or more, you should have no problem even pushing the water up to 2 floors. You will notice that the filter pressure will grow 2-4 pounds on the pressure sensor, but most pumps can handle additional resistance without problems. H: I have a pressure pool cleaner, will this conflict be with his work? A: If you have a pump-type pump amp for the pool cleaner, it is recommended that you do not work at the same time as a solar pool heater. The solar controller has a redefinition of the pump booster to disable the pump-accelerator when the valve drive opens to send water to the solar panels. A: Can I install solar panels on 2 different sides of the roof? A: Yes, coming out of the first set of panels, run the pipe to the set of the second panel and so on, and then back down to connect to the backline. In: Do I need to install a solar controller? A: Recommended for best results. If it starts to rain, or heavy clouds form, sending water to the solar panels will cool the water, and reversing the heat gains achieved earlier. What if I need to remove the solar panels to replace the roof? A: The panels can be removed within hours, without problems. The question is: What about wintering my solar panels? A: Solar panels are installed with a small step to the exit of the pipe, pipes, the air lock valve on the opposite corner to ensure a full drain during the autumn closing. If pitched properly, there should be no need to blow up the panels with air, although you can easily do so if you want to. To generalize the process of installing a solar pool heater, plan your space and make some measurements, then choose the size and shape of your solar heating system. Keep in mind that you can add more later. Next, pick up the extra hoses or pipes and fittings needed so you have everything at hand when you're ready to install it. Once you have a solar pool heater set up, you start producing free heat from the sun without any impact on the environment and you will swim in front of your neighbors and long after they have closed your unheated pool! Mike Cummings InTheSwim Staff Blogger Blogger

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