The 12-Volt

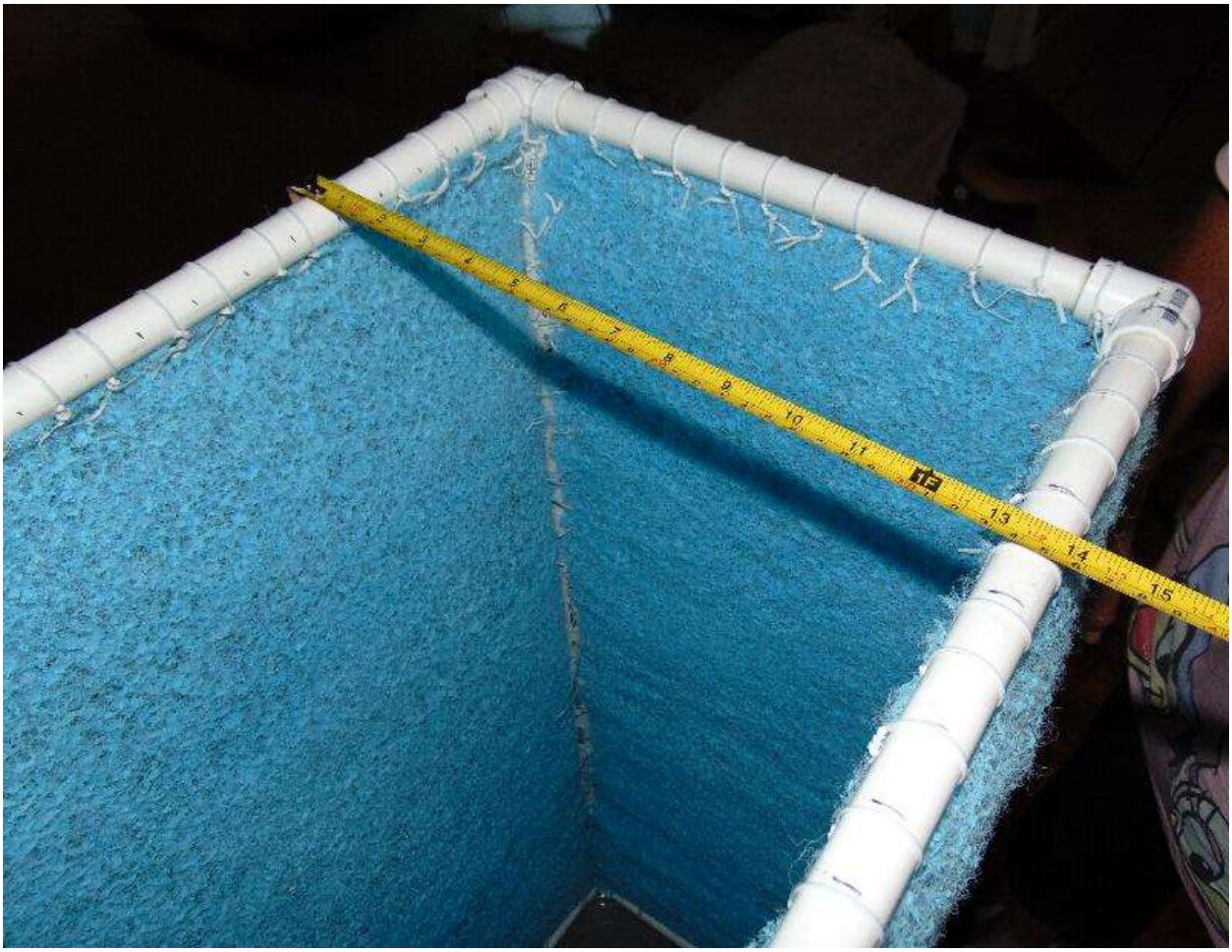
Solar Panel Powered

Room Cooler (Home-Build)

(5. Top of cooler, seal, fan, switches & HVAC elbow Build)

A simple but effective way to cool a room using only sunshine.

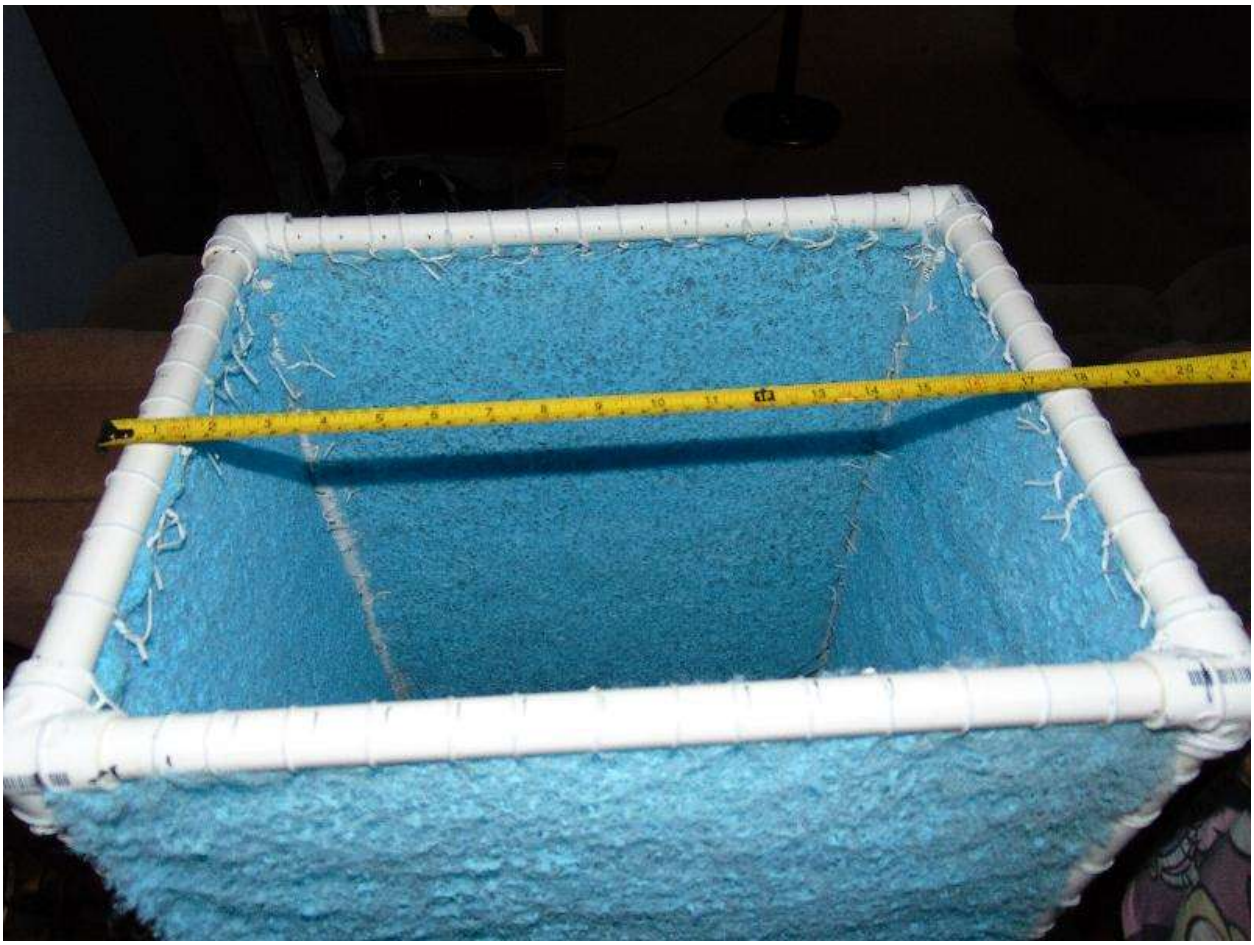
This is a home build project that is fairly easy to build requiring minimal use of power tools and minimal wiring.



Here is the top of the cooler. Note the twist wires with the twisted ends tucked inside the frame of the cooler.

You need to measure from the outside edge of the PVC pipe to the opposing outside edge.

Note in the photo above how I do this. You can see it is 14 inches.



Here is the long measurement of the cooler top opening. This view is harder to see but it measures 18 inches (from outside edge to outside edge of the top PVC pipe.

Your measurements my be slightly off but they still should be close to mine. Jus be sure to measure from the outside edge of the PVC pipe to the opposing outside edge as this is the measurement fpr the top of your cooler and this top will sit on top of a D-ring door seal as you will see.

I use ¼” plywood you can buy a 24” by 24” sheet of precut plywood from Lowes or from Home Depot.

I like the ¼” plywood as it adds weight to the top of the lid pressing it into the D-ring seals to make it more air tight.

Also I like the ¼” plywood as it makes it possible to use short screws to attach the fan to the bottom of this plywood and it allows you to screw on the 12 inch elbow so you can direct the airflow where you need it.

Note the above photo shows I measured out 14 inches on one side and 18” on the other end, and I marked it using a straight edge.

Now it’s ready to cut. After your cut you should have a 14 by 18 inch piece of ¼ “ plywood to work with.

Next lay your fan on what will be the BACK SIDE of your cooler top.

You should place the fan to one side of the plywood leaving about 1 ½ inches around the three sides of the fan as per photo.

This will leave room for the D-ring seal for it to seal to the top, (the lid).

Note the pen, draw a line around the outside of the fan.

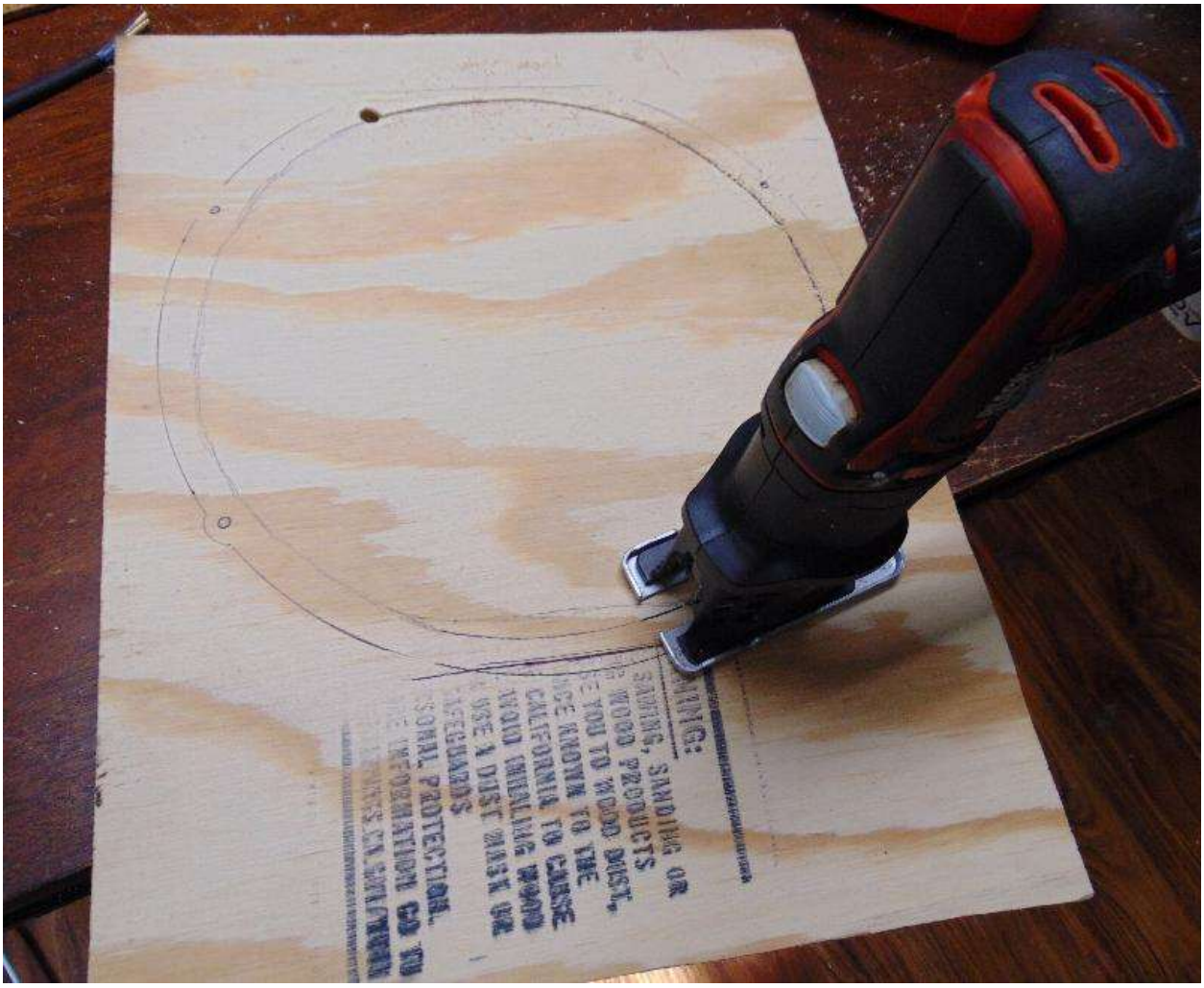
After that lift the fan off the plywood.

It should look a little like this with two drawn lines the outside line around the outside of the fan and the inner line that is where the actual fan is.

Note the two lines the outside line is drawn around the outside of the fan shroud. The shroud is ½" from the outside edge (the outside line) to the inside line (where the fan actually is). You can guess at the ½" or you can measure it ever half of an inch or so, then draw a line to connect all your marks and cut THAT line.

So drill a hole big enough to insert the jig saw blade into the hole which you drill on the inside line.

Next you cut around the inside line starting at your drilled hole.



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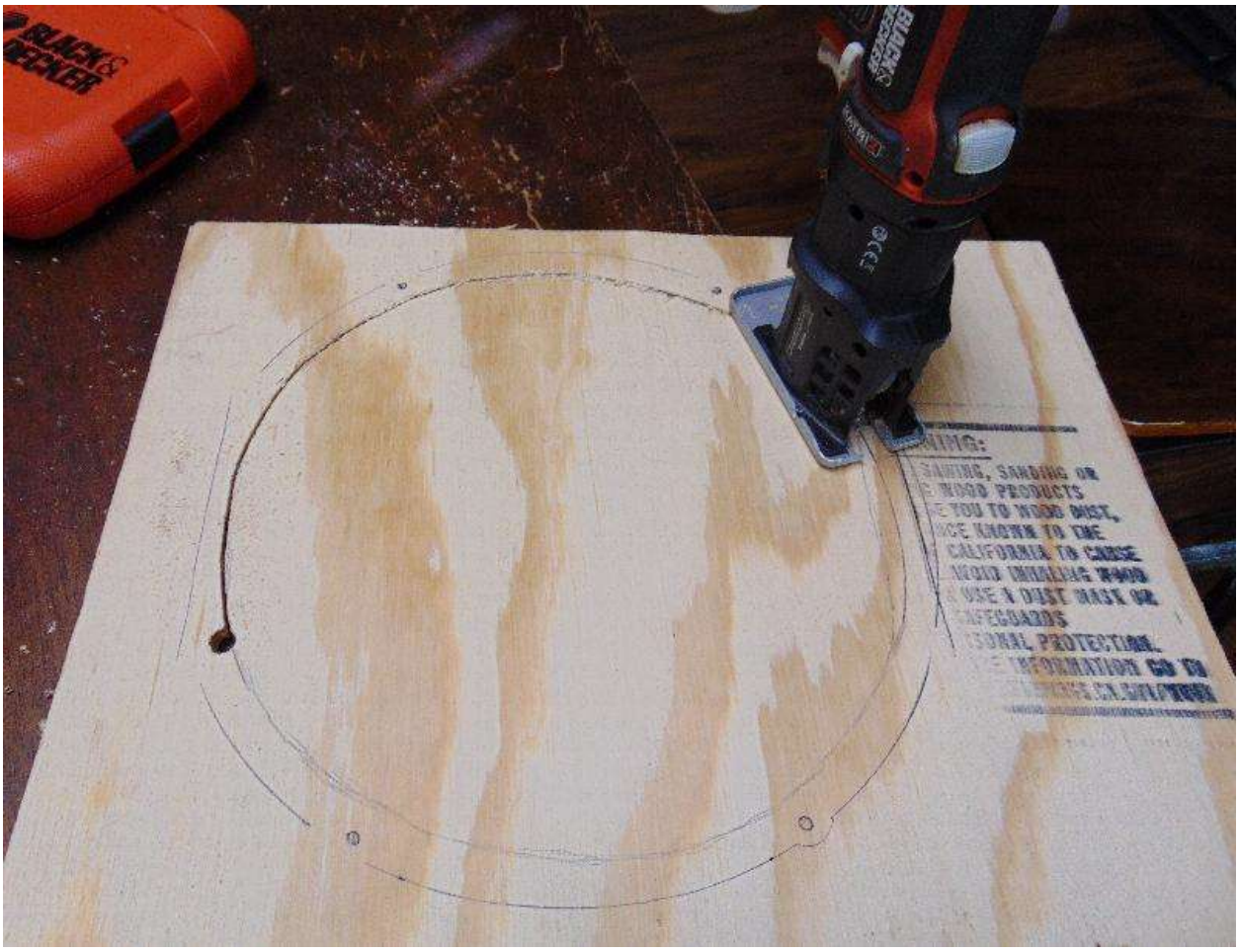
I got about half way around and my battery died.

BE SURE to cut around ONLY the inside line (where the fan sits).

The outside line is where the shroud for the fan sits and you will need to attach the fan shroud to the plywood after you cut your hole.



And if you want the top painted, you will need to do that before you attach the fan to the plywood opening.

Here is the hole cut for the fan cutting on the inside line.

So the fan has the full opening and the shroud has something to be attached to.

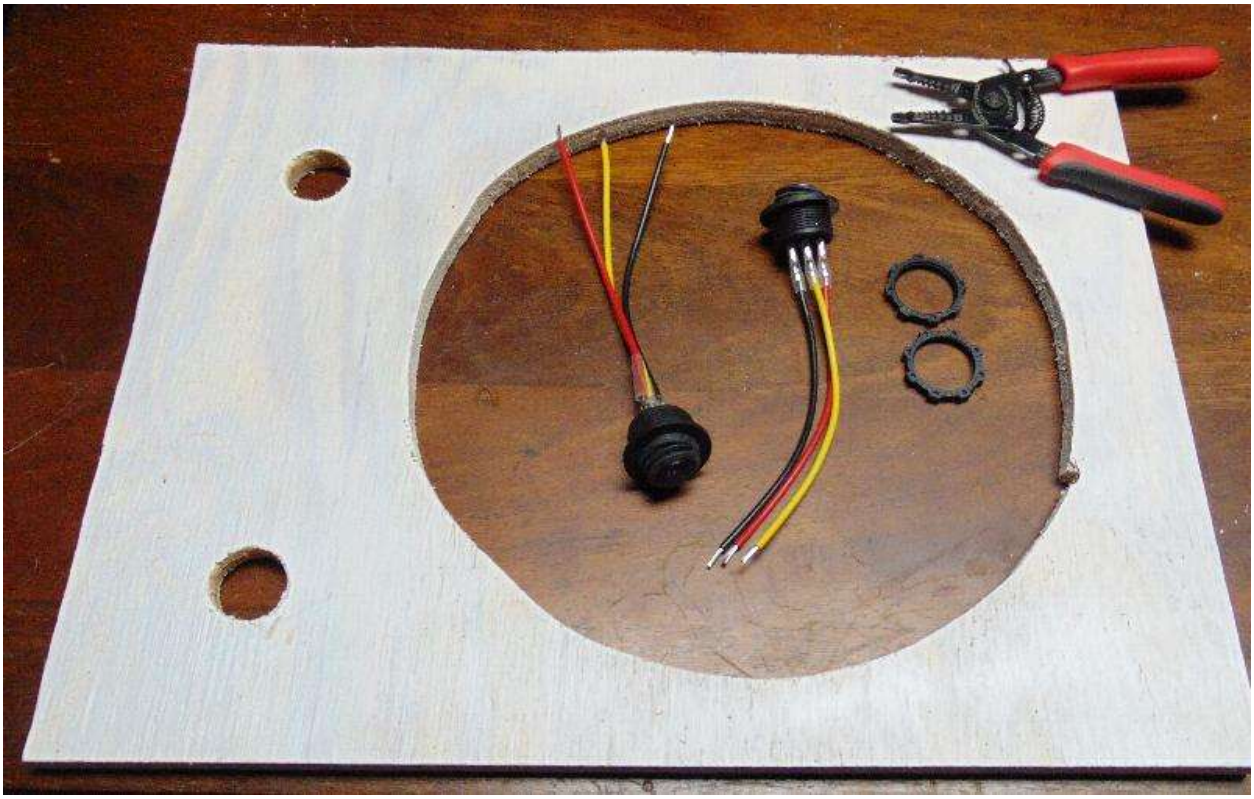
Here is what it will look like attached to the fan shroud. BUT we need to drill the holes for the switches and paint it first, before we attach it to the plywood top.

Note the extra 4 inches to the left side of the fan, this gives us extra room to attach the two switches without having to cut the shroud for the HVAC 12 inch elbow which is coming.

For the switches we chose we had to drill two 29 mm holes.

The object for these holes and switches is to keep them as far away from the sides of the wood and the PVC watering pipe that runs around the top of the cooler and from the fan shroud.

You should place your switches and their corresponding holes in a likewise manor. As per our example above.



To our surprise the barrel of the switch was NOT long enough to attach the locking plastic ring nut on the threads.

So we just used a little silicone and glued them in place. DO NOT go overboard with the silicone in case you ever have to replace a switch.

Notice we painted our top ¼ inch plywood, both sides.

Now we attached our fan making sure the fan was centrally located over the cut out in the plywood for the fan.

Be sure to use brass screws as they will not rust. Also be sure to use screws that are short so they will NOT go through the plywood and be an eyesore and catch on everything that comes in contact with them.

We used a ½ inch screw plus a washer on each screw to be sure.

When installing the screws DO NOT overtighten and strip the screw hole.

Now we attach the fan shroud on the top plate, this should be located over the opening for the fan so as not to interfere with the air flow.

Now for something really easy. Take your gummed edge D-door seal if you have a choice get a soft D-ring seal with the glue already attached to the seal. Stretch it out on top of the long end of the top of the PVC watering pipe from end to end and cut it with scissors and peel off the

plastic strip exposing the glued area which you stretch out on top of the long watering PVC pipe from end to end making sure it is ON TOP of the PVC pipe and press it firmly in place like in the photo above.

Next do the other long end of the PVC pipe so you have only the two short ends to apply the D-seal too.

Be sure to cut the short end long enough to fit snugly between the two long ends of the installed D-seal.

As per the photo above. If you make a mistake and there is a gap between the two D-seals you can cut a new piece OR you can use silicone glue and fill in the gap.

IF after you glue all the D-seals in place you notice a gap under the D-seal anywhere you can pull it up from one end and silicone it in place.

After you do this you should sit the top plate in place on top of the PVC pipe frame and let it set over night.

This should seal up any gaps.

The weight of the plywood, the fan and the shroud with the elbow attached should press the glue down onto the top PVC pipe quite well.

And seal it quit nicely.

Here is a photo above showing how the top plate with everything attached except for the elbow should sit on top of the D-seal which is on top of the PVC pipe around the top of the frame.

Please note: that I am not responsible for any damages or injuries caused by your building this device. This information is only provided as reference and educational material ONLY.

Sorry but I must include a disclaimer (it is the times we live in).