ISAC Build for Cosplay

Based on Tom Clancy's The Division

The following is a step by step instruction manual for how I built my ISAC for my Tom Clancy's The Division cosplay that I wore to DragonCon 2016. A lot of other cosplayers have chosen to 3D print or construct from cardboard or EVA foam. I went with wood because a) power tools, b) EVA foam does not exist in North Carolina, and c) it was way cheaper. Well, it was cheaper until I had to buy a new power tool - it's not a real project until you have to do that and you bleed on it.

Trust me, I bled on mine.

For this instruction set, I will post the sizes of things that I remember and the tools that I used but this should not limit you from making different choices or using different tools along the way. My carpentry kit is no where near as complete as I will have it some day (I wish I had space for a table saw and a miter saw, to start with) so, if you think a different tool will work better, go for it.

I didn't even know, for example, that there are power planers out there until I went to my dad's house. I hand planed my ISAC...

List of Tools that I Used:

- Drill
- Jigsaw
- Dremel
- Mouse sander
- Hand planer
- Chisel
- Spade Bits (1 1/8 and 1 1/2 in)
- Nail file
- Jewelry files
- Metal Shears
- Clamps, more clamps, go to home depot and get more clamps because the ones you have suck...

Materials List:

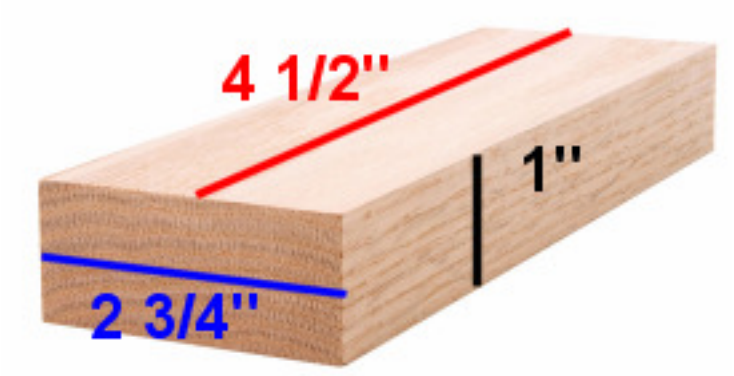
- Scrap 2x4 (make sure the wood is soft)
- Threaded bar (8-32 x 36 in)
- 1/4" dowel rod
- Aluminum tape
- Electrical tape
- Vacuum cleaner belt
- EL wire

- 8 AA Battery Holder
- 8 AA Batteries
- Tea light
- Black zip tie
- Copper Sheet
- Plasti Dip
- Metallic Silver Spray Paint
- Black Spray Paint
- Clear plastic top from an old makeup case slightly smaller than the circumference of the hole it is going to sit in - needs to be shallow!
- A round mirror, smaller than the clear plastic top

Creating the ISAC

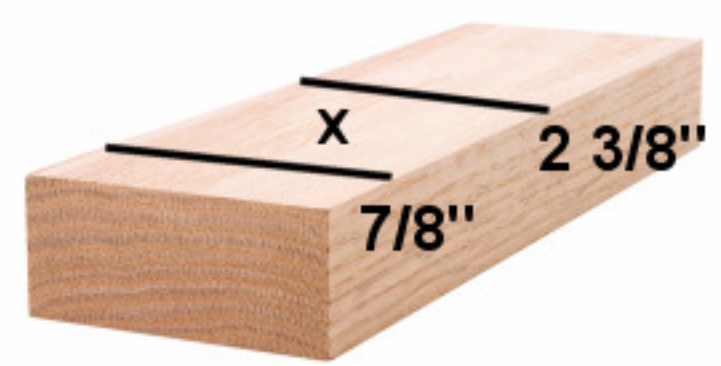
First of all, I do not have pictures for the entire build, I apologize. Where I do not have actual pics, I will provide reference images instead.

Take your scrap 2x4 and cut a piece a little over 4 1/2" long and about 2 3/4"s wide. Decide which side is going to be the top and the bottom. Working on the bottom, plane the wood down to 1" high (yes, take off 1/2").



Once you have your board, you need to figure out where you are going to put the light. I picked a side to have the light and marked two lines, one at 7/8" and the other at 2 3/8" (roughly, I am horrible at reading rulers).

After marking the lines, triangulate the exact center of the board and mark it as well.



Drill a pilot hole all the way through the wood where x marks the spot. Take your 1 1/8" spade bit and drill a hole. Go low and very slow (high torque low speed) with the spade bit as it will catch the wood and, if you forget to set your drill to stop spinning when it gets stuck, you can give yourself a black eye (true story).

You want to drill down roughly 3/4" but all that depends on the housing for your light beacon, which I will discuss later. You do this with two spade bits to create a shelf for your light to sit on so do not drive all the way down.

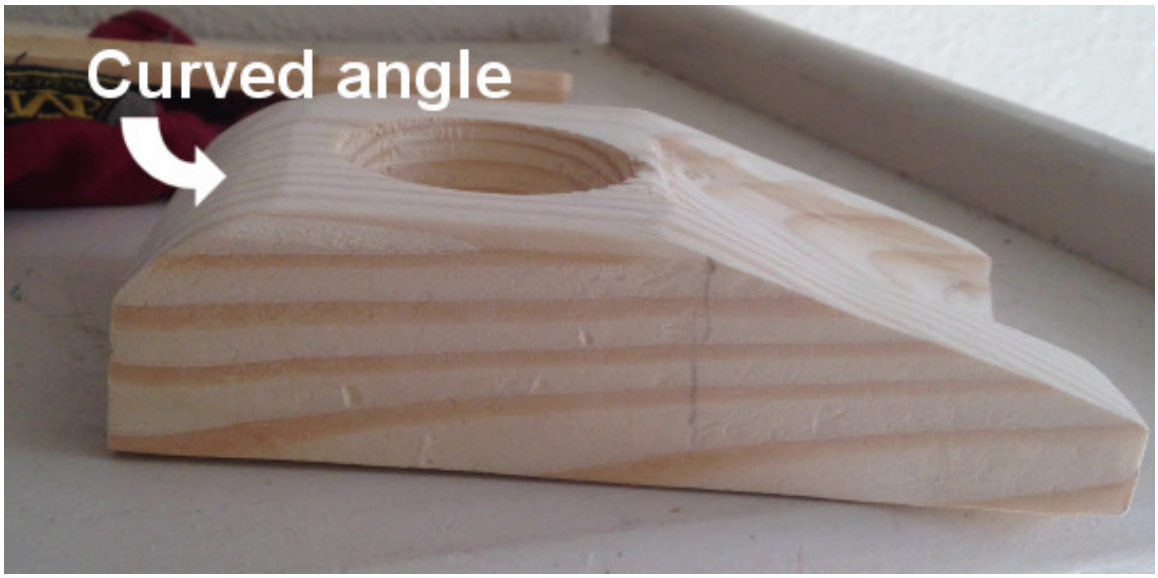
NOTE: You want to have the light housing already assembled before you plasti dip the ISAC in case you need to make changes - you want the top of the housing flush with the wood so plan accordingly. Also, the plasti dip will take away a little of the depth of the hole, not much but it depends on how thick you have applied it.

Once down, switch to the 1 1/2" spade bit and redrill the hole. Low and slow, or you will shred your wood. Do not go down as far as you did the first time. Once finished, recharge your battery on your drill (oh, wait that might have just been mine), but seriously the spade bit will drain your battery.

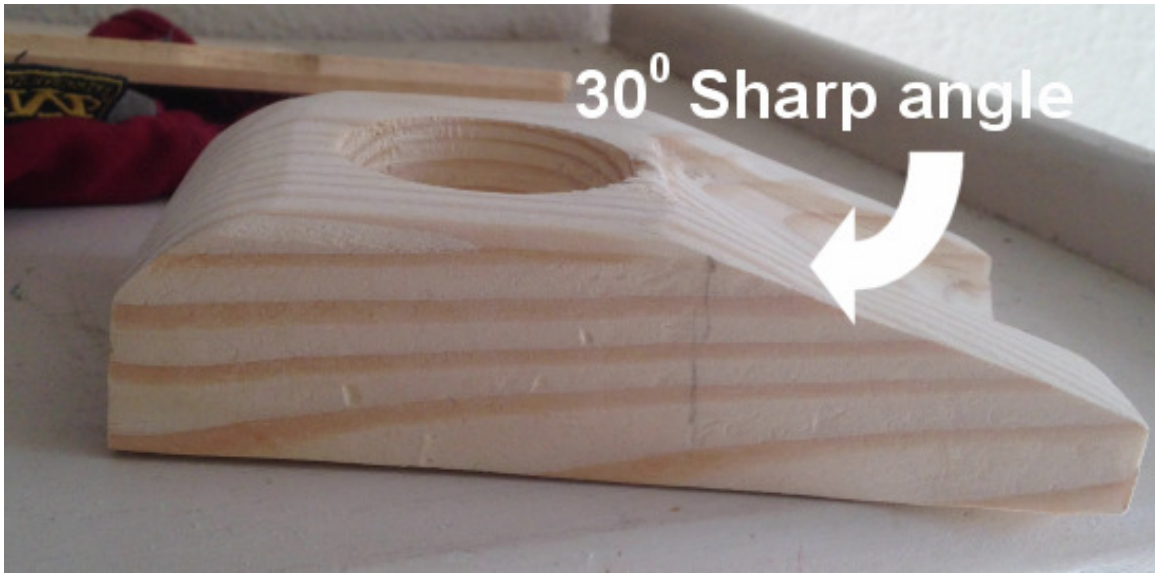
You can, if you want, drill the larger hole first and then the smaller hole - it depends on what you think will work better.

Grab your sanding materials and get to work on the edges of the hole - the hole itself will be filled so sand it if you want to (I didn't). You want to smooth out anywhere the wood split from the spade bit.

From your 7/8" line to the short end of the wood, sand at some sort of angle, curved or straight. You want to drop the edge at least 1/8" to get the approximate shape.



From the 2 3/8" line to the edge, sand a angled line. If you need to, you can adjust where the angle starts (if it's too close to the edge of the hole, you definitely want to move it away some). My angle is roughly 30 degrees but I went with more of a 'does it look right' vibe than an actual measurement.

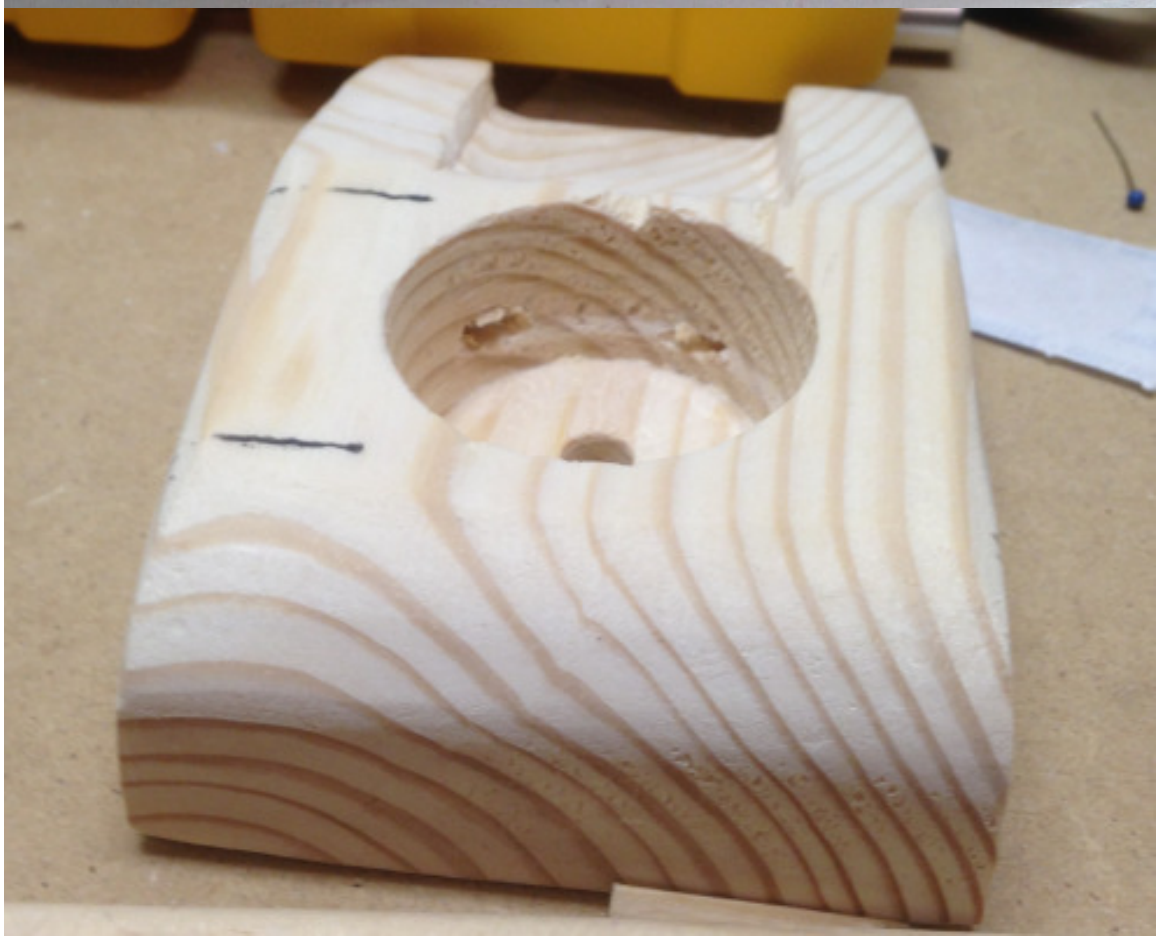


To cut the groove in the wood, first draw a line in the center of the wood to the edge. Measure 1 1/4' on either side and draw a line there as well.

Now we get to the hard part and the following isn't my step by step but is a combination of a couple of techniques that I finally managed to make work in the end. The best way I finally found to do it was to take a dremel with a cutting (saw?) attachment and use it to

cut the lines about a 1/4" down. After that, grab your chisel and chisel out the channel. Sand it however you need to, I did a combination of sander, dremel, nail file (for really fine parts), and the jewelry files. Hopefully, you can find an easier way of doing it for yourself!

In the end, your basic shape looks something like this...



Take wood filler and fill in anywhere you need to - I had to fill in the edge of the circle because the drill shredded the edge at one point. After that dries, sand, sand, sand until you are sick of sanding and then sand some more. The smoother the surface the better. You can also sand in details, if desired.

Depending on which shoulder you are carrying your sling bag on determines where the antenna array goes. The back half with the hole I consider to be the bottom and the hard angle is the top. For a left shoulder sling, therefore, you want to drill your hole for your threaded bar on left side, reverse for the right. Basically, you want the antenna on the outside and not tucked against your head.

Threaded bar - you want to cut it down to 2 1/2" at the very longest. I had to cut mine with a jig saw and crappy clamps; I am super surprised I still have all my fingers. Again, though, cut it to whatever length will work for you - just don't cut your fingers!

Screw your threaded bar into your ISAC.

Take your dowel rod and cut a piece about 6" long. Cut another piece about 1/2' long. Get your dremel and sanding wheels and sand the long dowel rod. For mine, I sanded a

sharp point on one end, squared the part that was not covered by the vacuum belt, and made the rest a flat rectangular shape. I do not have pictures of this but just kind of make the shape that you need. Drill a hole in the rounded part for the threaded rod to attach. Take your shorter piece and square it up as well, after drilling a hole all the way through it - it is going to cover the threaded bar attached to your ISAC.

Once you are happy with your basic shapes and sanding levels, spray a base coat or two of the silver metallic spray paint. Coat all the wood. Let dry.

Check the humidity outside before attempting the next part. No, really.

I tried to use the spray plasti dip but gave up on that idea really quickly as I could not get the dip to not pit. Using a plastic container, I used the pourable plasti dip and (I kid you not, 11 tries later) I managed to get a good dip on the piece. Basically, get your ISAC coated in a nice, even coat of plasti dip (it will not be perfectly smooth no matter what you do so just run with what looks good). If you hate the dip, just peel, sand, paint, and redip.

Dip both pieces of the dowel rod (or spray paint them black).

After everything has cured, not dried, cured, you can thread the rod back into the ISAC and rebuild the antenna. To attach your vacuum belt, cut the loop so you have one long piece and attach it to the long dowel using electric tape and your zip tie (make sure the clasp is underneath the antenna. If there is writing on the belt, sharpie it black.

Take your aluminum tape and add accents - I taped the sharp tip and the junction of the two rods to make it look like it was a solid piece of metal.

If desired, scrape through some of the plasti dip to show the metallic spray paint underneath. Add any other detail work you see fit.