

First of all, my apologies. While we were building the prototype Hive, which, due to a lack of time, turned into the real Hive, I did not take pictures of the pieces when I bought them. So the links to the PVC couplings, adaptors, and plug are probably not the exact same pieces that I made the Hive with. My suggestion is for you to go to your home improvement store of choice and play with the fittings until you find ones that fit.

List of Tools Used:

- Band saw
- Mouse sander
- Dremel
- Drill
- 1 1/2" spade bit
- Hacksaw
- Shop Vise
- Various clamps
- 3/16" bit
- Needle nose pliers
- Leatherman multi-tool
- Ball peen hammer
- Box knife

Materials List:

- Black spray paint
- Black plasti dip (spray)
- Metal pole for the handle (I used [metal from shelves](#) I ripped out)
- [Fluorescent green spray paint](#)
- [Contact cement](#)
- Superglue
- [Hobby wire](#)



[Reducing coupling](#)



[Male Adaptor](#)



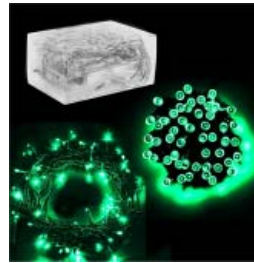
[Socket Cap](#)



[Cleanout Plug](#)



[Franklin Sports MLB Soft Strike Teeball - 2pk](#) - specifically get these, they have a the right kind of core



[30 Mini Bulb LED Battery Operated Fairy String Lights in Apple Green](#)

The Franklin baseball from target has a core of cork, with no rubber around the cork core, so it is the correct kind of material for the abuse you are about to put it through. First, take your baseball and remove both the leather covering and the yarn, you should be left with a sticky ball of cork. You can try to make it less sticky; I just ignored it since I was planning on sealing it later. You do want to sand the cork down a little bit and clean up the worst of the rough edges.

Next, using your band saw (or jig or maybe even a chop saw), you want to cut off the "top" of the ball so you have a flat surface to work with. Make sure your cut is pretty shallow. You can then make a very shallow cut (like just scraping it a little) on the "bottom" of the ball; it will make your life easier to have two flat surfaces.

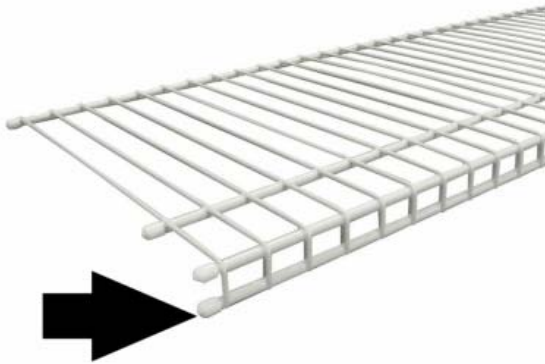
Take your 1 1/2" spade bit and drill out the center of the cork. You need to drill down until you are just at the point of breaking through. You will need to go low and slow on the speed; it's pretty easy to shatter the ball by going too fast.

Switch to the 3/16" bit. You are now going to drill the holes for the lights to poke through. I did two rows with the holes spaced approximately one inch apart horizontally and then vertically. Do what you think looks correct. Once all your holes are completed (and you have checked to make sure the lights will enter the hole), spray the ball with plasti dip and let dry. Repeat this step as needed to insure you get a fairly smooth surface.

The lights are in the image because we were testing them - you can do this step but be aware that you will have to remove the lights before the final assembly.



The hook of the Hive has a pretty distinct shape that is just easier to make. Using bolt cutters, we cut up an old wire shelf that we had taken down (YMMV) - cutting a 4" section of the bigger support wires and grinding the edges down from cutting off the rest of the wires.



Once you have whatever wire you are going to use (it **must be thick**), bend it into shape. We did this working the metal cold (my acetylene torch was completely out) with the shop vise, a ball peen hammer, and a lot of sweat equity. Once it is bent into the correct shape, put it on an anvil/other metal surface, take your ball peen hammer and flatten the handle out on the two big sides.



Drill a hole in the handle far enough down so that your PVC cap will have room to sit and run a small piece of your hobby wire through your hole - basically, it's a poor man's cotter pin. You want the hobby wire to nestle into the lid and hold the handle fairly static.



Take the male adapter and cut off the threaded part with a hacksaw and sand down the raw edge. That is the part that sits on top of the ball so you don't have to be super careful.



You then want to take your Dremel and, using your sanders, widen the hole at the ball end until the ball will nestle in there correctly.



Take the reducing coupling and a hack saw and cut off most of the bottom edge.



You may need to widen the bottom edge (the edge that you cut) so that the reducing coupling will fit in there neatly (mine did not but again, YMMV). You can do that with your Dremel. You may need to glue the two pieces together so use the rubber cement.



Take the socket cap and cut the cap with a hacksaw where the cap starts rounding into the actual cap part. This is the vast majority of the cap. Once that is cut, you need to fit it inside the reducing coupling top. You will need to sand down the inside of the reducing coupling and the outside of the cap.



Once the pieces fit, you need to drill a hole in the top of the cap wide enough for your electrical wire and the handle to fit through. I think, don't quote me on this, we used a 3/16" but I honestly don't remember.

Next, take your cleanout plug and hacksaw and cut a line halfway into the box part so you are left with just the box. This is the base of the hive.



Spray paint everything black. Paint a green line (or get something else that glows) on the top edge of the reducing coupling. Let all the paint and plasti dip cure for two days.

Assembly:

To assemble the pieces, the first thing you have to do is glue (I think we used rubber cement) the bottom square piece to the bottom of the ball. Clamp and let dry.

Next, take the lights and feed them through the top of the cap, getting all of the lights inside the assembly. Insert the handle into the cap and run the cotter pin through the handle.



Take your needle nose pliers and feed the lights through the center of the cork and into each of the holes you drilled. You can do it with your fingers but it is a lot easier with pliers. Make sure to keep the insides neatly packed or the cords will become an issue. Use a twist tie to keep them orderly.



Gotta test out the lights!



Finally, you want to glue the housing together. You can glue the cap to the reducing coupling first, clamp, let dry and then glue the male adaptor to the ball or you can do what we did and glue everything together all at one time. Just make sure that you have 2 days to let the glue completely cure.



Finally, attach it to your backpack, turn on the lights, and take some amazing pictures!

