Building Pluto Subwoofers with Large PVC Pipe

I decided to make the Pluto subwoofers from 10”-12” diameter PVC pipe. It seemed to me that these would be a better visual match to the Plutos themselves. The first problem was finding the pipe. U.S. Plastics will sell 12” diameter Schedule 40 PVC for about $20.00 per foot, minimum 10 feet, and a whopping delivery charge. I scouted out some local plumbing supply places and they had various sewer fittings, but all were still really expensive. But on my drive to and from work, I pass a big-time commercial plumbing company, Fagnelli Plumbing, and in their yard, next to the backhoes, were a bunch of large diameter PVC sewer pipe off-cuts, stuff leftover from previous jobs. So just after the New Year, I gave them a call to see if they would be willing to sell me a couple of foot-long pieces of 12” diameter pipe.

The fellow on the phone (who turned out to be the big boss) was agreeable, so I headed over there. The woman who answered the door insisted that they “didn’t sell supplies”, but I told her that I’d just talked with the big boss. “OK, OK, see what you can find in the yard.” I pulled out a four or five foot section of what I thought was 12” pipe (it turned out to be 10”) and went back to the door. The woman called up the big boss on her walkie-talkie, and to my surprise he said I could have it for free. Wow! Thank you, Fagnelli Plumbing!

The pipe ends were hardly square! I rigged up some plywood panels to a straight-legged table and managed to scribe a reasonably accurate circumference at right angles to the pipe’s main axis. Following a suggestion from one of the old guys at the hardware store, I used an ordinary 26” hand rip saw to *slowly* make the first cut. It took about 10 minutes,
but it came out cleanly. I finished by making two more cuts, giving me two 12” long pieces of the 10” pipe.

The next step was to cut rounds of ¾” MDF to plug the ends and provide driver mounts. I got a 2x4 foot piece of MDF from the local Home Depot, and started. My original plan was to use an electric jig saw to cut the rounds roughly to size, and then finish with a router and circle cutter. The thinking was that MDF is hard on router bits, so minimize the amount of cutting mine would have to do. This was a huge pain. Cutting MDF makes loads of really irritable fine dust, and cutting twice, once with the jig saw and again with the router, just doubled the torture. In the end, I did all of the machining with the router. The bit actually stood up well.

I used a cheap circle-cutting router attachment from Sears, and with a little care, it worked just fine. At the same time I bought the MDF, I also got a 2x4 foot panel of really cheap ½” plywood. I marked out all the circles on the MDF, and then drilled lots of counter-sunk holes for 1-1/4” drywall screws. I also drilled 1/8” holes at the centers of the circles for the pin on the circle cutter, and a 3/8” hole at the very edge of each circle as a starting place for the router bit. A plunge router would obviate the need for these holes, but mine isn’t a plunge model, alas.

The router made pretty short (but dusty) work of cutting the rounds. The drywall screws held everything together nicely on the backing board of cheap plywood. Here, ready to rout:
Here, two of the rounds:

The rounds for the driver mounts were actually doughnuts, so extra holes and drywall screws were necessary to hold things in place on the backing board.

After gluing the pieces together, and chamfering the inner edge of the top plate, I ended up with this:
The top and bottom plugs were glued into the PVC pipes with polyurethane glue. It sticks to most everything, and it’s very easy to clean up the squeeze-out with an old dull chisel.

The next step was to put a reasonable finish on the enclosures. I debated cloth socks and all the rest, but since my Plutos are basic black (as dictated by my wife), I went again with black paint.

The PVC had lots of scratches and dents (no doubt from backhoes and such), so I did lots of sanding and filling with wood filler. After a while I sprayed on some gray sandable primer. More patching and filling and sanding, and still more primer. Eventually, the tubes looked acceptable.

The weather held up in Pittsburgh through December and into January, so I was able paint outdoors in 50-degree temperatures. But before I could put on the final finish, an Arctic blast took temperatures into the single digits. Worried that I would have to wait two months to finish the subs, I took a deep breath and took the unfinished enclosures down to a local auto body shop, Bower Hill Auto Body, where I’d had some collision work done in the past. I’d sort of made friends with the owner, Pat. On one visit he showed me a ’65 Dodge sedan restoration he was working on, and we talked for a long time about all the work involved.

I explained to Pat that I could wait as long as necessary until a black car showed up for repair. If he could just paint my enclosures black, when his spray gun was already filled with black paint, I’d pay him whatever he asked. He took the enclosures and my telephone number, and I left. One week later, Pat called, and I went over to his shop. Inside I saw a great hulking 1955 Rolls Royce --- in black. Pat took me into the spray
booth, and there were my Pluto subwoofer enclosures, in Rolls Royce black. He refused payment! Pat’s a real craftsman, and a wonderful guy.

The walls of the PVC are about ½” thick (sturdy!) so the usual Radio Shack banana jacks weren’t long enough. (This was a problem with the top plate of the Pluto boxes as well.) Instead of bananas, I just used 1” 1/4x20 brass machine screws, washers and nuts. The speaker leads use crimp-on terminals big enough to take a ¼” screw. Some Mortite on the inside washers, pressing against the PVC walls, prevent air leaks.

The drivers themselves were mounted with #6 wood screws, about 1” long. I splurged and got the fancy round head ones with a black finish. I drilled 1/16” pilot holes for the screws. The drivers sit on black closed-cell foam weather stripping, 3/8” wide and about ¼” thick, with adhesive on one side. This is standard issue hardware store stuff.