

The Back Panel

When drilling the back panel for mounting of speaker terminals, and input jacks, we didn't realize that the bit was loose in my drill press until I cleaned off the metal particles. Holes were irregular, but fortunately did not lead to a cosmetic problem after hardware was installed. But when using a Dremel tool to cut an opening in the back panel for the connection receptacle/switch, the Dremel jumped and put a small gouge in the panel, and we also cut a corner a bit too large so that a visible space was noted at the corner around the hardware. Below is a close-up of the left side of the back panel. There was really no excuse for this. We simply needed to be more careful.



In the photo of the left side of the back panel, above, you can see the small horizontal defect. Which corner is too large is not so obvious. The irregular hole to the left of the power receptacle/switch opening is for the fuse, and is actually fine.

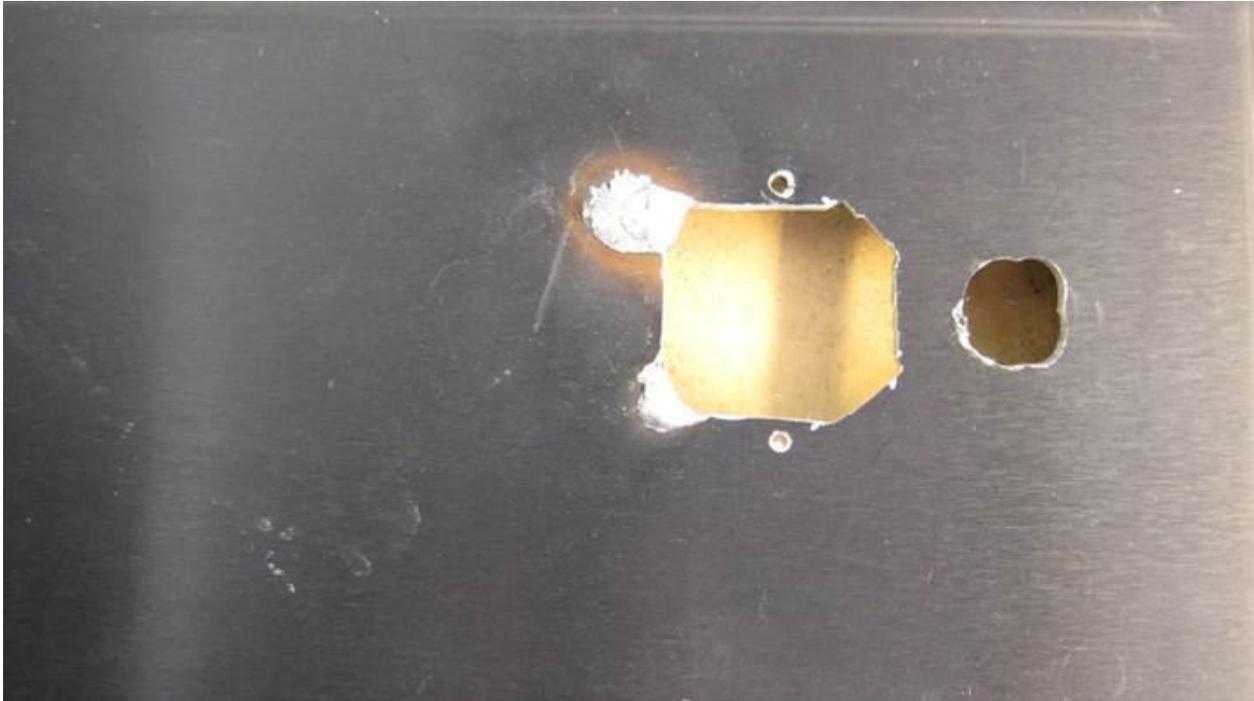
So, we made a journey to a friend's house a couple miles away. He has a plasma cutter, a TIG welder, and lots of other essentials in a beautiful garage. For this fast and small project, he created a welding table on some horses. The grinder is to clean the tungsten electrode on the TIG welder. Of note, he has a spotless sealed and painted garage floor.



Using the TIG welder (AC welding) and a nice aluminum rod, he was able to adjust the current and frequency and fill in two corners and fill in the horizontal defect with aluminum. It went well, even though he was welding on previously anodized aluminum.



Below is a photo of the back panel with the deposited aluminum immediately after welding. The aluminum was about 2-4 mm high, in mounds.



Before attempting the welding on the opening, he had experimented on the back side near a corner to get an idea what settings to use to lay down the aluminum without going all the way through the panel. We took the piece home and ground down the elevated aluminum in the corners of the opening until nearly flat, using 3 grinding wheels on the Dremel tool. We took the orbital sander to it to finish off the aluminum. Then a few strokes with sand paper and a block to get the “grains” horizontal like the rest of the back. We then used a file to form the corners as they should have been in the first place. It turned out quite well (below).



And with the power receptacle/switch in place, you can see that it fits perfectly, below.



Finishing up the case

We placed all the components (transformer, amp boards, PS board, rectifiers and terminal strip) in position on the bottom panel and drilled holes for either nylon offsets (PS board) or bolts and nuts (terminal strip and rectifiers). We had already drilled the holes for the offsets for the amp boards and the hole for the power transformer. With regard to the back panel, we drilled a 3.5 inch hole using a metal hole saw and the drill press along with mounting holes for a ventilation fan, though it wasn't clear we would need it (that is, we would mount it but may not need to power it up). Holes were also drilled along both sides of the top panel for ventilation.



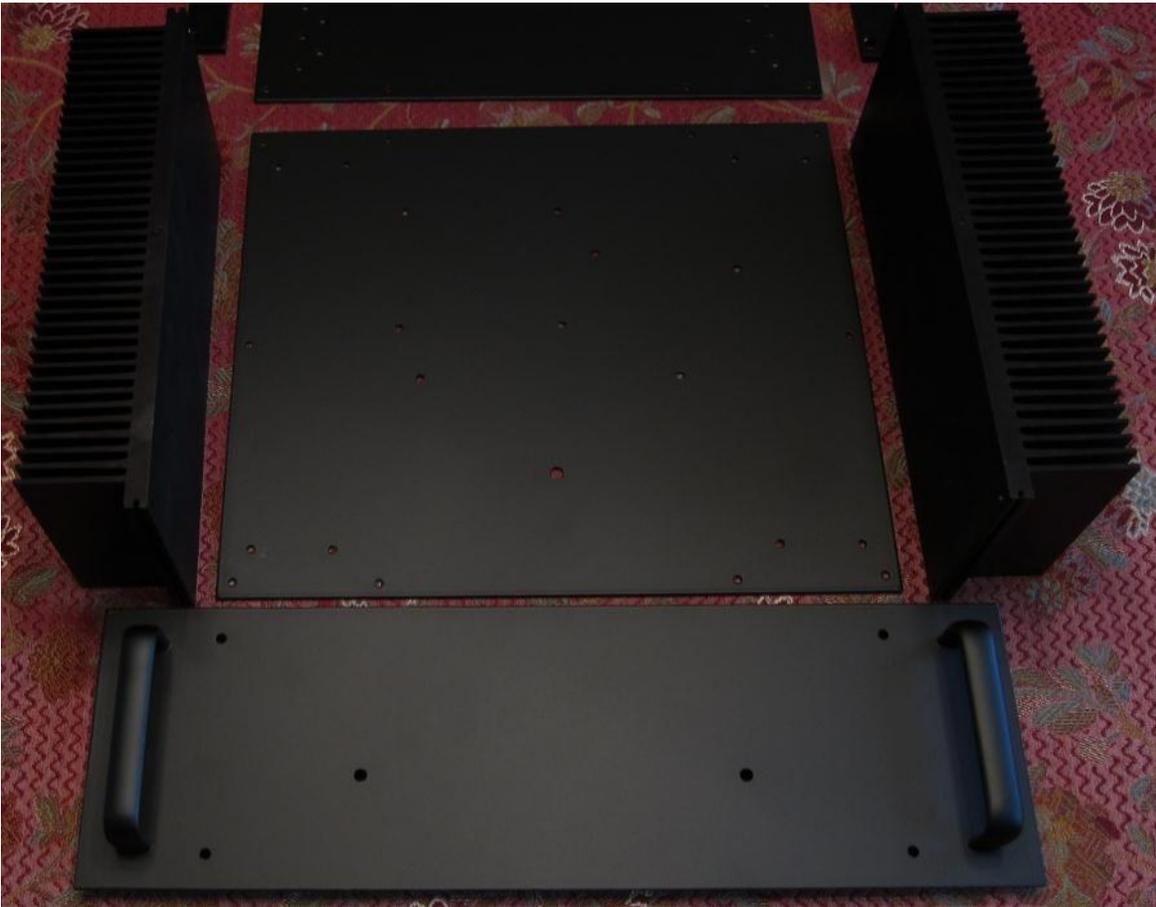


The ventilation fan we are installing is a relatively slow and quiet fan that runs on 120 VAC, which should raise concern for electrical noise. I think most would use a DC fan to keep 60 cycle interference to a minimum, especially since we took the trouble to acquire a custom-built toroidal transformer specifically designed to minimize noise. But we had used this same fan in the F5 and there was no problem at all, so we went with a sure thing. Resistors can always be used to cut down on the speed, if we need to use it at all.



Finally, we drilled two new holes in the front of the case, above, each of which will hold an LED that will be powered by each of the two amp boards to indicate power to that channel. The heat sinks and aluminum MOSFET clamps were then left off at a shop for stripping and black anodization, while the remainder of the enclosure was taken to be powder coated.

Below are photos after finishing.



The heat sinks look much, much better than when we received the case, and the anodized black matched the powder coating extremely well.

We were surprised that the powder coating actually did fill in holes more than we expected, and we had to carefully drill and file some back out the to their original size if they were for machine screws.

Continued in part 7