## **Repair of Quad 2905 Speakers**

Yesterday I took my 2905 speakers to have all ten remaining original panels replaced with new ones. After 12 years the original panels started to fail, with arcing manifesting as clicking, buzzing and occasional sparks. I had already replaced two panels, and when two more failed I decided to replace all the remainder. They are very heavy, but the counterbalance weights underneath are easily removed and this makes them a bit easier to manhandle. You'll need a truck to transport them too!

You start by prizing off the shiny top caps which are simply plugged into grommets. This is what you see:



Next you will need to remove the side frames, which are aluminum on these speakers (current models are wood, I think), and there are two

Philips screws attaching each at the top, so unscrew these. At the bottom you have to undo one Philips screw which removes a cover plate, and then undo a nut, at which point the side will come off.



## The cover plates:



After that, you undo the tiny Philips screws on the black frame under the side covers. There are about six on the front and also on the back:





Detach the brace from the rear, with a nut at the top and by unscrewing the sleeve into which it is threaded at the bottom. Remove the front and rear black grilles, remembering to unplug the wire going to the illuminated Quad logo at the bottom of the front panel. Now the dust covers can be removed: they are fragile and rather floppy. Be careful not to damage the membrane, which is like cling film:





Now the guts are exposed. The orange wire running up the centre of the back of the speaker supplies the high tension to charge the panels. At the sides are the grey, or bare metal, signal wires. The two mid/treble panels in the middle of the speakers stack of six panels have time delay signal wires to the concentric circles of those panels. They are on the right side at the front, and on the right side at the back. All panels are tied together for



signal by bare metal "spring wires" that have a small loop in them to allow for vibration. The next photo shows the central orange wire, and the grey time delay signal wires on the right side (this is the rear of the speaker):

And this is the front:



Note that the signal wires are coated in wax where they attach to the circuit board at the bottom. Best not to disturb this as it is also for preventing dust accumulating and causing shorts. Take photos and/or label the wires as all must be unsoldered to remove the panels. Having disconnected everything, there are screws at each corner of each panel that when undone will let you remove the panels:



The top panel comes out rather awkwardly as there is a spacer between it and the top of the frame. This is the spacer:



A view from the rear as the panels come out (the mid/treble at the top of this shot has already been replaced, so it is staying put). Note the desoldered time delay signal wires hanging down. The bass panels have a single signal wire on each side, and are electrically tied together with "spring wires."



To install new panels, simply(!) reverse the above. Note that new panels may not come with all hardware, so save the spring clips (visible above) that hold the orange tension wire in place, and you may need to desolder some of the connecting tags from the old panels and solder them on to the new.

## The Inside of a Panel

Just for interest, here is an old mid/treble panel deconstructed. First complete, and then with bolts removed, it separates:



The two green perforated copper stators are attached to the glass reinforced plastic frame:



One side has an insulator on its inner surface (above), and the other has the charged membrane coated with graphite to allow it to carry a charge. The membrane is taut and held so that it does not touch the stator. The issue with these panels is that the stator is glued to the white plastic framework, and if the glue fails, the stator can touch the membrane and will arc, quickly burning a hole in the panel. There is much more glue on the new panels, and they *should* last a long time. I hope so!