

Coupling Cap Replacement on Yaqin MC-13S by Dale Jonathan Perkins

Tip: To save opening the amp and removing the board twice consider replacing the volume pot with an ALPS RK27 at the same time.

This document is intended to be helpful, but if you do any work based on its contents you do so at your own risk. If in doubt find someone to do it for you.

For instructions on how to go about this procedure read Bob Drinkall's document 'Coupling Cap Replacement On Yaqin 13s & 10T' in the files section on the 'Yaqin Tube Valve Amplifiers' Facebook page along with 'Yaqin MC-13S mods' by Marvin Saunders.

This document aims to show how I went about it and acts as a document of the process with photographs and brief descriptions. I'm hoping this visual document will compliment Bob's and Marvin's guides

Choosing your capacitors

Do your research as there are many capacitors on the market and some are very expensive. Some high voltage capacitors are also very big and may not fit in the space under the PCB. I originally made a mistake by buying capacitors that were far to big and would have had to house them remotely. I decided to send them back and went for the ones documented below which fit relatively comfortably in the unit; they also sound really good. I found the following a good read as it attempted to offer objective descriptions of sound the qualities of several capacitors. <http://www.humblehomemadehifi.com/Cap.html>



NOS Russian Vintage (USSR) PIO capacitors K42y-2

Tolerance: 10%
Length: 50 mm\1,97 inch
Diameter: 14 mm\ 0,55 inch.
0.47uF 500V

Prepare four caps in advance

I followed instructions in Bob Drinkall's guidance and extended them by soldering 3" pieces of wire sourced from the centre of a coaxial cable. Be careful as this stuff can be difficult to strip.

Make sure you have the correct tools.

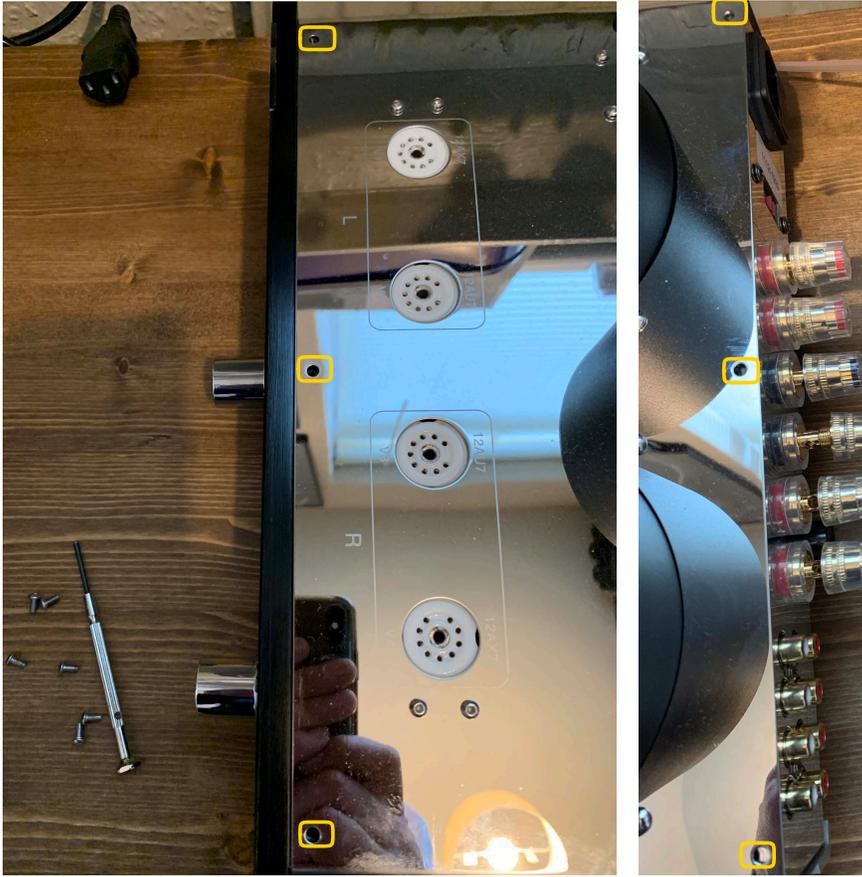
I used clear heat shrink to wrap the caps. This allows anyone who may end up with the amp to see their values. The heat shrink also prevents any contaminants from the caps causing problems (see Bob Drinkall's guide.)

I also added heat shrink tubing to the ends and then cut the ends to size as I fitted them.



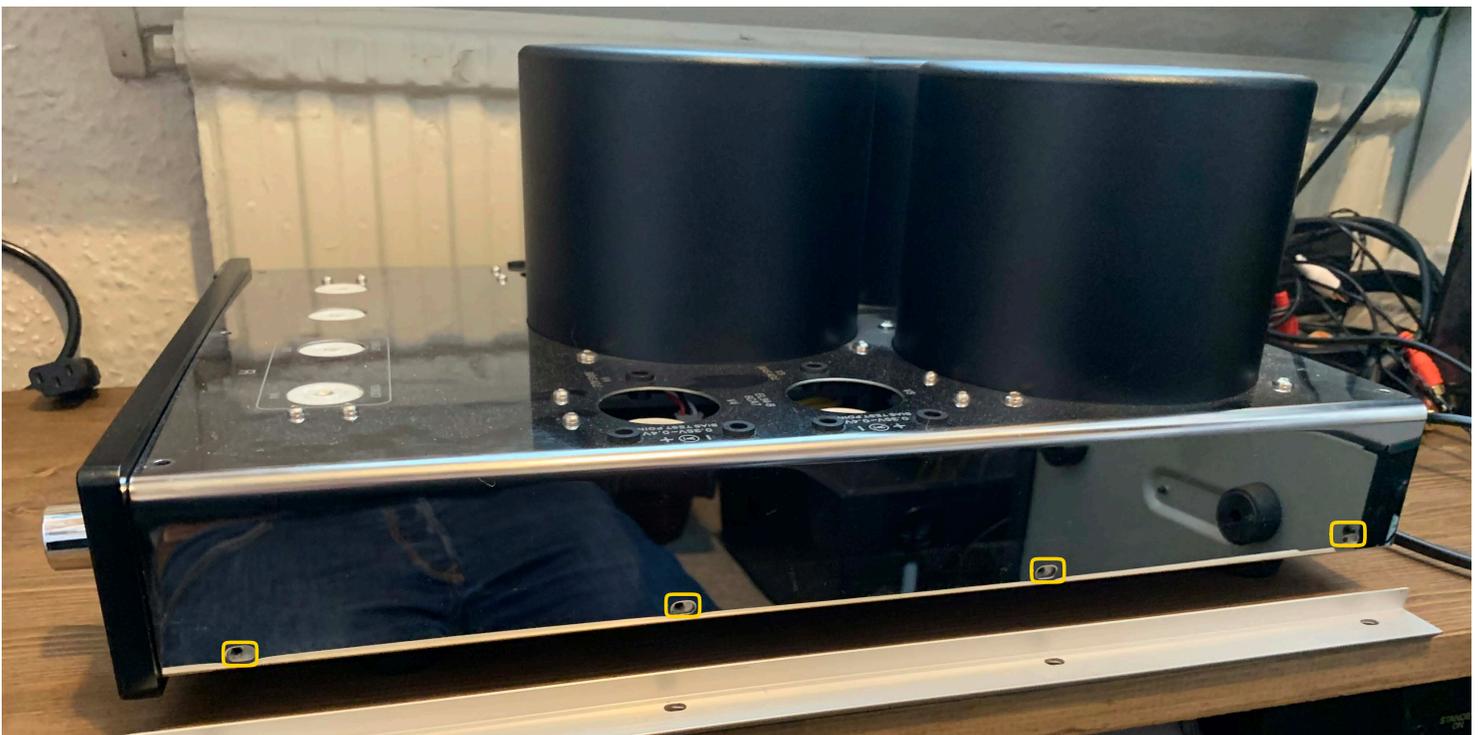
Opening the MC-13S

After removing the tubes unscrew the 6 hex bolts. There are 3 at the front and 3 at the back. Make sure you use the correct tool. Slipping and scratching that nice shiny surface will make you miserable!



Keep all your screws safe. Bag and label them.
If you lose them you will be miserable

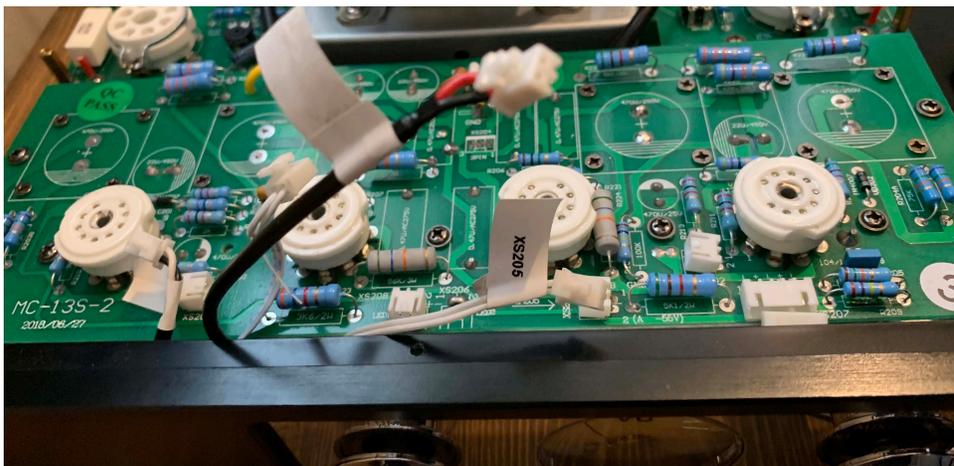
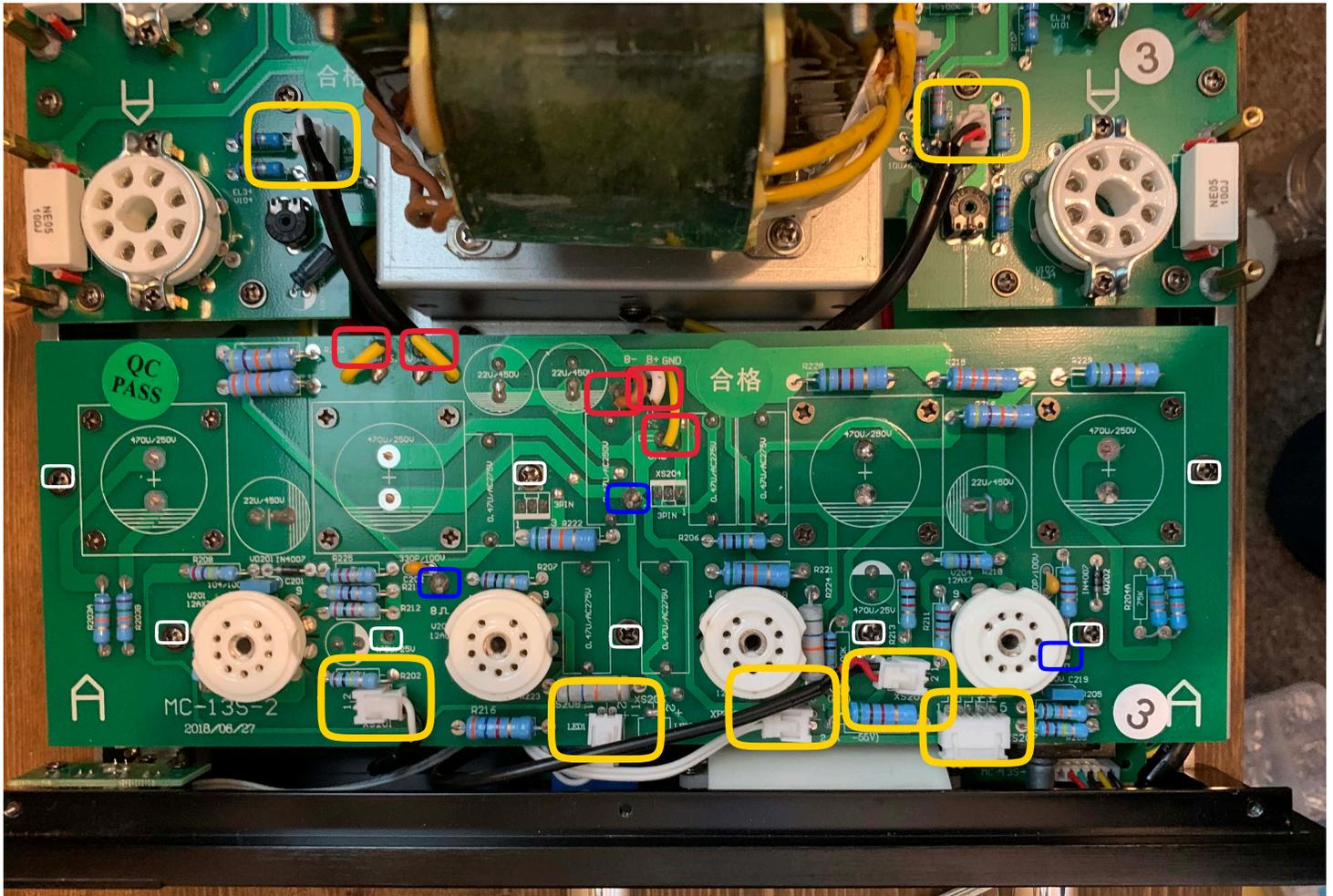
Remove the 8 self-tapping screws (4 located on each side). Remove the rails. You can now pull off the cover.



Removing the Board

I decided to remove the board to fit the caps. This made the process easier but you do have to de-solder 8 wires.

1. Unplug and label the 7 PCB connectors (shown in yellow). If you don't label you will be miserable later!
2. Remove the 8 screws that fix the board to the posts (shown in white)
3. De-solder the 5 wires (shown in red)
4. There are three further wires to de-solder from under the board (shown in blue) - one is tucked away near V4.
5. Clean up the points where you have de-soldered with a solder sucker and wick as it will make reconnecting the wires and fitting the capacitors much easier



Remember to label all connectors and wires. Misery is no fun! I use a Dymo printer as the labels stick well.

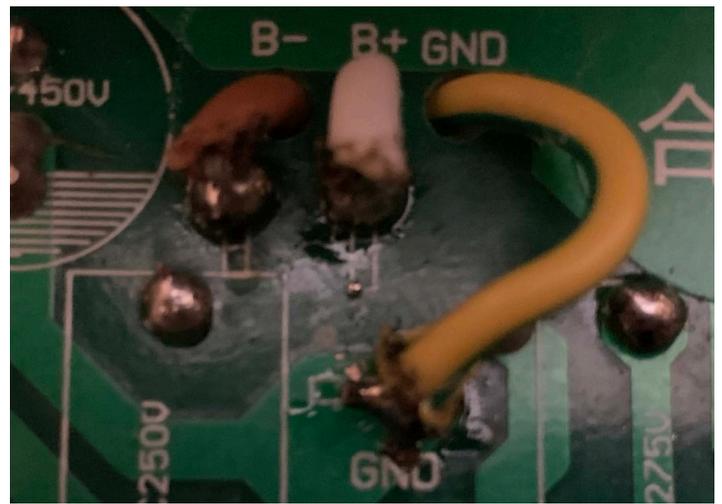
Putting it back together

I found putting it back together required care and patience. When refitting make sure all the connector wires are not caught around any of the nylon/plastic posts and try to get them into position. From there, place the board in its original position, but you'll need to ensure things fit well on the cap side and may have to keep checking for wires not getting in the way.



You then need to reattach the two red wires and one black wire from the cap side. I found using a solder puller and solder wick allowed me to clear the old solder so the wires could be fed from underneath in order to re-solder from the topside. Here's an example on the left (shown in blue) before soldering.

You can then feed the final 5 wires through the original holes and re-solder. I removed all the original solder so they were easy to position before soldering.



Final stage

Attach all the PCB connectors.

Line up the board with the posts (this will require patience. Don't force it and make sure nothing is snagged underneath) and replace the 8 screws.

Replace the cover, but you may wish to test your work before screwing in the 6 hex bolts and 8 self-tapping screws for the sides.

Make sure you install the tubes before switching on. I also suggest you check the bias.

Once all is put together enjoy your hard work and hopefully sound quality (assuming you chose caps that you actually like the sound of).

