

PAT4RENEW Circuit Boards

RevCVer1 PCB Modifications

Some of the RevCVer1 PCB versions of the PAT4RENEW exhibit some high frequency instability (around 50+ MHz) that can sound like hum. The instability is most often provoked by the combination of a new volume control and balance control, especially when:

- Balance is set to extreme right or left
- Volume is set to zero

Of course, this instability didn't show either in simulation or in models or in some years of production. It seems to be a sometimes thing that results from some combinations of components in a particular set of PCB preamp channels. The instability is in the line stage section of the preamp. The phono stage is not affected.

This document shows two sets of changes to remedy the instability. The first of these two changes has been found to take care of most of the problems:

- Adding 4.99K (or 4.7K) resistors in series with pin 9 of both preamp boards

This change is easy to make. We recommend making this change, then testing the unit, as it may quiet the hum.

The second modification may be necessary for some PCB's:

- Moving the end of C37 from the emitter of Q7 to the base of Q7.

We have observed that this second modification, applied to just one board, quenches the high frequency stability in both boards. As Tom Lee often says about funny circuit effects like this, YMMV (Your Mileage May Vary). You might decide that you'd rather apply this mod to both channels.

These modifications have been built into RevCVer3 of the Preamp Renew boards.

Making Modification 1

It's easy to add modification 1, and it's often all that is needed to eliminate the hum resulting from the high frequency instability. In the stock configuration, 1 wire runs from the center terminal of each half of the balance control to Eyelet 9 of each preamp PCB. You'll remove the wire from Eyelet 9, and insert a 4.99K resistor in series between the wire and the eyelet. The resistor value is not critical...typically anything from 4K to 10K is effective.

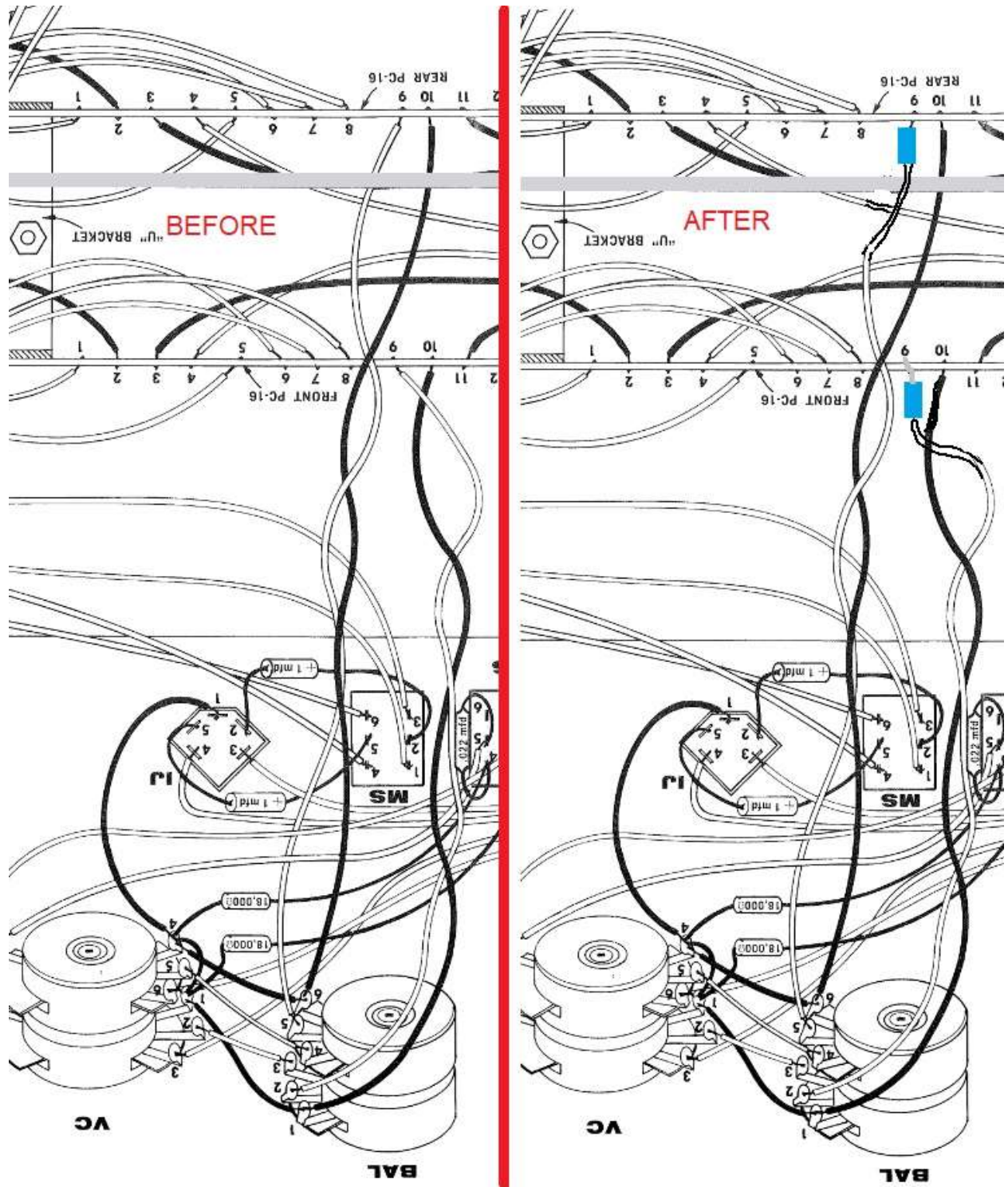
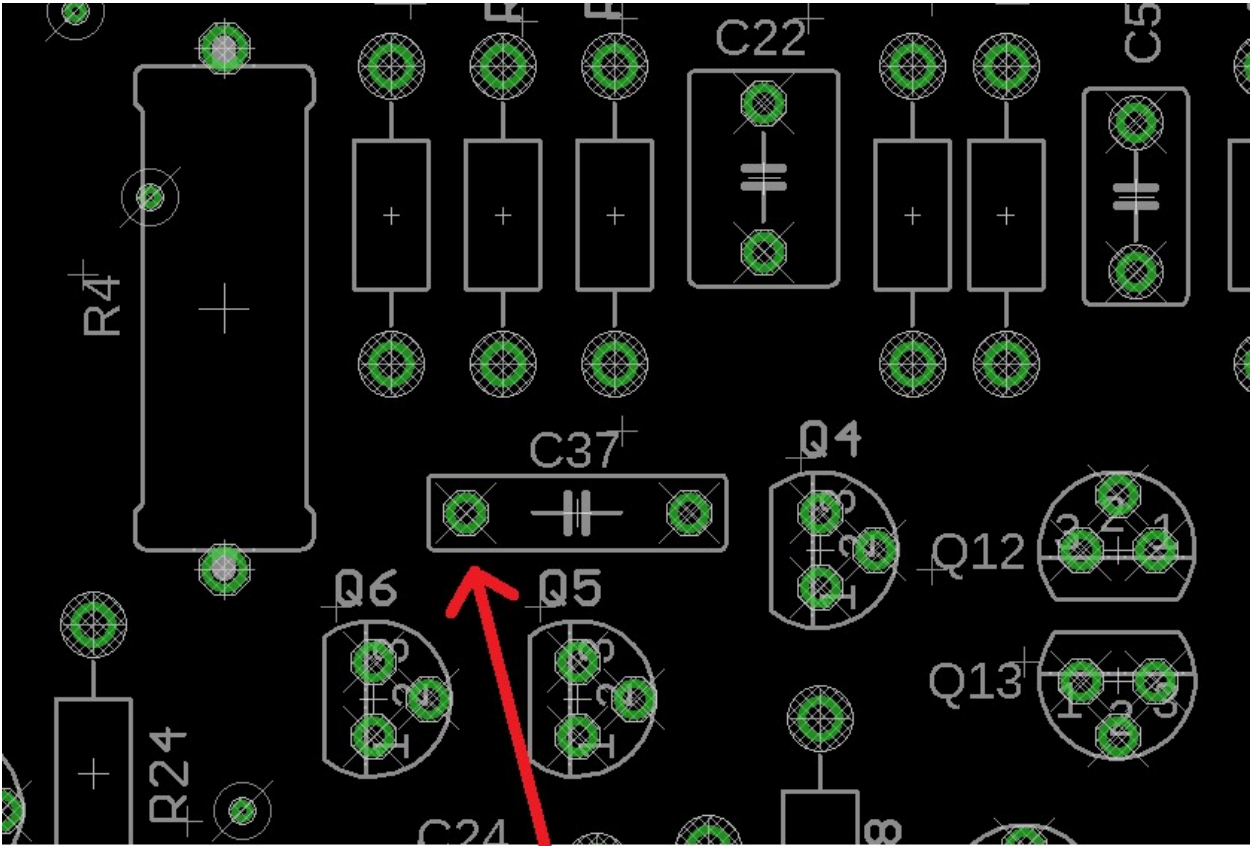


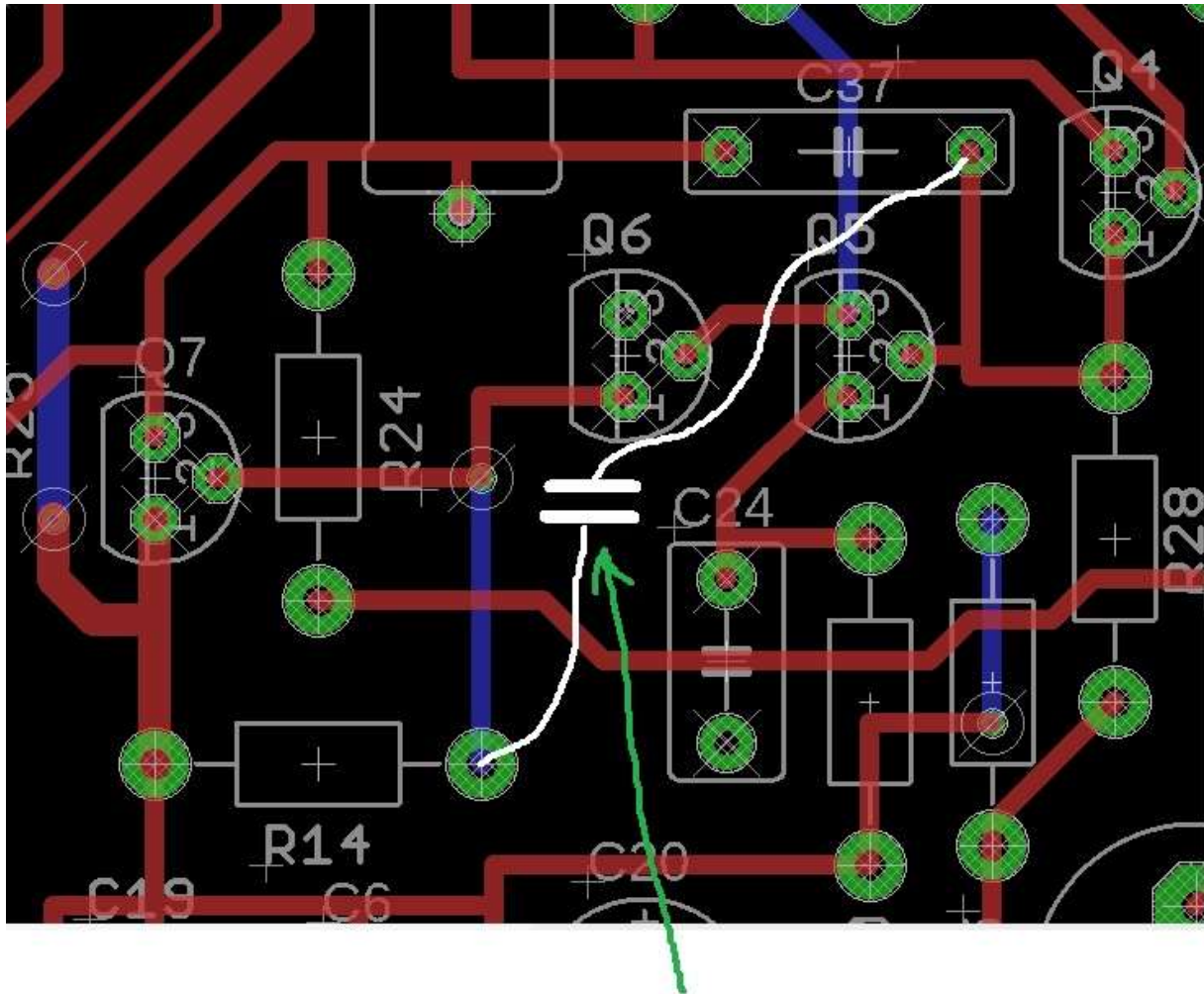
Figure 1-Showing Addition of 4990 Resistors in series with Eyelet 9

Making Modification 2

Modification 2 moves one end of C37 from the emitter of Q7 to the base of Q7.



Lift this end of C37



New C37 location

You'll probably need a new 100 pF cap. It's probably best to cover its leads with a bit of 22 AWG insulation to prevent shorts.