Filter Mod for Casio HT-3000 (MT-600/HT-700/HT-6000)

The Casio HT-3000 uses the unique chip NJM2090, a 4-pole voltage-controlled filter. It runs with (only) +5V supply, so that an optimized functionality for battery powered keyboards is guaranteed. There is one chip for the upper-tone voices and one for the lower tones.

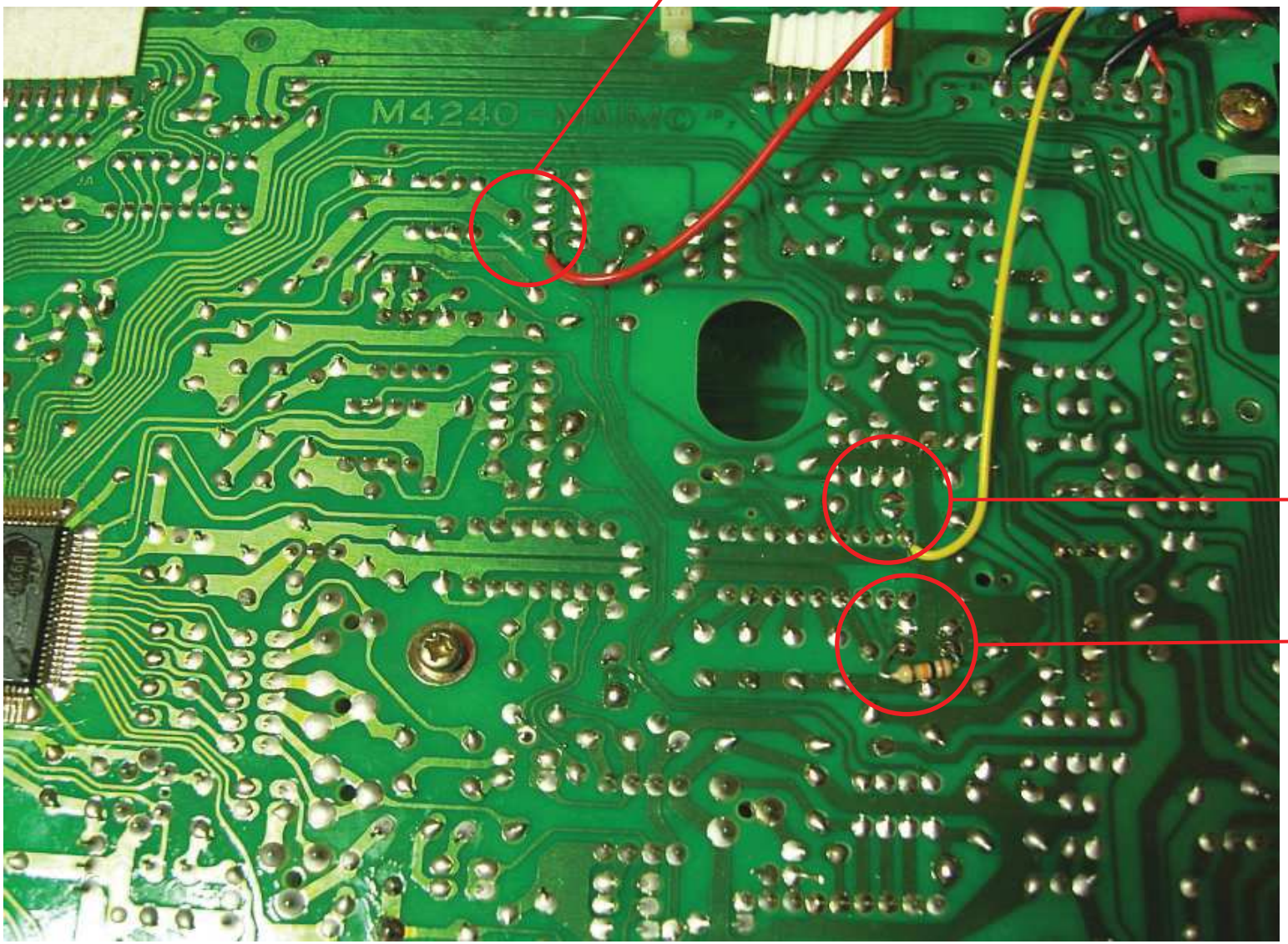
The useable cutoff swing of the filter is from 0V to 2.5V and the resonance runs between 0V and 3.5V. To control them by your own manually with pots, you need to eliminate the fixed voltages of the CPU, which values are dependent on the selected voices.
The input for the cutoff voltage is on PIN 2 and for the resonance voltage on PIN 9. So you have to cut the traces which lead to these PINs. To get selfoszillation you have to replace the upstandig blue 5,1 kOhm resistor opposite to Pin 9 against a 8-10 kOhm resistor.

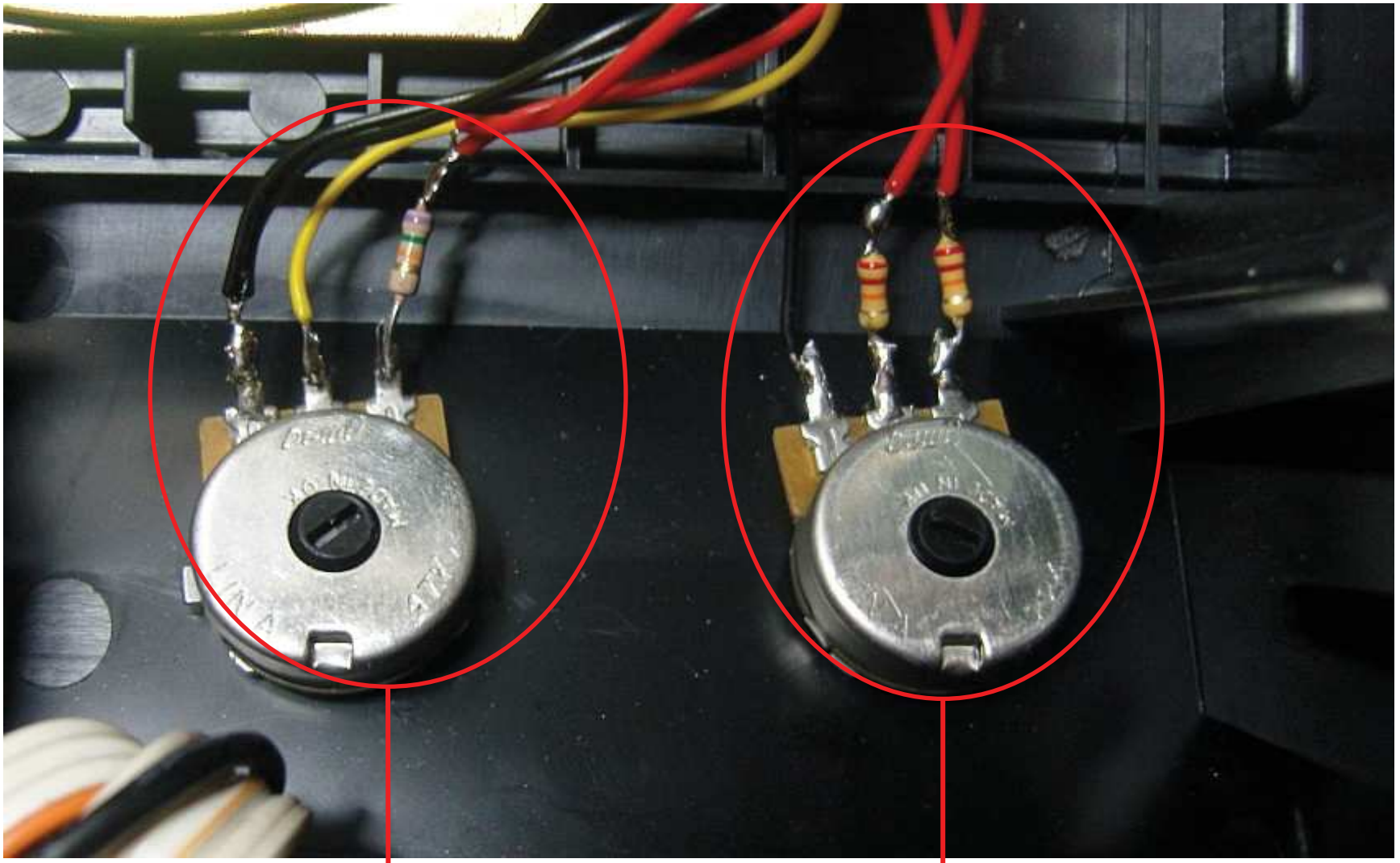
Now you can grab the +5V voltage and the GND from the IC supply (or directly from the power supply) and reduce it with a voltage divider to +2.5V (cutoff) and +3.5V (resonance). Connect the GND and +V to the outer pins of the pots and connect the middle pin to the cutoff/resonance inputs.

Thats it...

A good working combination was a 47 kOhm lin poti with 75 kOhm resistor for cutoff and a 22 kOhm lin poti with two 22 kOhm resistors for the resonance. Just look at the pictures on the next pdf.

Casio HT-3000/700 Modification





47 k lin pot and
75 k Resistor

22 k lin pot and
two 22 k Resistors