Simple EL84

Basic layout

DIY Paradise

13 June 2003

“EL84 doesn’t sing without feedback.”

“EL84 has no bass.”

These are comments I gleamed off the World Wide Web from various places.

The truth is, if the circuit is done CORRECTLY, then all the above points are moot. This circuit uses NO GLOBAL FEEDBACK and it has BASS!

Listening is king. But you can’t listen to one until you have built one right?

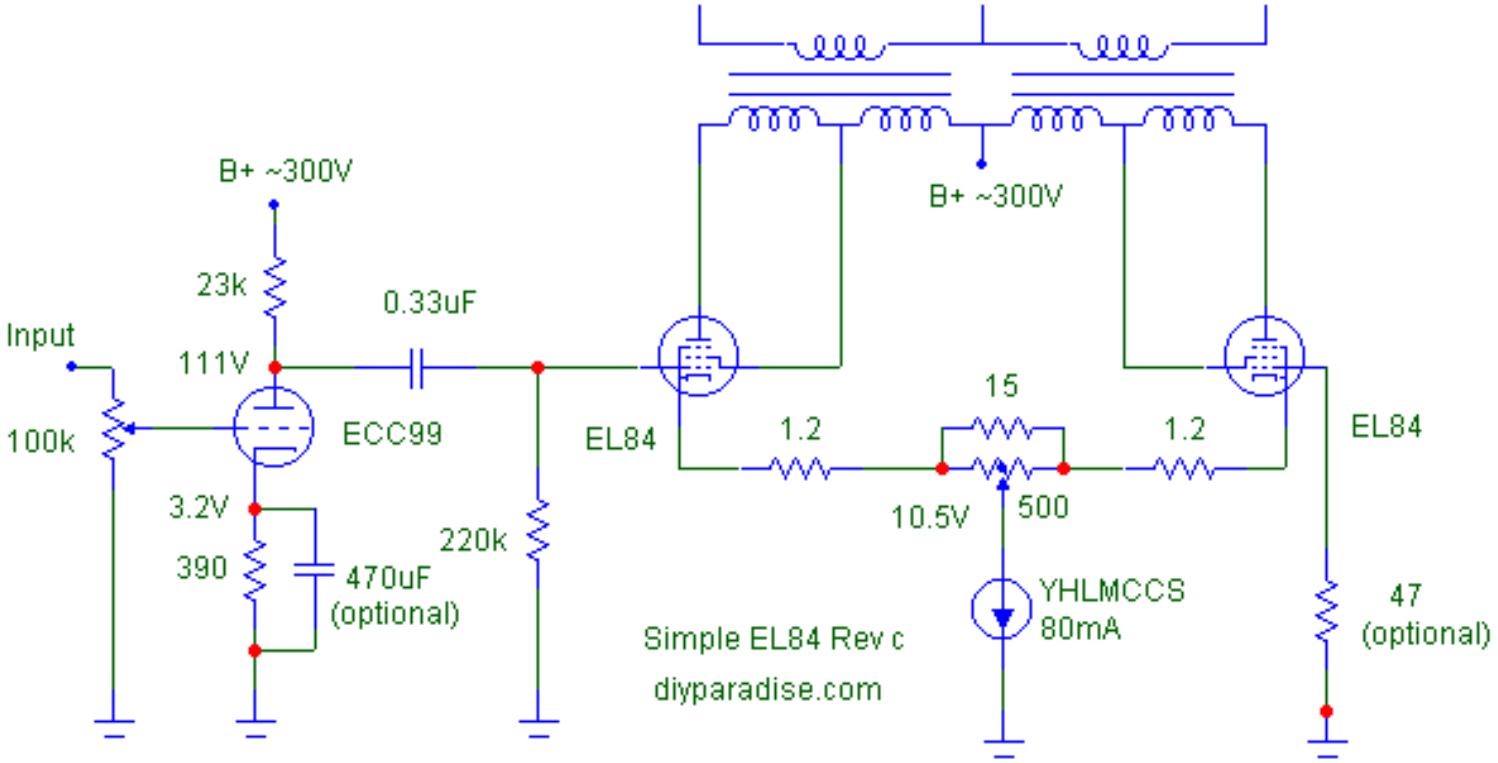
Note that the layout shown in the following pages are specific for

• this implementation wires the EL84 in ultra-linear configuration.

• this implementation has filaments of 4-0-4V, meant for 8BQ5. Use 3.15-0-3.15V for 6BQ5 or use a resistor to drop the voltage to 6.3V.

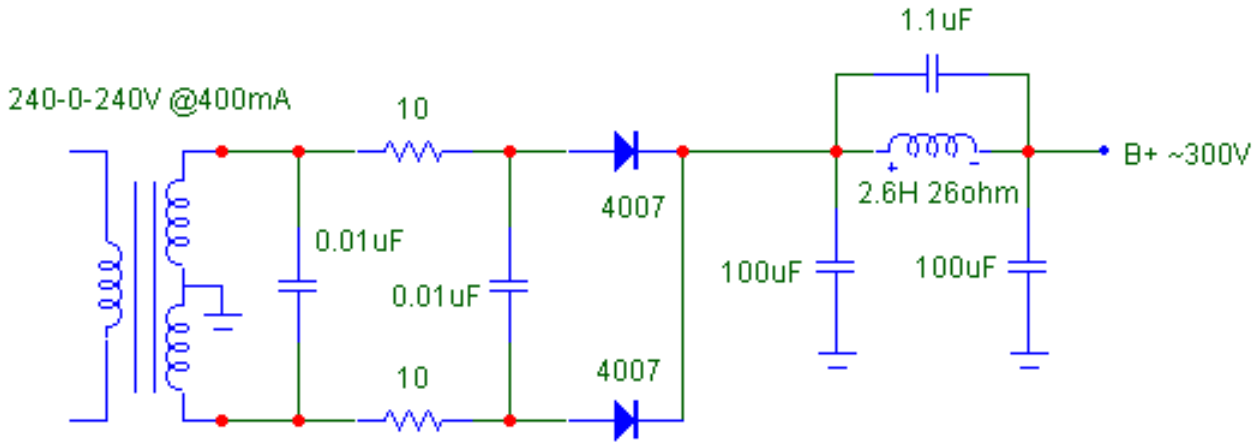
• Hammond output transformer, particularly the 1650x series.

• using one half of ECC99 for each channel. You could, of course, opt to use one tube for both channels, or use some other tube, say 5687. Wiring will be different then.



Schematic

Signal circuitry property of diyparadise.com



Schematic

Power supply circuitry property of diyparadise.com

Wiring the Simple EL84 is just a tad more complicated than the Simple 5687. If you can understand the wiring of the Simple 5687, the Simple EL84 shouldn't be too difficult.

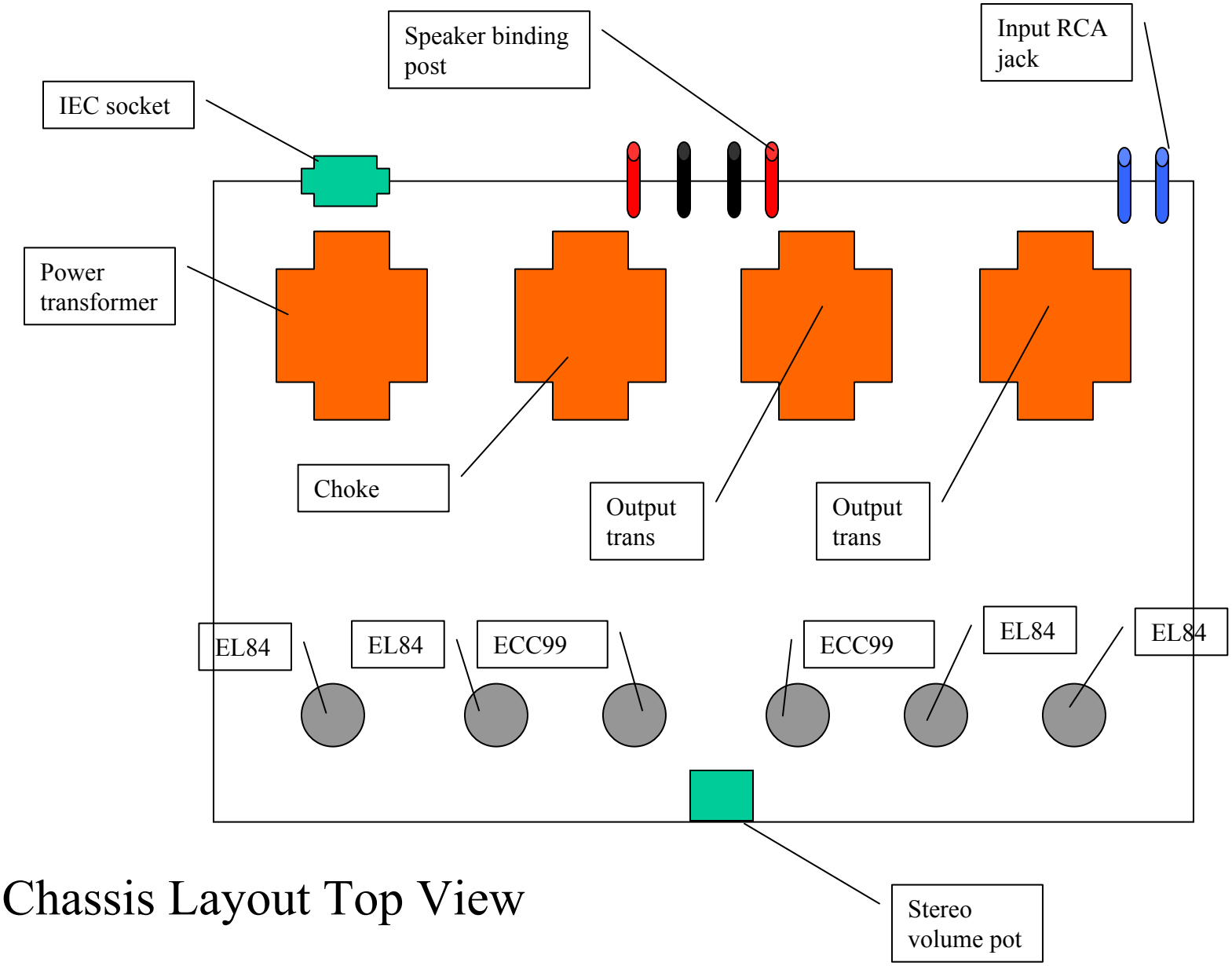
Basic rules still apply. If you have forgotten them, please read the Simple 5687 layout file again.

Layout of the Simple EL84 is slightly different. We are dealing with very hot components here. The EL84 is one hot tube! When planning the layout, please ensure adequate ventilation between tubes. 1.5-2" between each tubes should be okay.

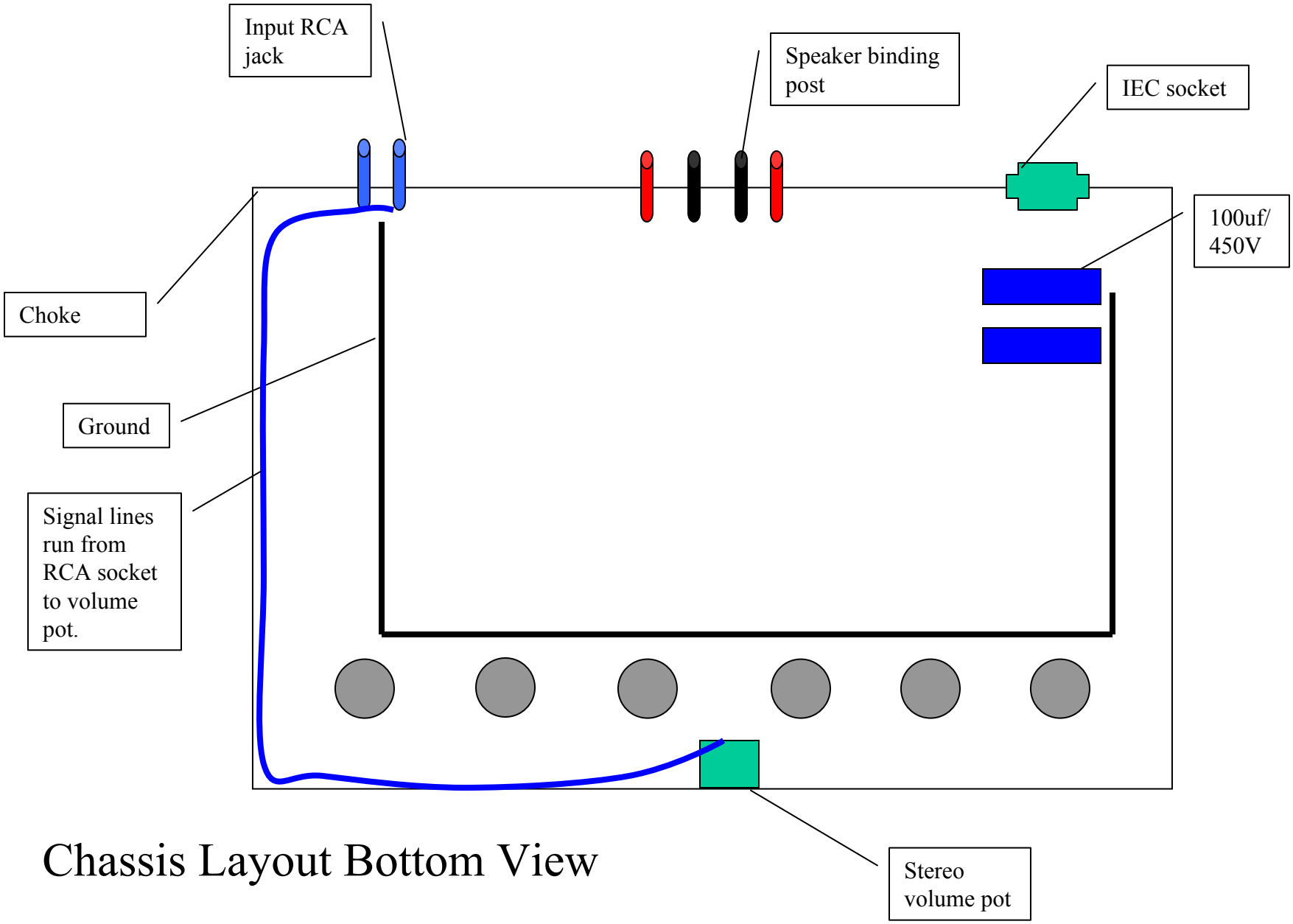
Please note that I didn't show wiring of volume pot, input RCA socket etc. If you have built the Simple 5687, then I don't want to repeat myself.

As usual, safety first.

SAFETY FIRST: REMEMBER TO SOLDER IN BLEEDER RESISTOR! REMEMBER TO "EARTH THE CHASSIS"!

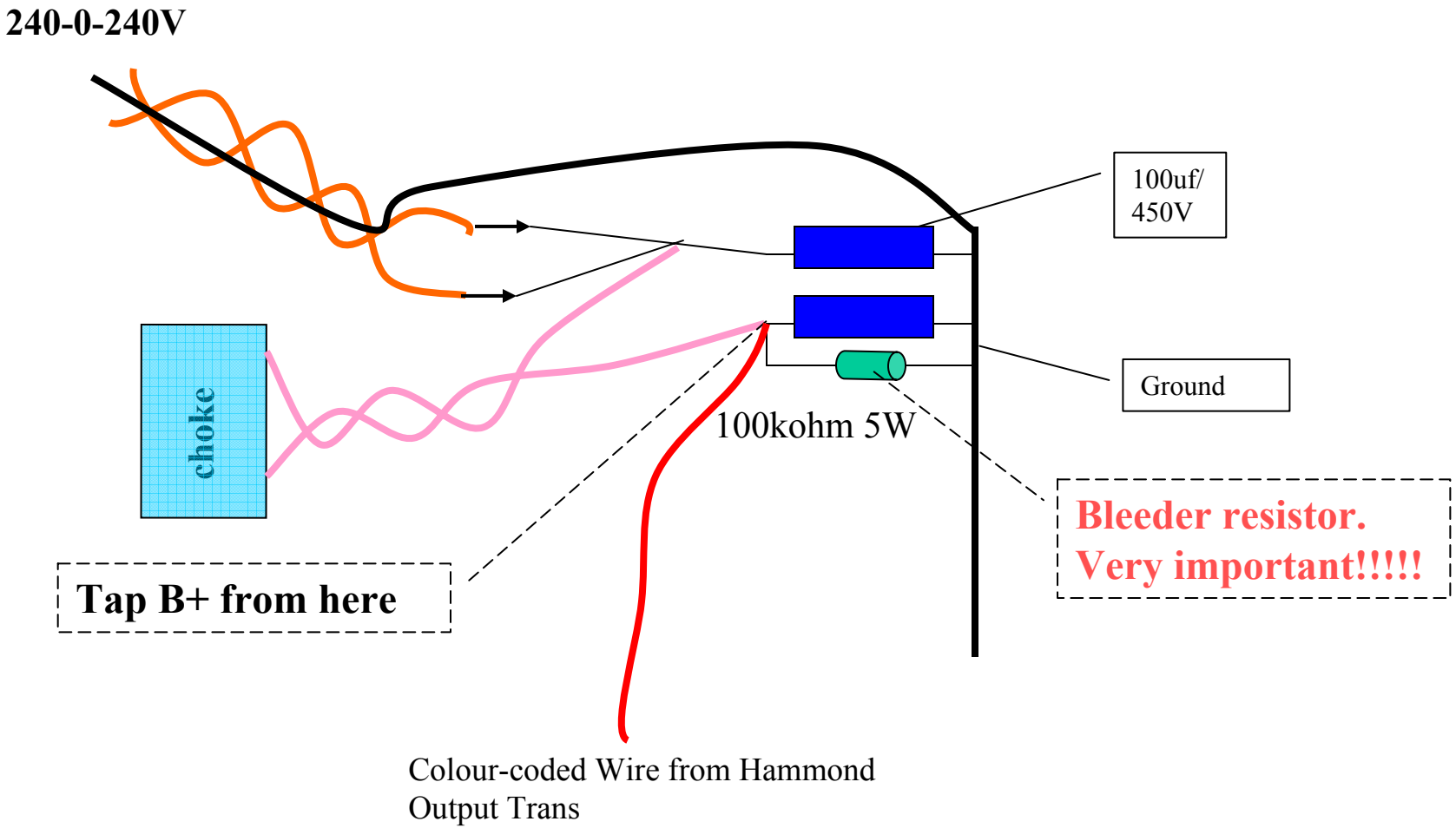


Chassis Layout Top View



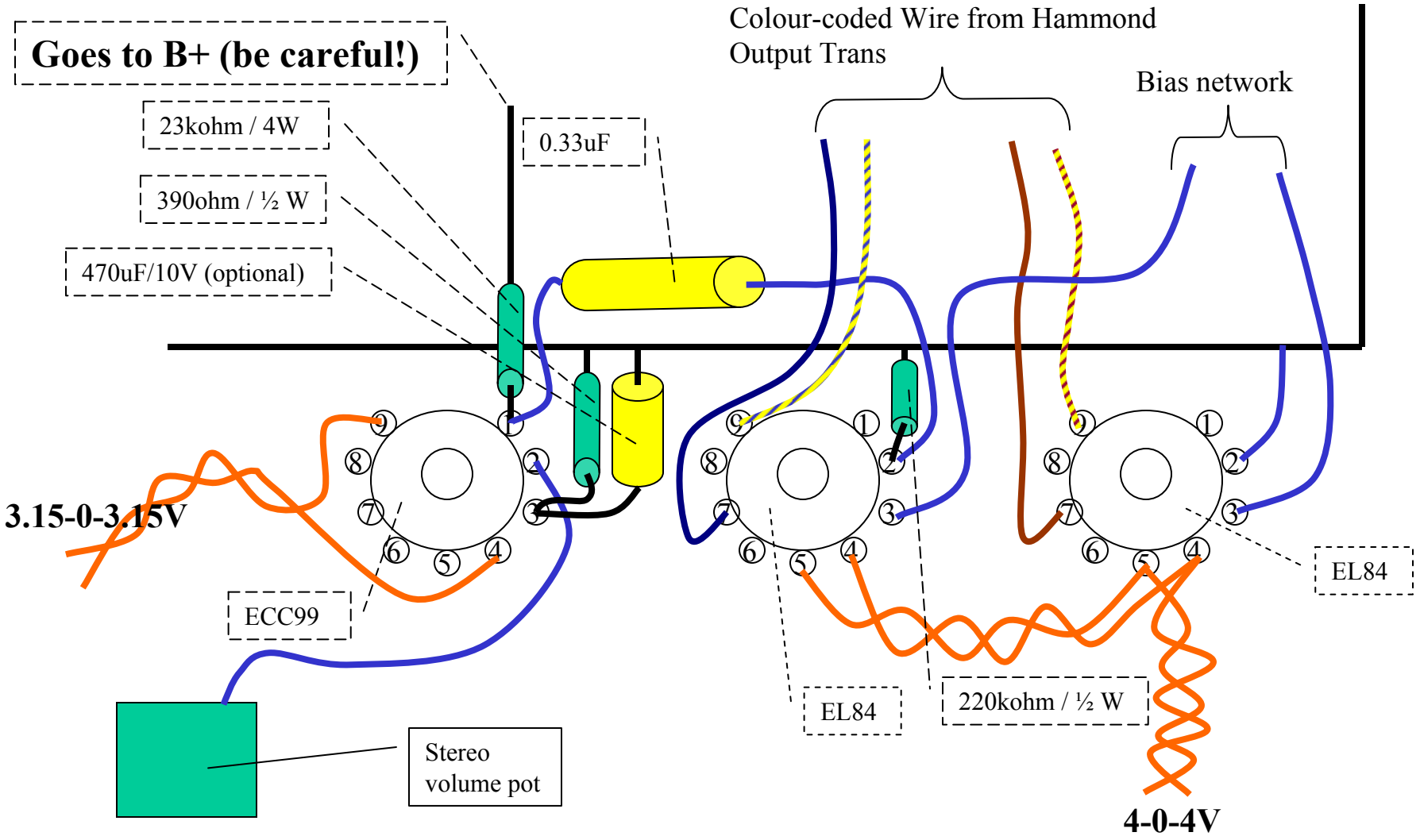
Chassis Layout Bottom View

Ground Layout



Chassis Layout Bottom View

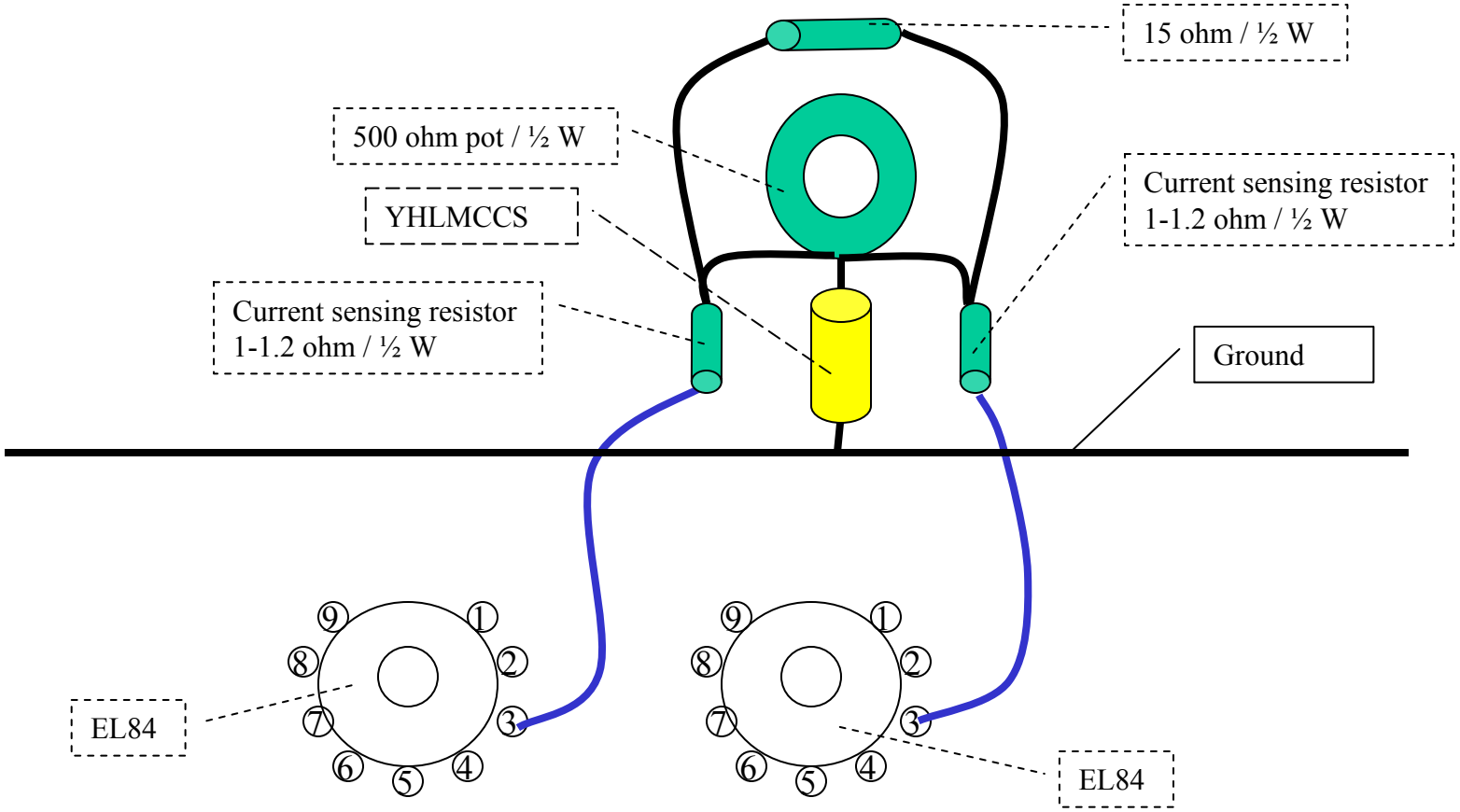
Power supply circuitry layout



Chassis Layout Bottom View

Signal circuitry layout (One channel only)

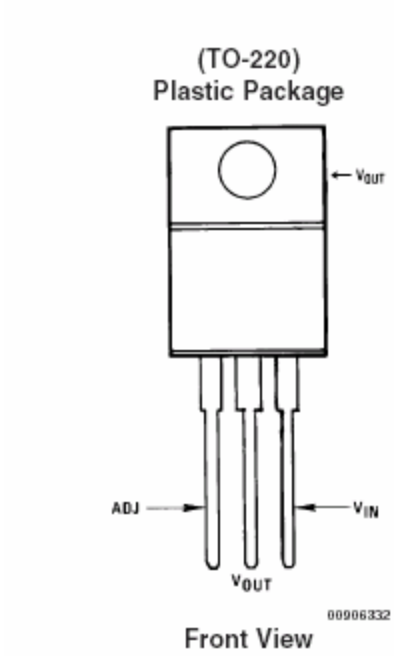
In case this isn't clear enough, pot center tap goes to YHLMCCS, while the other 2 ends, go to both cathodes (pin 3) of EL84.



Chassis Layout Bottom View

Bias network (One channel only)

YH's Lazy Man Constant Current Source



Using LM317, TO-220 package, preferably with heatsink.

Vin goes to pot (bias network) center tap.

Vout goes to GND.

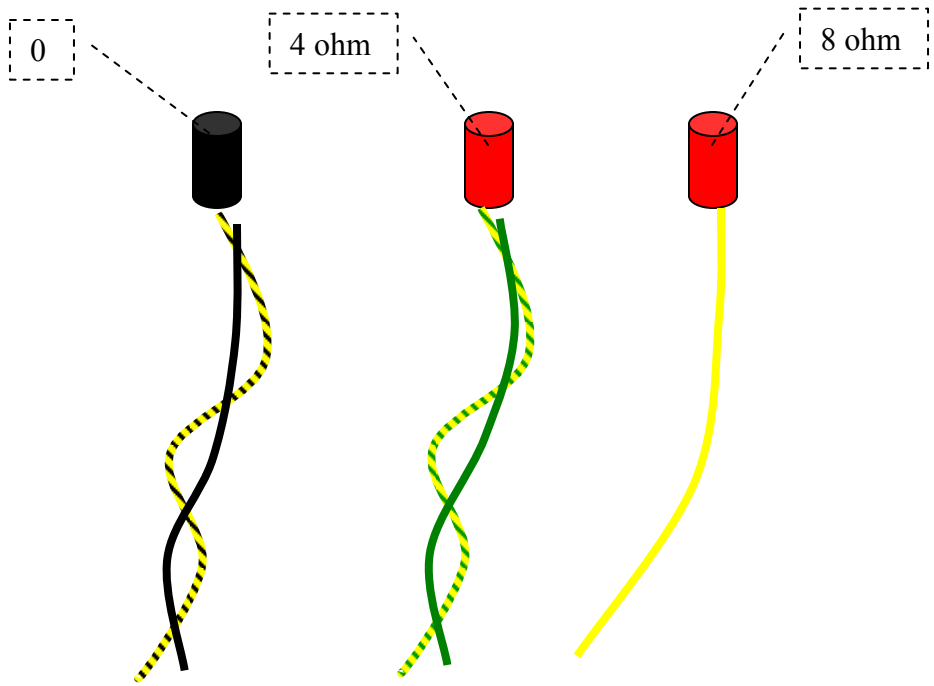
Resistor between ADJ and Vout determines current.

For Simple EL84, 40mA per EL84, use 16 ohm 1W.

Build the YHLMCCS on a small protoboard to make life easier for you.

Chassis Layout Bottom View

YHLMCCS (One channel only)



Colour-coded Wire from Hammond
Output Trans (secondary side)

Chassis Layout Bottom View

Output section (speaker binding post)

Very easy to build.

Start with the grounding scheme first, followed by heaters. The heater center taps, you could bring to GND or elevate it to some potential.

Then build the power supply, followed by the signal circuitry.

Check wiring, again and again and again. Oh yeah, please fit in 5A fuse before powering up.

Power it up, check all the voltage points are within 10% of the schematic. If they are different, check for incoming AC and/or heater voltage.

After tubes are warmed up (say after a minute), check voltage on current sensing resistor. It should read ~40mV. **Both** tubes on **each** channel should draw the same amount. If current draw is different, adjust 500 ohm pot. Be careful that you don't touch any high voltage points.

When both tubes conduct same amount of current (+/-5mA), you are ready to play!

By the time you reach this point, you should be having a truly wonderful musical machine.

This amp has surpassed all my expectations. It delivers 10W and oh! What a sweet beautiful 10W!

10W can drive lots of speakers, but it’s no slouch either with high sensitivity speakers. In other words, this amp should be able to last for a while as you change your speakers. Just don’t give it power hungry speakers.

I’ve talked too much.

Enjoy your music.