

## IMPROVED HAFLER 101 POWER SUPPLY

THE VALUE OF ULTRA-LOW IMPEDANCE, high current power supplies in preamps has become increasingly apparent. They have been incorporated into several products, such as the PS Audio and the Musical Concepts preamps. However, most designers assume that using a standard three-terminal regulator chip or large capacitors will do the job. My own assumption until now has been that the load did not "see" beyond the regulator (into the power transformer's secondary).

Beefing up the Hafler 101's power transformer proved to be quite easy and well worth the effort, sonically. Two Radio Shack transformers (#273-1515, about \$7.00 each) wired in series (Fig. 1) provide about 18V per side at 2A and about 20V per side with the preamp's modest load. After this AC voltage is rectified and smoothed, you have about 26.1V DC into the regulator, which is close enough to the original 27V. The benefit comes from the large reduction in DC impedance. Measured as DC resistance, the Hafler transformer's secondary is about 70 $\Omega$  total and the Radio Shack pair's secondary is only about 0.7 $\Omega$ .

Needless to say, you must mount the new transformers outboard with a short cable to the Hafler. You could plug the 120V cord into one of the switched outlets, or plug them in direct and leave the unit on all the time, as I do.

The high current transformers should

have more capacitance in the C24 and C25 positions to minimize ripple into the regulators. With the old transformer removed, you'll have plenty of room for two *additional* 2200 $\mu$ F @50V filter capacitors.

If you are on good terms with your local Radio Shack dealer, take in a line cord with insulated clips on one end, a 100 $\Omega$  load resistor, and your voltmeter. Check all the 18V @2A transformers in stock and buy a matched pair (within 0.1V of each other). This will also help minimize 60Hz ripple into the regulator.

To avoid a lot of words, the sonic results are:

- Tighter, cleaner bass
- Greater transparency
- Better resolution of low level sonic detail
- Reduced subjective noise level
- Wider subjective dynamic range

If you are skeptical, breadboard the modification and have a listen.

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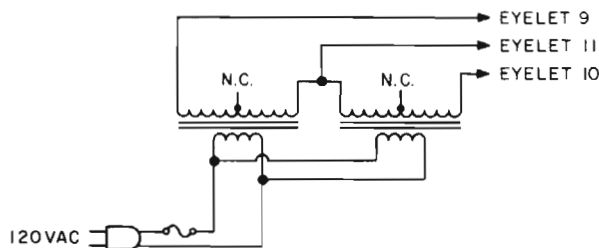


FIGURE 1: Reduce the output impedance characteristics of the Hafler DH-101's power supply by substituting two external transformers. Wire the new transformers in series, as shown above.

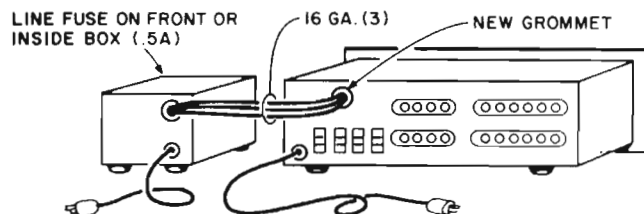


FIGURE 2: Put the new transformers in a separate auxiliary box for safety and appearance. After removing the original transformer, you will have room in the Hafler's cabinet for two extra 2200 $\mu$ F filter caps.