



GREETINGS, and welcome to our newsletter. This New Years edition marks a time to look back, and look forward. Tonewheel General wishes success to our friends and customers in the New Year, and beyond. Our philosophy of business has been well received and we are grateful for your patronage.

To an assembled group of dignitaries and friends, Benjamin Franklin said: "All human situations have their inconveniences. We feel those of the present but neither see nor feel those of the future; and hence we often make troublesome changes without amendment, and frequently for the worse."

The times, they are a changin', and Tonewheel General Hospital must adapt to our suppliers changing pricing policies. We continue to believe that denying customers the ability to easily compare prices is not in their best interest, but do respect manufacturer requests for a minimum advertised price (MAP). Accordingly, we must add Trek II Products to the list of vendors with such a policy effective January 1,2007.

At the same time, Trek II also increased the pricing of many of their products. Tonewheel General Hospital believes Trek II products to be well worth their list price and recommend them highly as need arises.

Effective January 1, 2007 Tonewheel General Hospital will be adjusting both our advertised price and actual selling price for the Trek II line. In order to receive an accurate quote we must ask that you call or email a request for Trek II pricing. We hope and believe you will accept our apologies for the inconvenience.

ASK THE DOCTOR



Is there a kit to hook up a 145 Leslie to a Hammond C3?

The 145/147 Leslies were designed for unbalanced outputs (Wurlitzer, Baldwin, Lowery, etc.). No kit was ever made for Hammond consoles because they are balanced output organs. The good news is no kit is really needed, as this is the simplest Leslie hookup out there. Here's the layout: <http://www.dairiki.org/HammondWiki/Leslie147Hookup>

How can I get a line output from my L-102 organ?

The Trek II [OBL-2](#) unit will work quite well for this purpose on all the Hammond spinet models. Connect the red lead to the positive speaker terminal and the black lead to a convenient ground point.



Is anybody building a B-3 cabinet that I can buy?

Hammond Suzuki is making cases for their new B-3, but they are not available empty. [Keyboard Exchange](#) in Orlando was at one time making very beautiful red oak units for their own use. Those are the only two reproductions that we are aware of.

Tech Talk: Potentiometers

Potentiometers are everywhere in music; volume and tone controls are where we encounter them most frequently. Remarkably robust for such a simple design, they can fail and interfere with the sound. Surprisingly, Hammond organists usually only interact with one potentiometer - the volume control on the Leslie amplifier. Let's take a look at this device and see how it influences the sound.

Audiologists long ago determined that our ears respond to volume (sound pressure level) in a non-linear manner; in fact, there is a logarithmic relationship. This means for a sound to appear twice as loud in volume it has to cause the sound pressure level to increase 1000%.

An audio taper potentiometer changes resistance according to this relationship. As a sliding wiper travels across a disk with a track of resistance material, the amount of resistance increases exponentially. In the case of our Leslie power amplifier volume control, the output voltage increases slowly through the first half of its rotation, resulting in 10 to 15% of the output. The remaining rotational travel would then provide 85 to 90% of the output.

Potentiometers can become scratchy or intermittent with time, the result of some foreign material interfering with the transmission of the signal between the wiper and the resistance material. A shot of DeoxIt or other contact cleaner will usually cure this.

MATH CORNER: Measuring Amplifier Power Output

Curious about how much power your amplifier is really producing? You can measure the AC voltage produced at the amplifier output terminals, but what type of load should you use? A speaker is constantly changing its impedance in response to the frequency (ies) being presented to it. A high wattage 4, 8 or 16 ohm power resistor eliminates this variable.

Feed the amplifier input a sine wave, connect your meter across the power resistor and measure the AC voltage produced. Square the voltage and divide by the resistance. For example, a Leslie 122 amplifier recently in the shop produced 25 volts into a 16 ohm load. This gives us $625/16$, or 39 watts.

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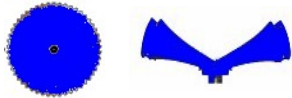
Of course, this doesn't take into account the total harmonic distortion (THD) produced, so the resulting number must be taken with some caution.

The formula is:

$$\text{Power} = E^2/R$$

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Publisher: Tonewheel General Hospital, 8426 Clint Drive #198, Belton, MO 64012 USA. Vendors please do not send unsolicited packages to this address unless we get to keep what is in them. Email the editor at editor@tonewheelgeneral.com.

Editor: Rick Prevallet, B3-122/147, A-31H/31H

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