

THOR TWEAKS

I have a pair of Joe D'Appolito Thor transmission line speakers with the Madisound upgraded crossovers mounted in the bottom cavity. After reading a letter by N. S. Francis of Norwich, England, in *Hi-Fi News* (May 2005), I decided to look into the cavity in the bottom of the Thors with the idea of trying the paving stone block trick.

I started out by making two concrete blocks about 30mm bigger than the bottom profile of the Thors with holes corresponding to where the spikes were. These blocks were about 50mm thick. I then left the concrete blocks to dry for some months, and then painted them satin black.

Unscrewing the crossovers from the Thor enclosures, I placed them on some foam plastic about 20mm thick; I also filled the bottom cavity with some dry sand in plastic supermarket bags. Running some BluTack around the edge of the bottom of the Thors and removing the spikes, I bolted the concrete blocks to the bottom of the Thor enclosures using the spike T-nuts to bolt into.

The result was:
Much tighter, better defined bass
Much better soundstage and stereo image
A much more detailed midrange.

This is the same result that N. S. Francis discovered in May 2005. I am unsure what, if any, effect vibration has on crossover components, but I suspect it may have some. Removal of the open cavity certainly does.

This has also added quite a lot of mass to the enclosures, which were pretty non resonant anyway, being made of solid 100+ year-old recycled Rimu—New Zealand native hardwood. A very worthwhile cheap improvement to a fine-sounding speaker.

Alan Smith

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CDs used:

Benjamin Britten, Variations on a theme of Frank Bridge Naxos 8557200
Jennifer Warnes, The Well SD8960
Jacques Loussier, Trio Telarc CD83544

CHIP UPDATE

As a followup to my article ("High End 120W MOSFET IC Driven Amp," June '07, p. 30), I have been corresponding off and on with Troy Huebner and Mark Brasfield from National Semiconductor, which offers a very comprehensive application note on the use of the LM4702 and MOSFETs (AN-1645). There is also a new driver chip introduced by

National which will source much more current—the LME49810.

*Jack Walton
Short Hills, N.J.*

PHONO PREAMPS

I've been a fan of Dennis Colin since I built my first Aries synth module back in the late 70s. I recently became interested in electronics again after needing a high-gain low-noise mike preamp for field recording. So I fired up my old Weller and built a preamp based on the THAT 1512 op amp. The breadboard version sounded very good, but the perf-board version had a lot of noise at high gains—I suppose due to the lack of a ground plane.

Just as I was building my mike preamp, I downloaded and read your article "The LP 797 Ultra-Low Distortion Phono Preamp" (Sept. '07, p. 6). I was intrigued with the description of your construction techniques—especially after stumbling across a lot of info online regarding "Ugly Construction"—a technique used by many amateur/ham radio builders. The article included some photos of your preamp, but I'd love to see more closeup shots of your construction techniques on both projects.

I plan to tear my preamp circuit down and rebuild it on a solid copper plane PC board and would benefit greatly from having a look at the techniques you employed in making your low-noise preamps. I hope you can post more pictures online or publish them in an upcoming issue of *audioXpress*. Keep up the great work...I always look forward to reading your articles!

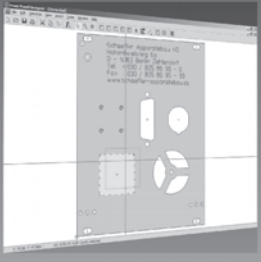
*Kim Cascone
kim@anechoicmedia.com*

Dennis Colin responds:

Thank you very much for the compliments.

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PHOTO 1: Groove Master phono preamp.

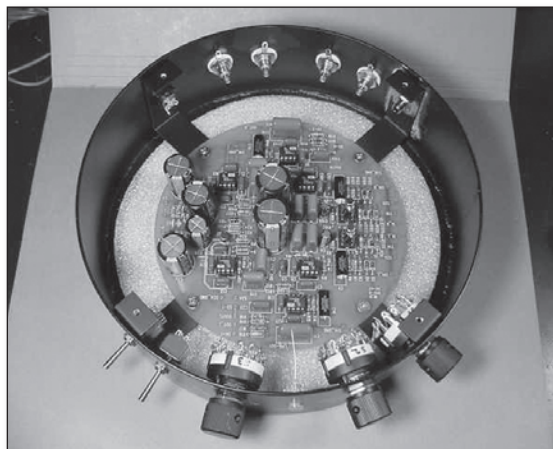


PHOTO 2: Inside the Groove Master.

Because the LP797 is so crammed in the too-small box, I'd rather not open it for photos. But the "air bridge over ground plane" construction is easy to describe:

1. I start with a piece of unetched PC board material (single- or double-sided; doesn't matter). Then I take DIP sockets for the op amps (and the JFETs here), and use 16-pin sockets so there are eight unused socket terminals.
2. I bend the inside four pins per side outward, then solder the downward-facing two pins at each socket corner to the solid copper board surface.
3. I solder the op amp supply-bypass caps from pins 4 and 7 to ground, with short cap leads.
4. I also solder all the other parts between appropriate op amp (and JFET) socket pins, if the paths are short enough. When needed to prevent shorts, use Teflon tubing on the component leads.
5. For long paths, I give balsa wood pieces to the board to provide insulated tie points, and also to mount large caps, and so on, by gluing them to these balsa strips. Crazy Glue works well and fast; you can use plastic or hardwood instead of balsa. The best Crazy Glue type cyanoacrylate (CA) I know of is "Zap-A-Gap CAT," available from HobbyLobby.com. Unlike Crazy Glue, it fills gaps and hardens like a rock. Don't get any on your skin! Hobby Lobby also sells a solvent, "Z-7 Debonder," which is made by Pacer Tech.

This technique is easy to describe, but very laborious. However, it works extremely well. I've built stable oscillators up to 13GHz in this way.

Good News

I recently had (conventional) PC boards

made for the phono preamp, and they work fine. The circuit uses the same "core" as in my article, but has provision for switchable loading (100Ω, 500Ω, 1k, 47k, 75k, 100k; 50pF, 100, 150, 200, 250, 300pF) and gain (36, 42, 48, 58, 64, 70dB) and a stereo/mono switch. The two accompanying photos show the PC board and complete prototype, called the "Groove Master." I'm having difficulties finding a company that can screen the round enclosure graphics cleanly (or produce high-quality labels). When (or if) this, and reasonably priced assembly, are solved, I plan to market the unit.

My website, ColinElectronics.com, will post any progress information. But for now, I'm considering offering a kit or at least the blank PC board, enclosure, and schematics.

Regarding your preamp: I think that if you do a conventional PC board layout (instead of perfboard and without the labor of a ground-plane breadboard), it should likely be successful if you have lots of bottom-side ground plane, especially under the active devices and input area. Poor grounding doesn't directly cause noise; it's likely that your perfboard unit had RF oscillations at high gains—this can intermodulate to produce audio noise.

Please feel free to contact me at dcolin@worldpath.net; I would enjoy talking with you about general audio and the good old Aries days!

CABLE TESTS

In response to John Loudonback's assertions in Oct. '07 *aX* (Xpress Mail, p. 49), I have followed the cable discussion since about 2000. I responded to an article that again claimed audible influences of cables. The author assumed that

I had a bias against cables being able to affect sound. This is simply not the case. In a home session I finally had to convince myself by conducting a cable test between a Goertz flat cable, an Audiquest, and a home-rolled one that no difference was perceivable, although I had been a proponent of "better cables" for years.

It is also fallacious to claim that the ear must be "trained" to perceive such differences. This argument is always put forth by the proponents of "cable sound."

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Politely put, this is simply hogwash.

The simple truth is: as long as someone knows which cable is in the chain, the differences are, let me quote: "...a curtain withdrawn...even my wife heard it in the kitchen doing the dishes...blew me away...the \$500 equipment sounded like \$5000 worth...blacker blacks, higher highs..." You get the drift.

Funny enough, though, once the information—and only the information which cable is just hooked up—is removed, everybody so far has failed any and all cable tests. Pure and simple. I have in my database a collection of tests made:

www.hydrogenaudio.org/forums/index.php?showtopic=33951,
www.vxm.com/21R.64.html,
www.hometheaterhifi.com/volume_7_4/audio-cable-shootout-part-1-12-2000.html—how not to conduct a test,
www.verber.com/mark/cables.html,
www.bluejeanscable.com/articles/humrejection.htm,
www.aes.org/sections/pnw/pnwrecaps/2000/lampen/,
www.provide.net/~djcarlst/abx_wire.htm,

www.hometheaterhifi.com/volume_11_4/feature-article-blind-test-power-cords-12-2004.html, and
www.provide.net/~djcarlst/abx_pwr.htm

Add to that tests made in Germany on two occasions by hififorum.de. and tests made by David Messinger of HIFI AKTIV, a high-end dealer in Austria, and the conclusion I draw is that anybody who claims that cable sound is a certainty is, to put it mildly, economical with the truth.

For myself, the discussion is over, I just get a bit irate when obvious untruths get peddled in perpetuity.

Peter M. Moritz
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TUBE DATA

There is an intriguing point in Mr. Touzelet's article, "Simple Approximations of Tube Anode Characteristics" (Sept. '07, p. 18). I've tried to build the Excel sheets based on his article, but the handmade (on my old and affordable HP-41C) and/or MS-Excel calcu-

lations do not match the values shown in table 2, page 18. So, I took a look in Mr. Norman Koren's website www.normankoren.com/Audio/Tubemodspice_article.html and, to my surprise, the same error was there.

So I'm confused. If I use the "base 10 logarithm (Log)" as shown in both articles, the values do not match, but if I use "Neperian Logarithm (LN)" everything becomes right (or seems to be right).

I'm not a mathematician, but we normally use *Log* for base 10 numbers and *LN* for base "e" numbers.

Luciano Peccerini Júnior
Brazil

Pierre Touzelet responds:

First of all, I would like to thank Mr. Luciano Peccerini for having tried to develop by himself the proposed software for tube characteristics simulation. I am sure he has enjoyed the time spent to do the work and see how rewarding this effort can be from an intellectual point of view.

It is exactly the objective I wanted to achieve when publishing this article in

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CONTRIBUTORS

Richard A. Johnson ("An Excellent DIY Basshorn," p. 8) became excited about high-performance horn speakers in his teens when he started DJing. He once begged a guy at the wood shop to cut dimensioned material for his first speaker cabinet. After finishing school, he bought himself all the wood shop tools he could use to build speakers. He earned his BS EE at the New Jersey Institute of Technology. He has experience with wireless handset development and cellular technologies. He currently develops graphical user interfaces (GUI) using Labview for the test and measurement industry.

Andreas Schilloff ("A Home Theater Preamp," p. 16) lives with his wife Kristi and dog Sally in the small city of Binghamton, NY. He has a BS degree in mechanical-electrical engineering from the Rochester Institute of Technology. The majority of his career has been spent working as a manufacturing engineer for a high-end PCB division of a global EMS company.

Dennis Colin ("The Amplibass Control," p. 22) has demonstrated the audibility of phase distortion at Boston Audio Society, and has designed the "Omni-Focus" speaker (bipolar coincidental with phase-linear first-order crossover), ARP 2600 analog music synthesizer, 1kW biamp and PWM supply at A/D/S, and Class D amps.

George Danavaras ("Testing Panasonic's WM-61A Mike Cartridge," p. 28) graduated from National Technical University of Athens, Greece in 1986 with a degree in Electronic Engineering. He currently works in the R & D division for a Greek telecommunication company. His hobbies include design and manufacturing of audio crossovers, amplifiers, and loudspeakers.

Iain McNeill ("A Mains Analyzer—How Clean Is Your Juice? Part 2," p. 34), an avid reader since the days of *Speaker Builder*, resides in Aptos, Calif.

The audio hobby for **Alex Arion** ("A Greek Baroque System," p. 52) began in the magic '60s in Communist Romania in his grandmother's attic, where, together with two friends, he installed a small "illegal" laboratory. Their first attempt was a beginner's guitar amplifier and a professional guitar pickup. The tubes used included ECC40s and EF40s. The rectifier was a 5 μ 4, Russian equivalent. They mounted all in a hat box that they found in the attic. After finishing his studies and many years of research, Alex moved to Greece, where he continues to build different tube-based and solid-state amps.

audioXpress, and I am really satisfied with this result. Concerning the difficulty he has to face with the logarithm, the usual rule agreed by mathematicians is the following:

Logx, when written with a capital letter (L) means the logarithm base "e" of x.

logx, when written with a small letter (l) means the logarithm base "10" of x.

So the logarithm used in my article is the logarithm base "e".

LOW FREQUENCY EFFECT

In "Analog Bass Control for Magnepans" (Aug. '07, p. 10), what does "LFE" refer to? It is an input to the ABMS, but its function is never explained.

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George Danavaras responds:

Thank you for your interest in my article. The LFE input refers to the Low Frequency Effect channel of a multi-channel system. The LFE channel has a limited bandwidth up to 120Hz so it delivers bass-only information, which usually is directed to a subwoofer.

In the ABMS, there is an input for this channel, which then is mixed with the low frequencies coming from the other channels. The total signal containing the low frequencies of all the channels is driven to the subwoofer output.

More information for the LFE channel can be found at www.dolby.com/assets/pdf/tech_library/38_LFE.pdf.

HELP WANTED

Can anyone supply me with a simple circuit using a tube as a VCA voltage control amplifier?

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CORRECTION

The schematics of Figures 1 and 4 in "A Single-Ended Class A Hybrid Amp, Part 2" (Nov. '07, p. 26) may baffle anyone trying to build this design without the Aikido boards. There are no connecting dots where required on all those crossing schematic lines. I needed to refer to my collection of *Tube Cad Journal* articles to find the proper circuit

connections (the *TCJ* article has the connection dots). The associated *Tube Cad Journal* article is the 8 November 2004 issue, see the "Safer version of the Aikido Amplifier" that John Broskie shows on page 4 of 4.

There should be a dot at the junction of the plate of V1a and R4, at the junction of the plate of V2b and R8 (but *not* where the line to C1 line crosses the lines to R7 or R15). The schematics have a common mistake: placing a connection at crossing lines in a schematic. This is forbidden by IEEE and

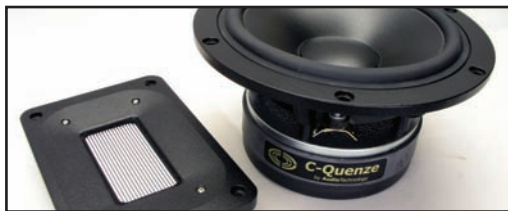
ANSI standards. All connections must be made only at the "T" intersections of lines. The reason for this is that if a connection dot that is required at a crossing line is accidentally left out of the schematic, the circuit will not work properly. This can waste time and money, and may in some instances present a danger to the finished unit or the builder.

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Ocean, N.J.
aX

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