VALVE

PO BOX 2786
Poulsbo, WA 98370

Get off your buns!

It's time to renew.
Don't miss an issue.
VALVE Volume 5, 1998
$25, $35 outside the US

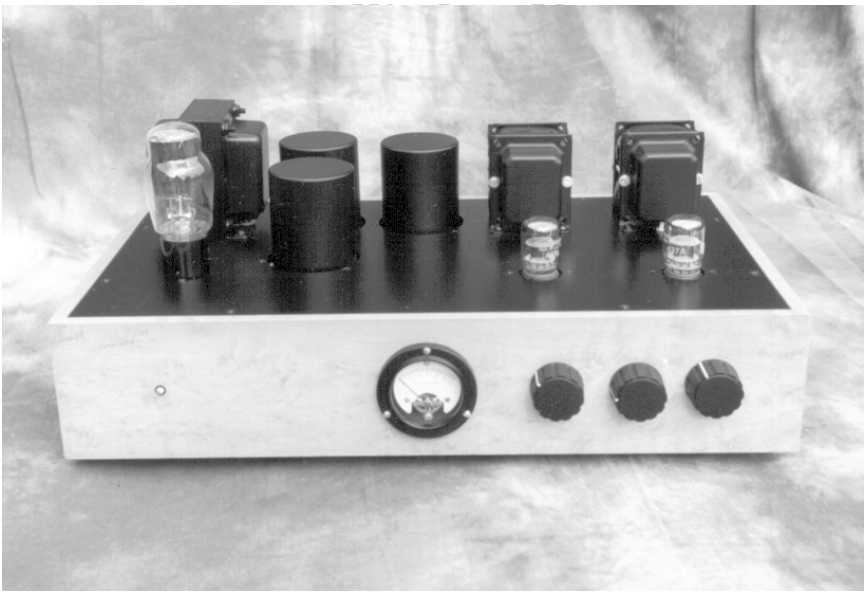
VALVE

Eduardo de Lima's mini monitor for SE 300B amps

why does zero-feedback single ended sound so good?

variable time delay relay

a letter from the Nimitz



Robert Root's Eurydice style preamp

volume 4, number 12 December 1997

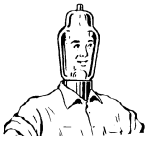
VALVE

the monthly magazine
of eXtreme audio

Editor and Publisher
Dan "Dr. Bottlehead" Schmalle
Chief Administrator
Eileen "In Charge" Schmalle
Production Staffer
Annie "Staple Queen" Boeckl
Resident Smart Guy and Technical Editor
Paul "Braniac" Joppa
Resident Hot Iron and Dr. B's Bodyguard
John "Smoothplate" Tucker
Big gun OEM advisor
Michael "Airgap" LaFevre
Contributing Editors
David "Full Track" Dintenfass
"Crazy Eric" Lenius

Our mailing address:
VALVE
P.O. Box 2786
Poulsbo, WA 98370
by phone: 360-697-1936
(hours: 9-4:30 PST, Mon -Fri)
fax: 360-697-3348
e-mail - Bottlehead@prodigy.net

Rates:
Membership/Subscriptions:
$25.00 per year (12 issues)
Foreign Subscriptions:
$35.00 per year (12 issues)
Please make checks payable to VALVE
MC/VISA/AMEX/DISC accepted



editor's thing

This is the time of year when editors are required to look back at the ending year's events, and look forward to the coming year's possibilities. (really, it's like a federal mandate or something, I think)

Where do I start about last year? Parallel feed? VSAC? Afterglow? (AUUUUGHHHH, still waiting for parts!)

Thanks to all you who participate in the crazy schemes we come up with, 97 is a year Eileen and I will never forget. The list of folks to thank is so huge that I dasn't start laying it out here, but those of you who supported us by buying kits, subscribing to VALVE, attending VSAC, trying parafeed, and particularly those who dive in whenever we need a hand or an answer, thank you sooooo much.

As to 98, we will continue to lead the way in tube technology, adding a few new twists as we go:

VSAC

Yes, of course there will be a VSAC 98! August 21 thru 24. We hope to double the number of exhibitors and attendees this year. We're looking for volunteers already, so give a call if you would like to help out.

VALVE

As you can see by the last few issues, we're light years from running out of ideas. But we need a broad range of views, so get out your camera, and put your ideas to paper. Send us an article about your pet project.

ELECTRONIC TONALITIES

After some mind blowing hassles getting consistent supplies of quality parts in 97, we really, truly will have enhanced SEX, Afterglow, and Foreplay available this year, as well as MagneQuest/Peerless/Brooklyn products (including a cool new power transformer), Lowther products, ABA products and also a new line, Jena Labs cables and wire products. I've been very impressed with the Jena Labs wire this year, and we will have Jennifer Crock's ultra cool hookup wire available by the foot for you folks who need cost effective ways to tweak up your pet projects. We're also starting to explore some capacitor suppliers - stay tuned.

EXTREME AUDIO

John Tucker and I have been looking for a way to express some of our more obsessive ideas. As a counterpoint to Tonalities' striving to offer the best compromise between high cost and high quality, our new joint venture, eXtreme Audio, will be for cost-no-object

projects. Look for a preamp, amp and speaker that will take on all comers, to be released next spring. And bring $$$.

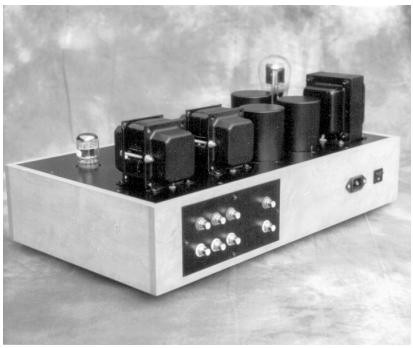
AMP DESIGN CLASSES

The first amp design class was such a success (read here, so damn much fun) that we decided to do two sets of classes this year. We've already had requests for an advanced class to complement the beginning class, so we'll design the March class around the needs of the experienced constructor who wants to delve deeply into the math and methods of ground up amp and preamp design, and the class after VSAC will be for the novice builder who wants to learn the basics of circuit design, component function and quality construction techniques.

Doc B.

cover

Robert Root sent us a couple photos of his



latest project, built and photographed to his usual high standards.

The preamp is based on the Eurydice transformer output WE 437A line stage published in *Sound Practices*.

The circuit uses:

- an RCA 83 mercury vapor rectifier
- Mega- Hertz output transformers
- silver wire
- step attenuators,
- AudioNote oil capacitors
- two chokes
- a time delay relay on the B+ supply
- a bird's eye maple chassis

Note that in this photo a globe style 280 was plugged in the rectifier socket.

Beautiful work as usual, Robert!

january

Back Issues

Back issues are printed to order - please allow two weeks for delivery - add $5 postage for orders outside the US

Volume 1 - 1994 issues - $20

a Williamson amp; Dyna Stereo 70 mod bakeoff; converting the Stereo 70 to 6GH8's; a QUAD system; triode input Dyna MkIII; MkIII vertical tasting; smoothing impedance curves; Altec A7; Ampexes Nagras and ribbon mikes; Triophoni, a 6CK4 amp; audio at the 1939 World's Fair; books for collectors and builders; V.T. vs. R.M.A. cross reference; FM tuner tube substitutions; Big Mac attack - the MI200; 6L6 shootout; a vintage "audessey"; more FM tuner mods; vintage radio mods; Heathkit rectifiers; PAS heater mod.

Volume 2 - 1995 issues - $20

Rectifier shootout, tube vs. solid; FM 1000 recap and meters; single ended 10 amp; triode output W-4; Optimus 990 - speaker for SE?; star grounds; tuner shootout; Living Stereo, vinyl or CD?; World Audio SE integrated; firin' up - smoke checking; Brook 12A schematic; 6C33 vs. 3C33; Heathkit power transformers; 6B4's + MagneQuest = SEcstasy; W5 mods; triode operating points; Dyna restorations; Marantz 7,8 and Scott LK150 impressions; hackable vintage gear; Quasimodo - PP 805 amp; restoring a Scott 340 in 75 minutes; a dream system for 78's; cartridges and styli for 78's; Restoring a Lowther, Part 1&2; easy tube CD output hack; 6ER5 phono preamp; 304TL & 450TH SE operating points; hypothetical DC ESL amps.

Volume 3 - 1996 - $25:

Single Watt, Single Tube, Single Ended, an amp for Lowthers; the Vintage Speaker Shootout of 1996, QUAD vs. Lowther, vs. A7; the Voigt Loudspeaker, the Single Ended eXperimenter's kit; cathode coupled SE 6AS7 amp; how to build the Superwhamodyne; refoaming AR woofers; mesh plate tubes; rebuilding QUADS; QUAD amp filter surgery; single gain stage amps; the Brooklet, and Brookson, choke loaded PP 6080 amps; transformer coupled PP 6DN7 amp; the Iron Maiden; Building the Lowther Club Medallion; the TQWT, a tapered pipe enclosure; IT 300B amp.

Volume 4 - 1997 - $25:

the Whampipe/Hyperwhamodyne; weird interconnects; winding your own SE output transformer; Tapered Quarter Wave Tubes; battery bias; onetuber 417A and 437A amps; DAC attack; 6BL7/211 SE amp; pro sound speakers at AES; 46 plate curves; what's all this about parallel feed?; parafeed line stage; C.W. horn divided by two; Svetlana meets Brooklyn; parallel feed SE 811A amp; parafeed 2A3 amp; Lowther fixes; Altec vs. the competition; VSAC 97 program guide; VSAC 97 photos; Andy Bartha's cool speaker cables; Paul Joppa's 6DN7 driver stage; S.E.X. kit schematic revealed; an Edgarhorn builder's story; direct coupled active loaded parafeed 45 amp; Brainiac's S.E.X. changes; VSAC 97 seminar notes; tweaking the one tube 6DN7 amp, Lowther drivers, and the Wright preamp; 300B S.E.X. amp conversion; mini monitor for 300B amps,

what is the technical advantage to zero-feedback single ended designs ?

By Lynn T. Olson

This oft asked question was posed on the Sound Practices *"joelist" recently (thanks to* SP *Editor and Publisher Joe Roberts for creating the list as a place for all of us bottleheads to share our insights), and one of the most lucid replies to this question was proferred by* V&T News *Editor Lynn Olson, who gave us permission to print it here. Keep a copy of this in your pocket for the next time some NFB push pull bully tries to wave distortion measurements in yo' face....B.*

Several reasons, all measurable with the right equipment:

* Cleaner spectral response, due to an all-triode signal path with no loop feedback. Triodes have the cleanest spectra of any amplifying device ever made, especially if you weight the harmonics as mentioned above. Feedback multiplies low-order harmonics into smaller but more numerous quantities of high-order harmonics. See articles by Norm Crowhurst in *Glass Audio* for the mathematical derivation of this.

* Crossmodulation. As a long-time speaker designer, I know that speaker drivers are wicked devices, cheerfully storing resonant signals for many milliseconds and then sending them right back to the amplifier. If there is zero loop feedback the trouble stops right at the plates or emitters, otherwise it goes to the input stage and cross-modulates the desired input signal. The usual engineering assumption that the feedback summing node has zero distortion is lazy thinking and is simply not true. If the summing node has non-zero distortion the driver resonances will cross-modulate with the amplifier distortion. This cross-modulation is partly responsible for the notorious matching problems between amps and speakers... worse, some of the very best speakers are the most reactive loads. If you want reactive loads, check out ESL's or horns. If your amp can't handle reactance gracefully, then you are stuck with Magneplanars, which are largely resistive loads.

* Greatly reduced problems with TIM/slewing distortion, which is an especially unpleasant form of signal-dependent time dispersion. Feedback generates large error overshoots when the amp nears clipping, slewing, or Class AB transitions. These overshoots can saturate low-current input stages, which then lose the ability to drive the Miller capacitance of the following stage. See articles by Matti Otala and many other authors in the *AES Journal* on this topic.

* Feedback greatly worsens the audibility of clipping, which is a serious problems with amps that don't have a 200 to 300 watt output capability. Music typically has a 10 to 20dB peak-to-average ratio, so 90dB average levels require peaks of 100 to 110dB. If the amp/speaker system is not capable of that, it is highly desirable the peak is gently compressed, not hard-clipped. The worst case is a feedback amplifier with output devices that saturate or become misbiased during clipping; not only does feedback hard-clip the amplifier, it may take a long time for the output devices to sweep out the charge, cool down the silicon die, regain normal operation, and return to a low-distortion regime. This stretches out clipping and makes it extremely offensive, in the manner of a transistor radio.

The effects discussed above interact in complex ways. For example, a very common problem with many transistor amps (nearly all, actually) is momentarly loss of phase margin stability when the amp clips. In the severe case, there are actually quick bursts of 2 to 20MHz oscillation when the amp clips into a speaker + cable load. (If this goes on long enough, the output devices and the tweeters will fail. This is one of the most common reasons that solid-state amps blow up.)

Assuming the above problem is addressed by the designer, when the feedback amp clips, the TIM distortion will still greatly increase until the output transistors leave saturation, cool down, and re-enter their linear region. As long as the output device is outside the linear region, overshoots in the feedback network are very large and easily overload the input section, which then in turn has to recover from saturation. What starts as a simple overload problem in one part of the amp spreads to the whole amp thanks to feedback ... and none of it shows up in a THD measurement due to the transient nature of the problem. The amp can be very unreliable, sound terrible, yet measure very

well in a THD measurement.

There is a common attitude in the audio industry that the critical listener is easily deluded, and the "proof" of this is that most music lovers don't care for the sound of modern low-THD electronics, from digital audio to op-amps to high-feedback amps. I take the opposite stance, and say that mainstream engineers should promptly discard outdated measurement protocols that have proven useless for assessing subjective quality.

Unfortunately, the mainstream audio-engineering community has little interest in doing so, and is instead vigorously pursuing techniques to discard 80 to 90% of the digital data in a medium that was grossly flawed even back in 1980. The 44.1kHz sampling rate was chosen by Philips since it would accomodate Beethoven's 9th Symphony in its entirety, fit in a standard IEC aperture for a car-stereo receiver, and be a submultiple of standard television scanning rates. In doing so, Sony and Philips ditched a decade of research by Tom Stockham, Denon, and the engineers at Decca Records, who were using 50kHz and had proposed a 60kHz rate to the AES Standards committee in 1979.

In the subjective world where we all live, if THD has any meaning at all, a mass-market receiver connected to $100 CD player should sound 20 to 100 times more realistic and lifelike than a Westrex 300B amplifier connected to a phonograph. I imagine there is no shortage of well-paid marketers and slick-magazine writers who would tell us that is exactly the case. And if Lucasfilm/Dolby/Microsoft changes their story next week, last week's party line will go into the memory hole, and it will be AC-5/Win99/DVD-II that will be "Perfect Sound and Vision."

I say let's just ignore these hucksters, and do our own research on what is truly audible and important.

Oh yeah, thanks Lynn, for your great coverage of VSAC 97 in V&T News, issue #2!

STYLE

a mini monitor for single ended 300Bs

by Eduardo B.E. de Lima

This loudspeaker, which I ended up calling STYLE, was originally designed because I needed a small speaker that would play with my 300B SE amplifier. One of the areas where SE amplifiers excel is in the small details and decay of the sounds. Sometimes this can be appreciated even better in small rooms at low listening levels. Therefore it seemed natural to design a small speaker to work with SE amplifiers in small rooms.

This speaker was one of the speakers I have demonstrated at the VSAC. It has around 90 db of efficiency with a very, very easy input impedance.

I believe that the very best performance with SE amplifiers can only happen when the whole system of amplifier, output transformer, speaker driver and box is very well matched. This requires the loudspeaker be designed for that particular amplifier, or less frequently, the other way around. This includes taking into account the amp output impedance, distortion levels, the transformer primary inductance and who knows how many other interrelated things! This may explain why most of the time it is more effective (and a lot more fun!) to let past experience, some intuition and mostly the ear do the whole job and find this correct match. After all, the ear must be the final judge.

But although this speaker was designed to be used with my amplifier it should work very well with most typical SE amplifiers. The bass alignment is targeted for amplifiers with an output impedance of 3.0 ohms, and it will work well with amps with Z_{out} in the range of 2.0 to 4.0 ohms. At the frequency range this speaker is expected to reproduce, any primary inductance bigger than 10H (for a 3K primary impedance) will work well. This means you may use good quality small transformers and get good sound. This speaker was designed according to some ideas that are presented in *Glass Audio* (3/97 and 6/97) and that were the subject of my seminar at VSAC 97. For its size and efficiency you will have surprisingly deep and controlled bass when they are used with a typical SE amp.

The Box

The box is very simple. It can be made with MDF. I have used 5/8" all around and 3/4" for the fascia. This fascia should have rounded sides. After some tests I found these materials just right for this box size, with no need for further bracing. If you want to try, thicker materials and bracing may be used. This may be good or bad, and experimenting is the only way to know. Remember to keep internal volume constant. If you decide to use thicker materials please change only the depth of the box. The frontal dimensions should remain the same. The box should be lined with 1" foam of low density on all sides except the front baffle. Of course you can also experiment with this until you get the best result. The duct should be made of a 5cm (2") curved PVC tube about 18cm (7") long. It must be a curved duct, otherwise it will not fit. Using a smaller diameter will allow you to use a straight tube. This will work but it is not the ideal. Always keep the duct as free as possible. Do not allow the foam to block the area close to the duct.

The Drivers

I have seen no projects using the Audax HM130X0, but this speaker with a TPX cone is a remarkable mid/woofer for our application. It has a very smooth midrange and just the right parameters to be used with high output impedance amplifiers. It probably has not been used frequently because the calculated ideal box for common low Z_{out} amplifiers will be ridiculously small and the speaker could only be used as a midrange. But the driver has the X_{max} and power handling to be used as a small woofer. The Seas T25-001, with its silver coil and very good subjective sound, was my choice for the tweeter. It has complemented the Audax in a seamless way. Although not cheap, these are not terribly expensive units, each one being around $60.

The Crossover

This is a mix of the minimalist approach with some impedance correction. The Audax unit is connected straight to the amp. The impedance correction network keeps the impedance curve in the mids and highs very smooth, with 8 ohms being just about average. The measured frequency response is very flat, being within +- 2.5 dB through most of the range.

I have used no diffraction compensation in the crossover. this makes this speaker sound better placed closer to the rear wall, as it is expected to sit in a small room. the best position is something that only experimenting in your own surroundings can determine. I should also recommend that you them on 24" to 28" stands placing the point halfway between the tweeter and the woofer at ear level. This is not very critical, but certainly helps. The frequency curve shows the response from 400 Hz up, without any smoothing. This response

changes very little with high output impedance amps. At frequencies below 400Hz the response is affected by the measurement setup limitations and by the value of the output impedance of the test amplifier.

Conclusion

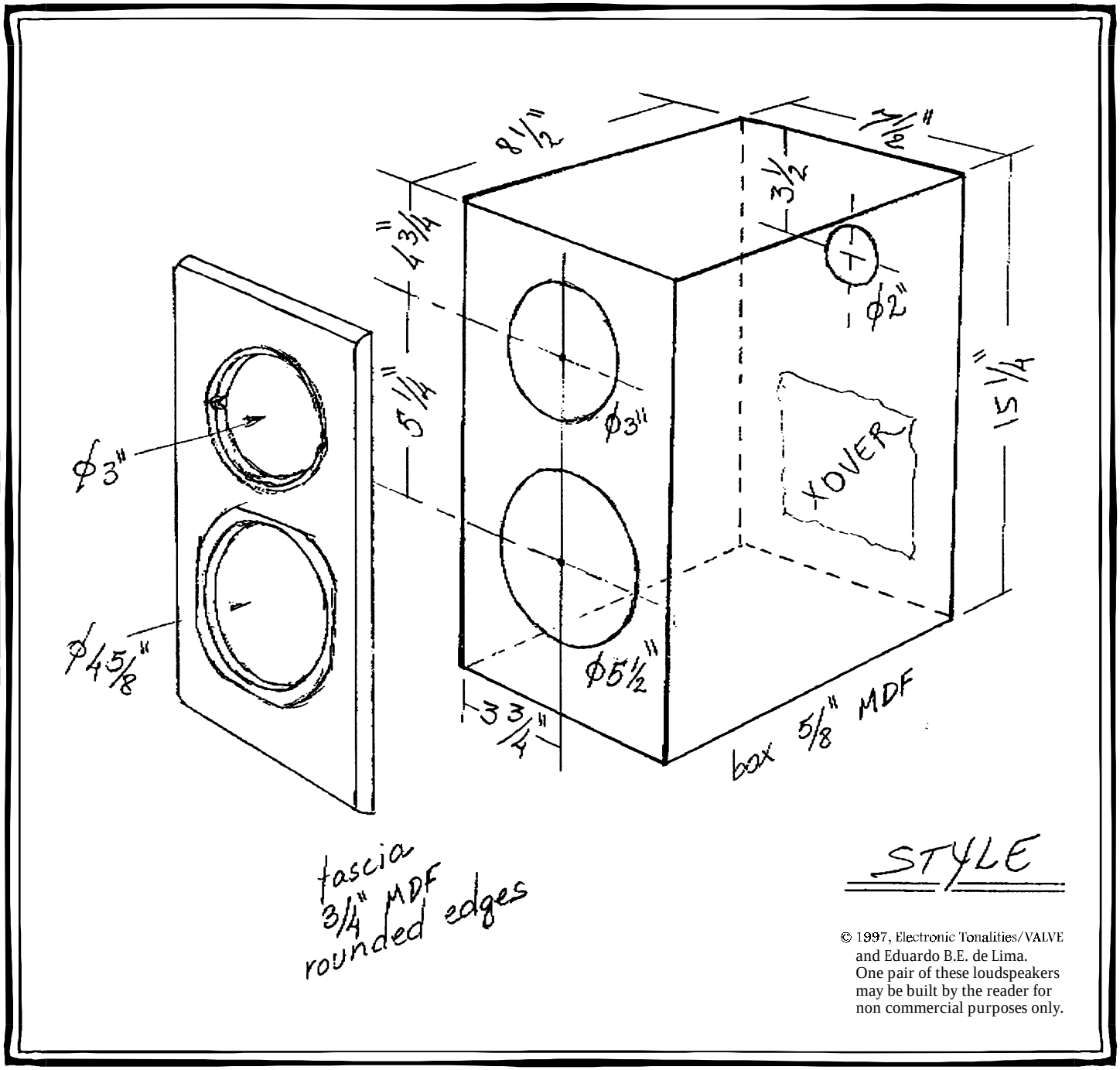
I believe you should build this speaker with all the normal care that high performance equipment begs for. The drivers and crossover components should be very well fixed. The cabinet should be very well made and the drivers should be mounted flush with the front surface.

I should say that this speaker is intended to be used with high output impedance amplifiers and that it will sound bass shy with the average transistor amplifier or tube amps using lots of negative voltage feedback.

I hope you try this little speaker. It has been the source of a lot of great listening for me and I believe it fulfills its intent very well.

opportunity knocks once

Doc B. is getting too busy for his own good. Between several joint ventures, the kit biz, and putting on VSAC, he can barely get VALVE done every month.
And so Electronic Tonalities/ VALVE is looking for a person with skills in desktop publishing who would have an interest in assisting in the monthly production of VALVE. We need someone who can come in to our office on a monthly basis and work with Doc to plan out each issue, and then complete the transcription and layout unassisted, to a strict deadline. The pay won't be too astounding, but on the other hand, you will only need to be working a few days each month, you get to be part of a very hot audio publication, you will get to be in on cool audio developments as they happen, and you'll get an awful lot of opportunities to talk to some very well known audio personalities. This offer won't last, call us quick if you're interested, 360-697-1936.



Parallel Feeders,Get Busy!

Folks keep asking, “How does parallel feed sound? ” More real!

- Vastly improved bass articulation
- Marvelous midrange clarity
- Improved “quiet” between notes
- tremendous SE bandwidth

Here’s some combos that should work very nicely:

For 45, 71A, 417A/5842, 6CK4, 6DN7

- Brooklyn BCP 15 40H 50mA plate loading choke, $50
- MagneQuest EXO-45 (5K:8ohm) or EXO-46 (5K:16 ohm) parallel feed output transformer, M6 version, $75, Permalloy version, $135 (as used in last month’s 45 parallel feed article)
- for operation at 2 watts maximum output

For 2A3, 6A3, 6B4

- MagneQuest EXO-03 30H 60mA plate loading choke, $65
- MagneQuest EXO-04 50H 60mA plate loading choke, $99
- MagneQuest EXO-35 (2.5K:8 ohm) or EXO-36 (2.5K:16 ohm) parallel feed output transformer, M6 version $75, Permalloy version $135
- for operation at 3 watts maximum output

For 300B, VV300B, VV32B

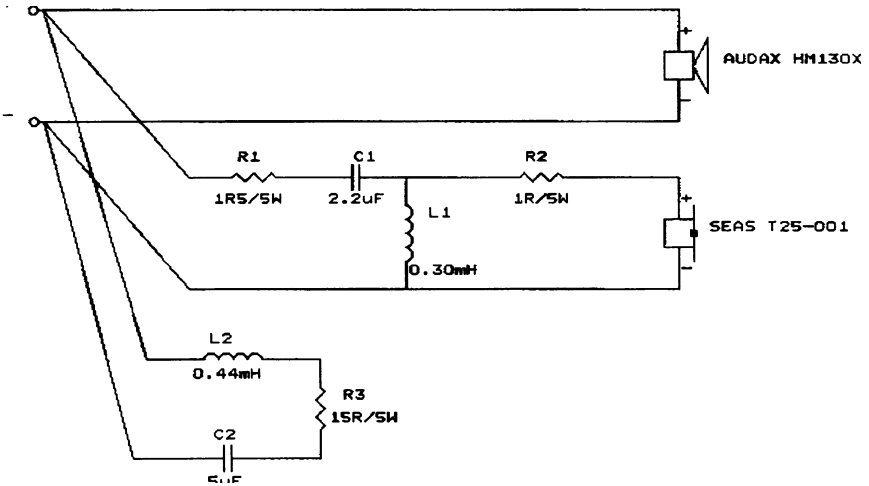
- MagneQuest EXO-04 50H 60mA plate loading choke, $99
- NEW - MagneQuest B.A.C. 50H 80mA plate loading choke, $149
- MagneQuest TFA-2004 (3K:4,8,16 ohms) parallel feed output transformer, M15 version $99, special edition Pinstripe M6/Permalloy/solid brass bell ends version, $225, Permalloy/ solid brass ends version $275
- for operation at 12 watts maximum output.

And don’t forget the Brooklyn B7 parallel feed line stage transformer, now available in 5K, 8K, and 15K primary, to 500 ohm secondary versions - $65 in M6, $75 with M6/Permalloy mix, $99 all Permalloy version, and matching BCP 14 plate load choke, 100H, 10mA, $45.

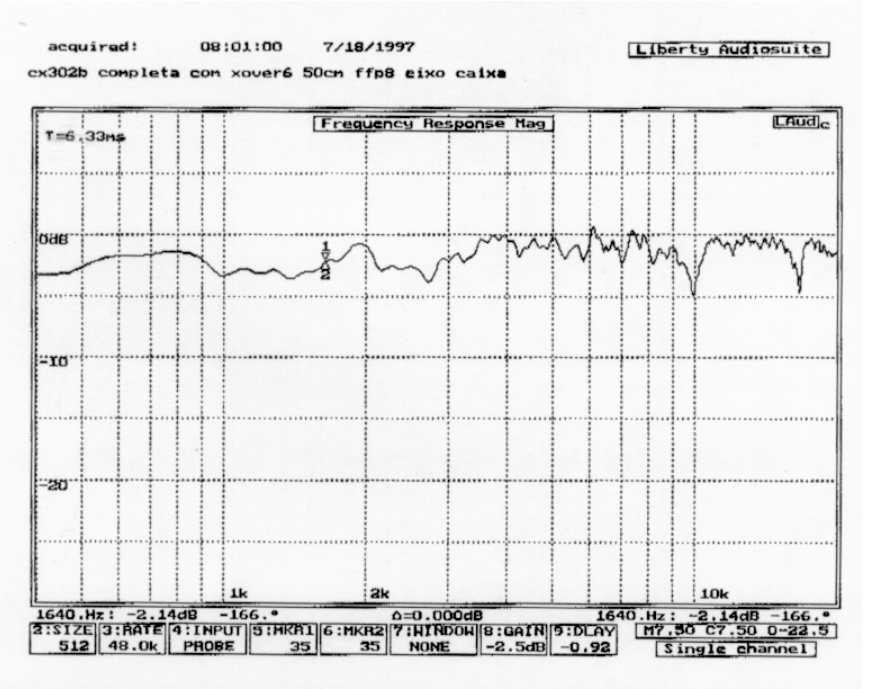
Call 360-697-1936 and ask for Doc B. for more info.

ELECTRONICTONALITIES - THE PARALLEL FEED AUTHORITY

P.O.Box 2786, Poulsbo, WA 98370



Above: Crossover schematic for the STYLE mini monitor
Below: 400Hz to 20kHz response of the mini monitor



variable time delay relay

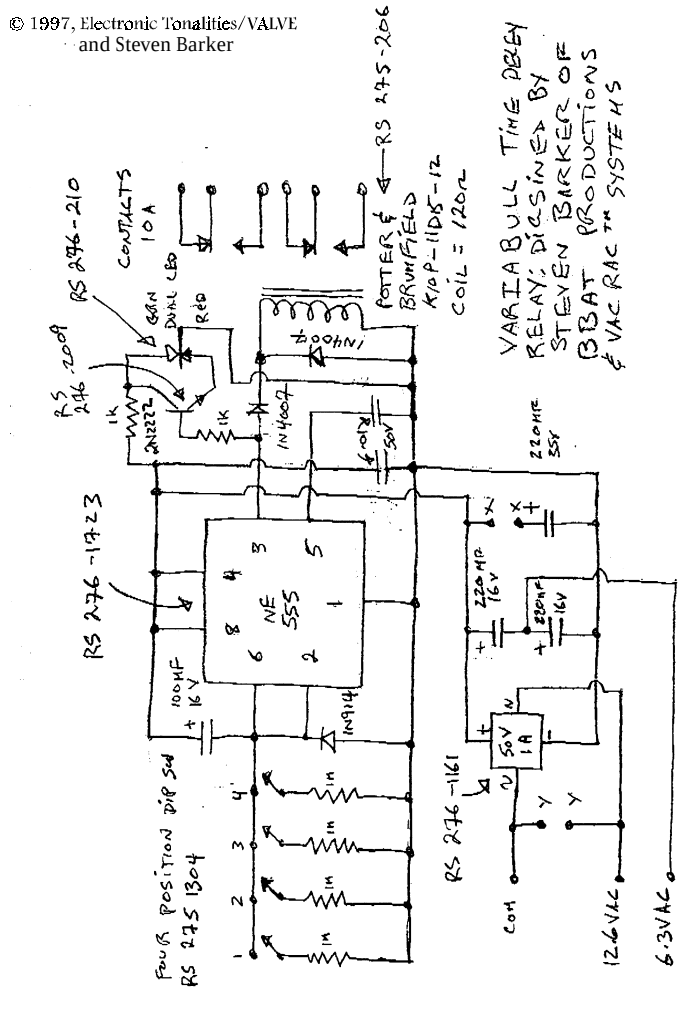
by Steve Barker

Soo, you say just laid out some big bucks for some super rare DHTs? Gonna use 'em in an ultra cool amp circuit? Well you better look at this map, bottlehead. This baby is gonna keep you from burning out the wick on them ultmate glowbugs by delaying the startup of your B+ transformer.

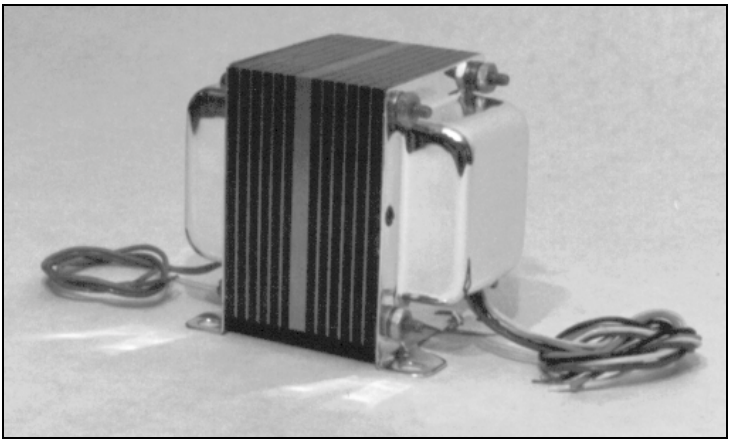
What's very cool about this circuit is that all the parts can be had at Radio Shack (Steve advises, "just don't ask the salespeople any questions, and you'll be OK") Notice that by switching in the 1 meg resistors in the upper left corner, you can adjust the length of the delay from 120 seconds to 30 seconds.

Also notice that the circuit can be powered from either 6.3V or 12.6V.

As usual, you may build this for non commercial purposes only.



THE PINSTRIPE



Hear 300Bs at their best

- ◊ 3,000 ohm primary impedance, 4,8 and 16 ohm secondaries.
- ◊ the legendary midrange quality of the TFA-204, now with phenomenal bass and treble speed and texture
- ◊ measured frequency response of -1dB at 2 Hz and 26 kHz
- ◊ perfect for SE 2A3, SE 300B, PSE 50s, SE VV300B, SE VV32B, even works with the VV52B!
- ◊ alternating interleaved laminations of M4 steel and nickel - pinstripes!
- ◊ stunning polished solid brass bell ends
- ◊ use with 2A3/300B and the new, larger EXO 04 60 mA 50H plate loading choke and B.A.C. 50H 80 mA choke -VV32Bs!

Perhaps the most beautiful transformer ever made

special price - $225 each.

Hyperpinstripe version, shown above, with nickel "sandwich", $250. All nickel TFA-2004 also available ,

yo Doc', we haven't seen any letters in a while...

Whamventure

10 September, 1997

I'm writing this off the coast of Hawaii as the Nimitz heads for Japan. I couldn't get to VSAC since it took me until noon of August 31 to complete my set of Hyperwhamodynes! As I'd been working on them every spare minute since the first of the month and had to be on the ship at 10 p.m. that night (departing the next morning), I thought I'd better devote the remainder of the day to that most understanding of women, my significant other.

I built my Hyperwhamodynes a bit differently from your prototypes (of course!). I wanted to get some visible real wood surfaces without breaking the bank and I'm no expert at woodworking (forget about veneering).

I used standard 2 x 12s (actually 1.5" x 11.25") for the sides, divider, and back of the subwoofer (the front has to be 3/4" or the port size changes). To compensate for reduced height I made them deeper - 21". This gave me a sealed volume of 1.23 cu.ft. and a vented volume of 1.33 cu ft. These increases are less than 10%; from the previous VALVE commentary on the design I guessed a small increase wouldn't hurt anyway. The standard width reduced my number of opportunities to screw up measuring and cutting - I have only a small table saw.

(increasing the sealed chamber's volume will reduce sensitivity and may in fact give a more palatable bass balance to those folks who think my tastes in bass are too heavy - this is very dependent upon the construction of your listening room. In my solid concrete basement listening room, some folks say, "too much". In VSAC 97s spongy rooms, some folks said, "your speaks are the only ones with real bass" Try to keep the vented chamber's volume close to the original plan, as it does not affect sensitivity, and is optimized for the driver used- B.)

I made the front, back, base and sloping pieces of the towers by cutting down 2 x 10s (1.5" x 9.25") to 8", using the same interior dimensions as the article. Again, from previous commentary on pie size, I guessed that a 1/2" wider divider wouldn't hurt.

(it will actually bring the cross sectional area a bit closer to the rule of thumb ideal for tapered pipes, that being that the maximum cross sectional area should be about 2.5 times the driven area of the drivers - B.)

By the way, I discovered why commercially available speakers aren't made with 2" lumber. First you have to carefully select each piece for straightness and lack of splits and knots. Then you've got to fill the knotholes you do have, hopefully with something that will look good with whatever finish you want. Extreme care is required to avoid splits during construction (predrilling screwholes, etc.), and the longer the wood remains unfinished the more likely it is to split on its own. I filled knotholes and the splits that developed (or I missed when I bought it) with wood glue and them sanded like hell - that glue dries *hard*.

Since I couldn't quickly find 1" MDF I used 3/4" for the subwoofer top and bottom and for the tower sides and top. I seriously considered your (and others) advice to laminate 1/2" MDF, but several things stopped me - the time it would take, the cost of the clamps to do it and the fact that all construction had to take place on a 3rd floor apartment back porch/balcony.

I tried a few other ideas on the interiors, too. I gave all interior surfaces 2 coats of "Acoustic Magic" - that paint Audio Concepts used to sell; I've no idea where you can get it now. In the towers I covered the interior surfaces of the top, the top sloping piece and the side of the divider piece facing the drivers with Spectral Dynamics sheets (Madisound, Michael Percy) and pushed a strip of it into the angle the divider makes with the front. I put Spectral Dynamics "Magnapad Gold" damping pads (smallest size, Michael Percy) on all of the driver magnets. I used the same carpet pad you used in the subwoofers, and on the tower's back, the back of the sloping divider, the front above the drivers, and on one side.

I wired the subwoofers with 12 ga. solid house wire and the towers with enameled magnet wire - 22 ga. on the tweeters and 18 ga. on the mids. I used your latest crossover values (.35 mH, 6 mfd) with cheap components - 18 ga. air core chokes (MCM) and mix'n'match industrial "yellow tube" type poly caps from my junk box (future eXperimentation here). I used the same stuffing you wound up with - 1/2 lb. virgin wool in each tower, 1 lb. in each sub's sealed chamber.

I used large Fowler spikes on the subs and some large brass (?) Tiptoe-like cones under the towers with matching "holders" (MCM) to protect the subwoofer tops. The cones and "holders" are held in pace with Payless Drugs' version of Blu-Tak. It takes serious force to tip or move the towers.

Obviously I didn't get a whole lot of time to enjoy them, and the proud poppa effect colors

my opinion. I can say that with zero breakin time they made Mick Zaffke (who helped with construction on half a dozen occasions) SHUT UP AND LISTEN for about three hours before heading out to VSAC. He had found your set bright for his tastes and liked these better. However, we were using an old Voice of Music receiver - Class A EL84s operating into tiny, cheap output transformers with 16 ohm taps. The only upgrades to the receiver are some supply capacitance and some Nichicon .1mfd poly bypassing, and the speaker were 16 ga. Radio Shack, well over 25 ft. long to reached the "unused" corners of the living room. I would venture to say that with the combination of transformer limitations, impedance mismatch and capacitance due to the cable length we were lucky to hear any highs at all. Bass didn't go very low but what we had was quick and tight; female voices were right on. Only bass was audible from the sub and tower ports, even with your ear actually at the ports.

Christine (my significant other) didn't care about *any* of the foregoing. When I hooked up the "old" speaks again and put on some music, she said they just wouldn't do after hearing the Whamos... gave me a choice - rearrange everything *now* or put in a switch to use the old speaks with the video setup and the Whamos for music. Said I'd educated her on good sound so I'd have to take the consequences. I guess that's one way to judge success. When I left she was rediscovering our music collection. She keeps FM on all day, even when she's at work, so the Whamos should be fairly well broken in when I get back.

By the way the old speaks were modded Minimus 7s stacked tweet to tweet, with homemade crossovers to those Heil/Tempest cabinets you gave me, wired as subs. I redid the woofer surrounds, but one tweeter didn't work, *(egad, another victim of Doc's junkpile!)* and repairs were unsuccessful, so I found a (hopefully temporary) use for them. The setup was tolerable until the A/B comparison.

Mike Wilcox
Bremerton, WA

*Epilogue - Mike retired from his career in the navy, in the nuclear reactor department. Upon his return from his tour to Japan, he moved off to a new career in Tennessee before I could get over to hear his Whamos. Mike has plans to build a 300B type parafeed amp in the future, and we hope to hear of his continuing adventure*s - *B.*

hey, I missed the meeting again!

After four years I think it is safe to assume that the meeting will be on the first Sunday of the month, and that VALVE magazine has evolved into something far beyond a meeting notice, only vaguely resembling the club newsletters of 1994. If you think you might attend a meeting, pick up the phone and call us around then. We'd love for you to come by! We'll tell you where and what we'll have at the meeting (although you regular attendees know that we do not follow the typical agendas of other clubs and there are always a lot of surprises at any given meeting).

When you consider that the meetings are basically a bonus for VALVE subscribers, and their guests, organized and mainly financed out of my own pocket, and those of a few die hard members (including lunch!) I hope you'll understand that I think it's a small thing to pick up the phone if you're not sure of the meeting date.

OK, next beef - "Why don't I get my December issue until the end of the month?" I have a solution which should make things better for folks who need more order in their lives. Starting next year, VALVE issues will have numbers only, with no reference to a month. Then it's never late, get it?

C'mon guys, there are other publishers in this business who can't even get four issues out in a year, and we get 11 or 12 out every year. Call the other guys and bug them, please.

The next thing - a few folks wrote me to complain about the issue we put out during VSAC, that it was just a big ad. One person thought the solution was obvious, just pay someone to write that issue. But he never sent a check to pay the guy who was supposed to write it.

Folks, we still have a pretty dinky circulation, about 500. Consequently VALVE is largely a labor of love, as was VSAC. Neither supports my family! I'm a lot more interested in hearing from folks who want to contribute than those who want to kibbitz. If you don't like the news, contribute some of your own!.

WRIGHT Sound Company

The **WLA10 line amp** with 4 inputs for those who don't need the phono section. Dubbed by those that have listened, as the best sounding line amp they have ever heard, tube or solid state. All this for $365.00 plus $17.50 shipping and handling in the continental U.S., WA res. please add 8.2% sales tax.

The **WPP100A phono preamp**, the most natural sounding unit on the market today, is available at $529 plus $17.50 shipping and handling in the continental U.S., WA residents please add 8.2% sales tax. The WPP100A has gold RCA connectors, and a new WPS02 power supply with a power switch and plate and filament indicators. The performance is better than the original version, which beat all the competition in listening tests by members of VALVE and other audiophiles who have had the pleasure of reviewing this product.

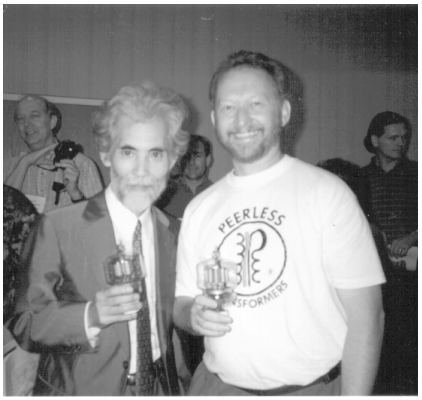
Now available to VALVE members, and those who have tried S.E.X. amps, the **WPL10V complete line amp/ phono stage** component. This basic model has the quality of the WPP100A, with the additions of a selector switch with phono plus three other line inputs and volume controls to make this the center of that great new S.E.Xy sound system. No longer do you need to wait for a great sounding addition to have great S.E.X., and at just $649 U.S. funds plus $17.50 shipping and handling, you can get this fully assembled preamp/line amp delivered to your door in the continental U.S., WA residents add 8.2%. The WPL10V is designed to be a cost effective basic chassis type, constructed with all the great stuff that goes into the WPP100A. We made it especially for you S.E.X. owners and VALVE members who want the most out of your system for the least out of your pocket. I must add that this product will work with almost any power amp you now have or may purchase, so with or without S.E.X. this is a great addition to the WRIGHT line. Stay tuned for future models.

Please send your order and payment to:

WRIGHT Sound Company
3516 So. 262nd, Kent WA 98032-7047
For further information, please leave a message at (253) 859-3592

Do these VSAC pics ever stop?

This month's photos are by Takuji Yamamoto of the Direct Heating group and Mitsuru Uchida of Sun Audio



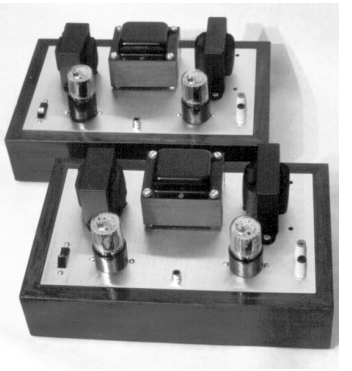
Doc B. and Sakuma san show off the 304TLs presented in appreciation to Sakuma san for his efforts to show us how important capturing the emotion and energy of the music is in how we design our equipment. I suggested these might be useful for his next preamp project....
Photo by Takuji Yamamoto, who put in many long hours preparing for our guest's generous efforts to bring U.S. bottleheads a taste of Japanese audio philosophy.

Here's a shot that helps explain all the comments you hear about the highlight of the show being the people who attended.
From left to right:
Eduardo B.E. de Lima, next, a gentleman who was in the Direct Heating party, and whose name I am ashamed to say I missed, Lynn T. Olson, Takuji Yamamoto, Reid Welch, and Susumu Sakuma.
Photo by Mitsuru Uchida

Queen Eileen in VSAC HQ, somebody else who put in unbelievable long hours, handling all the business aspects of VSAC, taking care of travel worn bottleheads and feeding the troops at our first amp design class.
Photo by Mitsuru Uchida

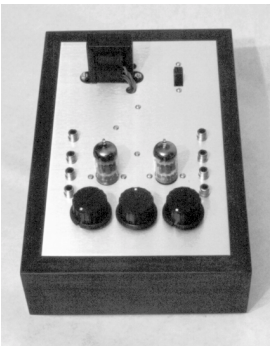
Listening is a sensual experience...

Single Ended eXperimenter's kit



The S.E.X.kit$_{TM}$ brought affordable SE sound to the masses. A great way to discover the pleasures of DIY, foolproof assembly instructions. Uses 6DN7 dual triodes. Basic kit, a pair of monoblocks, sans bases, $399. Optional 5" aluminum fullrange drivers, add $30. Optional wood base kits (pictured here assembled and finished*), $30. MagneQuest TFA-204 upgrade output transformer, $99 each.

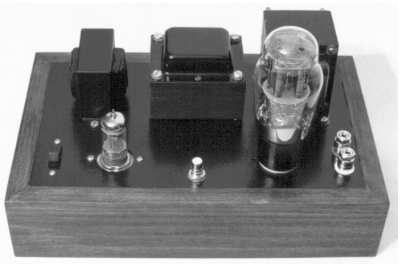
** Kits shown here have been finished to suit the tastes of their builders. Painting and staining is optional.*



Foreplay$_{TM}$ preamp kit

S.E.X. is best when preceded by Foreplay, our new stereo line preamp kit, designed by George Wright. 12AU7 gain stage and direct coupled cathode follower output, dual mono volume controls, three inputs. The perfect match for Afterglow, too. Basic kit, sans base, $99. Shown with optional wood base kit (pictured here assembled and finished*), $15.

Afterglow$_{TM}$ direct coupled SE 2A3 kit



John Tucker brings us this world class design. A 5965 driver with active loading is direct coupled to a 2A3, playing through our exclusive MagneQuest TFA-204 output transformer. Not to be confused with wimpy Loftin-White circuits, this amp has speed, clarity, and midrange that will bring your listening pleasure to a climax. Pair of monoblocks, with base kits, $849. Afterglow retrofits available for S.E.X. kits, call for details. (stock chassis plate is aluminum finish, not black*)

ElectronicTonalities

P.O. Box 2786, Poulsbo, WA 98370 360-697-1936