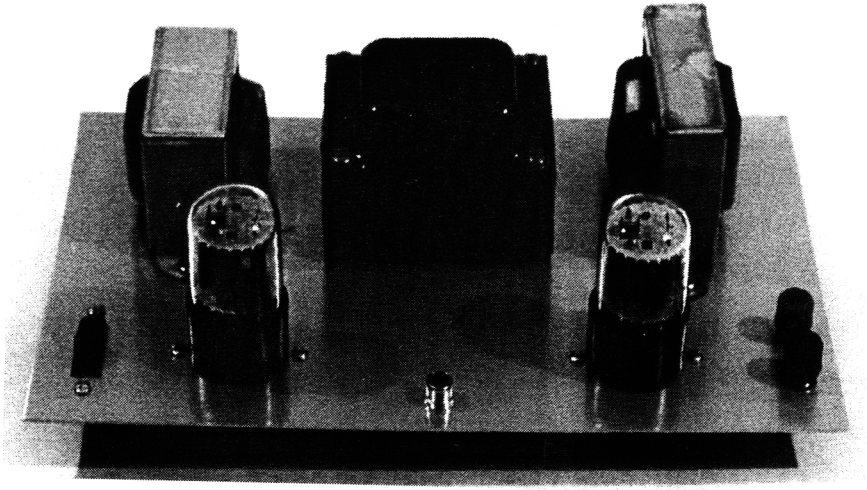
VALVE
PO BOX 2786
Poulsbo, WA 98370

satisfying S.E.X.*



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Issues of **VALVE** encourage eXperimentation with the basic kit, publishing lots of modification ideas, from simple parts upgrades to radical circuit mods, including custom made Magnequest output transformers and 300B conversions.

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We are pleased to announce the availability of the Peerless/ Magnequest TFA-204 Ultimate Pleasure output transformer. These are priced at $99 each, (plus $8 shipping per pair in the continental U.S., WA residents add 8.1% sales tax)

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VALVE

in this issue:

Gary Dahl's interstage coupled 300B amp
building the Lowther Club Medallions
the Exemplar example
S.E.X. with Ultimate Pleasure
lots of letters
stuff we liked this year

Snowmen prefer outdoor concerts

volume 3, number 12 December 1996

VALVE

the monthly magazine
for tube audio eXperimenters

Editor and Publisher
Dan "Dr. Bottlehead" Schmalle
Chief Administrator
Eileen "In Charge" Schmalle
Contributing Editors
David "Full Track" Dintenfass
Doug "Lazarus" Grove
Resident Smart Guy
Paul "Braniac" Joppa
Audio Archivist
Crazy Eric Lenius, the Fisher King, P.E.
Mapmaker
George "Always" Wright

Our mailing address:
VALVE
P.O. Box 2786
Poulsbo, WA 98370
by phone: 360-697-1936
(hours: 9-6 PST, Mon -Sat)
fax: 360-697-3348
e-mail FKQF17A@prodigy.com

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editor's thing

OK, here's the latest experiment. We printed this issue on our new HP laser printer. A slight improvement, eh?

We hope to be able to continue with this quality next year. The printer is really too slow for the number of subscribers we now have (closing in on 300), but we'll stick with it if we can, without going crazy watching those pages slowly creep out of the printer. Whether we can stick with this also depends on how much it costs to produce the mag this way, and we'll have some feel for that by the first issue or two of '97.

In keeping with our goal of ever improving quality I have requested adherence to some new standards for submission of graphics. As we grow and improve, we still maintain the same production staff, yours truly. The more complicated this gets, the less time I have to redo stuff people submit, particularly if we stay monthly. See page 11 for the details.

What's new around here this month? Well, I've got the first pair of Lowther Club of America Medallion kit cabinets sitting in the shop, with all but the last piece of trim and finish on them. See page 4 for the story on how they went together, and how they sound so far, as the killer PM2As break in.

I also got a wonderful call from Mike Lafevre right before Thanksgiving. The Ultimate Pleasure output transformers will be available in quantity sometime in December. All you patient folks can go ahead and order from us here at Electronic Tonalities/VALVE (our new name starting January 1) now, and Mike will drop ship to you direct from Magnequest as the TFA-204s drive off the assembly line.

John Tucker and I hope to complete one of Norman Tracy's X-DAC 3.0 kits soon. John has a completed a few of these DACs and has played a bit with grafting a tube output onto the unit. We may get a chance to hear this puppy at a future meeting.

As I posted in the October issue, the December meeting will be Sunday, December 8. We will hear the 'final' versions of the speaker contest entries. John Carey and I got together and threw a two way tapered pipe project together that sounds pretty damn good. It'll be there Sunday.

The infamous MCM 55-1290 driver now has an ETA of December 5, so we hope to

ship drivers to you folks who are back ordered soon thereafter. The backlog on all this stuff never ceases to amaze me.

I'm refining the Loftin-White conversion of the S.E.X. kit. It now sports a 2A3. When I get a bit less hum, and source good, inexpensive parts for this conversion, we'll have an article about it, and a conversion kit.

As we grow, our meeting room is getting very crowded. Once again I will ask if any folks are interested in helping with the conversion of my garage to a dedicated meeting/listening room, to give us another room to spill into besides the shop. This would allow us one room for the listeners, and one room for the BSers.

Do we have any contractor types with skills and connections, who'd be willing to coordinate such efforts? Please call me if you can help with materials or labor.

It is time to look back through the year and give thanks to those who have contributed .

Thanks to the fine editorial staff, who keep cranking out the hard data for us, and thanks to all of our contributors, who have made '96 our best year yet. The level of quality in the contributions this past year has put us at *the front* of the DIY tube audio movement. Keep up the good work!

Thanks to you guys who bring interesting stuff to the meetings, to keep us all 'dreaming'.

Thanks to our advertisers, who bring us really different, reasonably priced products.

Thanks to Joe Roberts and Charlie Kittleson, who have spread the word about VALVE in their mags and on the net.

Thanks to guys like Tony Glynn, Mike Lafevre, George Wright, John Tucker, Andy Bartha, Norman Tracy and Eric Barbour, who send us truly interesting products to try out.

Thanks to all you guys who have "pulled a few strings" to get us needed equipment. I can't mention your names, but you know who you are.

And thanks to all you guys who decided to chance the S.E.X. kit, build yourself a Superwhamo system, or scratchbuild a Brooklet. I am really stoked to see what kind of mods start to drift in the next few months.

If things continue the way they've been going, '97 is gonna be awesome!

Harmonious Holidays,

Dr. Bottlehead

did you just tune in? here's what's happened so far...

Back Issues

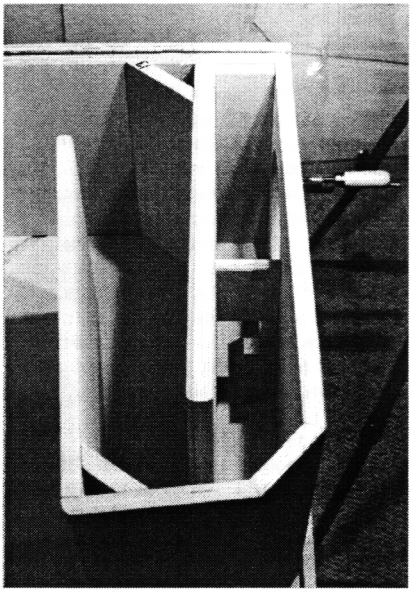
Volume 1 - 1994 issues - $20
a Williamson amp; Dyna Stereo 70 mod bakeoff; converting the Stereo 70 to 6GH8's; a QUAD system; triode input Dyna Mkill; Mkill vertical tasting; smoothing impedance curves; Altec A7; Ampexes Nagras and ribbon mikes; Triophoni, a 6CK4 amp; audio at the 1939 World's Fair; 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.

building the Lowther Medallion

by Dr. Bottlehead



Looking at the beefy construction of the throat panels - note the extra thick baffle and bracing behind the driver hole

About three weeks ago this semi pulls up in front of my house. "Cool," I says, "the Medallion kit cabinets are here."

I innocently go outside, figuring to see a flat cardboard carton in the back of the truck. The driver points to a particle board crate the size of a bookcase, with built in skids for slipping a forklift under. This monster crate is better built than my speaker cabinets.

The bill of lading says 200 lbs.

"You gotta handtruck?", asks the driver....

We wrestled the coffin off the back of the truck and made it as far as the garage, where it sat until the meeting that Sunday.

The gang arrived Sunday morning and I grabbed three of the healthiest looking ones (OK, least sickly ones) and we wrestled the treasure chest down the steps and into the shop.

Opening it was like early Xmas. Inside was $1100 worth of beautifully cut stacks of birch veneered Apple-Ply, all mitered, let in, dadoed, and ready to glue.

Everything was there except for an instruction manual, which it was my responsibility to produce, and drivers.

Tony Glynn had driven up from Or-y-gun that morning to see his new babies - he just couldn't stay away. In his trunk were two spanking new $650 a piece PM2As. Ooh, Baby!

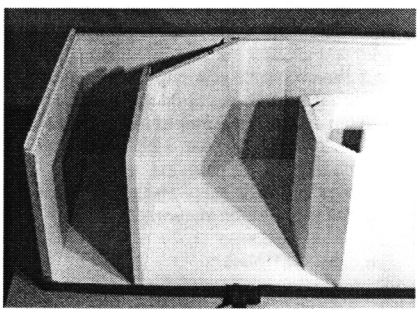
The meeting is always a complete blur to me. Soon after all the oohing and ahhing of the kit parts at the meeting Sunday, it was Monday, time to get busy.

I had a set of assembly drawings that accompany the blueprints for this cabinet, which Tony sells for $60. The blueprints and assembly plans seem to exist to convince one that the difficult angle cuts and dadoes (critical to the rigidity and hence, sound quality of the cabinet) are best left to cabinet makers who know how to do this stuff. I for one was glad somebody else did that part of the process.

(I designed and built one horn enclosure about eight years ago - sixty pieces - never had enough energy to build the other channel!)

Looking through the neatly packed parts a little more carefully than the day before revealed some pretty slick details:

- Prebuilt, precovered grills, cut to precisely fit the drivers and bring the front of the cabinet flush with the driver frame.
- Beautifully milled hardwood trim for the front edges of the cabinet.
- A terminal cup with good quality gold plated binding posts, prewired with no less than Jena Labs wire
- Chamfered holes for the driver and terminal cup, and access holes for filling the internal voids with mass loading material and routing the speaker wires from the back panel through the inner baffles to the driver. The driver



The main parts of the mouth glued in place

The final buttoning up. The driver was in and running before the clamps were off, natch.

fits so perfectly tight you don't even need a mounting gasket.

- Roseannes (threaded inserts) for the driver mounting Allen bolts (wrench included) and optional speaker spikes are already installed.

Taking my time with the first cabinet, it went together over about three days. During this assembly I figured out the simplest way to do things, and wrote a procedure for assembly of the second cabinet some photos from which you see here.

The second cabinet went together over two days, most of which was glue drying time. Actual hands on assembly time was about three hours. No kidding. Aside from a bit of sanding on the edges of a couple snug pieces, the panels just slip into the dadoes perfectly. You need a couple of band clamps and and a couple of 24" bar clamps, some carpenter's glue, a palm sander, and finishing materials. The full set of clamps set me back about $50.

OK, so the thing goes together easy, B. How does it sound?

Well folks, in spite of a lot of coverage of the Lowthers in VALVE over the past year or so, I really haven't been knocked out by the PM6 and PM7 series drivers I've heard. Oh, they're very efficient, very mellow, the Alnico versions are the kind of drivers you can run in the background all day (although some new, 'unbroken in' PM6Cs in some tapered pipe enclosures gave me a bit of a headache after a few hours). But they didn't ever make me look up and go "Hey, wait a minute."

Now let's talk about serious Lowthers. These PM2As barked at 2kHz right out of the box, just like all Lowthers, but after a few days of break in this reduced dramatically, and the highs of these drivers made the highs of the Whamos sound kind of edgy. I mean, these PM2As are smoooooth on top. *Now* I understand why people get so excited about these

(Continued on page 6)

(Continued from page 5)

drivers. A whole different league in the top end than 6s and 7s. Tony says the PM5s do this even better.

Yeah, B. but what about bass, I hear Lowthers ain't got no bass.

Well, they don't have much below about 60 Hz so far, but down to there they are surprisingly balanced, with no major suckouts or humps in the response.

I shouldn't even be talking about the bass until these puppies have a few more months on them. Every Lowther owner I talk to says they take several months to reach their peak smoothness and bass extension. In the future I may reduce to throat chamber volume just a bit, to optimize the cabinet for the PM2As. The stock design is optimized for PM7As, and slightly better PM2A upper bass response can be had with a little eXperimental back chamber reduction.

Need something below 60Hz? Well that crate the kit comes in is about 7 cubic feet, and would turn into a dandy subwoofer/ coffee table with the right woofers.

When Tony said he was sending these up, he wanted confirmation that they would be installed in the main listening room, and that the Whamos would most likely go up to the second listening room (the living room).

Well, before I got the Medallions I must admit I was leery of losing my cherished reference speaks from the listening room.

But after a week of listening, I find myself willing to go to the Lowthers for all but the giant symphony/ heavy organ stuff. Piano is marvelous, and small jazz groups are really vibrant and present without being harsh.

These speaks are a near perfect counterpoint to the Whamos, excelling in some different areas than the Whamos without going so far away in flavor as to be hard to adjust to.

God, did I mention efficient? S.E.X. will blow your ears off with these speaks. Don't bother hooking up some hummy amp you can get away with on your Thiels or Magnepans. It'll drive you crazy on these PM2s.

You are reminded that at live concerts the music can go happily along at normal levels, and then one note can really punch at your eardrums. Makes you watch that volume control real close.

If you want a great sounding, beautiful, cost effective, easy to assemble cabinet for PM6As, PM7As, PM2As or PM5As, these are a must hear.

ultimate pleasure is here

Mike Lafevre called a few days ago to tell me the first run of 20 Peerless/Magnequest TFA-204 output transformers are ready, with another 100 due out over the next month or two. The first run is already promised to the first of you who gave me an order in spite of the delays. See the back page for order info.

The info sheet on the TFA-204 reads as follows:

"The TFA-204 was originally designed on March 14, 1946 far Altec service as a direct replacement for the famed WE A171A transformer.

The TFA-204 is designed for use with the WE 300B valve. The primary impedance of the transformer is 3000 ohms. The secondary impedances are 3.6, 9 and 16 ohms. This transformer will deliver 8 watts of audio power into a 9 ohm load. Maximum plate current for this unit is 60 mA DC. This figure should not be exceeded because the air gap has been optimized for this amount. The maximum plate voltage should not exceed 425 WVDC. Each TFA-204 has been successfully hipotted at 1850 volts RMS."

These little jewels are about 2/3 the size of the DS-025 series, and they fit beautifully on the S.E.X. chassis, improving high end response, power output and image width. It also makes the kit a very versatile platform for 6B4/2A3/300B eXperimentation.

The current chassis plate has mounting holes for the TFA-204. To mount the TFA-204 on the S.E.X. chassis:

- Disconnect and remove the original OPT:
- Shift the terminal strips that were attached to the original trans mounting screws over to the set of holes nearest the power trans (you may need to extend a lead on some of components to move these terminals)
- Remove the 2.2K or 1.2K feedback resistor and the .047 mfd cap from term. 11
- Mount the TFA-204, attaching the relocated terminal strips with the new mounting screws
- The wires feed through the original tran's mounting holes. The red wire goes to terminal 14, the blue to terminal A2, the black to terminal P1 (black binding post)
- Choose your output impedance, and attach the proper wire to terminal P2 (red binding post) - brown for 4 ohms, orange for 8 ohms, yellow for 16 ohms.
- You can add a couple dB of feedback with the addition of a 4400Ω resistor from the 16Ω tap to terminal 11, for 4.5W out.

the Exemplar example

How cool is life here in Poulsbo. Yeah, Paul's - beau, where we get all the "good shit" under one roof. After this past year's phenomenal growth (we will have quintupled our membership by year's end) we have truly become a hot spot in the world of what Lynn Olson at Positive Feedback refers to as "super fi".

Here's one example of the kind of dreamstuff that happens around here these days:

A few months back I get a couple of "rumor calls", a couple of days apart, that John Tucker of Triode Support Systems, the home of the Exemplar, that high tech Altec driven two way horn system shown off in SP #9, is moving up to the Puget Sound area from Texas.

Yeah, yeah, sure. I'll believe it when I see it.

A few days later the phone rings, and it's John Tucker. One of the nicest guys I've talked to in ages, with that "take your shoes off and set a spell" drawl that makes you feel like his best bud.

John says he's just moved up, and would like to get together. Well, says I, Doug and I were planning on going over to insult the Pacific-northwest Audio Society next Wednesday, would you like to get together there?

He says sure, I'll be easy to spot.

We get to the meeting, and a few minutes into it a guy the size of a statue and bald as cue ball strides in and stands at the sidelines. Must be John....

We step outside and through a braid of several conversations with interested bystanders we establish that John has left most of his not inconsiderable audio possessions in Texas while he looks for a new house with a warehouse next to it.

He brought only his family, some clothes, a Rat Shit CD3400, and, oh yeah, some speakers.

Well John and family are staying in a small apartment, and these speaks are kinda big, see, and he asks, would I be interested in storing a pair of Exemplars at the shop for a month or so?

Super fi, hell man, this is above super, this is Fly-fi.

John shows up a few days later with a mini van absolutely crammed with four big cabinets and some ancillary stuff.

We wrestle all this into the basement, and hook it up, two bass bins, two horn loaded tweets and two BIG external crossovers on sand filled stands.

We hook the system up to the speaks and fire it up.

Damn, these speaks are playing loud! John says they're 103 dB.

Well those of you with the S.E.X./Whamo combination know that this combination is a wee bit underpowered. Let me say that S.E.X. with the Exemplars will blow the roof off the sucka for anybody short of a conductor.

(I have recently found that conductors are totally spoiled by their vantage point, and because of this are great resources for an opinion on realistic "ground zero" type volume levels)

The first impression is that these things are WAY different than an A7. The honk and lack of focus in the A7s have been very nicely corrected. In fact, the imaging is really amazing. You can sit right up close and they focus very well, whereas an A7 setup doesn't start throwing a convincing image for me until I'm at a listening distance of about 30 ft.

The other very striking impression is how well these speaks demonstrate the incredibly low distortion a properly done horn system can put out. They are very clean and smooth in their presentation.

Bass is quite a bit better than the A7 too. The article in SP claims 40 Hz on the bottom. I suspect that might be a wee bit exaggerated, but 50 Hz is there for sure, and it's quite smooth down there.

My favorite stuff to play on these speaks was loud, dirty electric blues. They should make it a law that all blues clubs use Exemplars for the house PA. It would be a much more beautiful world.

Don't assume that these speaks can't do classical just because I said I liked blues on them. They can most certainly give a masterful presentation of the scale of the orchestra, albeit sans the last little bit of "air". The smoothness of strings alone would be reason enough to want these speaks.

If I have to give one gripe to balance this out all this flowery commentary, I would complain about the slight hangover produced in the midrange by the 15"woofer. This is an inherent Altec thing, 604s do the same thing. Now most people adore 604s, so I guess it's a pretty small gripe, huh?

I have broken a bit with my new attitude of dealing fairly strictly with with DIY type stuff in VALVE to bring you these observations. That fact combined with my positive impressions of these speaks, in spite of my bias against horns, should tell you that these speaks are a significant new step in super-fi evolution. If you have the geld and the room, check out the Exemplars. - Dr. B.

ABA RCDs

Been meaning to find space to talk about the Andy Bartha's resonance control devices. Andy sent me a selection of three different sizes, to use under various pieces of front end gear and speakers.
He suggested using these lead and silicone pucks under the Whamo towers in place of the spikes on home brew mpingo blocks I had been using, and under the CD player and on top of power transformers.
Of these locations, I would say that I noticed a slight improvement in upper bass definition with the RCDs under the speakers towers, and no particular improvement in the CD player, because it already had a big, finned resonance damper sitting on top of it. But that was not where these dampers shone. Andy gave me a couple of the largest size dampers. One got a hole put in the bottom center of it, just the right size to fit the spindle of my Denon DP-6000.
The improvement in bass definition with the damper on a record is so obvious that you can use it as a way to demonstrate the art of tweaking to a rank novice. Play a little bassy music without it, then play the same passage with the damper on.
"Wow", they say. Every time.
A word of caution.
This damper is heavy. I do not know the long term effects on the turntable thrust bearing from using one of these devices. They are heavy, though not heavy enough to bottom the suspension on a new Thorens, a table notorious for a squishy, springy suspension. Also, the base of the damper is broad enough that the headshell may occasionally collide with it when running in the inner groove at the end of an LP, if it is of a smaller than normal diameter.
Nope, neither of these things bothers me one bit. I use the damper on every LP I play now.

VAIC tubes are back

Ron Welborne sent us a press release announcing his newfound position as sole US distributor of VAIC tubes.
He will be selling matched pairs of the VV300B, a blue glass VV300B, the VV30B and the big boy VV52B.
Welborne Labs
PO Box 260198
Littleton, CO 80126, USA
303-470-6585 fax 303-791-5783
e-mail labs@ix.netcom.com

interstage coupled 300B amp

By Gary Dahl

Last month I mentioned that we'd get more info on the 300B amp we used to test the second harmonic cancellation concept. Here's the poop - Dave B.

The use of interstage transformer (IT) coupling to drive directly-heated triodes (DHTs) has become increasingly popular in recent months. I believe the reasons for IT coupling go beyond mere fashionability. Of the several SE 300B circuits I have tried, the IT-coupled ones have provided the most beautiful-sounding results. This is one case where there are straightforward electrical explanations for the sonic results.

My venture into IT coupling was actually the indirect result of my efforts to understand the tradeoffs involved in the selection of plate and grid resistor values for an r/c coupled driver stage. I had been working on Herb Reichert's "Flesh and Blood" amp (Sound Practices, Issue __), and noticed that the value of the plate load resistor in the construction article was different than it was on the schematic he had given me previously. In order to learn the "best" value for the plate resistor, I opened the Radiotron Designer's Handbook and began to study.

I found that the choice of plate resistor value is indeed a compromise. If the driver tube works into a high impedance, distortion is at a minimum. Since the tube's load consists of the parallel combination of the plate resistor and the next stage's grid resistor, using a high value of resistance at the plate would seem to be a good idea, right? Not so fast--since all of the direct current flowing through the tube also must pass through the plate resistor, a higher resistance value results in greater voltage drop. This places a limit on the voltage across the tube, which in turn limits the available voltage output of the driver stage. We need lots of voltage swing to drive a DHT, so this poses a problem.

It would really help, then, to have a plate resistor with high ac impedance but low dc resistance. This is something a simple resistor cannot provide, but the primary of an interstage transformer can. An IT with little or no load on its secondary will reflect a very high impedance to its primary. Providing the driver tube with such a high impedance load results in a nearly-horizontal loadline, which represents minimum distortion and maximum voltage swing. The relatively low dc resistance of the primary drops substantially less voltage than a typical plate resistor.

Turning our attention to the needs of the output tube, selection of a grid resistor also consists of choosing the best compromise among conflicting requirements. As in the previous case, high impedance is desirable here because the grid resistor is part of the driver tube's load. Yet it is also good to have low dc resistance, because this minimizes the effect of grid current on the stability of the bias voltage. The secondary of an IT fulfills both of these criteria, and we even get to throw away the coupling cap!

There is no free lunch, however. Unless the IT is of very high quality, disadvantages appear that may outweigh the advantages described above. In a single-ended amplifier, dispensing with coupling caps means we will have unbalanced dc flowing through the primary. Achieving wide bandwidth in a transformer becomes more difficult as dc through the primary is increased. Furthermore, most driver tubes have higher plate resistance than typical output tubes, thus requiring a higher-impedance primary. As any transformer maker will tell you, wide bandwidth becomes harder to accomplish as the primary impedance is increased.

I decided to try a pair of Tango NC-18 interstage transformers, which I chose because of their versatility and their suitability for my favorite driver tubes. The NC-18 features dual primaries and dual secondaries, which makes several combinations of impedances and ratios available. Furthermore, they can be used in any combination of SE and PP. In their standard configuration (primaries in series and secondaries in series), the nominal impedance ratio is 8k:18k, which represents a voltage (step-up) ratio of 1:1.5. (The primaries may be paralleled if a 2k primary impedance is desired. This would provide a 1:3 step-up ratio. Connecting both primaries and secondaries in parallel retains the original 1:1.5 ratio but with a 2k primary impedance.)

Matching a driver tube to an interstage pri-

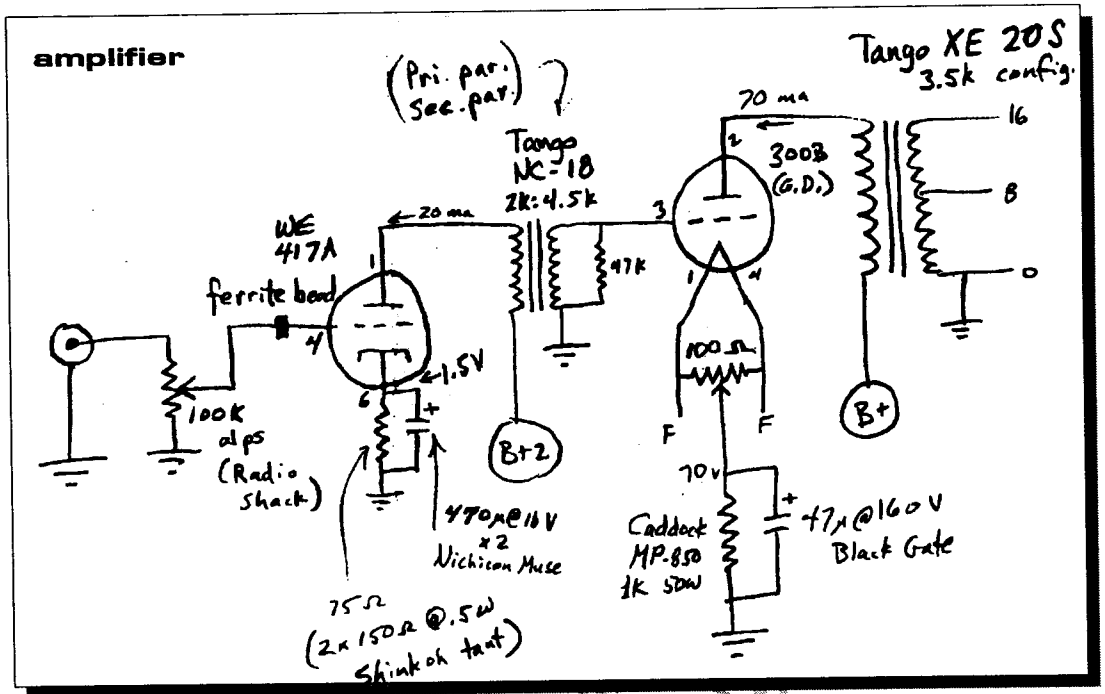
(Continued on page 12)

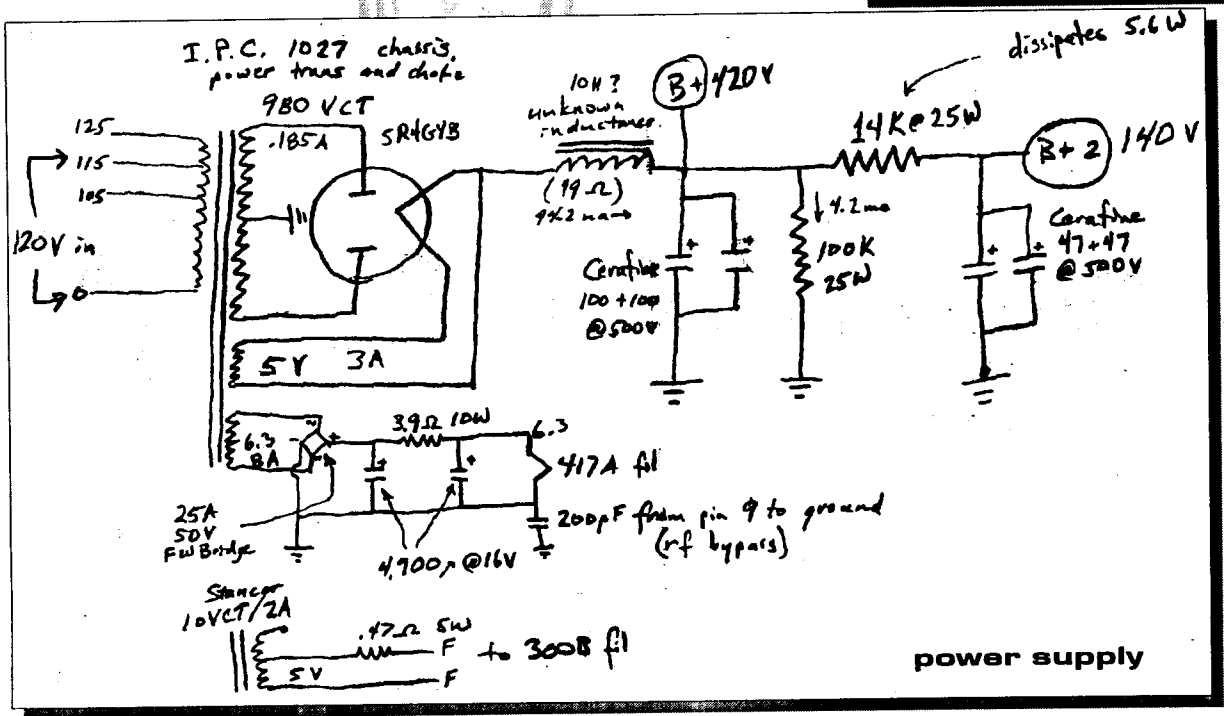
Gary Dahl's interstage coupled 300B amp

this note from Gary accompanies these drawings:
"Dan - You might mention that we fed the interstage transformer directly from a tube regulated supply, and that you used 160V, rather than 140V *(for the harmonic distorion measurements).* I don't know what voltage would appear at the cathode of the 417A with 160V, or how many ma flow,. I was trying to keep current flow low to maximize low frequency extension, but still get enough voltage swing (for the grid of he 300B)."

We used this supply because Gary was still fine tuning the voltage divider in the power supply which provides the plate voltage for the 417A. This section of the amp was disconnected when I received it, and we decided a separate supply would be the most expeditious way to get results. At the time 160V was as low as I could get the Kepco supply to run.

Do not be concerned by the "I.P.C. chassis, power supply and choke" notation. These were available and convenient for building this amp. Other chassis, power transformers and chokes of a similar rating may be substituted. Shoot for a B+ supply of 420V and at least 100 mA, per channel. A 5V CT filament transformer may be substituted for the 10V CT unit described in the schematic. - Doc B.





hey B, I can't read those drawings

I would like to publicly apologize to Gary for printing scans of the schematic drawings he promptly sent when I asked. I had told him that I would use them to create a CAD drawing. Unfortunately this was not possible, due to some software incompatibility. Hopefully we will be able to do this within the restrictions of our new publishing process (and budget) starting next year. However, I find very little time available to redraw artwork these days. (any volunteers?)

And so I would like to set some rough standards for future submissions of artwork:

The best possible format is a Windows Meta Format file, as used in the Visio drawing program. This was used to produce the beautiful drawings in Dave Dintenfass' articles. We can supply a symbol library.

Please mail your hand drawn graphs and artwork flat, and please do them in ink. Faxed submissions suffer a great loss of detail, and pencil is almost impossible to reproduce.

I currently use a hand scanner, and would appreciate it if you could keep the drawings small enough (about 4") in one dimension to hand scan easily.

Please keep lettering large enough to read when reduced 25%

By the way, I understand that it is still legal in all 50 states to use a ruler to draw straight lines... Doc B.

(Continued from page 9)

mary is fairly simple. A suitable tube will have an Rp that matches the primary impedance as closely as possible. This minimizes the transformer's HF peak (which results naturally from the series resonant circuit caused by the the combination of leakage reactance, shunt capacitance, and plate and winding resistances). A suitable tube should also be able to produce the desired amount of voltage swing without requiring more current flow than the primary can handle. The NC-18's primaries are rated for a maximum of 15 ma in series (30 ma in parallel), though bandwidth is better at about 10 ma (20 ma in parallel), especially in the bass.

To determine the gain of an IT coupled stage, simply multiply the amplification factor (mu) of the tube by the voltage ratio of the transformer. With a high-quality IT, losses will be slight enough that the overall gain of the stage will be very close to this figure. My first experiment was a variation on Reichert's "Flesh and Blood" amp. I replaced the r/c network after the second half of the 6SN7 with the NC-18. I wired the primaries in series, in order to match their impedance to the Rp of the driver, but wired the secondaries in parallel. This resulted in a step-down ratio of 1:0.75 creating a driver stage with about the same amount of gain as the original r/c coupled one. I also reduced the supply voltage to the stage, since there was no longer a significant voltage drop through a plate resistor. I adjusted the cathode resistor value to bring the current down to about 8 ma.

After these changes, music had a greater sense of clarity and grainlessness. I felt that in addition to the flattened load line of the driver and the increased stability of the operating conditions for the output tube, the elimination of a coupling cap was a big part of the reason for the improvement. Next I became interested in trying to eliminate the first stage (and its coupling cap) entirely. This led me to the WE417A.

Fortunately my NC18s were already well-suited to the task. Reconfiguring the primaries to their parallel configuration provided a load only slightly higher than the 417A's plate resistance, theoretically creating a slight HF peak (which can be tuned out with a load resistor across the secondary). I decided to run the 417A's on 20 ma, so I selected a B+ of 140 VDC and a cathode resistor value of 75 ohms. Actually I used two 150 ohm resistors in parallel, each with a 470 uF bypass cap.

To flatten out the HF peak, I added a 47k load resistor across the IT secondary. This makes the load line a bit less horizontal, resulting in slightly greater distortion and reducing the usable voltage swing, but it also reduces the fluctuation of the load that the driver tube works into. As a DHT is driven toward its Class A maximum, grid current becomes significant. The grid-to-ground impedance drops from its original nearly-infinite value. This change of impedance is reflected into the IT primary, which causes unwanted interaction with the driver tube. Placing the 47k resistor across the secondary reflects a somewhat lower impedance to the primary, but operating conditions remain comparatively more stable until grid current becomes appreciable. Judicious use of this principle makes it possible to drive the amp a little further into Class A2 with satisfactory sonics.

I predicted the gain of the driver stage by multiplying the mu of the 417A at this operating point (about 41) by the step up ratio of the NC18 (1.5). With slight losses, I expected gain of about 60. An input of 1.6 volts rms would drive the 300B to its maximum in Class A; it should be possible to go a bit into Class A2 for a little headroom.

Unfortunately, I couldn't do much of any critical listening to the results, because I had gotten rid of most of my high-sensitivity speakers in anticipation of the arrival of my Exemplars (any day now...!) One can only have so many big speakers in the house at one time, after all. But my initial listening impressions were very promising.

Meanwhile, an internet dialogue had developed on the issue of harmonic cancellation. Reid Welch, the author of the Glass Audio article on the topic, was participating in this discussion. We were wondering whether harmonic cancellation would result in a proportionally greater presence of upper-order harmonics. We were also trying to answer once and for all which way of hooking up an interstage tranny creates an inversion of the signal. Doc Bottlehead volunteered to make objective distortion measurements. Since I wasn't using my amps at the time, I sent 'em on over.

I came by Dan's shop at the end of October to reclaim my amps, and was treated to a listening session with the Superwhamodynes, the up-to-the-minute S.E.X. amps (complete with Ultimate Pleasure) demonstrated with and without feedback, and my IT-coupled 300B amps. Actually, everything sounded great. The S.E.X. amps with feedback produced the best deep bass performance, but the mids and highs were better without feedback. On the other hand, the S.E.X. amps couldn't play as loudly without feedback either, so I guess Dan's idea of switchable feedback was a good one. My amps had less bass control and extension than the S.E.X. amps with feedback, but I liked the richness of the IT/300B sound best of all throughout the remainder of the frequency range. But keep in mind it's the proud papa talking.

Actually the 300B amps were at a further disadvantage due to the impedance mismatch of the speakers and the output transformer. Connecting the 4-ohm Superwhamodynes to the 8-ohm taps on the Tango XE-20S outputs provided the 300B's with a load of only 1.75k, certainly not making the best use of either the tube or the transformer. I would have liked to hear my amps with FS-030's or Ultimate Pleasure trannies, or with 8-ohm speakers. When the Exemplars arrive I will have my chance!

I also want to try this circuit with 2A3's and 45's, especially since they are reputed to make a great combination with my Tango outputs. I will certainly report on my results.

Gary B. Dahl
E-mail: gdahl@televar.com

I gotta agree with Gary. That IT amp of his outsmoothed the S.E.X. amp, and the S.E.X. amp had tighter deep bass.
I'm inclined to chalk the smoothness in the mids and high mainly up to the lack of coupling caps in the IT amp.
Recent experiments with a direct coupled Shishido/Loftin-White style circuit on the S.E.X. chassis has shown a marked improvement in mid and high smoothness and speed. I also agree with Gary about the superior deep bass of the S.E..X. amp. Chalk that up to the fact that the little Magnequest TFA-204 even in zero feed back mode, has tighter, more defined bass than the Tango XE-20-S.
Hopefully we will get a chance to transplant a pair of Magnequests into these amps at some point. Should be an interesting comparison. B.

letters

more interstage poop

le 24 octobre 1996

Dan,
To complete Dave Dintenfass' sources for interstage transformers (VALVE Oct 96, p 15-16) :
There is another UK manufacturer-
SJS Electroacoustics
Ben-Dor
Lumb Carr Rd.
Holcombe, Bury
Lancs, BL8 4NN
UK

Tel/Fax +44 1706.823025
e-mail sjs@audiophile.com
http://www.netforward.com/audiophile/?sjs

They offer five interstage coupling transformer types, and four line preamp output transformer types. Finished chrome plated, fully shrouded.

Best regards,

Marc Veyer

IT distortion, 46 specs and current sources

Hi,

Most interesting: reversing the driver transformer does seem to affect all harmonics across the board, not just odd or even. But which connection is better, depends on the power output. To do a thorough job, you'll probably have to measure the two stages separately as well as the total distortion, at several power levels, but I think the task would be easier if the amplifier weren't so good! Also the results would be easier to interpret if you set the power levels equal for the normal and reversed connections. And if you gave the second harmonic figures in dB instead of percent. I'm enclosing graphs I made of your figures, a little easier to understand than the bare numbers. *(we'll try to include this graph in a future issue)*

I don't know why anybody would want to use 46 tubes but here are the graphs from

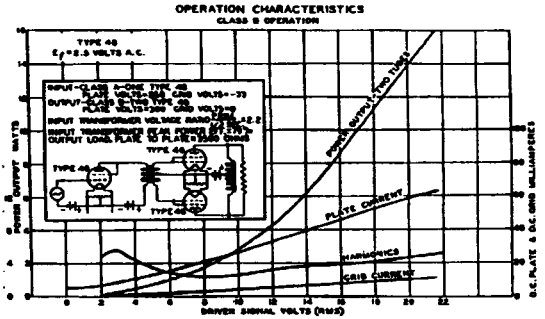
(Continued on page 14)

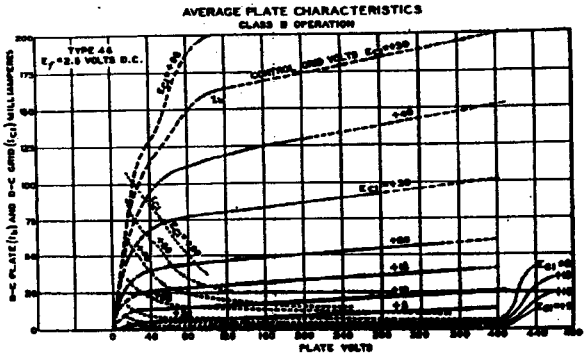
(Continued from page 13)

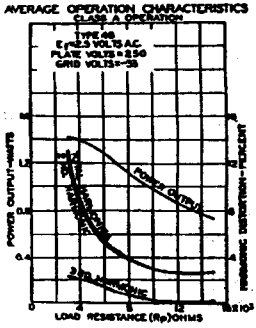
the 1933 RC-11 tube manual (by the way the series began with R-10; before that there were individual bulletins). I have a 1932 Atwater Kent 812 using 46s in class B and it's not what I'd call high fidelity. Chacun a son gout. In less than a year 46s (and class B) were history.

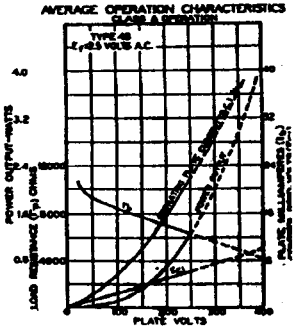
Forget the Joenet. It's a current source whether it supplies positive or negative current. haven't those guys got anything better to pick nits from? And there's nothing "backward" about positive current flow. It's only a convention (the electrons don't "flow" anyway!) and if it ain't broke, don't fix it. Don't be like Gary Galo who spends half a book review jawing about an author's choice of conventions if he commits the unpardonable sin of using standard positive current flow. it's no harder to learn one way than the other, and there are far more important things to worry about.

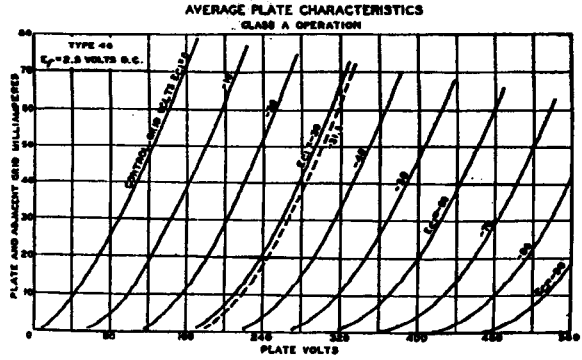
Alan Douglas











collecting signatures

Dear Dr. Bottlehead,

The packet of Volume 3 issues came Saturday; in fact while I was at the Bay Area Audio Group's meeting, where I had taken my Lowther PM7As in Voight tuned/tapered pipes, and Barbour 811-10 amps I'd just finished building on my old MkIII chassis (I used the original transformers and restacked the outputs so they're airgapped).

Your newsletter made for *very* enjoyable reading on a quiet Sunday - I use the

meeting date as a deadline for finishing the amps after futzing with them for a couple of months, and of course I finally finished with a big scramble on Saturday morning, but they look good and sound good (except for some filament hum).

The meeting focused on single driver crossoverless speakers - we had a controlled, repeated, level adjusted set up with about 3-1/2 minutes of various musical samples (after 15 seconds of pink noise for level setting) and an assortment of perhaps two dozen drivers. the question was "Is there a single driver sound?", as there is a single ended signature sound - and there seems to be.

When I first got into this end of audio it was the result of hearing an all Audio Note system featuring the Ongaku - haven't been the same since, my life is a mess - Sound Practices began about the same time, and I built the #91 in issue 1. I remember SE sound very well from the 50's. I just didn't know what it was, and in those days just a few years ago didn't know what comprised the SE signature. Now I realize the competent SE amps share a lot, and the compulsive anal fretting and hand wringing about the best caps, transformers, tubes, etc. is unimportant - as you pointed out in your mesh plate tube comments.

It's a matter of figuring out what the real signature or essence is: such as what is important about an F. If you don't know English how would you copy it? is this right:

or this:

F

What makes them the same and what parts don't matter?

Enough of this crap - you guys are on to really cool stuff, exciting stuff, and please send me your first two volumes.

Thanks, Steve Crocker

absolutely astounding improvements

Dan,

I just tried some mods that, in combination, were absolutely astounding!!! I don't know what you may already be doing along these lines, but thought you might be interested in these.

1) George Wright suggested a Zobel across speaker terminals

0.1 mfd 47Ω, 5 or 10W

This produced absolute magic in my system. Thank you George. By the way, his preamp is amazing.

2) Isolation transformer, with 1.0 mfd across the output, for the CD player. Noticeably cleaned everything up (I use Corcom two stage line filters as well)

3) 10 mfd 330V or 370V motor start, oil filled caps across the AC to everything. Check for orientation by reading the lowest leakage to ground from the case, and then ground the case when in use, to earth ground. Allied carries these for $5 or $6. They seem to vary a lot from unit to unit, so get a few and use the one with the lowest readings.

All three mods together produced the proverbial night and day improvement.

Gordon Burkhart-Schultz

Gordon and Andy Bartha have both called recently to rave about the improvement to their speaks made by replacing the tweeter crossover caps with Black Gate AC caps. These come in rather limited values, the lowest value Michael Percy carries is 6.8 mfd, but Andy suggests that they will still sound better than anything else, even if strung in series to get lower capacitance values. Better than what? Well, as I recall, Andy mentioned Hovland, Axon tin foil, oil caps, and like that.

By the way, while saving my pennies for some Black Gates (they start around $18), I put some NOS 6 mfd 2 kV oil caps , which I had picked up for the A2 Brute' project, into the Whamo crossovers, replacing the 5 mfd Solen/Vitamin Q composites I had scabbed together in my last flurry of improvements. This was stimulated by the noticeably better mid treble smoothness I heard in the new Lowthers, which were making the Whamos sound a little edgy. The added smoothness of these caps allows the lower "closer to the target" crossover point, which in theory, requires a 6.8 mfd cap. The big oiler may not be perfect, as the attack of notes may be softened a bit, but I like the smoothness and lack of sibilance, and as an added benefit, the lower crossover point seems to have brought the midrange up a bit, and smoothed the impedance curve, a good thing.

What do I do now about A2 Brute'? Believe it or not, Jim Dowdy found me a pair of 100 mfd 4 kV oilers that are only slightly larger (and a lot heavier) than the 16 mfds 4.5 kV caps Dave Slagle sent me. Thanks guys. The Brute should kick butt. I'm in oil cap heaven.

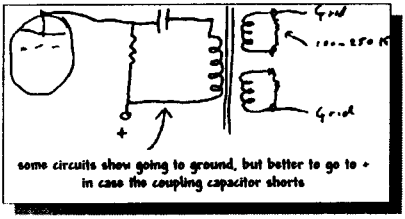
Doc B.

(Continued on page 16)

interstage push-pull

Dear Dan,

Noticed quite a bit of interest in transformer driving of PP output stages and I thought I would pass along a few comments.
In the late 1930 time period Thordarson Transformer Co. put out a set of transformers they called their 20-20 line, for 20 to 20 KC frequency response. They were in heavy cast housings with a single hole mounting so they could be rotated to reduce hum pick up, and arranged so that the leads could come out of the top or the bottom. They were the 9000 series, and for that day they were very good. Remember that in the late 1930 time period the sources of music were broadcast stations, and 78 RPM records played with Astatic crystal pickups. The speaker field had several good sources, but typical was a Jensen one with a 12" speaker in bass reflex cabinet and a small speaker built in to the front of the 12" one for high frequency response. In fact it was not bad sounding.
The output of the Thordarson recommended amplifier was a pair of 2A3 tubes class A. They supplied a kit with the drilled and painted chassis and the transformers. The input to the 2A3 stage was a single end to push pull grids transformer, and it was not bad. The recommended circuit showed the primary of the transformer isolated by a capacitor from the DC with a resistor load for the type 76 driver stage, or one could obtain a high inductance choke in the same type of housing for the plate load of the driver. With careful selection of the coupling capacitor and the plate load resistor, and the use of a small resistor to load the secondary, one could get very smooth response. The two output tubes had separate bias supply pots and a switchable meter to read the individual plate current and the sum of the two. In general a good design, and good trans.
I have one of the driver transformers and one of these days will set it up and make some measurements. I had one of the output transformers, but sold it to a guy several years ago.
Best regards, Fred Suffield, P.E.



some circuits show going to ground, but better to go to + in case the coupling capacitor shorts

another satisfied customer

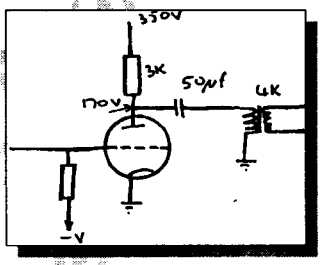
Dear Dan,

Diana Krall's *All For You* (a dedication to the Nat "King" Cole Trio), in a Marantz CD63SE, through S.E.X. amps and out Superwhamodynes. I close my eyes and I can feel her in front of me. It's a match made in heaven, once they're on I can't turn them off.
Now I can really enjoy music. Thank you...
Carlos Hernandez N. Hollywood , CA

RC coupled output

Dear Doc,

I have recently built a single ended 2A3 amplifier using this output arrangement:



I saw the resistor load and capacitor coupling design in February 1996's *Popular Electronics* "Build a single ended hi-fi amplifier", by Larry Lisle. My brother John suggested a PA line transformer might work in place of the half of a push pull transformer used in the article. So I tried an $11 Aus (about $7-8 US) line transformer and it worked. Well, when I say it worked, music comes out and it seems to be full frequency range. I can't comment on the sound quality, as I haven't yet built speakers that are efficient enough to use.
If the amp works half way reasonably it should provide a 3.5W DHT amp for the destitute (I'm interested in silk purses and sow's ears).
I'm using a preamp (6922 SRPP) so I don't need a lot of gain in the voltage amplifier stage. This allowed me to use a 6SN7 common cathode as the input/driver in the prototype. I think that with, say, a 12AX7 mu follower instead, there would be enough gain to run the amp directly from low output sources and eXperiment with feedback. I don't know if anyone has tried this before, however if the amp works well, would you be interested in an article?
Robert D'Arcy Rapid Creek, NT, Australia

Hell yes! - Doc B.

Introducing Brooklyn. Push-pull transformers that sound single-ended.

Recent developments have led us to an even better sound! If you've been waiting to try a Brooklyn transformer, wait no longer. This month we are incorporating improvements in the core construction that give even better bass response, making Brooklyn transformers the best entry level push pull transformers going.

PART #	PRIMARY IMPEDANCE	POWER LEVEL	MAX. PRIMARY DCMA PER SIDE	DCMA UNBAL	RETAIL EACH
B14	12,000 CT	10W	40	4	$100
B15	10,000 CT	20W	50	5	$125
B17	9,000 CT	30W	50	5	$140
B18	8,000 CT	15W	45	5	$120
B20	6,600 CT	30W	70	7	$140
B21	5,000 CT	20W	80	8	$120
B23	4,000 CT	50W	100	10	$150
B24	3,000 CT	15W	75	7.5	$125
B27	1,500 CT	30W	150	15	$135

try the B27 in the "Iron Maiden" circuits - Paul

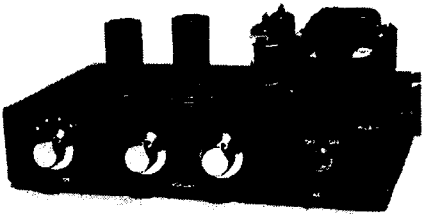
Note: Above units available with Ultralinear taps for an additional $6.00 per unit
Secondary impedances far all units are 2,4,8,12 & 16 ohms.
Guaranteed minimum frequency response is +/- 1 dB, 30Hz to 20 kHz.
All units supplied with vertical bell end caps.
All prices herein are special introductory - prices subject to change without notice.

Brooklyn

Brooklyn, P.O. Box 967
Cherryville, PA 18033
(215) 288-4816

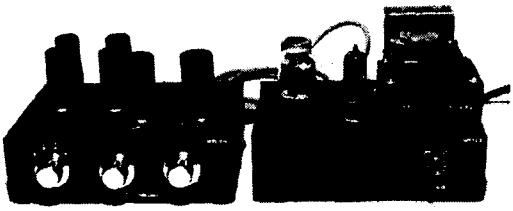
Where Push-Pull meets Single-Ended

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 $300.00 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 $450 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 $575 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.

To purchase any of these products, please send your order and payment to:

WRIGHT Sound Company
3516 So. 262nd, Kent WA 98032-7047

these are a few of my favorite (new) things

New stuff the Doc heard and liked this year

Speakers:

Superwhamodynes. (about $300 for parts)
Best bang for the buck if you don't mind DIY.
Pluses - 96 dB, whomping deep bass; natural midrange; good HF extension; best for a broad range of music.
Minuses - you gotta build it; big and tall; edgy with less than perfectly smooth amps; sounds lean with small amps; wants four watts minimum, and needs fifty for heavy metal.

Exemplars. ($8000)
Best two way horn system I've heard.
Pluses - 103 dB, no honk; super efficient, rocks the house with S.E.X.; unbelievably good image, even up close; super low distortion.
Minuses - $$$$$!; not a DIY project; BIG; maybe just a hair of hangover at the upper range of the woofer.

Medallions. (Cabinet kit $1100, assembled $1600, drivers range from $360 to $845 ea.)
Best one way system I've heard.
Pluses - 97 to 100 dB, Comes in easy to build kit form; super efficient; beautiful; very smooth, natural highs with PM2A drivers; killer image; awesome on piano.
Minuses - a little lean in the deep bass; a bit forward in the midrange; difficult to DIY, the kit is a better choice for the average builder.

Amps:

S.E.X. kit ($320/pr.)
Best bang for the buck.
Pluses - honest SE sound for peanuts; good bass; easily to build; upgradeable.
Minuses - a bit rolled off with stock OPT, a bit lean in the lower mids; you have to finish it yourself.

Antique Audio Labs AQ 1002K ($699)
Best high power kit amp (also the only high power kit amp I heard this year, but this thing is GOOD)
Nice balance; lotsa torque; and I'm told, helpful technical support.
Minuses - Crummy assembly instructions; the example I heard was hummy.

Gary Dahl's IT amp
Best homebrew amp.
Pluses - liquid mids and highs, super fast through this range; plenty of power for efficient speaks; killer lower midrange; very natural presentation on the Whamos.
Minuses - bass soft and light, requires lots ($) of iron.

Other amps of note - John Carey's copper Baby Ongakus, Dave and Paul's Brooklet/Brookson variants (these are still under development and may end up as giant killers), and my new Loftin-White S.E.X. conversion.

Preamps:

George Wright's phono/line/full preamps. ($300 to $575) A truly great preamp, in any of its three forms.
Pluses - inexpensive (you can even copy it from the November 95 VALVE, but George is a master builder, and you'd be hard pressed to improve upon his construction), super fast phono stage, very neutral line stage, dead quiet, runs any amp.
Minuses - 6ER5s may dry up someday; phono stage can sound lean with certain high output MC cartridges; low price means you sacrifice some bells and whistles, like mono switch and tape loops (these will be available on George's soon to be released upscale line)

Other notables - Audioprism Mantissa
A beauty of a line preamp. Sounds and looks beautiful. Costs a bundle.
Blue Circle preamp - ditto.

Best new tube.

The Svetlana 6550C. We listened to these in the Antique Audio amp and they were marvelous. Thought I'd show off, so we plugged in my treasured Tung Sol coke bottles. The Svets smoked 'em on tight, defined and clear. A true bargain. Eric Barbour will be sending some other cool tubes for us to design projects around in the coming year. Think 6AS7 and SV572....

Other great deals - Marantz CD63SE, TEAC PD-1200 (18 bit only!), Denon DL-103 cart, Andy Bartha's Resonance Damper as a record clamp, And the elusive Ultimate Pleasure output transformer. Oh, maybe we can save that one for next year's list!
Happy Holidays,

Doc B., Eileen, Colin & Katlyn

cravings

Wanted:
Mac MC 60s, MC 75s
Greg Izzi, 360-683-1744.

For Sale:
Electro Voice Patrician (single unit, 18 inch woofer, utility kit cabinet) $1500/best offer
Dynakit Mk IV, $300 the pair
Radiotron Handbook, 4th ed. $100
QUAD ESL, bad transformer, $200
(16) Tung-Sol 6550 $70 each
(20) Amperex 7308 (PQ, GOLD) $20 each
(50) GE 7868 $20 each
(20) GE 7027A $30 each
(5) GE, RCA (Mullard) 5AR4 $35 each
(15) Amperex 12AT7 B.B. $15 each
(15) RCA red base 5691 $30 each
(10) RCA, SYL, GE 7199 $15 each
(15) 6L6WGB (5881) $20 each
(15) GE, RCA, SYL 12BH7 $10 each
(15) GE, RCA, SYL 12BY7 $7 each
(10) GE 8068 $35 each
(8) RCA 5751 $10 each
(8) RCA UX-201A $25 each
(5) RCA WD-11 $90 each
(4) RCA WD-12 $60 each
All tubes NOS in original boxes
Steve Harrell
1179 Boylston St. #30
Boston, MA 02215
617-247-0672
fax 617-730-8449.

Wanted:
mesh plate 26 tubes
REL Precedent tuner
Jim Dowdy, 770-451-0087
fax 770-451-5684

For Sale:
- Pair Dynaudio D28 AF, one needs lead to solder terminal repaired - $35
- Pair Audax 5.25" Aerogel mid woofers - $100
- Pair MCM 53-410 titanium dome tweeters with diffraction lens. 95dB, 2Khz-22kHz. $20

all plus shipping
Dr. Bottlehead
360-697-1936
fax 360-697-3348
e-mail FKQF17A@prodigy.com

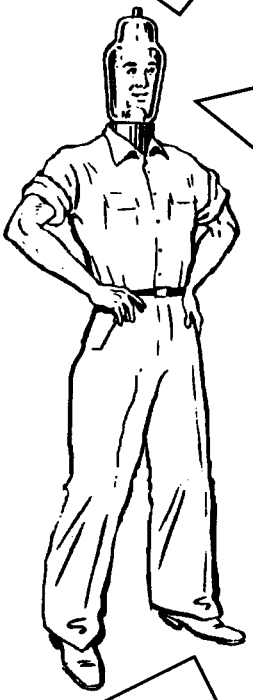
january

Hey, don't forget that the January meeting will be held Wednesday evening, January 15, 7:30, at 4545 Island Crest Way, Mercer Island, WA. (enter to the rear, in the church basement)
This will be the final showdown with the Pacificnorthwest Audio Society for our $100 speakers. Paul Joppa has an entry, Don Galarneau and Jerry Hertel have an entry, and John Carey and I have an entry. If you have an entry, please bring it to the Dec. 8 meeting!
We need a great turnout at the January meeting. Not just a good one, a GREAT one. All you Seattle residents, we need your support. This promises to be a really fun evening. The friendly rivalry thing is really starting to happen between our clubs, and there are some very interesting folks to meet over there. I will try to have a really frightening 805 SE amp of monstrous proportions ready to show off at this event.
Also, I have made an attempt to get as many bottleheads as possible to make it to winter CES in Las Vegas, Jan 9-12.
I will be heading down to meet with Tony Glynn, Mike Lafevre, Jennifer Crock, Eric Barbour, Gordon Rankin, Joe Roberts, Bruce Edgar, etc., etc. in the flesh. I hope to be there Thursday through Saturday. If you can make it, look me up. I'll have my "I'm a Bottlehead" T-shirt on.

a book to dog ear

My good friend Luciano Macri sent some fascinating books he publishes from Italy a few months back.
They are called *Manuale Hi-Fi a valvole - Schemario, vols. 1 & 2.*
Inside are tons of schematics of various tube amps, with a slant toward some Euro and Japanese circuits you don't see around here
The first volume has in depth analysis (yes, it's in Italian, but schemos translate pretty easily) of some circuits and bonus stuff like an article on winding your own PP EL84 output trannie.
The second volume is crammed with weird and wonderful circuits. Names like Hampton, Digitex, Loyez, Kappler and Millerioux pop up between the usual Audio Research/McIntosh/Marantz findings.
Did you know Technics made an OTL amp called the 20A? Even Dave's hyper rare Carver Model One prototype preamp in is here.
Get these books if you love map reading.
Available through Giampiero Pagnini Editore, Piazza Madonna Aldobrandini 7, 50123 Firenze, Italia - phone: ++055293267

HEY, IT'S TIME TO RENEW!



WHAT'S COMING IN '97?
WELL, HERE'S A FEW IDEAS WE'RE KICKING AROUND-

- ◊ A BIZZARE NEW DIY INTERCONNECT. EXCELLENT!
- ◊ $100 DIY SPEAKER CONTEST WINNERS
- ◊ A LOFTIN-WHITE S.E.X. CHANGE
- ◊ THE BROOKSON PP AMP BECOMES A REALITY
- ◊ S.E.X. WITH 300B'S
- ◊ A TUBE OUTPUT DAC
- ◊ A CAP FREE XOVER FOR THE WHAMOS
- ◊ WINDING YOUR OWN 845 OUTPUT TRANNIE

UNLESS YOU'VE ALREADY RENEWED, YOUR SUBSCRIPTION EXPIRES WITH THIS ISSUE. 1997 SUBSCRIPTIONS ARE STILL JUST $25, FOR TWELVE THRILL PACKED ISSUES. GET YOUR RENEWAL IN TO US BY JANUARY 1ST SO YOU DON'T MISS A BEAT! VISA, MC, AMEX, OR CHECK IS A-OK!

SEE THE BACK INSIDE COVER FOR KIT ORDERING INFORMATION