

Build the "Baby Ongaku" by Frank Reps

No relation, actually . . .

What nerve! Another ignorant scribbler writing in an audiophile magazine, rhapsodizing about a tiny 2A3 single ended amplifier and having the audacity to compare it to the peerless Audio Note *Ongaku*.

You may be tempted to think the author of this article never even saw a real live *Ongaku* let alone listened to one. Well, dear reader if you think that, you are wrong. Not only have I seen the *Ongaku*, the real thing is sitting on an equipment stand in my living room atop a Mark Levinson 31 CD transport, a 30.5 Mark Levinson D/A converter as well as a twelve year old McIntosh FM tuner (still as good as ever).

This seventy-pound boat anchor of a 211 amp is flanked by a pair of 1981 manufacture British Lowther TP1 enclosures furnished with the latest PM2 "A" Hi Ferric drivers.

This system is heaven to me and to most people who experience it. The *Ongaku* has no subtlety — it is colorless to a fault and it reproduces *all* of whatever signal is on the software. The Lowthers do have a very slight coloration, but to anyone who has spent any time listening to their crystal clear presentation, other speaker systems sound either like synthetic sound boxes or speakers with heavy blankets draped over their grille cloths.

I called my amp project "Baby Ongaku" because the end product is very close to the real thing sonically. The Baby is physically smaller, and much lower in power — 3 watts for the 2A3 vs. 15+ W for the 211-based *Ongaku*. This project puts the lie to the idea that one must spend \$50,000++ to obtain sound quality on the level of the purportedly best amplifier in the world. If you use high efficiency Lowther speakers, this three watt amp will produce three times the power needed for a moderate-sized listening room.

Details and nuances of the music are reproduced to an incredibly realistic level by the "Baby". I think it's because of the silver Magnequest transformers. All of the top level Kondo-designed Audio Note amplifiers use pure silver transformers, so I don't think the similarity in performance is accidental.

Oxygen free copper wire has about 94% of the conductivity of pure silver and one would think that a six percent difference could be compensated for in some way by the transformer designer. The cost differential is astronomical and what is six percent anyway? I have no physics class explanations of why silver sounds as it does but I do know from experience that well-made silver transformers provide a more transparent presentation and seem to pass on more of the detail contained in the program material than copper wired ones.

This is the "silver sound". The "Baby" has that sound. I have quite a bit of listening experience with the Audio Note *Neiro Silver* (silver caps) as well as the Audio Note Limited Edition *Kageki* (a *Neiro* with silver output transformers). All of these are great amplifiers. The *Kageki* is probably the best Audio Note of Japan product ever, even better than the *Ongaku* if you can live with seven watts output. There is definitely a silver sound and some of the best amplifiers I know of have it.

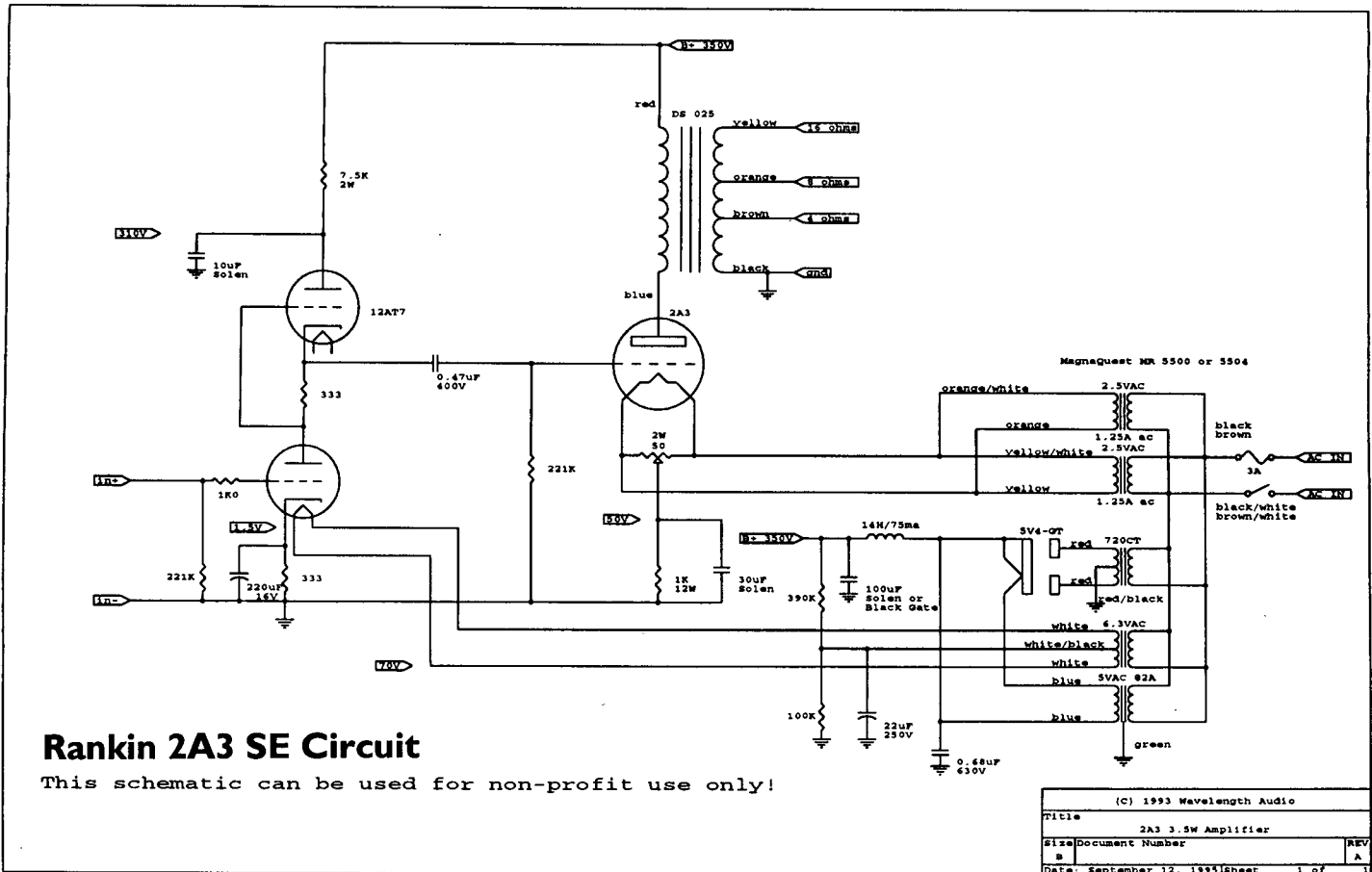
Even if one had the money the Audio Note Japan products are limited production items, hard to obtain, and outrageously expensive. If you can afford them, I would argue that the Audio Note amplifiers are a *necessity*, but from any pragmatic point of view Level 5 Audio Note products are a senseless way to waste money. The "Baby Ongaku" on the other hand, is well within the reach of any serious minded audiophile. But, if you want one, you must manufacture it yourself!

This "Baby" amp came into existence somewhat in the same manner that the classic film *Casablanca* came together. I think a committee of ten made the movie. Even though *Casablanca* was a cut and paste job, it metamorphasized into a great classic film.

A committee of four just happened to get together to make this particular amp. A random series of events took place that resulted in the "Baby". This amp too was sort of a cut and paste job.

A few months ago, I was talking to Mike LaFevre (the manufacturer of Magnequest transformers which are now captivating the hearts of Japanese audiophiles long used to the high quality Tango and Tamura products) about Ducati motorcycles and Alfa Romeo cars when the subject of a really neutral, clear sounding low power SE amp came up.

He told me that Gordon Rankin of Wavelength Audio, designer of the rave review *Cardinal 300B* amps, had recently provided him with a very simple 2A3 amp schematic which he made public for non-commercial use. Aside from the 2A3 output tube, the amp uses a single 12AT7 SRPP driver and a 5V4GT rectifier tube. A few tubes and a handful of capacitors and resistors is all there is to this simple circuit. Word "on the street" was that people who built Gordon's 2A3 thought it was a great sounding amp project, so I decided to give it a go.



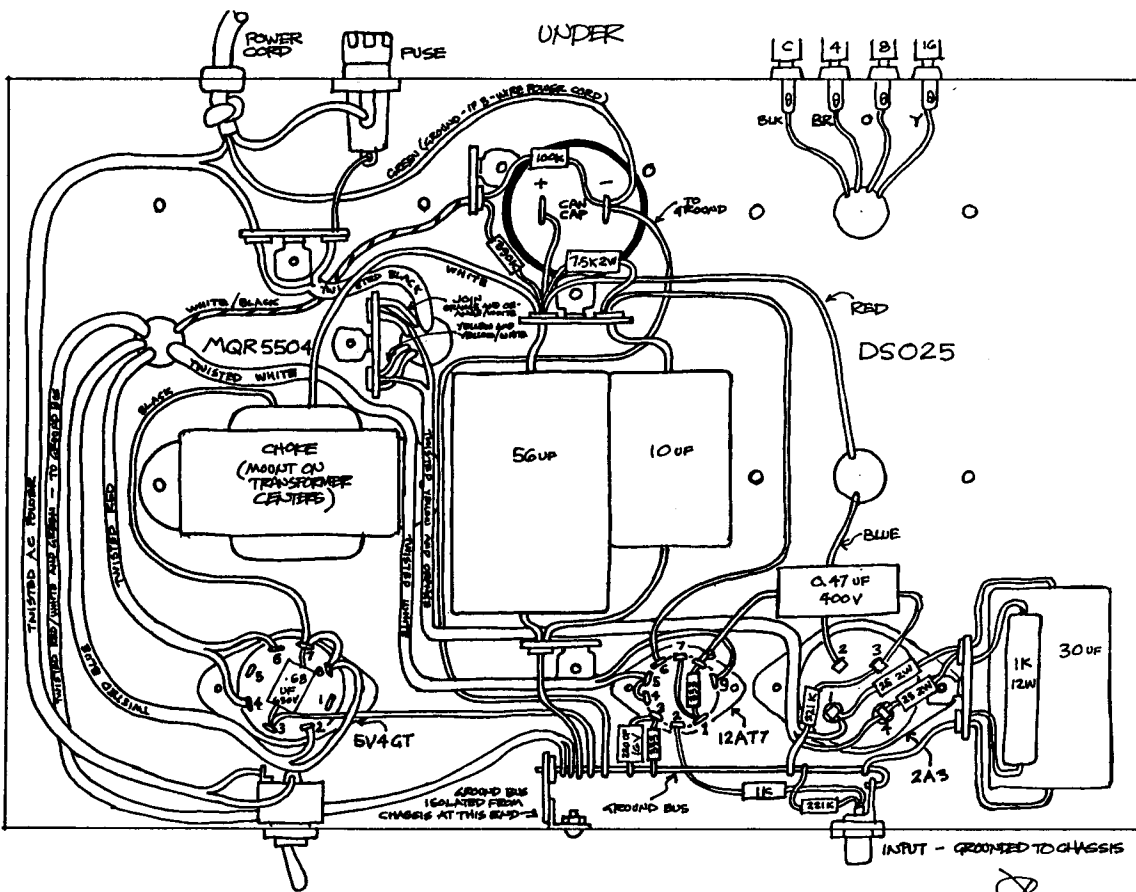
**Notes on layout
2A3 SE amp**

Mark and lay out chassis first, then mount all iron and hardware. The layout given requires 4 double lug terminal strips and three single lugs. All lugs used for circuit connections must be isolated from the chassis ground.

The only connection to the chassis ground is through the ground bus at the input jack. The other end of the ground bus must *not* make chassis contact. Use thick wire for the ground bus. All AC leads must be twisted as indicated by thick lines on drawing.

Good luck and no cold solder joints.

Don Garber





Mike sent me a copy of the schematic and after a lot of head scratching in an attempt to draw out a decent wiring diagram, I finally gave up and contacted Don Garber of "Fi" fame. He's the man who builds the exquisite direct coupled, silver wired 2A3 amps that have audiophiles on the East Coast captivated. Don Garber is probably one of the most meticulous and detail oriented amplifier builders in the country. I gave Don the mechanical layout and he proceeded to produce the simple and elegant wiring diagram illustrated which he agreed to make available as a gift to the SP readership.

Since I am an admirer of Audio Note of Japan products, I asked myself: Why not "ape" some of their construction details? This necessitated a 50 thou polished copper plate on the top of a black semi-gloss chassis. I used Solen filter capacitors as specified by Gordon Rankin and Black Gate capacitors in all other areas. But most importantly, I used the pure silver wire Magnequest output transformers and as much silver internal wire as needed.

In order to make the amp as solid and bullet proof as possible I utilized a Hammond aluminum chassis size 8" x 12" x 2". I cut out the top of the chassis leaving a one inch border along the sides. This would be the bottom of the new amp. I then took a sheet of 50 thou solid copper 12" x 9" x .050" and bent it at a 1" 90° angle along the 12" side. The 1" bend would serve as part of the ground plane where the input RCA socket and off/on switch are located. This plate would now be the top of the chassis fastened to what used to be the bottom of the

Hammond box, got it? The back of the alloy box houses the AC socket and speaker output posts.

Before I go any further, these "Baby Ongakus" are not cheap. To make them properly you will be spending \$1,600 for two Magnequest silver DS025 output transformers and an additional \$300 for a pair of Magnequest power transformers. Count on spending several hundred dollars for the Black Gate caps and tantalum resistors as well as a couple hundred or so for the Hammond chassis boxes, silver hook up wire, speaker binding posts, Solens, etc.

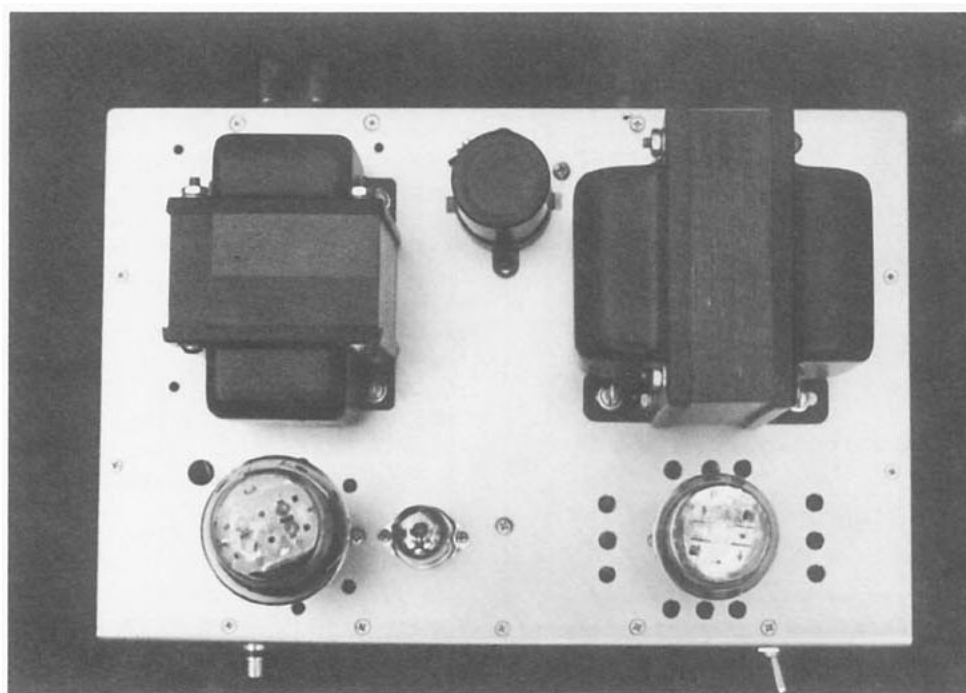
Let me digress. . . if any of you are *serious* music lovers who want to capture the rare and wonderful, emotionally satisfying experience obtainable from the "Baby Ongaku", the cost is very reasonable, even if you have a journeyman amp builder construct it. For you others, you *dumpster divers*, you *garbage night alley scroungers*, you *garage sale commandos*, and all of you who are reading this copy of SP in the form of a Xerox copy produced on someone else's machine, let me make one charitable attempt to enlighten you. Hey, this advice is FREE so glom onto it.

Always remember these fundamental facts of life that apply to all of Man's existence:

"Good things are not cheap!
Cheap things are not good!"

Any fool who seriously thinks that he or she can conjure up a "Magic Amp" with a few dollars worth of surplus parts, an old car radiator, and a \$4.98 Weller soldering iron should put this magazine down right now! Drop it, Fool! Take your 59 cent hamburger and plain wrap soda pop and retreat to the friendlier environs from whence you came.

Go back to the land of four year old *Popular Mechanics* magazines, room temperature IQs, and your dusty "I coulda/shoulda/woulda" projects. Go back to your dear friends who still believe that the 300 mile per gallon carburetor is being suppressed by Big Oil Companies.



Top view of "Baby Ongaku" amplifier

I personally think that the publisher of *SP* should refuse any and all articles that rehash cheap and silly circuits and go over long-disproven theories. Our primary focus should be the search for the highest level of reproduced musical excellence, a level only obtainable by the use of vacuum tube technology (particularly single-ended topologies) in conjunction with the most efficient loudspeakers available, single point source if possible. I'm talking about the "less is more" philosophy carried to its highest level.

Depending on the degree of finish you wish to impart to your amp, it may take some time to construct. I used 6-40 aircraft blind nuts for the bottom plate fasteners. The top plate is fitted with recessed flat head 4-40 stainless aircraft grade machine screws using locking nuts. The photos and illustrations give you an idea of constructional details.

A most important aspect of construction is the ground buss. Use a #12 solid copper wire, wrap the ground end around the threaded portion of the RCA input socket and then put the nut on. Solder this with a high wattage gun after it is tightened down. All wires go to the ground as illustrated in Don Garber's drawing. I used a 25 watt 1k cathode bias resistor for the 2A3 bypassed with a 30 uF Solen cap and placed it in a central position on my chassis. For a

coupling cap, I chose the copper foil-in-oil Audio Note and they sound really great.

Do not bend any of the wires at right angles. Use gentle bends when routing the wire. Let the Magnequest transformer leads be as long as possible. They do no harm being long. Make sure the copper top plate is fastened as securely as possible.

Don't use sheet metal screws, use machine screws and nuts. The rigidity of the chassis will have an effect on the sound. The stronger and more rigid the chassis, the less chance of spurious microphonic noises.

The output tubes should be matched highest quality Chinese Golden Dragon 2A3s or NOS RCA, Sylvania, etc. The driver should be the Mullard manufactured 12AT7 equivalent or top quality Golden Dragon. The 5V4G could be NOS RCA but the Sovtek 5V4GT is an acceptable and available alternative.

Do your voltage checks and then plug in the tubes. Before you do any serious sonic evaluations be sure to let your creation burn in for a week or so. Don't ask me why, but at first the amp sounds as if you are listening to a set of headphones laying on the carpet with the volume turned up. After a few hours you will begin to hear some music shine through. I can't explain the break-in phenomenon, but within forty hours or so the amplifier will begin to give you a hint of what is to come. My suggestion is to play a tuner through the "Baby Ongaku" out of earshot for a couple of weeks before any serious listening.

You now have a pair of expensive to build 3 watt monoblocks, equipped with silver output transformers that taken alone cost more than many complete amps. What you also have is a close approximation of the "silver sound" produced by the Audio Note *Ongaku*. No it does not replicate the undefinable *Ongaku* quality of absolute silence and space between each precise nuance of the music. However, it comes so close to that undefinable *Ongaku* quality that unless you make a direct comparison to the *Ongaku* you probably won't miss the difference. Use the \$50,000 savings for a Porsche instead!

One of these days Mike LaFevre will start pricing his transformers at levels comparable to the Audio Note UK silvers (not as well made) or the Japanese Kondo manufactured silver transformers (unbelievably well made) and your opportunity to own a "lifetime" amplifier will have come and gone.

The previous issue of *SP* contained plans for the classic Lowther *Acousta 115* enclosure. It is worth the trouble to have a pair built, believe me. Form a co-op and get your friends to pool their talents and make those enclosures. They will reproduce music. They're not "hi-fi" speakers. The "Baby" will work perfectly with the Lowthers. In fact, it's a match made in heaven.

If you've been trying to get realistic sound from some of the ludicrous but highly touted multi-way particle board horn systems using crappy European drivers, or if you went the "Radio Shack" way and mounted a bunch of "Quam" and "Pioneer" speakers in your own unique enclosure you may be ready for the Lowther *Acousta 115* enclosure with even the least expensive Lowther driver. Build the cabinets, hook up the Rankin/Magnequest/Garber/Reps, et. al. 2A3 Silver SE "Baby Ongaku" and prepare yourself for a radical change in direction as an audiophile.

Your new focus will be on accumulating records and CDs and transport mechanisms, D/A converters, turntables, tone arms and cartridges up to the task. The "Baby Ongaku" and the Lowther speaker systems won't need upgrading. Your investment in time, money, and labor will yield music reproduction in a league with the best available at any price.

Notes from designer Gordon Rankin

The 0.68 uF cap can be varied to establish the 350V B+ to the specified value. The power transformer secondary plate is shown as 640 ct in this particular circuit. Make sure that all voltages are correct before attaching speakers and tune the 50 ohm pot for minimal hum. If using 6A3/6B4-Gs, I suggest trying a DC supply with large amounts of capacitance in the power supply (10000 uF or more) to avoid hum problems. You can play around with the coupling cap. The value should be between 0.22 and 0.47 at 400V or higher. I found that the 0.33 uF Hovlands sound really good.


Many constructors have built this amp with no problems using only the schematic provided above. If this is your first time, I suggest that you find someone close by who can help you with the details. I will accept comments and requests for help by e-mail ONLY: waveaudio@eworld.com. Enjoy.

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